

FORM 1 Science Applications 17-APR-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ4103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5A80010

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/28/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/03/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
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-----Diesel Range Organics	0.82	B
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U F01, F06

FORM I SV

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1G4021

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. 18 Date Analyzed: 04/30/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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-----Gasoline Range Organics	610	U	U
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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S
Matrix: (soil/water) SOIL Lab Sample ID: 9804468-04
Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1S109
Level: (low/med) LOW Date Received: 04/17/98
% Moisture: 18 decanted: (Y/N) N Date Extracted: 04/22/98
Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/04/98
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	406	U
91-58-7-----	2-chloronaphthalene	406	U
208-96-8-----	acenaphthylene	406	U
83-32-9-----	acenaphthene	406	U
86-73-7-----	fluorene	406	U
85-01-8-----	phenanthrene	406	U
120-12-7-----	anthracene	406	U
206-44-0-----	fluoranthene	406	U
129-00-0-----	pyrene	406	U
56-55-3-----	benzo (a) anthracene	406	U
218-01-9-----	chrysene	406	U
205-99-2-----	benzo (b) fluoranthene	406	U
207-08-9-----	benzo (k) fluoranthene	406	U
50-32-8-----	benzo (a) pyrene	406	U
193-39-5-----	indeno (1,2,3-cd) pyrene	406	U
53-70-3-----	dibenz (a,h) anthracene	406	U
191-24-2-----	benzo (g,h,i) perylene	406	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4110

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2G2025

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. 19 Date Analyzed: 04/28/98

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	2.5	U	U ↓
108-88-3-----	Toluene	2.5	U	
100-41-4-----	Ethylbenzene	2.5	U	
1330-20-7-----	Xylenes (total)	7.4	U	

FORM I VOA

FORM 1 Science Applications 17-APR-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ4110

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5A8009

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/28/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/03/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
-----Diesel Range Organics		0.63	JB

U F01, F06

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4110

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1G4020

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. 19 Date Analyzed: 04/30/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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-----Gasoline Range Organics	617	U	U
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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4110

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA017S

Matrix: (soil/water) SOIL Lab Sample ID: 9804468-03

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 1S112

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/22/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/04/98

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	406	U
91-58-7-----	2-chloronaphthalene	406	U
208-96-8-----	acenaphthylene	406	U
83-32-9-----	acenaphthene	406	U
86-73-7-----	fluorene	406	U
85-01-8-----	phenanthrene	406	U
120-12-7-----	anthracene	406	U
206-44-0-----	fluoranthene	406	U
129-00-0-----	pyrene	406	U
56-55-3-----	benzo (a) anthracene	406	U
218-01-9-----	chrysene	406	U
205-99-2-----	benzo (b) fluoranthene	406	U
207-08-9-----	benzo (k) fluoranthene	406	U
50-32-8-----	benzo (a) pyrene	406	U
193-39-5-----	indeno (1,2,3-cd) pyrene	406	U
53-70-3-----	dibenz (a,h) anthracene	406	U
191-24-2-----	benzo (g,h,i) perylene	406	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: HA022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9804494-07

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

Lab File ID: 2G7015

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. 10

Date Analyzed: 05/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (ml)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

71-43-2-----	Benzene	2.2	U
108-88-3-----	Toluene	6.6	U
100-41-4-----	Ethylbenzene	2.2	U
1330-20-7-----	Xylenes (total)	6.7	U

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U
U

FORM I VOA

FORM 1 Science Applications
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HT7101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL Lab Sample ID: 9804494-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5A70011

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/03/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) MG/KG Q

-----Diesel Range Organics	1.24	JB
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: HA022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9804494-07

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

Lab File ID: 1G6035

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. 10

Date Analyzed: 05/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

-----Gasoline Range Organics	556	U	V
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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL Lab Sample ID: 9804494-07

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 4R115

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/24/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98

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	365	U	U ↓
91-58-7	-----2-chloronaphthalene	365	U	
208-96-8	-----acenaphthylene	365	U	
83-32-9	-----acenaphthene	365	U	
86-73-7	-----fluorene	365	U	
85-01-8	-----phenanthrene	365	U	
120-12-7	-----anthracene	365	U	
206-44-0	-----fluoranthene	365	U	
129-00-0	-----pyrene	365	U	
56-55-3	-----benzo(a)anthracene	365	U	
218-01-9	-----chrysene	365	U	
205-99-2	-----benzo(b)fluoranthene	365	U	
207-08-9	-----benzo(k)fluoranthene	365	U	
50-32-8	-----benzo(a)pyrene	365	U	
193-39-5	-----indeno(1,2,3-cd)pyrene	365	U	
53-70-3	-----dibenz(a,h)anthracene	365	U	
191-24-2	-----benzo(g,h,i)perylene	365	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: HA022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9804494-06

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

Lab File ID: 2G7014

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. 12

Date Analyzed: 05/03/98

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 U
108-88-3-----Toluene	6.7		
100-41-4-----Ethylbenzene	2.3	U	
1330-20-7-----Xylenes (total)	6.8	U	

FORM I VOA

FORM 1 Science Applications22-APR-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ7111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL Lab Sample ID: 9804494-06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5A70010

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/03/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) MG/KG Q

-----Diesel Range Organics	1.9	B
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U F01, F07

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9804494-06

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

Lab File ID: 1G6034

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. 12

Date Analyzed: 05/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

-----Gasoline Range Organics	568	U	U
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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S
Matrix: (soil/water) SOIL Lab Sample ID: 9804494-06
Sample wt/vol: 30.2 (g/mL) G Lab File ID: 4R114
Level: (low/med) LOW Date Received: 04/22/98
% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/24/98
Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98
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	376 U	U ↓
91-58-7	2-chloronaphthalene	376 U	
208-96-8	acenaphthylene	376 U	
83-32-9	acenaphthene	376 U	
86-73-7	fluorene	376 U	
85-01-8	phenanthrene	376 U	
120-12-7	anthracene	376 U	
206-44-0	fluoranthene	376 U	
129-00-0	pyrene	376 U	
56-55-3	benzo(a)anthracene	376 U	
218-01-9	chrysene	376 U	
205-99-2	benzo(b)fluoranthene	376 U	
207-08-9	benzo(k)fluoranthene	376 U	
50-32-8	benzo(a)pyrene	376 U	
193-39-5	indeno(1,2,3-cd)pyrene	376 U	
53-70-3	dibenz(a,h)anthracene	376 U	
191-24-2	benzo(g,h,i)perylene	376 U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: HA022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9804494-08

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

Lab File ID: 2G7016

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. 15

Date Analyzed: 05/03/98

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	2.4	U
100-41-4-----	Ethylbenzene	2.4	U
1330-20-7-----	Xylenes (total)	7.0	U

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FORM I VOA

FORM 1 Science Applications 22-APR-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ7103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL Lab Sample ID: 9804494-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: SA70012

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/03/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
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	-----Diesel Range Organics	1.34	JB
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U Fφ₁, Fφ₆

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S

Matrix: (soil/water) SOIL Lab Sample ID: 9804494-08

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1G6036

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: not dec. 15 Date Analyzed: 05/03/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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-----	Gasoline Range Organics	588	U
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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA022S
Matrix: (soil/water) SOIL Lab Sample ID: 9804494-08
Sample wt/vol: 30.5 (g/mL) G Lab File ID: 4R116
Level: (low/med) LOW Date Received: 04/22/98
% Moisture: 15 decanted: (Y/N) N Date Extracted: 04/24/98
Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98
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	386 U	U ↓
91-58-7	-----2-chloronaphthalene	386 U	
208-96-8	-----acenaphthylene	386 U	
83-32-9	-----acenaphthene	386 U	
86-73-7	-----fluorene	386 U	
85-01-8	-----phenanthrene	386 U	
120-12-7	-----anthracene	386 U	
206-44-0	-----fluoranthene	386 U	
129-00-0	-----pyrene	386 U	
56-55-3	-----benzo (a) anthracene	386 U	
218-01-9	-----chrysene	386 U	
205-99-2	-----benzo (b) fluoranthene	386 U	
207-08-9	-----benzo (k) fluoranthene	386 U	
50-32-8	-----benzo (a) pyrene	386 U	
193-39-5	-----indeno (1,2,3-cd) pyrene	386 U	
53-70-3	-----dibenz (a,h) anthracene	386 U	
191-24-2	-----benzo (g,h,i) perylene	386 U	

Environmental
Consulting

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: Hunter Army Airfield Site

cc: SAIC00398

Report Date: May 01, 1998

Page 1 of 1

Sample ID : HJ6400
Lab ID : 9804468-10
Matrix : Soil
Date Collected : 04/16/98
Date Received : 04/17/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
TOTAL ORGANIC CARBON (TOC)		1550 = <i>F01, F08</i>	24.1	100	mg/kg	1.0	RMJ	04/24/98	1247	120610	1

M = Method	Method-Description
M 1	SW846 9060 modified

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

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

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

Reviewed By

SPECIFIC GRAVITY AND POROSITY

Hunter Army Airfield UST CAP-A Report

UST 116, Building 9002, Facility ID: 9-025112

PROJECT: Hunter Air Force Base

LOCATION OF PROJECT: CAP Part A

DESCRIPTION OF SOIL: Tan Clayey Sand

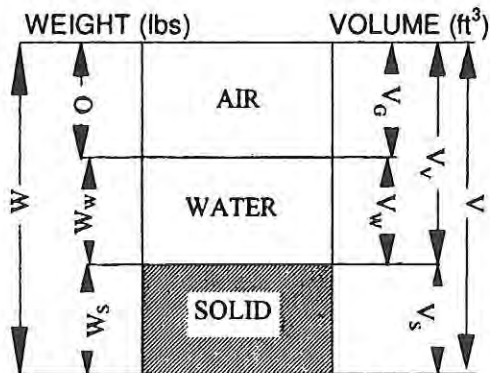
TESTED BY: BV-CA

JOB NO.: 98064

SAMPLE NO.: HJ6400

DEPTH OF SAMPLE: 2-4 ft.

DATE OF TESTING: 4/28/98



$$W = 1.06887$$

$$W_w = W - W_s = 0.19766$$

$$W_s = Y_d \cdot V = 0.8712$$

$$V = 0.01106$$

$$V_w = W_w / Y_w = 0.0032$$

$$V_s = W_s / G_s \cdot Y_w = 0.0052$$

$$V_g = V - (V_s + V_w) = 0.00264$$

$$V_v = V_g + V_w = 0.0058$$

MEASUREMENTS OF TUBE/CAN

HEIGHT= 17.3 cm

DIAMETER= 4.8 cm

WT. OF TUBE/CAN + WET SOIL= 722.50 g

WEIGHT OF TUBE/CAN= 237.66 g

WEIGHT OF WET SOIL= 484.84 g

W = 1.06887 lb

CALCULATED VOLUME OF TUBE/CAN

$$V = 313.05 \text{ cm}^3$$

$$0.01106 \text{ ft}^3$$

MOISTURE CONTENT

$$M_{cws} = 22.25 \text{ g}$$

$$M_c = 15.22 \text{ g}$$

$$M_{cbs} = 20.95 \text{ g}$$

$$M_s = 5.73 \text{ g}$$

$$M_w = 1.30 \text{ g}$$

$$w = 22.7 \%$$

Wet Density, $Y_m = W / V$

Dry Density, $Y_d = W_s / V$ or $Y_d = Y_m / (1 + w)$	
<u>double check</u>	$Y_d = Y_m / (1 + w)$
$Y_d = W_s / V$	$Y_m = 96.67 \text{ lbs/ft}^3$
$Y_d = 78.79 \text{ lbs/ft}^3$	$Y_d = 78.79 \text{ lbs/ft}^3$

Void Ratio, $e = V_v / V_s$

$$e = 1.1076$$

Porosity, $n = V_v / V$

$$n = 0.53$$

Specific Gravity = 2.66

Degree of Saturation, $S = V_w / V_v$

$$S = 0.5449$$

CATLIN Engineers and Scientists
Geotechnical Laboratories

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Hunter Army Airfield UST CAP-A Report
UST 116, Building 9002, Facility ID: 9-025112

Project : Hunter AFB

Location of Project : Cap Part A

Description of Soil : Tan Clayey Sand

Job # : 98064

Date of Testing: 5/18-20/98

Tested by: BV-CA

Boring # :

Sample # : HJ6400

Sample Depth : 2-4 ft.

Sample Type (Undisturbed or Remolded)

Standard Proctor:

Maximum Dry Density: pcf

Optimum Moisture Content: %

% Sample Compaction: %

Sample Dry Density: pcf

Sample Moisture Content: %

Sample Wet Density: pcf

Sample Permeation:

De-Aired Water

% Saturation: 96 %

Cell Pressure: 50 psi

Lower Pressure: 46 psi

Upper Pressure: 45 psi

Gradient: 13.53

Sample Dimensions

	Before	After
Length (cm)	5.20	5.10
Diameter (cm)	4.70	4.90
Water Content (%)	22.4	21.6
Weight (g)	188.3	188.4

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 (cm³)

L = Length of Sample = 5.20 cm

A = Area of Sample = 17.35 cm²

t = $t_2 - t_1$ (sec)

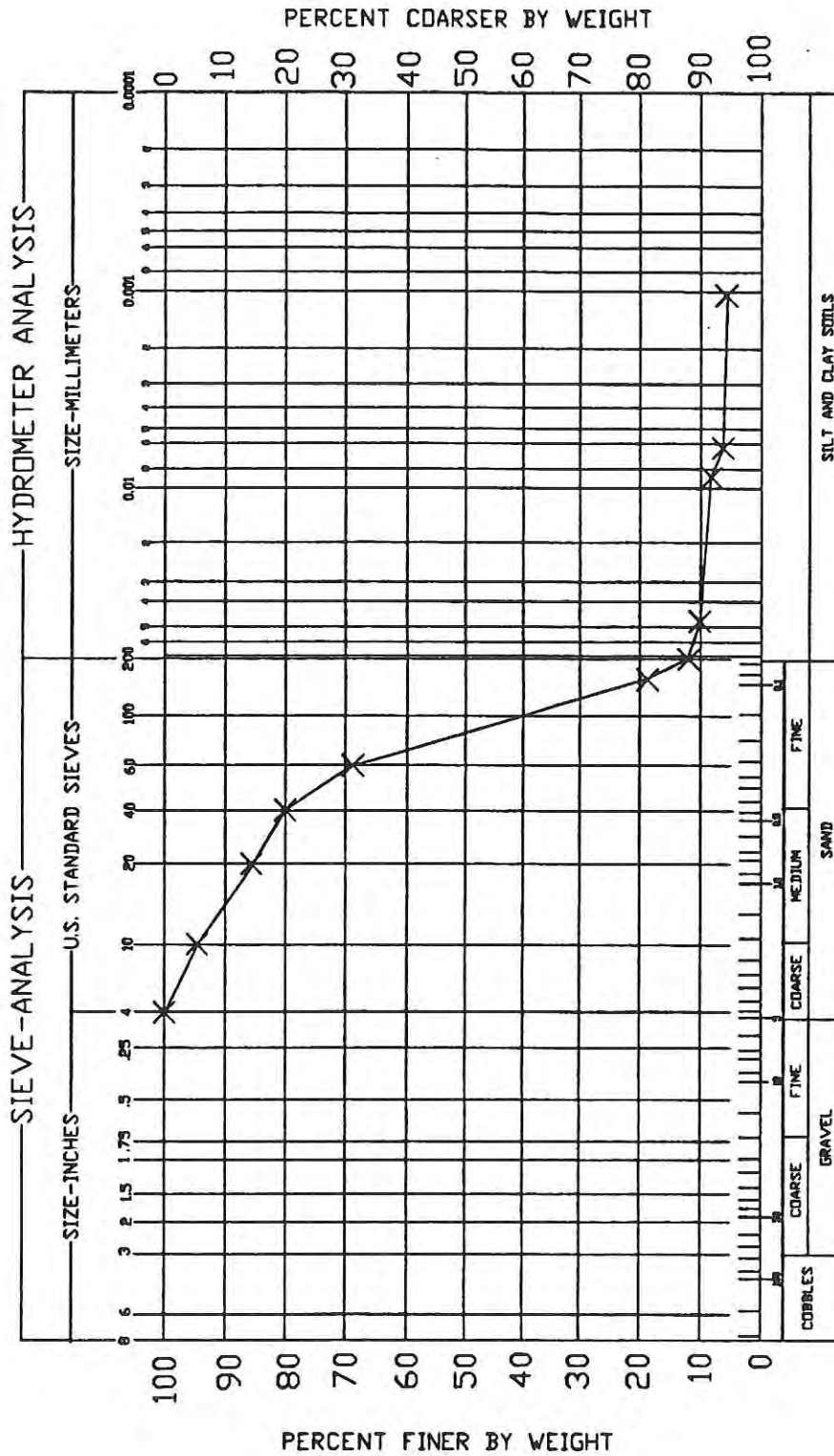
P_B = Bias Pressure = 1 psi x 70.37 cm/psi (cm - H₂O) : 70.37 cm

R_T = Temperature correction = 0.931

t_2 (sec)	t_1 (sec)	$(t_2 - t_1)$ (sec)	V (cm ³)	$[LR_T] / [P_B A]$ (cm ²)	K (cm/sec)
180	120	60	1.5	3.97E-03	9.91E-05
210	180	30	0.6	3.97E-03	7.93E-05
240	210	30	0.7	3.97E-03	9.25E-05
270	240	30	0.6	3.97E-03	7.93E-05

$$K_{avg} = \underline{8.76E-05} \text{ cm/sec}$$

CATLIN Engineers and Scientists
Geotechnical Laboratories



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	NAT. VC	LL	PL	PI	REMARKS	PROJECT NAME, HUNTER AFB
HJ5400	2-4 FT.	SC	22.7	-	-	-	TAN CLAYEY SAND	PROJECT LOCATION: CAP PART A
							12% PASSING #200 SIEVE	ACLA PROJECT #: 98064
								WORKING NO.
								DATE: 06/18/98

GRADATION CURVES

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project Hunter AFB Job No. *98064
Location of Project Camp MTA Sample No. HJ 6400
Description of Soil _____ Depth of Sample 24' Boring No. _____
Tested By BV. Date of Testing 4/30/88

Sample preparation procedures outlined in ASTM D421 and D2217.

Nominal diameter of largest particle
No. 10 sieve
No. 4 sieve
3/4 in.

Approximate minimum Wt. of sample, g
200
500
1500

Weight of sample used, M_{us} = 386.30 g

P-52

M_{cs}	M_{ods}	M_c	M_u	M_t	w %	M_w	M_s
	507.10	140.80	386.30				

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		0.42	0.10	0.10	99.90
#10		20.19	5.23	5.33	94.67
#20		32.01	8.30	13.63	86.37
#40		22.61	5.86	19.49	80.51
#60		44.12	11.43	30.92	69.08
#140		246.80	63.96	94.88	5.12
#200		11.20	2.90	97.78	2.22
pan		8.5	2.20	99.98	0.02
		385.85			

$$\% \text{ retained} = (\text{Wt. retained}/W) \cdot 100$$

$$\% \text{ passing} = 100 - \Sigma \% \text{ retained}$$

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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Calculations of alternate threshold levels are not indicated for the Underground Storage Tank 116, Facility ID: 9-025112 site because soil concentrations did not exceed the Georgia Environmental Protection Division (GA EPD) applicable soil threshold levels (i.e., Table A, column 2). However, the geotechnical data collected during the Corrective Action Plan-Part A investigation are presented in Table VI-A.

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TABLES

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UST 116, Building 9002
Hunter Army Airfield
Chatham County, Facility ID: 9-025112

TABLE VI-A. GEOTECHNICAL PARAMETERS

Building ID	Tank ID	Facility ID	Sample ID	Sample Depth	Classification	Moisture Content (%)	Total Organic Carbon (%)	Specific Gravity	Porosity, n	Permeability (cm/s)	Gravel (wt %)	Sand (wt %)	Mud (wt %)
9002	116	9-025112	HJ6900	2.0 to 4.0	SC	22.7	0.155	2.66	0.53	7.8E-5	5.3	87.7	7.0

NOTE: SC = Clayey sand.
UST = Underground storage tank.

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APPENDIX VII

MONITORING WELL DETAILS

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Monitoring wells were not installed as part of the Corrective Action Plan-Part A investigation. Temporary piezometers were installed at the Underground Storage Tank 116, Building 9002 site. Refer to Appendix IV for temporary piezometer installation details.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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UST 116, Building 9002
Hunter Army Airfield
Chatham County, Facility ID: 9-025112

TABLE VIII-A. SUMMARY OF GROUNDWATER ANALYTICAL RESULTS²

Location Sample ID Date Collected Depth (ft BGS)	Applicable Standards ¹	J-1 HJ1200 04/16/98 6.0 to 10.0	J-2 HJ2200 04/16/98 6.5 to 10.5	J-3 HJ3200 04/16/98 7.0 to 11.0	J-4 HJ4200 04/16/98 5.5 to 9.5	J-5 HJ5301 04/16/98 11.0 to 15.0	J-5 HJ5302 04/16/98 21.0 to 25.0	J-5 HJ5303 04/16/98 31.0 to 35.0	J-5 HJ5304 04/16/98 41.0 to 45.0
VOCs	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Benzene	5	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
Toluene	1,000	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
Ethylbenzene	700	2 U	2 U	2 U	5.6 J	2 U	2 U	2 U	2 U
Xylenes	10,000	6 U	8.4 =	6 U	34.2 J	6 U	6 U	6 U	6 U
PAHs	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
2-Chloronaphthalene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Acenaphthene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Acenaphthylene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Anthracene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Benzo(a)anthracene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Benzo(a)pyrene	0.2	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Benzo(b)fluoranthene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Benzo(k)fluoranthene	NRC	10 U	10.1 U	10.2 U	10 UJ	10.3 UJ	10 UJ	10 UJ	10 UJ
Chrysene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Fluoranthene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Fluorene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Naphthalene	NRC	1.6 J	10.1 U	10.2 U	15 =	10.3 U	10 U	10 U	10 U
Phenanthrene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U
Pyrene	NRC	10 U	10.1 U	10.2 U	10 U	10.3 U	10 U	10 U	10 U

NOTE: ¹U.S. Environmental Protection Agency maximum contaminant level.

²All field work and analytical sampling were performed prior to the release of the new Georgia Department of Natural Resources (GA DNR) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.

BGS - Below ground surface.

NRC - No regulatory criteria.

PAHs - Polynuclear aromatic hydrocarbons.

VOCs - Volatile organic compounds.

Laboratory Qualifiers

U - Indicates the compound was not detected at the concentration reported.

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

UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.

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

TABLE VIII-A. SUMMARY OF GROUNDWATER ANALYTICAL RESULTS (continued)²

Location Sample ID Date Collected Depth (ft BGS)	Applicable Standards ¹	J-5 HJ5305 04/16/98 51.0 to 55.0	J-7 HJ7200 04/20/98 6.0 to 10.0	J-7 HJ7210 ³ 04/20/98 6.0 to 10.0
VOCs	µg/L	µg/L	µg/L	µg/L
Benzene	5	2 U	2 UJ	2 UJ
Toluene	1,000	2 U	2 UJ	2 UJ
Ethylbenzene	700	2 U	12.6 J	2.5 J
Xylenes	10,000	2.2 J	59 J	9.8 J
PAHs	µg/L	µg/L	µg/L	µg/L
2-Chloronaphthalene	NRC	10 U	10.1 U	10.2 U
Acenaphthene	NRC	10 U	10.1 U	10.2 U
Acenaphthylene	NRC	10 U	10.1 U	10.2 U
Anthracene	NRC	10 U	10.1 U	10.2 U
Benzo(a)anthracene	NRC	10 U	10.1 U	10.2 U
Benzo(a)pyrene	0.2	10 U	10.1 U	10.2 U
Benzo(b)fluoranthene	NRC	10 U	10.1 U	10.2 U
Benzo(g,h,i)perylene	NRC	10 U	10.1 U	10.2 U
Benzo(k)fluoranthene	NRC	10 UJ	10.1 U	10.2 U
Chrysene	NRC	10 U	10.1 U	10.2 U
Dibenzo(a,h)anthracene	NRC	10 U	10.1 U	10.2 U
Fluoranthene	NRC	10 U	10.1 U	10.2 U
Fluorene	NRC	10 U	10.1 U	10.2 U
Indeno(1,2,3-cd)pyrene	NRC	10 U	10.1 U	10.2 U
Naphthalene	NRC	10 U	29.1 =	39.9 =
Phenanthrene	NRC	10 U	10.1 U	10.2 U
Pyrene	NRC	10 U	10.1 U	10.2 U

NOTE: ¹U.S. Environmental Protection Agency maximum contaminant level.

²All field work and analytical sampling were performed prior to the release of the new Georgia Department of Natural Resources (GA DNR) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.

³Duplicate sample for sample collected from location J-7 at a depth of 6.0 to 10.0 feet BGS.

BGS - Below ground surface.

NRC - No regulatory criteria.

PAHs - Polynuclear aromatic hydrocarbons.

VOCs - Volatile organic compounds.

Laboratory Qualifiers

U - Indicates the compound was not detected at the concentration reported.

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

UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.

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

CHAIN OF CUSTODY RECORD

COC NO.: 41698B

CHAIN OF CUSTODY RECORD

PROJECT NAME: CAP - Hunter AFB - Part A			REQUESTED PARAMETERS										LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 0019													LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Allison Bailey													PHONE NO: (803) 556-8171	
Sampler (Signature) <i>Michael H. Hall</i>			(Printed Name) Michael H. Hall										OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS	
Sample ID	Date Collected	Time Collected	Matrix	BTX	PAH	DRP	GRO	TOC	No. of Bottles/Vials		OVA SCREENING			
HI2230	4/15/98	1030	water	X					27	2	NA	Equip. Rinse		
HI6304	4/15/98	1605	water	X					10	2	NA	41.0 - 45.0 f		
HI6303	4/15/98	1540	water	X					11	2	NA	31.0 - 35.0 f		
HI6305	4/16/98	0845	water	X					10	2	NA	57.0 - 55.0		
HI1200	4/16/98	1035	water	X					13	2	NA	6.0 - 10.0		
HI2200	4/16/98	1100	water	X					14	2	NA	6.5 - 10.5 f		
HI3200	4/16/98	1135	water	X					15	2	NA	7.0 - 11.0 f		
RELINQUISHED BY: <i>Michael H. Hall</i> DATE/TIME: 4/15/98 COMPANY NAME: SH/C RECEIVED BY: <i>David S. ...</i> DATE/TIME: 4/16/98 COMPANY NAME: ...														
RELINQUISHED BY: <i>Ed ...</i> DATE/TIME: 4/16/98 COMPANY NAME: ... RECEIVED BY: <i>Ed ...</i> DATE/TIME: 4/16/98 COMPANY NAME: ...														
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CHAIN OF CUSTODY RECORD

COC NO.: 41698C

CHAIN OF CUSTODY RECORD

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 0019																LABORATORY ADDRESS: 2040 Savago Road Charleston, SC 29417	
PROJECT MANAGER: Allison Bailey																PHONE NO: (803) 556-8171	
Sample (Signature) <i>Nitchell H. Hall</i>				(Printed Name) Nitchell H. Hall													
Sample ID	Date Collected	Time Collected	Matrix	BTX	PAH	DR	GRO	TOC	No. of Bottles/ Vials				OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS			
HI 2230	4/15/98	1030	water						2	NA	Equip. miscalc						
HI 3200	4/15/98	1140	water						2	NA	5.0 - 9.0 ft						
HI 1200	4/15/98	0930	water						2	NA	7.0 - 10.0 ft						
HI 2200	4/15/98	1050	water						2	NA	6.0 - 10.0 ft						
HI 1200	4/16/98	1035	water						2	NA	6.0 - 10.0 ft						
				RECEIVED BY: <i>[Signature]</i> COMPANY NAME: <i>GEL</i> RELINQUISHED BY: <i>[Signature]</i> COMPANY NAME: <i>SAC</i>													
				RECEIVED BY: <i>[Signature]</i> COMPANY NAME: <i>GEL</i> RELINQUISHED BY: <i>[Signature]</i> COMPANY NAME: <i>[Signature]</i>													
				RECEIVED BY: <i>[Signature]</i> COMPANY NAME: <i>[Signature]</i> RELINQUISHED BY: <i>[Signature]</i> COMPANY NAME: <i>[Signature]</i>													

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As Required-Ordnance Company
Science Applications International Corporation

600 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 421-4000

CHAIN OF CUSTODY RECORD

COC NO.: 41798D

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory					
PROJECT NUMBER: 0019																LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417					
PROJECT MANAGER: Allison Bailey																PHONE NO: (803) 666-8171					
Sampler (Signature) <i>Alison Bailey</i>				Date Collected 4/17/98				Time Collected 0900				Matrix water				OVA SCREENING NA		OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS ASHA TWEED water; 207#5			
Sample ID HTB013				4/17/98				0900				water				2		1.0 - 5.0 pf			
HS1200				4/17/98				1025				water				2		1.0 - 5.0 pf			
HS2200				4/17/98				1055				water				2		21.0 - 25.0 pf			
HJ5302				4/16/98				1355				water				2		31.0 - 35.0 pf			
HJ5303				4/16/98				1420				water				2		41.0 - 45.0 pf			
HJ5304				4/16/98				1450				water				2		51.0 - 55.0 pf			
HJ5305				4/16/98				1515				water				2		11.0 - 15.0 pf			
HJ5301				4/16/98				1540				water				2		6.0 - 10.0 pf			
HR1200				4/17/98				0920				water				2		8.0 - 12.0 pf			
HJ4200				4/16/98				1500				water				2		7.0 - 11.0 pf			
HQ1200				4/17/98				0830				water				2					
RELINQUISHED BY: <i>Nichell Hall</i>				Date/Time 4/17/98				RECEIVED BY: <i>Donna Deane</i>				Date/Time 4/17/98				TOTAL NUMBER OF CONTAINERS: 22				Cooler Temperature: 4°C	
COMPANY NAME: SAIC				4/17/98				COMPANY NAME: GEL				11/15				Cooler ID: 227				FEDEX NUMBER: NA	
RECEIVED BY: <i>Bob Lockhart</i>				Date/Time 4/17/98				RELINQUISHED BY:				Date/Time									
COMPANY NAME: GEL				1330				COMPANY NAME:													
RELINQUISHED BY: <i>Bob Lockhart</i>				Date/Time 4-17-98				RECEIVED BY:				Date/Time									
COMPANY NAME: GEL				1615				COMPANY NAME:													

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CHAIN OF CUSTODY RECORD

COC NO.: 4/798B

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS										LABORATORY NAME: General Engineering Laboratory						
PROJECT NUMBER: 0019														LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417						
PROJECT MANAGER: Allison Bailey														PHONE NO: (803) 556-8171						
Sampler (Signature) <i>Michelle Hall</i>				(Printed Name) Michelle Hall														OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS		
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	DRP	GRO	TOC	No. of Bottles/ Vials										OVA SCREENING	
HJ5301	4/16/98	1340	water	X	X	X	X	X	9	4	9	1	3	2	NA	11.0 - 15.0A				
HJ5305	4/16/98	1515	water	X	X	X	X	X	1	3	1	3	2	NA	57.0 - 55.0A					
HJ4200	4/16/98	1300	water	X	X	X	X	X	1	3	1	3	2	NA	8.0 - 12.0A					
HJ5120	4/17/98	1025	water	X	X	X	X	X	1	3	1	3	2	NA	1.0 - 5.0A					
HJ5220	4/17/98	1055	water	X	X	X	X	X	1	3	1	3	2	NA	1.0 - 5.0A					
<i>Michelle Hall</i> 4/17/98																				
RELINQUISHED BY: <i>Michelle Hall</i>				RECEIVED BY: <i>Michelle Hall</i>				Date/Time 4-17-98				TOTAL NUMBER OF CONTAINERS: Cooler ID: #555				Cooler Temperature: 4°C FEDEX NUMBER: NA				
COMPANY NAME: SAIC				COMPANY NAME: CEL																
RECEIVED BY: <i>Michelle Hall</i>				RELINQUISHED BY:				Date/Time 4/13/98												
COMPANY NAME: SAIC				COMPANY NAME:																
RECEIVED BY: <i>Michelle Hall</i>				RELINQUISHED BY:				Date/Time 4/13/98												
COMPANY NAME: SAIC				COMPANY NAME:																
RECEIVED BY: <i>Michelle Hall</i>				RELINQUISHED BY:				Date/Time 4/13/98												
COMPANY NAME: SAIC				COMPANY NAME:																

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CHAIN OF CUSTODY RECORD

800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 487-4600

An Employer-Owned Company
Solutia Inc. Solutia International Corporation

COC NO.: 41798A

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS										LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 0019														LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Allison Bailey														PHONE NO: (803) 556-8171	
Sampler (Signature) <i>Michael Hall</i>				(Printed Name) Michael Hall											
Sample ID	Date Collected	Time Collected	Matrix	BTX	PAH	DR	GR	TOC	No. of Bottles/Vials		OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS			
HQ1200	4/17/98	0830	water							2	NA	7.0 - 11.0 p			
HJ5304	4/16/98	1450	water							2	NA	41.0 - 45.0 p			
HJ5303	4/16/98	1420	water							2	NA	31.0 - 35.0 p			
HJ5302	4/16/98	1355	water							2	NA	21.0 - 25.0 p			
HR1200	4/17/98	0920	water							2	NA	6.0 - 10.0 p			
<i>Handwritten: 4/17/98</i>															
				TOTAL NUMBER OF CONTAINERS: 10					Cooler Temperature: 4°C						
				Cooler ID: # 403					FEDEX NUMBER: NA						
RECEIVED BY: <i>Michael Hall</i>				RECEIVED BY: <i>Michael Hall</i>				Date/Time: 4-17-98							
COMPANY NAME: SHIC				COMPANY NAME: C-EL				Date/Time: 11-15							
RECEIVED BY: <i>Michael Hall</i>				RECEIVED BY: <i>Michael Hall</i>				Date/Time: 4-17-98							
COMPANY NAME: <i>SHIC</i>				COMPANY NAME: <i>SHIC</i>				Date/Time: 11-15							
RECEIVED BY: <i>Michael Hall</i>				RECEIVED BY: <i>Michael Hall</i>				Date/Time: 4-17-98							
COMPANY NAME: <i>SHIC</i>				COMPANY NAME: <i>SHIC</i>				Date/Time: 11-15							

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600 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 451-4600

CHAIN OF CUSTODY RECORD

COC NO.: 42298B

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS										LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 0019														LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Allison Bailey														PHONE NO: (803) 556-8171	
Sampler (Signature): <i>Michael Hall</i>															
(Printed Name): Michael Hall															
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	DRP	GRO	TOC	No. of Bottles/Vials		OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS			
HJ7200	4/20/98	1525	water	X					2	2	NA	6.0 - 10.0 ft			
HJ7210	4/20/98	1525	water	X					2	2	NA	6.0 - 10.0 ft			
HJ9200	4/21/98	0855	water	X					2	2	NA	7.0 - 11.0 ft			
HJ9210	4/21/98	0855	water	X					2	2	NA	7.0 - 11.0 ft			
HE9HIA200	4/21/98	1015	water	X					2	2	NA	6.0 - 10.0 ft			
HIB200	4/21/98	1135	water	X					2	2	NA	7.0 - 11.0 ft			
HG7200	4/22/98	0950	water	X					2	2	NA	5.0 - 9.0 ft			
HL9200	4/22/98	1130	water	X					2	2	NA	6.0 - 10.0 ft			
HTB017	4/22/98	0900	water	X					2	2	NA	ASTM 1181-97			
RECEIVED BY: <i>Michael Hall</i>				RECEIVED BY: <i>David D.</i>				TOTAL NUMBER OF CONTAINERS: 18				Cooler Temperature: 4°C			
COMPANY NAME: SAIC				COMPANY NAME: G-FIL				Cooler ID: 538				FEDEX NUMBER: NA			
RECEIVED BY: <i>Michael Hall</i>				RELINQUISHED BY: <i>Michael Hall</i>				Date/Time: 4/22/98				Date/Time: 1720			
COMPANY NAME: SAIC				COMPANY NAME: G-FIL				Date/Time: 1330				Date/Time: 1720			
RECEIVED BY: <i>Michael Hall</i>				RECEIVED BY: <i>Michael Hall</i>				Date/Time: 1720				Date/Time: 1720			
COMPANY NAME: SAIC				COMPANY NAME: G-FIL				Date/Time: 1720				Date/Time: 1720			

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CHAIN OF CUSTODY RECORD

PROJECT NAME: CAP - Hunter AFB - Part A				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 0019																LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Allison Bailey																PHONE NO: (803) 556-8171	
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	DRP	GRO	TOC	No. of Bottles/Vials				OVA SCREENING	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS			
H19210	4/21/98	0855	water						98046	1	01	2	NA	7.0-11.0 ft			
H19204	4/21/98	0855	water						08	2	02	2	NA	7.0-11.0 ft			
H17200	4/20/98	1525	water						03	2	03	2	NA	6.0-10.0 ft			
RECEIVED BY: <i>[Signature]</i> DATE/TIME: 4/22/98 COMPANY NAME: GEL																	
RELINQUISHED BY: <i>[Signature]</i>				RECEIVED BY: <i>[Signature]</i>				TOTAL NUMBER OF CONTAINERS: 6				Cooler Temperature: 40C					
COMPANY NAME: <i>[Signature]</i>				COMPANY NAME: GEL				Cooler ID: 477				FEDEX NUMBER: NA					
RECEIVED BY: <i>[Signature]</i>				RELINQUISHED BY: <i>[Signature]</i>				Date/Time: 1720									
COMPANY NAME: <i>[Signature]</i>				COMPANY NAME: <i>[Signature]</i>				Date/Time: 1720									
RELINQUISHED BY: <i>[Signature]</i>				RECEIVED BY: <i>[Signature]</i>				Date/Time: 1720									
COMPANY NAME: <i>[Signature]</i>				COMPANY NAME: <i>[Signature]</i>				Date/Time: 1720									

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CHAIN OF CUSTODY RECORD

COC NO.: 28622/h

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ1200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: HA016W

Matrix: (soil/water) GROUNDH₂O

Lab Sample ID: 9804427-13

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2G3012

Level: (low/med) LOW

Date Received: 04/16/98

% Moisture: not dec. _____

Date Analyzed: 04/29/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

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

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ1200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA014W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804406-05

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 7R117

Level: (low/med) LOW Date Received: 04/16/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98

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/L

Q

91-20-3-----	naphthalene	1.6	J
91-58-7-----	2-chloronaphthalene	10.0	U
208-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo(a)anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo(b)fluoranthene	10.0	U
207-08-9-----	benzo(k)fluoranthene	10.0	U
50-32-8-----	benzo(a)pyrene	10.0	U
193-39-5-----	indeno(1,2,3-cd)pyrene	10.0	U
53-70-3-----	dibenz(a,h)anthracene	10.0	U
191-24-2-----	benzo(g,h,i)perylene	10.0	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ2200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: HA016W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9804427-14

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2G3039

Level: (low/med) LOW

Date Received: 04/16/98

% Moisture: not dec. _____

Date Analyzed: 04/30/98

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)	8.4	

11-C

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ2200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA014W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804406-06

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: 7R118

Level: (low/med) LOW Date Received: 04/16/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98

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/L Q

91-20-3	-----naphthalene	10.1	U
91-58-7	-----2-chloronaphthalene	10.1	U
208-96-8	-----acenaphthylene	10.1	U
83-32-9	-----acenaphthene	10.1	U
86-73-7	-----fluorene	10.1	U
85-01-8	-----phenanthrene	10.1	U
120-12-7	-----anthracene	10.1	U
206-44-0	-----fluoranthene	10.1	U
129-00-0	-----pyrene	10.1	U
56-55-3	-----benzo (a) anthracene	10.1	U
218-01-9	-----chrysene	10.1	U
205-99-2	-----benzo (b) fluoranthene	10.1	U
207-08-9	-----benzo (k) fluoranthene	10.1	U
50-32-8	-----benzo (a) pyrene	10.1	U
193-39-5	-----indeno (1,2,3-cd) pyrene	10.1	U
53-70-3	-----dibenz (a,h) anthracene	10.1	U
191-24-2	-----benzo (g,h,i) perylene	10.1	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ3200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: HA016W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9804427-15

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2G3030

Level: (low/med) LOW

Date Received: 04/16/98

% Moisture: not dec. _____

Date Analyzed: 04/30/98

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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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ3200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA014W
Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804406-08
Sample wt/vol: 980.0 (g/mL) ML Lab File ID: 7R120
Level: (low/med) LOW Date Received: 04/16/98
% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98
Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/27/98
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/L	Q
91-20-3	naphthalene	10.2	U
91-58-7	2-chloronaphthalene	10.2	U
208-96-8	acenaphthylene	10.2	U
83-32-9	acenaphthene	10.2	U
86-73-7	fluorene	10.2	U
85-01-8	phenanthrene	10.2	U
120-12-7	anthracene	10.2	U
206-44-0	fluoranthene	10.2	U
129-00-0	pyrene	10.2	U
56-55-3	benzo(a)anthracene	10.2	U
218-01-9	chrysene	10.2	U
205-99-2	benzo(b)fluoranthene	10.2	U
207-08-9	benzo(k)fluoranthene	10.2	U
50-32-8	benzo(a)pyrene	10.2	U
193-39-5	indeno(1,2,3-cd)pyrene	10.2	U
53-70-3	dibenz(a,h)anthracene	10.2	U
191-24-2	benzo(g,h,i)perylene	10.2	U

FORM I SV-1

OLM03.0

1A
 VOLATILE ORGANICS ANALYSIS DATA SHEET

HJ4200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804469-05

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3021

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/29/98

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	445J G01 55J G01 G01 G01
108-88-3-----Toluene	2.0	U	
100-41-4-----Ethylbenzene	5.6		
1330-20-7-----Xylenes (total)	34.2		

USE

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ4200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) WATER Lab Sample ID: 9804469-14

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 2Q321

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/23/98

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	15.0	
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5301

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804469-03

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3019

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/29/98

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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FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5301

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) WATER Lab Sample ID: 9804469-12

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 2Q319

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/22/98

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/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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C02

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5302

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804427-19

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3034

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/30/98

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	U ↓
108-88-3-----	Toluene	2.0 U	
100-41-4-----	Ethylbenzene	2.0 U	
1330-20-7-----	Xylenes (total)	6.0 U	

1B
 SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ5302

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W
 Matrix: (soil/water) WATER Lab Sample ID: 9804469-10
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 2Q317
 Level: (low/med) LOW Date Received: 04/17/98
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/22/98
 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/L	Q
91-20-3	naphthalene	10.0 U	U ↓ UJ Cφ2 ↓
91-58-7	2-chloronaphthalene	10.0 U	
209-96-8	acenaphthylene	10.0 U	
83-32-9	acenaphthene	10.0 U	
86-73-7	fluorene	10.0 U	
85-01-8	phenanthrene	10.0 U	
120-12-7	anthracene	10.0 U	
206-44-0	fluoranthene	10.0 U	
129-00-0	pyrene	10.0 U	
56-55-3	benzo (a) anthracene	10.0 U	
218-01-9	chrysene	10.0 U	
205-99-2	benzo (b) fluoranthene	10.0 U	
207-08-9	benzo (k) fluoranthene	10.0 U	
50-32-8	benzo (a) pyrene	10.0 U	
193-39-5	indeno (1,2,3-cd) pyrene	10.0 U	
53-70-3	dibenz (a,h) anthracene	10.0 U	
191-24-2	benzo (g,h,i) perylene	10.0 U	

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5303

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804427-20

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3035

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/30/98

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	U ↓
108-88-3	Toluene	2.0	U	
100-41-4	Ethylbenzene	2.0	U	
1330-20-7	Xylenes (total)	6.0	U	

1B
 SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ5303

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) WATER Lab Sample ID: 9804469-09

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 2Q316

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/22/98

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/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5304

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804469-01

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3015

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/29/98

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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FORM I VOA

1B
 SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ5304

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) WATER Lab Sample ID: 9804469-08

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 2Q315

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/22/98

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/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5305

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804469-02

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2G3018

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: not dec. Date Analyzed: 04/29/98

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:		Q
		(ug/L or ug/Kg)	UG/L	
71-43-2-----	Benzene	2.0	U	U ↓ J
108-88-3-----	Toluene	2.0	U	
100-41-4-----	Ethylbenzene	2.0	U	
1330-20-7-----	Xylenes (total)	2.2	J	

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ5305

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA018W

Matrix: (soil/water) WATER Lab Sample ID: 9804469-13

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 2Q320

Level: (low/med) LOW Date Received: 04/17/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 04/20/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/22/98

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/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo(a)anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo(b)fluoranthene	10.0	U
207-08-9-----	benzo(k)fluoranthene	10.0	U
50-32-8-----	benzo(a)pyrene	10.0	U
193-39-5-----	indeno(1,2,3-cd)pyrene	10.0	U
53-70-3-----	dibenz(a,h)anthracene	10.0	U
191-24-2-----	benzo(g,h,i)perylene	10.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HJ7200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: HA023W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9804617-09

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2H1013

Level: (low/med) LOW

Date Received: 04/22/98

% Moisture: not dec. _____

Date Analyzed: 05/04/98

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	UT	601
108-88-3-----Toluene	2.0	U	UT	
100-41-4-----Ethylbenzene	12.6		J	
1330-20-7-----Xylenes (total)	59.0		J	

DATA VALIDATION
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ7200

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA023W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804617-03

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: 4R417

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: _____ decanted (Y/N) Date Extracted: 04/24/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/30/98

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	29.1	
91-58-7-----	2-chloronaphthalene	10.1	U
208-96-8-----	acenaphthylene	10.1	U
83-32-9-----	acenaphthene	10.1	U
86-73-7-----	fluorene	10.1	U
85-01-8-----	phenanthrene	10.1	U
120-12-7-----	anthracene	10.1	U
206-44-0-----	fluoranthene	10.1	U
129-00-0-----	pyrene	10.1	U
56-55-3-----	benzo (a) anthracene	10.1	U
218-01-9-----	chrysene	10.1	U
205-99-2-----	benzo (b) fluoranthene	10.1	U
207-08-9-----	benzo (k) fluoranthene	10.1	U
50-32-8-----	benzo (a) pyrene	10.1	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.1	U
53-70-3-----	dibenz (a,h) anthracene	10.1	U
191-24-2-----	benzo (g,h,i) perylene	10.1	U

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1A
 VOLATILE ORGANICS ANALYSIS DATA SHEET

HJ7210

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA023W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804617-10

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2H1014

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: not dec. Date Analyzed: 05/04/98

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	UJ G-01
108-88-3-----Toluene	2.0	U	UJ
100-41-4-----Ethylbenzene	2.5		J
1330-20-7-----Xylenes (total)	9.8		J ↓

DATA VALIDATION
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

HJ7210

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HA023W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9804617-04

Sample wt/vol: 975.0 (g/mL) ML Lab File ID: 4R418

Level: (low/med) LOW Date Received: 04/22/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 04/24/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/30/98

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	39.9		= u ↓
91-58-7-----	2-chloronaphthalene	10.2	U	
208-96-8-----	acenaphthylene	10.2	U	
83-32-9-----	acenaphthene	10.2	U	
86-73-7-----	fluorene	10.2	U	
85-01-8-----	phenanthrene	10.2	U	
120-12-7-----	anthracene	10.2	U	
206-44-0-----	fluoranthene	10.2	U	
129-00-0-----	pyrene	10.2	U	
56-55-3-----	benzo (a) anthracene	10.2	U	
218-01-9-----	chrysene	10.2	U	
205-99-2-----	benzo (b) fluoranthene	10.2	U	
207-08-9-----	benzo (k) fluoranthene	10.2	U	
50-32-8-----	benzo (a) pyrene	10.2	U	
193-39-5-----	indeno (1,2,3-cd) pyrene	10.2	U	
53-70-3-----	dibenz (a,h) anthracene	10.2	U	
191-24-2-----	benzo (g,h,i) perylene	10.2	U	

FORM I SV-1

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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 underground storage tanks (USTs) removed under contract with Anderson Columbia Environmental, Inc., to include clean and non-clean closures] was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA 31316. The Installation has records of all manifests and weight tickets for this project. However, site-specific information is not available.

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

Name: Thomas C. Fry

Title: Chief, Environmental Branch

Signature: Thomas C. Fry

Date: 03/01/99

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: Tank 116, Building 9002

Ranked by: C. Allison Bailey

County: Chatham Facility ID #: 9-025112

Date Ranked: 11/11/98

SOIL CONTAMINATION

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

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

B. Total Benzene -
Maximum Concentration found on the site

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

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

- ☐ >50' bls = 1
☐ >25' - 50' bls = 2
☐ >10' - 25' bls = 5
☒ $\leq 10'$ bls = 10

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

GROUNDWATER CONTAMINATION

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

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

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

- ☒ ≤ 5 $\mu\text{g/L}$ = 0
☐ >5 - 100 $\mu\text{g/L}$ = 5
☐ >100 - 1,000 $\mu\text{g/L}$ = 50
☐ >1,000 - 10,000 $\mu\text{g/L}$ = 100
☐ >10,000 $\mu\text{g/L}$ = 250

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

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.

* Note: Please see Section 1.0, Other Geologic and Hydrogeologic Data, page X-5, for justification of this evaluation.

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. 0) x (L. 50) = M. 0

(M. 0) + (D. 0) = N. 0

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. 0) x (P. 1) = (0) + (Q. 0)

= 0

ENVIRONMENTAL SENSITIVITY SCORE

1.0 OTHER GEOLOGIC AND HYDROGEOLOGIC DATA

The following information is presented to provide supplemental information to Appendix X (Site Ranking Form) of the Corrective Action Plan (CAP)-Part A form and provides detailed information relating to the geologic and hydrogeologic conditions at Hunter Army Airfield (HAAF) to support determinations of groundwater flow pathway(s) or direction(s) and contaminant transport.

1.1 REGIONAL GEOLOGY

Southeast Georgia is located within the Coastal Plain Physiographic Province of the Southeast United States (Clark and Zisa 1976). In this region, the thickness of southeastward dipping, subsurface strata ranges from 0 feet at the fall line, located approximately 350 miles inland from the Atlantic coast, to approximately 4200 feet below land surface (BLS) at the coast. Herrick (1961) provides detailed lithologic descriptions of the stratigraphic units encountered during the installation of water and petroleum exploration wells in Chatham County. The well log of GGS Well 125, located on White Bluff Road, 700 feet west and 0.3 miles north of Buckhalter Road, Savannah, provides one of the more complete lithologic descriptions of upper Eocene, Miocene, and Pliocene to Recent sedimentary strata in Chatham County.

The upper Eocene (Ocala Limestone) section of GGS Well 125 is approximately 225 feet thick and dominated by light-gray to white, fossiliferous limestone. The Miocene section is approximately 250 feet thick and consists of limestone with a 160-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known to occupy the Coosawatchie Formation of the Hawthorn Group (Furlow 1969; Arora 1984; Huddleston 1988). The interval from approximately 80 feet to the surface is Pliocene to Recent in age and composed primarily of sand interbedded with clay and silt. This section is occupied by the Satilla and Cypresshead Formations (Huddleston 1988).

1.2 LOCAL GEOLOGY

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

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

coarse-grained sand deposits of barrier island origin are more common throughout the remaining areas of HAAF.

Based on the coring and sampling of unconsolidated strata at HAAF during the CAP-Part A investigations, it is concluded that all former underground storage tanks (USTs) were buried within the Satilla Formation, which is overlain by various soil types. Soil groups at HAAF include the Chipley, Leon, Ellabelle, Kershaw, Pelham, Albany, Wahee, and Ogeechee (Wilkes et al. 1974).

1.3 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of HAAF is mostly influenced by two aquifer systems. These are referred to as the Principal (Floridan) Aquifer and the Surficial Aquifer (Miller 1990). The Principal Aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer, approximately 800 feet in total thickness, is composed primarily of Tertiary age limestone including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. Groundwater from the Floridan is used primarily for drinking water (Arora 1984). According to Miller (1990), one of the largest cones of depression produced in the Upper Floridan Aquifer exists directly beneath Savannah, Georgia. Net water-level decline in the Floridan system, between the predevelopment period and 1980, exceeded 80 feet beneath Savannah. In addition, according to 1980 estimates, more than 500 million gallons of water per day were withdrawn from the Floridan for public and industrial use in southeast Georgia, more than any other region.

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

The Surficial Aquifer consists of widely varying amounts of sand and clay, ranging from 55 to 150 feet in thickness, and is composed primarily of the Satilla and Cypresshead Formations in the Savannah vicinity (Arora 1984). This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet below ground level (Miller 1990). Groundwater in the Surficial Aquifer system is under unconfined, or water table, conditions. However, locally, thin clay beds create confined or semiconfined conditions, as is the case at HAAF where thin, surficial clay beds are present in the west quadrant (GA DNR 1976).

Groundwater encountered at all the CAP-Part A 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 Floridan Aquifer from the Surficial Aquifer, it is concluded that there is no hydraulic interconnection between UST sites (and associated plumes, if applicable) and water supply withdrawal points (Figure X-A).

1.4 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS AT THE UST 116, BUILDING 9002 SITE

According to Wilkes et al. (1974), the soil common in the area occupied by Building 9002 consists of the Ocilla-Urban land complex (Ojc). This soil is low inorganic content and very

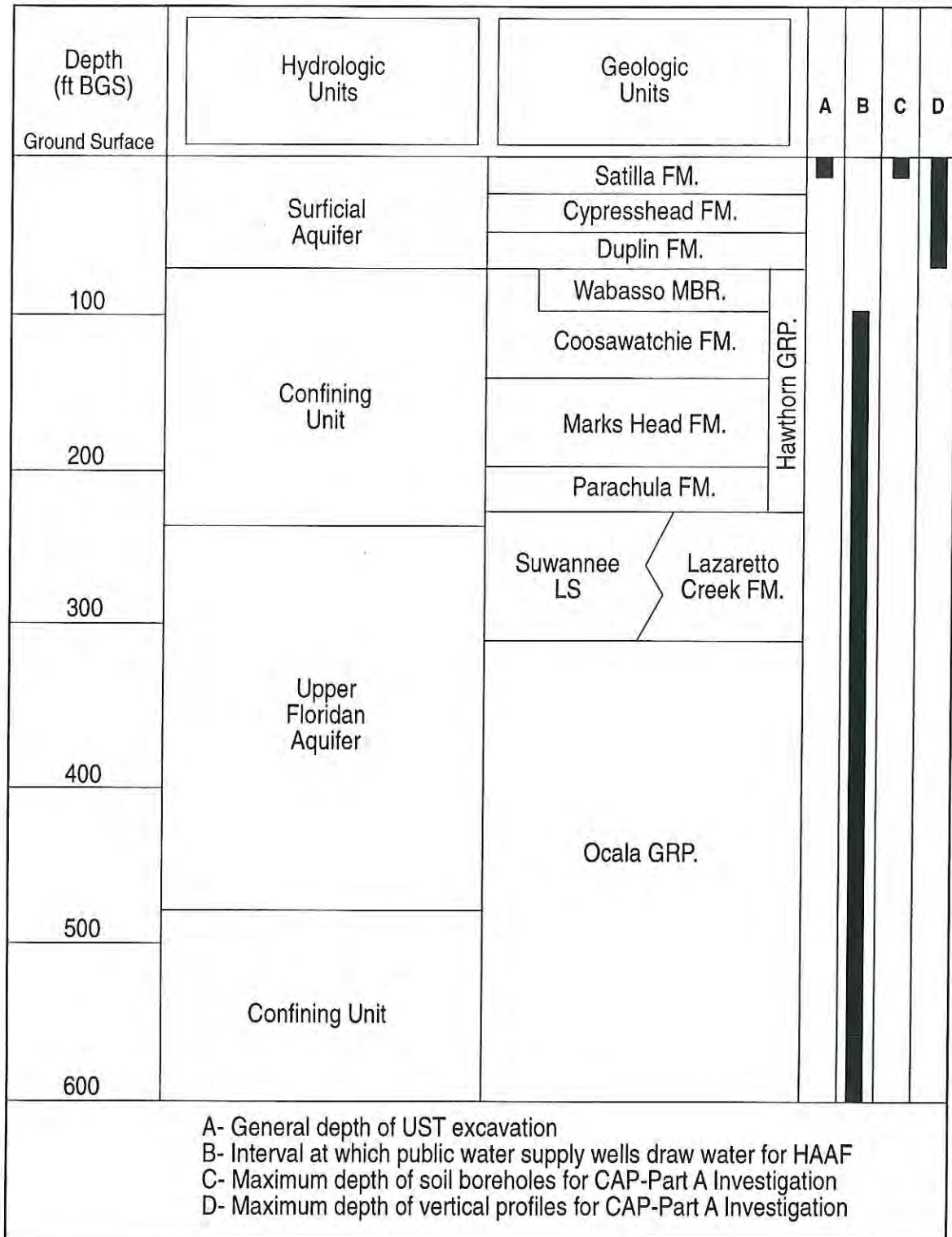
acidic throughout. The available water capacity is low to medium, and the permeability is moderate.

During direct-push sampling activities, three major unconsolidated sediment types were recorded. These include: (1) non-native fill material consisting of poorly graded, coarse-grained sand; (2) yellowish-brown to dark brown, fine-grained silty sand (sm); and (3) light gray, well-graded, fine-grained quartz sand (sw). The top of the saturated zone was encountered at the silty sand and sand boundary (Figure 4, Appendix I). Following piezometer installation, water levels rose above this contact approximately 1 to 2 feet indicating confining conditions.

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FIGURES

FIGURES
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31-102797-063

Figure X-A. Generalized Stratigraphy of Chatham County, Georgia

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APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OR NEWSPAPER NOTICE

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STATE OF GEORGIA
CHATHAM COUNTY

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

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

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

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

That he has reviewed the regular editions of the Savannah Morning
News/Savannah Evening Press, published on 1-24, 1999,
1-31, 1999, , 19 , , 19 , and finds
that the following Advertisement, to-wit:

015-Miscellaneous Notices
PUBLIC NOTICE
Notification of Corrective Action
Plan, Underground Storage Tank
Releases, Fort Stewart, Georgia
Area, Fort Stewart, Georgia
The United States Army Corps of
Engineers and Fort Stewart
Directorate of Public Works have
prepared Corrective Action Plan
(CAP) - Part A reports to assess
the environmental impact of
diesel, gasoline, or waste oil
releases from numerous under-
ground storage tanks (USTs)
located at the above referenced
property. These reports will be
submitted to the Georgia Envi-
ronmental Protection Division
after February 1, 1999. A listing of
the UST sites for which CAP -
Part A reports have been pre-
pared is presented at the end of
this notification.
The Georgia rules for UST man-
agement require notification of
the public most directly affected
by the plans. If you would like a
copy of any of the plans, please
contact:
Commander, 3rd Infantry Divi-
sion (Mechanized) and Fort Stew-
art, attn: AFZP-DEV (M. Little),
1157, Frank Cochran Dr., Bldg.
1139, Fort Stewart, Ga. 31314-4928
A copy of each requested plan will
be mailed at a nominal copying
and shipping fee.
To make comments on any of the
plans, or to examine the Georgia
Environmental Protection Divi-
sion's files, contact the Corrective
Action Unit, Underground Stor-
age Tank Management Program,
Environmental Protection Divi-
sion, at 404-362-2697. The Under-
ground Storage Tank Manage-
ment Program will accept public
comments up to 30 days after sub-
mission to the Georgia Environ-
mental Protection Division. Fol-
lowing is their mailing address:
Corrective Action Unit, Under-
ground Storage Tank Manage-
ment Program, 4244 International
Parkway, Suite 100, Atlanta, Ga.
30354
Hunter Army Airfield CAP - Part
A, Underground Storage Tank
Sites:
Tank Number; Facility ID;
Building
21 and 22; 9-025033; 1327
27 and 28; 9-025083; 8059
108; 9-025104; 1346
109; 9-025105; 1310
112; 9-025108; 8444
116; 9-025112; 9002

appeared in each of said editions.

Sworn to and subscribed
before me this 2 day
of Feb, 1999.

Joan T. Jenkins
(Deponent)
Lillie D. Lang
Notary Public, Chatham County, Georgia

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

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APPENDIX XII

GUST TRUST FUND REIMBURSEMENT APPLICATION AND CLAIM FOR REIMBURSEMENT

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The Hunter Army Airfield is a federally owned facility and has funded the investigation for the Underground Storage Tank 116, Building 9002 site, Facility ID: 9-025112, using Environmental Restoration Account funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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ATTACHMENT A

TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

The overall objective of this project was to provide the services required to produce Corrective Action Plans (CAPs) for the subject underground storage tank (UST) and heating oil tank (HOT) sites per the requirement of the Georgia Environmental Protection Division (EPD). The field activities included the installation of temporary piezometers, soil borings, and soil and groundwater sampling. Upon completion of the field activities, this CAP-Part A report was prepared to meet requirements of the Georgia EPD, Fort Stewart Directorate of Public Works (FS DPW), and the U.S. Army Corps of Engineers (USACE)-Savannah District.

2.0 FIELD ACTIVITIES

The following sections detail the methodologies used for direct-push sampling and piezometer installation. All boreholes were drilled and piezometers installed by R. E. Wright [Science Applications International Corporation (SAIC), Drilling Services Division], a drilling firm licensed in the state of Georgia. A geologist from SAIC, working under the direction of a registered professional engineer, was on site at all times. Drilling activities were not undertaken until all utility clearances and permits were obtained from Hunter Army Airfield (HAAF) utility personnel.

2.1 SUBSURFACE SOIL SAMPLING

2.1.1 Borehole Installation

A truck-mounted direct-push Geoprobe was used for installation of soil boreholes. All sampling devices were pushed to required depths using 4.0- and 3.0-foot push rods. During all borehole drilling, 4.0-foot soil cores were collected continuously from ground surface to the top of the water table.

2.1.2 Sample Collection

Soil samples were collected from boreholes using a 4.0-foot acetate-lined, steel macrocoring device. Upon retrieval of the sampling device, the acetate liner containing the soil core was removed from the steel macrocoring device. The soil core was removed from the protective sleeve using a truck-mounted, acetate-liner cutting device. The exposed soil core was split into two 2.0-foot sections using a stainless steel knife. A portion of each 2.0-foot section was collected for possible laboratory analysis. The remaining portion of each 2.0-foot section was used for field measurements.

Samples designated for possible laboratory analysis were collected from the cores using a stainless steel spoon. Soil was collected from along the entire length of the core in order to collect a representative sample. 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. 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 parts per million (ppm).

Immediately following 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 acetate-lined, steel macrocore sampling device was used to collect soil core from each interval of the project boreholes. Information regarding the soil sample selection criteria for off-site shipment to a laboratory for chemical analysis is presented in Section 3.1.3 of the project Sampling and Analysis Plan. Soil samples that were not selected for laboratory analysis were disposed of as investigation-derived waste (IDW).

2.2 GROUNDWATER SAMPLING

2.2.1 Groundwater Collection

Collection of groundwater samples from soil boreholes was accomplished through the use of a 3.5-foot-long, 1.0-inch-diameter steel slotted screen encased in a 3.5-foot-long, 1.5-inch-diameter stainless steel sleeve attached to an expendable 1.5-inch length, 1.5-inch-diameter steel drive point. The entire device was pushed 5 feet below the water table. The 3.5-foot steel sleeve was subsequently raised 4.0 feet from the bottom while discarding the steel drive point and exposing the entire length of the screen to groundwater. By raising the steel sleeve 4.0 feet, the steel slotted screen was raised 0.5 feet from the bottom of the borehole. As a result, the groundwater was collected from a 4.0-foot interval. Water was brought to the surface using a peristaltic pump attached to a clean acetate tube, which was cut to desired length prior to sampling and discarded following each sampling event. Enough water was extracted for laboratory sample containment and for water quality parameters to be measured with a Horiba U-10. Following groundwater sample collection, subsurface sampling devices were removed from the borehole, and a temporary piezometer was installed. Temporary piezometers were constructed of 1.0-inch inside diameter (ID) polyvinyl chloride (PVC) casing with a 5-foot screened interval.

2.2.2 Field Measurements

Groundwater field measurements performed during the project included measurement of static groundwater level, free product layer thickness, pH, specific conductance, and temperature. Groundwater levels were measured inside the temporary PVC piezometers. A summary of the procedures and criteria to be used for groundwater 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 indicated by the alarm and/or 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 the 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).

Free Product Thickness

Free product layer thickness measurements were collected at applicable sites using an electric interface probe. Initially, the indicator probe was lowered into each temporary piezometer casing until the alarm sounded and/or the indicator light was illuminated. The probe was withdrawn and then slowly lowered again until the liquid surface was contacted as noted by the alarm and/or indicator light. The meter was lowered until the alarm indicated the water surface. The thickness of the product was determined by subtracting the measurement of the free product layer surface from the measurement of the water surface. The water/product 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 free product measurement was repeated two or three times to ensure that the measurements were consistent (plus or minus 0.01 foot).

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 Horiba U-10 designed to measure these parameters. A portion of each groundwater sample was retrieved from the 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.

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 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 mS/cm and the temperature to the nearest 0.1°C. All recorded conductivity values were converted to conductance at 25°C.

2.3 TEMPORARY PIEZOMETER INSTALLATION

Following the collection of the groundwater sample, a 2-inch PVC piezometer, with a 5-foot screened section, was installed to prevent the borehole from collapsing. The piezometer remained in the borehole at least 24 hours, after which time measurements to determine the presence of a free product layer were made, if applicable, and the static water level was measured.

2.4 BOREHOLE ABANDONMENT

Once static water levels were measured, the temporary piezometers were removed, and the boreholes were abandoned. Abandonment was conducted in a manner preventing 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 bentonite powder.

Boreholes located in concrete-covered areas were capped with grout. After a 24-hour period, the abandoned borehole was checked for grout and bentonite settlement.

2.5 SURVEYING

A topographic survey of the horizontal and vertical locations of all soil boreholes was conducted after completion of 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 0.01 foot. Elevations were referenced to the National Geodetic Vertical Datum of 1983.

2.6 DECONTAMINATION PROCEDURES

Decontamination of equipment used for soil and groundwater sampling was conducted at each investigation site. Non-dedicated equipment was decontaminated after each use. The direct-push sampling equipment was decontaminated by removing soil and contaminants with potable water, phosphate-free detergent, and scrub brushes. This was followed by a potable water rinse, American Society for Testing and Materials (ASTM) Type I or equivalent water rinse, methanol rinse, and ASTM Type I or equivalent water rinse. The sampling equipment was then allowed to air dry and was 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 came into contact with 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 INVESTIGATION-DERIVED WASTE MANAGEMENT

Soil cuttings obtained during the installation of each borehole, and water collected for the measurement of water quality parameters, were the only indigenous IDW generated during the project. Non-indigenous IDW included solid compactible trash, decontamination solutions, and sludges.

2.7.1 Waste Collection and Containment

All soil waste was contained in a 55-gallon U.S. Department of Transportation (DOT) Specification 17C drums at the point of generation. At each site, water waste was contained in 55-gallon DOT specification 17E drums. All containers were appropriately labeled with generation point information and transported to the Central Staging Area. Sanitary waste was placed in trash bags at the point of generation.

2.7.2 Waste Characterization

Soil IDW was characterized by collecting a representative soil aliquot from each drum and creating a single homogenized composite sample. The sample was analyzed for Resource Conservation and Recovery Act Toxicity Characteristic Leaching Procedure (TCLP) analytes. Soil was considered non-contaminated if the TCLP results were below the regulatory criteria, and the analytical results for the associated field samples indicated all of the following:

- benzene, toluene, ethylbenzene, and xylene (BTEX) and polynuclear aromatic hydrocarbon (PAH) concentrations below applicable Table A or B Threshold Levels as defined in Rules of Georgia Department of Natural Resources, Environmental Protection Division, rule 391-3-15-.09;
- total petroleum hydrocarbon (TPH) concentrations below 100 ppm; and
- total lead concentrations below 100 ppm.

Water IDW was characterized by collecting one sample from each drum. Each sample was analyzed for BTEX, pH, oil and grease, phenols, and TCLP metals.

2.7.3 Waste Disposal

All of the soil IDW was characterized as being non-contaminated and approved for disposal by FS DPW personnel. The soil was spread in an area designated by FS DPW personnel.

All of the water IDW was characterized as meeting the acceptance criteria of the FS Industrial Waste Treatment Plant (IWTP) and approved for disposal by FS DPW personnel at the IWTP.

2.8 DOCUMENTATION OF FIELD ACTIVITIES

All information pertinent to drilling and 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, problems encountered, and field measurements. Lot numbers, manufacturers' names, and expiration dates of standard solutions used for field instrument calibration were also recorded. Sufficient information was recorded in the logbooks to permit reconstruction of direct-push and sampling activities.

3.0 SAMPLE HANDLING AND ANALYSIS

3.1 ANALYTICAL PROGRAM

Soil samples were screened for the presence of volatile vapors using a PhotoVac photoionization detector. The PhotoVac was calibrated daily using 100 ppm isobutylene. The headspace of each sample was measured approximately 15 minutes after collection.

Soil samples were analyzed for BTEX by method SW 846-8020, for PAH by method SW 846-8270, and for TPH by method SW 846-8015 (modified). TPH analysis included both gasoline-range organics and diesel-range organics. Groundwater samples were analyzed for BTEX by method SW 846-8240 and PAH by method SW 846-8270. The groundwater and soil sample containers, preservatives, and holding times are summarized in Table 1.1 of the Quality Assurance Project Plan of the SAP (SAIC 1998). All samples were shipped to General Engineering Laboratories (GEL), 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, which represented approximately 5 percent of the total sample population, were collected to detect sample cross-contamination. Duplicates and rinsates were submitted to GEL.

Split samples were collected in addition to other quality control samples but were sent to the USACE quality assurance laboratory in Marietta, Georgia, as an independent quality check.

3.2 SAMPLE PACKAGING AND SHIPMENT

Each sample container was labeled and 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.

ATTACHMENT B

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