FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 225
FACILITY ID #9-089090
BUILDING 4529
FORT STEWART, GEORGIA

Prepared for:

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

Prepared by:

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

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
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
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: UST 225, Building 4529 Street Address: W. 15th Street and Essayons Drive

Facility ID: 9-089090 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 15′ 17″ Longitude: 82° 05′ 15″

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

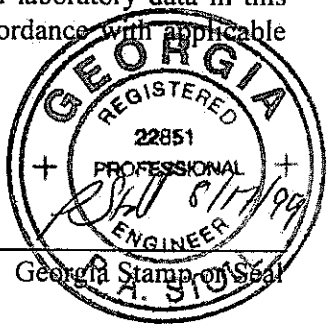
B. Registered Professional Engineer or Professional Geologist Certification

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: 8/17/99



Georgia Stamp or Seal

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

II. INITIAL RESPONSE REPORT

A. Initial Abatement

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

Actions were not required to abate imminent hazards and/or emergency conditions at the UST 225 site. Therefore, contaminant migration and release prevention, fire and vapor migration, or emergency free product removal was not performed prior to, or during, the removal of UST 225.

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
225	1000	used oil	6/18/96

D. Initial Site Characterization

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

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

Characterization of petroleum-related contamination at the site was initiated during UST system closure activities on June 18, 1996, by Anderson Columbia Environmental, Inc. (ACE). The ancillary piping was removed to the outdoor maintenance platform/pits. After removing the tank, one soil sample was collected from the tank pit (Figure 7). Benzene, toluene, ethylbenzene, xylenes, and oil and grease were detected in sample 225-T1-S1. Benzene was the only compound to exceed its respective soil threshold level. No groundwater 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 UST 225 and ancillary piping is presented in Figure 2. During removal activities by ACE, no holes in the tank were reported. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow.

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:	600	*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	2000	*feet*
ii. Nearest down-gradient surface water located within	3700	*feet*
iii. Nearest storm or sanitary sewer located within:	35	*feet*
iv. Depth to bottom of sewer at a point nearest the plume	3.3	*feet*

4. Impacted Environmental Media

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

Provide a brief discussion of soil sampling.
Continuous soil cores were collected at 2.0-foot intervals during the installation of nine 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, and PAH. In boreholes where organic vapors were detected, one sample was collected from the 2.0-foot interval where the highest vapor concentration was recorded, and the other from the deepest 2.0-foot interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the 2.0-foot interval nearest the midpoint of the boring, and the other from the 2.0-foot interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. *Soil contamination above applicable threshold levels?* YES X NO ____
If yes, indicate highest concentrations in soil along with locations and depths detected.

Benzene was detected at 0.231 mg/kg in the closure soil sample from the tank pit. The exact location and depth of this sample collected in 1996 is unknown. CAP-Part A investigation soil samples did not contain contaminant concentrations above applicable threshold limits.

ii. *ATLs calculated?* YES ____ NO X
If yes, present ATLs.

iii. *If ATL's calculated, is soil contamination above ATL's?* YES ___ NO ___ N/A X

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

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the water table to approximately 5.0 feet below the water table using a direct-push sampling device. At the vertical profile location (74-05), soil samples were collected every 5 feet below the water table until several soil sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. *Groundwater contamination above MCLs?* YES X NO ____
ii. *Groundwater contamination above In-Stream Water Quality Standards?* YES ____ NO X
If yes, indicate highest concentrations in groundwater along with the locations.

Benzene was present in borings 74-01 and 74-09 at concentrations of 49.6 µg/L and 5.6 µg/L, respectively. An elevated benzene detection limit of 50 µg/L was observed in boring 74-03. Other compounds were detected at these and other locations, but at concentrations below their respective MCLs. No BTEX or PAH compounds were present in the perimeter borings at concentrations above their respective regulatory limits.

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): 4.69 – 9.23 *(Table 4: Groundwater Elevations)*
b. Groundwater Flow Direction: east *(Figure 6: Potentiometric Surface Map)*
c. Hydraulic Gradient 0.005 ft/ft
d. Geophysical Province: coastal plain
e. Unique geologic/hydrological conditions: The Hawthorn Formation acts as a confining unit between the surficial and Floridan aquifers

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

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

ACE removed UST 225 on June 18, 1996. The UST piping was drained into the tank, and all used oil was subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. 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 tank was lifted from the excavation pit. The ancillary piping was removed to the outdoor maintenance platform/pits, and the ends were 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 1996 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, manifest, and maps) are provided in this CAP-Part A Report. Disposal manifests for the UST 225 site were submitted to GA EPD USTMP in September 1998 with the UST 207A (Facility ID#9-089039) Closure Report response to comments correspondence (Perez 1998). Approximately 21.81 tons of contaminated soil was excavated from the UST 225 tank pit.

7. Site Ranking:

Environmental Site Sensitivity Score: 600 (based on soil closure data and CAP-Part A groundwater data)
250 (based on CAP-Part A soil and 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)

There was no soil contamination in excess of applicable GUST soil threshold levels (i.e., Table A, Column 2) based on the CAP-Part A analytical results. Benzene was detected in two CAP-Part A groundwater samples with the highest concentration being 49.6 µg/L. The horizontal and vertical extent of groundwater contamination was determined during the CAP-Part A investigation. The closure data was collected two years prior to the CAP-Part A investigation and indicated a benzene concentration above the applicable soil threshold level. Due to the time period between the two sampling activities and the natural biodegration of petroleum compounds, the CAP-Part A results are more indicative of current site conditions and should be used to evaluate this site. Additional justification is provided in Appendix IX.

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)

UST 225, Building 4529, 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 the UST 225 site, Building 4529, Facility ID #9-089090, 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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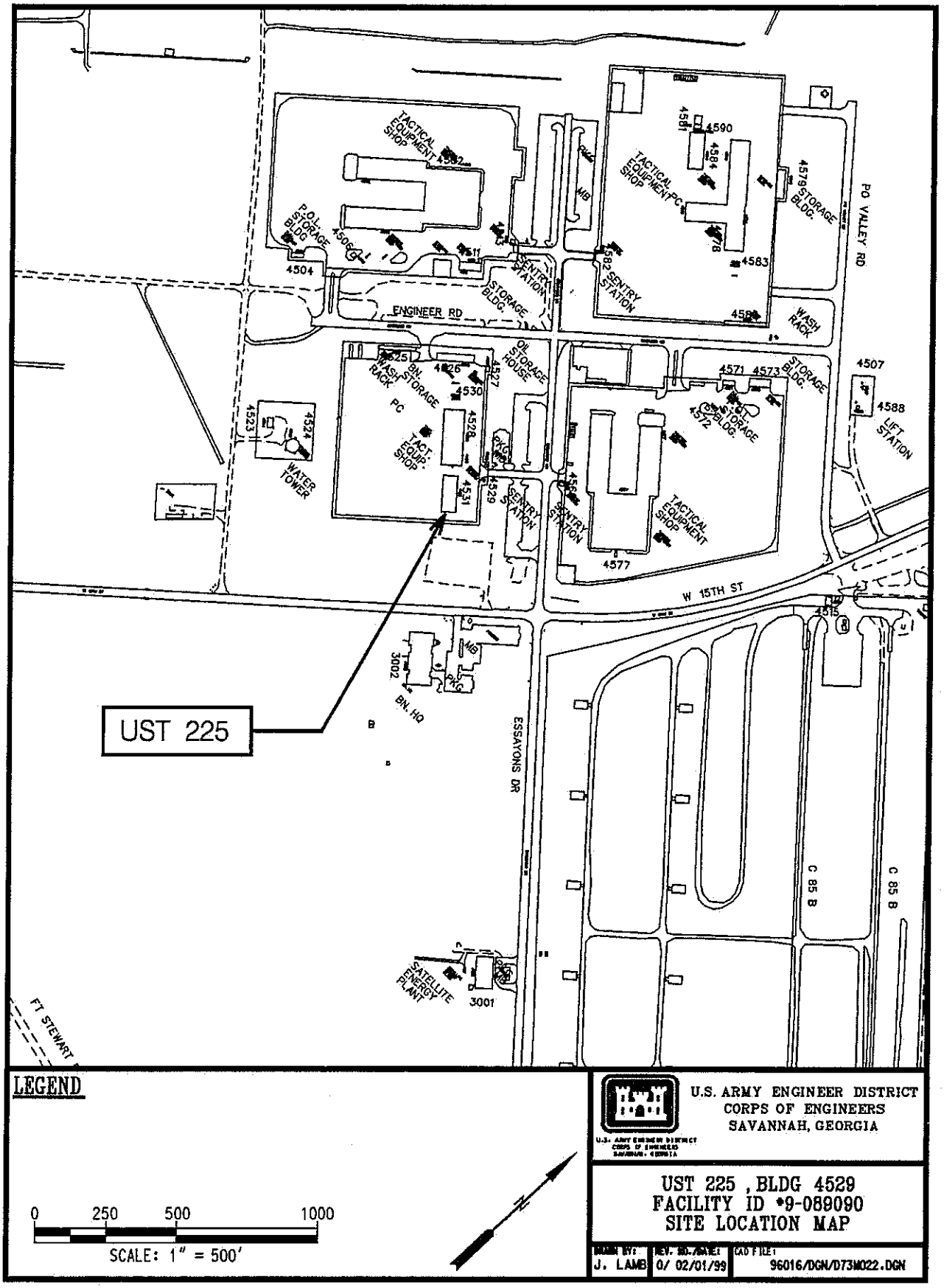

Figure 1. Location Map of UST 225, Fort Stewart, Liberty County, Georgia

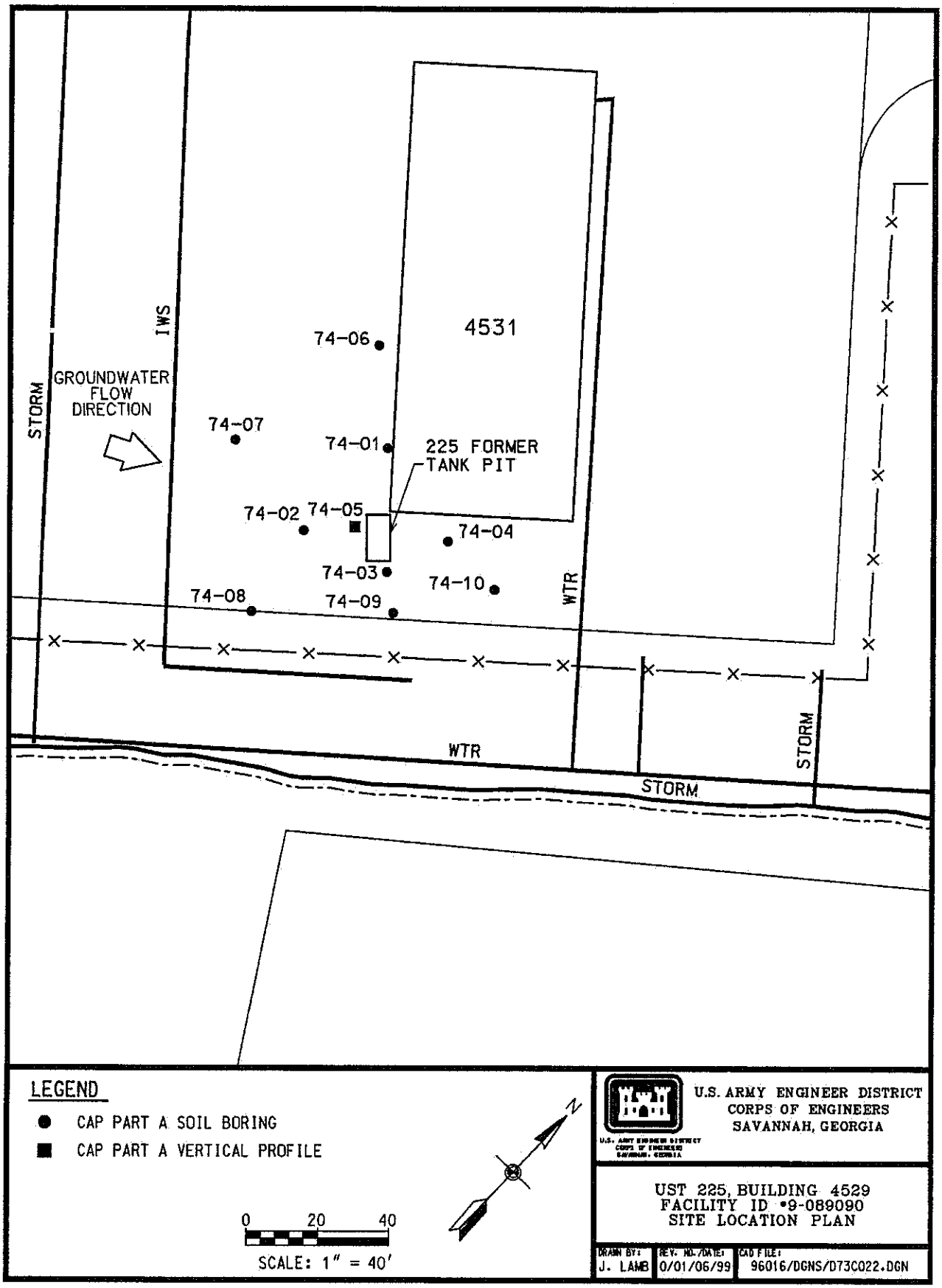

Figure 2. Site Plan for the UST 225 Site Investigation

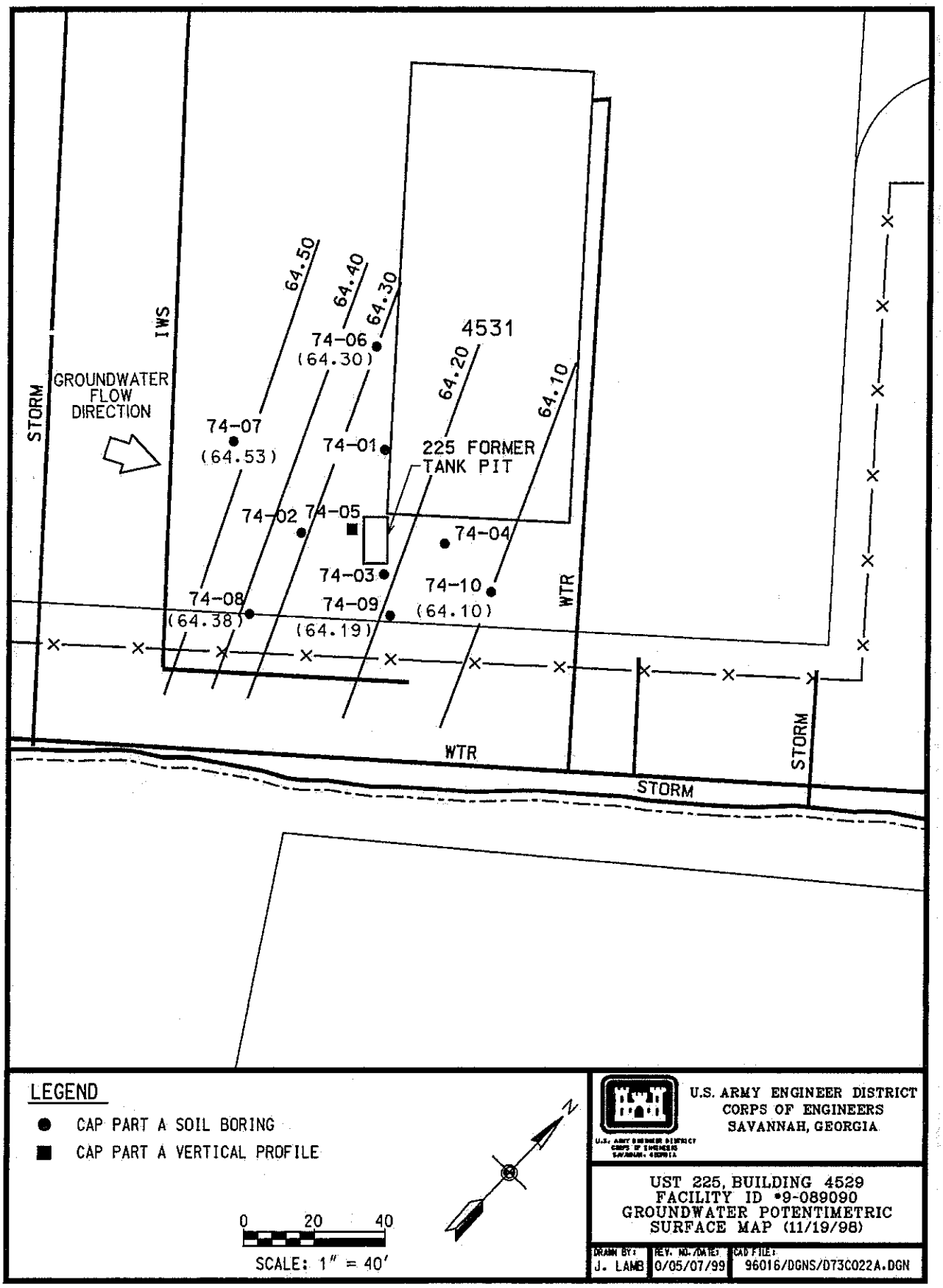

Figure 6. Potentiometric Surface Map of the UST 225 Site

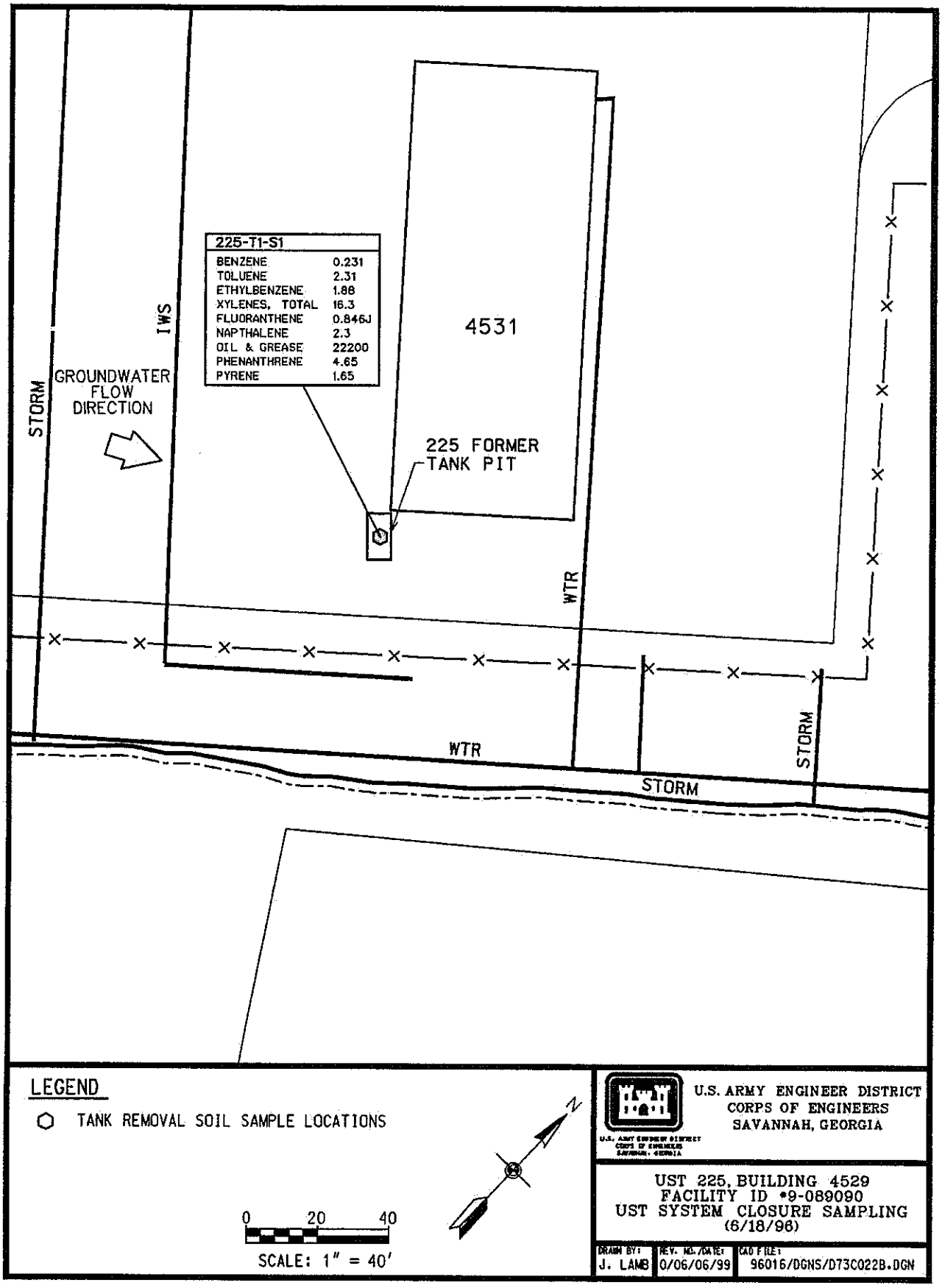

Figure 7. UST System Closure Sampling Locations at the UST 225 Site

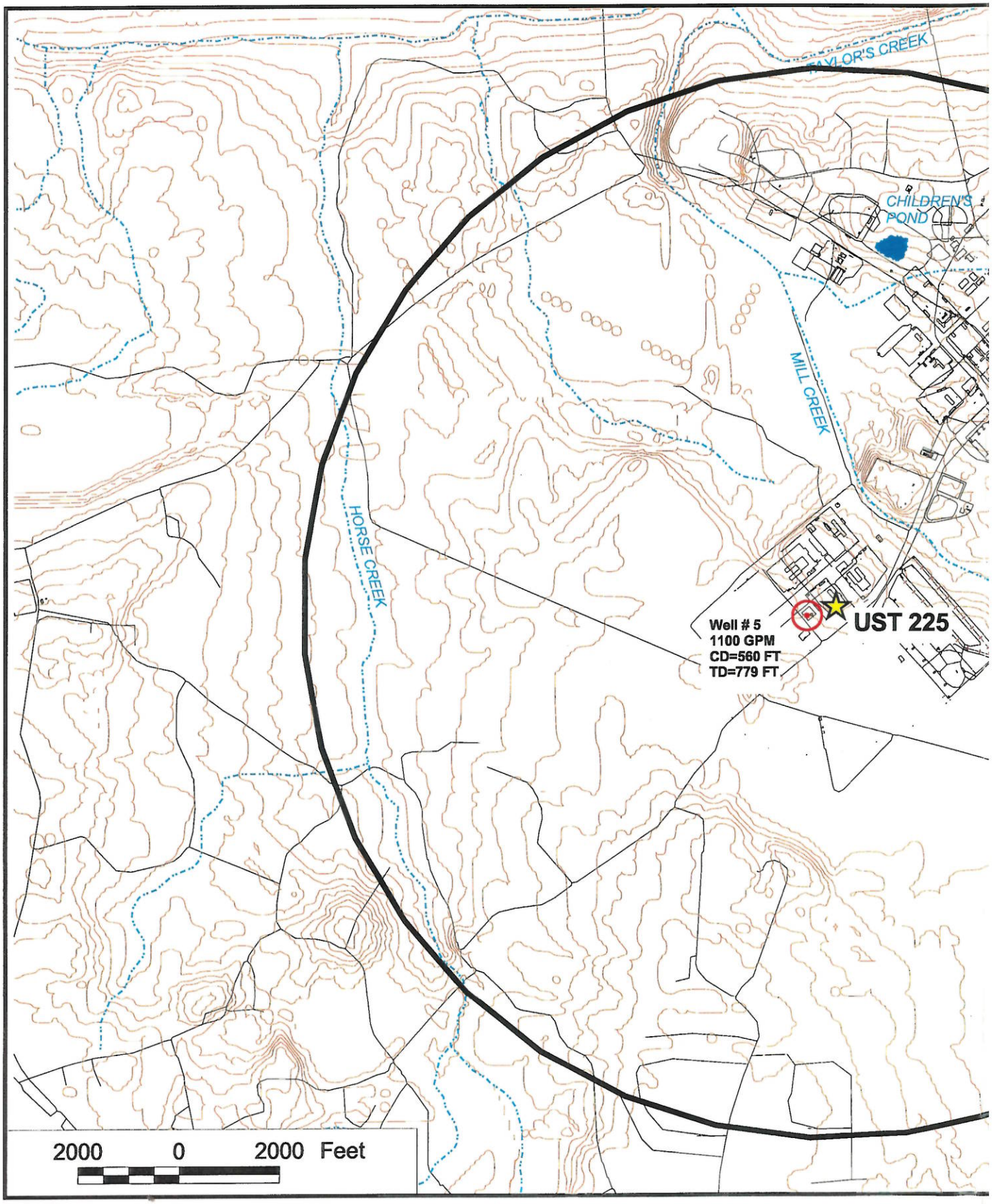

Figure 3. Map Showing Public and Private Drinking Water Sour
Bodies at Fort Stewart, Liberty County, Geo

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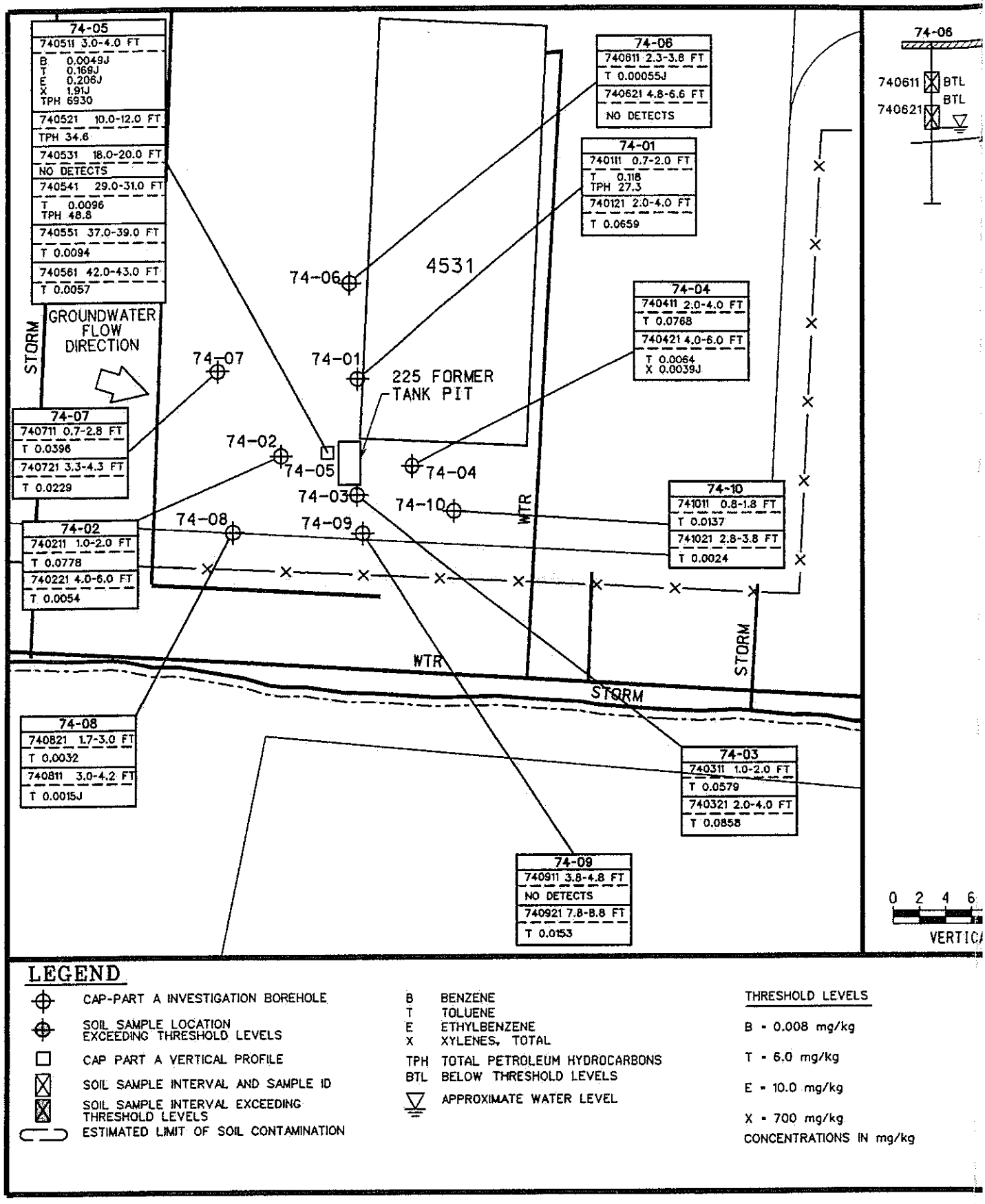

Figure 4. Soil Quality M

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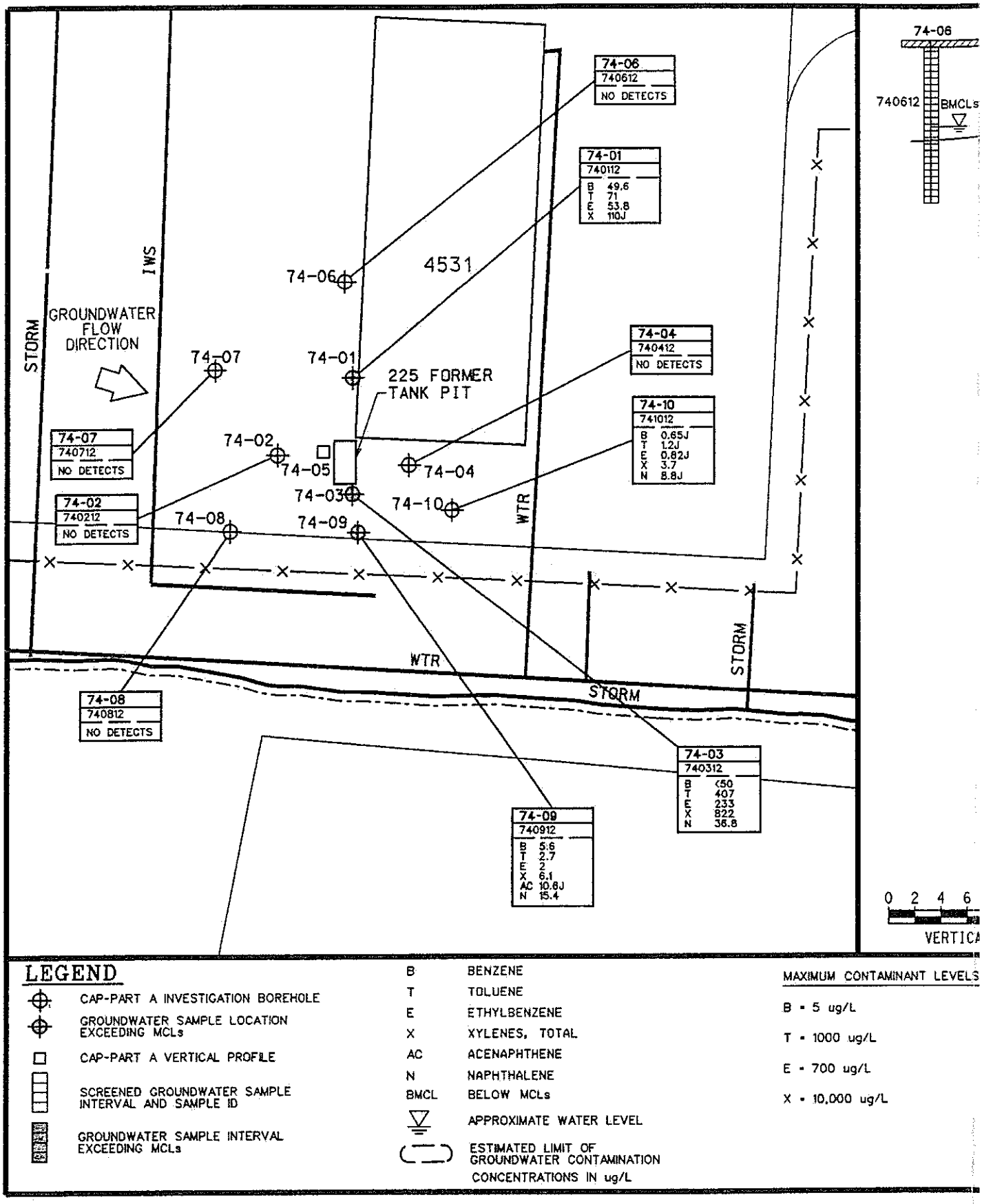

Figure 5. Groundwater Qu

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No additional borings or monitoring well locations 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 (mg/kg)
74-01	740111	0.7 - 2.0	05/11/98	0.0044 U	0.118 =	0.0044 U	0.0133 U	0.118	27.3 =
74-01	740121	2.0 - 4.0	05/11/98	0.0022 U	0.0659 =	0.0022 U	0.0066 U	0.0659	5.86 U
74-02	740211	1.0 - 2.0	05/11/98	0.0043 U	0.0778 =	0.0043 U	0.0129 U	0.0778	12.2 U
74-02	740221	4.0 - 6.0	05/11/98	0.0023 U	0.0054 =	0.0023 U	0.0069 U	0.0054	5.83 U
74-03	740311	1.0 - 2.0	05/11/98	0.0044 U	0.0579 =	0.0044 U	0.0133 U	0.0579	11.6 U
74-03	740321	2.0 - 4.0	05/11/98	0.0023 U	0.0858 =	0.0023 U	0.0068 U	0.0858	25.8 U
74-04	740411	2.0 - 4.0	05/11/98	0.0043 U	0.0768 =	0.0043 U	0.013 U	0.0768	6.68 U
74-04	740421	4.0 - 6.0	05/11/98	0.0024 U	0.0064 =	0.0024 U	0.0039 J	0.0103	7.87 U
74-05	740511	3.0 - 4.0	05/12/98	0.0049 J	0.169 J	0.206 J	1.91 J	2.2899	6930 =
74-05	740521	10.0 - 12.0	05/12/98	0.0047 U	0.0047 U	0.0047 U	0.0141 U	ND	34.6 =
74-05	740531	18.0 - 20.0	05/12/98	0.0026 U	0.0026 U	0.0026 U	0.0078 U	ND	2.51 U
74-05	740541	29.0 - 31.0	05/12/98	0.0024 U	0.0096 =	0.0024 U	0.0072 U	0.0096	48.8 =
74-05	740551	37.0 - 39.0	05/12/98	0.0024 U	0.0094 =	0.0024 U	0.0072 U	0.0094	13.6 U
74-05	740561	42.0 - 43.0	05/12/98	0.0026 U	0.0057 =	0.0026 U	0.0077 U	0.0057	8.4 U
74-06	740611	2.3 - 3.8	11/17/98	0.0022 U	0.00055 J	0.0022 U	0.0032 U	0.00055	14.4 U
74-06	740621	4.8 - 6.6	11/17/98	0.0022 U	0.0022 U	0.0022 U	0.0033 U	ND	7.91 U
74-07	740711	0.7 - 2.8	11/17/98	0.0022 U	0.0396 =	0.0022 U	0.0034 U	0.0396	6.5 U
74-07	740721	3.3 - 4.3	11/17/98	0.0022 U	0.0229 =	0.0022 U	0.0033 U	0.0229	7 U
74-08	740811	3.0 - 4.2	11/18/98	0.0022 U	0.0015 J	0.0022 U	0.0033 U	0.0015	8.92 U
74-08	740821	1.7 - 3.0	11/18/98	0.0022 U	0.0032 =	0.0022 U	0.0032 U	0.0032	7.24 U
74-09	740911	3.8 - 4.8	11/17/98	0.0022 U	0.0022 U	0.0022 U	0.0033 U	ND	12.3 U
74-09	740921	7.8 - 8.8	11/17/98	0.0022 U	0.0153 =	0.0022 U	0.0034 U	0.0153	14.8 U
74-10	741011	0.8 - 1.8	11/17/98	0.0022 U	0.0137 =	0.0022 U	0.0034 U	0.0137	8.33 U
74-10	741021	2.8 - 3.8	11/17/98	0.0022 U	0.0024 =	0.0022 U	0.0034 U	0.0024	8.21 U
Applicable Standards[1]				0.008	6	10	700	NRC	NRC

NOTES:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance 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

NRC No regulatory criteria

TPH Total petroleum hydrocarbon

Laboratory Qualifiers

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

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

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

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

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)						Total PAHs (mg/kg)
74-01	740111	0.7 - 2.0	05/11/98							ND
74-01	740121	2.0 - 4.0	05/11/98							ND
74-02	740211	1.0 - 2.0	05/11/98							ND
74-02	740221	4.0 - 6.0	05/11/98							ND
74-03	740311	1.0 - 2.0	05/11/98							ND
74-03	740321	2.0 - 4.0	05/11/98							ND
74-04	740411	2.0 - 4.0	05/11/98							ND
74-04	740421	4.0 - 6.0	05/11/98							ND
74-05	740511	3.0 - 4.0	05/12/98							ND
74-05	740521	10.0 - 12.0	05/12/98							ND
74-05	740531	18.0 - 20.0	05/12/98							ND
74-05	740541	29.0 - 31.0	05/12/98							ND
74-05	740551	37.0 - 39.0	05/12/98							ND
74-05	740561	42.0 - 43.0	05/12/98							ND
74-06	740611	2.3 - 3.8	11/17/98							ND
74-06	740621	4.8 - 6.6	11/17/98							ND
74-07	740711	0.7 - 2.8	11/17/98							ND
74-07	740721	3.3 - 4.3	11/17/98							ND
74-08	740811	3.0 - 4.2	11/18/98							ND
74-08	740821	1.7 - 3.0	11/18/98							ND
74-09	740911	3.8 - 4.8	11/17/98							ND
74-09	740921	7.8 - 8.8	11/17/98							ND
74-10	741011	0.8 - 1.8	11/17/98							ND
74-10	741021	2.8 - 3.8	11/17/98							ND
Applicable Standards[1]										NRC

NOTES:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance 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.

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	Screened Interval (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl - benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
74-01	740112	3.0 - 8.0	05/11/98	49.6 =	71 =	53.8 =	110 J	284.4
74-02	740212	0.0 - 10.0	05/11/98	2 U	2 U	2 U	6 U	ND
74-03	740312	3.0 - 8.0	05/11/98	50 U	407 =	233 =	822 =	1462
74-04	740412	5.0 - 10.0	05/11/98	2 U	2 U	2 U	6 U	ND
74-06	740612	0.0 - 12.3	11/17/98	2 U	2 U	2 U	3 U	ND
74-07	740712	0.0 - 11.5	11/17/98	2 U	2 U	2 U	3 U	ND
74-08	740812	0.0 - 10.0	11/18/98	2 U	2 U	2 U	3 U	ND
74-09	740912	0.0 - 12.8	11/17/98	5.6 =	2.7 =	2 =	6.1 =	16.4
74-10	741012	0.0 - 14.8	11/17/98	0.65 J	1.2 J	0.82 J	3.7 =	6.37
Applicable Standards[1]				5	1000	700	10000	NRC

NOTE:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance 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 at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

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

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)					Total PAH (ug/L)
				Acenaphthene	Naphthalene				
74-01	740112	3.0 - 8.0	05/11/98						
74-02	740212	0.0 - 10.0	05/11/98						
74-03	740312	3.0 - 8.0	05/11/98		36.8 =				
74-04	740412	5.0 - 10.0	05/11/98						
74-06	740612	0.0 - 12.3	11/17/98						
74-07	740712	0.0 - 11.5	11/17/98						
74-08	740812	0.0 - 10.0	11/18/98						
74-09	740912	0.0 - 12.8	11/17/98	10.6 =	15.4 =				
74-10	741012	0.0 - 14.8	11/17/98		8.8 J				
Applicable Standards[1]				NRC	NRC				NRC

NOTE:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

[1] U.S. Environmental Protection Agency maximum contaminant level
BGS Below ground surface
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

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

TABLE 4: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft MSL)	Top of Casing Elev. (ft MSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Specific Gravity Adjustment	Corrected Groundwater Elev. (ft MSL)
74-01	5/11/98	70.30	73.34	3.0 - 8.0	N/A	7.65	N/A	N/A	65.69
74-02	5/11/98	70.23	70.13	0.0 - 10.0	N/A	5.34	N/A	N/A	64.79
74-03	5/11/98	70.58	72.65	3.0 - 8.0	N/A	4.69	N/A	N/A	67.96
74-04	5/11/98	70.80	70.68	5.0 - 10.0	N/A	7.24	N/A	N/A	63.44
74-06	11/19/98	70.31	73.27	0.0 - 12.3	N/A	8.97	N/A	N/A	64.30
74-07	11/19/98	69.86	73.54	0.0 - 11.5	N/A	9.01	N/A	N/A	64.53
74-08	11/19/98	70.17	70.00	0.0 - 10.0	N/A	5.62	N/A	N/A	64.38
74-09	11/19/98	69.64	73.42	0.0 - 12.8	N/A	9.23	N/A	N/A	64.19
74-10	11/19/98	70.14	70.33	0.0 - 14.8	N/A	6.23	N/A	N/A	64.10

NOTE:

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

TABLE 5a: UST SYSTEM CLOSURE - 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)	Oil & Grease (mg/kg)
225-T1-S1	unknown	6/18/96	0.231 =	2.31 =	1.88 =	16.3 =	20.721	22200 =
Applicable Standards[2]			0.008	10	6	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)
			Fluoranthene	Naphthalene	Phenanthrene	Pyrene	
225-T1-S1	unknown	6/18/96	0.846 =	2.30 =	4.65 =	1.65 =	9.446
Applicable Standards[2]			NRC	NRC	NRC	NRC	NRC

NOTE:

[1] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
[2] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
ND Not detected
NRC No regulatory criteria.
PAH Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

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

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

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl – benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
			No groundwater samples were collected.				
Applicable Standards[2]			5	700	1,000	10,000	NRC

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

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

NOTE:

[1]	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1997)
[2]	U.S. Environmental Protection Agency maximum contaminant levels
BGS	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
ND	Not detected
NRC	No regulatory criteria.
PAH	Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

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

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 Floridan) aquifer. Chlorine and fluoride are added into the groundwater at the well heads prior to being pumped into storage tanks and/or water towers, according to Fort Stewart DPW personnel. The location of these wells, along with a 500-foot radius drawn around each well, is shown in Figure 3.

1.2 SURFACE WATER BODIES

Surface water(s) in the State of Georgia, as defined by Rules and Regulations for Water Quality Control, Chapter 391-3-6, shall mean any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming part of the boundaries of the state, 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 UST 225 SITE

A field potential receptor survey was conducted for the UST 225 site in May 1998. The site and adjacent areas were surveyed for locations of surface water bodies, utility lines, and basements. Basements do not exist in the buildings adjacent to the site. Additional information, provided by DPW, was used to determine the location of the nearest public and non-public water supply wells and downgradient surface water bodies not located during the field survey.

2.1 Water Supply Wells Near the UST 225 Site

The UST 225 site is located approximately 600 feet east (downgradient) of Well #5. Therefore, the UST 225 site is classified as being located greater than 500 feet to a withdrawal point. The nearest downgradient water supply well is Well #1, which is located 7500 feet east of the UST 225 site.

2.2 Surface Water Bodies Near the UST 225 Site

At the closest point to the site, Mill Creek is located approximately 2000 feet northeast of the UST 225 site. In the direction of groundwater flow, Mill Creek is located approximately 3700 feet east of the site. In addition, there is a storm water drainage ditch that is located along the southeastern boundary of the motorpool and is located approximately 65 feet southeast of the former tank pit. Based on the distances between the UST and the nearest surface water body, the site is classified as being located less than 500 feet to a downgradient surface water body.

2.3 Underground Utility Lines Near the UST 225 Site

The closest downgradient underground utility is an industrial wastewater line that is located approximately 35 feet southeast of the former tank pit with an invert depth of approximately 3.3 feet BGS. There is an underground water line located approximately 70 feet east of the former tank pit. The

depth of this utility is estimated to be 3.0 to 4.0 feet BGS. A storm drain catch basin is located approximately 130 feet east of the former tank pit and has an invert depth of approximately 3.0 feet BGS and flows into a storm water drainage ditch located along the southeastern boundary of the motorpool.

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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 74-01

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)
		CONCRETE				
	1	sandy SILT (ML), 25% fine to medium grained sand, subrounded, firm, dry, dark brown (10YR3/3)	6.3ppm		Soil Sample 740111	
	2					
	3		8.4ppm		Soil Sample 740121	▽ wet below 3.2 ft BGS
	4					
	5		N/A			
	6					
	7	sandy CLAY (CH), 10% fine grained sand, medium plasticity, firm, wet yellowish brown (10YR5/6	N/A			
	8					END OF DRILLING AT 8.0 FT BGS AND SET TEMPORARY PIEZOMETER COLLECTED GROUNDWATER SAMPLE 740112 FROM TEMPORARY PIEZOMETER SCREENED AT 3.0 TO 8.0 FT BGS
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 74-02

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

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	CONCRETE				
	2	silty SAND (SW), fine to medium grained, moist, soft, very dark brown (10YR 2/2)	14.2 ppm		Soil Sample 740211	
	3		N/A			
	4	SAND with silt (SP-SM), coarse grained, poorly graded, angular, soft, moist, grayish-brown (10YR 5/2)				
	5	clayey SAND (SC), fine to medium grained, soft, moist to wet, dark gray (10YR 4/1) mottled olive yellow (2.5 Y 6/8)	3.4 ppm		Soil Sample 740221	▽ wet below 5.0 ft BGS
	6					
	7	Sandy CLAY (CH), stiff, coarse grained, poorly sorted, wet, gray (2.5Y 6/1) mottled yellowish brown (10YR 5/8)	N/A			
	8					
	9	SHELBY TUBE SAMPLE	N/A	Soil Sample 740231		COLLECTED GROUNDWATER SAMPLE 740212 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 FT TO 10.0 FT BGS
	10					END OF DRILLING AT 10.0 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 74-03

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)
	0–1	CONCRETE				
	1–2	sandy SILT (ML), 25% fine grained sand, dry, soft to firm, dark brown (10YR3/3)	10.5ppm		Soil Sample 740311	
	2–4		15.4ppm		Soil Sample 740321	▽ wet below 4.0 ft BGS
	4–7	silty SAND (SM), 20% silt, fine to medium grained, subrounded, firm, wet, dark grayish brown (10YR4/2)				
	7–8	clayey SAND (SC), 30% clay, medium plasticity, wet, firm, Yellowish brown (10YR5/8				
	8–10					END OF DRILLING AT 8.0 FT BGS AND SET TEMPORARY PIEZOMETER COLLECTED GROUNDWATER SAMPLE 740312 FROM TEMPORARY PIEZOMETER SCREENED AT 3.0 TO 8.0FT BGS

HTRW DRILLING LOG

HOLE NUMBER 74-04

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

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Concrete				
	2	silty SAND (SW), fine to medium grained, soft, moist, very dark brown (10YR 2/2)	0.0 ppm			
	3	SAND with silt (SP-SM), coarse grained, angular, soft, moist, grayish-brown (10YR 5/2)	0.0 ppm		Soil Sample 740411	
	4					
	5	clayey SAND (SC), fine to medium grained, soft, moist to wet, dark gray (10YR 4/1), mottled - olive yellow (2.5Y 6/8)	0.0 ppm		Soil Sample 740421	
	6					▽ = wet below 6.0 ft BGS
	7	Sandy CLAY (CH), coarse grained, poorly graded stiff, wet, gray (2.5Y 6/1) mottled, primarily yellowish brown (10YR 5/8)	0.0 ppm			
	8					
	9		N/A			Collected groundwater sample 740412 from temporary piezometer screened at 5.0 ft to 10.0 ft BGS. End of drilling at 10.0 ft BGS and set temporary piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 74-05

PROJECT: Fort Stewart USTs | INSPECTOR L. Mercado | SHEET 1 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	CONCRETE				
	2	silty SAND (SW-SM), 20% silt, fine to medium grained, subangular, dense, moist, brown (7.5 YR 4/2)	2.2 ppm			
	3					
	4	silty SAND (SM), 35% silt, fine to medium grained, subangular, medium dense, moist, very dark gray (2.5 Y 3/1)	644 ppm		Soil Sample 740511	
	5					
	6		168 ppm			
	7					
	8					
	9	clayey SAND (SC); fine to medium grained, subrounded, medium dense, low to no plasticity, white (2.5 YR 8/1) wet.	21.0 ppm			
	10					

HTRW DRILLING LOG

HOLE NUMBER 74-05

PROJECT: Fort Stewart USTs

INSPECTOR L. Mercado

SHEET 2 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11	Clayey SAND (SC); as above	54.1 ppm		Soil Sample 740521	
	12					
	13		5.9 ppm			
	14					
	15		3.6 ppm			
	16					
	17		1.5 ppm			
	18					
	19		1.4 ppm		Soil Sample 740531	
	20					

HTRW DRILLING LOG

HOLE NUMBER 74-05

PROJECT: Fort Stewart USTs | INSPECTOR L. Mercado | SHEET 3 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	21	clayey SAND (SC): as above (based on cuttings)	N/R			Ran 4.0', Rec 0.0'
	22					
	23		N/R			
	24					Ran 3.0' 0.0'
	25		N/R			
	26					
	27		N/R			
	28					
	29		2.2 ppm		Soil Sample 740541	
	30					

HTRW DRILLING LOG

HOLE NUMBER 74-05

PROJECT: Fort Stewart USTs | INSPECTOR L. Mercado | SHEET 4 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	31	Clayey SAND (SC); as above (based on cuttings)			↓	Ran 4.0', Rec 0.0
	32		N/R			
	33					
	34					
	35					
	36	SAND (SW), fine grained, loose, with fine pieces of bivalve shells, wet, greenish gray (5GY6/1)	2.6ppm			
	37					
	38	Sandy CLAY (CL), fine to medium grained sand, low plasticity, soft, 30% bivalve shell fragments (Hawthorn), greenish gray (10GY5/1)	2.3ppm		Soil Sample 74055	
	39					
	40		4.6ppm			

HTRW DRILLING LOG

HOLE NUMBER 74-05

PROJECT: Fort Stewart USTs | INSPECTOR L. Mercado | SHEET 5 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	41	SILT (ML), trace of clay, stiff, no plasticity, no toughness, dry, greenish gray (5G7/1)				
	42		7.0 ppm			
	43		5.0 ppm		Soil Sample 740561	
	43					END OF DRILLING AT 43.0 FT BGS
	44					
	45					
	46					
	47					
	48					
	49					
	50					

HTRW DRILLING LOG

HOLE NUMBER 74-06

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	Silty SAND (SM), fine to medium grained, some clay, dark gray to black to light gray	0.0 ppm			
	2					
	3		0.0 ppm		Soil Sample 740611	
	4	Clayey SAND (SC), fine to medium grained, moist, orange to gray				
		Silty SAND (SM), fine to medium grained, moist to saturated, gray to dark gray	0.0 ppm			
	5					
	6		0.0 ppm		Soil sample 740621	▽ wet below = 6.5 ft BGS
	7		0.0 ppm			
		Clayey SAND (SC), fine to medium grained, firm to hard, light gray				COLLECTED GROUNDWATER SAMPLE 740612 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 12.3 FT BGS.
	8					
	9					END OF DRILLING AT 12.3 FT BGS AND SET TEMPORARY PIEZOMETER
	10					

HTRW DRILLING LOG

HOLE NUMBER 74-07

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)
	0	CONCRETE				
	1	SAND (SP), fine to coarse grained, some silt, some clay, dark gray to tan				
	2		0.0 ppm		Soil Sample 740711	
	3		0.0 ppm			
	4		0.0 ppm		Soil Sample 740721	
		Silty SAND (SM), fine to medium grained, wet, gray				
	5					▽ wet below 5.0 FT BGS
	6					
	7					COLLECTED GROUNDWATER SAMPLE 740712 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 11.5 FT BGS.
	8					
	9					
	10					END OF DRILLING AT 11.5 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 74-08

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	CONCRETE				
	1	silty SAND (Sm), 20% silt, fine to medium grained, subrounded, soft, wet from surface to 1.7' then dry, brown (10YR 4/3)	N/A			
	2		190ppm		Soil Sample 740821	
	3		14.7ppm		Soil Sample 740811	
	4					▽ = wet below 4.2 FT BGS
	5					
	6	sandy CLAY (CH), 15% fine to medium grained sand, medium plasticity, firm, wet, brownish yellow (10YR 6/8)				
	7					COLLECTED GROUNDWATER SAMPLE 740812 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 10.0 FT BGS
	8					
	9					
	10					END DRILLING AT 10.2 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 74-09

PROJECT: Fort Stewart USTs | INSPECTOR J. Shiflet | SHEET 1 OF 2

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, some silt, moist dark gray to mottled orange to tan	0.0 ppm			
	2		0.0ppm			
	3		0.0ppm			
	4		0.0ppm		Soil Sample 740911	
	5		0.0ppm			
	6		0.0ppm			
	7		0.0 ppm			
	8		0.0 ppm		Soil Sample 740921	
	9	Silty SAND(SM), some gravel, saturated, gray				▽ wet below 9.3 FT BGS
	10	Silty SAND(SM), fine to coarse grained, hard, moist, very light gray				

HTRW DRILLING LOG

HOLE NUMBER 74-09

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

SHEET 2 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11					COLLECTED GROUNDWATER SAMPLE 740912 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 12.8 FT BGS
	12					
	13					END OF DRILLING AT 12.8 FT BGS AND SET TEMPORARY PIEZOMETER
5	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 74-10

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)
	0	CONCRETE				
	1	SAND(SP), fine to medium grained, subrounded, some silt, moist, dark gray	0.0 ppm		Soil sample 741011	
	2		0.0 ppm			
	3		0.0 ppm		Soil sample 741021	
	4					▽ wet below 4.0 ft BGS
	5	Silty SAND(sm), fine to medium grained, some clay, soft to hard, orange mottled with tan to light gray				
	6					
	7					COLLECTED GROUNDWATER SAMPLE 741014 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 14.8 FT BGS
	8					
	9					
	10					END OF DRILLING AT 14.8 FT BGS AND SET TEMPORARY PIEZOMETER

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APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GA UST	74-01	74-01	74-02	74-02	74-03
Sample ID:	Soil	740111	740121	740211	740221	740311
Sample Interval (ft BGS):	Threshold	0.7 - 2.0	2.0 - 4.0	1.0 - 2.0	4.0 - 6.0	1.0 - 2.0
Collection Date:	Level[1]	11-May-98	11-May-98	11-May-98	11-May-98	11-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0044 U	0.0022 U	0.0043 U	0.0023 U	0.0044 U
Toluene	6	0.118 =	0.0659 =	0.0778 =	0.0054 =	0.0579 =
Ethylbenzene	10	0.0044 U	0.0022 U	0.0043 U	0.0023 U	0.0044 U
Xylenes, Total	700	0.0133 U	0.0066 U	0.0129 U	0.0069 U	0.0133 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Acenaphthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Acenaphthylene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(a)anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(a)pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(b)fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(k)fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Chrysene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Fluorene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Naphthalene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Phenanthrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Other Analytes						
Lead	NRC		1.9 U		4.3 =	
Total Petroleum Hydrocarbons	NRC	27.3 =	5.86 U	12.2 U	5.83 U	11.6 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for the UST closure is summarized in Appendix II, and the analytical data is included at the end of this appendix but is 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.

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

Station:	GA UST	74-03	74-04	74-04	74-05	74-05
Sample ID:	Soil	740321	740411	740421	740511	740521
Sample Interval (ft BGS):	Threshold	2.0 - 4.0	2.0 - 4.0	4.0 - 6.0	3.0 - 4.0	10.0 - 12.0
Collection Date:	Level[1]	11-May-98	11-May-98	11-May-98	12-May-98	12-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0023 U	0.0043 U	0.0024 U	0.0049 J	0.0047 U
Toluene	6	0.0858 =	0.0768 =	0.0064 =	0.169 J	0.0047 U
Ethylbenzene	10	0.0023 U	0.0043 U	0.0024 U	0.206 J	0.0047 U
Xylenes, Total	700	0.0068 U	0.013 U	0.0039 J	1.91 J	0.0141 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Acenaphthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Acenaphthylene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(a)anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(a)pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(b)fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(g,h,i)perylene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(k)fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Chrysene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Dibenzo(a,h)anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Fluorene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Indeno(1,2,3-cd)pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Naphthalene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Phenanthrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Other Analytes						
Lead	NRC	3 =		5.2 =	2.7 =	
Total Petroleum Hydrocarbons	NRC	25.8 U	6.68 U	7.87 U	6930 =	34.6 =

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for the UST closure is summarized in Appendix II, and the analytical data is included at the end of this appendix but is 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.

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

Station:	GA UST	74-05	74-05	74-05	74-05	74-06
Sample ID:	Soil	740531	740541	740551	740561	740611
Sample Interval (ft BGS):	Threshold	18.0 - 20.0	29.0 - 31.0	37.0 - 39.0	42.0 - 43.0	2.3 - 3.8
Collection Date:	Level[1]	12-May-98	12-May-98	12-May-98	12-May-98	17-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0026 U	0.0024 U	0.0024 U	0.0026 U	0.0022 U
Toluene	6	0.0026 U	0.0096 =	0.0094 =	0.0057 =	0.00055 J
Ethylbenzene	10	0.0026 U	0.0024 U	0.0024 U	0.0026 U	0.0022 U
Xylenes, Total	700	0.0078 U	0.0072 U	0.0072 U	0.0077 U	0.0032 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Acenaphthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Acenaphthylene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(a)anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(a)pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(b)fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(g,h,i)perylene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(k)fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Chrysene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Dibenzo(a,h)anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Fluorene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Indeno(1,2,3-cd)pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Naphthalene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Phenanthrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Other Analytes						
Lead	NRC					
Total Petroleum Hydrocarbons	NRC	2.51 U	48.8 =	13.6 U	8.4 U	14.4 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for the UST closure is summarized in Appendix II, and the analytical data is included at the end of this appendix but is 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.

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

Station:	GA UST	74-06	74-07	74-07	74-08	74-08
Sample ID:	Soil	740621	740711	740721	740811	740821
Sample Interval (ft BGS):	Threshold	4.8 - 6.6	0.7 - 2.8	3.3 - 4.3	3.0 - 4.2	1.7 - 3.0
Collection Date:	Level[1]	17-Nov-98	17-Nov-98	17-Nov-98	18-Nov-98	18-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Toluene	6	0.0022 U	0.0396 =	0.0229 =	0.0015 J	0.0032 =
Ethylbenzene	10	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.0033 U	0.0034 U	0.0033 U	0.0033 U	0.0032 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Acenaphthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Acenaphthylene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(a)anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(a)pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(b)fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(k)fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Chrysene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Fluorene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Naphthalene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Phenanthrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Other Analytes						
Lead	NRC	3.1 =	1.9 =			1.4 =
Total Petroleum Hydrocarbons	NRC	7.91 U	6.5 U	7 U	8.92 U	7.24 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for the UST closure is summarized in Appendix II, and the analytical data is included at the end of this appendix but is 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.

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

Station:	GA UST	74-09	74-09	74-10	74-10
Sample ID:	Soil	740911	740921	741011	741021
Sample Interval (ft BGS):	Threshold	3.8 - 4.8	7.8 - 8.8	0.8 - 1.8	2.8 - 3.8
Collection Date:	Level[1]	17-Nov-98	17-Nov-98	17-Nov-98	17-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS					
Benzene	0.008	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Toluene	6	0.0022 U	0.0153 =	0.0137 =	0.0024 =
Ethylbenzene	10	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.0033 U	0.0034 U	0.0034 U	0.0034 U
POLYNUCLEAR AROMATIC HYDROCARBONS					
2-Chloronaphthalene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Acenaphthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Acenaphthylene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(a)anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(a)pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(b)fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(k)fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Chrysene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Fluorene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Naphthalene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Phenanthrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Other Analytes					
Lead	NRC		2.5 =		3 =
Total Petroleum Hydrocarbons	NRC	12.3 U	14.8 U	8.33 U	8.21 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for the UST closure is summarized in Appendix II, and the analytical data is included at the end of this appendix but is 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.

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APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GA UST	74-01	74-01	74-02	74-02	74-03
Sample ID:	Soil	740111	740121	740211	740221	740311
Sample Interval (ft BGS):	Threshold	0.7 - 2.0	2.0 - 4.0	1.0 - 2.0	4.0 - 6.0	1.0 - 2.0
Collection Date:	Level[1]	11-May-98	11-May-98	11-May-98	11-May-98	11-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0044 U	0.0022 U	0.0043 U	0.0023 U	0.0044 U
Toluene	6	0.118 =	0.0659 =	0.0778 =	0.0054 =	0.0579 =
Ethylbenzene	10	0.0044 U	0.0022 U	0.0043 U	0.0023 U	0.0044 U
Xylenes, Total	700	0.0133 U	0.0066 U	0.0129 U	0.0069 U	0.0133 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Acenaphthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Acenaphthylene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(a)anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(a)pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(b)fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Benzo(k)fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Chrysene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Fluoranthene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Fluorene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Naphthalene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Phenanthrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Pyrene	NRC	0.370 U	0.366 U	0.354 U	0.383 U	0.369 U
Other Analytes						
Lead	NRC		1.9 U		4.3 =	
Total Petroleum Hydrocarbons	NRC	27.3 =	5.86 U	12.2 U	5.83 U	11.6 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for UST closure was submitted in the November 1996 Closure Report and is summarized in Appendix II.

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.

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

Station:	GA UST	74-03	74-04	74-04	74-05	74-05
Sample ID:	Soil	740321	740411	740421	740511	740521
Sample Interval (ft BGS):	Threshold	2.0 - 4.0	2.0 - 4.0	4.0 - 6.0	3.0 - 4.0	10.0 - 12.0
Collection Date:	Level[1]	11-May-98	11-May-98	11-May-98	12-May-98	12-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0023 U	0.0043 U	0.0024 U	0.0049 J	0.0047 U
Toluene	6	0.0858 =	0.0768 =	0.0064 =	0.169 J	0.0047 U
Ethylbenzene	10	0.0023 U	0.0043 U	0.0024 U	0.206 J	0.0047 U
Xylenes, Total	700	0.0068 U	0.013 U	0.0039 J	1.91 J	0.0141 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Acenaphthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Acenaphthylene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(a)anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(a)pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(b)fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(g,h,i)perylene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Benzo(k)fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Chrysene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Dibenzo(a,h)anthracene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Fluoranthene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Fluorene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Indeno(1,2,3-cd)pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Naphthalene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Phenanthrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Pyrene	NRC	0.379 U	0.355 U	0.392 U	1.45 U	0.392 U
Other Analytes						
Lead	NRC	3 =		5.2 =	2.7 =	
Total Petroleum Hydrocarbons	NRC	25.8 U	6.68 U	7.87 U	6930 =	34.6 =

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for UST closure was submitted in the November 1996 Closure Report and is summarized in Appendix II.

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.

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

Station:	GA UST	74-05	74-05	74-05	74-05	74-06
Sample ID:	Soil	740531	740541	740551	740561	740611
Sample Interval (ft BGS):	Threshold	18.0 - 20.0	29.0 - 31.0	37.0 - 39.0	42.0 - 43.0	2.3 - 3.8
Collection Date:	Level[1]	12-May-98	12-May-98	12-May-98	12-May-98	17-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0026 U	0.0024 U	0.0024 U	0.0026 U	0.0022 U
Toluene	6	0.0026 U	0.0096 =	0.0094 =	0.0057 =	0.00055 J
Ethylbenzene	10	0.0026 U	0.0024 U	0.0024 U	0.0026 U	0.0022 U
Xylenes, Total	700	0.0078 U	0.0072 U	0.0072 U	0.0077 U	0.0032 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Acenaphthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Acenaphthylene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(a)anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(a)pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(b)fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(g,h,i)perylene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Benzo(k)fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Chrysene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Dibenzo(a,h)anthracene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Fluoranthene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Fluorene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Indeno(1,2,3-cd)pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Naphthalene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Phenanthrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Pyrene	NRC	0.433 U	0.402 U	0.402 U	0.427 U	0.358 U
Other Analytes						
Lead	NRC					
Total Petroleum Hydrocarbons	NRC	2.51 U	48.8 =	13.6 U	8.4 U	14.4 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for UST closure was submitted in the November 1996 Closure Report and is summarized in Appendix II.

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.

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

Station:	GA UST	74-06	74-07	74-07	74-08	74-08
Sample ID:	Soil	740621	740711	740721	740811	740821
Sample Interval (ft BGS):	Threshold	4.8 - 6.6	0.7 - 2.8	3.3 - 4.3	3.0 - 4.2	1.7 - 3.0
Collection Date:	Level[1]	17-Nov-98	17-Nov-98	17-Nov-98	18-Nov-98	18-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Toluene	6	0.0022 U	0.0396 =	0.0229 =	0.0015 J	0.0032 =
Ethylbenzene	10	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.0033 U	0.0034 U	0.0033 U	0.0033 U	0.0032 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Acenaphthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Acenaphthylene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(a)anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(a)pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(b)fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Benzo(k)fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Chrysene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Fluoranthene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Fluorene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Naphthalene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Phenanthrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Pyrene	NRC	0.370 U	0.374 U	0.362 U	0.370 U	0.358 U
Other Analytes						
Lead	NRC	3.1 =	1.9 =			1.4 =
Total Petroleum Hydrocarbons	NRC	7.91 U	6.5 U	7 U	8.92 U	7.24 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for UST closure was submitted in the November 1996 Closure Report and is summarized in Appendix II.

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.

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

Station:	GA UST	74-09	74-09	74-10	74-10
Sample ID:	Soil	740911	740921	741011	741021
Sample Interval (ft BGS):	Threshold	3.8 - 4.8	7.8 - 8.8	0.8 - 1.8	2.8 - 3.8
Collection Date:	Level[1]	17-Nov-98	17-Nov-98	17-Nov-98	17-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS					
Benzene	0.008	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Toluene	6	0.0022 U	0.0153 =	0.0137 =	0.0024 =
Ethylbenzene	10	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.0033 U	0.0034 U	0.0034 U	0.0034 U
POLYNUCLEAR AROMATIC HYDROCARBONS					
2-Chloronaphthalene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Acenaphthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Acenaphthylene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(a)anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(a)pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(b)fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(g,h,i)perylene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Benzo(k)fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Chrysene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Dibenzo(a,h)anthracene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Fluoranthene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Fluorene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Naphthalene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Phenanthrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Pyrene	NRC	0.370 U	0.374 U	0.374 U	0.374 U
Other Analytes					
Lead	NRC		2.5 =		3 =
Total Petroleum Hydrocarbons	NRC	12.3 U	14.8 U	8.33 U	8.21 U

NOTES:

May1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for UST closure was submitted in the November 1996 Closure Report and is summarized in Appendix II.

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.

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-18

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J608

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 10 Date Analyzed: 05/23/98

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	118		=
100-41-4	Ethylbenzene	4.4	U	u
1330-20-7	Xylenes (total)	13.3	U	u

FORM I VOA

35

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1U515

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 05/19/98

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	370	U
91-58-7	2-chloronaphthalene	370	U
208-96-8	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

U

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

cc: SAIC00598

Report Date: June 09, 1998

Sample ID	: 740111
Lab ID	: 9805399-18
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		27.3	J	2.20	11.1	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805399-18

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-10

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6028

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 9 Date Analyzed: 05/24/98

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	65.9		=
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.6	U	U

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V217

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 9 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/26/98

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	366	U
91-58-7	2-chloronaphthalene	366	U
208-96-8	acenaphthylene	366	U
83-32-9	acenaphthene	366	U
86-73-7	fluorene	366	U
85-01-8	phenanthrene	366	U
120-12-7	anthracene	366	U
206-44-0	fluoranthene	366	U
129-00-0	pyrene	366	U
56-55-3	benzo(a)anthracene	366	U
218-01-9	chrysene	366	U
205-99-2	benzo(b)fluoranthene	366	U
207-08-9	benzo(k)fluoranthene	366	U
50-32-8	benzo(a)pyrene	366	U
193-39-5	indeno(1,2,3-cd)pyrene	366	U
53-70-3	dibenz(a,h)anthracene	366	U
191-24-2	benzo(g,h,i)perylene	366	U

u

DATA VALIDATION
COPY

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

cc: SAIC00598

Report Date: June 08, 1998

Sample ID	: 740121
Lab ID	: 9805400-10
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	5.86	u FQ1, FD6 2.18	11.0	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805400-10

SDG No.: FS4024S DATA VALIDATION COPY

Method Type: Total Metals

Sample ID: 9805400-10

Client ID: 740121

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

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run	
7439-92-1	Lead	1.9	mg/kg			P	0.10	TJA61 Trace ICPAES	980520-1	U F01, F07

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-14

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J604

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 7 Date Analyzed: 05/23/98

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	4.3	U	U
108-88-3	Toluene	77.8		=
100-41-4	Ethylbenzene	4.3	U	U
1330-20-7	Xylenes (total)	12.9	U	U

FORM I VOA

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-14

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 1U511

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 7 decanted: (Y/N) N Date Extracted: 05/19/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	354	U
91-58-7	2-chloronaphthalene	354	U
208-96-8	acenaphthylene	354	U
83-32-9	acenaphthene	354	U
86-73-7	fluorene	354	U
85-01-8	phenanthrene	354	U
120-12-7	anthracene	354	U
206-44-0	fluoranthene	354	U
129-00-0	pyrene	354	U
56-55-3	benzo(a)anthracene	354	U
218-01-9	chrysene	354	U
205-99-2	benzo(b)fluoranthene	354	U
207-08-9	benzo(k)fluoranthene	354	U
50-32-8	benzo(a)pyrene	354	U
193-39-5	indeno(1,2,3-cd)pyrene	354	U
53-70-3	dibenz(a,h)anthracene	354	U
191-24-2	benzo(g,h,i)perylene	354	U

u

DATA VALIDATION COPY

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

cc: SAIC00598 Report Date: June 09, 1998

Sample ID	: 740211
Lab ID	: 9805399-14
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		12.2	U FD1, F07	2.14	10.8	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805399.14

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-12

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6018

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 13 Date Analyzed: 05/24/98

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	2.3	U	U
108-88-3	Toluene	5.4		=
100-41-4	Ethylbenzene	2.3	U	U
1330-20-7	Xylenes (total)	6.9	U	U

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V219

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 13 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/26/98

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	383	U
91-58-7	2-chloronaphthalene	383	U
208-96-8	acenaphthylene	383	U
83-32-9	acenaphthene	383	U
86-73-7	fluorene	383	U
85-01-8	phenanthrene	383	U
120-12-7	anthracene	383	U
206-44-0	fluoranthene	383	U
129-00-0	pyrene	383	U
56-55-3	benzo(a)anthracene	383	U
218-01-9	chrysene	383	U
205-99-2	benzo(b)fluoranthene	383	U
207-08-9	benzo(k)fluoranthene	383	U
50-32-8	benzo(a)pyrene	383	U
193-39-5	indeno(1,2,3-cd)pyrene	383	U
53-70-3	dibenz(a,h)anthracene	383	U
191-24-2	benzo(g,h,i)perylene	383	U

DATA VALIDATION
COPY

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

cc: SAIC00598

Report Date: June 08, 1998

Sample ID	: 740221
Lab ID	: 9805400-12
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	5.83	U FQ1, FQL 2.28	11.5	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4024S

Method Type: Total Metals

Sample ID: 9805400-12

Client ID: 740221

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

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 87.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	4.3	mg/kg			P	0.11	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-17

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J607

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 10 Date Analyzed: 05/23/98

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	57.9		=
100-41-4	Ethylbenzene	4.4	U	U
1330-20-7	Xylenes (total)	13.3	U	U

FORM I VOA

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-17

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 1U514

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 05/19/98

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	369	U
91-58-7	2-chloronaphthalene	369	U
208-96-8	acenaphthylene	369	U
83-32-9	acenaphthene	369	U
86-73-7	fluorene	369	U
85-01-8	phenanthrene	369	U
120-12-7	anthracene	369	U
206-44-0	fluoranthene	369	U
129-00-0	pyrene	369	U
56-55-3	benzo(a)anthracene	369	U
218-01-9	chrysene	369	U
205-99-2	benzo(b)fluoranthene	369	U
207-08-9	benzo(k)fluoranthene	369	U
50-32-8	benzo(a)pyrene	369	U
193-39-5	indeno(1,2,3-cd)pyrene	369	U
53-70-3	dibenz(a,h)anthracene	369	U
191-24-2	benzo(g,h,i)perylene	369	U

u

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

cc: SAIC00598

Report Date: June 09, 1998

Sample ID	: 740311
Lab ID	: 9805399-17
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		11.6	U FQ1, FQ7	2.20	11.1	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805399-17

275

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-18

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6025

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 12 Date Analyzed: 05/24/98

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	2.3	U	U-U-U
108-88-3	Toluene	85.8		
100-41-4	Ethylbenzene	2.3	U	
1330-20-7	Xylenes (total)	6.8	U	

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V304

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 12 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

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	379	U
91-58-7	2-chloronaphthalene	379	U
208-96-8	acenaphthylene	379	U
83-32-9	acenaphthene	379	U
86-73-7	fluorene	379	U
85-01-8	phenanthrene	379	U
120-12-7	anthracene	379	U
206-44-0	fluoranthene	379	U
129-00-0	pyrene	379	U
56-55-3	benzo(a)anthracene	379	U
218-01-9	chrysene	379	U
205-99-2	benzo(b)fluoranthene	379	U
207-08-9	benzo(k)fluoranthene	379	U
50-32-8	benzo(a)pyrene	379	U
193-39-5	indeno(1,2,3-cd)pyrene	379	U
53-70-3	dibenz(a,h)anthracene	379	U
191-24-2	benzo(g,h,i)perylene	379	U

u

DATA VALIDATION COPY

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

cc: SAIC00598 Report Date: June 08, 1998

Sample ID	: 740321
Lab ID	: 9805400-18
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		25.8	U FQ1, FD7 2.26	11.4	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805400-18

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4024S

Method Type: Total Metals

Sample ID: 9805400-18

Client ID: 740321

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

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 88.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.0	mg/kg			P	0.11	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-16

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J606

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 8 Date Analyzed: 05/23/98

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	4.3	U
108-88-3	Toluene	76.8	
100-41-4	Ethylbenzene	4.3	U
1330-20-7	Xylenes (total)	13.0	U

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-16

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 1U513

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/19/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

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

U

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

cc: SAIC00598 Report Date: June 09, 1998 Page 1 of 1

Sample ID	: 740411
Lab ID	: 9805399-16
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	J	6.68	U FD1, FD6	2.16	10.9	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805399-16

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-15

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6021

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 15 Date Analyzed: 05/24/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	Benzene	2.4	U	U
108-88-3	Toluene	6.4		
100-41-4	Ethylbenzene	2.4	U	U
1330-20-7	Xylenes (total)	3.9	J	J

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V222

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

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

u

VALIDATION COPY

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

cc: SAIC00598 Report Date: June 08, 1998

Sample ID	: 740421
Lab ID	: 9805400-15
Matrix	: Soil
Date Collected	: 05/11/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.87	U FQ1, FQ6 2.34	11.8	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805400-15

DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4024S **Method Type:** Total Metals

Sample ID: 9805400-15 **Client ID:** 740421

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

Matrix: SOIL **Date Received:** 5/13/98 **Level:** LOW

% Solids: 85.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.2	mg/kg			P	0.11	TJA61 Trace ICPAES	980520-1

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

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

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740511

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-14

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6029

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 8 Date Analyzed: 05/24/98

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	4.9	P
108-88-3	Toluene	169	P
100-41-4	Ethylbenzene	206	P
1330-20-7	Xylenes (total)	1910 ~~1460~~	~~EP~~ DP

J G01, M08

SPR 6/29/98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740511

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V221

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

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	1450	U
91-58-7	2-chloronaphthalene	1450	U
208-96-8	acenaphthylene	1450	U
83-32-9	acenaphthene	1450	U
86-73-7	fluorene	1450	U
85-01-8	phenanthrene	1450	U
120-12-7	anthracene	1450	U
206-44-0	fluoranthene	1450	U
129-00-0	pyrene	1450	U
56-55-3	benzo(a)anthracene	1450	U
218-01-9	chrysene	1450	U
205-99-2	benzo(b)fluoranthene	1450	U
207-08-9	benzo(k)fluoranthene	1450	U
50-32-8	benzo(a)pyrene	1450	U
193-39-5	indeno(1,2,3-cd)pyrene	1450	U
53-70-3	dibenz(a,h)anthracene	1450	U
191-24-2	benzo(g,h,i)perylene	1450	U

DATA VALIDATION
COPY

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

cc: SAIC00598 Report Date: June 08, 1998

Sample ID	: 740511
Lab ID	: 9805400-14
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		6930	=	108	545	mg/kg	50.	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805400-14

DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4024S

Method Type: Total Metals

Sample ID: 9805400-14

Client ID: 740511

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

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.7	mg/kg			P	0.10	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-07

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6016

Level: (low/med) LOW Date Received: 05/13/98

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

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	4.7	U
108-88-3	Toluene	4.7	U
100-41-4	Ethylbenzene	4.7	U
1330-20-7	Xylenes (total)	14.1	U

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1U415

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/19/98

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	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

FORM I SV-1

OLM03.0

DATA VALIDATION
COPY

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

cc: SAIC00598

Report Date: June 09, 1998

Sample ID	: 740521
Lab ID	: 9805399-07
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		34.6	SRR	2.34	11.8	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805399-07

265

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740531

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-20

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6019

Level: (low/med) LOW Date Received: 05/13/98

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.6	U
108-88-3	Toluene	2.6	U
100-41-4	Ethylbenzene	2.6	U
1330-20-7	Xylenes (total)	7.8	U

u

FORM I VOA

SEMIVOLATILE ORGANICS 1B ANALYSIS DATA SHEET

EPA SAMPLE NO.

740531

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4023S

Matrix: (soil/water) SOIL Lab Sample ID: 9805399-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1V106

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 23 decanted: (Y/N) N Date Extracted: 05/19/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/26/98

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	433	U
91-58-7	2-chloronaphthalene	433	U
208-96-8	acenaphthylene	433	U
83-32-9	acenaphthene	433	U
86-73-7	fluorene	433	U
85-01-8	phenanthrene	433	U
120-12-7	anthracene	433	U
206-44-0	fluoranthene	433	U
129-00-0	pyrene	433	U
56-55-3	benzo(a)anthracene	433	U
218-01-9	chrysene	433	U
205-99-2	benzo(b)fluoranthene	433	U
207-08-9	benzo(k)fluoranthene	433	U
50-32-8	benzo(a)pyrene	433	U
193-39-5	indeno(1,2,3-cd)pyrene	433	U
53-70-3	dibenz(a,h)anthracene	433	U
191-24-2	benzo(g,h,i)perylene	433	U

4

FORM I SV-1

OLM03.0

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

cc: SAIC00598

Report Date: June 09, 1998

Sample ID	: 740531
Lab ID	: 9805399-20
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	2.51	U	2.57	13.0	mg/kg	1.0	JLP	05/28/98	1230	123027	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

278

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740541

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J608

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 17 Date Analyzed: 05/24/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.4	U
108-88-3	Toluene	9.6	
100-41-4	Ethylbenzene	2.4	U
1330-20-7	Xylenes (total)	7.2	U

4=4U

FORM I VOA

COPY

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740541

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V210

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 17 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/26/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	402	U
91-58-7	2-chloronaphthalene	402	U
208-96-8	acenaphthylene	402	U
83-32-9	acenaphthene	402	U
86-73-7	fluorene	402	U
85-01-8	phenanthrene	402	U
120-12-7	anthracene	402	U
206-44-0	fluoranthene	402	U
129-00-0	pyrene	402	U
56-55-3	benzo(a)anthracene	402	U
218-01-9	chrysene	402	U
205-99-2	benzo(b)fluoranthene	402	U
207-08-9	benzo(k)fluoranthene	402	U
50-32-8	benzo(a)pyrene	402	U
193-39-5	indeno(1,2,3-cd)pyrene	402	U
53-70-3	dibenz(a,h)anthracene	402	U
191-24-2	benzo(g,h,i)perylene	402	U

u

DATA VALIDATION
COPY

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

cc: SAIC00598

Report Date: June 08, 1998

Sample ID	: 740541
Lab ID	: 9805400-03
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		48.8	=	2.38	12.0	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

9805400-03

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740551

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-07

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6013

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 17 Date Analyzed: 05/24/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.4	U
108-88-3	Toluene	9.4	
100-41-4	Ethylbenzene	2.4	U
1330-20-7	Xylenes (total)	7.2	U

U = U U

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740551

COPY

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V214

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 17 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/26/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	402	U
91-58-7	2-chloronaphthalene	402	U
208-96-8	acenaphthylene	402	U
83-32-9	acenaphthene	402	U
86-73-7	fluorene	402	U
85-01-8	phenanthrene	402	U
120-12-7	anthracene	402	U
206-44-0	fluoranthene	402	U
129-00-0	pyrene	402	U
56-55-3	benzo(a)anthracene	402	U
218-01-9	chrysene	402	U
205-99-2	benzo(b)fluoranthene	402	U
207-08-9	benzo(k)fluoranthene	402	U
50-32-8	benzo(a)pyrene	402	U
193-39-5	indeno(1,2,3-cd)pyrene	402	U
53-70-3	dibenz(a,h)anthracene	402	U
191-24-2	benzo(g,h,i)perylene	402	U

u

FORM I SV-1 OLM03.0

DATA VALIDATION COPY

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

cc: SAIC00598

Report Date: June 08, 1998

Sample ID	: 740551
Lab ID	: 9805400-07
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		13.6	U FQ1, F07 2.38	12.0	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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

Reviewed By

9805400-07

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740561

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-06

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J6011

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 22 Date Analyzed: 05/24/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	Benzene	2.6	U	4
108-88-3	Toluene	5.7		=
100-41-4	Ethylbenzene	2.6	U	4
1330-20-7	Xylenes (total)	7.7	U	u

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

COPY

740561

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V213

Level: (low/med) LOW Date Received: 05/13/98

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

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/26/98

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	427	U
91-58-7	2-chloronaphthalene	427	U
208-96-8	acenaphthylene	427	U
83-32-9	acenaphthene	427	U
86-73-7	fluorene	427	U
85-01-8	phenanthrene	427	U
120-12-7	anthracene	427	U
206-44-0	fluoranthene	427	U
129-00-0	pyrene	427	U
56-55-3	benzo(a)anthracene	427	U
218-01-9	chrysene	427	U
205-99-2	benzo(b)fluoranthene	427	U
207-08-9	benzo(k)fluoranthene	427	U
50-32-8	benzo(a)pyrene	427	U
193-39-5	indeno(1,2,3-cd)pyrene	427	U
53-70-3	dibenz(a,h)anthracene	427	U
191-24-2	benzo(g,h,i)perylene	427	U

u

DATA VALIDATION COPY

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

cc: SAIC00598 Report Date: June 08, 1998

Sample ID	: 740561
Lab ID	: 9805400-06
Matrix	: Soil
Date Collected	: 05/12/98
Date Received	: 05/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	8.40	2.53	12.8	mg/kg	1.0	JLP	06/02/98	1300	123293	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Reviewed By

9805400-06

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

343

CHAIN OF CUSTODY RECORD

COC NO.: GAB027

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9805
PROJECT NUMBER: 01-0331-04-~~9305~~-200
PROJECT MANAGER: Patty Stoll
Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory
LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417
PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
100551	5/11/98	1350	Soil	1						1			2	
100561	5/11/98	1420		1						1			2	
740521	5/13/98	1430		1						1			2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 56	Cooler Temperature: 4°C
COMPANY NAME: SAIC	5/13/98 1140	COMPANY NAME:		Cooler ID: #1133	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	5-13-98 1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA1904-96

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
010731	5/12/98	0950	Soil	1						1			2	
060531	5/11/98	1635		1						1			2	
700111	5/11/98	950		1						1			2	
010761	5/12/98	1150		1						1			2	
010731	5/12/98	1140		1						1			2	
010741	5/12/98	1110		1						1			2	
740211	5/11/98	1435		1						1			2	
610111	5/12/98	1600		1						1			2	
740411	5/11/98	1655		1						1			2	
740311	5/11/98	1625		1						1			2	
740111	5/11/98	1650		1						1			2	
610211	5/12/98	1445		1						1			2	
740311	5/12/98	1450	↓	1						1			2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	5/13/98		
COMPANY NAME:	1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #420

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

2012

CHAIN OF CUSTODY RECORD

COC NO.: GA3Y28

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
060541	5/11/98	1650	soil	1						1			2	
700211	5/11/98	1045		1						1			2	
740541	5/12/98	1555		1						1			2	
100561	5/11/98	1355		1						1			2	
100541	5/11/98	1345		1						1			2	
740561	5/12/98	1630		1						1			2	
710551	5/12/98	1645		1						1			2	
100571	5/11/98	1400		1						1			2	
010711	5/12/98	930	↓	1						1			2	

5/11/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	5-13-98		
COMPANY NAME: GEL	1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 44

Cooler Temperature: 4°C

Cooler ID: #420

FEDEX NUMBER:

V-58

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: G4[illegible]-1

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
740121	5/11/96	1650	Soil	1							1			2	
990511	5/11/96	1535		1		1					1			3	
610221	5/12/96	1450		1							1			2	
740421	5/11/96	1740		1							1			2	
610121	5/12/96	1750		1							1			2	
740511	5/12/96	1420		1							1			2	
740421	5/11/96	1900		1							1			2	
700221	5/11/96	1050		1							1			2	
700121	5/11/96	9455		1							1			2	
740321	5/11/96	1625		1							1			2	
770111	5/12/96	1240					1	1						2	
160321	5/12/96	1615					1		1					2	
770321	5/12/96	1645					1						1	2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4/0C
COMPANY NAME: SAIC	5/13/96 1140	COMPANY NAME:		Cooler ID: #30	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	5.17.96 1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L113

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 7 Date Analyzed: 11/30/98

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	CCJC
108-88-3	toluene	0.55	J	
100-41-4	ethylbenzene	2.2	U	
1330-20-7	xylenes (total)	3.2	U	

FORM I VOA OLM03.0

44

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V314

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/25/98

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

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

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 740611
Lab ID	: 9811627-07
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		14.4 U FD1, FD7	5.33	10.8	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

DATA VALIDATION COPY

298

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L120

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 10 Date Analyzed: 11/30/98

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	2.2	U
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.3	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V320

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/26/98

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

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

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 740621
Lab ID	: 9811627-13
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.91 U F01, F06	5.50	11.1	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

304

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-13

Client ID: 740621

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.1	mg/kg			P	0.17	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L122

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 11 Date Analyzed: 11/30/98

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	C
71-43-2	benzene	2.2	U	
108-88-3	toluene	39.6		
100-41-4	ethylbenzene	2.2	U	
1330-20-7	xylenes (total)	3.4	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V322

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/26/98

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	374	U
91-58-7	2-chloronaphthalene	374	U
209-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

Client:	Science Applications International Corp. P.O. Box 2502 800 Oak Ridge Turnpike Oak Ridge, Tennessee 37831
Contact:	Ms. Lorene Rollins
Project Description:	CAP-Part A for UST Sites

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 740711
Lab ID	: 9811627-15
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.50 U FD1, FD6	5.56	11.2	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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 (843) 769-7391.

Reviewed By

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-15

Client ID: 740711

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.9	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L118

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 8 Date Analyzed: 11/30/98

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	22.9		
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.

740721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V319

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/26/98

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

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

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 740721
Lab ID	: 9811627-12
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.00 U FD1,FD6	5.39	10.9	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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Reviewed By

303

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L133

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 10 Date Analyzed: 12/01/98

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	1.5	J	J
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.

740811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V312

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/25/98

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

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

cc: SAIC01498 Report Date: December 04, 1998

Sample ID	: 740811
Lab ID	: 9811627-05
Matrix	: Soil
Date Collected	: 11/18/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	8.92	UF01,F06 5.50	11.1	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* 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 (843) 769-7391.

Reviewed By

DATA VALIDATION
COPY

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-06

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L134

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 7 Date Analyzed: 12/01/98

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	3.2		=
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.2	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V313

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/25/98

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

FORM I SV-1 OLM03.0

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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

cc: SAIC01498 Report Date: December 04, 1998

Sample ID	: 740821
Lab ID	: 9811627-06
Matrix	: Soil
Date Collected	: 11/18/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.24 U F01, F06	5.33	10.8	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-06

Client ID: 740821

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 93.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.4	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-11

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L117

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 10 Date Analyzed: 11/30/98

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	2.2	U
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.3	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V318

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/26/98

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

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

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 740911
Lab ID	: 9811627-11
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		12.3 U F01,F07	5.50	11.1	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Reviewed By

302

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-18

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L137

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 11 Date Analyzed: 12/01/98

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	15.3	
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.4	U

U = U U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4W210

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 12/01/98

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	374	U
91-58-7	2-chloronaphthalene	374	U
209-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

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

cc: SAIC01498

Report Date: January 12, 1999

Sample ID : 740921
Lab ID : 9811627-18
Matrix : Soil
Date Collected : 11/17/98
Date Received : 11/18/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		14.8 U F01, F07	5.56	11.2	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Valerie A Davis

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29414
(843) 556-8171 • Fax (843) 766-1178

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9811627-18

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-18

Client ID: 740921

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.5	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L116

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 11 Date Analyzed: 11/30/98

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	13.7		=
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.4	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V317

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/25/98

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	374	U
91-58-7	2-chloronaphthalene	374	U
209-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

Client:	Science Applications International Corp. P.O. Box 2502 800 Oak Ridge Turnpike Oak Ridge, Tennessee 37831
Contact:	Ms. Lorene Rollins
Project Description:	CAP-Part A for UST Sites

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 741011
Lab ID	: 9811627-10
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	8.33 U F01,F06	5.56	11.2	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

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

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

Reviewed By

301

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-17

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L136

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 11 Date Analyzed: 12/01/98

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	2.4		=
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.4	U	U

FORM I VOA OLM03.0

62

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4W209

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 12/01/98

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	374	U
91-58-7	2-chloronaphthalene	374	U
209-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

U

DATA VALIDATION COPY

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

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

cc: SAIC01498 Report Date: January 12, 1999 Page 1 of 1

Sample ID : 741021
Lab ID : 9811627-17
Matrix : Soil
Date Collected : 11/17/98
Date Received : 11/18/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	8.21 U FD1,FD6	5.56	11.2	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
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This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie S Davis
Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29414
(843) 556-8171 • Fax (843) 766-1178

9811627-17

Printed on recycled paper.

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-17

Client ID: 741021

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.0	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA020

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
TBA036	11/17/98	745	water	2									2	9811626-11
741014	11/17/98	1330		2									2	-12
740912	11/17/98	1145		2	2								4	-13
740916	11/17/98	1145		2	2								4	-14
740612	11/17/98	1045		2									2	-15
740712	11/17/98	945		2									2	-16
741012	11/17/98	1330		2									2	-17
690512	11/17/98	1600		2									2	-18
690612	11/17/98	1630		2									2	-19
740611	11/17/98	1045	Soil	1				1					2	9811627-07
690511	11/17/98	1600		1				1					2	-08
690611	11/17/98	1630		1				1					2	-09
741011	11/17/98	1330		1				1					2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98	Bionne Francis	11/18/98
COMPANY NAME: SAIC	1245	COMPANY NAME:	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEC	1245	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEC	1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #714

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

V-95

SAIC An Employee Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GA020

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

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
740911	11/17/98	1145	Soil	1				1					2	9811627-11
740721	11/17/98	945	Soil	1				1					2	-12
740621	11/17/98	1045	Soil	1						1			2	-13
690521	11/17/98	1800	Soil	1						1			2	-14
740711	11/17/98	945	Soil	1						1			2	-15
690623	11/17/98	1630	Soil	1						1			2	-16
741021	11/17/98	1330	Soil	1						1			2	-17
740921	11/17/98	1145	Soil	1						1			2	-18
690621	11/17/98	1630	Soil	1						1			2	-19

34.3 → .4

RELINQUISHED BY: Laura Lumley COMPANY NAME: SAIC	Date/Time 11/18/98 1245	RECEIVED BY: DIONNE FRANCES COMPANY NAME: GEL	Date/Time 11/18/98 1600
RECEIVED BY: [signature] COMPANY NAME: GEL	Date/Time 11-18-98 1245	RELINQUISHED BY: COMPANY NAME:	Date/Time
RELINQUISHED BY: [signature] COMPANY NAME: GEL	Date/Time 11-18-98 1600	RECEIVED BY: COMPANY NAME:	Date/Time

TOTAL NUMBER OF CONTAINERS: 48

Cooler ID: #714

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

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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

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	Total Phenols	Oil & Grease	pH	TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
780912	11/18/98	900	water	2	2												4	9811626-01
780812	11/18/98	1000		2	2												4	-02
740812	11/18/98	1150		2													2	-03
TBA037	11/18/98	745		2													2	-04
DW1614	11/18/98	1224											2	2	2	2	7	*24 HR TURN*
780911	11/18/98	900	soil			1	1										2	9811627-01
780811	11/18/98	1000				1	1										2	-02
780821	11/18/98	1000				1			1								2	-03
780921	11/18/98	900				1			1								2	-04
740811	11/18/98	909		1				1									2	-05
740821	11/18/98	903		1						1							2	-06

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 31	Cooler Temperature:
Laura Lumley	11/18/98 1245	DIONNE FRANCIS	11/18/98 1600	Cooler ID: #713	FEDEX NUMBER:
COMPANY NAME: SAIC		COMPANY NAME: GEL			
RECEIVED BY:	Date/Time 11-18-98 1245	RELINQUISHED BY:	Date/Time	NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.	
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 11-18-98 1600	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

V-97

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Fort Stewart

Location of Project : CAP Part A

Description of Soil : Tan Sand

Job # : 98066
Date of Testing: 6/15-19/98
Tested by: CA
Boring # :
Sample # : 740331
Sample Depth : 8-10'

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

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

Sample Permeation:

De-Aired Water
% Saturation: 97 %
Cell Pressure: 80 psi
Lower Pressure: 76 psi
Upper Pressure: 75 psi
Gradient: 12.35

Sample Dimensions		
	Before	After
Length (cm)	5.70	5.70
Diameter (cm)	4.70	4.60
Water Content (%)	1.7	15.6
Weight (g)	199.0	201.6

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 = 5.70 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 (min)	t_1 (min)	$(t_2 - t_1)*60$ (sec)	V (cm^3)	$[LR_T]/[P_B A]$ (cm^3)	K (cm/sec)
0.5	0	30	1.9	4.35E-03	2.75E-04
1	0.5	30	1.7	4.35E-03	2.46E-04
1.5	1	30	1.7	4.35E-03	2.46E-04
2	1.5	30	1.4	4.35E-03	2.03E-04

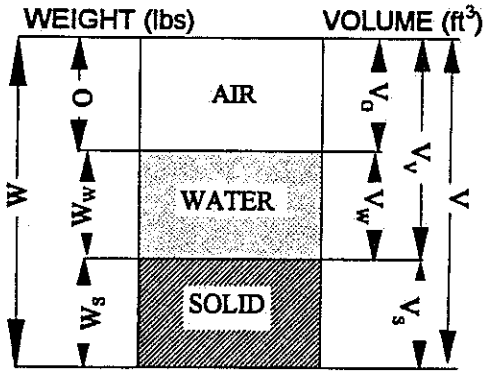
K_{avg} = 2.43E-04 cm/sec

CATLIN Engineers and Scientists
Geotechnical Laboratories

SPECIFIC GRAVITY AND POROSITY

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

JOB NO.: 98066
SAMPLE NO: 740331
DEPTH OF SAMPLE: 8-10ft.
DATE OF TESTING: 6/22/98



W = 1.27293
$W_W = W - W_S$ = 0.12332
$W_S = Y_d * V$ = 1.1496

V = 0.00950
$V_W = W_W / Y_W$ = 0.0020
$V_S = W_S / G_S * Y_W$ = 0.0070
$V_G = V - (V_S + V_W)$ = 0.00055
$V_V = V_G + V_W$ 0.0025

MEASUREMENTS OF TUBE/CAN

HEIGHT= 15.5 cm
DIAMETER= 4.7 cm

CALCULATED VOLUME OF TUBE/CAN

V= 268.92 cm^3
0.00950 ft^3

WT. OF TUBE/CAN + WET SOIL= 879.40 g
WEIGHT OF TUBE/CAN= 302 g
WEIGHT OF WET SOIL= 577.40 g
W = 1.27293 lb

MOISTURE CONTENT

M_{CWS} = 26.90 g
M_{CDS} = 25.75 g
M_W = 1.15 g
M_C = 15.03 g
M_S = 10.72 g
w = 10.7 %

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= 134.02 lbs/ft^3
Y_d= 121.03 lbs/ft^3	Y_d= 121.03 lbs/ft^3

Void Ratio, $e = V_V / V_S$
e = 0.3617

Porosity, $n = V_V / V$
n = 0.27

Specific Gravity = 2.64

Degree of Saturation, $S = V_W / V_V$
S = 0.7830

CATLIN Engineers and Scientists
Geotechnical Laboratories

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project FORT STEWART Job No. 98066

Location of Project CAP Part A Sample No. FT 740331

Description of Soil White, med Coarse Sand Depth of Sample 5-10' Boring No.

Tested By BV Date of Testing 6/16/98

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

Weight of sample used, M_{ss}= 502.80 g

X-3

M_{cws}	M_{cds}	M_c	M_w	M_s	w %	M_{ss}	M_s
	621.70	111.80					

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		4.46	0.88	0.88	99.12
#10		18.35	3.62	4.50	95.50
#20		100.76	19.87	24.37	75.63
#40		168.48	33.22	57.59	42.41
#60		134.60	26.55	84.14	15.86
#140		64.90	12.80	96.94	3.06
#200		6.50	1.28	98.22	1.78
pan		9.00	1.78	100.00	0
		506.97			

% retained = (Wt. retained/W_s) · 100

% passing = 100 - Σ % retained.

SOIL ANALYTICAL DATA OBTAINED DURING UST 225 CLOSURE ACTIVITIES (June 1996)

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SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY
611 SOUTH COBB DRIVE
MARIETTA, GA 30060-3172

Sample Location: 29338 #225-T1-S1
FT. STEWART

Lab Number: 96-A037723

Sampler: BOBBI THORN

Date Collected: 6/18/96

Date Received: 6/25/96

Time Collected: 12:25

Time Received: 8:30

Sample type: Soil

Percent solids: 91.0

SEMIVOLATILE ORGANICS and PESTICIDE/PCB's

Analyte	Result	Flag	DF	Units	Date	Time	Analyst	Method
Naphthalene	2300		2	ug/kg	6/29/96	10:03	K.Walkup	8100
Acenaphthene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Anthracene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Fluoranthene	846.	J	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Fluorene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Pyrene	1650		2	ug/kg	6/29/96	10:03	K.Walkup	8100
Benzo(a)anthracene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Benzo(a)pyrene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Benzo(b)fluoranthene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Benzo(k)fluoranthene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Chrysene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Dibenzo(a,h)anthracene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Indeno(1,2,3-cd)pyrene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Acenaphthylene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Benzo(g,h,i)perylene	1460	U	2	ug/kg	6/29/96	10:03	K.Walkup	8100
Phenanthrene	4650		2	ug/kg	6/29/96	10:03	K.Walkup	8100
1-Methylnaphthalene	7330		2	ug/kg	6/29/96	10:03	K.Walkup	8100
2-Methylnaphthalene	11500		2	ug/kg	6/29/96	10:03	K.Walkup	8100
[illegible] extraction	Completed			ug/kg	6/26/96	14:29	C.Bardwell	3550

COPY 1

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY
611 SOUTH COBB DRIVE
MARIETTA, GA 30060-3172

Sample Location: 29338 #225-T1-S1
FT. STEWART

Lab Number: 96-A037723

Sampler: BOBBI THORN

Date Collected: 6/18/96

Date Received: 6/25/96

Time Collected: 12:25

Time Received: 8:30

Sample type: Soil

UNDERGROUND STORAGE TANK RESULTS

Analyte	Result	Units	PQL	Dil Factor	Date	Time	Analyst	Method
Benzene	0.231	mg/kg	0.220	2	6/28/96	1:14	Holingwrth	8020
Toluene	2.31	mg/kg	0.220	2	6/28/96	1:14	Holingwrth	8020
Ethylbenzene	1.88	mg/kg	0.220	2	6/28/96	1:14	Holingwrth	8020
Xylenes, total	16.3	mg/kg	0.220	2	6/28/96	1:14	Holingwrth	8020
Oil and Grease	22200	mg/kg	11.0	1	6/26/96	16:00	M.Himelick	9071

Sample Extraction Data

PAH's Extracted 6/26/96 Wt extracted: 30.0 gm Extract Volume: 2.00 ml

** QUALITY CONTROL DATA **

Surrogate Recoveries

Surrogate	% Recovery	Target Range
GRO Surrogate, soil	76.	50 - 150
PAH Surrogate	41.	39 - 147

COPY 1

U.S. A‑‑y Corps of Engineers Work Orde ______ Job # 396.2 **Chain of Cus' ‑dy Recc**
(ER 1110-‑-263)

Proj. No. | Project Name: Ft. Stewart | TAT 7days

Sampler : (Signature) 46688

Date	Time	Pres.	Grab	Comp	Site Code/Sample Number	Number of Containers	M8020	M8100	M9071		Remarks: SAD NO.	MATR
6/18/96	0945				#224-T1-S1	3	✓	✓	✓	96-A037722	29337	Soil
↓	1225				#225-T1-S1	3	✓	✓	✓	96-A037723	29338	↓
↓	—				Trip Blank	2	✓			96-A037724	29339	H2O

Sampler Relinquished by:	Date/Time	Received by: (Sig.)	Date/Time	Hazards Associated with Samples
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.)	Date/Time	96-A037725 - Soil 96-A037726 H2O
Relinquished by: (Sig)	Date/Time	Received for Laboratory by: (Sig.) [signature]	Date/Time 6/25/96 0830	Remarks at time of receipt:
Custody Seal No.		Lab case No.:		

ENG Form ‑-R, Oct 90 Pro‑ ‑ent: CEMP-‑

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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; thus, no alternate threshold levels were calculated. The maximum benzene concentration in groundwater was 49.6 µg/L in June 1998. In addition, the sample from 74-03 contained an elevated benzene detection limit of 50 µg/L. The benzene concentration in this sample was masked by the concentrations of toluene, ethylbenzene, and xylenes that were below their respective MCLs. The horizontal and vertical extent of contamination was determined and the potential downgradient receptors were not impacted, 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 UST 225 site to determine the presence 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	74-01	74-02	74-03	74-04	74-06
Sample ID:	Federal	Water	740112	740212	740312	740412	740612
Screened Interval (ft BGS)	SDWA	Quality	3.0 - 8.0	0.0 - 10.0	3.0 - 8.0	5.0 - 10.0	0.0 - 12.3
Collection Date:	MCLs	Standards	11-May-98	11-May-98	11-May-98	11-May-98	17-Nov-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	**49.6** =	2 U	**50** U	2 U	2 U
Toluene	1000	200000	71 =	2 U	407 =	2 U	2 U
Ethylbenzene	700	28718	53.8 =	2 U	233 =	2 U	2 U
Xylenes, Total	10000	NRC	110 J	6 U	822 =	6 U	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Acenaphthene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Acenaphthylene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Anthracene	NRC	110000	20 U	20 U	20 U	10.9 U	11.8 U
Benzo(a)anthracene	NRC	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Benzo(a)pyrene	0.2	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Benzo(b)fluoranthene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Benzo(g,h,i)perylene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Benzo(k)fluoranthene	NRC	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Chrysene	NRC	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Dibenzo(a,h)anthracene	NRC	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Fluoranthene	NRC	370	20 U	20 U	20 U	10.9 U	11.8 U
Fluorene	NRC	14000	20 U	20 U	20 U	10.9 U	11.8 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	20 U	20 U	20 U	10.9 U	11.8 U
Naphthalene	NRC	NRC	20 U	20 U	**36.8** =	10.9 U	11.8 U
Phenanthrene	NRC	NRC	20 U	20 U	20 U	10.9 U	11.8 U
Pyrene	NRC	11000	20 U	20 U	20 U	10.9 U	11.8 U

NOTES:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC samples 740416 (equipment rinsate), 740916 (equipment rinsate), and 741014 (duplicate) are provided in Appendix VIII, but not summarized in this table.

[1] U.S. Environmental Protection Agency 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 at the concentration reported.

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

J Indicates the value for the compound is an estimated value.

= Indicates the compound was detected at the concentration reported.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	74-07	74-08	74-09	74-10
Sample ID:	Federal	Water	740712	740812	740912	741012
Screened Interval (ft BGS)	SDWA	Quality	0.0 - 11.5	0.0 - 10.0	0.0 - 12.8	0.0 - 14.8
Collection Date:	MCLs	Standards	17-Nov-98	18-Nov-98	17-Nov-98	17-Nov-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS						
Benzene	5	71.28	2 U	2 U	**5.6** =	0.65 J
Toluene	1000	200000	2 U	2 U	2.7 =	1.2 J
Ethylbenzene	700	28718	2 U	2 U	2 =	0.82 J
Xylenes, Total	10000	NRC	3 U	3 U	6.1 =	3.7 =
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	NRC	11 U	10 U	11 U	11.2 U
Acenaphthene	NRC	NRC	11 U	10 U	10.6 J	11.2 U
Acenaphthylene	NRC	NRC	11 U	10 U	11 U	11.2 U
Anthracene	NRC	110000	11 U	10 U	11 U	11.2 U
Benzo(a)anthracene	NRC	0.0311	11 U	10 U	11 U	11.2 U
Benzo(a)pyrene	0.2	0.0311	11 U	10 U	11 U	11.2 U
Benzo(b)fluoranthene	NRC	NRC	11 U	10 U	11 U	11.2 U
Benzo(g,h,i)perylene	NRC	NRC	11 U	10 U	11 U	11.2 U
Benzo(k)fluoranthene	NRC	0.0311	11 U	10 U	11 U	11.2 U
Chrysene	NRC	0.0311	11 U	10 U	11 U	11.2 U
Dibenzo(a,h)anthracene	NRC	0.0311	11 U	10 U	11 U	11.2 U
Fluoranthene	NRC	370	11 U	10 U	11 U	11.2 U
Fluorene	NRC	14000	11 U	10 U	11 U	11.2 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	11 U	10 U	11 U	11.2 U
Naphthalene	NRC	NRC	11 U	10 U	15.4 =	8.8 J
Phenanthrene	NRC	NRC	11 U	10 U	11 U	11.2 U
Pyrene	NRC	11000	11 U	10 U	11 U	11.2 U

NOTES:

May 1998 sampling was conducted prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted in or after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC samples 740416 (equipment rinsate), 740916 (equipment rinsate), and 741014 (duplicate) are provided in Appendix VIII, but not summarized in this table.

[1] U.S. Environmental Protection Agency 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 at the concentration reported.

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

J Indicates the value for the compound is an estimated value.

= Indicates the compound was detected at the concentration reported.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-08

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J3021

Level: (low/med) LOW Date Received: 05/13/98

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

GC Column: J&W DB-624(PID) 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/L	Q	
71-43-2	Benzene	49.6	=	
108-88-3	Toluene	71.0	=	
100-41-4	Ethylbenzene	53.8	=	
1330-20-7	Xylenes (total)	110	P J	FQ1, FQ8, MQ8

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805387-08

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 1U206

Level: (low/med) LOW Date Received: 05/13/98

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

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/19/98

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

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4019W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805392-17

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J4027

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

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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EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

740212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-13

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 2U410

Level: (low/med) LOW Date Received: 05/13/98

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

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	20.0	U
91-58-7	2-chloronaphthalene	20.0	U
209-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-07

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J3028

Level: (low/med) LOW Date Received: 05/13/98

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	50.0	U	U
108-88-3	Toluene	407		=
100-41-4	Ethylbenzene	233		=
1330-20-7	Xylenes (total)	822		=

F01, F08

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-12

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 2U409

Level: (low/med) LOW Date Received: 05/13/98

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

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	36.8	
91-58-7	2-chloronaphthalene	20.0	U
209-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4019W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805392-01

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J407

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

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.

740412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805387-15

Sample wt/vol: 920.0 (g/mL) ML Lab File ID: 1U213

Level: (low/med) LOW Date Received: 05/13/98

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

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/19/98

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/L	Q
91-20-3	naphthalene	10.9	U
91-58-7	2-chloronaphthalene	10.9	U
208-96-8	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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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO.

740416

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-15

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 2U412

Level: (low/med) LOW Date Received: 05/13/98

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

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.3	U
91-58-7	2-chloronaphthalene	10.3	U
209-96-8	acenaphthylene	10.3	U
83-32-9	acenaphthene	10.3	U
86-73-7	fluorene	10.3	U
85-01-8	phenanthrene	10.3	U
120-12-7	anthracene	10.3	U
206-44-0	fluoranthene	10.3	U
129-00-0	pyrene	10.3	U
56-55-3	benzo(a)anthracene	10.3	U
218-01-9	chrysene	10.3	U
205-99-2	benzo(b)fluoranthene	10.3	U
207-08-9	benzo(k)fluoranthene	10.3	U
50-32-8	benzo(a)pyrene	10.3	U
193-39-5	indeno(1,2,3-cd)pyrene	10.3	U
53-70-3	dibenz(a,h)anthracene	10.3	U
191-24-2	benzo(g,h,i)perylene	10.3	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO.

740416

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4019W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805392-03

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J409

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

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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SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: CA [illegible]

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405
PROJECT NUMBER: 01-0331-04-~~9305~~200
PROJECT MANAGER: Patty Stoll
Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
710212	5/11/98	1140	water		1								1
740112	5/11/98	1730			2								2
720212	5/11/98	1030			2								2
670112	5/11/98	1005			2								2
670212	5/11/98	1055			2								2
770112	5/12/98	1330			2								2
760416	5/12/98	950			2								2

5/13/98

LABORATORY NAME: General Engineering Laboratory
LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417
PHONE NO: (803) 556-8171
OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	5-13-98 1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13
Cooler ID: # 463
Cooler Temperature: 4°C
FEDEX NUMBER:

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GAB024

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 7805

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

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
710512	5/11/98	1345	water		2								2
7404116	5/11/98	1910			2								2
6660214	5/11/98	1525			2								2
6660212	5/11/98	1525			2								2
6660112	5/11/98	1430			2								2
710305	5/11/98	1400	↓					3					3

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 13	Cooler Temperature: 4°C
COMPANY NAME: SAIC	5/13/98 1140	COMPANY NAME:		Cooler ID: # 552	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: FEC	5-13-98 1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

2041

CHAIN OF CUSTODY RECORD

COC NO.: [illegible]

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

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

PROJECT MANAGER: Patty Stoll

Sampler (Signature): [signature] (Printed Name): Linda Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
760112	5/11/98	1950	water	2									2
660112	5/11/98	1130		2									2
660212	5/11/98	1525		2									2
710512	5/11/98	1245		2									2
670214	5/11/98	1055		2									2
670212	5/11/98	1055		2									2
670112	5/11/98	1005		2									2
610212	5/12/98	1505		2									2
710412	5/11/98	1130		2									2
700112	5/11/98	1000		2									2
740416	5/11/98	1910		2									2
760412	5/12/98	1025		2									2
160412	5/12/98	1910		2									2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

No Preservative

No Preservative

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[signature]	5/13/98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY: [signature]	Date/Time 5-13-98	RELINQUISHED BY:	Date/Time
COMPANY NAME:	1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler Temperature: 4°C

Cooler ID: #136

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GA 830 3X

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	VOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
740212	5/11/98	1400	water	2										2	
710312	5/11/98	1630		2										2	
710325	5/11/98	1400					2							2	
TBA009	5/11/98	745		2										2	
TBA010	5/12/98	745		2										2	
7A4211	5/12/98	1920											2	2	16 SUMM

5/13/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13 98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	5-13-98		
COMPANY NAME:		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 86

Cooler Temperature: 4°C

Cooler ID: # 1360

FEDEX NUMBER:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-15

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K315

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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

DATA VALIDATION
GCTY

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-09

Sample wt/vol: 850.0 (g/mL) ML Lab File ID: 4V114

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	11.8	U
91-58-7	2-chloronaphthalene	11.8	U
209-96-8	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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-16

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K316

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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	

DATA VALIDATION COPY

FORM I VOA OLM03.0

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-10

Sample wt/vol: 910.0 (g/mL) ML Lab File ID: 4V115

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	11.0	U
91-58-7	2-chloronaphthalene	11.0	U
209-96-8	acenaphthylene	11.0	U
83-32-9	acenaphthene	11.0	U
86-73-7	fluorene	11.0	U
85-01-8	phenanthrene	11.0	U
120-12-7	anthracene	11.0	U
206-44-0	fluoranthene	11.0	U
129-00-0	pyrene	11.0	U
56-55-3	benzo(a)anthracene	11.0	U
218-01-9	chrysene	11.0	U
205-99-2	benzo(b)fluoranthene	11.0	U
207-08-9	benzo(k)fluoranthene	11.0	U
50-32-8	benzo(a)pyrene	11.0	U
193-39-5	indeno(1,2,3-cd)pyrene	11.0	U
53-70-3	dibenz(a,h)anthracene	11.0	U
191-24-2	benzo(g,h,i)perylene	11.0	U

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FORM I SV-1 OLM03.0

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-03

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K310

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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

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DATA VALIDATION

FORM I VOA OLM03.0

DATA VALIDATION COPY

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6020W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811693-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 8V214

Level: (low/med) LOW Date Received: 11/20/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/23/98

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

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.

740912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-13

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1L106

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/30/98

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	5.6	
108-88-3	toluene	2.7	
100-41-4	ethylbenzene	2.0	
78-93-3	xylenes (total)	6.1	

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-13

Sample wt/vol: 910.0 (g/mL) ML Lab File ID: 4V116

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	15.4	
91-58-7	2-chloronaphthalene	11.0	U
209-96-8	acenaphthylene	11.0	U
83-32-9	acenaphthene	10.6	J
86-73-7	fluorene	11.0	U
85-01-8	phenanthrene	11.0	U
120-12-7	anthracene	11.0	U
206-44-0	fluoranthene	11.0	U
129-00-0	pyrene	11.0	U
56-55-3	benzo(a)anthracene	11.0	U
218-01-9	chrysene	11.0	U
205-99-2	benzo(b)fluoranthene	11.0	U
207-08-9	benzo(k)fluoranthene	11.0	U
50-32-8	benzo(a)pyrene	11.0	U
193-39-5	indeno(1,2,3-cd)pyrene	11.0	U
53-70-3	dibenz(a,h)anthracene	11.0	U
191-24-2	benzo(g,h,i)perylene	11.0	U

= 10.6 U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE
EPA SAMPLE NO.

740916

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-14

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K314

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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

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RINSATE

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

740916

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-14

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 4V117

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	10.3	U
91-58-7	2-chloronaphthalene	10.3	U
209-96-8	acenaphthylene	10.3	U
83-32-9	acenaphthene	10.3	U
86-73-7	fluorene	10.3	U
85-01-8	phenanthrene	10.3	U
120-12-7	anthracene	10.3	U
206-44-0	fluoranthene	10.3	U
129-00-0	pyrene	10.3	U
56-55-3	benzo(a)anthracene	10.3	U
218-01-9	chrysene	10.3	U
205-99-2	benzo(b)fluoranthene	10.3	U
207-08-9	benzo(k)fluoranthene	10.3	U
50-32-8	benzo(a)pyrene	10.3	U
193-39-5	indeno(1,2,3-cd)pyrene	10.3	U
53-70-3	dibenz(a,h)anthracene	10.3	U
191-24-2	benzo(g,h,i)perylene	10.3	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-17

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K317

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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	0.65	J
108-88-3	toluene	1.2	J
100-41-4	ethylbenzene	0.82	J
78-93-3	xylenes (total)	3.7	

DATA VALIDATION

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-07

Sample wt/vol: 890.0 (g/mL) ML Lab File ID: 4V112

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	8.8	J
91-58-7	2-chloronaphthalene	11.2	U
209-96-8	acenaphthylene	11.2	U
83-32-9	acenaphthene	11.2	U
86-73-7	fluorene	11.2	U
85-01-8	phenanthrene	11.2	U
120-12-7	anthracene	11.2	U
206-44-0	fluoranthene	11.2	U
129-00-0	pyrene	11.2	U
56-55-3	benzo(a)anthracene	11.2	U
218-01-9	chrysene	11.2	U
205-99-2	benzo(b)fluoranthene	11.2	U
207-08-9	benzo(k)fluoranthene	11.2	U
50-32-8	benzo(a)pyrene	11.2	U
193-39-5	indeno(1,2,3-cd)pyrene	11.2	U
53-70-3	dibenz(a,h)anthracene	11.2	U
191-24-2	benzo(g,h,i)perylene	11.2	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

741014

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-12

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K313

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

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	0.57	J	J
108-88-3	toluene	1.1	J	
100-41-4	ethylbenzene	0.68	J	
78-93-3	xylenes (total)	3.4		

DATA VALIDATION COPY

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DUPLICATE

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

741014

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-05

Sample wt/vol: 900.0 (g/mL) ML Lab File ID: 4V110

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/19/98

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) UG/L	Q
91-20-3	naphthalene	8.9	J
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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FORM I SV-1 OLM03.0

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SAIC. An Employee Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GA019

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
741014	11/17/98	1330	water		Z								Z	9811626-05
690612	11/17/98	1630			Z								Z	-06
741012	11/17/98	1330			Z								Z	07
690512	11/17/98	1600			Z								Z	08
740612	11/17/98	1045			Z								Z	09
740712	11/17/98	945			Z								Z	-10

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	11/18/98 1245	DIONNE FRANCIS	11/18/98 1600	Cooler ID: # 715	FEDEX NUMBER:
COMPANY NAME: SAIC		COMPANY NAME: GEL			
RECEIVED BY:	Date/Time 11-18-98 1245	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 11-18-98 1600	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA0720

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
TBA036	11/17/98	745	water	2									2	9811626-11
741014	11/17/98	1330		2									2	-12
740912	11/17/98	1145		2	2								4	-13
740916	11/17/98	1145		2	2								4	-14
740612	11/17/98	1045		2									2	-15
740712	11/17/98	945		2									2	-16
741012	11/17/98	1330		2									2	-17
690512	11/17/98	1600		2									2	-18
690612	11/17/98	1630		2									2	-19
740611	11/17/98	1045	Soil	1				1					2	9811627-07
690511	11/17/98	1600		1				1					2	-08
690611	11/17/98	1630		1				1					2	-09
741011	11/17/98	1330		1				1					2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98	Bionne Francis	11/18/98
COMPANY NAME: SAIC	1245	COMPANY NAME: GEL	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1245	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #714

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

SAIC An Employee-Owned Company
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

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	Total Phenols	Oil & Grease	pH	TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
780912	11/18/98	900	water	2	2												4	9811626-01
780812	11/18/98	1000		2	2												4	-02
740812	11/18/98	1150		2													2	-03
TBA037	11/18/98	745		2													2	-04
DW1614	11/18/98	1226											2	2	2	2	7	*24 HR TURN*
780911	11/18/98	900	soil			1	1										2	9811627-01
780811	11/18/98	1000				1	1										2	-02
780821	11/18/98	1000				1			1								2	-03
780921	11/18/98	900				1			1								2	-04
740811	11/18/98	909		1				1									2	-05
740821	11/18/98	903		1						1							2	-06

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98	DIONNE FRANCIS	11/18/98
COMPANY NAME: SAIC	1245	COMPANY NAME: GEL	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	11-18-98 1245	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	11-18-98 1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 31

Cooler ID: #713

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

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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 1996 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, manifest, and maps) are provided in this CAP-Part A Report. Disposal manifests for the UST 225 site were submitted to GA EPD USTMP in September 1998 with the UST 207A (Facility ID#9-089039) Closure Report response to comments correspondence (Perez 1998). Approximately 21.81 tons of contaminated soil was excavated from the UST 225 tank pit.

I certify that the above information is true and accurate.

Name: Thomas C. Fry

Title: Acting Chief, ENRD

Signature: Thomas C. Fry

Date: 09/07/99

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
Directorate of Public Works
1557 Frank Cochran Drive
Fort Stewart, Georgia 31314-4928

REPLY TO ATTENTION OF

SEP 15 1998

Directorate of Public Works

CERTIFIED MAIL
Z-098-024-167

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

Dear Mr. Logan:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's correspondence dated August 14, 1998, in reference to the Closure Report submitted for Fort Stewart's former Underground Storage Tank (UST) #207A, Building 230, Facility Identification Number 9089039. As requested in that correspondence, the April 3, 1998 Closure Report Addendum should be amended to include the enclosed manifests for Anderson Columbia Environmental Delivery Order 101, which are provided for your use and convenience. These manifests include additional UST sites (as shown on the attached list). A total of 45 USTs were removed under this delivery order. In addition, this delivery order removed dispensing islands (note included on the provided list) from another 22 sites, for a total of 67 sites as noted in the Closure Report Addendum.

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

Sincerely,

Dale F. Kiefer
for Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosure

FORT STEWART UST Removal List for FY 1996

Anderson Columbia Delivery Order #101

TANK #	LOCATION	SIZE	FACILITY ID #
2	Bldg 1840: Diesel	25,000	9-089065
3	Bldg 1850: Mogas	5,000	9-089065
4	Bldg 1840: Waste Oil	2,500	9-089065
4A	Bldg 1840: Waste Oil	1,000	9-089065
5	Bldg 1824: Mogas	6,000	9-089066
6	Bldg 1824: Diesel	25,000	9-089066
22	Bldg 1720: Waste Oil	2,000	9-089011
24	Bldg 1720: Waste Oil	2,000	9-089011
28B	Bldg 1720: Waste Oil	2,000	9-089011
38	Bldg 1510/13: Waste Oil	1,000	9-089109
41	Bldg 1542: Waste Oil	1,000	9-089145
45	Bldg 1172: Waste Oil	500	9-089054
56	Bldg 1056: Waste Oil	2,000	9-089116
65	Bldg 927: Mogas	10,000	9-089091
66	Bldg 967: Diesel	10,000	9-089091
71	Bldg 1203: Waste Oil	1,000	9-089022
71A	Bldg 1260: Waste Oil	1,000	9-089023
74	Bldg 1280: Waste Oil	2,500	9-089072
79	Bldg 1224: Waste Oil	1,000	9-089026
87	Bldg 1245: Diesel	5,000	9-089073
88	Bldg 1245: Diesel	5,000	9-089073
93	Bldg 1330: Waste Oil	2,500	9-089112
94	Bldg 1320/23: Waste Oil	1,000	9-089076
94B	Bldg 1339: Waste Oil	1,000	9-089110
94C	Bldg 1339A: Waste Oil	1,000	9-089110
100A	Bldg 1349: Waste Oil	1,000	9-089080
100B	Bldg 1350: Waste Oil	1,000	9-089081
201A	Bldg 260: Waste Oil	1,000	9-089043
201B	Bldg 260: Waste Oil	1,000	9-089043
207	Bldg 232: Waste Oil	500	9-089038
207A	Bldg 230: Waste Oil	2,500	9-089039
214	Bldg 1503: Waste Oil	550	9-089015
215	Bldg 1503: Waste Oil	500	9-089015
216	Bldg 4502: Waste Oil	1,000	9-089060
224	Bldg 4528: Waste Oil	1,000	9-089063
225	Bldg 4529: Waste Oil	1,000	9-089090
238	Bldg 4586: Waste Oil	1,000	9-089044
241	Bldg 241: Waste Oil	2,000	9-089041
242	Bldg 241: Waste Oil	1,000	9-089041
243	Bldg 241: Waste Oil	1,000	9-089041
244	Bldg 241: Waste Oil	1,000	9-089041
261	Bldg 430 (AAFES):Waste Oil	500	9-089118
115	Bldg 15003 Em. Gen: Diesel	250	9-054005
118	Bldg 1239 Em. Gen: Diesel	1,000	9-089070
123	Bldg 933 Em. Gen: Diesel	1,000	9-089092

225

REYNOLDS CONSTRUCTION COMPANY
Highway 84 • P. O. Box 749
Ludowici, Georgia 31316
Office (912) 368-7488 • Plant (912) 876-8085

Date _____ 19__ Load No. 3

Triple "R" Mgnt. — Customer

PCS soil — Description

BRR 104 — Project Number

Ft. Stewart — Location

Liberty — County

43620 Net

23000 lb ~~Net~~ Tare
00 lb Tare
23000 lb+ Gross
11:10 AM AU 12 96

66620 lb Net
00 lb Tare
66620 lb+ Gross
11:06 AM AU 12 96

Signature of Weigher

TONS: 21.81 TOTAL TONS: 63.50

Hendrix — TRUCKER

33 — TRUCK NO.

Robert Stovall — DRIVER

TICKET NO. 58820

VIP-1518-HV

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

Manifest Document No. 000222 | 1. Page 1 of 1

GENERATOR

2. Generator's Name and Mailing Address
Ft. Stewart
Hinesville, GA 31313

3. Generator's Phone (912) 234-6579

4. Transporter 1 Company Name
Hendricks Hauling

5. Transporter 2 Company Name

6. Designated Facility Name and Site Address
Triple R Management, Inc.
c/o Reynolds Constr Co.
Rt. 84
Ludowici, GA 31316

A. Transporter's Phone
B. Transporter's Phone 912-427-6758
C. Facility's Phone 912-756-3655

7. Waste Shipping Name and Description	8. Containers No.	8. Containers Type	9. Total Quantity	10. Unit Wt/Vol
a. Petroleum Contaminated Soil	1	TT	18.00	CY
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

11. Special Handling Instructions and Additional Information
8101
Tank # 325

12. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Printed/Typed Name: Tom C. Fry | Signature: Tom C. Fry | Month 10 | Day 06 | Year 96

TRANSPORTER

13. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: ROBERT STOVALL | Signature: Robert Stovall | Month | Day | Year

14. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

FACILITY

15. Discrepancy Indication Space

16. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: CHARles PRUitt | Signature: Charles Pruitt | Month 10 | Day 12 | Year 96

ORIGINAL – RETURN TO GENERATOR

APPENDIX X

SITE RANKING FORMS

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Based on 10 years of historical leaking underground fuel tank case studies by the California Environmental Protection Department (CA EPD 1995), it was determined that the geometry of a groundwater contamination plume from a UST leak tends to change slowly with time. In general, the length of the plume changes slowly, rarely exceeds 250 feet, and tends to stabilize at a relatively short distance from the source of the contaminant release. The mass of the plume tends to decrease more rapidly than the plume length decreases. Active remediation may help reduce benzene concentrations in a groundwater plume. However, a significant reduction in benzene concentrations can occur with time, even without active remediation.

During this case analysis by the California Environmental Protection Department, the proposed plume life cycle consisted of four phases as described in Table 1. Using this methodology for the UST sites at Fort Stewart CAP-Part A investigations, the USTs fall into the Phase III category because the active source of contamination has been removed from the site. As a result, the mass of the groundwater plume is being reduced by passive bioremediation.

At the UST 225 site, the groundwater plume mass is being reduced through passive bioremediation so the plume's length is slowly decreasing while the mass is rapidly decreasing. The benzene contamination in the soil during the closure activities in 1996 is slowly desorbing into the groundwater. This process tends to inhibit changes in the length of the groundwater plume, however, the benzene soil concentrations in the tank pit are decreasing with time. Due to the passive bioremediation taking place at the UST 225 site and the life cycle phase of the site, Fort Stewart believes that the CAP-Part A analytical results are more indicative of present site conditions and should be used in the decision-making process in lieu of the UST closure analytical results. However, for your use and convenience, the environmental site ranking scores have been presented in this appendix based on both closure soil data and CAP-Part A soil data with the CAP-Part A groundwater data because there were no groundwater samples collected during closure activities.

Table 1. Summary of the phases of a UST groundwater plume life cycle

Life Cycle Stage	Characteristics
Phase I	• an active fuel hydrocarbon source is present • free product is in contact with the groundwater • fuel hydrocarbons dissolve into the groundwater • dissolved fuel hydrocarbons are transported down gradient • growth phase of the groundwater plume
Phase II	• a zone of fuel hydrocarbon passive bioremediation is established • the fuel hydrocarbon mass contributed to the plume from the active source is removed in the passive bioremediation zone • removal is due to the digestion of fuel hydrocarbons by subsurface microorganisms • the groundwater plume stops growing
Phase III	• the active source is depleted or removed • the length of groundwater plume slowly decreases • the contaminant mass decreases rapidly due to either active or passive remediation, or both • fuel hydrocarbons sorbed onto the soil particulates tend to inhibit changes in the plume length because as the groundwater concentrations of fuel hydrocarbons decrease, the soils will desorb fuel hydrocarbons slowly back into the groundwater
Phase IV	• considered an "exhausted plume" • the plume mass reaches a relatively low residual mass • insignificant temporal changes in length and mass • average plume concentrations not significantly greater than 1 µg/L • passive bioremediation will continue at a slower rate because the fuel hydrocarbon food source has been diminished • active remediation is not cost effective at this point

Source: CA EPD 1995

SITE RANKING FORM

Facility Name: UST 225, Building 4529 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089090 **Date Ranked:** 6/30/99

SOIL CONTAMINATION (based on 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

B. Total Benzene -
Maximum Concentration found on the site

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

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

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

Fill in the blanks: (A. 25) + (B. 10) = (35) x (C. 10) = (D. 350)

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

Fill in the blanks: (E. 0) + (F. 5) = (G. 5)

Facility Name: UST 225, Building 4529 County: Liberty Facility ID #: 9-089090

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.

* 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. 50)+ (K. 0) = L. 50

(G. 5) x (L. 50) = M. 250

(M. 250)+ (D. 350) = N. 600

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. 600) x (P. 1) = (600) + (Q. 0)

= 600 (based on Closure soil data and CAP-Part A groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

SITE RANKING FORM

Facility Name: UST 225, Building 4529 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089090 **Date Ranked:** 6/30/99

SOIL CONTAMINATION (based on CAP-Part A 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 several 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

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. 0) = (0) x (C. 10) = (D. 0)

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

Fill in the blanks: (E. 0) + (F. 5) = (G. 5)

Facility Name: UST 225, Building 4529 County: Liberty Facility ID #: 9-089090

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. 50)+ (K. 0) = L. 50

(G. 5) x (L. 50) = M. 250

(M. 250) + (D. 0) = N. 250

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. 250) x (P. 1) = (250) + (Q. 0)

= 250 (based on CAP-Part A soil and groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

OTHER GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information to Section II.D.5 of the CAP-Part A Form and 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 4200 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, limestone, and siliceous, and dolomitic and less calcareous.

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

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: [redacted] Facility ID#
2 & 3, 1848, 9-[redacted]
5 & 6, 1884, 9-[redacted]

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, 15036, 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.

Zillie D. Jay
Notary Public, Chatham County, Georgia

Form 121 rev.

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ATTACHMENT A

TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

The overall objective of this project is to provide the engineering services required to produce Corrective Action Plans (CAPs) for the subject UST sites. These reports will conform to the site closure requirements of a CAP-Part A for sites in Georgia. The field investigations necessary to support the report preparation included the installation of temporary piezometers, soil borings, and associated sampling of soil and groundwater. Upon completion of the field investigations, a CAP-Part A will be prepared to meet 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 ensuring 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 of the remaining sample portion into containers designated for other types of chemical analyses. Sample containers designated for volatile organic analysis were filled so that no headspace was present in the containers.

2.2.2 Field Measurements

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

Static Groundwater Level

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

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

pH, Specific Conductance, and Temperature

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

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

2.3 Temporary Piezometer Installation

Following the collection of the groundwater sample, a 1.0-inch PVC piezometer, with a 5-foot or 10-foot screened section, was installed in the borehole to prevent the borehole from collapsing. These piezometers remained in the boreholes approximately 24 hours, after which time the static water level was measured. 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 the drilling of boreholes was conducted within the temporary decontamination pad constructed at the central staging area. The decontamination pad was constructed so that all decontamination liquids were contained from the surrounding environment and were recovered for disposal as IDW. The entire geoprobe vehicle and equipment was decontaminated once it arrived on site and the geoprobe sampling equipment was decontaminated after completion of each soil borehole. The equipment was decontaminated by removing the caked soil material from the exterior of equipment using a rod and/or brush, steam cleaning the interior and exterior of equipment, allowing the equipment to air dry as long as possible, and wrapping or covering the equipment in plastic.

2.6.2 Sampling Equipment

Decontamination of equipment used for soil sampling and collection of groundwater samples was conducted at the temporary decontamination area. Nondedicated equipment was decontaminated after each use. The sampling equipment was washed with potable water and phosphate-free detergent using various types of brushes required to remove particulate matter and surface films, followed by a potable water rinse, 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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Miller, James A., 1990. *Groundwater Atlas of the United States*, U.S. Department of the Interior, U.S. Geological Survey, Hydrologic Inventory Atlas 730G.

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