FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANKS 63 & 64
FACILITY ID #9-089051
BUILDING 1128
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 37830

August 1999

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limits
AMSL	above mean sea level
ARAR	applicable, relevant, and appropriate requirement
ASTM	American Society for Testing and Materials
ATL	alternate threshold level
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
BTOC	below top of casing
CAP	Corrective Action Plan
COCs	chemicals of concern
DAF	dilution-attenuation factor
DPW	Directorate of Public Works
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
GA EPD	Georgia Environmental Protection Division
GRO	gasoline-range organics

HQ	hazard quotient
ID	inside diameter
IDW	investigation-derived waste
MCL	maximum contaminant level
MSL	mean sea level
ND	not detected
NRC	no regulatory criteria
OVA	organic vapor analyzer
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
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

CORRECTIVE ACTION PLAN PART A

Facility Name: USTs 63 & 64, Building 1128 Street Address: Utility Street (DPW Complex)

Facility ID: 9-089051 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 16′ 20″ Longitude: 82° 06′ 14″

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) 767-2010	Telephone: (423) 481-8792

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: 09/07/99

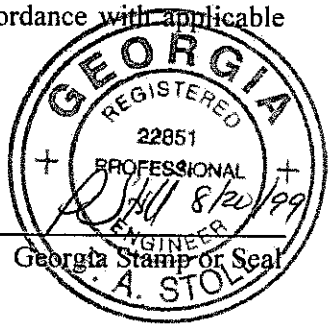
B. Registered Professional Engineer or Professional Geologist Certification

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: 8/20/99



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 USTs 63 & 64 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 USTs 63 & 64.

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
63	5000	gasoline	3/4/93
64	1000	used oil	3/4/93

Note: The tanks were located in the same general area and registered under the same facility ID number; however, they were not colocated. UST 63 was a dispensing unit for DPW vehicles, and UST 64 collected used oil from Building 1128.

D. Initial Site Characterization

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

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

Anderson Columbia Environmental, Inc. (ACE) initiated characterization of petroleum-related contamination at the site during UST system closure activities on March 4, 1993. After removing each tank, one groundwater sample was collected from each tank pit (Figure 7). No BTEX compounds were detected in the two groundwater samples. However, the detection limit for all BTEX compounds was 200 µg/L, which exceeds the MCL for benzene. No soil samples were collected during the tank removal activities.

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 USTs 63 & 64 and ancillary piping as configured during operation is presented in Figure 2. The Closure Report prepared by ACE in 1993 indicated that UST 63 was the source of contamination.

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:*	2500	*feet*
ii. *Nearest down-gradient public water supply located within:*	7500	*feet*
iii. *Nearest non-public water supply located within:*	>10,560	*feet*
iv. *Nearest down-gradient non-public water supply located within:*	>10,560	*feet*

c. *Surface Water Bodies and sewers:*

i. *Nearest surface water located within*	2700	*feet*
ii. *Nearest down-gradient surface water located within*	3700	*feet*
iii. *Nearest storm or sanitary sewer located within:*	N/A	*feet*
iv. *Depth to bottom of sewer at a point nearest the plume*	N/A	*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 1.5- or 2.0-foot intervals during the installation of six 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 BTEX, TPH-DRO, TPH-GRO, and PAH. In boreholes where organic vapors were detected, one sample was collected from the sample interval where the highest vapor concentration was recorded, and the other from the deepest sample interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the sample interval nearest the midpoint of the boring, and the other from the sample 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.

In June 1998, boring 92-02 contained an elevated benzene detection limit of 0.0116 mg/kg in a soil sample located at 4.0 – 6.0 ft BGS. This detection slightly exceeded the soil threshold level of 0.008 mg/kg. Eleven of the 12 soil samples collected contained low concentrations of toluene at one to two orders of magnitude below the toluene soil threshold level.

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 borings, one groundwater sample was collected from the temporary piezometer screened from ground surface to approximately 5.0 feet below the water table. At the vertical profile locations (92-05, 92-08), groundwater samples were collected every 5 feet below the water table until several groundwater 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 ____ NO X

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

YES ____ NO X

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

The detection limit associated with the two closure groundwater samples was 200 µg/L. These samples were collected from each of the tank pits. During the CAP-Part A investigation, borings 92-01, 92-02, and 92-08 were located in the former UST 63 tank pit, and borings 92-03 and 92-04 were located in the former UST 64 tank. Groundwater samples from these borings did not indicate the presence of benzene and concentrations of toluene, ethylbenzene, and xylenes were below MCLs. Since the CAP-Part A data was also taken from the tank pits, this data should supercede the closure data because it is more reflective of current site conditions.

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):* 6.76 – 10.3 *(Table 4: Groundwater Elevations)*
b. *Groundwater Flow Direction:* northwest *(Figure 6: Potentiometric Surface Map)*
c. *Hydraulic Gradient* 0.0029 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 USTs 63 & 64 on March 4, 1993. The respective UST piping was drained into each tank, and all used oil and gasoline were subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. All lines were capped except the fill and vent. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped and the tanks were lifted from the excavation pit. At UST 63, the ancillary piping and associated dispenser located on top of the tank were removed. At UST 64, the ancillary piping was removed to Building 1128, and the end was grouted.

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:

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 Closure Report was not submitted to GA EPD in 1993 because review of the closure analytical data indicated that a CAP-Part A would be required (i.e., per requirements of GUST-9, Item 15, page 12, dated August 1995). However, all pertinent information (i.e., copies of analytical data and maps) presented in the Closure Report are provided in this CAP-Part A Report. The records regarding the excavation of contaminated soil at the site indicate that approximately 15 cubic yards were removed but are insufficient to determine specific quantities from each tank pit. All soil excavated in 1993 (USTs 54 & 55, USTs 63 & 64, USTs 248 & 249, USTs 255 & 256, USTs 257–260) was stockpiled at a central location and transported to Kedesh, Inc., at the end of the project. Disposal manifests under this project have been archived and can be made available upon request.

7. Site Ranking:

Environmental Site Sensitivity Score: 260 (based on closure groundwater data)
10 (based on CAP-Part A groundwater data)

(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 ____

(provide justification)

One soil sample contained an elevated detection limit of 0.0116 mg/kg, otherwise, there is no soil contamination in excess of applicable GUST soil threshold levels (i.e. Table A, Column 2). No BTEX concentrations in groundwater exceeded their respective MCLs during the CAP-Part A investigation. The horizontal and vertical extent of groundwater contamination was determined during the CAP-Part A investigation. The storm drain is located approximately 520 feet from the tank pit. The site ranking score was determined to be 10, based on CAP-Part A investigation results.

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

(provide justification)

c. CAP-B (if applicable) N/A X

(provide justification)

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 X
(Figure 8: Proposed additional boring/monitoring well location)

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

1. Soil N/A X

2. Groundwater

   a. Free Product N/A X

   b. Dissolved phase N/A X

3. Surface Water N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

Additional vadose zone and aquifer characteristics were collected as part of the CAP-Part A investigation, thus no additional data is required.

V. PUBLIC NOTICE

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

USTs 63 & 64 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 Georgia Environmental Protection Division (GA EPD) guidance by publishing an announcement in the *Savannah Morning News* on June 27 and July 4, 1999.

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 USTs 63 & 64, Building 1128, Facility ID #9-089051, using Department of Defense 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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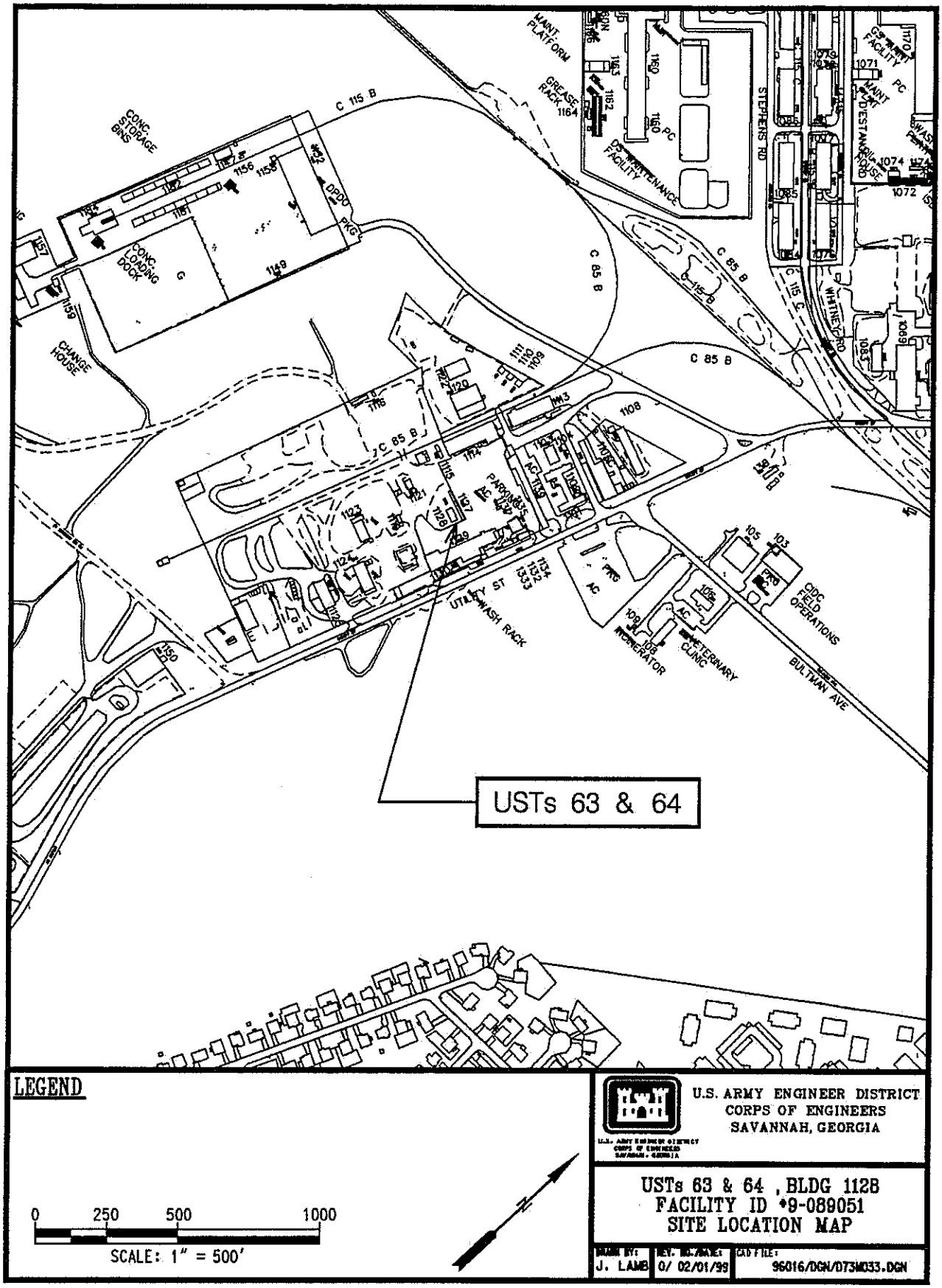

Figure 1. Location Map of USTs 63 & 64, Fort Stewart, Liberty County, Georgia

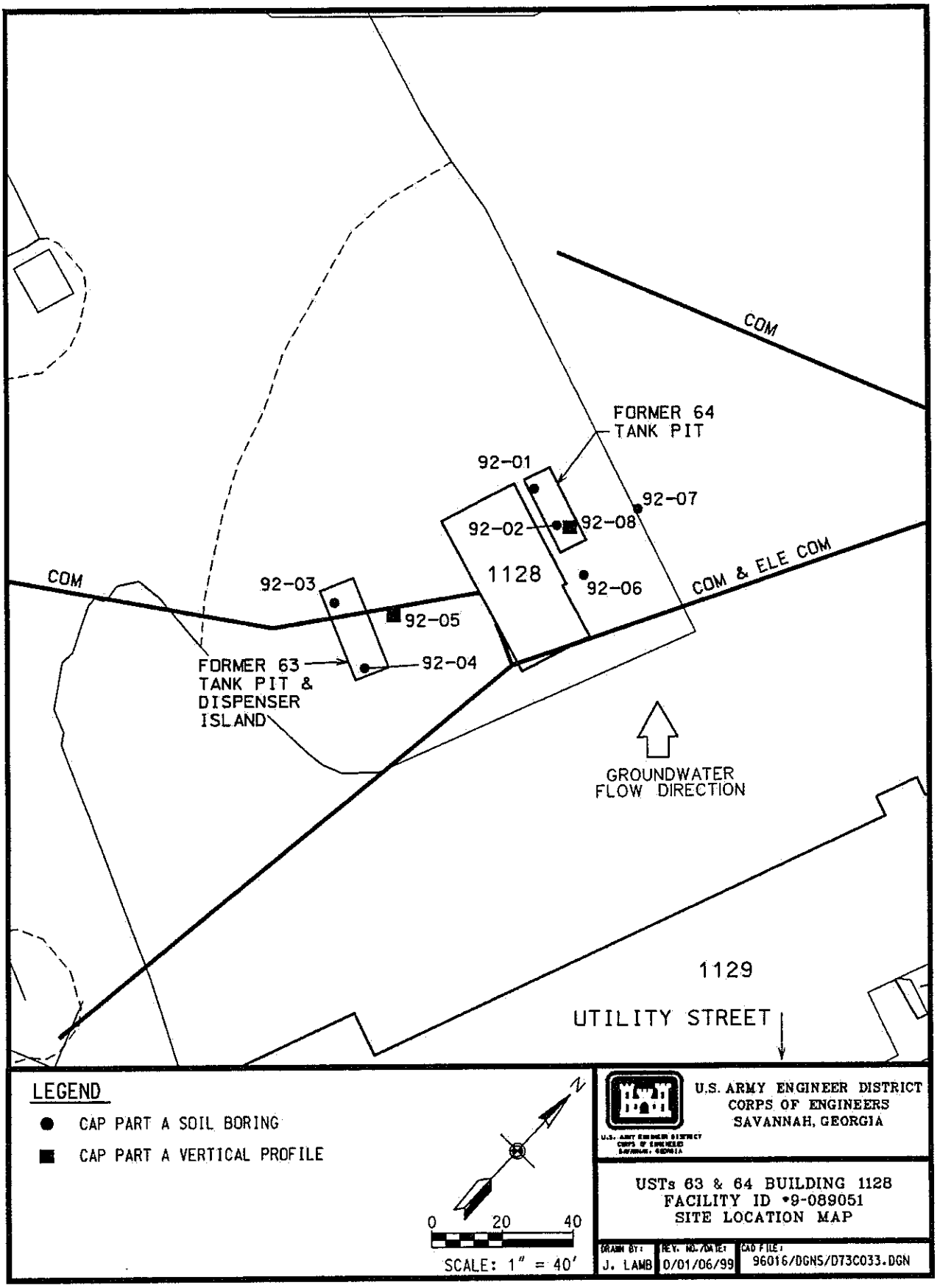

Figure 2. Site Plan for the USTs 63 & 64 Site Investigation

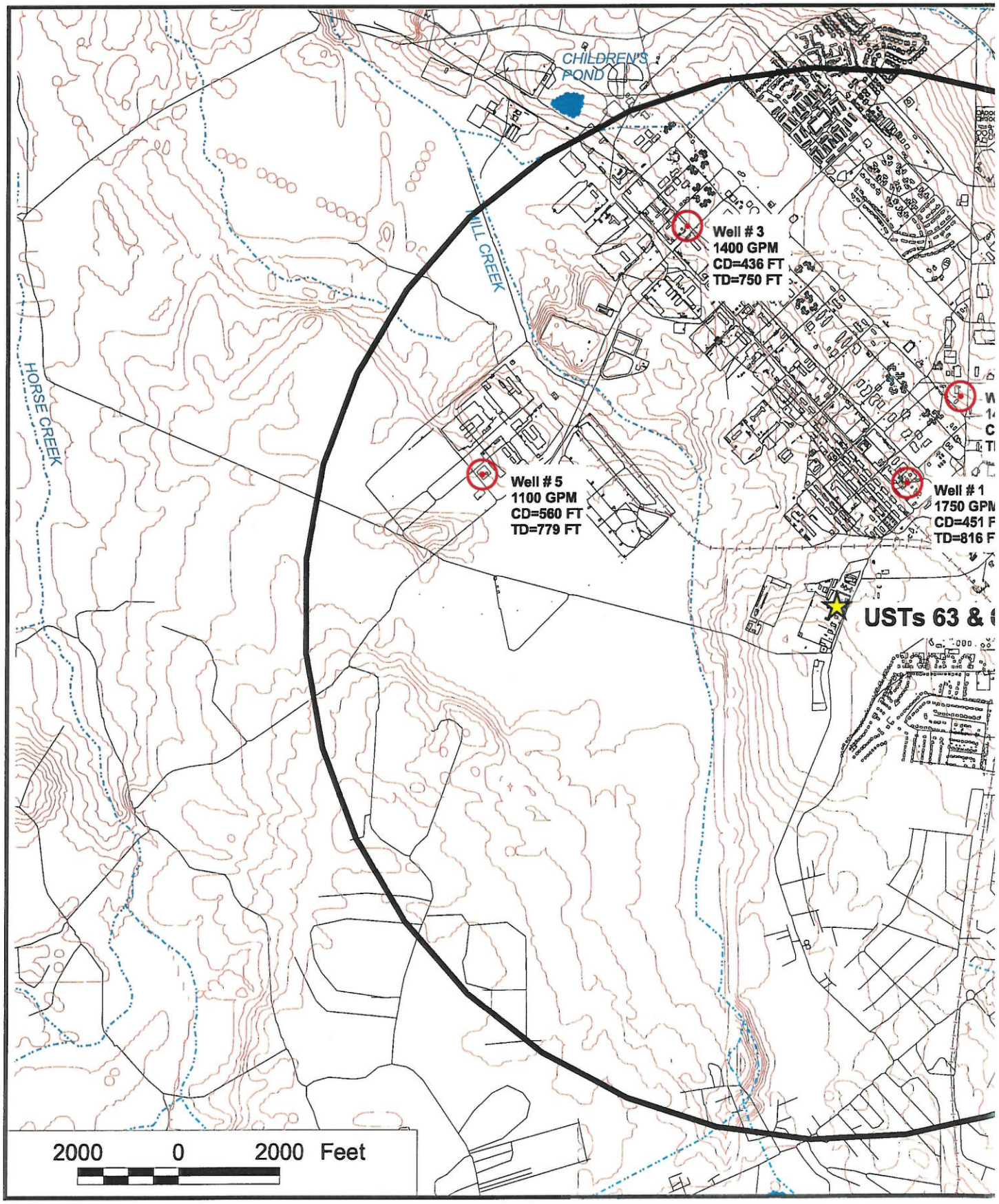

Figure 3. Map Showing Public and Private
Bodies at Fort Stewart,

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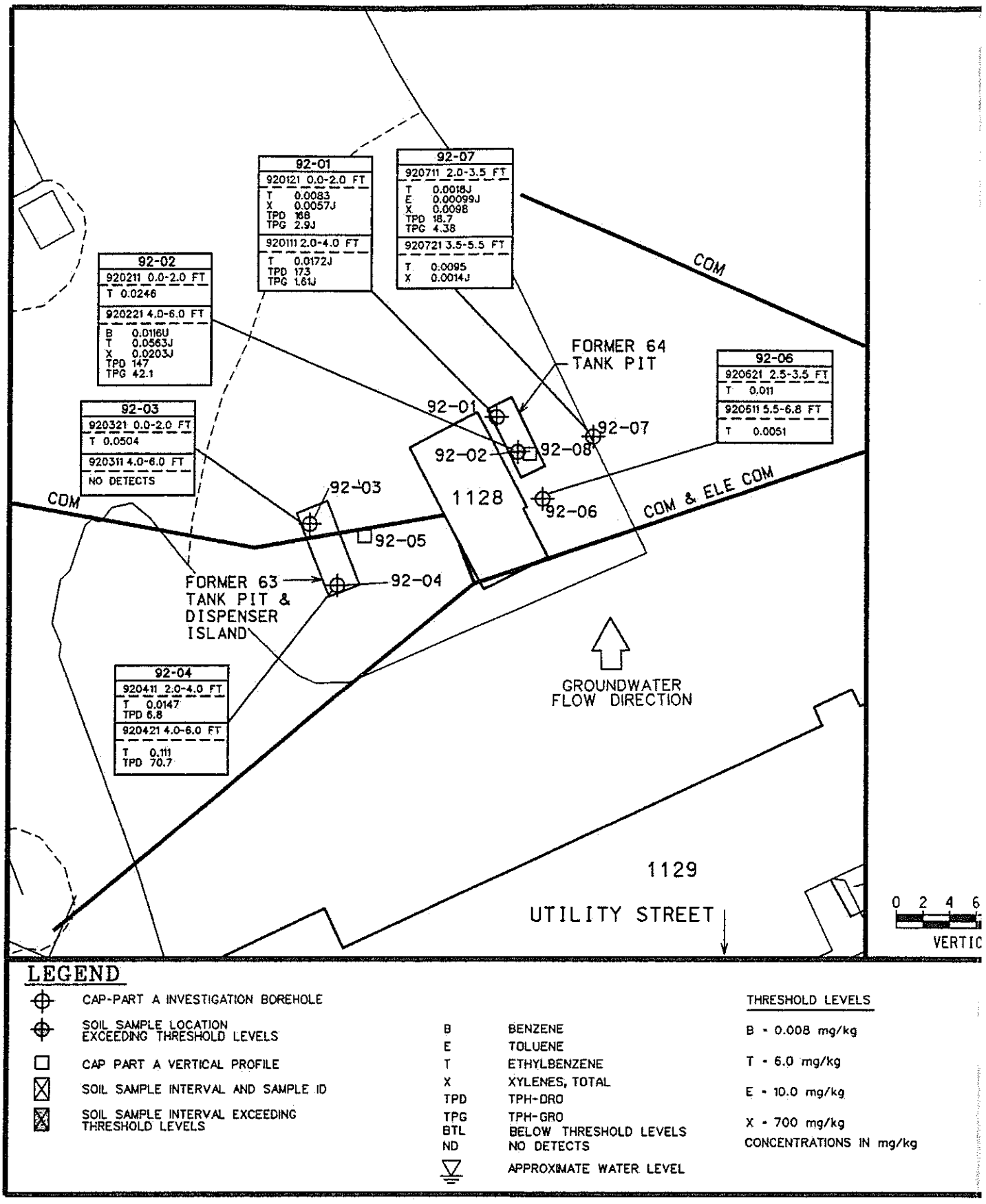

LEGEND

- CAP-PART A INVESTIGATION BOREHOLE
- SOIL SAMPLE LOCATION EXCEEDING THRESHOLD LEVELS
- CAP PART A VERTICAL PROFILE
- SOIL SAMPLE INTERVAL AND SAMPLE ID
- SOIL SAMPLE INTERVAL EXCEEDING THRESHOLD LEVELS

B	BENZENE
E	TOLUENE
T	ETHYLBENZENE
X	XYLENES, TOTAL
TPD	TPH-DRO
TPG	TPH-GRO
BTL	BELOW THRESHOLD LEVELS
ND	NO DETECTS

APPROXIMATE WATER LEVEL

THRESHOLD LEVELS

B - 0.008 mg/kg

T - 6.0 mg/kg

E - 10.0 mg/kg

X - 700 mg/kg

CONCENTRATIONS IN mg/kg

Figure 4. Soil Quality M

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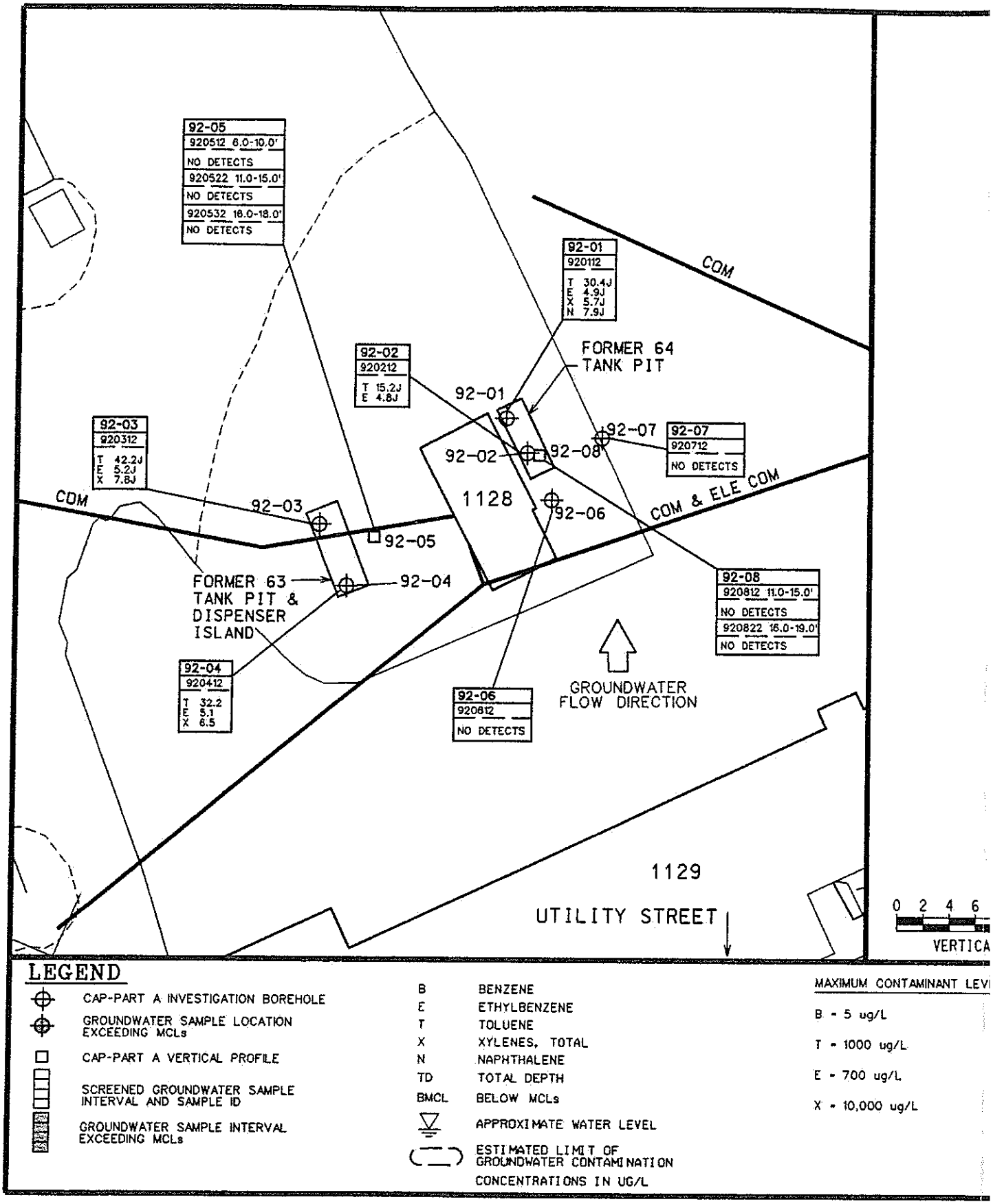

Figure 5. Groundwater Quali

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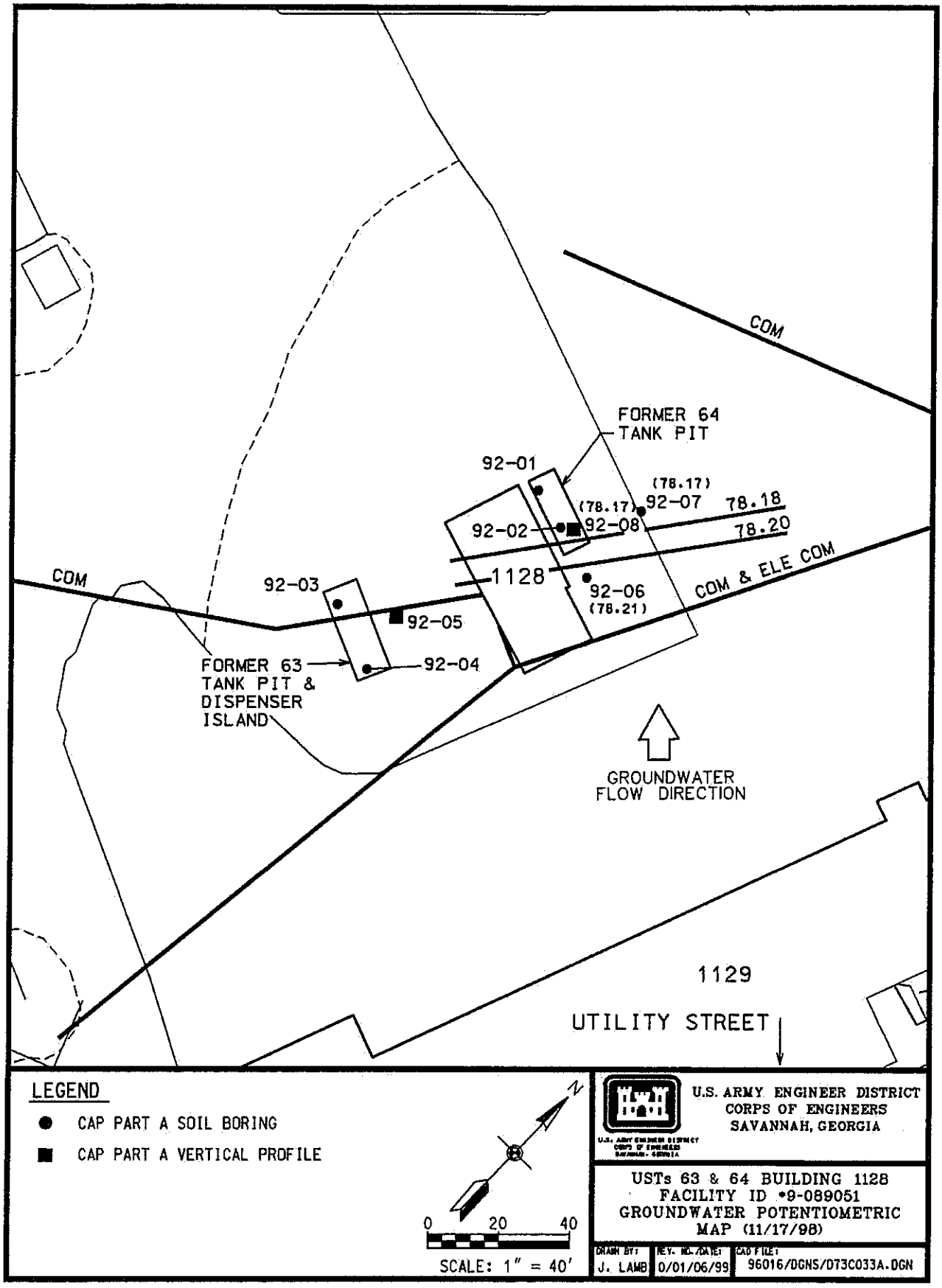

Figure 6. Potentiometric Surface Map of the USTs 63 & 64 Site

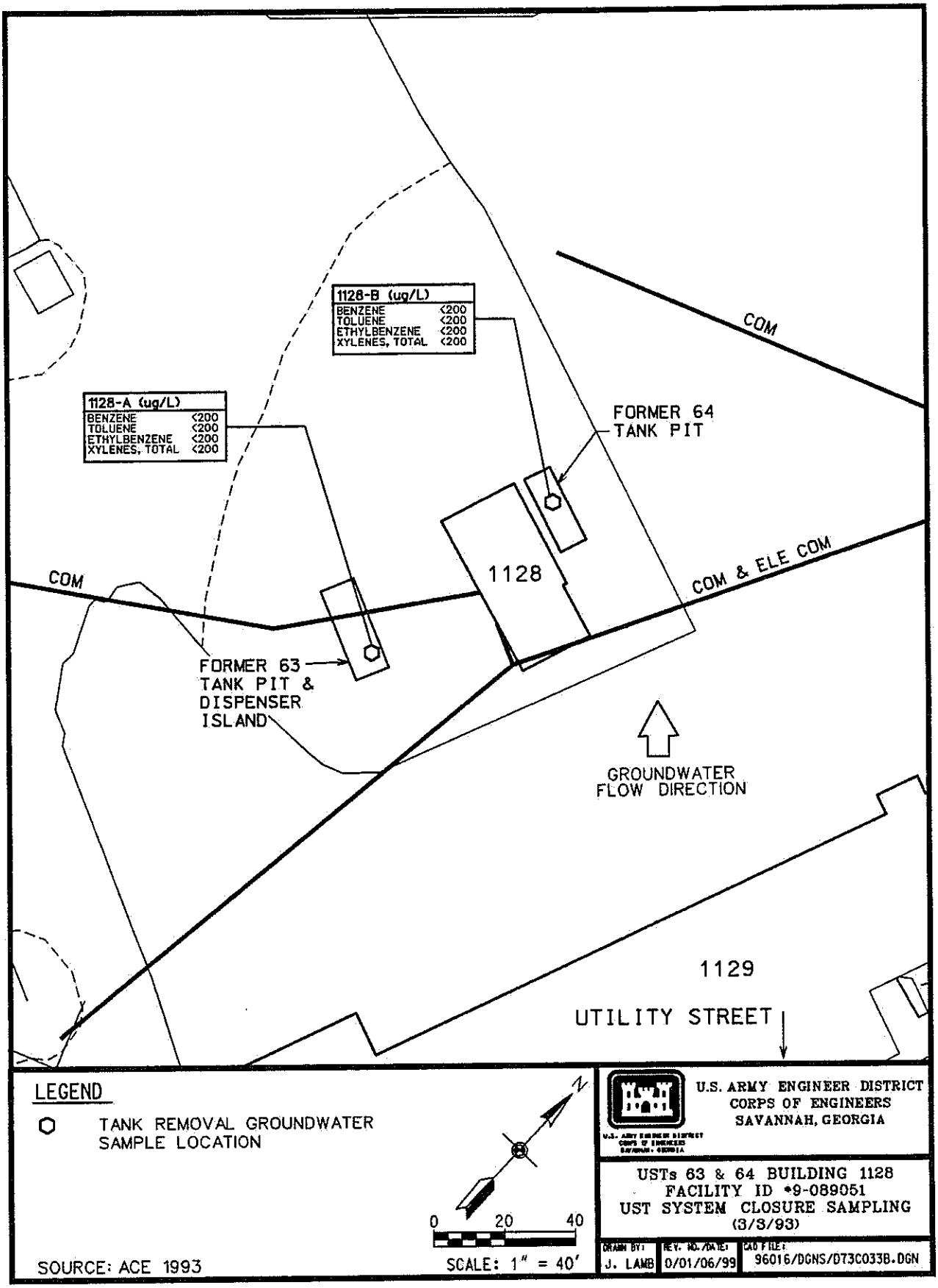

Figure 7. UST System Closure Sampling Locations at the USTs 63 & 64 Site

No additional borings or monitoring wells are proposed for this site.

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)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)
92-01	920111	2.0 - 4.0	06/30/98	0.0044 U	0.0172 J	0.0044 U	0.0034 U	0.0172	173 =	1.61 J
92-01	920121	0.0 - 2.0	06/30/98	0.0021 U	0.0083 =	0.0021 U	0.0057 J	0.014	168 =	2.9 J
92-02	920211	0.0 - 2.0	06/28/98	0.0022 U	0.0246 =	0.0022 U	0.0067 U	0.0246	3.5 U	1.12 U
92-02	920221	4.0 - 6.0	06/28/98	0.0116 U	0.0563 J	0.0116 U	0.0203 J	0.0766	147 =	42.1 =
92-03	920311	4.0 - 6.0	06/29/98	0.0022 U	0.0022 U	0.0022 U	0.0066 U	ND	1.4 U	1.1 U
92-03	920321	0.0 - 2.0	06/29/98	0.0021 U	0.0504 =	0.0021 U	0.0062 U	0.0504	2.8 U	1.04 U
92-04	920411	2.0 - 4.0	06/29/98	0.0022 U	0.0147 =	0.0022 U	0.0064 U	0.0147	6.8 =	1.08 U
92-04	920421	4.0 - 6.0	06/29/98	0.0022 U	0.111 =	0.0022 U	0.0065 U	0.111	70.7 =	1.09 U
92-06	920611	5.5 - 6.8	11/12/98	0.0024 U	0.0051 =	0.0024 U	0.0035 U	0.0051	0.95 U	0.0588 U
92-06	920621	2.5 - 3.5	11/12/98	0.0022 U	0.011 =	0.0022 U	0.0033 U	0.011	1.2 U	0.109 UJ
92-07	920711	2.0 - 3.5	11/12/98	0.0022 U	0.0018 J	0.00099 J	0.0098 =	0.01259	18.7 =	4.38 =
92-07	920721	3.5 - 5.5	11/12/98	0.0022 U	0.0095 =	0.0022 U	0.0014 J	0.0109	1.1 U	0.0556 U
Applicable Standards[1]				0.008	6	10	700	NRC	NRC	NRC

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

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

BGS Below ground surface

BTEX Benzene, toluene, ethylbenzene, and xylene

ND Not detected

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.

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

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

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)
92-01	920111	2.0 - 4.0	06/30/98						ND
92-01	920121	0.0 - 2.0	06/30/98						ND
92-02	920211	0.0 - 2.0	06/28/98						ND
92-02	920221	4.0 - 6.0	06/28/98						ND
92-03	920311	4.0 - 6.0	06/29/98						ND
92-03	920321	0.0 - 2.0	06/29/98						ND
92-04	920411	2.0 - 4.0	06/29/98						ND
92-04	920421	4.0 - 6.0	06/29/98						ND
92-06	920611	5.5 - 6.8	11/12/98						ND
92-06	920621	2.5 - 3.5	11/12/98						ND
92-07	920711	2.0 - 3.5	11/12/98						ND
92-07	920721	3.5 - 5.5	11/12/98						ND
Applicable Standards[1]									NRC

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
BGS Below ground surface
ND Not detected (refer to Appendix V, Table V-A, for complete list of PAH results)
NRC No regulatory criteria
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 (ug/L)	Toluene (ug/L)	Ethyl - benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
92-01	920112	0.0 - 10.0	06/30/98	2 UJ	30.4 J	4.9 J	5.7 J	41.0
92-02	920212	0.0 - 9.0	06/29/98	2 UJ	15.2 J	4.8 J	6 UJ	156.0
92-03	920312	1.0 - 11.0	06/29/98	2 UJ	42.2 J	5.2 J	7.8 J	55.2
92-04	920412	0.0 - 10.0	06/29/98	2 U	32.2 =	5.1 =	6.5 =	43.8
92-05	920512	6.0 - 10.0	06/29/98	2 U	2 U	2 U	6 U	ND
92-05	920522	11.0 - 15.0	06/29/98	2 U	2 UJ	2 UJ	6 UJ	ND
92-05	920532	16.0 - 18.0	06/29/98	2 U	2 U	2 U	6 U	ND
92-06	920612	0.0 - 9.3	11/12/98	2 U	2 U	2 U	3 U	ND
92-07	920712	0.0 - 8.5	11/12/98	2 U	2 U	2 U	3 U	ND
92-08	920812	11.0 - 15.0	11/13/98	2 U	2 U	2 U	3 U	ND
92-08	920822	16.0 - 19.0	11/13/98	2 U	2 U	2 U	3 U	ND
Applicable Standards[1]				5	700	1000	10000	NRC

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

[1] U.S. Environmental Protection Agency maximum contaminant level
BTEX Benzene, toluene, ethylbenzene, and xylene
BGS Below ground surface
ND Not detected
NRC No regulatory criteria

Laboratory Qualifiers

U Indicates 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 the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)				Total PAH (ug/L)
				Naphthalene				
92-01	920112	0.0 - 10.0	06/30/98	7.9 J				7.9
92-02	920212	0.0 - 9.0	06/29/98					ND
92-03	920312	1.0 - 11.0	06/29/98					ND
92-04	920412	0.0 - 10.0	06/29/98					ND
92-05	920512	6.0 - 10.0	06/29/98					ND
92-05	920522	11.0 - 15.0	06/29/98					ND
92-05	920532	16.0 - 18.0	06/29/98					ND
92-06	920612	0.0 - 9.3	11/12/98					ND
92-07	920712	0.0 - 8.5	11/12/98					ND
92-08	920812	11.0 - 15.0	11/13/98					ND
92-08	920822	16.0 - 19.0	11/13/98					ND
Applicable Standards[1]								NRC

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998; thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

1 U.S. Environmental Protection Agency maximum contaminant level
BGS Below ground surface
N/A Not analyzes, insufficient sample volume for analysis
ND Not detected (refer to Appendix VIII, Table VIII-A, for complete list of PAH results)
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates 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 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)
92-01	6/30/98	84.69	85.57	0.0 - 10.0	N/A	6.69	N/A	N/A	78.88
92-02	6/30/98	84.73	86.09	0.0 - 9.0	N/A	7.24	N/A	N/A	78.85
92-03	6/30/98	84.70	89.33	1.0 - 11.0	N/A	10.33	N/A	N/A	79.00
92-04	6/30/98	84.68	84.93	0.0 - 10.0	N/A	6.10	N/A	N/A	78.83
92-06	11/18/98	84.67	85.99	0.0 - 9.3	N/A	7.78	N/A	N/A	78.21
92-07	11/18/98	84.72	86.46	0.0 - 8.5	N/A	8.29	N/A	N/A	78.17
92-08	11/18/98	84.73	84.93	0.0 – 10.0	N/A	6.76	N/A	N/A	78.17

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)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
			No soil samples were collected.					
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)
			No soil samples were collected.				
Applicable Standards[2]							NRC

NOTE:

[1] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1993)
[2] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon
TPH Total petroleum hydrocarbons

Laboratory Qualifiers

U Indicates 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 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 (µg/L)	Toluene (µg/L)	Ethyl – benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
1128-A	unknown	3/3/93	200 U	200 U	200 U	200 U	ND
1128-B	unknown	3/3/93	200 U	200 U	200 U	200 U	ND
Applicable Standards[2]			5	1,000	700	10,000	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)
			Groundwater samples collected during UST closure activities were not analyzed for PAHs.				
Applicable Standards[2]							NRC

NOTE:

[1] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1993)
[2] U.S. Environmental Protection Agency maximum contaminant levels
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
NRC No regulatory criteria.
PAH Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

U Indicates 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 the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

1.0 LOCAL WATER RESOURCES

As required by the 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 Floridian) 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, which 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 USTS 63 & 64 SITE

A field potential receptor survey was conducted for the USTs 63 & 64 site in June 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 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 USTs 63 & 64 Site

The USTs 63 & 64 site is located approximately 2500 feet southwest (sidegradient) of Well #1. In the direction of groundwater flow, Well #3 is located approximately 7500 feet northwest of the site. Therefore, the USTs 63 & 64 site is classified as being located greater than 500 feet to a withdrawal point. There are no non-public supply wells located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the USTs 63 & 64 Site

At the closest point to the site, Mill Creek is located approximately 2700 feet west (sidegradient) of the site. In the direction of groundwater flow, a drainage ditch is located approximately 520 feet northwest of the site and Mill Creek is located approximately 3700 feet northwest of the 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.

2.3 Underground Utility Lines Near the USTs 63 & 64 Site

There are no underground utilities located downgradient of the site.

Science Applications International Corporation

CONTACT REPORT

INDIVIDUAL CONTACTED, TITLE: Pam Babbs	ORIGINATOR: Patty Stoll
ORGANIZATION: Fort Stewart DPW - Water Resources	DATE CONTACTED: October 10, 1998
PHONE: 912 - 767 - 2281	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone

SUBJECT: Update Supply Well Information for Fort Stewart Supply Wells for Water Resources Survey

DISCUSSION:

During a telephone conversation with Pam Babbs on October 10, 1998 the following information on the supply wells at Fort Stewart was provided.

Well No.1 1750 gpm, CD = 451 ft, TD = 816 ft
Well No.2 1400 gpm, CD = 470 ft, TD = 808 ft
Well No.3 1400 gpm, CD = 436 ft, TD = 750 ft
Well No.5 1100 gpm, CD = 560 ft, TD = 779 ft
Well No.6A 500 gpm, CD = 374 ft, TD = 472 ft
Well No.6B 500 gpm, CD = 393 ft, TD = 508 ft
Evans Well 190 gpm, CD = 404 ft, TD = 600 ft
Camp Oliver Well 400 gpm, CD = 451 ft, TD = 706 ft

COMMENTS, ACTIONS, DATES

Incorporate new pumping rate data into the CAP Part A and B reports being prepared for Fort Stewart.

DISTRIBUTION: Melanie Little (Fort Stewart DPW)
Central Records (SAIC)
Project File (SAIC)

Science Applications International Corporation

CONTACT REPORT

INDIVIDUAL CONTACTED, TITLE: Jeff Barnes	ORIGINATOR: Patty Stoll
ORGANIZATION: Georgia Department of Natural Resources	DATE CONTACTED: October 1, 1997
PHONE: 912 - 353 - 3225	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone

SUBJECT: Update Supply Well Information for Liberty County Supply Wells for Water Resources Survey

DISCUSSION:	COMMENTS, ACTIONS, DATES
During a telephone conversation with the Ga DNR, regarding drinking water wells in Liberty County, it was suggested I contact Mr. Jeff Barnes. After being transfered to Mr. Jeff Barnes and explaining our needs, he agreed to send a printout of the permitted drinking water systems in Liberty County. On October 17, 1997 we received the list of permitted drinking water systems in Liberty County.	Review list of permitted drinking water supply wells for proximity to Fort Stewart CAP Part A and B sites.

DISTRIBUTION: Melanie Little (Fort Stewart DPW)
Central Records (SAIC)
Project File (SAIC)

APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 92-01

PROJECT: Fort Stewart USTs

INSPECTOR J.K. Ledbetter

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	Gravel				
		clayey SAND, fine to medium grained, firm, subrounded, 20% clay non-plastic, dry, red (10R5/8)				
	1	silty SAND, fine grained, soft, 30% silt, dry, dark brown (10YR3/3)	904ppm		Soil Sample 920121	
	2					
	3		400ppm		Soil Sample 920111	
	4	No Recovery				
		same as above silty SAND	400ppm			▼ Wet below 4.5 FT BGS
	5					
	6					
	7		N/A			COLLECTED GROUNDWATER SAMPLE 920112 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 10.0 FT BGS
	8					
	9					Drilled to 10.0 FT BGS. Set piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 92-02

PROJECT: Fort Stewart USTs | INSPECTOR S.K. Ledbetter | 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	Gravel			Soil Sample 920211	
	1	Clayey SAND, fine grained, firm, 30% clay, non-plastic to low plasticity, dry red (10R5/6)	1.4 ppm			
	2					
	3	Sandy SILT, 15% fine grained sand, soft, dry dark brown (10YR3/3) concrete fragments	77 ppm			
	4	No Recovery				
	5	SAND, and concrete fragments	257 ppm		Soil Sample 920221	
	6	No Recovery				▼ Wet below 6.8 FT BGS
	7		N/A			
	8					COLLECTED GROUNDWATER SAMPLE 920212 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 9.0 FT BGS
	9					End of drilling 9.0 FT BGS Set piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 9Z-03

PROJECT: Fort Stewart USTs

INSPECTOR J.K. Ledbetter

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	Gravel				
	1	silty SAND, fine to medium grained, subrounded, firm dry. 25% silt, yellowish brown (10YR5/4)	3.4ppm		Soil Sample 920321	
	2	SAND, fine to medium grained, subrounded, soft, dry, gray (10YR6/1) with interbedded silt, dark brown (10YR3/3)	3.1ppm			
	3					
	4	SAND, fine grained, soft, dry light gray (10YR7/2)				▼ Wet below 4.5 FT BGS
	5	Color grading to dark brown (10YR3/3)	2.8ppm		Soil Sample 920311	
	6					
	7					
	8					COLLECTED GROUNDWATER SAMPLE 920312 FROM TEMPORARY PIEZOMETER SCREENED FROM 1.0 to 11.0 FT BGS
	9					Drilled to 11.0FT BGS. Set piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 92-04

PROJECT: Fort Stewart USTs | INSPECTOR J.K. Ledbetter | 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	Gravel				
	1	Sandy SILT, soft, dry, 10% fine grained sand, dark brown (10YR 3/3) with grayish brown (10YR 5/2) mottles	1.8 ppm			
	2				Soil Sample 920411	
	3	grading to silty SAND, fine grained, soft, dry, 5% silt, very pale brown (10YR 8/3)	1.7 ppm			
	4	No Recovery				
	5	same as above	2.2 ppm		Soil Sample 920421	▼ Wet below 5.2 FT BGS
	6					
	7	color grading to black (10YR 2/1)	N/A			
	8					COLLECTED GROUNDWATER SAMPLE 920412 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 10.0 FT BGS
	9	Shelby Tube	N/A	Soil Sample 920431		End of drilling at 10FT BGS Set piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 92-05

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | 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	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithologic description				
	2					
	4					
	6					
	8		0.0ppm		Groundwater Sample 920512	PUSHED TO 10.0 FT BGS AND PULLED BACK TO 6.0 FT BGS TO EXPOSE SCREEN
	10					
	12		0.0ppm		Groundwater Sample 920522	PUSHED TO 15.0 FT BGS AND PULLED BACK TO 11.0 FT BGS TO EXPOSE SCREEN
	14					
	16		0.0ppm		Groundwater Sample 920532	PUSHED TO REFUSAL AT 18.0 FT BGS AND PULLED BACK TO 16.0 TO EXPOSE SCREEN
	18	REFUSAL AT 18.0 FT BGS				
	20					

HTRW DRILLING LOG

HOLE NUMBER 92-06

PROJECT: Fort Stewart USTs | INSPECTOR J. Shiflet | 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)
		CONCRETE				
	1	SAND(SP), fine to medium grained, subrounded, dry to moist to saturated, black to tan to dark brown				
	2					
	3		5.4 ppm		Soil Sample 920621	
	4					
	5					
	6		3.2 ppm		Soil sample 920611	
	7					▽ = wet below 7.0 FT BGS
	8					COLLECTED GROUNDWATER SAMPLE 920612 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 9.3 FT BGS.
	9					END OF DRILLING AT 9.3 FT BGS AND SET TEMPORARY PIEZOMETER
	10					

HTRW DRILLING LOG

HOLE NUMBER 92-07

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

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	SAND(SP), fine to medium grained, some silt, black				
		Sandy GRAVEL(GW), fine to coarse gravel				
	2	SAND(SP), fine to medium grained, tan to yellow to dark brown				
	3		100.4 ppm		Soil Sample 920711	
	4		7.6 ppm		Soil Sample 920721	
	5					▽ wet below 5.0 FT BGS
	6					COLLECTED GROUNDWATER SAMPLE 920712 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 8.5 FT BGS.
	7					
	8					END OF DRILLING AT 8.5 FT BGS AND SET TEMPORARY PIEZOMETER
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 92-08

PROJECT: Fort Stewart USTs | INSPECTOR K. Ledbetter | 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	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithologic description				
	6				dry	PUSHED TO 10.0 FT BGS AND PULLED BACK TO 6.0 FT BGS TO EXPOSE SCREEN. INSUFFICIENT WATER FOR SAMPLE
	10					
	12				Groundwater Sample 920812	PUSHED TO 15.0 FT BGS AND PULLED BACK TO 11.0 FT BGS TO EXPOSE SCREEN
	16					PUSHED TO REFUSAL AT 19.0 FT BGS AND PULLED BACK TO 16.0 FT BGS TO EXPOSE SCREEN
	18				Groundwater Sample 920822	INSTALLED TEMPORARY PIEZOMETER SCREENED AT 0.0 FT TO 10.0 FT BGS
	20	REFUSAL AT 19.0 FT BGS				

APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GA UST	92-01	92-01	92-02	92-02	92-03	92-03
Sample ID:	Soil	920111	920121	920211	920221	920311	920321
Sample Interval (ft BGS):	Threshold	2.0 - 4.0	0.0 - 2.0	0.0 - 2.0	4.0 - 6.0	4.0 - 6.0	0.0 - 2.0
Collection Date:	Level[1]	30-Jun-98	30-Jun-98	28-Jun-98	28-Jun-98	29-Jun-98	29-Jun-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0044 U	0.0021 U	0.0022 U	**0.0116 U**	0.0022 U	0.0021 U
Toluene	6	0.0172 J	0.0083 =	0.0246 =	0.0563 J	0.0022 U	0.0504 =
Ethylbenzene	10	0.0044 U	0.0021 U	0.0022 U	0.0116 U	0.0022 U	0.0021 U
Xylenes, Total	700	0.0034 U	0.0057 J	0.0067 U	0.0203 J	0.0066 U	0.0062 U
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Acenaphthene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Acenaphthylene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Anthracene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Benzo(a)anthracene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Benzo(a)pyrene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Benzo(b)fluoranthene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Benzo(g,h,i)perylene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Benzo(k)fluoranthene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Chrysene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Dibenzo(a,h)anthracene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Fluoranthene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Fluorene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Indeno(1,2,3-cd)pyrene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Naphthalene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Phenanthrene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Pyrene	NRC	0.358 U	3.55 U	0.365 U	1.52 U	0.361 U	0.343 U
Other Analytes							
Lead	NRC		12.5 =		8.3 =		2.3 =
Total Organic Carbon	NRC						6670 =
TPH-Diesel Range Organics	NRC	173 =	168 =	3.5 U	147 =	1.4 U	2.8 U
TPH-Gasoline Range Organics	NRC	1.61 J	2.9 J	1.12 U	42.1 =	1.1 U	1.04 U

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998, thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC sample 920123 (duplicate) are contained within this appendix, but are not summarized in this table.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

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.

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

TABLE V-A. Summary of Soil Analytical Results (continued)

Station:	GA UST	92-04	92-04	92-06	92-06	92-07	92-07
Sample ID:	Soil	920411	920421	920611	920621	920711	920721
Sample Interval (ft BGS):	Threshold	2.0 - 4.0	4.0 - 6.0	5.5 - 6.8	2.5 - 3.5	2.0 - 3.5	3.5 - 5.5
Collection Date:	Level[1]	29-Jun-98	29-Jun-98	12-Nov-98	12-Nov-98	12-Nov-98	12-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0022 U	0.0022 U	0.0024 U	0.0022 U	0.0022 U	0.0022 U
Toluene	6	0.0147 =	0.111 =	0.0051 =	0.011 =	0.0018 J	0.0095 =
Ethylbenzene	10	0.0022 U	0.0022 U	0.0024 U	0.0022 U	0.00099 J	0.0022 U
Xylenes, Total	700	0.0064 U	0.0065 U	0.0035 U	0.0033 U	0.0098 =	0.0014 J
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Acenaphthene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Acenaphthylene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Anthracene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Benzo(a)anthracene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Benzo(a)pyrene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Benzo(b)fluoranthene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Benzo(g,h,i)perylene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Benzo(k)fluoranthene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Chrysene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Dibenzo(a,h)anthracene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Fluoranthene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Fluorene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Indeno(1,2,3-cd)pyrene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Naphthalene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Phenanthrene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Pyrene	NRC	0.350 U	3.59 U	0.392 U	0.362 U	0.362 U	0.370 U
Other Analytes							
Lead	NRC		3.9 =		1 =		2.3 =
Total Organic Carbon	NRC						
TPH-Diesel Range Organics	NRC	6.8 =	70.7 =	0.95 U	1.2 U	18.7 =	1.1 U
TPH-Gasoline Range Organics	NRC	1.08 U	1.09 U	0.0588 U	0.109 UJ	4.38 =	0.0556 U

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998, thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC sample 920123 (duplicate) are contained within this appendix, but are not summarized in this table.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

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.

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5011

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 9 Date Analyzed: 07/10/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 2.0

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	4.4	U	U
108-88-3	Toluene	17.2	P	J MDB
100-41-4	Ethylbenzene	4.4	U	U
1330-20-7	Xylenes (total)	3.4	J	J

LW
8-13-98

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-04

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 1C211

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 9 decanted: (Y/N) N Date Extracted:07/07/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/14/98

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	358	U
91-58-7	2-chloronaphthalene	358	U
209-96-8	acenaphthylene	358	U
83-32-9	acenaphthene	358	U
86-73-7	fluorene	358	U
85-01-8	phenanthrene	358	U
120-12-7	anthracene	358	U
206-44-0	fluoranthene	358	U
129-00-0	pyrene	358	U
56-55-3	benzo(a)anthracene	358	U
218-01-9	chrysene	358	U
205-99-2	benzo(b)fluoranthene	358	U
207-08-9	benzo(k)fluoranthene	358	U
50-32-8	benzo(a)pyrene	358	U
193-39-5	indeno(1,2,3-cd)pyrene	358	U
53-70-3	dibenz(a,h)anthracene	358	U
191-24-2	benzo(g,h,i)perylene	358	U

U

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8-13-98

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7C1003

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 9 decanted: (Y/N) N Date Extracted: 07/09/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/13/98

Injection Volume: 1.0(uL) Dilution Factor: 25.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	173	B	= F08

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q607

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 9 Date Analyzed: 07/11/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	Gasoline Range Organics	1610	J

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-01

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q508

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 6 Date Analyzed: 07/10/98

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
108-88-3	Toluene	8.3	
100-41-4	Ethylbenzene	2.1	U
1330-20-7	Xylenes (total)	5.7	J

U = 5

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8-11-98

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2C119

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 6 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/13/98

Injection Volume: 1.0(uL) Dilution Factor: 10.0

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	3550	U	U
91-58-7	2-chloronaphthalene	3550	U	
209-96-8	acenaphthylene	3550	U	
83-32-9	acenaphthene	3550	U	
86-73-7	fluorene	3550	U	
85-01-8	phenanthrene	3550	U	
120-12-7	anthracene	3550	U	
206-44-0	fluoranthene	3550	U	
129-00-0	pyrene	3550	U	
56-55-3	benzo(a)anthracene	3550	U	
218-01-9	chrysene	3550	U	
205-99-2	benzo(b)fluoranthene	3550	U	
207-08-9	benzo(k)fluoranthene	3550	U	
50-32-8	benzo(a)pyrene	3550	U	
193-39-5	indeno(1,2,3-cd)pyrene	3550	U	
53-70-3	dibenz(a,h)anthracene	3550	U	
191-24-2	benzo(g,h,i)perylene	3550	U	

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8-11-98

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FORM I SV-1 OLM03.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-01

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 7B20053

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 6 decanted: (Y/N) N Date Extracted: 07/06/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/08/98

Injection Volume: 1.0 (uL) Dilution Factor: 50.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics_____	168	B	= FOB

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FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q4025

Level: (low/med) LOW Date Received: 07/01/98 USE

% Moisture: not dec. 6 Date Analyzed: 07/09/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	----------Gasoline Range Organics	LW 8-11-98 2900 ~~1720~~	J G02

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DATA VALIDATION COPY

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A20S

Method Type: Total Metals

Sample ID: 9807050-01

Client ID: 920121

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

Matrix: SOIL Date Received: 7/1/98 Level: LOW

% Solids: 94.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	12.5	mg/kg			P	0.16	TJA61 Trace2 ICPAES	980710-5

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

DUPLICATE

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-05

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5015

Level: (low/med) LOW Date Received: 07/01/98 USE

% Moisture: not dec. 5 Date Analyzed: 07/10/98

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	UJ	Kol, GD
108-88-3	Toluene	28.0		J	Gol, Kol
100-41-4	Ethylbenzene	2.5	P	J	Gol, Mo8, Kol
1330-20-7	Xylenes (total)	16.4	P	J	Gol, Mo8, Kol

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8-11-98

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

920123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-05

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 2C121

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/13/98

Injection Volume: 1.0(uL) Dilution Factor: 10.0

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	3480	U
91-58-7	2-chloronaphthalene	3480	U
209-96-8	acenaphthylene	3480	U
83-32-9	acenaphthene	3480	U
86-73-7	fluorene	3480	U
85-01-8	phenanthrene	3480	U
120-12-7	anthracene	3480	U
206-44-0	fluoranthene	3480	U
129-00-0	pyrene	3480	U
56-55-3	benzo(a)anthracene	3480	U
218-01-9	chrysene	3480	U
205-99-2	benzo(b)fluoranthene	3480	U
207-08-9	benzo(k)fluoranthene	3480	U
50-32-8	benzo(a)pyrene	3480	U
193-39-5	indeno(1,2,3-cd)pyrene	3480	U
53-70-3	dibenz(a,h)anthracene	3480	U
191-24-2	benzo(g,h,i)perylene	3480	U

U

DATA VALIDATION COPY

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8-11-98

FORM I SV-1

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DUPLICATE

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-05

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 7B20054

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/06/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/08/98

Injection Volume: 1.0(uL) Dilution Factor: 50.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	175	B	=

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DATA VALIDATION COPY

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q4029

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 5 Date Analyzed: 07/09/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	3040		=

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8-11-98

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FORM I VOA

DUPLICATE

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A20S

Method Type: Total Metals

Sample ID: 9807050-05

Client ID: 920123

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

Matrix: SOIL Date Received: 7/1/98 Level: LOW

% Solids: 95.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	11.4	mg/kg			P	0.15	TJA61 Trace2 ICPAES	980710-5

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

VALIDATED COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL

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

Lab Sample ID: 9807051-05

Level: (low/med) LOW

Lab File ID: 2Q504

% Moisture: not dec. 11

Date Received: 07/01/98

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

Date Analyzed: 07/10/98

Soil Extract Volume:_____(ml)

Dilution Factor: 1.0

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	24.6	
100-41-4	Ethylbenzene	2.2	U
1330-20-7	Xylenes (total)	6.7	U

CLP

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8-13-98

DATA VALIDATION
COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-05

Sample wt/vol: 30.8 (g/mL) G Lab File ID: 1C212

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 11 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/14/98

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	365	U
91-58-7	2-chloronaphthalene	365	U
209-96-8	acenaphthylene	365	U
83-32-9	acenaphthene	365	U
86-73-7	fluorene	365	U
85-01-8	phenanthrene	365	U
120-12-7	anthracene	365	U
206-44-0	fluoranthene	365	U
129-00-0	pyrene	365	U
56-55-3	benzo(a)anthracene	365	U
218-01-9	chrysene	365	U
205-99-2	benzo(b)fluoranthene	365	U
207-08-9	benzo(k)fluoranthene	365	U
50-32-8	benzo(a)pyrene	365	U
193-39-5	indeno(1,2,3-cd)pyrene	365	U
53-70-3	dibenz(a,h)anthracene	365	U
191-24-2	benzo(g,h,i)perylene	365	U

U

LW 8-13-98

DATA VALIDATION COPY

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-05

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 7B50035

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:07/09/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/10/98

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) MG/KG	Q	
	----------Diesel Range Organics	3.5	B	U Fo1, Fo7

LW 8-26-98

DATA VALIDATION COPY

FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q5024

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 11 Date Analyzed: 07/10/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	1120	U	U

LW
8-13-98

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2R106

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 14 Date Analyzed: 07/13/98

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	11.6	U
108-88-3	Toluene	56.3	P
100-41-4	Ethylbenzene	11.6	U
1330-20-7	Xylenes (total)	20.3	J

MoB

LW
8-13-98

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-13

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 1C303

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 14 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/15/98

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	1520	U
91-58-7	2-chloronaphthalene	1520	U
209-96-8	acenaphthylene	1520	U
83-32-9	acenaphthene	1520	U
86-73-7	fluorene	1520	U
85-01-8	phenanthrene	1520	U
120-12-7	anthracene	1520	U
206-44-0	fluoranthene	1520	U
129-00-0	pyrene	1520	U
56-55-3	benzo(a)anthracene	1520	U
218-01-9	chrysene	1520	U
205-99-2	benzo(b)fluoranthene	1520	U
207-08-9	benzo(k)fluoranthene	1520	U
50-32-8	benzo(a)pyrene	1520	U
193-39-5	indeno(1,2,3-cd)pyrene	1520	U
53-70-3	dibenz(a,h)anthracene	1520	U
191-24-2	benzo(g,h,i)perylene	1520	U

U

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FORM I SV-1 OLM03.0

195

920221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-13

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 7C1004

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 14 decanted: (Y/N) N Date Extracted:07/09/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/13/98

Injection Volume: 1.0(uL) Dilution Factor: 25.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	147	B	= F08

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8.26.98

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 3R1014

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 14 Date Analyzed: 07/13/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	42100		=

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8-13-98

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FORM I VOA

SDG No.: FS4A21S

Form 1: Inorganic Analyses Data Sheet

Method Type: Total Metals

Sample ID: 9807051-13

Client ID: 920221

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

Matrix: SOIL Date Received: 7/1/98 Level: LOW

% Solids: 86.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	8.3	mg/kg			P	0.17	TJA61 Trace ICPAES	980710-5

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-06

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5013

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 9 Date Analyzed: 07/10/98

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)	6.6	U

LW
8-13-98

DATA VALIDATION
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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-06

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 1C213

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 9 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/14/98

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	361	U
91-58-7	2-chloronaphthalene	361	U
209-96-8	acenaphthylene	361	U
83-32-9	acenaphthene	361	U
86-73-7	fluorene	361	U
85-01-8	phenanthrene	361	U
120-12-7	anthracene	361	U
206-44-0	fluoranthene	361	U
129-00-0	pyrene	361	U
56-55-3	benzo(a)anthracene	361	U
218-01-9	chrysene	361	U
205-99-2	benzo(b)fluoranthene	361	U
207-08-9	benzo(k)fluoranthene	361	J
50-32-8	benzo(a)pyrene	361	U
193-39-5	indeno(1,2,3-cd)pyrene	361	U
53-70-3	dibenz(a,h)anthracene	361	U
191-24-2	benzo(g,h,i)perylene	361	U

U

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8-13-98

DATA VALIDATION
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FORM I SV-1 OLM03.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-06

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 7B50020

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 9 decanted: (Y/N) N Date Extracted:07/09/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/10/98

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) MG/KG	Q	
	----------Diesel Range Organics	1.4	JB	U Fol, Fo

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8-26-98

DATA VALIDATION COPY

FORM I SV

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-06

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q5025

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 9 Date Analyzed: 07/10/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	1100	U	U

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8-13-98

DATA VALIDATION COPY

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-10

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5019

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 4 Date Analyzed: 07/10/98

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	50.4		
100-41-4	Ethylbenzene	2.1	U	U
1330-20-7	Xylenes (total)	6.2	U	U

LW
8-11-98

DATA VALIDATION
COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS1A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-10

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 2B719

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 4 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/12/98

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	343	U
91-58-7	2-chloronaphthalene	343	U
209-96-8	acenaphthylene	343	U
83-32-9	acenaphthene	343	U
86-73-7	fluorene	343	U
85-01-8	phenanthrene	343	U
120-12-7	anthracene	343	U
206-44-0	fluoranthene	343	U
129-00-0	pyrene	343	U
56-55-3	benzo(a)anthracene	343	U
218-01-9	chrysene	343	U
205-99-2	benzo(b)fluoranthene	343	U
207-08-9	benzo(k)fluoranthene	343	U
50-32-8	benzo(a)pyrene	343	U
193-39-5	indeno(1,2,3-cd)pyrene	343	U
53-70-3	dibenz(a,h)anthracene	343	U
191-24-2	benzo(g,h,i)perylene	343	U

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DATA VALIDATION COPY

LW 8-11-98

FORM I SV-1 OLM03.0

920321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-10

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7B20044

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 4 decanted: (Y/N) N Date Extracted:07/06/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/08/98

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) MG/KG	Q	
	----------Diesel Range Organics	2.8	B	U Fo1, Fo7

LW
8-11-98

DATA VALIDATION COPY

FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS1A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q5012

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 4 Date Analyzed: 07/10/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	1040	U	U

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FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A20S **Method Type:** Total Metals

Sample ID: 9807050-10 **Client ID:** 920321

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

Matrix: SOIL **Date Received:** 7/1/98 **Level:** LOW

% Solids: 96.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.3	mg/kg			P	0.15	TJA61 Trace2 ICPAES	980710-5

Color Before: **Clarity Before:** **Texture:**

Color After: **Clarity After:** **Artifacts:**

Comments:

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: July 23, 1998

Sample ID	: 920321
Lab ID	: 9807050-10
Matrix	: Soil
Date Collected	: 06/29/98
Date Received	: 07/01/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
TOTAL ORGANIC CARBON (TOC)		6670	= FD3	24.1	100	mg/kg	1.0	LS	07/17/98	1149	125631	1

M = Method	Method-Description
M 1	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.

DATA VALIDATION COPY

Reviewed By

9807050-10

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-08

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5015

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 7 Date Analyzed: 07/10/98

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	U
108-88-3	Toluene	14.7		U
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.4	U	U

LW
8-13-98

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A2IS

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-08

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 1C215

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 7 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/14/98

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	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

LW 8-13-98

DATA VALIDATION COPY

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-08

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 7B50022

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:07/09/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/10/98

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) MG/KG	Q	
	----------Diesel Range Organics	6.8	B	= FOB

LW
8-26-98

DATA VALIDATION
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A21S

Matrix: (soil/water) SOIL Lab Sample ID: 9807051-08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q5028

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 7 Date Analyzed: 07/10/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	1080	U	U

LW 8-13-98

DATA VALIDATION COPY

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2Q5010

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 8 Date Analyzed: 07/10/98

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	U
108-88-3	Toluene	111		U
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.5	U	U

LW
8-11-98

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-03

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 2C120

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/13/98

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

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	3590	U	U
91-58-7	2-chloronaphthalene	3590	U	
208-96-8	acenaphthylene	3590	U	
83-32-9	acenaphthene	3590	U	
86-73-7	fluorene	3590	U	
85-01-8	phenanthrene	3590	U	
120-12-7	anthracene	3590	U	
206-44-0	fluoranthene	3590	U	
129-00-0	pyrene	3590	U	
56-55-3	benzo(a)anthracene	3590	U	
218-01-9	chrysene	3590	U	
205-99-2	benzo(b)fluoranthene	3590	U	
207-08-9	benzo(k)fluoranthene	3590	U	
50-32-8	benzo(a)pyrene	3590	U	
193-39-5	indeno(1,2,3-cd)pyrene	3590	U	
53-70-3	dibenz(a,h)anthracene	3590	U	
191-24-2	benzo(g,h,i)perylene	3590	U	

DATA VALIDATION COPY

LW 8-11-98

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-03

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7B20035

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 07/06/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/07/98

Injection Volume: 1.0(uL) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	70.7	B	=

LW
8-11-98

DATA VALIDATION COPY

FORM I SV

255

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A20S

Matrix: (soil/water) SOIL Lab Sample ID: 9807050-03

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3Q506

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. 8 Date Analyzed: 07/10/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	1090	U	U

LW
8-11-98

DATA VALIDATION COPY

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A20S

Method Type: Total Metals

Sample ID: 9807050-03

Client ID: 920421

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

Matrix: SOIL Date Received: 7/1/98 Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.9	mg/kg			P	0.15	TJA61 Trace2 ICPAES	980710-5

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of

CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920121	6/30/98	830	soil						—		1		2	9807050-01
890121	6/29/98	1415							—		1		2	-02
920421	6/29/98	1600							—		1		2	-03
850421	6/29/98	950							—		1		2	-04
920123	6/30/98	830							—		1		2	-05
850121	6/29/98	1100							—		1		2	-06
890123	6/29/98	1415							—		1		2	-07
890321	6/29/98	1600							—			1	2	-08
850321	6/29/98	1200							—			1	2	-09
920321	6/29/98	1425							—			1	2	-10
4620412	6/29/98	1145	water	2									2	9807047-18
820114	6/29/98	1225		2									2	-19
820112	6/29/98	1225		2									2	-20

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98 1200	[illegible]	7/1/98 1630
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: [illegible]	Date/Time 7/1/98 1200	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 7-1-98 1630	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 577

Cooler Temperature: 4°C

FEDEX NUMBER:

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2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA026

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920111	6/30/98	830	Soil						1	1			2	98070551-04
920211	6/28/98	1715							1	1			2	-05
920311	6/29/98	1445							1	1			2	-06
890111	6/29/98	1345							1	1			2	-07
920411	6/29/98	1535							1	1			2	-08
890211	6/29/98	1500							1	1			2	-09
850211	6/29/98	855							1	1			2	-10
850311	6/29/98	1200							1	1			2	-11
850411	6/29/98	950							1	1			2	-12
920221	6/29/98	1755							1		1		2	-13
850221	6/29/98	855							1		1		2	-14
890221	6/29/98	1510							1		1		2	-15
890421	6/29/98	1745	~						1		1		2	-16

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1630
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
[illegible]	7/1/98		
COMPANY NAME: GEL	1200	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[illegible]	7-1-98		
COMPANY NAME: GEL	1630	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 52

Cooler ID: # 6042

Cooler Temperature: 4°C

FEDEX NUMBER:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8J612

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 15 Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (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	5.1		
100-41-4	ethylbenzene	2.4	U	
1330-20-7	xylenes (total)	3.5	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5U421

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 15 decanted: (Y/N) N Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/19/98

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	392	U
91-58-7	2-chloronaphthalene	392	U
208-96-8	acenaphthylene	392	U
83-32-9	acenaphthene	392	U
86-73-7	fluorene	392	U
85-01-8	phenanthrene	392	U
120-12-7	anthracene	392	U
206-44-0	fluoranthene	392	U
129-00-0	pyrene	392	U
56-55-3	benzo(a)anthracene	392	U
218-01-9	chrysene	392	U
205-99-2	benzo(b)fluoranthene	392	U
207-08-9	benzo(k)fluoranthene	392	U
50-32-8	benzo(a)pyrene	392	U
193-39-5	indeno(1,2,3-cd)pyrene	392	U
53-70-3	dibenz(a,h)anthracene	392	U
191-24-2	benzo(g,h,i)perylene	392	U

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FORM 1 Science Applications13-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1010

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 15 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

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) MG/KG	Q	
	----------Diesel Range Organics_____	0.95	JB	U F01, F06

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1J7014

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 15 Date Analyzed: 11/23/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	58.8	U	U

DATA VALIDATION COPY

FORM I VOA

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920621

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J414

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 8 Date Analyzed: 11/19/98

GC Column: DB-624 ID: 0.25 (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	U
108-88-3	toluene	11.0		=
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.3	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4U517

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/17/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/21/98

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	362	U
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

U

FORM I SV-1 OLM03.0

126

920621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-09

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21C3064

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/17/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/19/98

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) MG/KG	Q	
	----------Diesel Range Organics	1.2	JB	U F01, F06

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-09

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K2012

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 8 Date Analyzed: 11/24/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 2.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	109	U	UJ GD2

USE

FORM I VOA

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6006S

Method Type: Total Metals

Sample ID: 9811470-09

Client ID: 920621

Contract: SAIC01498 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 11/13/98 Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.0	mg/kg			P	0.15	TJA61 Trace2 ICPAES	981117-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8J610

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 8 Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (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	1.8	J
100-41-4	ethylbenzene	0.99	J
1330-20-7	xylenes (total)	9.8	

UJ

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5U419

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/19/98

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	362	U
91-58-7	2-chloronaphthalene	362	U
208-96-8	acenaphthylene	362	U
83-32-9	acenaphthene	362	U
86-73-7	fluorene	362	U
85-01-8	phenanthrene	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

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FORM 1 Science Applications13-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D203

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/24/98

Injection Volume: 1.0(uL) Dilution Factor: 5.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	Diesel Range Organics	18.7	B

~~4 FD1, FD7~~
= F12

÷ 5 = 3.74

FORM I SV

245

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6005S

Matrix: (soil/water) SOIL Lab Sample ID: 9811469-02

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1J7015

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 8 Date Analyzed: 11/23/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	----------Gasoline Range Organics_____	4380	D

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FORM I VOA

205

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920721

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-03

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J408

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 10 Date Analyzed: 11/19/98

GC Column: DB-624 ID: 0.25 (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	9.5	
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	1.4	J

4 of 11 C

FORM I VOA OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4U511

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/17/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	370	U
91-58-7	2-chloronaphthalene	370	U
209-96-8	acenaphthylene	370	U
83-32-9	acenaphthene	370	U
86-73-7	fluorene	370	U
85-01-8	phenanthrene	370	U
120-12-7	anthracene	370	U
206-44-0	fluoranthene	370	U
129-00-0	pyrene	370	U
56-55-3	benzo(a)anthracene	370	U
218-01-9	chrysene	370	U
205-99-2	benzo(b)fluoranthene	370	U
207-08-9	benzo(k)fluoranthene	370	U
50-32-8	benzo(a)pyrene	370	U
193-39-5	indeno(1,2,3-cd)pyrene	370	U
53-70-3	dibenz(a,h)anthracene	370	U
191-24-2	benzo(g,h,i)perylene	370	U

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FORM 1 Science Applications13-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

920721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-03

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21C3056

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/17/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/19/98

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) MG/KG	Q	
	----------Diesel Range Organics_____	1.1	JB	U F01, F06

FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K1014

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 10 Date Analyzed: 11/23/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	55.6	U	U

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6006S

Method Type: Total Metals

Sample ID: 9811470-03

Client ID: 920721

Contract: SAIC01498 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 11/13/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.3	mg/kg			P	0.17	TJA61 Trace2 ICPAES	981117-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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CHAIN OF CUSTODY RECORD

COC NO.: GA005

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
760612	11/12/98	1850	water		2								2	9811467-13
840712	11/12/98	1930	↓		2								2	? -14
860612	11/12/98	1800	↓		2								2	✓ -15
870711	11/12/98	1315	Soil			1	1						2	9811469-01
920711	11/12/98	1100				1	1						2	-02
880811	11/12/98	1540				1	1						2	-03
920611	11/12/98	1015				1	1						2	-04
940711	11/12/98	1500				1	1						2	-05
870811	11/12/98	1215				1	1						2	-06
870613	11/12/98	1415				1	1						2	-07
880611	11/12/98	1500				1	1						2	-08
940911	11/12/98	1120				1	1						2	✓ -09
880711	11/12/98	1630	↓			1	1						2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/13/98	Dionne FRANCIS	11/13/98
COMPANY NAME: SAIC	1215	COMPANY NAME: GEL	1530
RECEIVED BY: [illegible]	Date/Time 11-13-98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1215	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 11-13-98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1530	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #711

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations
PROJECT NUMBER: 01-0331-04-9805-220
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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials	Observations, Comments, Special Instructions
870612	11/12/98	1430	Water	2									2	9811468-13
870812	11/12/98	1230		2									2	-14
920716	11/12/98	1115		2									2	-15
920612	11/12/98	1020		2									2	-16
920712	11/12/98	1110		2									2	-17
TBA031	11/12/98	745		2									2	-18
940921	11/12/98	1211	Soil			1			1				2	9811470-01
880721	11/12/98	1630				1			1				2	-02
920721	11/12/98	1100				1			1				2	-03
870621	11/12/98	1415				1			1				2	-04
940721	11/12/98	1513				1			1				2	-05
870721	11/12/98	1315				1			1				2	-06
780621	11/12/98	1620				1			1				2	-07

Relinquished By	Date/Time	Received By	Date/Time
Laura Lumley; Company Name: SAIC	11/13/98 1215	[signature]; Company Name: GEL	11/13/98 1530
Received By: Bob [signature]; Company Name: GEL	11-13-98 1215	Relinquished By: ; Company Name:	Date/Time
Relinquished By: Bob [signature]; Company Name: GEL	11-13-98 1530	Received By: ; Company Name:	Date/Time

TOTAL NUMBER OF CONTAINERS:
Cooler Temperature:
Cooler ID: #712
FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA0006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
780721 XB														
760712	11/12/98	1962	Soil			1			1				2	9811470 - 08 14
940821	11/12/98	1347				1			1				2	-08
920621	11/12/98	1015				1			1				2	-09
880821	11/12/98	1540				1			1				2	-10
860621	11/12/98	1500				1			1				2	-11
870621	11/12/98	1215				1			1				2	-12
840711	11/12/98	1930		1			1						2	-13
840721	11/12/98	1930		1			1			1			2	-15
860621	11/12/98	1600		1			1			1			2	-16
860611	11/12/98	1600		1			1						2	-17

11/13/98

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/13/98 1215	[illegible]	11/13/98 1530
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: [illegible]	Date/Time 11-13-98 1215	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 11-13-98 1530	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 72

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

Note: Cooler Receipt Checklist indicates a cooler temp. of 4°-5°C upon arrival at the laboratory.

36 .2 .3 .2

V-69

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: 7/24-27/98
Tested by: BV-CA
Boring # :
Sample # : 920431
Sample Depth : 7.5-10 ft.

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: 100 %
Cell Pressure: 65 psi
Lower Pressure: 61 psi
Upper Pressure: 60 psi
Gradient: 12.13

Sample Dimensions		
	Before	After
Length (cm)	5.80	5.70
Diameter (cm)	4.70	4.70
Water Content (%)	26.7	22.8
Weight (g)	194.0	191.7

Constant Head Calculation:

$$K = [V(t_1,t_2)\, LR_T]/[P_B A t] \text{ (cm/sec)}$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm^3)
L = Length of Sample = 5.80 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)	$[LR_T]/[P_B A]$ (cm^3)	K (cm/sec)
130	120	10	0.3	4.42E-03	1.33E-04
140	130	10	0.3	4.42E-03	1.33E-04
160	140	10	0.3	4.42E-03	1.33E-04
170	160	10	0.3	4.42E-03	1.33E-04

K_{avg} = 1.33E-04 cm/sec

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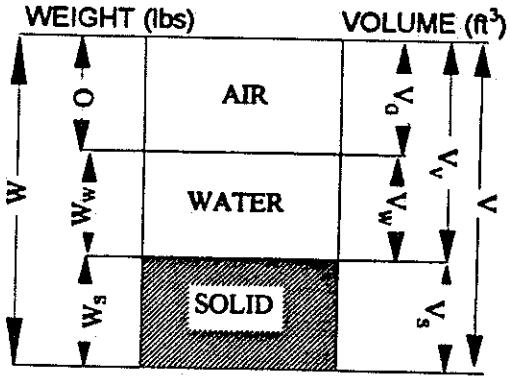
SPECIFIC GRAVITY AND POROSITY

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

JOB NO.: 98066
SAMPLE NO: 920431
DEPTH OF SAMPLE: 7.5-10 ft.
DATE OF TESTING: 7/29/98



W = 0.88505
$W_W = W - W_S$ = 0.18977
$W_S = Y_d * V$ = 0.6953

V = 0.00729
$V_W = W_W / Y_W$ = 0.0030
$V_S = W_S / G_S * Y_W$ = 0.0043
$V_G = V - (V_S + V_W)$ = -0.00006
$V_V = V_G + V_W$ = 0.0030

MEASUREMENTS OF TUBE/CAN

HEIGHT= 11.9 cm
DIAMETER= 4.7 cm

CALCULATED VOLUME OF TUBE/CAN

V= 206.46 cm^3
0.00729 ft^3

WT. OF TUBE/CAN + WET SOIL= 631.10 g
WEIGHT OF TUBE/CAN= 229.64 g
WEIGHT OF WET SOIL= 401.46 g
W = 0.88505 lb

MOISTURE CONTENT

M_{CWS} = 31.15 g
M_{CDS} = 27.73 g
M_W = 3.42 g
M_C = 15.20 g
M_S = 12.53 g
w = 27.3 %

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= 121.37 lbs/ft^3
Y_d= 95.35 lbs/ft^3	Y_d= 95.35 lbs/ft^3

Void Ratio, $e = V_V / V_S$
e = 0.6893

Porosity, $n = V_V / V$
n = 0.41

Specific Gravity = 2.58

Degree of Saturation, $S = V_W / V_V$
S = 1.0216

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: FT. Stewart   Job No.: 98066

Location of Project: Cnf Part n.   Sample No.: #920431

Description of Soil: Dark Brown Sand / Black Silty Sand   Depth of Sample: 7.5-10'   Boring No.:

Tested By: FB/CA   Date of Testing: 7/31/98

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

X-4

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

M_{cws}	M_{cds}	M_c	M_w	M_s	w %	M_{ws}	M_s
	422.9	113.75					309.53

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		0.20	0.06	0.06	99.94
#20		0.86	0.03	0.09	99.91
#40		1.75	0.57	0.66	99.34
#60		19.92	6.44	7.1	92.90
#140		264.4	85.42	92.52	7.48
#200		5.2	1.68	94.2	5.8
pan		17.2	5.56	99.76	—
		309.53			

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

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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The contaminant concentrations in soil did not exceed their respective soil threshold levels except for one sample with an elevated detection limit; thus, no alternate threshold levels were calculated.

No BTEX compounds exceeded their respective MCLs during the CAP-Part A investigation; thus, no alternate concentration limits were calculated.

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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 USTs 63 & 64 site for the determination of free product. Refer to Figure 5 (Appendix I) for locations and screened intervals.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:		In Stream	92-01	92-02	92-03	92-04	92-05	92-05
Sample ID:	Federal	Water	920112	920212	920312	920412	920512	920522
Screened Interval (ft BGS)	SDWA	Quality	0.0 - 10.0	0.0 - 9.0	1.0 - 11.0	0.0 - 10.0	6.0 - 10.0	11.0 - 15.0
Collection Date:	MCLs	Standards	30-Jun-98	29-Jun-98	29-Jun-98	29-Jun-98	29-Jun-98	29-Jun-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS								
Benzene	5	71.28	2 UJ	2 UJ	2 UJ	2 U	2 U	2 U
Toluene	1000	200000	30.4 J	15.2 J	42.2 J	32.2 =	2 U	2 UJ
Ethylbenzene	700	28718	4.9 J	4.8 J	5.2 J	5.1 =	2 U	2 UJ
Xylenes, Total	10000	NRC	5.7 J	6 UJ	7.8 J	6.5 =	6 U	6 UJ
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Acenaphthene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Acenaphthylene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Anthracene	NRC	110000	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Benzo(a)anthracene	NRC	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Benzo(a)pyrene	0.2	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Benzo(b)fluoranthene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Benzo(g,h,i)perylene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Benzo(k)fluoranthene	NRC	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Chrysene	NRC	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Dibenzo(a,h)anthracene	NRC	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Fluoranthene	NRC	370	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Fluorene	NRC	14000	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Naphthalene	NRC	NRC	7.9 J	40 U	10 U	10 U	10.9 U	10.6 U
Phenanthrene	NRC	NRC	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U
Pyrene	NRC	11000	10.6 U	40 U	10 U	10 U	10.9 U	10.6 U

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998, thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC samples 920514 (duplicate), 920716 (equipment rinsate), and 920814 (duplicate) are contained within this appendix but are not summarized in this table.

Elevated PAH detection limits are a result of associated organic content, such as TPH or other organic compounds. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

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

Bold values exceed MCLs

Laboratory Qualifiers

U	Indicates the compound was not detected above the reported quantitation limit.
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 VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	92-05	92-06	92-07	92-08	92-08
Sample ID:	Federal	Water	920532	920612	920712	920812	920822
Screened Interval (ft BGS)	SDWA	Quality	16.0 - 18.0	0.0 - 9.3	0.0 - 8.5	11.0 - 15.0	16.0 - 19.0
Collection Date:	MCLs	Standards	29-Jun-98	12-Nov-98	12-Nov-98	13-Nov-98	13-Nov-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	2 U	2 U	2 U	2 U	2 U
Toluene	1000	200000	2 U	2 U	2 U	2 U	2 U
Ethylbenzene	700	28718	2 U	2 U	2 U	2 U	2 U
Xylenes, Total	10000	NRC	6 U	3 U	3 U	3 U	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Acenaphthene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Acenaphthylene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Anthracene	NRC	110000	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Benzo(a)anthracene	NRC	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Benzo(a)pyrene	0.2	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Benzo(b)fluoranthene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Benzo(g,h,i)perylene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Benzo(k)fluoranthene	NRC	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Chrysene	NRC	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Dibenzo(a,h)anthracene	NRC	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Fluoranthene	NRC	370	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Fluorene	NRC	14000	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Naphthalene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Phenanthrene	NRC	NRC	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U
Pyrene	NRC	11000	10.2 U	10.5 U	11.1 U	12.2 U	11.8 U

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-Part A guidance that was published in May 1998, thus, the new SW-846 analytical methods were not used during that sampling event.

Beginning November 1998, sampling was conducted in accordance with the new CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC samples 920514 (duplicate), 920716 (equipment rinsate), and 920814 (duplicate) are contained within this appendix but are not summarized in this table.

Elevated PAH detection limits are a result of associated organic content, such as TPH or other organic compounds. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

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

Bold values exceed MCLs

Laboratory Qualifiers

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A17W

Matrix: (soil/water) WATER Lab Sample ID: 9807046-06

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q309

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	2.0	U	UJ A03
108-88-3	Toluene	30.4		J
100-41-4	Ethylbenzene	4.9		
1330-20-7	Xylenes (total)	5.7	J	

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-14

Sample wt/vol: 940.0 (g/mL) ML Lab File ID: 1B717

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0 USE

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	7.9	J
91-58-7	2-chloronaphthalene	10.6	U
209-96-8	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

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A17W

Matrix: (soil/water) WATER Lab Sample ID: 9807046-07

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q3010

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q		
71-43-2	Benzene	2.0	U	UJ	A03
108-88-3	Toluene	15.2		J	
100-41-4	Ethylbenzene	4.8		J	
1330-20-7	Xylenes (total)	6.0	U	UJ	

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A15W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807044-17

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C103

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/13/98

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/L	Q
91-20-3	naphthalene	40.0	U
91-58-7	2-chloronaphthalene	40.0	U
209-96-8	acenaphthylene	40.0	U
83-32-9	acenaphthene	40.0	U
86-73-7	fluorene	40.0	U
85-01-8	phenanthrene	40.0	U
120-12-7	anthracene	40.0	U
206-44-0	fluoranthene	40.0	U
129-00-0	pyrene	40.0	U
56-55-3	benzo(a)anthracene	40.0	U
218-01-9	chrysene	40.0	U
205-99-2	benzo(b)fluoranthene	40.0	U
207-08-9	benzo(k)fluoranthene	40.0	U
50-32-8	benzo(a)pyrene	40.0	U
193-39-5	indeno(1,2,3-cd)pyrene	40.0	U
53-70-3	dibenz(a,h)anthracene	40.0	U
191-24-2	benzo(g,h,i)perylene	40.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA - Case No.: NA SAS No.: NA SDG No.: FS4A17W

Matrix: (soil/water) WATER Lab Sample ID: 9807046-10

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q306

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	2.0	U	UJ A03
108-88-3	Toluene	42.2		J ↓ ↓
100-41-4	Ethylbenzene	5.2		
1330-20-7	Xylenes (total)	7.8		

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A15W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807044-19

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2B704

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/12/98

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	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
209-96-8	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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A17W

Matrix: (soil/water) WATER Lab Sample ID: 9807046-08

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q305

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	32.2	
100-41-4	Ethylbenzene	5.1	
1330-20-7	Xylenes (total)	6.5	

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A15W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807044-18

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2B703

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/12/98

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	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
209-96-8	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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A18W

Matrix: (soil/water) WATER Lab Sample ID: 9807047-12

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q407

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/09/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-03

Sample wt/vol: 920.0 (g/mL) ML Lab File ID: 1B706

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	10.9	U
91-58-7	2-chloronaphthalene	10.9	U
209-96-8	acenaphthylene	10.9	U
83-32-9	acenaphthene	10.9	U
86-73-7	fluorene	10.9	U
85-01-8	phenanthrene	10.9	U
120-12-7	anthracene	10.9	U
206-44-0	fluoranthene	10.9	U
129-00-0	pyrene	10.9	U
56-55-3	benzo(a)anthracene	10.9	U
218-01-9	chrysene	10.9	U
205-99-2	benzo(b)fluoranthene	10.9	U
207-08-9	benzo(k)fluoranthene	10.9	U
50-32-8	benzo(a)pyrene	10.9	U
193-39-5	indeno(1,2,3-cd)pyrene	10.9	U
53-70-3	dibenz(a,h)anthracene	10.9	U
191-24-2	benzo(g,h,i)perylene	10.9	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

920514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A18W

Matrix: (soil/water) WATER Lab Sample ID: 9807047-15

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q4018

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/09/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-08

Sample wt/vol: 900.0 (g/mL) ML Lab File ID: 1B711

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	11.1	U
91-58-7	2-chloronaphthalene	11.1	U
209-96-8	acenaphthylene	11.1	U
83-32-9	acenaphthene	11.1	U
86-73-7	fluorene	11.1	U
85-01-8	phenanthrene	11.1	U
120-12-7	anthracene	11.1	U
206-44-0	fluoranthene	11.1	U
129-00-0	pyrene	11.1	U
56-55-3	benzo(a)anthracene	11.1	U
218-01-9	chrysene	11.1	U
205-99-2	benzo(b)fluoranthene	11.1	U
207-08-9	benzo(k)fluoranthene	11.1	U
50-32-8	benzo(a)pyrene	11.1	U
193-39-5	indeno(1,2,3-cd)pyrene	11.1	U
53-70-3	dibenz(a,h)anthracene	11.1	U
191-24-2	benzo(g,h,i)perylene	11.1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A19W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807048-09

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q3020

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-02

Sample wt/vol: 940.0 (g/mL) ML Lab File ID: 1B705

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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
209-96-8	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

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920532

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A18W

Matrix: (soil/water) WATER Lab Sample ID: 9807047-14

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q409

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/09/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920532

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-09

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: 1B712

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	10.2	U
91-58-7	2-chloronaphthalene	10.2	U
209-96-8	acenaphthylene	10.2	U
83-32-9	acenaphthene	10.2	U
86-73-7	fluorene	10.2	U
85-01-8	phenanthrene	10.2	U
120-12-7	anthracene	10.2	U
206-44-0	fluoranthene	10.2	U
129-00-0	pyrene	10.2	U
56-55-3	benzo(a)anthracene	10.2	U
218-01-9	chrysene	10.2	U
205-99-2	benzo(b)fluoranthene	10.2	U
207-08-9	benzo(k)fluoranthene	10.2	U
50-32-8	benzo(a)pyrene	10.2	U
193-39-5	indeno(1,2,3-cd)pyrene	10.2	U
53-70-3	dibenz(a,h)anthracene	10.2	U
191-24-2	benzo(g,h,i)perylene	10.2	U

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Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GA021

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
620114	6/29/98	1225	water		1								1	9807044-13
620112	6/29/98	1225			2								2	-14
820212	6/29/98	1040			2								2	-15
820412	6/29/98	1145			2								2	-16
920212	6/29/98	1825			2								2	-17
920412	6/29/98	1625			2								2	-18
920312	6/29/98	1510	↓		2								2	-19

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1630
RECEIVED BY: [illegible]	Date/Time 7.1.98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1200	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 7-1-98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1630	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 555

Cooler Temperature: 4°C

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GA022

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920216	6/29/98	1610	water		2								2	9807044-20
690212	6/29/98	1640			2								2	9807045-01
920522	6/29/98	1400			2								2	-02
920512	6/29/98	1325			2								2	-03
650516	6/29/98	1650			2								2	-04
650512	6/29/98	1600			2								2	-05
4902116	6/29/98	1430	↓		1								1	

7/1/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98		7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1630
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	7.1.98		
COMPANY NAME: GEL	1700	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	7-1-98		
COMPANY NAME: GEL	1650	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 4258 4°C

Cooler Temperature: 4° C

FEDEX NUMBER:

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Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GA023

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
890425	6/29/98	1705	water							3			3	98070145-C06
890112	6/29/98	1600			2								2	-07
920514	6/29/98	1325			2								2	-08
920532	6/29/98	1425			2								2	-09
850542	6/29/98	1830			2								2	-10
850532	6/29/98	1700			2								2	-11

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME: TGEL	1630
RECEIVED BY: [illegible]	Date/Time 7.1.98	RELINQUISHED BY:	Date/Time
COMPANY NAME: TGEL	1200	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 7-1-98	RECEIVED BY:	Date/Time
COMPANY NAME: TGEL	1631	COMPANY:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler Temperature: 4°C

Cooler ID: #627

FEDEX NUMBER:

COC NO.: GA024

CHAIN OF CUSTODY RECORD

LABORATORY NAME: General Engineering Laboratory

REQUESTED PARAMETERS

LABORATORY ADDRESS:

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CHAIN OF CUSTODY RECORD

COC NO.: GA024

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
660512	6/28/98	955	water		2								2	9807045-11 12
660514	6/28/98	955			2								2	-13
920112	6/30/98	910			2								2	-14
850524	6/29/98	1630			2								2	-15
890312	6/30/98	852			2								2	-16
660522	6/30/98	1040			2								2	-17
* 650522	6/29/98	1630			1								1	

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98 1200	D Hallowell	7/1/98 1620
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	7.1.98 1200	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	7-1-98 1630	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 631

Cooler Temperature: 4°C

FEDEX NUMBER:

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1 of

CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920121	6/30/96	830	soil						1		1		2	9807050-01
890121	6/29/96	1415							1		1		2	-02
920421	6/29/96	1600							1		1		2	-03
850421	6/29/96	950							1		1		2	-04
920123	6/30/96	830							1		1		2	-05
850121	6/29/96	1100							1		1		2	-06
890123	6/29/96	1415							1		1		2	-07
890321	6/29/96	1600							1			1	2	-08
850321	6/29/96	1200							1			1	2	-09
920321	6/29/96	1425							1			1	2	-10
620412	6/29/96	1145	water	2									2	9807047-18
820114	6/29/96	1225		2									2	-19
820112	6/29/96	1225		2									2	-20

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC	7/1/96 1200	COMPANY NAME: GEL	7/1/96 1630	Cooler ID: # 577	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	7/1/96 1200	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	7-1-96 1630	COMPANY NAME:			

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285

CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
890216	6/29/98	1430	water	2									2	9807047-01
820312	6/29/98	1211		2									2	-02
890512	6/29/98	855		2									2	-03
820212	6/29/98	1910		2									2	-04
890522	6/29/98	935		2									2	-05
890514	6/29/98	855		2									2	-06
890532	6/29/98	1125		2									2	-07
850212	6/29/98	940		2									2	-08
890312	6/30/98	857		2									2	-09
850312	6/29/98	1300		2									2	-10
890212	6/29/98	1640		2									2	-11
920512	6/29/98	1325		2									2	-12
850542	6/29/98	1430		2									2	-13

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
Laura Lumley	7/1/98	[illegible]	7/1/98		
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1630	Cooler ID: # 577	FEDEX NUMBER:
RECEIVED BY: [illegible]	Date/Time 7/1/98	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1200	COMPANY NAME:			
RELINQUISHED BY: [illegible]	Date/Time 7-1-98	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1630	COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920532	6/29/98	1435	water	2									2	9807047-14
920514	6/29/98	1325		2									2	-15
690112	6/29/98	1600		2									2	-16
850414	6/29/98	1035		2									2	-17
850112	6/29/98	1130		2									2	9807048-01
850412	6/29/98	1035		2									2	-02
650532	6/29/98	1700		2									2	-03
930642	6/30/98	1355		2									2	-04
930632	6/30/98	1315		2									2	-05
930652	6/30/98	1430		2									2	-06
930622	6/30/98	1245		2									2	-07
650516	6/29/98	1650		2									2	-08
920522	6/29/98	1400		2									2	-09

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME:	1630
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
[illegible]	7/1/98		
COMPANY NAME:	1750	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[illegible]	7-1-98		
COMPANY NAME:	1650	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 577

Cooler Temperature: 4°C

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	REQUESTED PARAMETERS: BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
860522	6/30/98	1040	water	2									2	9807048-10
850512	6/29/98	1600		2									2	-11
860514	6/29/98	955		2									2	-12
X 850524	6/29/98	1630		2									2	-13
930612	6/30/98	1215		2									2	-14
890412	6/30/98	925		2									2	-15
890425	6/29/98	1705		2									2	-16
X 850524	6/29/98	1630		2									2	-17
860512	6/29/98	955		2									2	-18
A 850225	6/29/98	850							2				2	-19
TRA019	6/29/98	745		2									2	-20
TRA020	6/30/98	745		2									2	9807046-05
920112	6/30/98	910		2									2	Unpreserved

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	7/1/98	A Marcio	7/1/98		4°C
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1620	Cooler ID: # 577	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME:	7-1-98 1700	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	7-1-98 1630	COMPANY NAME:			

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5 of 5

CHAIN OF CUSTODY RECORD

COC NO.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920212	6/29/98	1625	water	2									2	920212-07 (Unpreserved)
920412	6/29/98	1625	↓	2									2	11-08
920216	6/29/98	1610		2									2	11-09
920312	6/29/98	1510		2									2	Unpreserved

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME:	1630
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	7.1.98 1200	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:	7-1-98 1430	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: # 577

Cooler Temperature: 4°C

FEDEX NUMBER:

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6004W

Matrix: (soil/water) WATER Lab Sample ID: 9811468-16

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1J514

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. _____ Date Analyzed: 11/20/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
78-93-3	xylenes (total)	3.0	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6003W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811467-09

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 7U515

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	10.5	U
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.

920712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6004W

Matrix: (soil/water) WATER Lab Sample ID: 9811468-17

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1J515

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. _____ Date Analyzed: 11/20/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
78-93-3	xylenes (total)	3.0	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6003W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811467-03

Sample wt/vol: 900.0 (g/mL) ML Lab File ID: 7U509

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	11.1	U
91-58-7	2-chloronaphthalene	11.1	U
208-96-8	acenaphthylene	11.1	U
83-32-9	acenaphthene	11.1	U
86-73-7	fluorene	11.1	U
85-01-8	phenanthrene	11.1	U
120-12-7	anthracene	11.1	U
206-44-0	fluoranthene	11.1	U
129-00-0	pyrene	11.1	U
56-55-3	benzo(a)anthracene	11.1	U
218-01-9	chrysene	11.1	U
205-99-2	benzo(b)fluoranthene	11.1	U
207-08-9	benzo(k)fluoranthene	11.1	U
50-32-8	benzo(a)pyrene	11.1	U
193-39-5	indeno(1,2,3-cd)pyrene	11.1	U
53-70-3	dibenz(a,h)anthracene	11.1	U
191-24-2	benzo(g,h,i)perylene	11.1	U

DATA VALIDATION COPY

RINSATE

EPA SAMPLE NO.

920716

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6004W

Matrix: (soil/water) WATER Lab Sample ID: 9811468-15

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1J513

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. _____ Date Analyzed: 11/20/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
78-93-3	xylenes (total)	3.0	U	

FORM I VOA OLM03.0

RINSATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920716

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6003W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811467-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 7U507

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	10.0	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-08

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J711

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/22/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
1330-20-7	xylenes (total)	3.0	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-04

Sample wt/vol: 820.0 (g/mL) ML Lab File ID: 8U510

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	12.2	U
91-58-7	2-chloronaphthalene	12.2	U
208-96-8	acenaphthylene	12.2	U
83-32-9	acenaphthene	12.2	U
86-73-7	fluorene	12.2	U
85-01-8	phenanthrene	12.2	U
120-12-7	anthracene	12.2	U
206-44-0	fluoranthene	12.2	U
129-00-0	pyrene	12.2	U
56-55-3	benzo(a)anthracene	12.2	U
218-01-9	chrysene	12.2	U
205-99-2	benzo(b)fluoranthene	12.2	U
207-08-9	benzo(k)fluoranthene	12.2	U
50-32-8	benzo(a)pyrene	12.2	U
193-39-5	indeno(1,2,3-cd)pyrene	12.2	U
53-70-3	dibenz(a,h)anthracene	12.2	U
191-24-2	benzo(g,h,i)perylene	12.2	U

U

DUPLICATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920814

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-14

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J556

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
1330-20-7	xylenes (total)	3.0	U	

DUPLICATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920814

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-08

Sample wt/vol: 880.0 (g/mL) ML Lab File ID: 8U514

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	11.4	U
91-58-7	2-chloronaphthalene	11.4	U
208-96-8	acenaphthylene	11.4	U
83-32-9	acenaphthene	11.4	U
86-73-7	fluorene	11.4	U
85-01-8	phenanthrene	11.4	U
120-12-7	anthracene	11.4	U
206-44-0	fluoranthene	11.4	U
129-00-0	pyrene	11.4	U
56-55-3	benzo(a)anthracene	11.4	U
218-01-9	chrysene	11.4	U
205-99-2	benzo(b)fluoranthene	11.4	U
207-08-9	benzo(k)fluoranthene	11.4	U
50-32-8	benzo(a)pyrene	11.4	U
193-39-5	indeno(1,2,3-cd)pyrene	11.4	U
53-70-3	dibenz(a,h)anthracene	11.4	U
191-24-2	benzo(g,h,i)perylene	11.4	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920822

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-13

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J555

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
1330-20-7	xylenes (total)	3.0	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

920822

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-03

Sample wt/vol: 850.0 (g/mL) ML Lab File ID: 8U509

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

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	11.8	U
91-58-7	2-chloronaphthalene	11.8	U
208-96-8	acenaphthylene	11.8	U
83-32-9	acenaphthene	11.8	U
86-73-7	fluorene	11.8	U
85-01-8	phenanthrene	11.8	U
120-12-7	anthracene	11.8	U
206-44-0	fluoranthene	11.8	U
129-00-0	pyrene	11.8	U
56-55-3	benzo(a)anthracene	11.8	U
218-01-9	chrysene	11.8	U
205-99-2	benzo(b)fluoranthene	11.8	U
207-08-9	benzo(k)fluoranthene	11.8	U
50-32-8	benzo(a)pyrene	11.8	U
193-39-5	indeno(1,2,3-cd)pyrene	11.8	U
53-70-3	dibenz(a,h)anthracene	11.8	U
191-24-2	benzo(g,h,i)perylene	11.8	U

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CHAIN OF CUSTODY RECORD

COC NO.: GA003

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
920716	11/12/98	1115	water		2								2	9811467-01
870812	11/12/98	1230			2								2	02
920712	11/12/98	1110			2								2	03
880612	11/12/98	1500			2								2	04
940812	11/12/98	1420			2								2	05
880712	11/12/98	1630	↓		2								2	06

11/13/98

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
Laura Lumley	11/13/98	DIONNE FRANCIS	11/13/98		
COMPANY NAME: SAIC	1215	COMPANY NAME: GEL	1530	Cooler ID: #717	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time	Note: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.	
COMPANY NAME: GEL	11-13-98 1215	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	11-13-98 1530	COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GA0004

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
940712	11/12/98	1605	water		Z								Z	9811467-07
940912	11/12/98	1240			Z								Z	-08
920612	11/12/98	1020			Z								Z	-09
870712	11/12/98	1330			Z								Z	-10
870612	11/12/98	1430			Z								Z	-11
880812	11/12/98	1545			Z								Z	-12

11/13/98

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/13/98 1215	Dionne Francis	11/13/98 1530
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
GEL	11-13-98 1215		
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
GEL	11-13-98 1530		
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: # 715

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

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2 of 3

CHAIN OF CUSTODY RECORD

COC NO.: GAØØ6

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	Observations, Comments, Special Instructions
870612	11/12/98	1430	water	2									2	9811468-13
870812	11/12/98	1230		2									2	-14
920716	11/12/98	1115		2									2	-15
920612	11/12/98	1020		2									2	-16
920712	11/12/98	1110		2									2	-17
TBA031	11/12/98	745		2									2	-18
940921	11/12/98	1211	Soil			1			1				2	9811470-01
880721	11/12/98	1630				1			1				2	-02
920721	11/12/98	1100				1			1				2	-03
870621	11/12/98	1415				1			1				2	-04
940721	11/12/98	1513				1			1				2	-05
870721	11/12/98	1315				1			1				2	-06
780621	11/12/98	1620				1			1				2	-07

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley; COMPANY NAME: SAIC	11/13/98 1215	D. Franco; COMPANY NAME: GEL	11/13/98 1530
RECEIVED BY: Bob Lockhart; COMPANY NAME: GEL	11-17-98 1215	RELINQUISHED BY: ; COMPANY NAME:	Date/Time
RELINQUISHED BY: Bob Lockhart; COMPANY NAME: GEL	11-13-98 1530	RECEIVED BY: ; COMPANY NAME:	Date/Time

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Register Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA007

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

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

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
161012	11/13/98	1225	water		2								2	9811476-01
161014	11/13/98	1225			2								2	-02
920822	11/13/98	1030			2								2	-03
920812	11/13/98	950			2								2	-04
6680632	11/13/98	1640			2								2	-05
6680642	11/13/98	1745			2								2	-06

3966-1

11/14/98

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/98	DFrancis	11/14/98
COMPANY NAME: SAIC	1105	COMPANY NAME: gel	1330
RECEIVED BY: Carol Landel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: General Engineering	1105	COMPANY NAME:	
RELINQUISHED BY: Carol Landel	Date/Time 11/14/98	RECEIVED BY:	Date/Time
COMPANY NAME: General Engineering	1330	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: # 727

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicate a cooler temperature of 3°-5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA0066

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
680612	11/13/98	1615	water		2								2	9811476-07
920814	11/13/98	950			2								2	-08
840812	11/13/98	1045			2								2	-09
840612	11/13/98	915			2								2	-10
800712	11/13/98	1215			2								2	-11
680612	11/13/98	1550			2								2	-12

3667

11/14/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
Laura Lumley	11/14/98	Branco	11/14/98	Cooler ID: #725	FEDEX NUMBER:
COMPANY NAME: SAIC	1105	COMPANY NAME: GEL	1330		
RECEIVED BY: Carol Landel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time		
COMPANY NAME: General Engineering	1105	COMPANY NAME:			
RELINQUISHED BY: Carol Landel	Date/Time 11/14/98	RECEIVED BY:	Date/Time		
COMPANY NAME: General Engineering	1330	COMPANY NAME:			

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
840623	11/13/96	915	soil	1						1			2	9811477-14
860721	11/13/96	1745	↓	1						1			2	-15
800621	11/13/96	1615	↓	1						1			2	-16
680642	11/13/96	1745	water	2									2	9811478-01
680632	11/13/96	1640	↓	2									2	-02
860712	11/13/96	1745		2									2	-03
* 160912	11/13/96	1600		2									2	-04
680622	11/13/96	1615		2									2	-05
680612	11/13/96	1550		2									2	-06
160642	11/13/96	1500		2									2	-07
920812	11/13/96	950		2									2	-08
800612	11/13/96	1615		2									2	-09
840812	11/13/96	1435	↓	2									2	-10

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

3666.75 ↓ 3666.40

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/96	[illegible]	11/14/98
COMPANY NAME: SAIC	1105	COMPANY NAME: GEL	1330
RECEIVED BY: Carol Sandel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: General Engineering	1105	COMPANY NAME:	
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98	RECEIVED BY:	Date/Time
COMPANY NAME: General Engineering	1330	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.

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CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

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	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
161012	11/13/98	1225	water	2									2	9811478-11
840612	11/13/98	915		2									2	-12
920822	11/13/98	1030		2									2	-13
920814	11/13/98	950		2									2	-14
161014	11/13/98	1225		2									2	-15
160912	11/13/98	1600		2									2	-16
160814	11/13/98	1500		2									2	-17
TBA032	11/13/98	745		2									2	-18
800712	11/14/98	840		2									2	-19

LL 11/14/98

RELINQUISHED BY: Laura Lumley COMPANY NAME: SAIC	Date/Time 11/14/98 1105	RECEIVED BY: D. Franco COMPANY NAME: gel	Date/Time 11/14/98 1330
RECEIVED BY: Carol Sandel COMPANY NAME: General Engineering	Date/Time 11/14/98 1105	RELINQUISHED BY: COMPANY NAME:	Date/Time
RELINQUISHED BY: Carol Sandel COMPANY NAME: General Engineering	Date/Time 11/14/98 1330	RECEIVED BY: COMPANY NAME:	Date/Time

TOTAL NUMBER OF CONTAINERS: 70

Cooler ID: # 712

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.

GROUNDWATER ANALYTICAL DATA OBTAINED DURING USTS 63 & 64 CLOSURE ACTIVITIES (March 1993)

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James H. Carr & Associates, Inc.

Office & Laboratories
P.O. Box 90209
Columbia, SC 29290
(803) 776-7789
(800) 435-3995

USTs 63 & 64

04/15/93

Mr. Mike McRae
Anderson Columbia Environ
P.O. Box 1386
Lake City, FL 32056

Dear Mr. McRae:

The following are the results of the parameters you requested we check on your FT.ST.3/5 samples listed below.

Parameter	Analyst	Analysis Date -- Time		Results	Units	Lowest Detectable Level	Method Number
Sample Date: 03/03/93 In House # 03-0593-93		Source: 1128-A		Location: PIT			
Benzene - liquid	SL	03/10/93	12:00 <	200.000	ug/l	5.00 ug/l	624
Toluene - liquid	SL	03/10/93	12:00 <	200.000	ug/l	5.00 ug/l	624
Ethylbenzene - liquid	SL	03/10/93	12:00 <	200.000	ug/l	5.00 ug/l	624
Xylene - liquid	SL	03/10/93	12:00 <	200.000	ug/l	10.00 ug/l	624

Comments:
TRPH 418.1 was unable to be analyzed due to nature of this sample.
Detection limits and less than values for benzene, toluene, and ethylbenzene are 40 X those shown and xylenes is 20 X that shown. BTEX was analyzed by Savannah Laboratories.

Laboratory ID # 40111

Very truly yours,

James H. Carr, Jr.
Chemist

James H. Carr & Associates, Inc.

Office & Laboratories
P.O. Box 90209
Columbia, SC 29290
(803) 776-7789
(800) 435-3995

USTs 63 & 64

04/15/93

Mr. Mike McRae
Anderson Columbia Environ
P.O. Box 1386
Lake City, FL 32056

Dear Mr. McRae:

The following are the results of the parameters you requested we check on your FT.ST.3/5 samples listed below.

Parameter	Analyst	Analysis Date -- Time		Results	Units	Lowest Detectable Level	Method Number
Sample Date: 03/04/93 In House # 03-0594-93		Source: 1128-B		Location: PIT			
TRPH - liquid prep. - (418.1)	MB	03/22/93	08:00 <	0.000		0.00	
TPH IR Scan 418.1 - Liquid	SS	03/22/93	09:00	25.000	mg/l	1.00 mg/l	418.1
Benzene - liquid	SL	03/10/93	13:00 <	200.000	ug/l	5.00 ug/l	624
Toluene - liquid	SL	03/10/93	13:00 <	200.000	ug/l	5.00 ug/l	624
Ethylbenzene - liquid	SL	03/10/93	13:00 <	200.000	ug/l	5.00 ug/l	624
Xylene - liquid	SL	03/10/93	13:00 <	200.000	ug/l	10.00 ug/l	624

Comments:
Detection limits and less than values for benzene, toluene, and ethylbenzene are 40 X those shown and xylenes is 20 X that shown. BTEX was analyzed by Savannah Laboratories.

Laboratory ID # 40111

Very truly yours,

James H. Carr, Jr.
Chemist

ANDERSON COLUMBIA
ENVIRONMENTAL, INC.
CHAIN OF CUSTODY RECORD

Page___of___

Project No.: 2030
Project Name: FT. STEWART
Samplers (Signature): [signature]

Sample Number	Date	Time	Grab	Comp.	Sample Location	No. of Containers	Preservative	418.1	602	8020	9073	RCRA Metals			Remarks:
03 0593 - 1128-A	3-3-93	3 PM		✓	Pit	3	✓	✓	✓						Unleaded gasoline
0594 1128-B	3-4-93	1:30 PM		✓	Pit	3	✓	✓	✓						WASTE oil
0595 1128-Stockpile	3-4-93	1:50 PM								✓	✓	✓			

Relinquished by:	Date / Time	Received by:	Relinquished by:	Date / Time	Received by:
[signature]	3-4-93/4:50 pm	[signature]			
Relinquished by: [signature]	Date / Time 3-5-93 1130	Received by: [signature]	Relinquished by:	Date / Time	Remarks: * 0593 was being rescanned for 418.1
Relinquished by:	Date / Time	Received by:			

Coc # 1022

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APPENDIX IX

CONTAMINATED SOIL DISPOSAL 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 in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Closure Report was not submitted to GA EPD in 1993 because review of the closure analytical data indicated that a CAP-Part A would be required (i.e., per requirements of GUST-9, Item 15, page 12, dated August 1995). However, all pertinent information (i.e., copies of analytical data and maps) presented in the Closure Report are provided in this CAP-Part A Report. The records regarding the excavation of contaminated soil at the site indicate that approximately 15 cubic yards were removed but are insufficient to determine specific quantities from each tank pit. All soil excavated in 1993 (USTs 54 & 55, USTs 63 & 64, USTs 248 & 249, USTs 255 & 256, USTs 257–260) was stockpiled at a central location and transported to Kedesh, Inc., at the end of the project. Disposal manifests under this project have been archived and can be made available upon request.

Name: Thomas C. Fry

Title: Acting Chief, ENRD

Signature: Thomas C. Fry

Date: 09/07/99

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: USTs 63 & 64, Building 1128 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089051 **Date Ranked:** 7/11/99

SOIL CONTAMINATION (based on CAP-Part A Data, no Closure data)

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

* *Elevated PAH reporting limit for three samples , however, no estimated concentrations below that limit*

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

* *Based on elevated detection limit of 0.0116 mg/kg in sample 920221*

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. 1) = (1) x (C. 10) = (D. 10)

GROUNDWATER CONTAMINATION (based on CAP-Part A groundwater data)

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

* *CAP-Part A data supercedes elevated closure detection limits since CAP-Part A samples were collected from the tank pit*

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

Facility Name: USTs 63 & 64, Building 1128 **County:** Liberty **Facility ID #:** 9-089051

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	= 10
* ☒	>2 mi	= 0

For lower susceptibility areas only:

☐	>1 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 attached text.

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

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. 5) + (K. 0) = L. 5

(G. 0) x (L. 5) = M. 0

(M. 0) + (D. 10) = N. 10

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. 10) x (P. 1) = (10) + (Q. 0)

= 10 (based on CAP-Part A soil and groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

SITE RANKING FORM

Facility Name: USTs 63 & 64, Building 1128 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089051 **Date Ranked:** 7/11/99

SOIL CONTAMINATION (based on CAP-Part A Data, no Closure data)

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

* *Elevated PAH reporting limit for three samples , however, no estimated concentrations below that limit*

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

* *Based on elevated detection limit of 0.0116 mg/kg in sample 920221*

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. 1) = (1) x (C. 10) = (D. 10)

GROUNDWATER CONTAMINATION (based on Closure groundwater data)

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

* *Elevated benzene detection limits in two closure groundwater samples.*

Fill in the blanks: (E. 0) + (F. 50) = (G. 50)

Facility Name: USTs 63 & 64, Building 1128 **County:** Liberty **Facility ID #:** 9-089051

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

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

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

* For justification that withdrawal point is not hydraulically connected, see attached text.

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. 5) + (K. 0) = L. 5

(G. 50) x (L. 5) = M. 250

(M. 250) + (D. 10) = N. 260

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. 260) x (P. 1) = (260) + (Q. 0)

= 260 (based on CAP-Part A soil and Closure groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL 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 Item H of the Site Ranking Form and provides detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart which supports Fort Stewart's determination that the water withdrawal point(s) located at Fort Stewart is (are) not hydraulically connected to the surficial aquifer.

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 0 feet at the fall line located approximately 150 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 1970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2170 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 (Herrick and Vochis 1963).

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 (Herrick and Vochis 1963).

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 (Herrick and Vochis 1963).

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: Coosawhatchie 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 Markshead Formation is approximately 70 feet thick in the Savannah Georgia area and consists of light- colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

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.

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

APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OF NEWSPAPER NOTICE

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STATE OF GEORGIA
CHATHAM COUNTY

Affidavit of Publication
___Savannah Morning News
___Savannah Evening Press

Personnally appeared before me, Lynnette Tuck, to me known, who being sworn, deposes and says:

That he is the Class. Inside Sales Mgr. 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 6-27, 1999, 7-4, 1999, _____, 1999, _____, 1999, and finds that the following Advertisement, to-wit:

015 Miscellaneous Notices

PUBLIC NOTICE

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

The Georgia EPD (GEPD) has required Fort Stewart Directorate of Public Works to prepare a Corrective Action Plans Part-A to investigate and/or clean up contamination at the underground storage tank sites listed at the end of this notification. These plans will be submitted to the GEPD on or before September 30, 1999. If you want to examine a copy of one or more of the plans, please contact Commander, 3rd Infantry Division (Mechanized) and Fort Stewart, attn: DPW ENRD ENV. Br. (T. Rutland), 1557 Frank Cochran, Fort Stewart, Ga. 31314-4928

A copy will be mailed at a nominal fee.

Comments to the plan will be accepted until October 31, 1999, and should be directed to GEPD at 404-362-2687. Following is the mailing address:

GEPD USTMP, 4244 International Parkway, Suite 104, Atlanta, Ga. 30354

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

UST; Building; Facility ID#
2 & 3, 1840, 9-089065
5 & 6, 1824, 9-089066
28B, 1720, 9-089011
36 & 37m 1510, 9-089016
38, 1510/13, 9-089109
63 & 64, 1128, 9-089051
71, 1203, 9-089022
79, 1224, 9-089026
87 & 88, 1245, 9-089073
100B, 1350, 9-089081
122, 7705, 9-089083
123, 933, 9-089092
214, 1503, 9-089015
225, 4529, 9-089090
242 & 244, 241, 9-089041
248 & 249, 15016, 9-054006
4 & 5 NGTC, 9395, 0-890028
6 & 7 NGTC, 9795, 0-890028

appeared in each of said editions.

Lynnette Tuck
(Deponent)

Sworn to and subscribed before me this 7 day of July, 1999.

Zelle D. Jay
Notary Public, Chatham County, Georgia

Form 121 rev.

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APPENDIX XII

GUST TRUST FUND REIMBURSEMENT APPLICATION AND CLAIM FOR REIMBURSEMENT

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Fort Stewart is a federally owned facility and has funded the investigation for USTs 63 & 64, Building 1128, Facility ID #9-089051, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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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 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 retrieval of 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.

During the May and June 1998 sampling events, 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.

Due to a change in the state regulations governing sample analysis, the collection of samples designated for volatile organic analyses was modified beginning with the November 1998 field effort. Soil samples designated for volatile organic analyses were collected using En Core™ samplers. The samplers were locked into an En Core T-Handle. Using the T-Handle, the sampler was pushed into the soil until the coring body of the sampler was full. Once the samplers were filled, caps were locked onto them insuring that no

headspace was present. The samplers were then removed from the handle and placed in an En Core zipper bag. Three encore samples are collected from each section 2.0-foot section.

Immediately after collection of each sample and completion of 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 from geoprobe boreholes installed during Preliminary Groundwater and CAP-Part A investigations were collected 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 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 were 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. During field activities in November 1998 or later, the temporary piezometers were screened from ground surface to the bottom of the borehole.

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 drilling 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 were decontaminated once they 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, American Society for Testing and Materials (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. For a detailed description of all field documentation, see section 4.5 of Attachment IV of the Work Plan.

3.0 SAMPLE HANDLING AND ANALYSIS

3.1 Analytical Program

Soil samples were screened for the presence of volatile vapors using a MiniRae organic vapor analyzer (PID). 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, TPH by method SW846-9073, and lead by method SW846-6010/7000, during the May and June 1998 field effort. Beginning in November 1998, BTEX was analyzed using method SW846-5035/8260B, while the analyses for the other contaminants remained the same. Groundwater samples were analyzed for BTEX by method SW846-8260 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 SW846-8020, PAH by method SW846-8270, TPH by method SW846-8015 (modified), and lead by method SW846-6010/7000. Groundwater samples were analyzed for BTEX by method SW846-8260 and PAH by method SW 846-8270. TPH analysis included both gasoline range organics (GRO) and diesel range organics (DRO). Beginning in November 1998, soil samples were analyzed for BTEX using method SW846-5035/8260B. 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/TPH-GRO	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
BTEX (beginning 11/98)	3 – En Core™ Samplers	15 g	Cool, 0°C	48 hrs
TPH-GRO (beginning 11/98)	1 – 4 oz jar with Teflon®-lined cap (no headspace)	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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