FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 261
FACILITY ID #9-089118
BUILDING 430
FORT STEWART, GEORGIA

Prepared for:

U.S. Army Corps of Engineers - Savannah District
and
Fort Stewart Directorate of Public Works
Under Contract Number DACA21-95-D-0022
Delivery Order 0024

Prepared by:

Science Applications International Corporation
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831

March 1999

DOCUMENT 2

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limit
AMSL	above mean sea level
ASTM	American Society for Testing and Materials
ATL	alternate threshold level
BGS	below ground surface
BLS	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylene
BTL	below threshold level
BTOC	below top of casing
CAP	Corrective Action Plan
DPW	Directorate of Public Works
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
FS	Fort Stewart
GA EPD	Georgia Environmental Protection Division
GRO	gasoline-range organics
ID	inside diameter
IDW	investigation-derived waste
N/A	not applicable

NRC	no regulatory criteria
OVM	organic vapor meter
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
SAIC	Science Applications International Corporation
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UST	underground storage tank
USTMP	Underground Storage Tank Management Program
VOC	volatile organic compound

CORRECTIVE ACTION PLAN PART A

Facility Name: UST 261, Building 430 Street Address: Hero Rd between Bundy Ave & W. 15th St

Facility ID: 9-089118 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 31°52'18" Longitude: 81°35'35"

Submitted by UST Owner/Operator:	Prepared by Consultant/Contractor:
Name: Thomas C. Fry/ Environmental Branch	Name: Patricia A. Stoll
Company: U.S. Army/HQ 3d, Inf. Div (Mech)	Company: SAIC
Address: DPW ENRD 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
Telephone: (912) 767-1078	Telephone: (423) 481-8791

I. PLAN CERTIFICATION:

A. UST Owner/Operator Certification

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, 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: 03/25/99

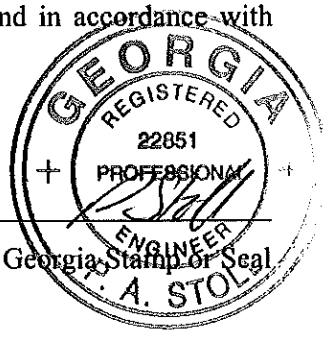
B. Registered Professional Engineer or Professional Geologist Certification

I hereby certify that I have directed and supervised the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered professional geologist and/or professional engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologists. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 3/23/99



Georgia Stamp or Seal

General: READ THE GUIDANCE DOCUMENT FOR CAP PART-A BEFORE COMPLETING THIS FORM. FAILURE TO READ THE GUIDANCE DOCUMENT WILL MOST LIKELY RESULT IN PREPARATION OF AN UNACCEPTABLE REPORT. All text, figures, and tables requested in their respective sections should be prepared strictly in accordance with the Georgia EPD CAP-A guidance document. Please fill out this form as provided. Do not change the size of the fields or alter the placement of each section on each page.
(Appendix I: All Report Figures)
(Appendix II: All Report Tables)

II. INITIAL RESPONSE REPORT

A. Initial Abatement

Were initial abatement actions initiated? YES ____ NO X
If Yes, please summarize. If No, please explain why not.

Actions were not required to abate imminent hazards and/or emergency conditions at the UST 261 site. Therefore, contaminant migration and release prevention, fire and vapor migration, or emergency free product removal was not performed prior to, or during, the removal of UST 261.

B. Free Product Removal

(Table 1: Summary of Free Product Removal – must include Free Product thickness in each well in which it was detected, and volume of product removed)

Free Product Detected? YES ____ NO X
If Yes, please summarize free product recovery efforts.

Continuing free product recovery proposed? YES ____ NO X
If yes, please indicate the method and frequency of removal.

C. Tank History

List current and former UST's operated at site based on owner/operator knowledge consistent with EPA 7530-1 Form). Systems must be illustrated on Figure 2 (Site Plan), as described in section D below.

CURRENT UST SYSTEMS (if applicable)

Tank ID Number	Capacity (gal)	Substance Stored	Age (yrs)	Meets 1998 Upgrade Standards (Yes/No)
N/A	N/A	N/A	N/A	N/A

FORMER UST SYSTEMS (if applicable)

Tank ID Number	Capacity (gal)	Substance Stored	Date Removed
261	500	Waste Oil	6/25/96

D. Initial Site Characterization

(Figure 1: Vicinity/Location Map)
(Figure 2: Site Plan)

1. Regulated Substance Released (gasoline, diesel, used oil, etc.): used oil
Discuss how this determination was made and circumstances of discovery.

Characterization of petroleum-related contamination at the site was initiated during UST system closure activities on June 25, 1996, by Anderson Columbia Environmental, Inc (ACE). After removal of the tank and ancillary piping, one soil sample was collected from the tank pit (Figure 7). Soil sample 261-T1-S1 contained 2.51 mg/kg of BTEX, 0.517 mg/kg of SVOCs and 282 mg/kg of TPH. The method detection limit for benzene (0.0115 mg/kg) exceeded applicable soil threshold levels.

2. Source(s) of Contamination: Unknown; piping leakage or tank overflow suspected.
Discuss how this determination was made.

A detailed schematic diagram illustrating the former UST 261 and ancillary piping is available at Fort Stewart DPW. Employees of the Car Care Center hand carried waste oil to the tank and poured the oil into the tank, which often resulted in surface spillage. However, during removal activities by ACE, no holes in the tank were reported. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow from operation practices.

3. Local Water Resources

(Figure 3: Quadrangle Map – Public and Private drinking water and surface water)
(Appendix III: Water resources survey documentation, including, but not limited to: USGS database search, interview forms, and documentation of field survey)

a. *Site located in high/average* X *OR low* ____ *groundwater pollution susceptibility area?*

b. *Water Supplies within applicable radii?* YES X NO ____
If yes,
   i. *Nearest public water supply located within:* 1750 *feet*
   ii. *Nearest down-gradient public water supply located within:* 1750 *feet*
   iii. *Nearest non-public water supply located within:* >2,640 *feet*
   iv. *Nearest down-gradient non-public water supply located within:* >2,640 *feet*

c. *Surface Water Bodies and sewers:*
   i. *Nearest surface water located within* 1000 *feet*
   ii. *Nearest down-gradient surface water located within* 1000 *feet*
   iii. *Nearest storm or sanitary sewer located within:* 50 *feet*
   iv. *Depth to bottom of sewer at a point nearest the plume* est. 4-6 *feet*

4. Impacted Environmental Media

a. *Soil Impacted*
(Table 2: Soil Analysis Results)
(Figure 4: Soil Quality Map)
(Appendix IV: Soil Boring Logs)
(Appendix V: Soil Laboratory Reports)
(Appendix VI: ATL Calculations, if applicable)

Provide a brief discussion of soil sampling.

Continuous soil cores were collected at 2.0-foot intervals during the installation of five boreholes. Field headspace gas analyses were performed on each sample to determine the organic vapor concentration. Two soil samples were selected from each borehole for laboratory chemical analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); and polynuclear aromatic hydrocarbons (PAH). In boreholes where organic vapors were detected, one sample was collected from the 2.0-foot interval where the highest vapor concentration was recorded, and the other from the deepest 2.0-foot interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the 2.0-foot interval nearest the midpoint of the boring, and the other from the 2.0-foot interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. Soil contamination above applicable threshold levels?

YES X NO ____

If yes, indicate highest concentrations in soil along with locations and depths detected.

Benzene exceeded applicable threshold levels in borings 73-04 and 73-05. The benzene concentrations ranged from 0.0136 mg/kg to 1.020 mg/kg in the samples from these two boreholes with the highest contamination observed in sample 730541 at a depth of 14.0 to 16.0 ft BGS. Benzene contamination was also present in the deepest soil sample collected from the vertical profile boring (73-05) at 32.0 to 34.0 ft BGS at a concentration of 0.0455 mg/kg.

ii. ATLs calculated? YES ____ NO X

If yes, present ATLs.

iii. If ATL's calculated, is soil contamination above ATL's?

YES ____ NO ____ N/A X

b. Groundwater Impacted
(Table 3: Groundwater Analysis Results)
(Figure 5: Groundwater Quality Map)
(Appendix VII: Monitoring Well Details)
(Appendix VIII: Groundwater Laboratory Results)

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the water table to approximately 5.0 feet below the water table using a direct-push sampling device. At the vertical profile location (73-05), soil samples were collected every 5 feet below the water table until several soil sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. Groundwater contamination above MCLs? YES X NO ____

ii. Groundwater contamination above In-Stream Water Quality Standards?

YES X NO ____

If yes, indicate highest concentrations in groundwater along with the locations.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in borings 73-01, 73-02, 73-03, and 73-04. Benzene and toluene concentrations exceeded their respective MCLs. The highest benzene and toluene concentrations were detected in boring 73-04 at concentrations of 12,000 µg/L and 11,000 µg/L, respectively.

c. *Surface Water Impacted?* YES _____ NO X
If Yes, indicate concentration(s) of surface water sample(s) taken from the surface water body/bodies impacted.

d. *Point of Withdrawal Impacted?* YES _____ NO _____ N/A X
If Yes, indicate concentration(s) of water sample(s) taken from withdrawal point(s).

5. Other Geologic/Hydrogeologic Data

a. *Depth to Groundwater (ft BTOC):* 7.11 to 8.88 *(Table 4: Groundwater Elevations)*
b. *Groundwater Flow Direction:* southeast *(Figure 6: Potentiometric Surface Map)*
c. *Hydraulic Gradient* 0.0103 ft/ft
d. *Geophysical Province:* coastal plain
e. *Unique geologic/hydrological conditions:* The Hawthorn Formation acts as a confining unit between the surficial and Floridan aquifers

6. Corrective Action Completed or In-Progress (if applicable)
(Table 5: UST System Closure Sampling)
(Figure 7: UST System Closure Sampling)
(Appendix IX: Contaminated Soil Disposal Manifests)

a. *Underground Storage Tank (UST) System Closure:* N/A _____
If applicable, summarize UST system closure activities conducted.

ACE removed UST 261 on June 25, 1996. The UST piping was drained into the tank, and all waste oil was subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. The ancillary piping was removed to the building where the piping was grouted and capped. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped and the tank was lifted from the excavation pit. The tank was triple rinsed, cut up, and sold as scrap metal to Savannah Steel.

b. Excavation and Treatment/Disposal of Backfill Materials and Native Soils

Check one:

No UST removal performed	____
Returned to UST excavation	____
Excavated soils treated or disposal off site	X

If soils were excavated, summarize excavation and treatment/disposal activities:

Approximately 17.3 tons of soil were removed from the UST 261 site. It should be noted that all contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Installation has records of all manifests and weight tickets for this project. However, site/UST-specific information is not available.

7. Site Ranking:

Environmental Site Sensitivity Score: *12625*
(Appendix X: Site Ranking Form)

8. Conclusions and Recommendations

Complete applicable section below, one section only

a. No Further Action Required (if applicable) N/A X
(provide justification)

b. Monitoring Only (if applicable) N/A X
(provide justification)

c. CAP-B (if applicable) N/A ____
(provide justification)

Benzene and toluene concentrations in groundwater exceed their respective MCLs. The horizontal and vertical extent of groundwater contamination was not determined during the CAP-Part A investigation.

III. MONITORING ONLY PLAN (if applicable): N/A X

A. Monitoring points

B. Period/Frequency of monitoring and reporting

C. Monitoring Parameters

D. Milestone Schedule

E. Scenarios for site closure or CAP-Part B

IV. SITE INVESTIGATION PLAN (if applicable): N/A _____
(Figure 8: Proposed additional boring/monitoring well location)

A. Proposed Investigation of Horizontal and Vertical Extent of Contamination In:

1. Soil N/A _____ 9-089118

The UST 261 site (Facility ID #9-089118) and USTs 257-260 site (Facility ID #0-890037) are registered with GAEPD under separate facility identification numbers, although they are located within 60 feet of each other at the closest point (i.e., piping for USTs 257-260 and former UST 261 tankpit). Thus, due to the close proximity of the two sites, and the fact that the groundwater contamination plume encompasses both sites, Fort Stewart proposes to combine the CAP-Part B investigations into one investigation for both sites. The field investigation will include the installation of 12 soil borings as indicated in Figure 8. At each boring, two soil samples will be collected based on PID/FID readings and the borings will be completed as shallow monitoring wells. If the proposed sampling strategy does not achieve horizontal delineational contamination, then additional borings/wells will be installed.

2. Groundwater

a. Free Product N/A _____

Each of the 12 soil borings will be converted to a monitoring well. The wells will be screened across the water table with 3 feet of screen above the water table in order to detect the presence of free product. All monitoring wells will be completed flush with the ground surface.

b. Dissolved phase NA _____

One groundwater sample will be collected from each monitoring well and analyzed for BTEX and PAH. To further characterize the vertical extent of contamination at the site 76-21 and 76-22 will be drilled to a depth of approximately 40 feet BGS and soil samples will be collected at 10 foot-intervals. The soil samples will be analyzed for BTEX, PAH, TPH-ORO, and TPH-DRO.

3. Surface Water N/A X

Two surface water and sediment samples will be collected from the drainage swale located east of the site that runs parallel to Hero Road. These samples will be analyzed for BTEX, PAH, and TPH (sediment only).

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

A geotechnical soil sample was collected from the site during the CAP-Part A investigation and analyzed for permeability, porosity, grain size distribution, moisture content, bulk density, specific gravity, and total organic carbon (Tables V-A and VI-A). Each of the groundwater samples collected will be analyzed for dissolved iron. A slug test will be performed in three of the monitoring wells to determine the saturated horizontal hydraulic conductivity. This information will be utilized in the fate and transport modeling or remediation system design.

V. PUBLIC NOTICE

(Figure 9. Tax Map)
(Appendix XI: Copies of public notification letters & certified return receipts or newspaper notice if approved)

UST 261, Building 430 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by GA EPD guidance by publishing an announcement in the *Savannah Morning News* on July 19 and 26, 1998.

VI. CLAIM FOR REIMBURSEMENT (for GUST Trust Fund sites only): N/A X

(Appendix XII: GUST Trust Fund Reimbursement Application and Claim for reimbursement)

Fort Stewart is a federally owned facility and has funded the investigation for the UST 261 site, Building 430, Facility ID #9-089118, using Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

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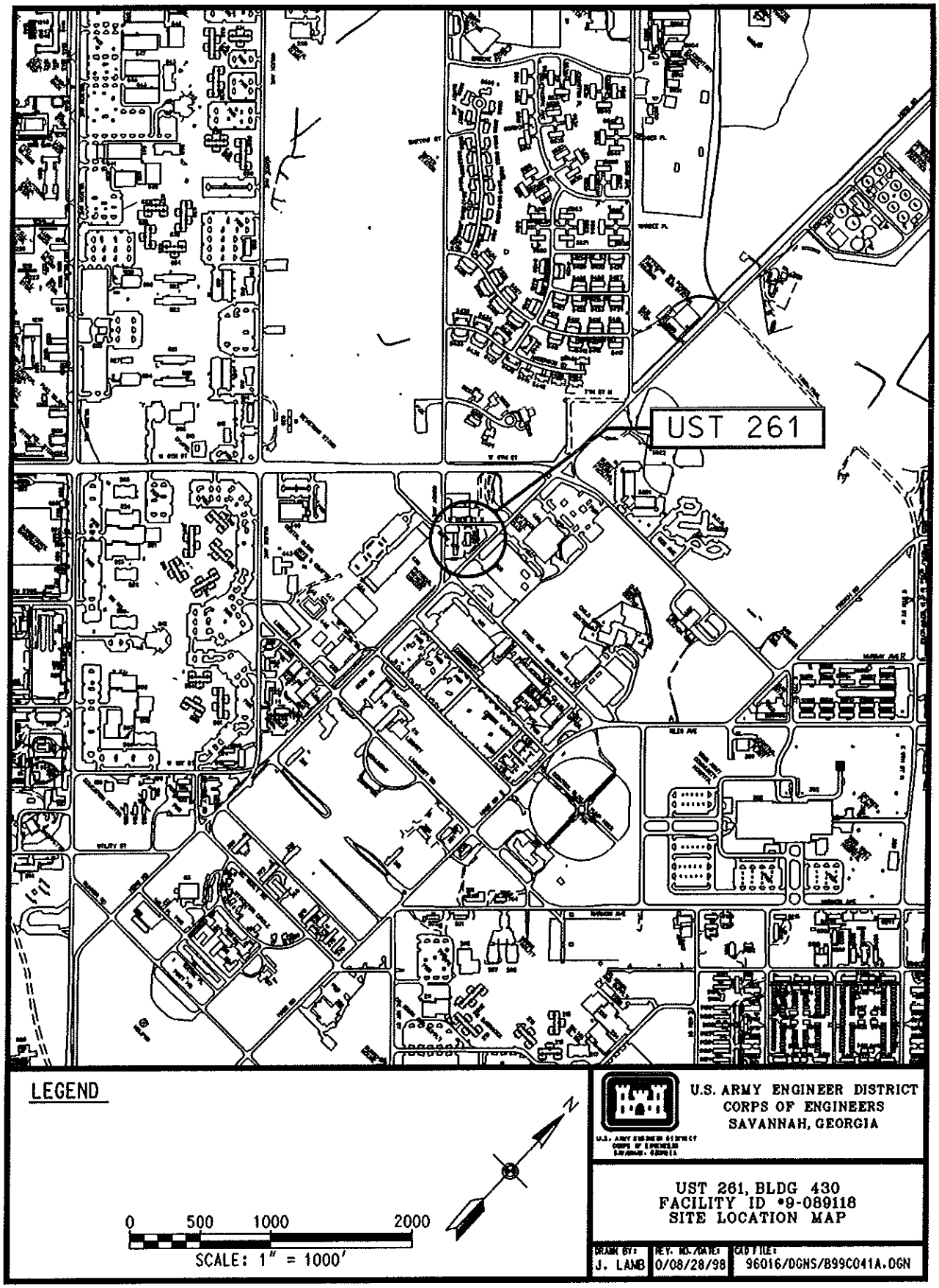

Figure 1. Location Map of Fort Stewart, Liberty County, Georgia

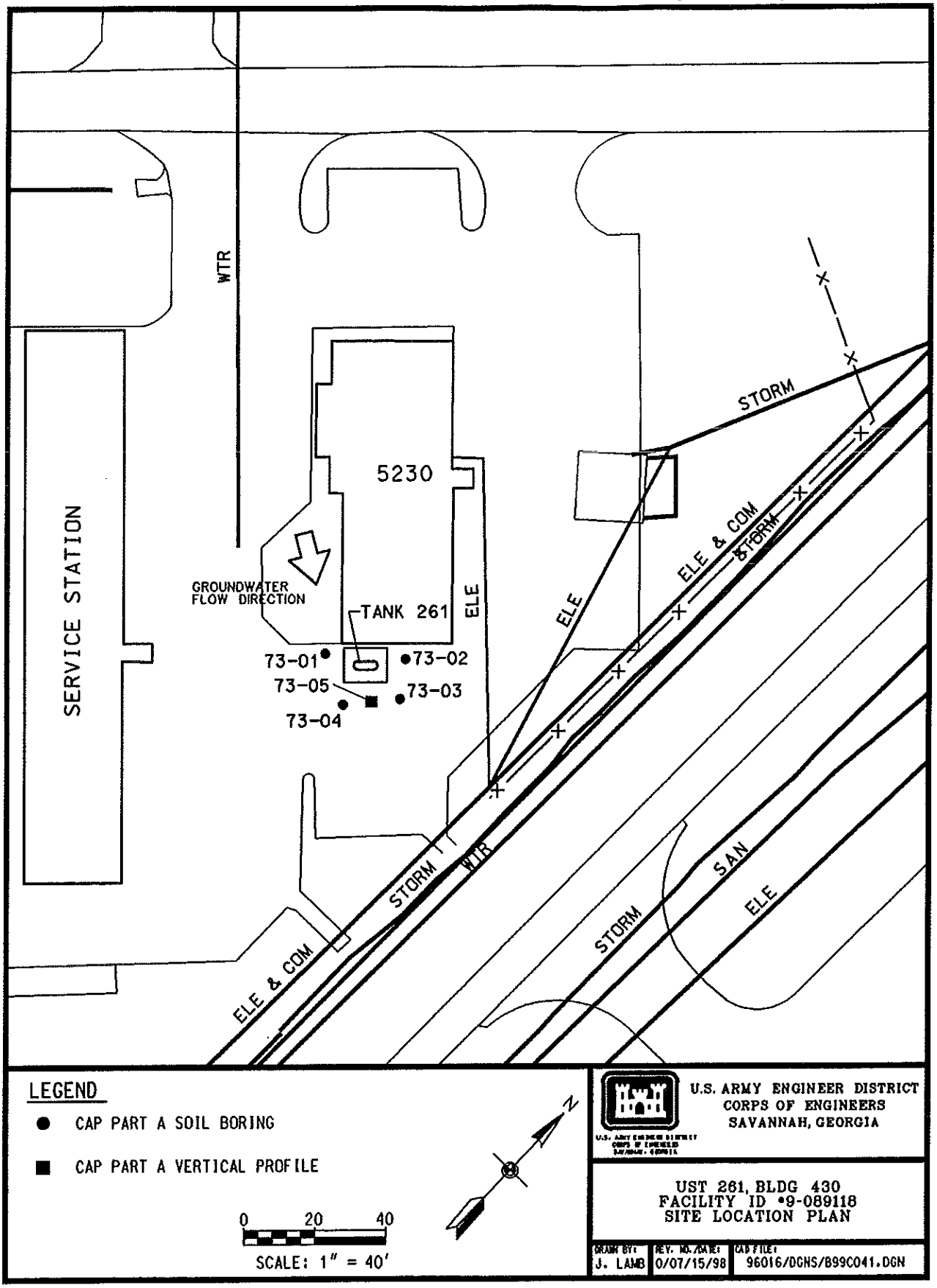

Figure 2. Site Plan for the UST 261, Building 430 Site Investigation

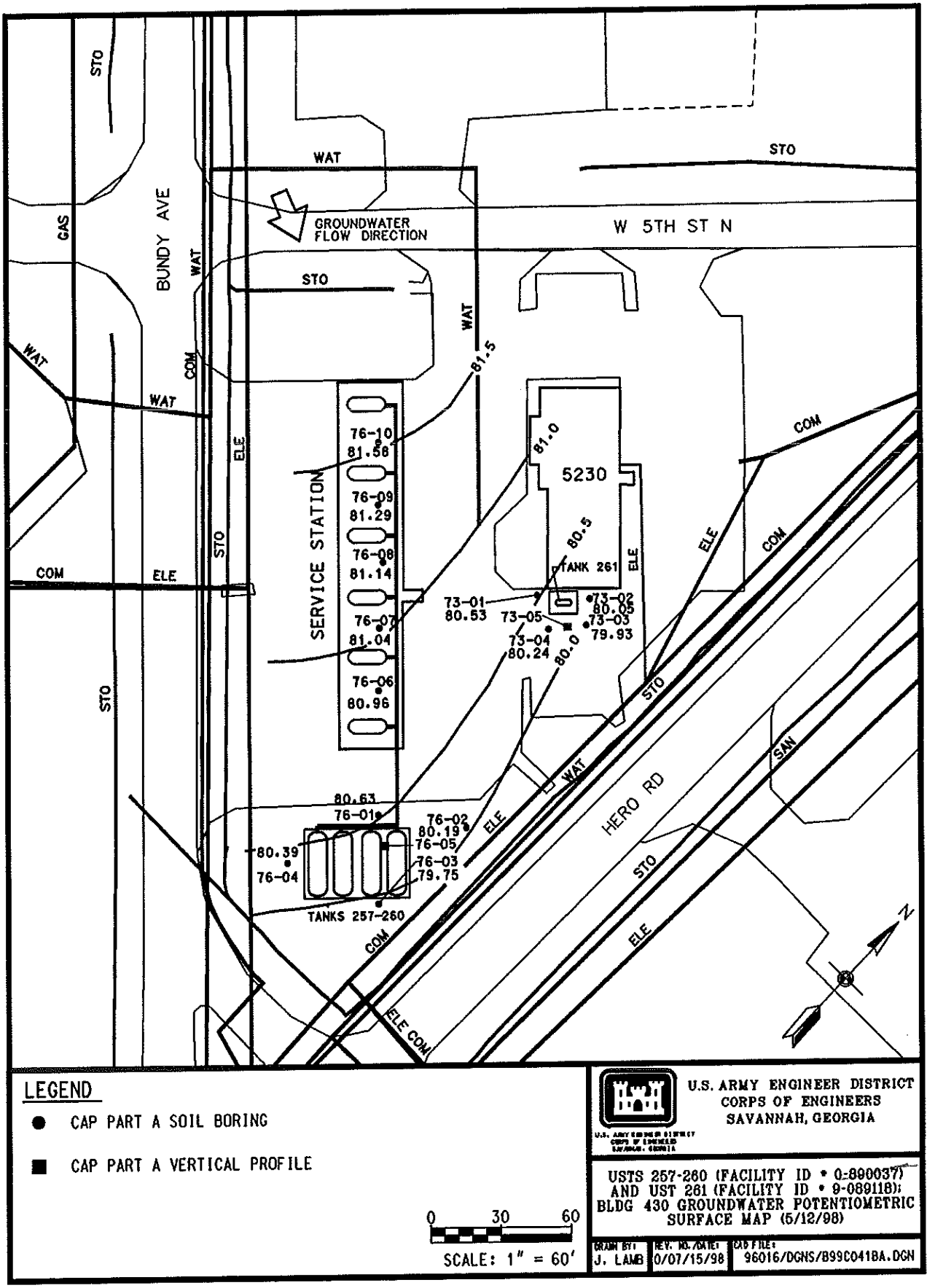

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Figure 6. Potentiometric Surface Map of the UST 261, Building 430 Site

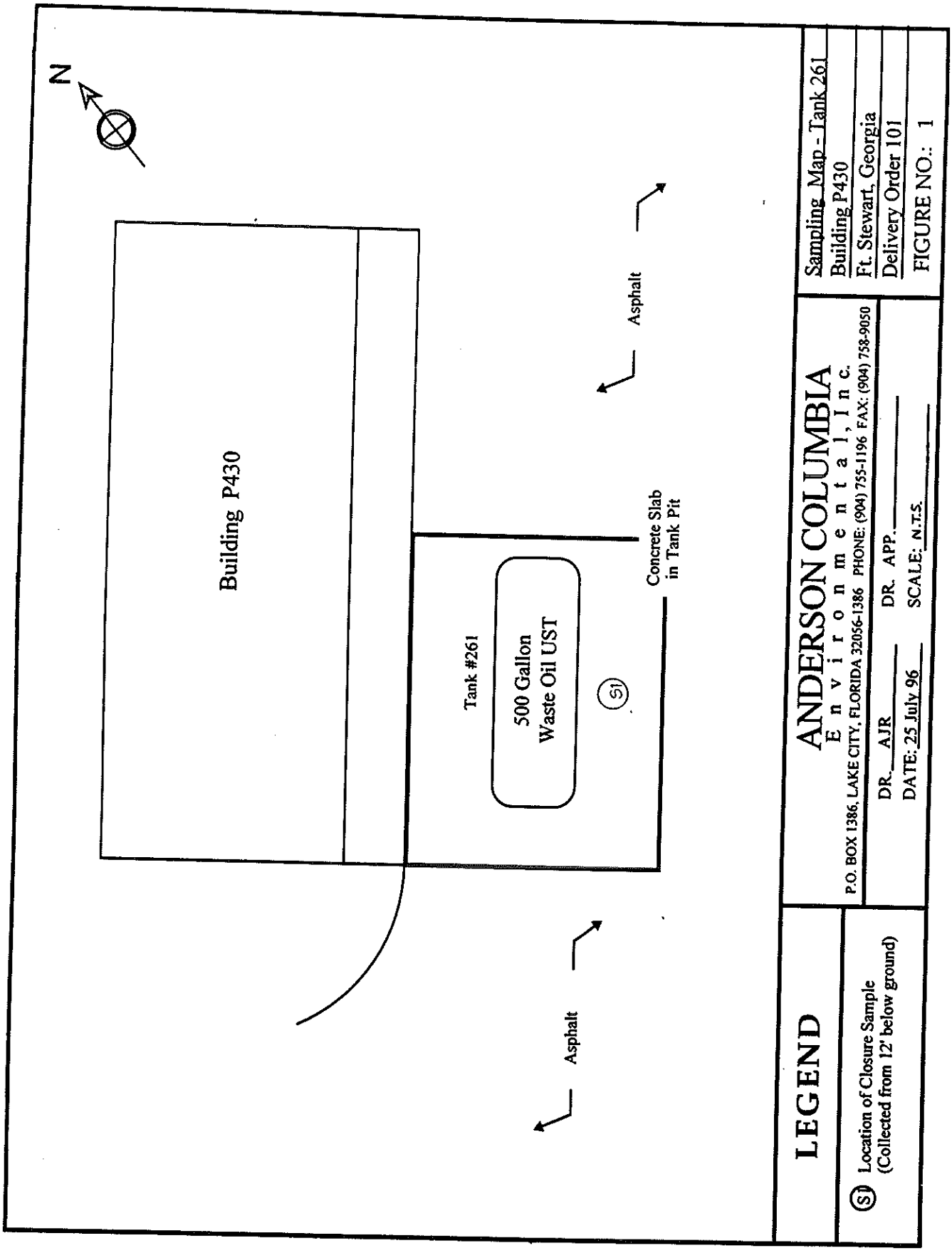

Figure 7. UST System Closure Sampling Locations at the UST 261, Building 430 Site

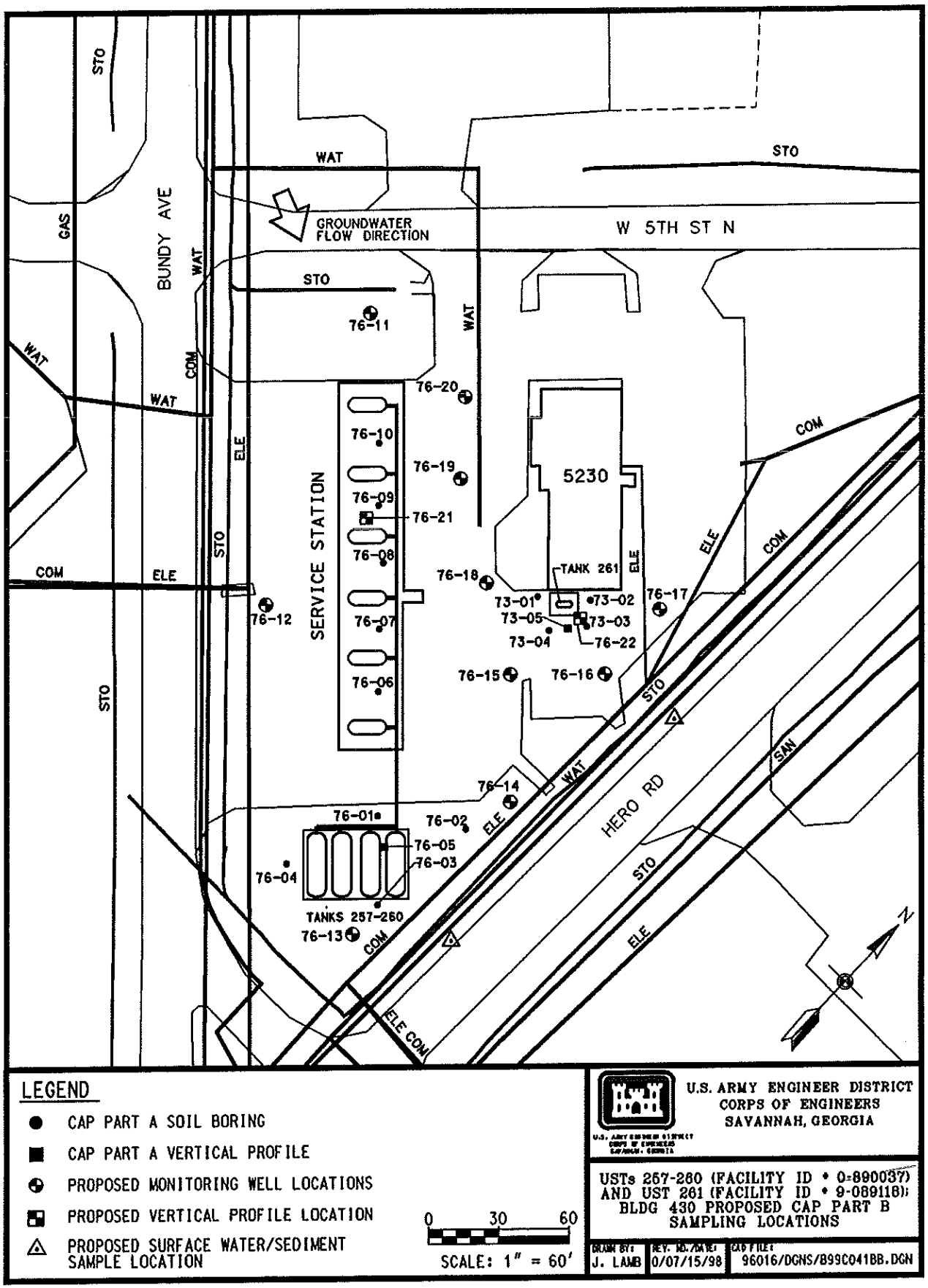

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Figure 8. Proposed Additional Boring/Monitoring Well Locations

No tax map is available for Fort Stewart Military Reservation, which is a government owned facility.

Figure 9. Tax Map.

APPENDIX II

REPORT TABLES

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TABLE 1: FREE PRODUCT REMOVAL

Monitoring Well Number: N/A				
Date of Measurement	Groundwater Elev. (ft AMSL)	Product Thickness (ft)	Corrected Water Elev. (ft AMSL)	Product Removed (gal)
No Free Product Detected				
			TOTAL	NONE

Monitoring Well Number: N/A				
Date of Measurement	Groundwater Elev. (ft AMSL)	Product Thickness (ft)	Corrected Water Elev. (ft AMSL)	Product Removed (gal)
No Free Product Detected				
			TOTAL	NONE

NOTE:
AMSL Above mean sea level.

TABLE 2a: SOIL ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
73-01	730121	2.0 - 4.00	05/10/98	0.0022 U	0.0022 U	0.0022 U	0.0064 U	0.013 U	49.1 =
73-01	730111	4.0 - 6.0	05/10/98	0.0026 U	0.0106 U	0.0218 =	0.134 J	0.169	47.9 =
73-02	730221	2.0 - 4.0	05/10/98	0.00097 =	0.0024 =	0.0023 U	0.0068 U	0.01247	13.4 U
73-02	730211	4.0 - 6.0	05/10/98	0.0021 U	0.015 =	0.0055 J	0.0161 J	0.0387	14.7 U
73-03	730311	4.0 - 6.0	05/10/98	0.0098 =	0.0193 J	0.0404 J	0.0435 =	0.113	15.2 U
73-03	730321	6.0 - 8.0	05/10/98	0.0057 U	0.023 U	0.0376 =	0.252 =	0.3183	62.3 =
73-04	730411	4.0 - 6.0	05/10/98	0.0053 U	0.021 U	1.33 U	4.05 =	5.4063	616 =
73-04	730421	6.0 - 8.0	05/10/98	0.0575 UJ	0.23 UJ	0.23 UJ	0.97 J	1.4875	238 =
73-05	730511	2.0 - 4.0	05/09/98	0.0027 J	0.0735 =	0.0152 J	0.0281 J	0.1195	12.4 J
73-05	730521	6.0 - 8.0	05/09/98	0.0136 J	0.138 J	0.292 J	1.81 =	2.2536	31.8 =
73-05	730531	8.0 - 10.0	05/09/98	0.0024 U	0.0025 =	0.0024 U	0.0072 U	0.0145	79.5 =
73-05	730541	14.0 - 16.0	05/09/98	1.02 =	0.318 =	0.555 =	3.67 =	5.563 =	12.8 U
73-05	730551	18.0 - 20.0	05/09/98	0.0987 =	0.039 J	0.025 U	0.127 =	0.2897	12.5 U
73-05	730561	22.0 - 24.0	05/09/98	0.0026 U	0.0026 U	0.0026 U	0.0078 U	0.0156 U	48.2 =
73-05	730571	26.0 - 28.0	05/09/98	0.0524 =	0.0395 =	0.0058 J	0.0424 =	0.1401	98.5 =
73-05	730581	32.0 - 34.0	05/09/98	0.0455 =	0.0629 =	0.0125 =	0.057 =	0.1779 =	12.5 U
Applicable Standards[1]				0.008	6.000	10	700	NRC	NRC

NOTES:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
DRO Diesel Range Organics
GRO Gasoline Range Organics
NRC No regulatory criteria
TPH Total petroleum hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit
UJ Indicates that the compound was not detected above an approximated sample quantitation limit
J Indicates that the value for the compound was an estimated value.
= Indicates that the compound was detected at the concentration reported.

TABLE 2b: SOIL ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)								Total PAHs (mg/kg)
				napthalene	phenanthrene	fluoranthene	pyrene	chrysene	benzo (b) fluoranthene	benzo (a) pyrene	benzo (g,h,i) perylene	
73-01	730121	2.0 - 4.0	05/10/98	1.43 U	1.43 U	1.43 U	1.18 J	0.985 J	1.32 J	0.861 J	0.765 J	5.111 J
73-01	730111	4.0 - 6.0	05/10/98	0.355 U	0.355 U	0.355 U	0.355 U	0.355 U	0.355 U	0.355 U	0.355 U	ND
73-02	730221	2.0 - 4.0	05/10/98	0.375 U	0.375 U	0.375 U	0.375 U	0.375 U	0.375 U	0.375 U	0.375 U	ND
73-02	730211	4.0 - 6.0	05/10/98	0.352 U	0.352 U	0.352 U	0.352 U	0.352 U	0.352 U	0.352 U	0.352 U	ND
73-03	730311	4.0 - 6.0	05/10/98	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	ND
73-03	730321	6.0 - 8.0	05/10/98	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	ND
73-04	730411	4.0 - 6.0	05/10/98	0.346 U	0.346 U	0.346 U	0.346 U	0.346 U	0.346 U	0.346 U	0.346 U	ND
73-04	730421	6.0 - 8.0	05/10/98	0.377 U	0.377 U	0.377 U	0.377 U	0.377 U	0.377 U	0.377 U	0.377 U	ND
73-05	730511	2.0 - 4.0	05/09/98	0.0314 J	0.0326 J	0.014 J	0.014 J	0.373 U	0.373 U	0.373 U	0.373 U	0.107 J
73-05	730521	6.0 - 8.0	05/09/98	0.0445 J	0.362 U	0.362 U	0.362 U	0.362 U	0.362 U	0.362 U	0.362 U	0.0445 J
73-05	730531	8.0 - 10.0	05/09/98	0.402 =	0.402 U	0.402 U	0.402 U	0.402 U	0.402 U	0.402 U	0.402 U	0.402 =
73-05	730541	14.0 - 16.0	05/09/98	0.104 J	0.0947 J	0.427 U	0.427 U	0.427 U	0.427 U	0.427 U	0.427 U	0.199 J
73-05	730551	18.0 -20.0	05/09/98	0.412 U	0.412 U	0.412 U	0.412 U	0.412 U	0.412 U	0.412 U	0.412 U	ND
73-05	730561	22.0 - 24.0	05/09/98	0.433 U	0.433 U	0.433 U	0.433 U	0.433 U	0.433 U	0.433 U	0.433 U	ND
73-05	730571	26.0 - 28.0	05/09/98	0.407 U	0.407 U	0.407 U	0.407 U	0.407 U	0.407 U	0.407 U	0.407 U	ND
73-05	730581	32.0 - 34.0	05/09/98	0.417 U	0.417 U	0.417 U	0.417 U	0.417 U	0.417 U	0.417 U	0.417 U	ND
Applicable Standards[1]				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

2 ND - Not detected; refer to Appendix V, Table V-A, for complete list of PAH results

BGS Below ground surface

N/A Not applicable

PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

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

UJ Indicates that the compound was not detected above an approximated sample quantitation limit

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

= Indicates that the compound was detected at the concentration reported

TABLE 3a: GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethyl - benzene (µg/l)	Xylenes (µg/l)	Total BTEX (µg/l)
73-01	730112	7.2	05/10/98	4840 =	1130 =	280 =	1600 =	7850.0 =
73-02	730212	7.8	05/10/98	3170 =	184 =	132 =	1350 =	4836.0 =
73-03	730312	7.5	05/10/98	2400 =	72.5 =	105 =	954 =	3531.5 =
73-04	730412	7.5	05/10/98	12000 =	11000 =	983 =	5630 =	29613.0 =
Applicable Standards[1]				5	700	1000	10000	NRC

TABLE 3b: GROUNDWATER ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (µg/l)				Total PAHs (µg/l)
				Naphthalene				
73-01	730112	7.2	05/10/98	9.7 J				9.7 J
73-02	730212	7.8	05/10/98	10.6 U				ND
73-03	730312	7.5	05/10/98	34.0 =				34.0 =
73-04	730412	7.5	05/10/98	49.0 =				49.0 =
Applicable Standards[2]				NRC				NRC

NOTE:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 U.S. Environmental Protection Agency maximum contaminant level
BTEX Benzene, toluene, ethylbenzene, and xylene
BGS Below ground surface
N/A Not applicable
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported
UJ Indicates that the compound was not detected above an approximated sample quantitation limit
J Indicates the value for the compound is an estimated value
= Indicates the compound was detected at the concentration reported

TABLE 4: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft MSL)	Top of Casing Elev. (ft MSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Specific Gravity Adjustment	Corrected Groundwater Elev. (ft MSL)
73-01	05/12/98	87.49	92.54	4.0 - 14.0	N/A	7.11	N/A	N/A	80.53
73-02	05/12/98	87.49	92.43	3.0 - 13.0	N/A	7.70	N/A	N/A	80.05
73-03	05/12/98	87.10	91.08	4.2 - 14.2	N/A	8.78	N/A	N/A	79.93
73-04	05/12/98	87.14	89.71	2.5 - 12.5	N/A	8.88	N/A	N/A	81.24

NOTE:

MSL	Mean sea level
BGS	Below ground surface
BTOC	Below top of casing
N/A	Not applicable

TABLE 5a: UST SYSTEM CLOSURE[1] - SOIL ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
261-T1-S1	N/A	06/25/96	0.0115 U	0.0069 =	0.0414 =	0.1667 =	0 227	282.0 =
Applicable Standards[2]			0.008	6	10	700	NRC	NRC

TABLE 5b: UST SYSTEM CLOSURE[1] - SOIL ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)					Total PAHs (mg/kg)
			2-Methyl-Naphthalene					
261-T1-S1	N/A	06/25/96	0.0517 =					0.0517 =
Applicable Standards[2]			NRC					NRC

NOTE:

[1] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
[2] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
[3] Not applicable; the health-based threshold level is exceeded only if free product exists

BDL Below detection limit
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
NRC No regulatory criteria.
PAH Polynuclear aromatic hydrocarbon.

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported
UJ Indicates that the compound was not detected above an approximated sample quantitation limit
J Indicates the value for the compound is an estimated value
= Indicates the compound was detected at the concentration reported

TABLE 6a: UST SYSTEM CLOSURE[1] - GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethyl - benzene (mg/L)	Xylenes (mg/L)	Total BTEX (mg/L)
No groundwater samples were collected during tank removal.							
Applicable Standards[2]			5	700	1000	10000	NRC

TABLE 6b: UST SYSTEM CLOSURE[1] - GROUNDWATER ANALYTICAL RESULTS
(POLYNUCLEAR ANALYTICAL RESULTS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (µg/L)				Total PAHs (µg/L)
No groundwater samples were collected during tank removal.							
Applicable Standards[2]							NRC

NOTE:

1	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
2	U.S. Environmental Protection Agency maximum contaminant levels
BGS	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
N/A	Not applicable
ND	Not detected
NR	Not required; PAH analysis was not requested for these samples
NRC	No regulatory criteria.

Laboratory Qualifiers

U	Indicates the compound was not detected at the concentration reported
UJ	Indicates that the compound was not detected above an approximated sample quantitation limit
J	Indicates the value for the compound is an estimated value
=	Indicates the compound was detected at the concentration reported

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APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

1.0 LOCAL WATER RESOURCES

As required by the Georgia Environmental Protection Division (GA EPD) UST CAP-Part A guidance, a water resource survey documenting information for public and non-public water supply wells, surface water bodies, underground utilities, and potential receptors was conducted for the Fort Stewart UST investigation sites. The information presented in this appendix provides the supporting documentation for Section II.D.3 of the CAP-Part A Form.

1.1 WATER SUPPLY WELL SURVEY

The water supply well survey was conducted using the following GA EPD guidelines/requirements:

- Fort Stewart is located in an area of average or higher groundwater pollution susceptibility.
- Locate all public supply wells as defined by GA EPD that exist within 2 miles of the investigation sites.
- Locate all non-public supply wells that exist within 0.5 miles of the investigation sites.
- Locate all supply wells nearest the investigation sites.
- Locate all wells downgradient of the investigation sites.

A total of seven groundwater supply wells are located within a 2-mile radius of the Fort Stewart garrison area. Six of these wells are located within the confines of the garrison area. The other well is located at Wright Army Airfield, approximately 1.2 miles northeast of the garrison area. All of the groundwater supply wells are classified as public wells that supply water to Fort Stewart for drinking and nondrinking purposes. These wells are approximately 450 feet deep and draw groundwater from the Principal Artesian (also known as the Floridan) aquifer. Chlorine and fluoride are added into the groundwater at the well heads prior to being pumped into storage tanks and/or water towers, according to Fort Stewart DPW personnel. The location of these wells, along with a 500-foot radius drawn around each well, is shown in Figure 3.

1.2 SURFACE WATER BODIES

Surface water(s) in the State of Georgia, as defined by Rules and Regulations for Water Quality Control, Chapter 391-3-6, shall mean any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming part of the boundaries of the State that are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation. The surface water body survey was conducted using the following GA EPD guidelines/requirements:

- surface water bodies that exist within 1 mile of the investigation sites,
- all surface water bodies nearest the investigation sites if these bodies lie outside the 1-mile radius of concern,

- all surface water bodies downgradient of the investigation sites, and
- the storm and sanitary sewers adjacent to the investigation sites.

Several surface water bodies are located within a 1-mile radius of the Fort Stewart garrison area. These are shown in Figure 3 and include Mill Creek, Taylors Creek, Peacock Creek, Childpen's Pond, and two unnamed ponds. Mill Creek extends along the western side of the garrison area and flows into Taylors Creek located approximately 0.75 miles northwest of the garrison area. Taylors Creek then flows northward approximately 3.5 miles to its confluence with Canoochee Creek. Peacock Creek originates near the east corner of the garrison area and flows southward from the garrison. Mill Creek, Taylors Creek, and Peacock Creek all have natural streambeds and exhibit perennial flow.

Childpen's Pond is located at the northwest end of the garrison area. The two unnamed ponds are located at the northwest end of the facility golf course in the vicinity of Childpen's Pond. All of the ponds are isolated water bodies that are relatively small in size, measuring less than 500 feet in diameter.

Typically, surface water run-off from the UST site moves over the existing concrete and asphalt cover to the Fort Stewart storm water drainage system. Since petroleum contamination at the sites primarily impacts surficial groundwater, the surface water run-off pathway is not a viable contaminant transport mechanism because of the concrete acting as a barrier and the location of the nearest surface water body.

2.0 POTENTIAL RECEPTOR SURVEY SUMMARY OF THE UST 261 SITE

A field potential receptor survey was conduced for the UST 261 site in May 1998. The site and adjacent areas were surveyed for locations of surface water bodies, utility lines, and basements. Basements do not exist in the buildings adjacent to the site. Additional information, provided by the Directorate of Public Works (DPW), was used to determine the location of the nearest public and non-public water supply wells and downgradient surface water bodies not located during the field survey.

2.1 Water Supply Wells Near the UST 261

The UST 261 site is located approximately 1750 feet north (upgradient) of Well #2. Therefore, the UST 261 site is classified as being located greater than 500 feet to a withdrawal point. The nearest downgradient water supply well is Well #2.

2.2 Surface Water Bodies Near the UST 261 Site

At the closest point, an unnamed tributary that flows into Taylors Creek northeast of the Garrison Area is located approximately 1000 feet east of the UST 261 site. In the direction of groundwater flow, this tributary is located approximately 1000 feet east of the UST 261 site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located greater than 500 feet to a downgradient surface water body. In addition to these surface water bodies, there are drainage swales that run parallel to Hero Road and are located east of the site.

2.3 Underground Utility Lines Near the UST 261 Site

Underground utilities are located 50 feet east (downgradient) of the site and run parallel to Hero Road. The depth of these lines are estimated to be approximately 4 to 6 ft BGS.

APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 73-01

PROJECT: Fort Stewart USTs | INSPECTOR H. BROWN | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	ASPHALT				
	1	clayey SAND (SC), medium grained, soft, moist, yellowish brown (10YR 5/6)	7.0ppm			
	2					
	3	silty SAND (SM), fine to medium grained, soft, moist, black (7.5 YR 2.5/1)	4.4ppm		Soil Sample 730121	
	4	SAND (SW), fine grained, soft, moist, brownish gray (2.5Y 6/2)				
	5		270ppm		Soil Sample 730111	4.0'-8.0' STRONG PETROLEUM ODOR 8.0'-12.0' SHEEN ON WATER IN CORE SAMPLE
	6					
	7		77.5ppm			▽ WET BELOW 7.2 FT BGS
	8	silty SAND (SM), fine to medium grained, soft, wet black (10YR 2/1)				PUSHED TO 14.0 FT BGS TO SET TEMPORARY PIEZOMETER COLLECTED GROUNDWATER SAMPLE 730112 FROM TEMPORARY PIEZOMETER SCREENED AT 4.0 FT TO 14.0 FT BGS
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 73-02

PROJECT: Fort Stewart USTs | INSPECTOR | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		ASPHALT				
	1	clayey SAND (SC), medium grained, soft, moist, yellowish brown (10YR5/6)	5.2ppm			
	2					
	3		25.4ppm		Soil Sample 730221	
	4					
	5	SAND (SW), fine grained, soft, moist, light brownish gray (2.5Y6/2)	97.3ppm		Soil Sample 730211	
	6					
	7	silty SAND (SM), fine to medium grained, soft, wet, black (10YR2/1)	13.6 ppm			▽ WET BELOW 7.0 FT BGS
	8					PUSHED TO 13.0 FT BGS TO SET TEMPORARY PIEZOMETER
	9					COLLECTED GROUNDWATER SAMPLE 730212 FROM TEMPORARY PIEZOMETER SCREENED AT 3.0 FT TO 13.0 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 73-03

PROJECT: Fort Stewart USTs | INSPECTOR | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		ASPHALT				
	1	clayey SAND (SC), medium grained, soft, moist, yellowish brown (10YR5/6)	2.2 ppm			
	2					
	3	SAND (SW), fine grained, soft, moist, black (10 YR 2/1)	33.4ppm			
	4	SAND (SW), fine grained, soft, moist, light brownish gray (2.5 Y 6/2)				
	5		228ppm		Soil Sample 730311	
	6	Silty SAND (SM), fine to medium grained, soft, moist to wet, black (10YR 2/1)				
	7		23.2 ppm		Soil Sample 730321	▽ = WET BELOW 7.5 FT BGS
	8	SHELBY TUBE SAMPLE INTERVAL				PUSHED TO 14.0 FT BGS TO SET TEMPORARY PIEZOMETER
	9			Soil Sample 730331		COLLECTED GROUNDWATER SAMPLE 730312 FROM TEMPORARY PIEZOMETER SCREENED AT 4.0 FT TO 14.0 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 73-04

PROJECT: Fort Stewart USTs | INSPECTOR | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		ASPHALT				
	1	clayey SAND (SC), medium grained, moist, soft, yellowish brown (10YR5/6)	158 ppm			
	2					
	3	SAND (SW), fine grained, soft, moist, black (10YR2/1)	245ppm			
	4					
	5	silty SAND (SM), fine to medium grained, soft, moist, dark grayish brown (10YR 4/2) to light brownish gray (2.5Y 6/2)	>2500ppm		Soil Sample 730411	
	6					
	7		371ppm		Soil Sample 730421	▽ WET BELOW 7.5 FT BGS
	8	silty SAND (SM), fine to medium grained, soft, wet, black (10YR2/1)				PUSHED TO 12.5 FT BGS TO SET TEMPORARY PIEZOMETER.
	9					COLLECTED GROUNDWATER SAMPLE FROM TEMPORARY PIEZOMETER SCREENED AT 2.5 FT TO 12.5 FT BGS (SAMPLE ID 730412)
	10					

HTRW DRILLING LOG

HOLE NUMBER 73-05

PROJECT: Fort Stewart USTs | INSPECTOR B. Moeller | SHEET 1 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	Asphalt				
	1	No Recovery				
	2					
	3	clayey SAND, dry, orange to gray				
	4	silty SAND, dry, brown	599 ppm		Soil Sample #30511	
	5	SAND, fine grained, brownish tan, dry	124 ppm			
	6	SAND, fine grained, dry, light tan				
	7		291 ppm		Soil Sample #30521	
	8	SAND, fine grained, moist, dark brown				▼ Wet below = 8.0 FT BGS
	9	silty SAND, fine grained, wet, dark brown	2270 ppm		Soil Sample #30531	
	10					

HTRW DRILLING LOG

HOLE NUMBER 73-05

PROJECT: Fort Stewart USTs

INSPECTOR B. Moeller

SHEET 2 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11	Silty SAND, fine grained, wet, dark brown	1360 ppm			
	12					
	13		390 ppm			
	14					
	15		628 ppm		Soil Sample 730541	
	16					
	17	SAND, fine to medium grained, wet, orangish brown	400 ppm			
	18					
	19		786 ppm		Soil Sample 730551	
	20					

HTRW DRILLING LOG

HOLE NUMBER 73-05

PROJECT: Fort Stewart USTs

INSPECTOR B. Moeller

SHEET 3 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	21	SAND, medium to fine grained, wet, tanish orange	3.0ppm			
	22	SAND, fine to coarse grained, wet, tanish brown	75.0ppm		Soil Sample 730591	
	24					
	25		0ppm			
	26					
	27	Clayey SAND, fine to medium grained, wet, tanish brown	113ppm		Soil Sample 730571	
	28					
	29		0ppm			
	30					

HTRW DRILLING LOG

HOLE NUMBER 73-05

PROJECT: Fort Stewart USTs

INSPECTOR B. Moeller

SHEET 4 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		same as above				
	31	SAND, fine to medium grained, tanish brown	0ppm			
	32					
	33		0ppm		Soil Sample # 30581	
	34					End of drilling at 34.0FT BGS
	35					
	36					
	37					
	38					
	39					
	40					

APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. SUMMARY OF SOIL ANALYTICAL RESULTS

Station:	Georgia UST	73-01	73-01	73-02	73-02	73-03	73-03	73-04
Sample ID:	Corrective	730111	730121	730211	730221	730311	730321	730411
Sample Interval:	Action Levels							
Collection Date:	for Soil[1]	10-May-98	10-May-98	10-May-98	10-May-98	10-May-98	10-May-98	10-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS								
Benzene	0.008	0.0026 U	0.0022 U	0.0021 U	0.00097 =	**0.0098 =**	0.0057 U	0.0053 U
Toluene	6	0.0106 U	0.0022 U	0.015 =	0.0024 =	0.0193 J	0.023 U	0.021 U
Ethylbenzene	10	0.0218 =	0.0022 U	0.0055 J	0.0023 U	0.0404 J	0.0376 =	1.33 J
Xylenes, Total	700	0.134 J	0.0064 U	0.0161 J	0.0068 U	0.0435 =	0.252 =	4.05 =
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Acenaphthene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Acenaphthylene	NRC	0.355 U	1.43 UJ	0.352 UJ	0.375 U	0.35 U	1.5 U	0.346 U
Anthracene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Benzo(a)anthracene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Benzo(a)pyrene	NRC	0.355 U	0.861 J	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Benzo(b)fluoranthene	NRC	0.355 U	1.32 J	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Benzo(g,h,i)perylene	NRC	0.355 U	0.765 J	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Benzo(k)fluoranthene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Chrysene	NRC	0.355 U	0.985 J	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Dibenzo(a,h)anthracene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Fluoranthene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Fluorene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Indeno(1,2,3-cd)pyrene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Naphthalene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Phenanthrene	NRC	0.355 U	1.43 U	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
Pyrene	NRC	0.355 U	1.18 J	0.352 U	0.375 U	0.35 U	1.5 U	0.346 U
OTHER ANALYTES								
Lead	NRC		11.9 =		5.4 =		7.1 =	
Total Organic Carbon	NRC						6270 =	
Total Petroleum Hydrocarbons	NRC	47.9 =	49.1 =	14.7 U	13.4 U	15.2 U	62.3 =	616 =

NOTE:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed GUST action levels for soil

NRC No regulatory criteria

QA/QC samples were collected. The laboratory data sheets have been included in this Appendix but the results are not summarized.

Laboratory Qualifiers

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

UJ Indicates that the compound was not detected above an approximated sample quantitation limit

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

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

TABLE V-A. SUMMARY OF SOIL ANALYTICAL RESULTS

Station:	Georgia UST	73-04	73-05	73-05	73-05	73-05	73-05	73-05
Sample ID:	Corrective	730421	730511	730521	730531	730541	730551	730561
Sample Interval:	Action Levels							
Collection Date:	for Soil[1]	10-May-98	09-May-98	09-May-98	09-May-98	09-May-98	09-May-98	09-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS								
Benzene	0.008	**0.0575 UJ**	0.0027 J	**0.0136 J**	0.0024 U	**1.02 =**	**0.0987 =**	0.0026 U
Toluene	6	0.23 UJ	0.0735 =	0.138 J	0.0025 =	0.318 =	0.039 J	0.0026 U
Ethylbenzene	10	0.23 UJ	0.0152 J	0.292 J	0.0024 U	0.555 =	0.025 U	0.0026 U
Xylenes, Total	700	0.97 J	0.0281 J	1.81 =	0.0072 U	3.67 =	0.127 =	0.0078 U
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Acenaphthene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Acenaphthylene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Anthracene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Benzo(a)anthracene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Benzo(a)pyrene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Benzo(b)fluoranthene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Benzo(g,h,i)perylene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Benzo(k)fluoranthene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Chrysene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Dibenzo(a,h)anthracene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Fluoranthene	NRC	0.377 U	0.014 J	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Fluorene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Indeno(1,2,3-cd)pyrene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Naphthalene	NRC	0.377 U	0.373 U	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Phenanthrene	NRC	0.377 U	0.0314 J	0.0445 J	0.402 =	0.104 J	0.412 U	0.433 U
Pyrene	NRC	0.377 U	0.0326 J	0.362 U	0.402 U	0.0947 J	0.412 U	0.433 U
OTHER ANALYTES		0.377 U	0.0293 J	0.362 U	0.402 U	0.427 U	0.412 U	0.433 U
Lead	NRC	7 =	5.8 J					
Total Organic Carbon	NRC							
Total Petroleum Hydrocarbons	NRC	238 =	12.4 J	31.8 =	79.5 =	12.8 U	12.5 U	48.2 =

NOTE:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed GUST action levels for soil

NRC No regulatory criteria

QA/QC samples were collected. The laboratory data sheets have been included in this Appendix but the results are not summarized.

Laboratory Qualifiers

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

UJ Indicates that the compound was not detected above an approximated sample quantitation limit

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

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

TABLE V-A. continued

Station:	Georgia UST	73-05	73-05
Sample ID:	Corrective	730571	730581
Sample Interval:	Action Levels		
Collection Date:	for Soil[1]	09-May-98	09-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS			
Benzene	0.008	**0.0524 =**	**0.0455 =**
Toluene	6	0.0395 =	0.0629 =
Ethylbenzene	10	0.0058 J	0.0125 =
Xylenes, Total	700	0.0424 =	0.057 =
POLYNUCLEAR AROMATIC HYDROCARBONS			
2-Chloronaphthalene	NRC	0.407 U	0.417 U
Acenaphthene	NRC	0.407 U	0.417 U
Acenaphthylene	NRC	0.407 U	0.417 U
Anthracene	NRC	0.407 U	0.417 U
Benzo(a)anthracene	NRC	0.407 U	0.417 U
Benzo(a)pyrene	NRC	0.407 U	0.417 U
Benzo(b)fluoranthene	NRC	0.407 U	0.417 U
Benzo(g,h,i)perylene	NRC	0.407 U	0.417 U
Benzo(k)fluoranthene	NRC	0.407 U	0.417 U
Chrysene	NRC	0.407 U	0.417 U
Dibenzo(a,h)anthracene	NRC	0.407 U	0.417 U
Fluoranthene	NRC	0.407 U	0.417 U
Fluorene	NRC	0.407 U	0.417 U
Indeno(1,2,3-cd)pyrene	NRC	0.407 U	0.417 U
Naphthalene	NRC	0.407 U	0.417 U
Phenanthrene	NRC	0.407 U	0.417 U
Pyrene	NRC	0.407 U	0.417 U
OTHER ANALYTES			
Lead	NRC		
Total Organic Carbon	NRC		
Total Petroleum Hydrocarbons	NRC	98.5 =	12.5 U

NOTE:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed GUST action levels for soil

NRC No regulatory criteria

QA/QC samples were collected. The laboratory data sheets have been included in this Appendix but the results are not summarized.

Laboratory Qualifiers

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

UJ Indicates that the compound was not detected above an approximated sample quantitation limit

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

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

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4007S

Matrix: (soil/water) SOIL Lab Sample ID: 9805298-15

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I6034

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 6 Date Analyzed: 05/17/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 5.0

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	2.6	U	U
108-88-3	Toluene	10.6	U	U
100-41-4	Ethylbenzene	21.8		J m08
1330-20-7	Xylenes (total)	134	J	

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4007S

Matrix: (soil/water) SOIL

Sample wt/vol: 30.0 (g/mL) G

Lab Sample ID: 9805298-15

Level: (low/med) LOW

Lab File ID: 1U321

% Moisture: 6 decanted: (Y/N) N

Date Received: 05/11/98

Concentrated Extract Volume: 1.00(mL)

Date Extracted: 05/15/98

Injection Volume: 1.0(uL)

Date Analyzed: 05/21/98

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

Dilution Factor: 1.0

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	355	U
91-58-7	2-chloronaphthalene	355	U
208-96-8	acenaphthylene	355	U
83-32-9	acenaphthene	355	U
86-73-7	fluorene	355	U
85-01-8	phenanthrene	355	U
120-12-7	anthracene	355	U
206-44-0	fluoranthene	355	U
129-00-0	pyrene	355	U
56-55-3	benzo(a)anthracene	355	U
218-01-9	chrysene	355	U
205-99-2	benzo(b)fluoranthene	355	U
207-08-9	benzo(k)fluoranthene	355	U
50-32-8	benzo(a)pyrene	355	U
193-39-5	indeno(1,2,3-cd)pyrene	355	U
53-70-3	dibenz(a,h)anthracene	355	U
191-24-2	benzo(g,h,i)perylene	355	U

U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598 Report Date: June 01, 1998

Sample ID	: 730111
Lab ID	: 9805298-15
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		47.9	= F01, F08	2.10	10.6	mg/kg	1.0	JLP	05/26/98	1330	122880	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805298-15

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I3027

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 7 Date Analyzed: 05/13/98

GC Column: J&W DB-624(PID) 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)	6.4	U

U ↓

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-13

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 4T220

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 7 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/13/98

Injection Volume: 1.0(uL) Dilution Factor: 4.0

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	1430	U	U
91-58-7	2-chloronaphthalene	1430	U	↓
208-96-8	acenaphthylene	1430	U	UJ C05
83-32-9	acenaphthene	1430	U	U
86-73-7	fluorene	1430	U	
85-01-8	phenanthrene	1430	U	
120-12-7	anthracene	1430	U	
206-44-0	fluoranthene	1430	U	
129-00-0	pyrene	1180	J	J
56-55-3	benzo(a)anthracene	1430	U	U
218-01-9	chrysene	985	J	J - C02, C0
205-99-2	benzo(b)fluoranthene	1320	J	J
207-08-9	benzo(k)fluoranthene	1430	U	U
50-32-8	benzo(a)pyrene	861	J	J
193-39-5	indeno(1,2,3-cd)pyrene	1430	U	U
53-70-3	dibenz(a,h)anthracene	1430	U	U
191-24-2	benzo(g,h,i)perylene	765	J	J

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4004S

Method Type: Total Metals

Sample ID: 9805292-13

Client ID: 730121

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 93.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	11.9	mg/kg		=	P	0.10	TJA61 Trace ICPAES	980517-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: May 20, 1998

Sample ID	: 730121
Lab ID	: 9805292-13
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		49.1	= FQ1, FQ8	2.14	10.8	mg/kg	1.0	JLP	05/15/98	1100	122290	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805292-13

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-11

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I3025

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 6 Date Analyzed: 05/13/98

GC Column: J&W DB-624(PID) 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	U
108-88-3	Toluene	15.0		=
100-41-4	Ethylbenzene	5.5	P	J M08
1330-20-7	Xylenes (total)	16.1	P	J M08

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-11

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 4T218

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 6 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/13/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
91-20-3	naphthalene	352	U	U
91-58-7	2-chloronaphthalene	352	U	↓
208-96-8	acenaphthylene	352	U	UJ C05
83-32-9	acenaphthene	352	U	U
86-73-7	fluorene	352	U	↓
85-01-8	phenanthrene	352	U	↓
120-12-7	anthracene	352	U	↓
206-44-0	fluoranthene	352	U	↓
129-00-0	pyrene	352	U	↓
56-55-3	benzo(a)anthracene	352	U	↓
218-01-9	chrysene	352	U	↓
205-99-2	benzo(b)fluoranthene	352	U	↓
207-08-9	benzo(k)fluoranthene	352	U	↓
50-32-8	benzo(a)pyrene	352	U	↓
193-39-5	indeno(1,2,3-cd)pyrene	352	U	↓
53-70-3	dibenz(a,h)anthracene	352	U	↓
191-24-2	benzo(g,h,i)perylene	352	U	↓

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

DATA VALIDATION COPY

cc: SAIC00598

Report Date: May 20, 1998

Sample ID	: 730211
Lab ID	: 9805292-11
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		14.7	U F01, F07	2.10	10.6	mg/kg	1.0	JLP	05/15/98	1100	122290	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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.

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 (803) 769-7391.

Reviewed By

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-07

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I7013

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 12 Date Analyzed: 05/18/98

GC Column: J&W DB-624(PID) 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	0.97		=
108-88-3	Toluene	2.4		=
100-41-4	Ethylbenzene	2.3	U	U
1330-20-7	Xylenes (total)	6.8	U	U

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-07

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 7U418

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 12 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/21/98

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	375	U
91-58-7	2-chloronaphthalene	375	U
208-96-8	acenaphthylene	375	U
83-32-9	acenaphthene	375	U
86-73-7	fluorene	375	U
85-01-8	phenanthrene	375	U
120-12-7	anthracene	375	U
206-44-0	fluoranthene	375	U
129-00-0	pyrene	375	U
56-55-3	benzo(a)anthracene	375	U
218-01-9	chrysene	375	U
205-99-2	benzo(b)fluoranthene	375	U
207-08-9	benzo(k)fluoranthene	375	U
50-32-8	benzo(a)pyrene	375	U
193-39-5	indeno(1,2,3-cd)pyrene	375	U
53-70-3	dibenz(a,h)anthracene	375	U
191-24-2	benzo(g,h,i)perylene	375	U

U

Client:	Science Applications International Corp. P.O. Box 2502 800 Oak Ridge Turnpike Oak Ridge, Tennessee 37831
Contact:	Ms. Lorene Rollins
Project Description:	CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730221
Lab ID	: 9805300-07
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		13.4 U, F01, F07	2.26	11.4	mg/kg	1.0	JLP	05/26/98	1330	122880	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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 (803) 769-7391.

Reviewed By

9805300-07

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4008S

Method Type: Total Metals

Sample ID: 9805300-07

Client ID: 73022

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 5/11/98

Level: LOW

% Solids: 88.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.4	mg/kg			P	0.10	TJA61 Trace ICPAES	980517-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4007S

Matrix: (soil/water) SOIL Lab Sample ID: 9805298-16

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I6035

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 5 Date Analyzed: 05/17/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 5.0

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	9.8	
108-88-3	Toluene	19.3	P
100-41-4	Ethylbenzene	40.4	P
1330-20-7	Xylenes (total)	43.5	

MΦ8
MΦ8

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4007S

Matrix: (soil/water) SOIL Lab Sample ID: 9805298-16

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 1U322

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 5 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/21/98

Injection Volume: 1.0(uL) DATA VALIDATION Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	350	U
91-58-7	2-chloronaphthalene	350	U
208-96-8	acenaphthylene	350	U
83-32-9	acenaphthene	350	U
86-73-7	fluorene	350	U
85-01-8	phenanthrene	350	U
120-12-7	anthracene	350	U
206-44-0	fluoranthene	350	U
129-00-0	pyrene	350	U
56-55-3	benzo(a)anthracene	350	U
218-01-9	chrysene	350	U
205-99-2	benzo(b)fluoranthene	350	U
207-08-9	benzo(k)fluoranthene	350	U
50-32-8	benzo(a)pyrene	350	U
193-39-5	indeno(1,2,3-cd)pyrene	350	U
53-70-3	dibenz(a,h)anthracene	350	U
191-24-2	benzo(g,h,i)perylene	350	U

U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins

Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598 Report Date: June 01, 1998

Sample ID	: 730311
Lab ID	: 9805298-16
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		15.2	U FQ1, FQ7 2.08	10.5	mg/kg	1.0	JLP	05/26/98	1330	122880	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805298-16

DATA VALIDATION
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL

Lab Sample ID: 9805300-13

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 2I7034

Level: (low/med) LOW

Date Received: 05/11/98

% Moisture: not dec. 13

Date Analyzed: 05/18/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm)

Dilution Factor: 10.0

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	5.7	U	U
108-88-3	Toluene	23.0	U	U
100-41-4	Ethylbenzene	37.6		
1330-20-7	Xylenes (total)	252		

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

VALIDATION COPY

EPA SAMPLE NO.

730321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-13

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 7U508

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 13 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/22/98

Injection Volume: 1.0(uL) Dilution Factor: 4.0

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	1500	U
91-58-7	2-chloronaphthalene	1500	U
208-96-8	acenaphthylene	1500	U
83-32-9	acenaphthene	1500	U
86-73-7	fluorene	1500	U
85-01-8	phenanthrene	1500	U
120-12-7	anthracene	1500	U
206-44-0	fluoranthene	1500	U
129-00-0	pyrene	1500	U
56-55-3	benzo(a)anthracene	1500	U
218-01-9	chrysene	1500	U
205-99-2	benzo(b)fluoranthene	1500	U
207-08-9	benzo(k)fluoranthene	1500	U
50-32-8	benzo(a)pyrene	1500	U
193-39-5	indeno(1,2,3-cd)pyrene	1500	U
53-70-3	dibenz(a,h)anthracene	1500	U
191-24-2	benzo(g,h,i)perylene	1500	U

U

FS-410085

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730321
Lab ID	: 9805300-13
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		62.3 = ~~F02~~, F01, F08	2.28	11.5	mg/kg	1.0	JLP	05/26/98	1330	122880	1
TOTAL ORGANIC CARBON (TOC)		6270 = F01, F08	24.1	100	mg/kg	1.0	LIB	05/29/98	1807	122938	2

M = Method	Method-Description
M 1	EPA 418.1 Modified
M 2	SW846 9060 modified

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.

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 (803) 769-7391.

Reviewed By

303

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4008S

Method Type: Total Metals

Sample ID: 9805300-13

Client ID: 730321

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 87.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	7.1	mg/kg			P	0.11	TJA61 Trace ICPAES	980517-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-02

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I7010

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 5 Date Analyzed: 05/18/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 50.0

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	5.3 ~~26.3~~	U	U
108-88-3	Toluene	21.0 105	U	U
100-41-4	Ethylbenzene	1330	P	J MΦ8
1330-20-7	Xylenes (total)	4050		

use

FORM I VOA

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-02

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7U413

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 5 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/21/98

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	346	U
91-58-7	2-chloronaphthalene	346	U
208-96-8	acenaphthylene	346	U
83-32-9	acenaphthene	346	U
86-73-7	fluorene	346	U
85-01-8	phenanthrene	346	U
120-12-7	anthracene	346	U
206-44-0	fluoranthene	346	U
129-00-0	pyrene	346	U
56-55-3	benzo(a)anthracene	346	U
218-01-9	chrysene	346	U
205-99-2	benzo(b)fluoranthene	346	U
207-08-9	benzo(k)fluoranthene	346	U
50-32-8	benzo(a)pyrene	346	U
193-39-5	indeno(1,2,3-cd)pyrene	346	U
53-70-3	dibenz(a,h)anthracene	346	U
191-24-2	benzo(g,h,i)perylene	346	U

U

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730411
Lab ID	: 9805300-02
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		616 F02, F01, F08	20.8	105	mg/kg	10.	JLP	05/26/98	1330	122880	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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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 (803) 769-7391.

Reviewed By

9805300-02

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-12

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I7019

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 13 Date Analyzed: 05/18/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 100.0

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	57.5	U	UJ	KØ1
108-88-3	Toluene	230	U	↓	↓
100-41-4	Ethylbenzene	230	U		
1330-20-7	Xylenes (total)	970		J	KØ1

use

FORM I VOA

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4008S

Matrix: (soil/water) SOIL Lab Sample ID: 9805300-12

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 7U423

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 13 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/22/98

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	377	U
91-58-7	2-chloronaphthalene	377	U
208-96-8	acenaphthylene	377	U
83-32-9	acenaphthene	377	U
86-73-7	fluorene	377	U
85-01-8	phenanthrene	377	U
120-12-7	anthracene	377	U
206-44-0	fluoranthene	377	U
129-00-0	pyrene	377	U
56-55-3	benzo(a)anthracene	377	U
218-01-9	chrysene	377	U
205-99-2	benzo(b)fluoranthene	377	U
207-08-9	benzo(k)fluoranthene	377	U
50-32-8	benzo(a)pyrene	377	U
193-39-5	indeno(1,2,3-cd)pyrene	377	U
53-70-3	dibenz(a,h)anthracene	377	U
191-24-2	benzo(g,h,i)perylene	377	U

U

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730421
Lab ID	: 9805300-12
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		238 =	~~J~~, F01, F08 11.4	57.5	mg/kg	5.0	JLP	05/26/98	1330	122880	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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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 (803) 769-7391.

Reviewed By

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4008S

Method Type: Total Metals

Sample ID: 9805300-12

Client ID: 730421

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 87.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	7.0	mg/kg			P	0.11	TJA61 Trace ICPAES	980517-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730511

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-11

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I4034

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 11 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) 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	2.7	P	J MΦ8
108-88-3	Toluene	73.5		=
100-41-4	Ethylbenzene	15.2	P	J MΦ8
1330-20-7	Xylenes (total)	28.1	P	J MΦ8

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730511

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-11

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 2T535

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 11 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
91-20-3	naphthalene	31.4	J	J
91-58-7	2-chloronaphthalene	373	U	U
208-96-8	acenaphthylene	373	U	U
83-32-9	acenaphthene	373	U	U
86-73-7	fluorene	373	U	U
85-01-8	phenanthrene	32.6	J	J
120-12-7	anthracene	373	U	U
206-44-0	fluoranthene	14.0	J	J
129-00-0	pyrene	29.3	J	J
56-55-3	benzo(a)anthracene	373	U	U
218-01-9	chrysene	373	U	
205-99-2	benzo(b)fluoranthene	373	U	
207-08-9	benzo(k)fluoranthene	373	U	
50-32-8	benzo(a)pyrene	373	U	
193-39-5	indeno(1,2,3-cd)pyrene	373	U	
53-70-3	dibenz(a,h)anthracene	373	U	
191-24-2	benzo(g,h,i)perylene	373	U	

FORM I SV-1

OLM03.0

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598 Report Date: May 20, 1998

Sample ID	: 730511
Lab ID	: 9805295-11
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		12.4 J F01, F08, I02	2.22	11.2	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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 (803) 769-7391.

Reviewed By

9805295 11

Form 1: Inorganic Analyses Data Sheet

DATA VALIDATION COPY

SDG No.: FS4006S

Method Type: Total Metals

Sample ID: 9805295-11

Client ID: 730511

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.8	mg/kg	J	P Ø2	P	0.10	TJA61 Trace ICPAES	980514a-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730521

Lab Name: GENERAL ENGINEERING LABCR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-16

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5026

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 8 Date Analyzed: 05/16/98

GC Column: J&W DB-624(PID) 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	13.6	P	J MΦ8
108-88-3	Toluene	138	P	J MΦ8
100-41-4	Ethylbenzene	292 ~~358~~	~~EP~~ D	J MΦ8
1330-20-7	Xylenes (total)	1810 ~~710~~	~~E~~ D	=

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J GΦ1

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730521DL

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-16

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I609

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 8 Date Analyzed: 05/16/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 10.0

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	7.4	DJ	J
108-88-3	Toluene	112	DP	J MΦ8
100-41-4	Ethylbenzene	292	DP	J MΦ8
1330-20-7	Xylenes (total)	1810	D	J

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do not use

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T335

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.9

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	44.5	J
91-58-7	2-chloronaphthalene	362	U
209-96-8	acenaphthylene	362	U
83-32-9	acenaphthene	362	U
86-73-7	fluorene	362	U
85-01-8	phenanthrene	362	U
120-12-7	anthracene	362	U
206-44-0	fluoranthene	362	U
129-00-0	pyrene	362	U
56-55-3	benzo(a)anthracene	362	U
218-01-9	chrysene	362	U
205-99-2	benzo(b)fluoranthene	362	U
207-08-9	benzo(k)fluoranthene	362	U
50-32-8	benzo(a)pyrene	362	U
193-39-5	indeno(1,2,3-cd)pyrene	362	U
53-70-3	dibenz(a,h)anthracene	362	U
191-24-2	benzo(g,h,i)perylene	362	U

J
U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730521
Lab ID	: 9805294-16
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		31.8 = F01, F08	2.16	10.9	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method

	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730531

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-17

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5015

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 17 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) 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	2.4	U	U
108-88-3	Toluene	2.5		U
100-41-4	Ethylbenzene	2.4	U	U
1330-20-7	Xylenes (total)	7.2	U	

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730531

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T336

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 17 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

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	402	
91-58-7	2-chloronaphthalene	402	U
209-96-8	acenaphthylene	402	U
83-32-9	acenaphthene	402	U
86-73-7	fluorene	402	U
85-01-8	phenanthrene	402	U
120-12-7	anthracene	402	U
206-44-0	fluoranthene	402	U
129-00-0	pyrene	402	U
56-55-3	benzo(a)anthracene	402	U
218-01-9	chrysene	402	U
205-99-2	benzo(b)fluoranthene	402	U
207-08-9	benzo(k)fluoranthene	402	U
50-32-8	benzo(a)pyrene	402	U
193-39-5	indeno(1,2,3-cd)pyrene	402	U
53-70-3	dibenz(a,h)anthracene	402	U
191-24-2	benzo(g,h,i)perylene	402	U

= U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598 Report Date: June 01, 1998

Sample ID	: 730531
Lab ID	: 9805294-17
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		79.5 = FØ1, FØ8	2.38	12.0	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805294-17

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730541

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I509

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 22 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 10.0

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	1020	
108-88-3	Toluene	318	
100-41-4	Ethylbenzene	555	
1330-20-7	Xylenes (total)	3670	

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730541

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T527

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 22 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	104	J
91-58-7	2-chloronaphthalene	427	U
209-96-8	acenaphthylene	427	U
83-32-9	acenaphthene	427	U
86-73-7	fluorene	427	U
85-01-8	phenanthrene	94.7	J
120-12-7	anthracene	427	U
206-44-0	fluoranthene	427	U
129-00-0	pyrene	427	U
56-55-3	benzo(a)anthracene	427	U
218-01-9	chrysene	427	U
205-99-2	benzo(b)fluoranthene	427	U
207-08-9	benzo(k)fluoranthene	427	U
50-32-8	benzo(a)pyrene	427	U
193-39-5	indeno(1,2,3-cd)pyrene	427	U
53-70-3	dibenz(a,h)anthracene	427	U
191-24-2	benzo(g,h,i)perylene	427	U

J U J U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: May 20, 1998

Sample ID	: 730541
Lab ID	: 9805295-03
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry		12.8									
Total Rec. Petro. Hydrocarbons	J	~~8.05~~ U FB1, FB6, ~~2.53~~		12.8	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805295-03

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730551

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-01

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I508

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 20 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 10.0

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	98.7		=
108-88-3	Toluene	39.0	P	J
100-41-4	Ethylbenzene	25.0	U	U
1330-20-7	Xylenes (total)	127		=

MΦ8

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730551

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-01

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 2T522

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 20 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/15/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH

DATA VALIDATION COPY

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
209-96-8	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

FS4006.S

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598 Report Date: May 20, 1998

Sample ID	: 730551
Lab ID	: 9805295-01
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	12.5 5.54 U F01, F06,	2.48	12.5	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method Description
M 1	EPA 418.1 Modified

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.

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 (803) 769-7391.

Reviewed By

9805295_01

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730561

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-20

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5018

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 23 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) 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	2.6	U
108-88-3	Toluene	2.6	U
100-41-4	Ethylbenzene	2.6	U
1330-20-7	Xylenes (total)	7.8	U

U

DATA VALIDATION
COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730561

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T339

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 23 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	433	U
91-58-7	2-chloronaphthalene	433	U
209-96-8	acenaphthylene	433	U
83-32-9	acenaphthene	433	U
86-73-7	fluorene	433	U
85-01-8	phenanthrene	433	U
120-12-7	anthracene	433	U
206-44-0	fluoranthene	433	U
129-00-0	pyrene	433	U
56-55-3	benzo(a)anthracene	433	U
218-01-9	chrysene	433	U
205-99-2	benzo(b)fluoranthene	433	U
207-08-9	benzo(k)fluoranthene	433	U
50-32-8	benzo(a)pyrene	433	U
193-39-5	indeno(1,2,3-cd)pyrene	433	U
53-70-3	dibenz(a,h)anthracene	433	U
191-24-2	benzo(g,h,i)perylene	433	U

U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730561
Lab ID	: 9805294-20
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		48.2	= F01, F08	2.57	13.0	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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.

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 (803) 769-7391.

Reviewed By

9805294-20

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730571

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-02

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I507

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 19 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) 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	52.4		=
108-88-3	Toluene	39.5		=
100-41-4	Ethylbenzene	5.8	P	J
1330-20-7	Xylenes (total)	42.4		=

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DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730571

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-02

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 2T526

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 19 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	407	U
91-58-7	2-chloronaphthalene	407	U
208-96-8	acenaphthylene	407	U
83-32-9	acenaphthene	407	U
86-73-7	fluorene	407	U
85-01-8	phenanthrene	407	U
120-12-7	anthracene	407	U
206-44-0	fluoranthene	407	U
129-00-0	pyrene	407	U
56-55-3	benzo(a)anthracene	407	U
218-01-9	chrysene	407	U
205-99-2	benzo(b)fluoranthene	407	U
207-08-9	benzo(k)fluoranthene	407	U
50-32-8	benzo(a)pyrene	407	U
193-39-5	indeno(1,2,3-cd)pyrene	407	U
53-70-3	dibenz(a,h)anthracene	407	U
191-24-2	benzo(g,h,i)perylene	407	U

U

FORM I SV-1

OLM03.0

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: May 20, 1998

Sample ID	: 730571
Lab ID	: 9805295-02
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		98.5 F01,F08,	2.44	12.3	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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.

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 (803) 769-7391.

Reviewed By

9805295-02

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730581

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-19

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5017

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 20 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) 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	45.5	
108-88-3	Toluene	62.9	
100-41-4	Ethylbenzene	12.5	
1330-20-7	Xylenes (total)	57.0	

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730581

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T338

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 20 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	417	U
91-58-7	2-chloronaphthalene	417	U
209-96-8	acenaphthylene	417	U
83-32-9	acenaphthene	417	U
86-73-7	fluorene	417	U
85-01-8	phenanthrene	417	U
120-12-7	anthracene	417	U
206-44-0	fluoranthene	417	U
129-00-0	pyrene	417	U
56-55-3	benzo(a)anthracene	417	U
218-01-9	chrysene	417	U
205-99-2	benzo(b)fluoranthene	417	U
207-08-9	benzo(k)fluoranthene	417	U
50-32-8	benzo(a)pyrene	417	U
193-39-5	indeno(1,2,3-cd)pyrene	417	U
53-70-3	dibenz(a,h)anthracene	417	U
191-24-2	benzo(g,h,i)perylene	417	U

U

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: June 01, 1998

Sample ID	: 730581
Lab ID	: 9805294-19
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	12.5 ~~3.40~~ U F01, F06	2.48	12.5	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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.

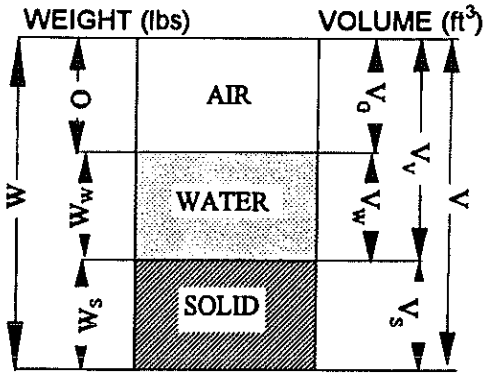
This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By

SPECIFIC GRAVITY AND POROSITY

PROJECT: Fort Stewart
LOCATION OF PROJECT: CAP Part A
DESCRIPTION OF SOIL: Dark Brown Silty Sand
TESTED BY: B.J. Vance

JOB NO.: 98066
SAMPLE NO: 730331
DEPTH OF SAMPLE: 8-10ft.
DATE OF TESTING: 6/22/98



W = 1.61618
$W_W = W - W_S$ = 0.27118
$W_S = Y_d * V$ = 1.3450

V = 0.00950
$V_W = W_W / Y_W$ = 0.0043
$V_S = W_S / G_S * Y_W$ = 0.0083
$V_G = V - (V_S + V_W)$ = -0.00310
$V_V = V_G + V_W$ 0.0012

MEASUREMENTS OF TUBE/CAN

HEIGHT= 15.5 cm
DIAMETER= 4.7 cm

CALCULATED VOLUME OF TUBE/CAN

V= 268.92 cm^3
0.00950 ft^3

WT. OF TUBE/CAN + WET SOIL= 1159.40 g
WEIGHT OF TUBE/CAN= 426.3 g
WEIGHT OF WET SOIL= 733.10 g
W = 1.61618 lb

MOISTURE CONTENT

M_{CWS} =	24.34	g	M_C =	10.99	g
M_{CDS} =	22.10	g	M_S =	11.11	g
M_W =	2.24	g	w =	20.2	%

Wet Density, $Y_m = W / V$

Dry Density, $Y_d = W_s / V$ or $Y_d = Y_m / (1+ w)$

double check	$Y_d = Y_m / (1+ w)$
$Y_d = W_s / V$	Y_m= 170.16 lbs/ft^3
Y_d= 141.61 lbs/ft^3	Y_d= 141.61 lbs/ft^3

Void Ratio, $e = V_V / V_S$
e = 0.1507

Porosity, $n = V_V / V$
n = 0.13

Specific Gravity = 2.61

Degree of Saturation, $S = V_W / V_V$
S = 3.4927

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Fort Stewart

Location of Project : CAP Part A

Description of Soil : Dark Brown Silty Sand

Job # : 98066
Date of Testing: 7/13-14/98
Tested by: CA
Boring # :
Sample # : 730331
Sample Depth : 8-10'

Sample Type (Undisturbed or Remolded)
Standard Proctor:
Maximim Dry Density: _____ pcf
Optimum Moisture Content: _____ %

% Sample Compaction: _____ %
Sample Dry Density: _____ pcf
Sample Moisture Content: _____ %
Sample Wet Density: _____ pcf

Sample Permeation:

De-Aired Water
% Saturation: 96 %
Cell Pressure: 55 psi
Lower Pressure: 51 psi
Upper Pressure: 50 psi
Gradient: 8.58

Sample Dimensions		
	Before	After
Length (cm)	8.20	6.40
Diameter (cm)	4.70	4.80
Water Content (%)	21.7	18.6
Weight (g)	270.5	264.1

Constant Head Calculation:

$$K = [V(t_1,t_2)\ LR_T]/[P_BAt]\ (cm/sec)$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm^3)
L = Length of Sample = 8.20 cm
A = Area of Sample = 17.35 cm^2
t = $t_2 - t_1$ (sec)
P_B = Bias Pressure = 1 psi x 70.37 cm/psi $_{(cm - H2O)}$ 70.37 cm
R_T = Temperature correction = 0.931

t_2 (sec)	t_1 (sec)	$(t_2 - t_1)$ (sec)	V (cm^3)	$[LR_T]/[P_BA]$ (cm^3)	K (cm/sec)
15	10	5	0.1	6.25E-03	1.25E-04
20	15	5	0.1	6.25E-03	1.25E-04
25	20	5	0.1	6.25E-03	1.25E-04
35	25	10	0.2	6.25E-03	1.25E-04

K_{avg} = 1.25E-04 cm/sec

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project FORT STEWART Job No. 98066

Location of Project CAP Part A Sample No. # 730 331

Description of Soil _____ Depth of Sample 8-10' Boring No. _____

Tested By CH Date of Testing 7/7/88

Sample preparation procedures outlined in ASTM D421 and D2217.

Nominal diameter of largest particle	Approximate minimum Wt. of sample, g
No. 10 sieve	200
No. 4 sieve	500
3/4 in.	1500

Weight of sample used, M_{ws}= 554.4 g

M_{cws}	M_{cds}	M_p ____	M_w	M_s	w %	M_{ws}	M_s
	708.0	113.60					

Sieve analysis and grain shape

Sieve no.	Diam. (mm)	Wt. retained	% retained	Σ % retained	% passing
3"					
2"					
1 1/2 "					
3/4"					
3/8"					
#4					
#10		1.35	0.23	0.23	99.77
#20		8.61	1.45	1.68	98.32
#40		33.61	5.67	7.35	92.65
#60		86.37	16.55	21.94	78.06
#140		437.70	73.53	95.87	4.13
#200		4.70	0.79	96.66	3.34
pan		19.70	3.32	99.98	0.02
		592.04			

% retained = (Wt. retained/W_s) · 100 % passing = 100 - Σ % retained.

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CHAIN OF CUSTODY RECORD

COC NO.: GAB013

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9605

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
660221	5/8/96	900	Soil				1		1				2	
660221 +	5/8/96	900												
630221	5/9/96	1045		1							1		2	
760211	5/8/96	1005					1	1					2	
630121	5/9/96	935		1							1		2	
660211	5/8/96	910					1	1					2	
750111	5/6/96	1335					1		1				2	
760221	5/6/96	1015					1		1				2	
750113	5/6/96	1335					1		1				2	
750121	5/6/96	1345					1	1					2	
760411	5/6/96	1310					1	1					2	
730211	5/10/96	1230		1						1			2	
630211	5/9/96	1045		1						1			2	

RELINQUISHED BY: Laura Lumley	Date/Time 5/11/96 1130	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME:		Cooler ID: #165	FEDEX NUMBER:
RECEIVED BY:	Date/Time 5/11/96 1130	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GAB013

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305

PROJECT NUMBER: 01-0331-04-9305-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:
730121	5/10/98	1120	Soil	1							1		1	2
690421	5/10/98	915		1							1		1	2
760421	5/8/98	1320					1		1					2
900721	5/8/98	1205					1		1					2
900521	5/8/98	945					1		1					2
900621	5/8/98	1040					1		1					2
760311	5/8/98	1600					1	1						2
900711	5/8/98	1155					1	1						2
900511	5/8/98	945					1	1						2
900611	5/8/98	1050					1	1						2
750421	5/8/98	1625					1						1	2
760321	5/8/98	1610					1						1	2
760421	5/9/98	1455					1						1	2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/11/98 1130		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
[signature]	5-11-98 1130		
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 50

Cooler Temperature: 4°C

Cooler ID: #165

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GAB014

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305

PROJECT NUMBER: 01-0331-04-9305-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
760811	5/9/96	1855	Soil		X		1	1	X		X		2	
750211	5/8/96	1900			X		1	1	X		X		2	
750411	5/16/96	1650			X		1	1	X		X		2	
770211	5/8/96	1725			X		1	1	X		X		2	
770411	5/8/96	1555			X		1	1	X		X		2	
750221	5/16/96	1905			X		1		1		X		2	
770421	5/8/96	1615			X		1		1		X		2	
770221	5/8/96	1735			X		1		1		X		2	
690111	5/9/96	1540		1	X		X		X	1	X		2	
640221	5/9/96	1500		1	X		X		X		1		2	
730521	5/9/96	915		1	X		X		X	1	X		2	
730531	5/9/96	935		1	X		X		X	1	X		2	
690411	5/10/96	910		1	X		X		X	1	X		2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC	5/11/96 1130	COMPANY NAME:		Cooler ID: #131	FEDEX NUMBER:
RELINQUISHED BY:	Date/Time 5-11-96	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GAB014

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9805

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
730581	5/9/98	1457	So; l	1						1			2	
730561	5/9/98	1350		1						1			2	
730551	5/9/98	1015		1						1			2	
730571	5/9/98	1452		1						1			2	
730541	5/9/98	1000		1						1			2	
690211	5/9/98	1640		1						1			2	
690311	5/9/98	1610		1						1			2	
640111	5/9/98	1415		1						1			2	
690121	5/9/98	1545		1							1		2	
690321	5/9/98	1615		1							1		2	
690221	5/9/98	1645		1							1		2	
640121	5/9/98	1415		1							1		2	
730511	5/9/98	910		1							1		2	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 52	Cooler Temperature: 4°C
Laura Lumley	5/11/98				
COMPANY NAME: SAIC	1130	COMPANY NAME:		Cooler ID: #131	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEC	5/11-98 1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: CA002

PROJECT NAME: Fort Stewart CAP Part A Investigation 9405

PROJECT NUMBER: 01-0331-04-~~8481~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	GRAIN SIZE	ATTERBERG LIMITS	MOISTURE CONTENT	PERMEABILITY	SPECIFIC GRAVITY	POROSITY	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
151621	5/11/98	1220	Soil	X	X	X	X	X	X	1		
730331	5/10/98	1410	↓	X	X	X	X	X	X	1		
720131	5/11/98	1055	↓	X	X	X	X	X	X	1		

REQUESTED PARAMETERS

LABORATORY NAME: Caitlin Laboratories

LABORATORY ADDRESS: 1051 Johnnie Dodds Blvd. Suite C Mt. Pleasant, SC 29464

PHONE NO: (803) 881-6000

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/12/98		
COMPANY NAME: SAIC	1700	COMPANY NAME:	
RECEIVED BY: 403096836125	Date/Time 5/12/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: FedEX	1700	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 3

Cooler Temperature:

Cooler ID: N/A

FEDEX NUMBER: 403096836125

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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Calculations of alternate threshold levels are not required at this time for the UST 261 site. However, the geotechnical data collected during the CAP-Part A investigation are presented in Table VI-A.

VI-A. Geotechnical Results for Soil Samples Collected at the UST 261 Site

	73-03
Sample ID	730331
Depth Interval (ft BGS)	8.0' – 10.0'
Grain size analysis - % Fines	3
Grain size analysis - % Sand	96
Grain size analysis - % Gravel	1
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP
Natural Moisture Content (%)	20.2
Permeability (cm/sec)	1.25×10^{-4}
Porosity	0.13
Specific Gravity	2.61

NP = Nonplastic.
NA = Not applicable, sample was not analyzed for specific geotechnical parameter.

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APPENDIX VII

MONITORING WELL DETAILS

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Monitoring wells were not installed as part of the CAP-Part A investigation. Temporary piezometers were installed at the UST 261 site. Refer to Figures 4 and 5 (Appendix I) for locations.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Station:		In Stream	73-01	73-02	73-03	73-04
Sample ID:	Federal	Water	730112	730212	730312	730412
Collection Date:	SDWA MCLs[1]	Quality	10-May-98	10-May-98	10-May-98	10-May-98
Units:	(ug/L)	Standards[2]	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLTILE ORGANIC COMPOUNDS						
Benzene	5	71.28	**4840 =**	**3170 =**	**2400 =**	**12000 =**
Toluene	1000	200,000	**1130 =**	184 =	72.5 =	**11000 =**
Ethylbenzene	700	28,718	280 =	132 =	105 =	983 =
Xylenes, Total	10000	–	1600 =	1350 =	954 =	5630 =
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene		–	10.5 U	10.6 U	10.5 U	20 U
Acenaphthene		–	10.5 U	10.6 U	10.5 U	20 U
Acenaphthylene		–	10.5 U	10.6 U	10.5 U	20 U
Anthracene		110,000	10.5 U	10.6 U	10.5 U	20 U
Benzo(a)anthracene		0.0311	10.5 U	10.6 U	10.5 U	20 U
Benzo(a)pyrene	0.2	0.0311	10.5 U	10.6 U	10.5 U	20 U
Benzo(b)fluoranthene		–	10.5 U	10.6 U	10.5 U	20 U
Benzo(g,h,i)perylene		–	10.5 U	10.6 U	10.5 U	20 U
Benzo(k)fluoranthene		0.0311	10.5 U	10.6 U	10.5 U	20 U
Chrysene		0.0311	10.5 U	10.6 U	10.5 U	20 U
Dibenzo(a,h)anthracene		0.0311	10.5 U	10.6 U	10.5 U	20 U
Fluoranthene		370	10.5 U	10.6 U	10.5 U	20 U
Fluorene		14,000	10.5 U	10.6 U	10.5 U	20 U
Indeno(1,2,3-cd)pyrene		0.0311	10.5 U	10.6 U	10.5 U	20 U
Naphthalene		–	9.7 J	10.6 U	34 =	49 =
Phenanthrene		–	10.5 U	10.6 U	10.5 U	20 U
Pyrene		11,000	10.5 U	10.6 U	10.5 U	20 U

NOTES:

Field work was conducted prior to the new CAP-A guidance published in May 1998, thus the new analytical methods were not used.

1 U.S. Environmental Protection Agency maximum contaminant level

2 GA EPD water quality standards (Chapter 391-3-6.03)

QA/QC samples were collected. The laboratory data sheets have been included in this Appendix, but the results are not summarized.

Bold values exceed MCLs

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported

UJ Indicates that the compound was not detected above an approximated sample quantitation limit

J Indicates the value for the compound is an estimated value

= Indicates the compound was detected at the concentration reported

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-01

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1038

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 50.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	4840	
108-88-3	Toluene	1130	
100-41-4	Ethylbenzene	280	
1330-20-7	Xylenes (total)	1600	

DATA VALIDATION COPY

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-14

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 4T420

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/15/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	9.7	J
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	10.5	U
86-73-7	fluorene	10.5	U
85-01-8	phenanthrene	10.5	U
120-12-7	anthracene	10.5	U
206-44-0	fluoranthene	10.5	U
129-00-0	pyrene	10.5	U
56-55-3	benzo(a)anthracene	10.5	U
218-01-9	chrysene	10.5	U
205-99-2	benzo(b)fluoranthene	10.5	U
207-08-9	benzo(k)fluoranthene	10.5	U
50-32-8	benzo(a)pyrene	10.5	U
193-39-5	indeno(1,2,3-cd)pyrene	10.5	U
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	10.5	U

J U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-16

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1045

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/20/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 25.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	3170	
108-88-3	Toluene	184	
100-41-4	Ethylbenzene	132	
1330-20-7	Xylenes (total)	1350	

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-10

Sample wt/vol: 940.0 (g/mL) ML Lab File ID: 4T416

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/14/98

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/L	Q
91-20-3	naphthalene	10.6	U
91-58-7	2-chloronaphthalene	10.6	U
208-96-8	acenaphthylene	10.6	U
83-32-9	acenaphthene	10.6	U
86-73-7	fluorene	10.6	U
85-01-8	phenanthrene	10.6	U
120-12-7	anthracene	10.6	U
206-44-0	fluoranthene	10.6	U
129-00-0	pyrene	10.6	U
56-55-3	benzo(a)anthracene	10.6	U
218-01-9	chrysene	10.6	U
205-99-2	benzo(b)fluoranthene	10.6	U
207-08-9	benzo(k)fluoranthene	10.6	U
50-32-8	benzo(a)pyrene	10.6	U
193-39-5	indeno(1,2,3-cd)pyrene	10.6	U
53-70-3	dibenz(a,h)anthracene	10.6	U
191-24-2	benzo(g,h,i)perylene	10.6	U

FORM I SV-1

OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-15

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1044

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2400	
108-88-3	Toluene	72.5	
100-41-4	Ethylbenzene	105	
1330-20-7	Xylenes (total)	954	

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-17

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 4U106

Level: (low/med) LOW

% Moisture: _____ decanted: (Y/N) ___ Date Received: 05/11/98

Concentrated Extract Volume: 1.00 (mL) Date Extracted: 05/12/98

Injection Volume: 1.0 (uL) Date Analyzed: 05/18/98

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	34.0	
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	10.5	U
86-73-7	fluorene	10.5	U
85-01-8	phenanthrene	10.5	U
120-12-7	anthracene	10.5	U
206-44-0	fluoranthene	10.5	U
129-00-0	pyrene	10.5	U
56-55-3	benzo(a)anthracene	10.5	U
218-01-9	chrysene	10.5	U
205-99-2	benzo(b)fluoranthene	10.5	U
207-08-9	benzo(k)fluoranthene	10.5	U
50-32-8	benzo(a)pyrene	10.5	U
193-39-5	indeno(1,2,3-cd)pyrene	10.5	U
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	10.5	U

= U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-04

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1039

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 100.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	12000	
108-88-3	Toluene	11000	
100-41-4	Ethylbenzene	983	
1330-20-7	Xylenes (total)	5630	

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4012W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805304-03

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 1T309

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/13/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/13/98

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/L	Q
91-20-3	naphthalene	49.0	
91-58-7	2-chloronaphthalene	20.0	U
208-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

11 U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730416

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-14

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1034

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 5.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	552	
108-88-3	Toluene	315	
100-41-4	Ethylbenzene	14.6	
1330-20-7	Xylenes (total)	88.9	

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

730416

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-16

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4U105

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/18/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
208-96-8	acenaphthylene	10.0	U
83-32-9	acenaphthene	10.0	U
86-73-7	fluorene	10.0	U
85-01-8	phenanthrene	10.0	U
120-12-7	anthracene	10.0	U
206-44-0	fluoranthene	10.0	U
129-00-0	pyrene	10.0	U
56-55-3	benzo(a)anthracene	10.0	U
218-01-9	chrysene	10.0	U
205-99-2	benzo(b)fluoranthene	10.0	U
207-08-9	benzo(k)fluoranthene	10.0	U
50-32-8	benzo(a)pyrene	10.0	U
193-39-5	indeno(1,2,3-cd)pyrene	10.0	U
53-70-3	dibenz(a,h)anthracene	10.0	U
191-24-2	benzo(g,h,i)perylene	10.0	U

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CHAIN OF CUSTODY RECORD

COC NO.: GAB009

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
770412	5/8/98	1730	water		1								1	
640112	5/9/98	1445			1								1	
690212	5/9/98	1700			2								2	
760612	5/9/98	1750			2								2	
760812	5/9/98	1930			2								2	
690412	5/10/98	945			2								2	
730212	5/10/98	1325			2								2	
760912	5/10/98	1345			2								1	
	5/11/98													

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 13	Cooler Temperature: 4°C
COMPANY NAME: SAIC	5/11/98 1130	COMPANY NAME:		Cooler ID: 549	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	5-11-98 1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GAB010

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305

PROJECT NUMBER: 01-0331-04-9305-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) (Printed Name)

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
730312	5/10/98	1445	water		1								1	
590112	5/10/98	1040			2								2	
600112	5/10/98	1555			2								2	
690312	5/9/98	1620			2								2	
730112	5/10/98	1135			2								2	
560212	5/10/98	1150			2								2	
730416	5/10/98	1430			2								2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 13	Cooler Temperature: 4°C
Laura Lumley	5/11/98				
COMPANY NAME: SAIC	1130	COMPANY NAME:		Cooler ID: #508	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
	5-11-98				
COMPANY NAME: GEL	1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GAB 011

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
730312	5/10/98	1445	water		1								1	
710416	5/10/98	1600			2								2	
761012	5/10/98	1445			2								2	
600212	5/10/98	1630			2								2	
600214	5/10/98	1630			2								2	
710412	5/10/98	1605			2								2	
730412	5/10/98	1420			2								2	

REQUESTED PARAMETERS

RELINQUISHED BY: Laura Lumley — Date/Time: 5/11/98 1130 — COMPANY NAME: SAIC

RECEIVED BY: — Date/Time: — COMPANY NAME:

TOTAL NUMBER OF CONTAINERS: 13

Cooler Temperature: 4°C

Cooler ID: # 466

FEDEX NUMBER:

RECEIVED BY: [illegible] — Date/Time: 5-11-98 1130 — COMPANY NAME: GEL

RELINQUISHED BY: — Date/Time: — COMPANY NAME:

RELINQUISHED BY: — Date/Time: — COMPANY NAME:

RECEIVED BY: — Date/Time: — COMPANY NAME:

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APPENDIX IX

EXCAVATION OF CONTAMINATED SOIL AND SUPPORTING MANIFESTS

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All contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Installation has records of all manifests and weight tickets for this project. However, site/UST-specific information is not available.

I certify that the above information is true and accurate. If GA EPD Underground Storage Tank Management Program (USTMP) would like copies of all manifests and weight tickets for the numerous UST removal contracts that the Installation has conducted, the Installation will gladly forward copies to the USTMP.

Name: Thomas C. Fry
Title: Chief, Environmental Branch

Signature: Thomas C. Fry

Date: 03/15/99

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: UST 261, Building 430 **Ranked by:** P. Stoll

County: Liberty **Facility ID #:** 9-089118 **Date Ranked:** 7/29/98

SOIL CONTAMINATION

A. Total PAHs –
Maximum Concentration found on the site
(Assume <0.660 mg/kg if only gasoline was stored on site)

☒	≤0.660 mg/kg	=	0
☐	>0.66 - 1 mg/kg	=	10
☐	>1 - 10 mg/kg	=	25
☐	>10 mg/kg	=	50

B. Total Benzene -
Maximum Concentration found on the site

☐	≤0.005 mg/kg	=	0
☐	>0.005 - .05 mg/kg	=	1
☐	>0.05 - 1 mg/kg	=	10
☒	>1 - 10 mg/kg	=	25
☐	>10 - 50 mg/kg	=	40
☐	>50 mg/kg	=	50

C. Depth to Groundwater
(bls = below land surface)

☐	>50' bls	=	1
☐	>25' - 50' bls	=	2
☐	>10' - 25' bls	=	5
☒	≤10' bls	=	10

Fill in the blanks: **(A. 0) + (B. 25) = (25) x (C. 10) = (D. 250)**

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See Guidelines For definition of "sheen").

☒	No free product	=	0
☐	Sheen - 1/8"	=	250
☐	>1/8" - 6"	=	500
☐	>6" - 1ft.	=	1,000
☐	For every additional inch, add another 100 points = 1,000 + _____		

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release.)

☐	≤5 µg/L	= 0
☐	>5 - 100 µg/L	= 5
☐	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 100
☒	>10,000 µg/L	= 250

Fill in the blanks: **(E. 0) + (F. 250) = (G. 250)**

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤500'	= 500
☐	>500' - ¼ mi	= 25
☐	¼ mi - 1 mi	= 10
☐	>1 mi - 2 mi	= 2
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤100'	= 500
☐	>100' - 500'	= 25
☐	>500' - ¼ mi	= 5
☐	>¼ - ½ mi	= 2
☒	>½ mi	= 0

For lower susceptibility areas only:

☐	>¼ mi	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

* For justification that withdrawal point is not hydraulically connected, see page X-5.

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table)

☐	Impacted	= 500
☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50

(G. 250) x (L. 50) = M. 12500

(M. 12500) + (D. 250) = N. 12750

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: (N. 12750) x (P. 1) = (12750) + (Q. 0)

= 12750

ENVIRONMENTAL SENSITIVITY SCORE

OTHER GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information to Section II.D.5 of the CAP-Part A form and provides detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart to support determinations of groundwater flow pathway(s) or direction(s) and contaminant transport.

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from zero feet at the fall line located approximately 350 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 feet thick and dominated by limestone with a 175-foot thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Metcalf & Eddy 1996).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group was encountered. The uppermost portion of the section was found to be Quaternary age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Metcalf & Eddy 1996).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Metcalf & Eddy 1996).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian 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 is composed primarily of Tertiary age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site, but is believed to be located at 40 to 50 feet BGS, thus the effective aquifer thickness would be approximately 35 to 45 feet. Soil surveys for Liberty and Long Counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Cooswhatchie Formation, Markshead Formation, and the Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay, but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah Georgia area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Marshead Formation is approximately 70 feet thick in the Savannah Georgia area and consists of light colored phosphatic, slightly dolomitic, argillacerous sand to fine-grained sandy clay with scattered beds of dolostone, limestone, and siliceous, and dolomitic and less calcareous.

The Parachula Formation consists of sand, clay, limestone, and dolomite, and is approximately 10 feet thick in the Savannah Georgia area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

APPENDIX XI

PUBLIC NOTIFICATION

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STATE OF GEORGIA
CHATHAM COUNTY

Affidavit of Publication
____Savannah Morning News
____Savannah Evening Press

Personally appeared before me, Joan T. Jenkins, to me known, who being sworn, deposes and says:

That he is the Classified Adv Supv of Southeastern Newspapers Corporation, a Georgia corporation, doing business in Chatham County, Georgia, under the trade name of Savannah Morning News/Savannah Evening Press, a daily newspaper published in said county;

That he is authorized to make affidavits of publication on behalf of said published corporation;

That said newspaper is of general circulation in said county and in the area adjacent thereto;

That he has reviewed the regular editions of the Savannah Morning News/Savannah Evening Press, published on 7-19, 1998, 7-26, 1998, ________, 1998, ________, 1998, and finds that the following Advertisement, to-wit:

PUBLIC NOTICE

Notification of Corrective Action Plan, Underground Storage Tank Releases, Fort Stewart Garrison Area, Fort Stewart, Georgia

The United States Army Corps of Engineers and Fort Stewart Directorate of Public Works have prepared Corrective Action Plan (CAP) - Part A and Part B reports to assess the environmental impact of diesel, gasoline, or waste oil releases from numerous underground storage tanks (USTs) located at the above referenced property. These reports will be submitted to the Georgia Environmental Protection Division after September 30, 1998. A listing of the UST sites for which CAP - Part A and Part B reports have been prepared is presented at the end of this notification.

The Georgia rules for UST management require notification of the public most directly affected by the plans. If you would like a copy of any of the plans, please contact:

Commander, 3rd Infantry Division (Mechanized) and Fort Stewart, Attn: AFZP-DEV (T. Rutland), Building 1139, Fort Stewart, Georgia 31314-5000

A copy of each requested plan will be mailed at a nominal copying and shipping fee.

To make comments on any of the plans, or to examine the Georgia Environmental Protection Division's files, contact the Corrective Action Unit, Underground Storage Tank Management Program, Environmental Protection Division at 404-362-2687. The Underground Storage Tank Management Program will accept comments on the CAP - Part A and Part B reports up to 30 days after submittal to the Georgia Environmental Protection Division. Following is their mailing address: Corrective Action Unit, Underground Storage Tank Management Program, 4244 International Parkway, Suite 100, Atlanta, Georgia 30354

Fort Stewart CAP - Part A and Part B Underground Storage Tank Sites

Tank Number
Facility ID
Building

242, 9-089041, 241
244, 9-089041, 241
28B, 9-089011, 1720
94B, 9-089110, 1339
100B, 9-089081, 1350
214, 9-089015, 1503
215, 9-089015, 1503
123, 9-089092, 933
106, 9-089032, 6923
111, 9-089085, 19109
118, 9-089070, 1239
36, 9-089016, 1512
37, 9-089016, 1512
94, 9-089076, 1328
4, 9-089065, 1840
5 and 6, 9-089066, 1824
52, 9-089050, 1062
X, 9-, 106501
1, 9-089064, 1842
18, 9-089011, 1720
20, 9-089011, 1720
28A, 9-08901A 1720
30-35, 9-089028, 1621
202-204, 9-089045, 241
261, 9-089118, 430
225, 9-089090, 4529
122, 9-089083, 7705
257-260, 9-089037, 430
2 and 3, 9-089065, 1840
87 and 88, 9-089073, 1245
48 and 49, 9-089054, 1175
226 and 227, 9-089042, 4530

appeared in each of said editions.

Joan T. Jenkins
(Deponent)

Sworn to and subscribed before me this 28 day of July, 1998.

Lillie D. Lang
Notary Public, Chatham County, Georgia

LILLIE D. LANG
Notary Public, Chatham County, Ga.
My Commission Expires Apr. 8, 2001

Form 121 rev.

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ATTACHMENT A

TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

The overall objective of this project is to provide the engineering services required to produce Corrective Action Plans (CAPs) for the subject UST sites. These reports will conform to the site closure requirements of a CAP-Part A for sites in Georgia. The field investigations necessary to support the report preparation included the installation of temporary piezometers, soil borings, and associated sampling of soil and groundwater. Upon completion of the field investigations, a CAP-Part A will be prepared to meet Georgia Environmental Protection Division (GA EPD), Fort Stewart, and the USACE-Savannah requirements.

2.0 FIELD ACTIVITIES

The following sections detail the methodologies used for geoprobe drilling, sampling, and piezometer installation. A geologist from SAIC was on site at all times during operations. No drilling activities were undertaken until all utility clearances and permits had been obtained from Fort Stewart's utility personnel.

2.1 Subsurface Soil Sampling

2.1.1 Geoprobe Drilling

The geoprobe method was used during the project for collecting soil samples. During all geoprobe drilling, soil samples were collected continuously on 4.0-foot centers from the ground surface to the bottom of the borehole. The total depth of each borehole was dictated by the depth where the water table was encountered.

2.1.2 Sample Collection

Soil samples for chemical analyses were collected from boreholes using 4.0-foot macro-core samplers. Upon retrieving the sampling device, the soil core was split into two 2.0-foot sections using a stainless steel knife. A portion of each 2.0-foot section was collected for possible laboratory analysis. The remaining portion of each 2.0-foot section was used for field measurements.

Samples designated for possible laboratory analysis were collected from the section using a stainless steel spoon. The spoon was run lengthwise down the core to collect a sample representative of the entire core section. The portion of the sample designated for volatile organic analyses was placed into laboratory sample containers first, followed by placement of the remaining portion of the sample into the containers designated for other types of analyses. Sample containers designated for volatile organic analyses were filled so that minimal headspace was present in the containers. Headspace gas concentration measurements were made using a field organic vapor meter (OVM). Initially, soil from each 2.0-foot interval was placed into a glass jar, leaving some air space, and covered with aluminum foil to create an air-tight seal. The sample was allowed to volatilize for a minimum of 15 minutes. The sealed jar was punctured with the OVM probe and headspace gas drawn until the meter reading was stable. The concentration of the headspace gas was recorded to the nearest 0.1 part per million.

Immediately after collecting each sample and completing bottle label information, each potential analytical sample container was placed into an ice-filled cooler to ensure preservation. A clean split-barrel sampling device was used to collect soil core from each interval of the project boreholes. Information regarding the criteria for selection of soil samples for off-site shipment to a laboratory for chemical analysis is presented

in Section 3.1.3 of the project Work Plan. Soil samples, which were not selected for laboratory analysis, were disposed of as investigation-derived waste (IDW).

2.2 Groundwater Sampling

2.2.1 Groundwater Collection

Groundwater samples were collected from geoprobe boreholes installed during Preliminary Groundwater and CAP-Part A investigations using a geoprobe sampler or from temporary piezometers. The geoprobe sampler is a probe that allows the collection of a groundwater sample from a discrete undisturbed depth interval in a soil boring. Temporary piezometers were constructed of 1.0-inch inside diameter (ID) polyvinyl chloride (PVC) casing with a 5-foot or 10-foot screened interval. These piezometers were installed in the open borehole following completion of all drilling activities.

Each soil borehole was advanced to the top of the water table using direct push methods. For each borehole, the geoprobe sampler was lowered to the bottom of the borehole and driven through the undisturbed soil to a depth of approximately 3.0 feet below the water table. The outer casing of the geoprobe sampler was retracted to expose the screen and allow groundwater to enter the chamber. In cases where the geoprobe sampler could not be driven or where groundwater recovery through the geoprobe sampler was poor, the groundwater sample was collected through the temporary piezometer.

Groundwater samples were collected using a peristaltic pump or a 0.75-inch diameter stainless steel bailer. The portion of the sample designated for volatile organic analysis was poured into laboratory sample containers first, followed by pouring of the remaining sample portion into containers designated for other types of chemical analyses. Sample containers designated for volatile organic analysis were filled so that no headspace was present in the containers.

2.2.2 Field Measurements

Groundwater field measurements performed during the project included measurement of static groundwater level, pH, specific conductance, and temperature. Measurement of groundwater levels in soil boreholes was accomplished through the installation of temporary PVC piezometers. A summary of the procedures and criteria to be used for groundwater sample field measurements is presented in the following sections.

Static Groundwater Level

Static groundwater level measurements were made using an electronic water level indicator. Initially, the indicator probe was lowered into each temporary piezometer casing until the alarm sounded and/or the indicator light illuminated. The probe was withdrawn several feet and slowly lowered again until the groundwater surface was contacted as noted by the alarm and/or indicator light. Water level measurements were estimated to the nearest 0.01 foot based on the difference between the nearest probe cord mark to the top of the piezometer casing.

The distance between the top of casing and the surrounding ground surface was taken into account in measuring the water level to within 0.01 foot. The static water level measurement procedure was repeated two or three times to ensure that the water level measurements were consistent (plus or minus 0.01 foot). If this was the case, then the first measured level was recorded as the depth to groundwater. If this was not the case, the procedure was repeated until consistent readings were obtained from three consecutive measurements.

pH, Specific Conductance, and Temperature

The pH, specific conductance, and temperature measurements were recorded for groundwater during groundwater sampling. The pH, temperature, and conductivity measurements were made using a combination meter designed to measure these parameters. A portion of each groundwater sample was retrieved from the PowerPunch sampler and poured into the collection cup. With the combination meter set in the pH mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. The sample pH was recorded to the nearest 0.1 pH unit. The pH measurement procedure was repeated, using a new sample each time, until the pH measurements were consistent (less than 0.2 pH units variation).

Upon completion of the pH measurement, conductivity and temperature measurements were made on a groundwater sample collected in the same manner as described above. With the combination meter set in the conductivity mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. Concurrently, a temperature probe was placed into the sample and allowed to reach equilibrium. The sample conductivity was recorded to the nearest 10 mmhos/cm and the temperature to the nearest 0.1° C. All recorded conductivity values were converted to conductance at 25° C. The conductivity and temperature measurement procedure was repeated a minimum of three times using a new sample each time, until the measurements are consistent (less than 10 percent variation for conductance and less than 0.5° C variation for temperatures).

2.3 Temporary Piezometer Installation

Following the collection of the groundwater sample, a 1.0-inch PVC piezometer, with a 5-foot or 10-foot screened section, was installed in the borehole to prevent the borehole from collapsing. These piezometers remained in the boreholes approximately 24-hours, after which time the static water level was measured.

2.4 Borehole Abandonment

Once the static water level was measured, the temporary piezometers were removed and the boreholes were abandoned. Abandonment was conducted in a manner precluding any current or subsequent fluid media from entering or migrating within the subsurface environment along the axis or from the endpoint of the borehole. Abandonment was accomplished by filling the entire volume of the borehole with grout.

2.5 Surveying

A topographic survey of the horizontal and vertical locations of all soil boreholes was conducted after completion of all field activities. The topographic survey was conducted by a surveyor registered in the State of Georgia.

The horizontal coordinates for each soil borehole were surveyed to the closest 1.0 foot and referenced to the State Plane Coordinate System. Ground elevations were surveyed to the closest 0.1 foot. Elevations were referenced to the National Geodetic Vertical Datum of 1983.

2.6 Decontamination Procedures

2.6.1 Geoprobe Equipment

Decontamination of equipment used for the drilling of boreholes was conducted within the temporary decontamination pad constructed at the central staging area. The decontamination pad was constructed so that all decontamination liquids were contained from the surrounding environment and were recovered for disposal as IDW. The entire geoprobe vehicle and equipment was decontaminated once it arrived on site and the geoprobe sampling equipment was decontaminated after completion of each soil borehole. The equipment was decontaminated by removing the caked soil material from the exterior of equipment using a rod and/or brush, steam cleaning the interior and exterior of equipment, allowing the equipment to air dry as long as possible, and wrapping or covering the equipment in plastic.

2.6.2 Sampling Equipment

Decontamination of equipment used for soil sampling and collection of groundwater samples was conducted at the temporary decontamination area. Nondedicated equipment was decontaminated after each use. The sampling equipment was washed with potable water and phosphate-free detergent using various types of brushes required to remove particulate matter and surface films, followed by a potable water rinse, ASTM Type I or equivalent water rinse, isopropyl alcohol rinse, ASTM Type I or equivalent water rinse, allowed to air dry, and wrapped in plastic or aluminum foil.

In addition to the sampling equipment, field measurement instruments were also decontaminated between uses. Only those portions of each instrument that come into contact with potentially contaminated environmental media were decontaminated. Because of the delicate nature of these instruments, the decontamination procedure only involved initial rinsing of the instrument probes with ASTM Type I or equivalent water.

2.7 Documentation of field activities

All information pertinent to sampling activities, including instrument calibration data, was recorded in field logbooks. The logbooks were bound and the pages consecutively numbered. Entries in the logbooks were made in black permanent ink and included, at a minimum, a description of all activities, individuals involved in drilling and sampling activities, date and time of drilling and sampling, weather conditions, any problems encountered, and all field measurements. Sufficient information was recorded in the logbooks to permit reconstruction of all sampling activities.

3.0 SAMPLE HANDLING AND ANALYSIS

3.1 Analytical Program

Soil samples were screened for the presence of volatile vapors using a organic vapor analyzer photoionization detector. The MiniRae was calibrated daily using 100 parts per million (ppm) isobutylene. The headspace of each sample was measured approximately 15 minutes after collection.

For sites where the UST had contained waste oil, soil samples were analyzed for BTEX by method SW846-8020, PAH by method SW846-8270, and TPH by method SW846-9073. Groundwater samples were analyzed for BTEX by method SW 846-8240 and PAH by method SW 846-8270. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

For sites where the UST had contained gasoline or diesel, soil samples were analyzed for BTEX by method SW 846-8020, PAH by method SW 846-8270, and TPH by method SW 846-8015 (modified). Groundwater samples were analyzed for BTEX by method SW 846-8240 and PAH by method SW 846-8270. TPH analysis included both gasoline range organics and diesel range organics. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

Duplicate samples of soil and groundwater were collected throughout the project and represented approximately 10 percent of the total sample population. Rinsate blanks were collected to determine whether the sampling equipment was causing cross-contamination of the samples and represented approximately 5 percent of the total sample population. Duplicates and rinsates were submitted to General Engineering Laboratories, Charleston, South Carolina.

3.2 Sample Containers, Preservation, and Holding Times

The soil sample containers, preservatives, and holding times are summarized in Table A-1. The groundwater sample containers, preservatives, and holding times are summarized in Table A-2.

3.3 Sampling Packaging and Shipment

Each sample container was labeled, taped shut with electrical tape (except those containing samples designated for volatile organic analysis), and an initialed/dated custody seal was placed over the lid. Each sample bottle was placed into a separate plastic bag and sealed. The samples were placed upright in thermally insulated rigid-body coolers and surrounded by vermiculite to prevent breakage during shipment. In addition, samples were cooled to approximately 4° C with wet ice. These measures were taken to slow the decomposition and volatilization of contaminants during shipping and handling. The sample coolers were shipped to the analytical laboratory via courier service provided by the laboratory.

Table A-1. Summary of Sample Containers, Preservation Techniques, and Holding Times for Soil Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
TPH-GRO	use same container as BTEX	20 g	Cool, 4°C	14 d
PAHs	1 – 8 oz jar with Teflon®-lined cap	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH-DRO	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
Metals (lead)	use same container as PAHs	20 g	Cool, 4°C	180 d

Table A-2. Summary of Sample Containers, Preservation Techniques, and Holding Times for Groundwater Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX	2 – 40 mL glass vials with Teflon®-lined septum (no headspace)	40 mL	Cool, 4°C HCl to pH < 2	14 d
PAHs	2 – 1L amber glass bottle with Teflon®-lined lid	1000 mL	Cool, 4°C	7 d (extraction) 40 d (analysis)

ATTACHMENT B

REFERENCES

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Anderson Columbia Environmental Inc., 1996. Closure Report, Waste Oil Tank, Building P430, Tank 261, Facility ID: 9-089118, Fort Stewart, Georgia, October.

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.

Geraghy and Miller, 1993. RCRA Facility Investigation Work Plan, Fort Stewart, Georgia.

Looper, Edward E., 1980. Soil Survey of Liberty and Long Counties, Georgia, U.S. Department of Agriculture, Soil Conservation Service.

Metcalf and Eddy, 1996. Final Work Plan for RCRA Facility Investigation at Bulk Fuel Storage System, Wright Army Airfield, Fort Stewart, 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.

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Binder copy

DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

REPLY TO ATTENTION OF

MAR 19 1999

Directorate of Public Works

CERTIFIED MAIL

Georgia Department of Natural Resources
Environmental Protection Division
Underground Storage Tank Management Program
Attention: Ms. AJ McAllister, Environmental Specialist
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

Dear Ms. McAllister:

Fort Stewart is pleased to submit the Corrective Action Plan (CAP)-Part A for Underground Storage Tank (UST) #261, formerly located at Building 430, Facility Identification Number 9089118, Fort Stewart, Georgia.

This site is located greater than 500 feet from a withdrawal point for a public water supply and the area is considered to be of average or higher groundwater pollution susceptibility. Therefore, soil threshold levels for this site were taken from Georgia Department of Natural Resources Environmental Protection Division (GA EPD), Chapter 391-3-15, Table A, Column 2, and the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) were used for comparison to groundwater analytical data.

The contract to perform the field work at UST #261 was awarded prior to publication of the May 1998 CAP-Part A Guidance document. Therefore, analytical methods utilized during the CAP-Part A investigation were the old SW846 methods, not the new methods outlined in the Guidance Document, Underground Storage Tank Release: Corrective Action Plan-Part A, May 1998. However, even though the CAP-Part A was considered "underway" when the guidance document was released, the new (May 1998) CAP-Part A form and guidance document were utilized in preparation of this report.

Ms. Melanie Little, this directorate, discussed the issue of the new guidance with Mr. Michael Coughlan, GA EPD, during a September 1998 visit to Fort Stewart. At that time, Fort Stewart was directed to mention this fact in the respective cover letter for each affected CAP-Part A and to reference the "notice" dated May 18, 1998 from GA EPD, USTMP stating, "those CAP-Part A's which are already under development may be completed using the November 1995 Guidance Document." Again, since the contract had been awarded with the costs for the old SW846 methods, the only aspect of the May 1998

guidance document which was not adhered to were the sampling procedures. I hope this does not cause an inconvenience to you in your review.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) contamination was identified in groundwater, exceeding their respective MCLs. In addition, the vertical and horizontal extent of groundwater contamination was not determined during the CAP-Part A investigation. Therefore, Fort Stewart recommends that a CAP-Part B be prepared for the site, as outlined in Section II.D.8: *Conclusions and Recommendations*.

Fort Stewart, as noted under *Site Investigation Plan* Section IV.A.1 of the enclosed CAP-Part A, recommends combining the CAP-Part B investigation for this site and USTs #257 through #260 (Facility Identification Number 0890037). Although these former USTs are registered under separate facility identification numbers, the sites are located at the same facility (Building 430) and are located less than 60 feet from each other at the closest point. Fort Stewart proposes to submit one CAP-Part B Report which will address both facilities. For tracking purposes, two copies of the report will be submitted under each of the two facility identification numbers. A recommended Milestone Schedule is enclosed, and will be initiated by Fort Stewart unless otherwise directed by the Underground Storage Tank Management Program.

Finally, Fort Stewart recently submitted a Free Product Notification for Facility Identification Number 0890037. This was associated with the pipeline for USTs #257 through #260. However, since this is at the same Car Care Facility, Building 430, as the former UST#261, it has been provided herein for informational purposes only.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,

Thomas C. Fry 03/19/99
for Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosures

MILESTONE SCHEDULE

USTs #261, FACILITY ID. NO. 9089118

PROJECTED DATE*	EVENT
April 1999	Conduct CAP-Part B field work (NOTE: Facility Id. No. 0890037 and 9089118 will be combined for one CAP-Part B investigation and one CAP-Part B report since the sites are located less than 60 feet from each other at the closest point. However, two copies of the report will be submitted, one for each facility Id No.).
July 1999	Review Draft CAP-Part B.
October 1999	Fort Stewart submits one CAP-Part B for Facility Id. Nos. 0890037 **and** 9089118 to GA EPD, USTMP (two copies, one for each facility Id No.).

NOTE: * These dates are tentative and are based on a negotiated Contractor's schedule.

DEPARTMENT OF THE ARMY
HEADQUARTERS 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

MAR 15 1999

REPLY TO
ATTENTION OF

Directorate of Public Works

CERTIFIED MAIL

Z-098-024-647

Georgia Department of Natural Resources
Underground Storage Tank Management Program
Attention: Ms. A.J. McAllister
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

Dear Ms. McAllister:

On March 9, 1999, the Installation's contractor identified 2/8 of an inch of free product at monitoring well 76-19 installed for a Corrective Action Plan (CAP)-Part B investigation at former underground storage tanks #257-261, Building 430, Facility Identification Number 0-890037, Fort Stewart, Georgia.

Fort Stewart notified the Underground Storage Tank Management Program via e-mail (see attached) on March 10, 1999 concerning free product at this site. As stated in the e-mail correspondence, the well has been "socked" with absorbent material to initiate free product removal. Fort Stewart is evaluating the need for an active recovery system (i.e., Ferret System) and will document in the CAP-Part B for the site if a system is installed.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,

Thomas C. Fry 03/15/99
for Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosure

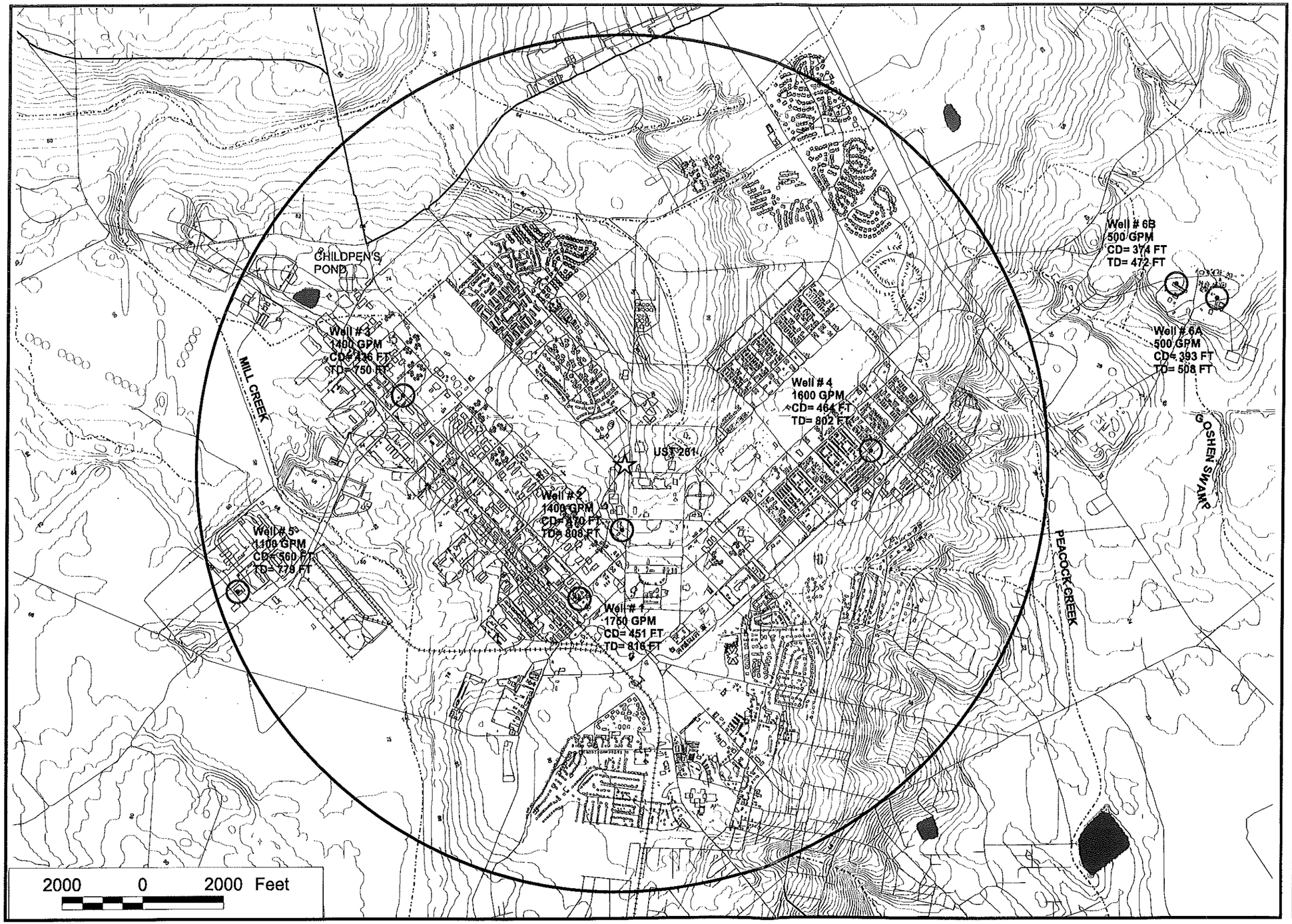
Rutland Tressa M DPW

From: LittleDERA@aol.com[SMTP:LittleDERA@aol.com]
Sent: Wednesday, March 10, 1999 10:50 AM
To: amy_mcallister@mail.dnr.state.ga.us
Cc: carl.w.smith@sas02.usace.army.mil; patricia.a.stoll@cpmx.saic.com; rutlandt@emh5.stewart.army.mil; sharon.l.stoller@cpmx.saic.com; sstoller@utk.edu
Subject: Free Product Notification (Bldg 430, Fort Stewart, Fac. Id. No. 0-890037)

A.J.,
On March 9, 1999 Fort Stewart identified 2/8" of product in monitoring well
76-19, located at Building 430, Facility Id. #0-890037, Fort Stewart, Georgia. We have been submitting notification of free product to GA EPD, USTMP via e-mail. If you would like an official correspondence, please let me know and we will send a letter this week.

An absorbent sock has been placed in the well and will be removed/replaced as necessary to "passively" remove product. Fort Stewart will evaluate the need for an active recovery system (i.e., Ferret System) and will document in the CAP-Part B for the site if a system is installed.

Please let me know if you need any additional information. Thanks, Melanie Little



Legend:

- 2 Mile Radius
- Surface Water (stream/river/drain)
- Contour (2 FT intervals)
- Road (primary)
- UST 261
- Water Supply Well with 500 FT Radius
  - CD Casing Depth
  - TD Total Depth
- Pond/Lake
- Building

NOTE:
Contours were created by Science Applications International Corporation (SAIC) from Digital Elevation Models translated from http://mapping.usgs.gov/, which were obtained from the following U.S.G.S. 7.5 minute Topographic Quad sheets: Hinesville, Walthourville, Taylors Creek, Trinity. Roads and County boundrys were translated from http://www.gis.state.ga.us/. Wells received by SAIC as Microstation files from Fort Stewart.

N

GA State Plane NAD83 (Feet)

SAIC
Science Applications International Corporation

UST 261 BLDG 430
FACILITY ID # 9-089118

REVISION	DRAWN BY:	CHKD BY:	DATE:
0	M. Norris	P. Stoll	11/20/98

FILE REFERENCES

Radius_Ellipse	2cttaylorsp83fts
Libertyroads83ft_Polyline	179cn_region
Libertywater83ft_polyline	Longarea83ft_region
2cthinesville83fts	
2cthinesville83ftsm	
BoundbryanCo_region	

SHT 1 of 1 — DRAWING #
G:\96016\FtStewart261APR — ARCVIEW PROJECT NAME

Figure 3. Map Showing Public and Private Drinking Water Sources and Surface Water Bodies at Fort Stewart, Liberty County, Georgia

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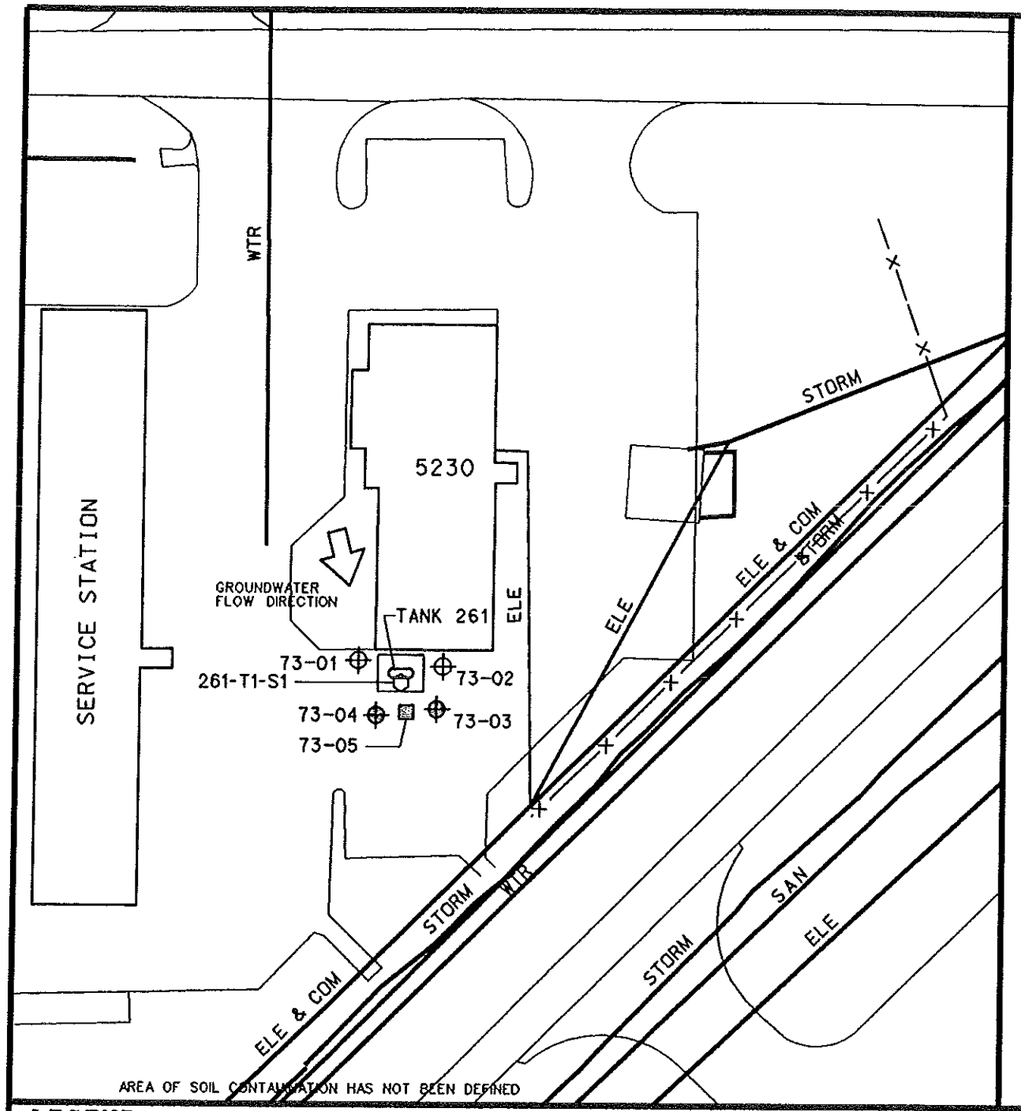
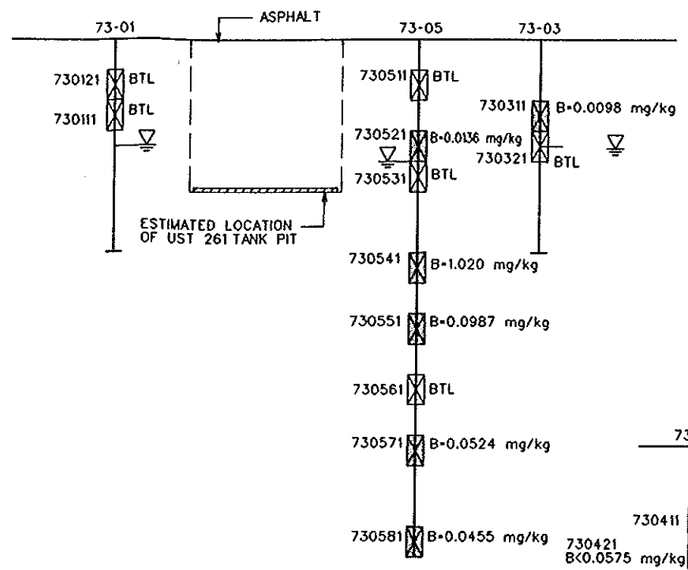
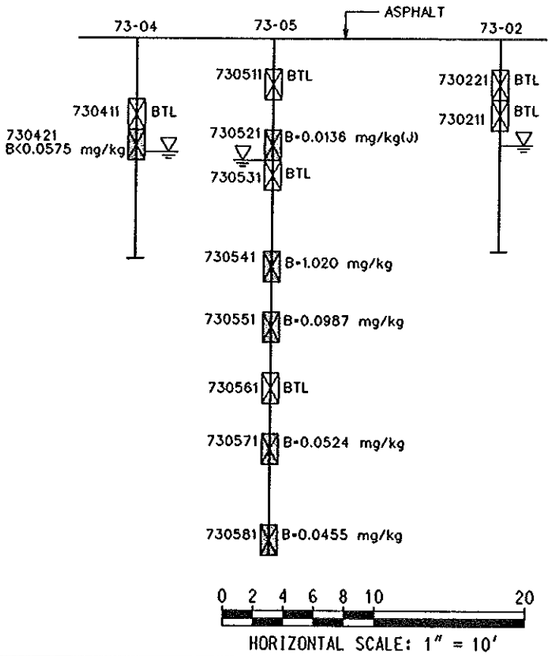




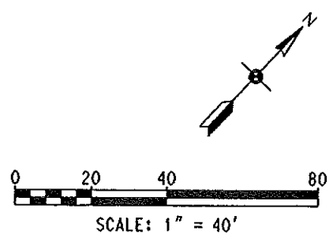


LEGEND

- CAP-PART A INVESTIGATION BOREHOLE
- SOIL SAMPLE LOCATION EXCEEDING THRESHOLD LEVELS
- TANK REMOVAL SAMPLE LOCATION
- CAP PART A VERTICAL PROFILE WITH SOIL SAMPLES EXCEEDING THRESHOLD LEVELS
- SOIL SAMPLE INTERVAL AND SAMPLE ID
- SOIL SAMPLE INTERVAL EXCEEDING THRESHOLD LEVELS
- ESTIMATED LIMIT OF SOIL CONTAMINATION

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES, TOTAL
BTL	BELOW THRESHOLD LEVELS
	APPROXIMATE WATER LEVEL

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



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

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

UST 261, BLDG 430
FACILITY ID # 9-089118
SOIL SAMPLING LOCATIONS & ANALYTICAL RESULTS

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/08/28/98	96016/DGNS/B99C041D.DGN

Figure 4. Soil Quality Map of the UST 261, Building 430 Site

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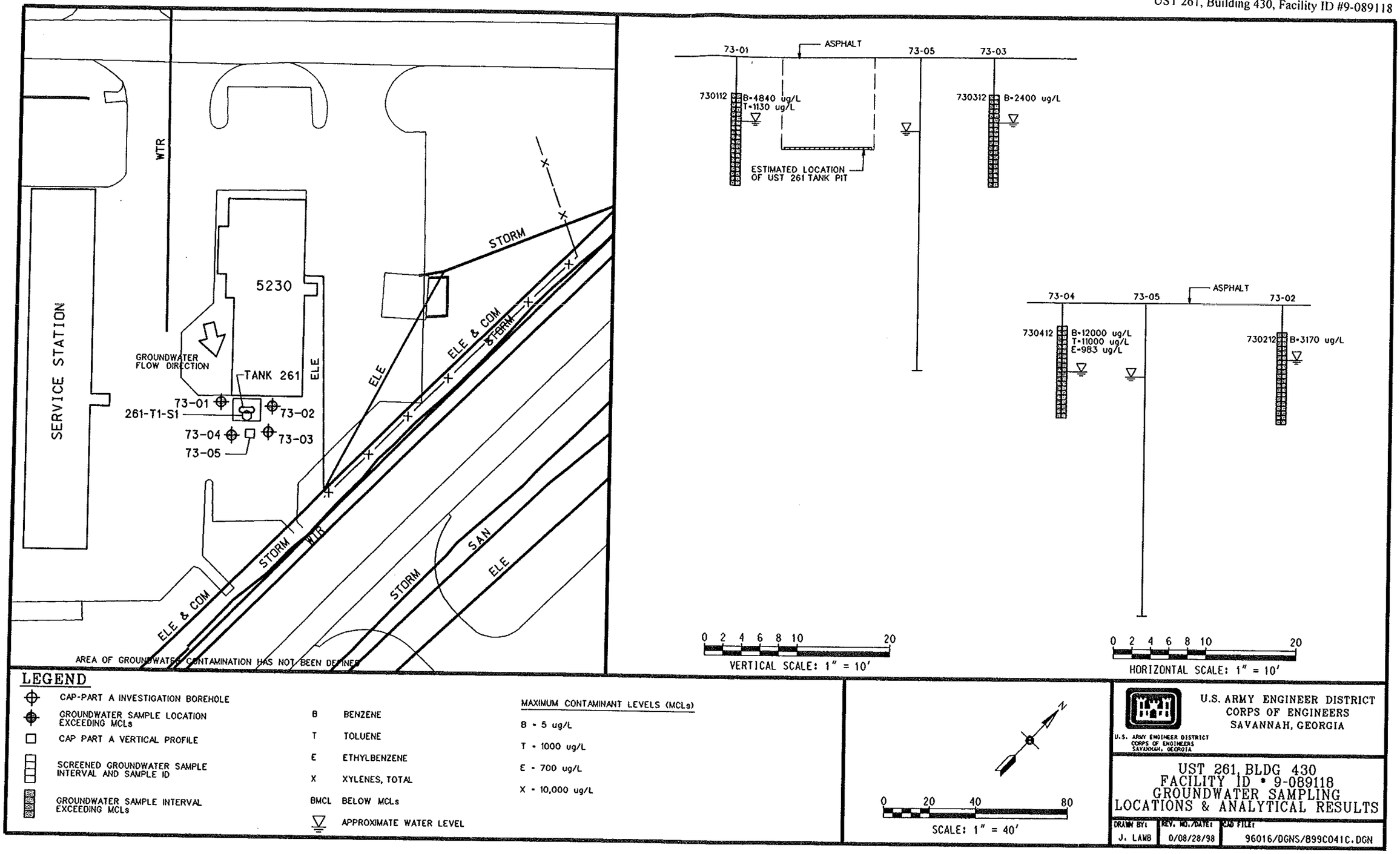

Figure 5. Groundwater Quality Map of the UST 261, Building 430 Site

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