FINAL

IMA

FIRST ANNUAL MONITORING ONLY REPORT

3d Inf Div (Mech)

Former Underground Storage Tank 117
Building 7002
Bulk Fuel Facility (HAA-09)
Facility ID #9-025113*1
Hunter Army Airfield, Georgia

Prepared for

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-02-D-0004
Delivery Order 0006

July 2003

SAIC®

DOCUMENT 8

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

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

FINAL

FIRST ANNUAL MONITORING ONLY REPORT
FOR
FORMER UNDERGROUND STORAGE TANK 117
BUILDING 7002
BULK FUEL FACILITY (HAA-09)
FACILITY ID #9-025113*1
HUNTER ARMY AIRFIELD, GEORGIA

Prepared for

U.S. Army Corps of Engineers, Savannah District
and
Fort Stewart Directorate of Public Works
Under Contract Number DACA21-02-D-0004
Delivery Order 0006

Prepared by

Science Applications International Corporation
P.O. Box 2501
Oak Ridge, TN 37831

July 2003

CONTENTS

List of Abbreviations and Acronyms

ACL	alternate concentration limit
AST	aboveground storage tank
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
EPA	U.S. Environmental Protection Agency
GA EPD	Georgia Environmental Protection Division
HAAF	Hunter Army Airfield
IWQS	In-Stream Water Quality Standard
MCL	maximum contaminant level
PAH	polynuclear aromatic hydrocarbon
SAIC	Science Applications International Corporation
UST	underground storage tank

MONITORING ONLY REPORT

Submittal Date: July 2003 Monitoring Report Number: 1st Annual

For Period Covering: April 2002 to April 2003

Facility Name: Former UST 117 Street Address: Bulk Fuel Facility, Building 7002

Facility ID: 9-025113 City: Savannah County: Chatham Zip Code: 31409

Latitude: 32°01'43" Longitude: 81°08'37"

Submitted by UST Owner/Operator:		Prepared by Consultant/Contractor:	
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I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

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

Name: Patricia A. Stoll

Signature: Patricia A Stoll

Date: 6/20/03

Georgia Stamp & Seal

II. PROJECT SUMMARY

(Appendix I, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

Former Underground Storage Tank (UST) 117, Facility ID #9-025113*1, was located near Building 7002 at the Bulk Fuel Facility at Hunter Army Airfield (HAAF), Georgia. The Bulk Fuel Facility is approximately 600 by 1,200 ft and covers an area of approximately 16.5 acres. Currently, the facility contains three aboveground storage tanks (ASTs) for the storage of JP-8 with capacities of approximately 500,000 gal each, aboveground and underground piping, and off-loader and pump stations for the distribution of fuel to and from the tanks. The tank was removed and the piping abandoned in place on September 30, 1996. Science Applications International Corporation (SAIC) performed a soil gas survey in January 1999 to identify areas of significant contaminant concentrations (SAIC 1999). SAIC conducted a Corrective Action Plan (CAP)–Part A investigation in December 1999 and January 2000 and a CAP–Part B investigation from November 2000 to March 2001 to determine the extent of petroleum contamination at the site. Thirty-four monitoring wells, seven soil borings, and six vertical-profile borings were installed during these investigations, and surface water and sediment samples were collected from Lamar Canal. The CAP–Part B Report (SAIC 2001) was submitted to the Georgia Environmental Protection Division (GA EPD) Underground Storage Tank Management Program in July 2001. The report recommended that a well be installed to replace BF-MW-21, which had been destroyed, and that seven monitoring wells (i.e., BF-MW-19, BF-MW-20, BF-MW-21R, BF-MW-22, BF-MW-32, BF-MW-33, and BF-MW-34) be sampled on a semiannual basis for benzene, toluene, ethylbenzene, and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs) because benzene and naphthalene were selected as constituents of potential concern in groundwater.

The fate and transport modeling performed as part of the CAP–Part B Report reflected a continuous source of contamination. The results are summarized in Attachment A of this document. The analytical results were evaluated as part of this report, and it was determined that the fate and transport model did not need to be revised.

The purpose of the semiannual monitoring, summarized in this report, was to confirm the results of the fate and transport modeling and that natural attenuation is taking place at the site. The benzene and naphthalene concentrations during the July 2002 sampling event were lower than those of the CAP–Part B investigation and remained below their respective In-Stream Water Quality Standards (IWQSs) or alternate concentration limits (ACLs). In accordance with recommendations made in the CAP–Part B Report for the Monitoring Only Plan, an ACL for benzene of 634 μg/L and an ACL for naphthalene of 820 μg/L were proposed as the monitoring endpoints. If the benzene and naphthalene concentrations remain below their respective ACLs after 1 year of monitoring, the monitoring only program may be terminated regardless of the site ranking score.

In July 2002 and January 2003, free product was observed in well BF-MW-E5, which is located in the vicinity of AST 7009. This tank is approximately 500 ft northeast of AST 7003, which is where the groundwater plume is being monitored. Free product was not observed in this well during the CAP–Part B investigation. During that investigation, the BTEX and PAH constituents detected in the well were below the maximum contaminant level (MCL), IWQS, and ACL; therefore, groundwater monitoring of this area was not warranted.

It is apparent that there are two separate releases at the Bulk Fuel Facility. For clarification, Release #1 is associated with the groundwater plume in the vicinity of AST 7003 where the semiannual monitoring only program has been in place for the last year. Release #2 is associated with the free product observed in well BF-MW-E5, which is in the vicinity of AST 7009.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

A. Potentiometric Data:

(Appendix I, Figure 2: Potentiometric Surface Map)
(Appendix II, Table 1: Groundwater Elevations)

Discuss groundwater flow at this site and implications for this project.

During the first monitoring event in July 2002, groundwater elevations were measured in the site monitoring wells to determine the groundwater flow direction (Table 1). In July 2002, the groundwater flow direction ranged from the south to the southeast toward Lamar Canal, and the average groundwater gradient was approximately 0.0079 ft/ft. Free product was observed in well BF-MW-E5, which is located 500 ft northeast of the monitored groundwater plume.

During the second monitoring event in January 2003, groundwater elevations were measured in the site monitoring wells to determine the groundwater flow direction (Table 1). In January 2003, the groundwater flow direction ranged from the south to the southeast toward Lamar Canal, and the average groundwater gradient was approximately 0.0046 ft/ft. Free product was observed in well BF-MW-E5, which is located 500 ft northeast of the monitored groundwater plume.

B. Analytical Data:

(Appendix I, Figure 3: Groundwater Quality Map)
(Appendix I, Figure 4: Trend of Contaminant Concentrations)
(Appendix II, Table 2: Groundwater Analytical Results)
(Appendix II, Table 3: Soil Analytical Results)
(Appendix III: Laboratory Analytical Results)

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

During the first sampling event in July 2002 associated with Release #1, monitoring wells BF-MW-19, BF-MW-20, BF-MW-21R, BF-MW-22, BF-MW-32, BF-MW-33, and BF-MW-34 were sampled for BTEX using U.S. Environmental Protection Agency (EPA) Method 8021B/8260B and PAHs using EPA Method 8270C. Analytical results from the sampling event are summarized below.

- Benzene was detected in five of the seven groundwater samples at concentrations ranging from 0.99J to 178 µg/L. One of the samples exceeded the IWQS of 71.28 µg/L; however, the concentration did not exceed the ACL of 634 µg/L and showed a decrease from the CAP–Part B sampling event.

- Toluene was detected in three of the seven groundwater samples at concentrations ranging from 1.2 to 6 µg/L. None of the concentrations exceeded the IWQS of 200,000 µg/L.

- Ethylbenzene was detected in four of the seven groundwater samples at concentrations ranging from 11.6 to 207 µg/L. None of the concentrations exceeded the IWQS of 28,719 µg/L.

- Total xylenes were detected in four of the seven groundwater samples at concentrations ranging from 103 to 911 µg/L. There is no ACL or IWQS for total xylenes; however, the concentrations did not exceed the MCL of 10,000 µg/L.

- Naphthalene was detected in six of the seven groundwater samples at concentrations ranging from 1 to 168 µg/L. There is no IWQS for naphthalene; however, the concentrations did not exceed the ACL of 820 µg/L.

- 2-Methylnaphthalene was detected in five of the seven groundwater samples at concentrations ranging from 1.8 to 133 µg/L. There is no ACL or IWQS for 2-methylnaphthalene.

- 2-Chloronaphthalene was detected in one of the seven groundwater samples at a concentration of 41.5 µg/L. There is no ACL or IWQS for 2-chloronaphthalene.

- Acenaphthylene was detected in one of the seven groundwater samples at a concentration of 1.8 µg/L. There is no ACL or IWQS for acenaphthylene.

- Fluorene was detected in one of the seven groundwater samples at a concentration of 5.9 µg/L. There is no ACL or IWQS for fluorene.

None of the benzene or naphthalene concentrations exceeded the ACL of 634 or 820 µg/L, respectively. The benzene concentration in BF-MW-21R exceeded the IWQS of 71.28 µg/L. None of the other constituents exceeded its respective IWQS. Figure 4 shows the trend in benzene concentrations in groundwater for the wells in the monitoring only program for Release #1.

During the second sampling event in January 2003 associated with Release #1, monitoring wells BF-MW-19, BF-MW-20, BF-MW-21R, BF-MW-22, BF-MW-32, BF-MW-33, and BF-MW-34 were sampled for BTEX using EPA Method 8021B/8260B and PAHs using EPA Method 8270C. Analytical results from the sampling event are summarized below.

- Benzene was detected in four of the seven groundwater samples at concentrations ranging from 1.8 to 183 µg/L. One of the samples exceeded the IWQS of 71.28 µg/L; however, the concentration did not exceed the ACL of 634 µg/L and showed a decrease from the CAP–Part B sampling event.

- Toluene was detected in three of the seven groundwater samples at concentrations ranging from 0.56J to 1.2 µg/L. None of the concentrations exceeded the IWQS of 200,000 µg/L.

- Ethylbenzene was detected in three of the seven groundwater samples at concentrations ranging from 9.9 to 105 µg/L. None of the concentrations exceeded the IWQS of 28,719 µg/L.

- Total xylenes were detected in three of the seven groundwater samples at concentrations ranging from 130 to 328 µg/L. There is no ACL or IWQS for total xylenes; however, the concentrations did not exceed the MCL of 10,000 µg/L.

- Naphthalene was detected in six of the seven groundwater samples at concentrations ranging from 0.22J to 110 µg/L. There is no IWQS for naphthalene; however, the concentrations did not exceed the ACL of 820 µg/L.

- 2-Methylnaphthalene was detected in three of the seven groundwater samples at concentrations ranging from 2.4 to 42 µg/L. There is no ACL or IWQS for 2-methylnaphthalene.

None of the benzene or naphthalene concentrations exceeded the ACL of 634 or 820 µg/L, respectively. The benzene concentration in BF-MW-21R exceeded the IWQS of 71.28 µg/L. None of the other constituents exceeded its respective IWQS. Figure 4 shows the trend in benzene concentrations in groundwater for the wells in the monitoring only program for Release #1.

IV. SITE RANKING (Note: Re-rank site after each monitoring event.)

(Appendix IV: Site Ranking Form)

Environmental Site Sensitivity Score: *(April 1999 version of the Site Ranking Form was used for all scores.)*	3,250 (CAP–Part B Report) 3,250 (July 2002 – First semiannual sampling event) 3,250 (Jan. 2003 – Second semiannual sampling event)

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

The Monitoring Only Plan for the plume in the vicinity of BF-MW-21 (i.e., Release #1) was conducted in accordance with Section III.D of the CAP–Part B Report (SAIC 2001). Termination conditions in the CAP–Part B Report indicated that termination would be requested once the measured benzene and naphthalene concentrations had remained below their respective ACLs for 1 year. During the first year of the monitoring program for Release #1, the benzene and naphthalene concentrations in the vicinity of BF-MW-21 have been below their respective ACLs; therefore, no further action with respect to Release #1 is being requested. The monitoring program associated with Release #1 will be discontinued.

During the water-level-measurement activities at the site during the semiannual monitoring, however, free product was identified in well BF-MW-E5 (i.e., Release #2). This well is located in the vicinity of AST 7009 and is approximately 500 ft northeast of AST 7003 and Release #1. During the CAP–Part B investigation, free product was not observed in well BF-MW-E5, and the BTEX and PAH constituents detected in the well were below the MCL, IWQS, and ACL; therefore, groundwater monitoring of this area was not warranted.

The six wells with an "E" designator are located within the impermeable bermed area that provides secondary containment for AST 7009. Because of the recent rise in groundwater elevations at the site, the water table is now above the screened interval in all six "E" wells. As a result, it is unknown whether the free product present in BF-MW-E5 extends laterally to

the five wells surrounding BF-MW-E5 or is migrating toward BF-MW-E5 from an upgradient location. The construction of the bermed area did not provide a point of access for motorized vehicles. As a result, the six "E" wells cannot be redrilled and rescreened above the water table, and additional wells cannot be installed within the bermed area.

Because of the proximity of the free product to the AST, excavation of the soil is not practical because of the significant probability of undermining the integrity of the tank and compromising the integrity of the impermeable liner at the base of the bermed area. As a result, it is recommended that three additional wells be installed around the perimeter of the bermed area as shown in Figure 5 to ensure that the free product is not migrating toward Lamar Canal. Wells BF-MW-25, BF-MW-26, and BF-MW-27 are already located on the perimeter of the bermed area and can be used as monitoring points.

Once the three new wells have been installed, it is recommended that semiannual monitoring of Release #2 be initiated at the site. Wells BF-MW-E1, BF-MW-E2, BF-MW-E3, BF-MW-E4, BF-MW-E5, and BF-MW-E6 within the bermed area; BF-MW-25, BF-MW-26, BF-MW-27, and three new wells around the perimeter; and upgradient well BF-MW-04 will be sampled for BTEX and PAHs. Free product will be passively removed from any wells containing product through the use of absorbent socks or periodic pumping. It is expected that the wells will be installed during the fall of 2003, and the next sampling event will be conducted in January 2004. The Second Annual Monitoring Only Report will be submitted to GA EPD in October 2004 and will summarize all previous sampling events.

During each sampling event, water levels will be measured in all of the site monitoring wells. Specific conductivity, pH, and temperature analyses will be completed on each sample from the monitoring wells at which analytical samples are collected. The samples will be shipped to an approved laboratory for BTEX analysis using EPA Method 8021B/8260B and PAH analysis using EPA Method 8270C.

As part of the next annual report, fate and transport modeling will be conducted to predict the time required for the concentrations to reach the IWQS as a result of natural attenuation and to determine the ACLs for the plume associated with BF-MW-E5. Monitoring of this plume will be terminated once contaminant concentrations in the groundwater have remained below their respective ACLs for a minimum of 1 year. Once the ACLs have been maintained, the Monitoring Only Plan for the plume associated with BF-MW-E5 may be terminated regardless of the site ranking score.

VI. REIMBURSEMENT

Attached _____ N/A X

(Appendix V: Reimbursement Application)

Fort Stewart is a federally owned facility and has funded the investigation for the former UST 117 site, Facility ID #9-025113*1, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

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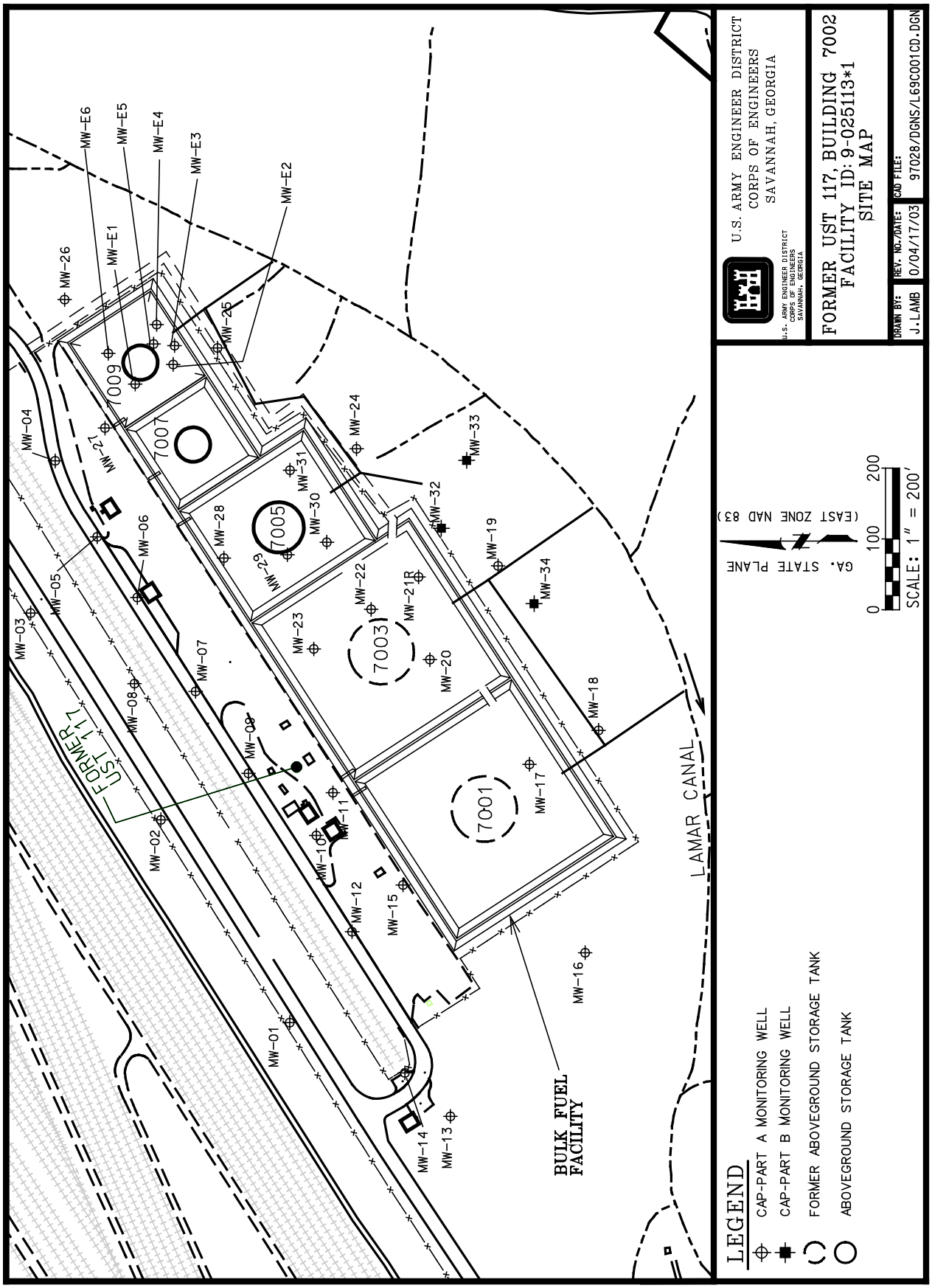

Figure 1. Location Map of the Former UST 117 Site, Hunter Army Airfield, Georgia

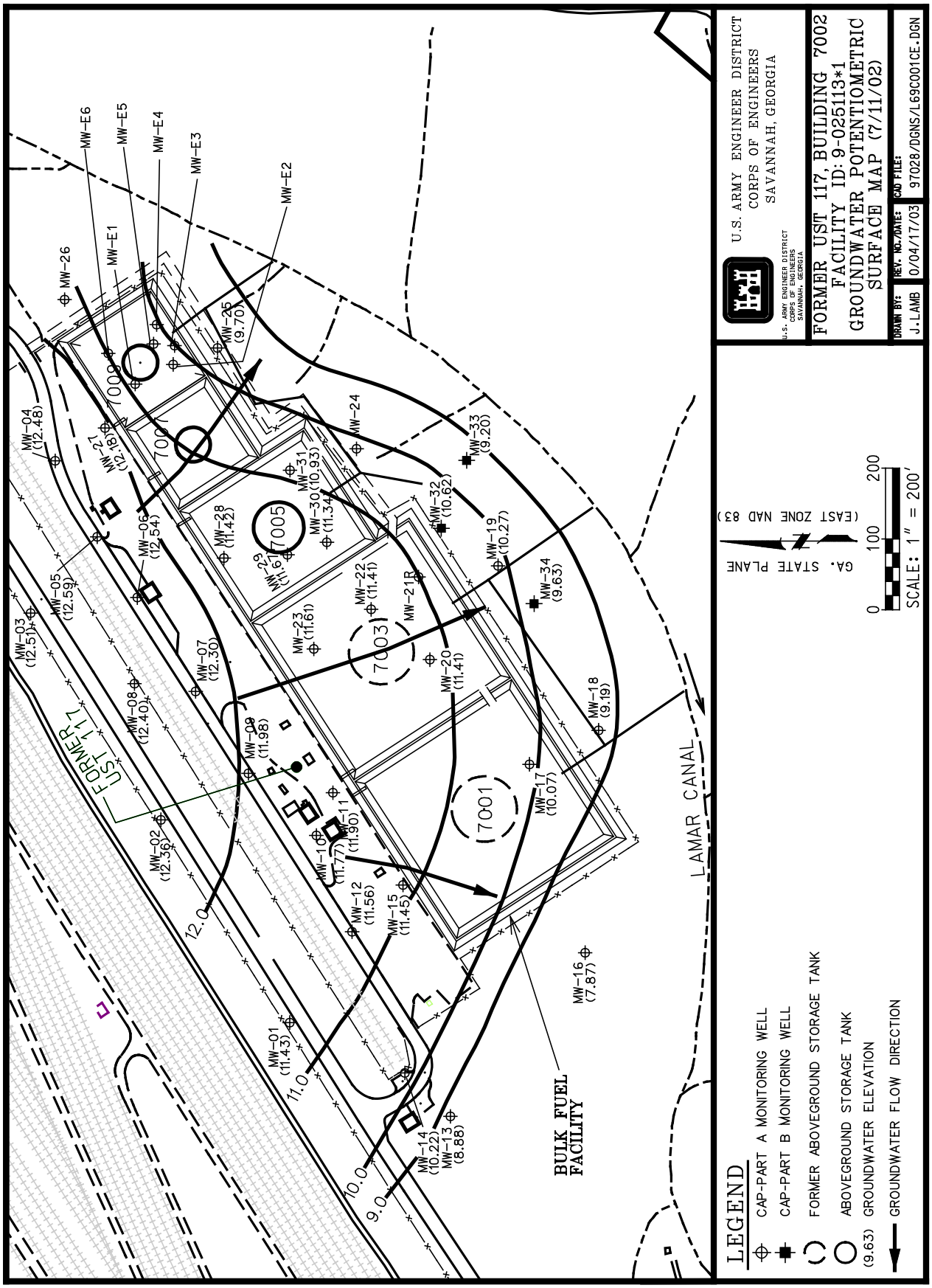

Figure 2a. Potentiometric Surface Map of the Former UST 117 Site (July 2002)

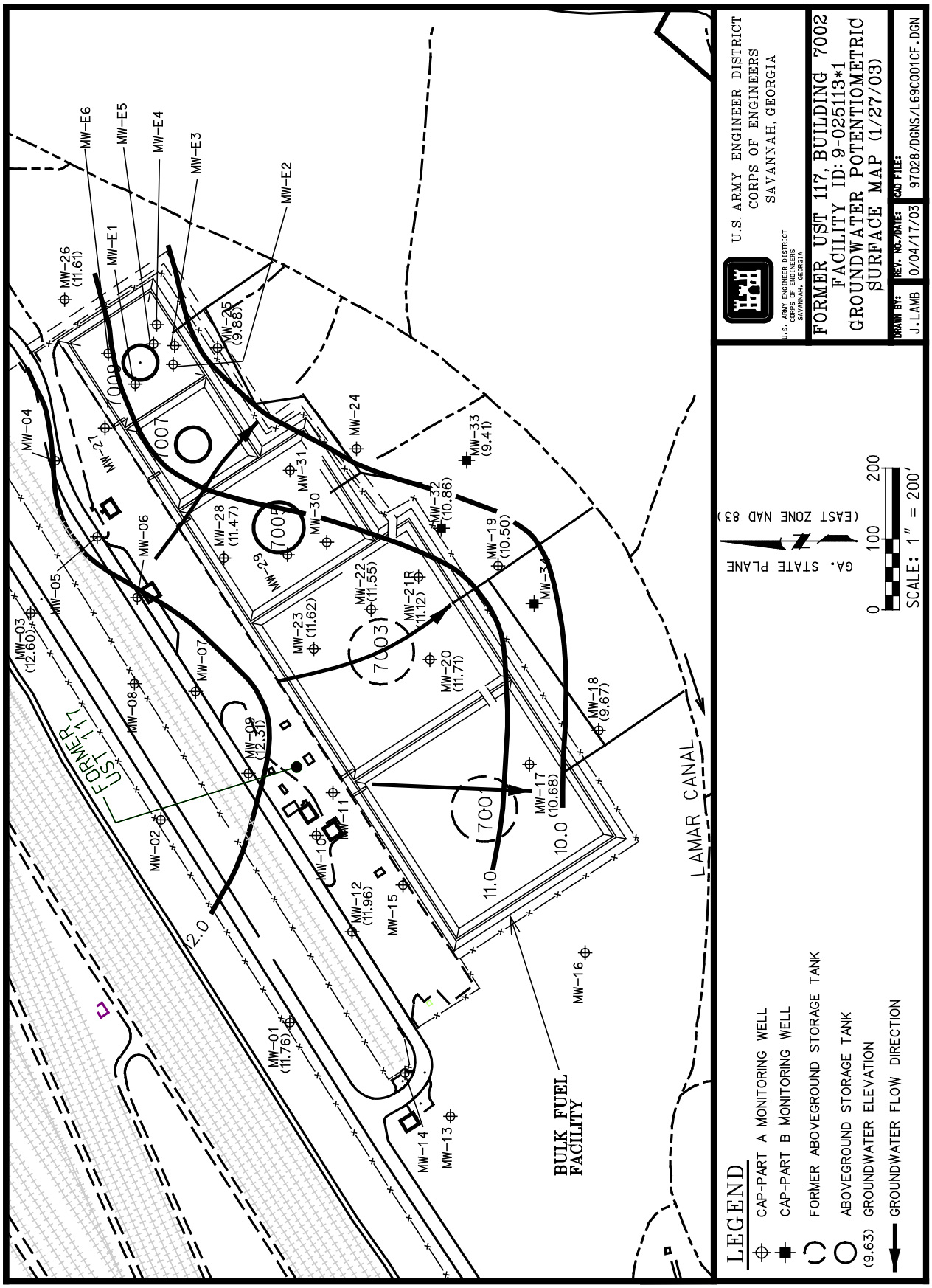

Figure 2b. Potentiometric Surface Map of the Former UST 117 Site (January 2003)

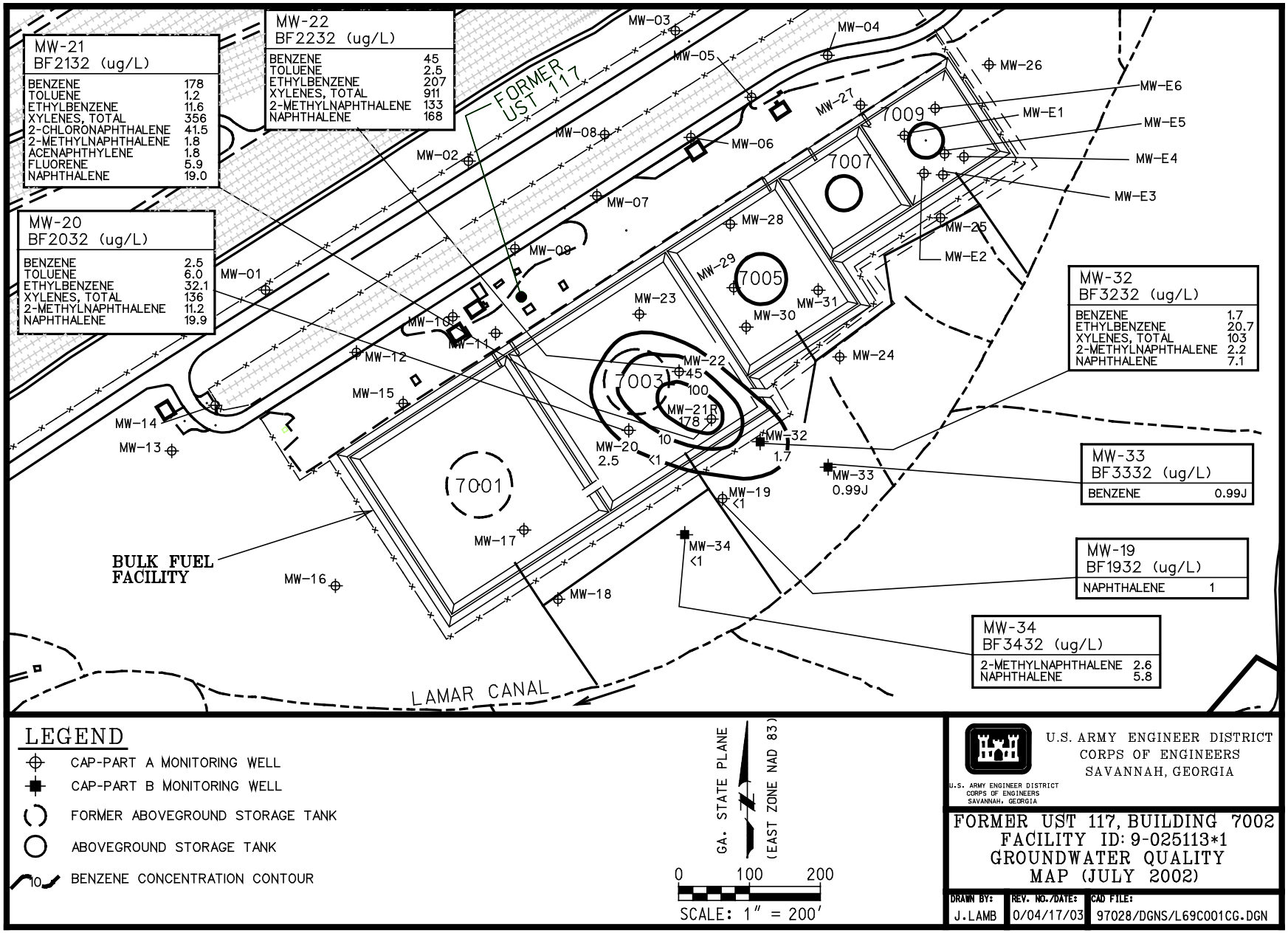

Figure 3a. Groundwater Quality Map for the Former UST 117 Site (July 2002)

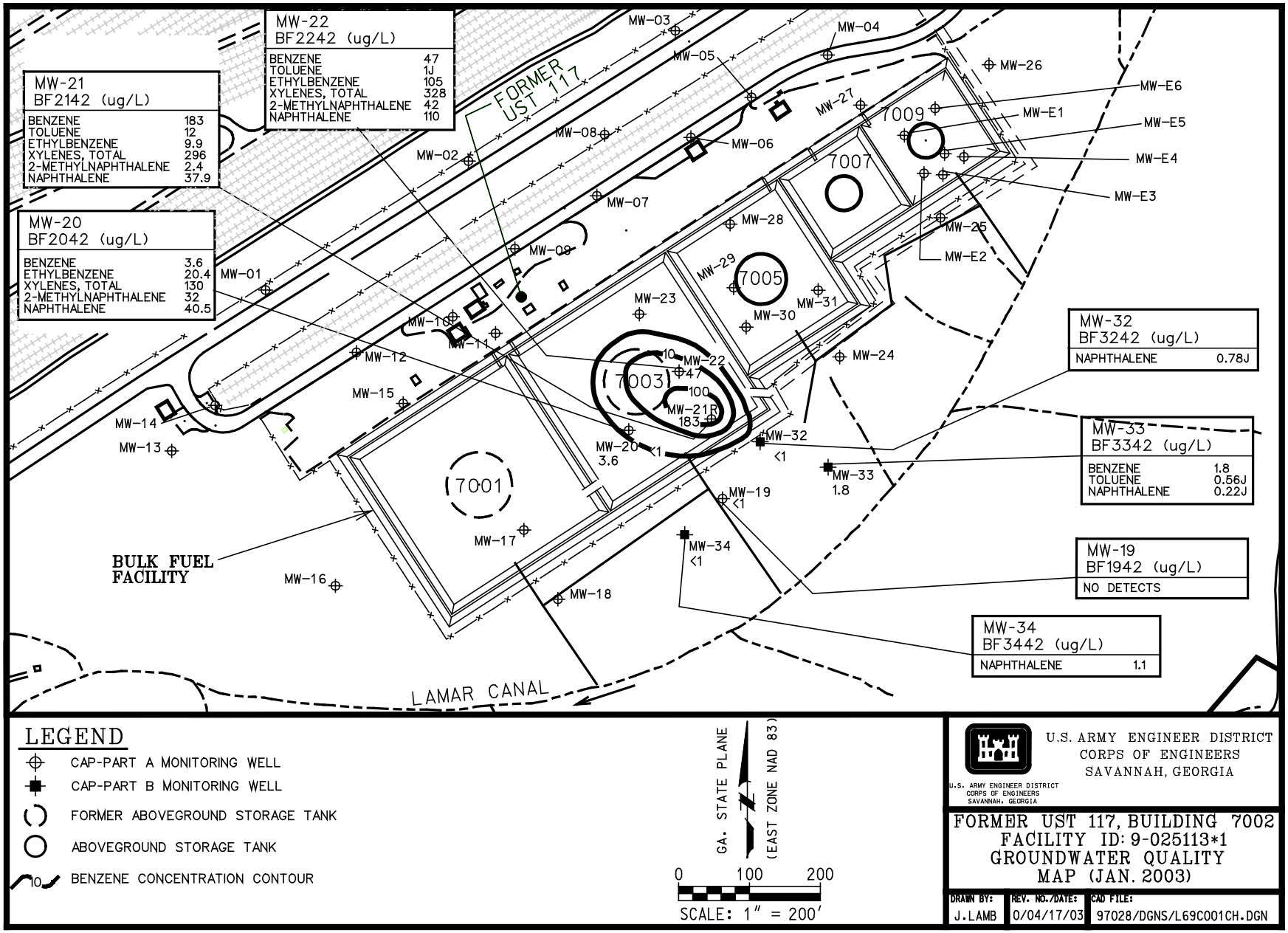

Figure 3b. Groundwater Quality Map for the Former UST 117 Site (January 2003)

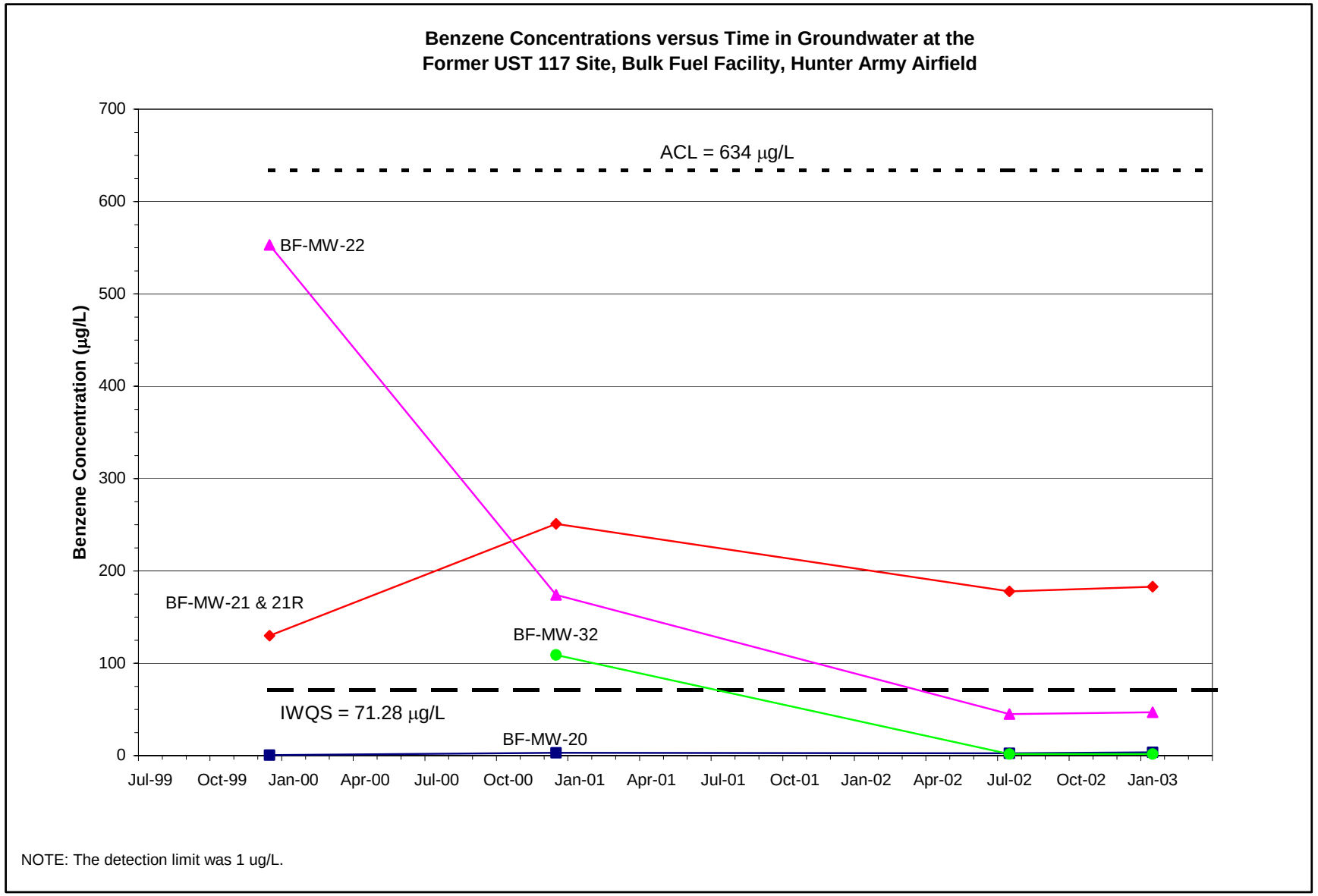

Figure 4. Trend of Benzene Concentrations for the Former UST 117 Site

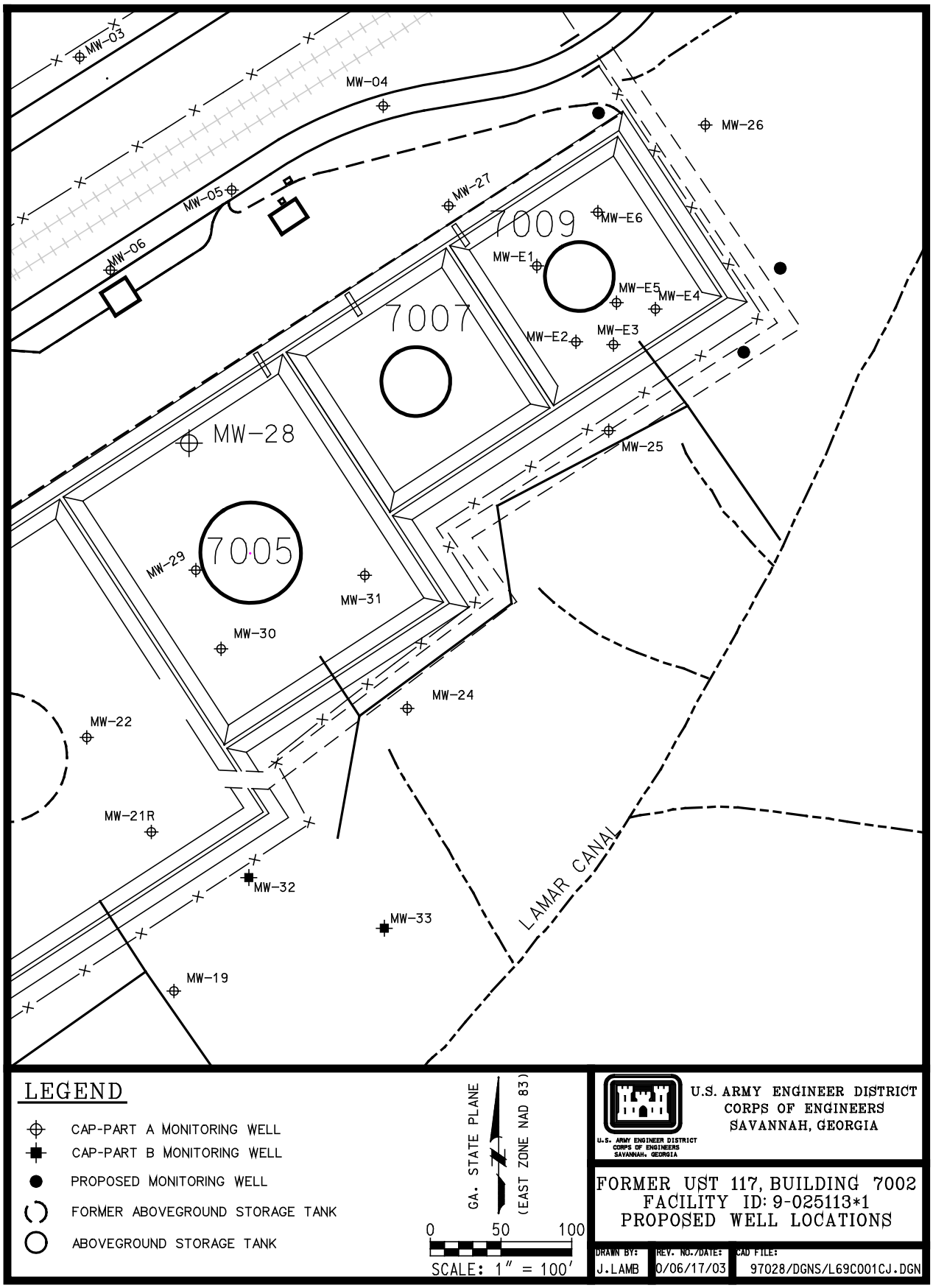

Figure 5. Proposed Well Locations at the Former UST 117 Site

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APPENDIX II

REPORT TABLES

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Table 1. Groundwater Elevations

Well Number	Date Measured	Top of Casing Elevation (ft AMSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Corrected Groundwater Elevation[a] (ft AMSL)
First Semiannual Monitoring Event – July 2002							
BF-MW-01	07/11/02	15.47	3.5 – 12.5	—	4.04	0	11.43
BF-MW-02	07/11/02	16.24	3.5 – 13.0	—	3.88	0	12.36
BF-MW-03	07/11/02	16.39	3.6 – 13.1	—	3.88	0	12.51
BF-MW-04	07/11/02	17.11	2.8 – 12.3	—	4.63	0	12.48
BF-MW-05	07/11/02	16.99	2.9 – 12.4	—	4.40	0	12.59
BF-MW-06	07/11/02	16.80	2.7 – 12.2	—	4.26	0	12.54
BF-MW-07	07/11/02	16.74	2.9 – 12.4	—	4.44	0	12.30
BF-MW-08	07/11/02	16.40	2.3 – 11.8	—	4.00	0	12.40
BF-MW-09	07/11/02	16.60	2.9 – 12.4	—	4.62	0	11.98
BF-MW-10	07/11/02	15.33	2.3 – 11.8	—	3.56	0	11.77
BF-MW-11	07/11/02	15.42	2.3 – 11.8	—	3.52	0	11.90
BF-MW-12	07/11/02	16.35	3.0 – 12.5	—	4.79	0	11.56
BF-MW-13	07/11/02	13.72	2.3 – 11.8	—	4.84	0	8.88
BF-MW-14	07/11/02	15.26	28 – 12.3	—	5.04	0	10.22
BF-MW-15	07/11/02	15.01	2.5 – 12.0	—	3.56	0	11.45
BF-MW-16	07/11/02	12.61	2.7 – 12.2	—	4.74	0	7.87
BF-MW-17	07/11/02	13.15	3.0 – 12.5	—	3.08	0	10.07
BF-MW-18	07/11/02	12.99	3.4 – 12.9	—	3.80	0	9.19
BF-MW-19	07/11/02	13.88	2.0 – 11.5	—	3.61	0	10.27
BF-MW-20	07/11/02	14.79	2.2 – 11.7	—	3.38	0	11.41
BF-MW-21R	07/11/02	14.57	4.8 – 14.8	—	3.55	0	11.02
BF-MW-22	07/11/02	14.60	2.4 – 11.9	—	3.19	0	11.41
BF-MW-23	07/11/02	14.74	2.7 – 12.2	—	3.13	0	11.61
BF-MW-25	07/11/02	13.60	3.6 – 13.1	—	3.90	0	9.70
BF-MW-27	07/11/02	14.90	2.5 – 12.0	—	2.72	0	12.18
BF-MW-28	07/11/02	15.49	2.0 – 11.5	—	4.07	0	11.42
BF-MW-29	07/11/02	14.49	2.0 – 11.5	—	2.82	0	11.67
BF-MW-30	07/11/02	14.19	1.9 – 11.4	—	2.85	0	11.34
BF-MW-31	07/11/02	14.46	1.5 – 11.0	—	3.53	0	10.93
BF-MW-32	07/11/02	15.74	1.4 – 11.2	—	5.12	0	10.62
BF-MW-33	07/11/02	13.95	1.6 – 11.4	—	4.75	0	9.20
BF-MW-34	07/11/02	14.87	3.1 – 13.1	—	5.24	0	9.63
BF-MW-E1	07/11/02	14.00	4.6 – 14.6	—	3.77	0	10.23
BF-MW-E2	07/11/02	13.76	3.94 – 13.94	—	3.91	0	9.85
BF-MW-E3	07/11/02	13.99	4.4 – 14.4	—	4.31	0	9.68

NOTES:
AMSL Above mean sea level.
BGS Below ground surface.
BTOC Below top of casing.

Table 1. Groundwater Elevations (continued)

Well Number	Date Measured	Top of Casing Elevation (ft AMSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Corrected Groundwater Elevation[a] (ft AMSL)
BF-MW-E4	07/11/02	13.88	4.6 – 14.6	—	4.42	0	9.46
BF-MW-E5	07/11/02	14.00	4.8 – 14.8	4.34	4.41	0.07	9.65[a]
BF-MW-E6	07/11/02	13.76	3.7 – 13.7	—	3.69	0	10.07
Second Semiannual Monitoring Event – January 2003							
BF-MW-01	01/27/03	15.47	3.5 – 12.5		3.71	0	11.76
BF-MW-03	01/27/03	16.39	3.6 – 13.1	—	3.79	0	12.60
BF-MW-09	01/27/03	16.60	2.9 – 12.4	—	4.29	0	12.31
BF-MW-12	01/27/03	16.35	3.0 – 12.5	—	4.39	0	11.96
BF-MW-17	01/27/03	13.15	3.0 – 12.5	—	2.47	0	10.68
BF-MW-18	01/27/03	12.99	3.4 – 12.9	—	3.32	0	9.67
BF-MW-19	01/27/03	13.88	2.0 – 11.5	—	3.38	0	10.50
BF-MW-20	01/27/03	14.79	2.2 – 11.7	—	3.08	0	11.71
BF-MW-21R	01/27/03	14.57	4.8 – 14.8	—	3.45	0	11.12
BF-MW-22	01/27/03	14.60	2.4 – 11.9	—	3.05	0	11.55
BF-MW-23	01/27/03	14.74	2.7 – 12.2	—	3.12	0	11.62
BF-MW-25	01/27/03	13.60	3.6 – 13.1	—	3.72	0	9.88
BF-MW-26	01/27/03	13.62	2.4 – 11.9	—	2.01	0	11.61
BF-MW-28	01/27/03	15.49	2.0 – 11.5	—	4.02	0	11.47
BF-MW-32	01/27/03	15.74	1.4 – 11.2	—	4.88	0	10.86
BF-MW-33	01/27/03	13.95	1.6 – 11.4	—	4.54	0	9.41
BF-MW-E1	01/27/03	14.00	4.6 – 14.6	—	3.99	0	10.01
BF-MW-E2	01/27/03	13.76	3.94 – 13.94	—	4.02	0	9.74
BF-MW-E3	01/27/03	13.99	4.4 – 14.4	—	4.38	0	9.61
BF-MW-E4	01/27/03	13.88	4.6 – 14.6	—	4.22	0	9.66
BF-MW-E5	01/27/03	14.00	4.8 – 14.8	4.44	4.54	0.1	9.55[a]
BF-MW-E6	01/27/03	13.76	3.7 – 13.7	—	3.87	0	9.89

NOTES:
[a] Corrected groundwater elevation based on an product density of 880 kg/m^3.
AMSL Above mean sea level.
BGS Below ground surface.
BTOC Below top of casing.

Table 2a. Groundwater Analytical Results (Volatile Organic Compounds)

Sample Location	Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
CAP–Part B Investigation – 2000							
BF-MW-19	BF1922	12/02/00	1 U	1 U	1 U	3 U	ND
BF-MW-20	BF2022	12/03/00	3.1 =	1 U	2.1 =	7.3 =	12.5
BF-MW-21	BF2122	12/02/00	**251 =**	1.3 =	17.4 =	734 =	1,003.7
BF-MW-22	BF2222	12/02/00	**174 =**	5.7 =	128 =	662 =	969.7
BF-MW-32	BF3222	12/01/00	**109 J**	0.65 J	1.1 =	115 =	225.75
BF-MW-33	BF3322	12/01/00	1 =	1 U	1 U	3 U	1
BF-MW-34	BF3422	12/01/00	1 U	1 U	1 U	0.36 J	0.36
First Semiannual Sampling Event – July 2002							
BF-MW-19	BF1932	07/11/02	1 U	1 U	1 U	3 U	ND
BF-MW-20	BF2032	07/11/02	2.5 =	6 =	32.1 =	136 =	176.6
BF-MW-21R	BF2132	07/11/02	**178 =**	1.2 =	11.6 =	356 =	546.8
BF-MW-22	BF2232	07/11/02	45 =	2.5 =	207 =	911 =	1,165.5
BF-MW-32	BF3232	07/11/02	1.7 =	1 U	20.7 =	103 =	125.4
BF-MW-33	BF3332	07/11/02	0.99 J	1 U	1 U	3 U	0.99
BF-MW-34	BF3432	07/11/02	1 U	1 U	1 U	3 U	ND
Second Semiannual Sampling Event – January 2003							
BF-MW-19	BF1942	01/24/03	1 U	1 U	1 U	1 U	ND
BF-MW-20	BF2042	01/24/03	3.6 =	1 U	20.4 =	130 =	154
BF-MW-21R	BF2142	01/24/03	**183 =**	1.2 =	9.9 =	296 =	490
BF-MW-22	BF2242	01/24/03	47 =	1 J	105 =	328 =	481
BF-MW-32	BF3242	01/24/03	1 U	1 U	1 U	1 U	ND
BF-MW-33	BF3342	01/24/03	1.8 =	0.56 J	1 U	1 U	2.36
BF-MW-34	BF3442	01/24/03	1 U	1 U	1 U	1 U	ND
In-Stream Water Quality Standards (Georgia Rule 391-3-6)			71.28	200,000	28,718	NRC	NRC
Alternate Concentration Limits			634	—	—	—	—

NOTES:

Bold values exceed In-Stream Water Quality Standards.

BTEX Benzene, toluene, ethylbenzene, and xylenes.

CAP Corrective Action Plan.

ND Not detected.

NRC No regulatory criteria.

Laboratory Qualifiers

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

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

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

Table 2b. Groundwater Analytical Results (Polynuclear Aromatic Compounds)

Sample Location	Sample ID	Date Sampled	Naphthalene (µg/L)	2-Methylnaphthalene (µg/L)	2-Choronaphthalene (µg/L)	Acenaphthylene (µg/L)	Fluorene (µg/L)
CAP–Part B Investigation – 2000							
BF-MW-19	BF1922	12/02/00	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
BF-MW-20	BF2022	12/03/00	7.8 =	0.99 U	0.99 U	0.99 U	0.99 U
BF-MW-21	BF2122	12/02/00	22 =	1 U	1 U	1 U	1 U
BF-MW-22	BF2222	12/02/00	528 =	19 U	19 U	19 U	19 U
BF-MW-32	BF3222	12/01/00	2 =	1.1 U	1.1 U	1.1 U	1.1 U
BF-MW-33	BF3322	12/01/00	1 U	1 U	1 U	1 U	1 U
BF-MW-34	BF3422	12/01/00	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U
First Semiannual Sampling Event – July 2002							
BF-MW-19	BF1932	07/11/02	1 =	0.98 U	0.98 U	0.98 U	0.98 U
BF-MW-20	BF2032	07/11/02	19.9 =	11.2 =	0.98 U	0.98 U	0.98 U
BF-MW-21R	BF2132	07/11/02	19 =	1.8 =	41.5 =	1.8 =	5.9 =
BF-MW-22	BF2232	07/11/02	168 =	133 =	9.8 U	9.8 U	9.8 U
BF-MW-32	BF3232	07/11/02	7.1 =	2.2 =	0.98 U	0.98 U	0.98 U
BF-MW-33	BF3332	07/11/02	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
BF-MW-34	BF3432	07/11/02	5.8 =	2.6 =	0.98 U	0.98 U	0.98 U
First Semiannual Sampling Event – July 2002							
BF-MW-19	BF1942	01/24/03	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
BF-MW-20	BF2042	01/24/03	40.5 =	32 =	0.98 U	0.98 U	0.98 U
BF-MW-21R	BF2142	01/24/03	37.9 =	2.4 =	0.99 U	0.99 U	0.99 U
BF-MW-22	BF2242	01/24/03	110 =	42 =	0.99 U	0.99 U	0.99 U
BF-MW-32	BF3242	01/24/03	0.78 J	0.99 U	0.99 U	0.99 U	0.99 U
BF-MW-33	BF3342	01/24/03	0.22 J	0.98 U	0.98 U	0.98 U	0.98 U
BF-MW-34	BF3442	01/24/03	1.1 =	0.98 U	0.98 U	0.98 U	0.98 U
In-Stream Water Quality Standards (Georgia Rule 391-3-6)			NRC	NRC	NRC	NRC	14,000
Alternate Concentration Limits			820	—	—	—	—

NOTES:
NRC No regulatory criteria.

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

Table 3. Well Construction Details

Boring/Well Number	Date Installed	Boring Depth (ft BGS)	Screened Interval (ft BGS)	Type of Completion	Coordinates (NAD83)		Elevation (NAVD88)	
					Northing	Easting	Ground Surface	Top of Casing
Additional Well Installation – June 2002								
BF-MW-21R	06/21/02	15.0	4.8 – 14.8	2-in. PVC	739331.22	973250.78	14.7	14.57

NOTES:
BGS Below ground surface.
PVC Polyvinyl chloride.

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APPENDIX III

LABORATORY ANALYTICAL RESULTS

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ANALYTICAL LABORATORY INFORMATION AND DATA VALIDATION CODES

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ANALYTICAL LABORATORY INFORMATION

The analytical laboratory was General Engineering Laboratories, Inc. (GEL). The analytical data sheets provided in this appendix are copies of those provided by GEL with the Science Applications International Corporation validation codes. Representatives from the Georgia Environmental Protection Division Underground Storage Tank Management Program and Fort Stewart agreed upon the format of the analytical data sheets and the information they contain during a meeting held on January 27, 1999.

The "original" laboratory data sheets do not include validation qualifiers. The original certificates of analysis and chain-of-custody forms are provided as an attachment to this report. The analytical process is extended beyond providing the analytical data with laboratory qualifiers by providing a formal laboratory independent data validation, and then goes another step by adding specific reason codes to further identify why data have been designated as estimated, "J," or nondetect, "U." As a result of this extended validation process, copies of the original data sheets are not provided in this report. A summary of the validation and reason codes is provided in this section. Each data package generated for the underground storage tank project at Fort Stewart and Hunter Army Airfield contains a case narrative that is signed by the analytical laboratory project manager. Laboratory information and third-party certification are provided below.

STATE OF GEORGIA
ENVIRONMENTAL LABORATORY ACCREDITATION

	Name of Laboratory:	**General Engineering Laboratories, Inc.**
	Address:	P.O. Box 30712 2040 Savage Road Charleston, SC 29407
	Contact:	Wendy Dimmick
	Telephone number:	(843) 556-8171
	Fax number:	(843) 766-1178
#1	Accrediting Authority:	**State of South Carolina**
	Accreditation Number:	SC-10120001
	Effective Date:	1/27/03
	Expiration Date:	3/26/04
	Accreditation Scope:	SDWA, CWA, RCRA, CERCLA
#2	Accrediting Authority:	**State of Florida**
	Accreditation Number:	E-87156
	Effective Date:	July 1, 2001
	Expiration Date:	June 30, 2003
	Accreditation Scope:	SDWA, CWA, RCRA, CERCLA

DATA VALIDATION REASON CODES

Organic, Inorganic, and Radiological Analytical Data

Holding Times

A01 Extraction holding times were exceeded.
A02 Extraction holding times were grossly exceeded.
A03 Analysis holding times were exceeded.
A04 Analysis holding times were grossly exceeded.
A05 Samples were not preserved properly.
A06 Professional judgment was used to qualify the data.

GC/MS Tuning

B01 Mass calibration was in error, even after applying expanded criteria.
B02 Mass calibration was not performed every 12 hours.
B03 Mass calibration did not meet ion abundance criteria.
B04 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Organics

C01 Initial calibration RRF was <0.05.
C02 Initial calibration RDS was >30%.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was <0.05.
C05 Continuing calibration %D was >25%.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 RPD criteria were not met.
C09 RDS criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was >30%.
C13 Combined breakdown of endrin/DDT was >30%.
C14 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Inorganics

D01 ICV or CCV was not performed for every analyte.
D02 ICV recovery was above the upper control limit.
D03 ICV recovery was below the lower control limit.
D04 CCV recovery was above the upper control limit.
D05 CCV recovery was below the lower control limit.
D06 Standard curve was not established with the minimum number of standards.
D07 Instrument was not calibrated daily or each time the instrument was set up.
D08 Correlation coefficient was <0.995.
D09 Mid-range cyanide standard was not distilled.
D10 Professional judgment was used to qualify the data.

ICP and Furnace Requirements

E01 Interference check sample recovery was outside the control limit.
E02 Duplicate injections were outside the control limit.
E03 Post-digestion spike recovery was outside the control limit.
E04 MSA was required but not performed.
E05 MSA correlation coefficient was <0.995.
E06 MSA spikes were not at the correct concentration.
E07 Serial dilution criteria were not met.
E08 Professional judgment was used to qualify the data.

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >2 times the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgment was used to qualify the data.

Surrogate/Radiological Chemical Recovery

G01 Surrogate/radiological chemical recovery was above the upper control limit.
G02 Surrogate/radiological chemical recovery was below the lower control limit.
G03 Surrogate recovery was <10%.
G04 Surrogate recovery was zero.
G05 Surrogate/radiological chemical recovery data was not present.
G06 Professional judgment was used to qualify the data.
G07 Radiological chemical recovery was <20%.
G08 Radiological chemical recovery was >150%.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MD/MSD recovery was <10%.
H04 MS/MSD pairs exceeded the RPD limit.
H05 No action was taken on MS/MSD limit.
H06 Professional judgment was used to qualify the data.
H07 Radiological MS/MSD recovery was <20%.
H08 Radiological MS/MSD recovery was >160%.
H09 Radiological MS/MSD samples were not analyzed at the required frequency.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30%.
I04 No action was taken on MS data.
I05 Professional judgment was used to qualify the data.

Laboratory Duplicate

J01 Duplicate RPD/radiological duplicate error ratio (DER) was outside the control limit.
J02 Duplicate sample results were >5 times the CRDL.
J03 Duplicate sample results were <5 times the CRDL.
J04 Professional judgment was used to qualify the data.
J05 Duplicate was not analyzed at the required frequency.

DATA VALIDATION REASON CODES (continued)

Organic, Inorganic, and Radiological Analytical Data

Internal Area Summary K01 Area counts were outside the control limits. K02 Extremely low area counts or performance was exhibited by a major drop-off. K03 IS retention time varied by more than 30 sec. K04 Professional judgment was used to qualify the data.	**Pesticide Cleanup Checks** L01 10% recovery was obtained during either check. L02 Recoveries during either check were >120%. L03 GPC cleanup recoveries were outside the control limits. L04 Florisil cartridge cleanup recoveries were outside the control limits. L05 Professional judgment was used to qualify the data.
Target Compound Identification M01 Incorrect identifications were made. M02 Qualitative criteria were not met. M03 Cross contamination occurred. M04 Confirmatory analysis was not performed M05 No results were provided. M06 Analysis occurred outside 12-hour GC/MS window. M07 Professional judgment was used to qualify the data. M08 The %D between the two pesticide/PCB column checks was >25%.	**Compound Quantitation and Reported CRQLs** N01 Quantitation limits were affected by large off-scale peaks. N02 MDLs reported by the laboratory exceeded corresponding CRQLs. N03 Professional judgment used to qualify the data.
Tentatively Identified Compounds (TICs) O01 Compound was suspected laboratory contaminant and was not detected in the blank. O02 TIC result was not above 10 times the level found in the blank. O03 Professional judgment was used to qualify analytical data.	**Laboratory Control Samples (LCSs)** P01 LCS recovery was above upper control limit. P02 LCS recovery was below lower control limit. P03 LCS recovery was <50%. P04 No action was taken on the LCS data. P05 LCS was not analyzed at required frequency. P06 Radiological LCS recovery was <50% for aqueous samples, <40% for solid samples. P07 Radiological LCS recovery was >150% for aqueous samples, >160% for solid samples. P08 Professional judgment was used to qualify the data.
Field Duplicate Q01 Field duplicate RPDs were >30% for waters and/or >50% for soils. Q02 Radiological field duplicate error ratio (DER) was outside the control limit. Q03 Duplicate sample results were >5 times the CRDL. Q04 Duplicate sample results were <5 times the CRDL.	**Radiological Calibration** R01 Efficiency calibration criteria were not met. R02 Energy calibration criteria were not met. R03 Resolution calibration criteria were not met. R04 Background determination criteria were not met. R05 Quench curve criteria were not met. R06 Absorption curve criteria were not met. R07 Plateau curve criteria were not met. R08 Professional judgment was used to qualify the data.
Radiological Calibration Verification S01 Efficiency verification criteria were not met. S02 Energy verification criteria were not met. S03 Resolution verification criteria were not met. S04 Background verification criteria were not met. S05 Cross-talk verification criteria were not met. S06 Professional judgment was used to qualify the data.	

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FIRST SEMIANNUAL SAMPLING EVENT
LABORATORY ANALYTICAL RESULTS

JULY 2002

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF1932

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S310

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

4

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF1932

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577001

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1706

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	
91-57-6	2-Methylnaphthalene	0.98	U
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

= U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2032

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S331

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.5	
108-88-3	Toluene	6.0	
100-41-4	Ethylbenzene	32.1	
1330-20-7	Xylenes (total)	136	

FORM I VOA

DATA VALIDATION COPY

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2032

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577002

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1709

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	19.9	
91-57-6	2-Methylnaphthalene	11.2	
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

FORM I SV-1

DATA VALIDATION COPY

OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2034

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S311

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.3	
108-88-3	Toluene	8.7	
100-41-4	Ethylbenzene	37.6	
1330-20-7	Xylenes (total)	148	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2034

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577003

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1710

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	19.4	
91-57-6	2-Methylnaphthalene	12.9	
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2132

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S312

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

USD

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
71-43-2	Benzene	178	~~172~~	~~E~~ D	=
108-88-3	Toluene		1.2		
100-41-4	Ethylbenzene		11.6		
1330-20-7	Xylenes (total)	356	~~343~~	~~E~~ D	

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2132

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577004

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1711

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	19.0	
91-57-6	2-Methylnaphthalene	1.8	
91-58-7	2-Chloronaphthalene	41.5	
208-96-8	Acenaphthylene	1.8	
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	5.9	
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2232

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S313

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

USE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	45.0	
108-88-3	Toluene	2.5	
100-41-4	Ethylbenzene	207 ~~226~~	~~E~~ D
1330-20-7	Xylenes (total)	911 ~~938~~	~~E~~ D

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2232

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577005

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1805

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/18/02

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	168	
91-57-6	2-Methylnaphthalene	133	
91-58-7	2-Chloronaphthalene	9.8	U
208-96-8	Acenaphthylene	9.8	U
83-32-9	Acenaphthene	9.8	U
86-73-7	Fluorene	9.8	U
85-01-8	Phenanthrene	9.8	U
120-12-7	Anthracene	9.8	U
206-44-0	Fluoranthene	9.8	U
129-00-0	Pyrene	9.8	U
56-55-3	Benzo(a)anthracene	9.8	U
205-99-2	Benzo(b)fluoranthene	9.8	U
207-08-9	Benzo(k)fluoranthene	9.8	U
50-32-8	Benzo(a)pyrene	9.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	9.8	U
53-70-3	Dibenzo(a,h)anthracene	9.8	U
191-24-2	Benzo(ghi)perylene	9.8	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3232

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S335

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/18/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.7	
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	20.7	
1330-20-7	Xylenes (total)	103	

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3232

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577006

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1713

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	7.1	
91-57-6	2-Methylnaphthalene	2.2	
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3332

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S341

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/18/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	0.99	J
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3332

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577007

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1714

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/17/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	0.98	U
91-57-6	2-Methylnaphthalene	0.98	U
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3432

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S408

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/18/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3432

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577008

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S8G1715

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 07/16/02

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/18/02

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	5.8	
91-57-6	2-Methylnaphthalene	2.6	
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

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FORM I SV-1

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

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EPA SAMPLE NO.

TBH012

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577

Matrix: (soil/water) WATER Lab Sample ID: 63577009

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S307

Level: (low/med) LOW Date Received: 07/13/02

% Moisture: not dec. _____ Date Analyzed: 07/17/02

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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1 of 3

SAIC An Employee-Owned Company
Science Applications International Corporation
151 Lafayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll 63577%

Sampler (Signature) (Printed Name) Virginia Mullins

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO: (843) 556-8171

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01	BF1932	7-11-02	1655	W		X			2		
02	BF2032	7-11-02	1450	W		X			2		
03	BF2034	7-11-02	1452	W		X			2		
04	BF2132	7-11-02	1505	W		X			2		
05	BF2232	7-11-02	1555	W		X			2		
06	BF3232	7-11-02	1616	W		X			2		

III-28

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
COMPANY NAME: GEL/SAIC	7-13-02 0840	COMPANY NAME: GEL	7/13/02 0840	Cooler ID: 1000	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	7/13/02 1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

2 of 2

SAIC An Employee-Owned Company
Science Applications International Corporation
151 Layfayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll 63577

Sampler (Signature) (Printed Name) Virginia Mullis

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
BF3332	7-11-02	1635	W		X			2		
BF3432	7-11-02	1715	W		X			2		

III-29

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 4	Cooler Temperature:
COMPANY NAME: GEL/SAIC	7-13-02 0840	COMPANY NAME: GEL	7/13/02 0840	Cooler ID: 1003	FEDEX NUMBER:
RECEIVED BY: Paulette Mundell	Date/Time 7/13/02 1130	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SAIC An Employee-Owned Company
Science Applications International Corporation
151 Layfayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll

63577%

Sampler (Signature) (Printed Name) Virginia Hughes

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO: (843) 556-8171

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1	BF1932	7-11-02	1655	W	X				2		
2	BF2032	7-11-02	1450	W	X				2		
3	BF2034	7-11-02	1450	W	X				2		
4	BF2132	7-11-02	1505	W	X				2		
5	BF2232	7-11-02	1555	W	X				2		
6	BF3232	7-11-02	1616	W	X				2		
7	BF3332	7-11-02	1635	W	X				2		
8	BF3432	7-11-02	1715	W	X				2		
9	TBH012	7-11-02	0730	W	X				2		

III-30

7-13-02

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL/SAIC	7-13-02 0840	COMPANY NAME: GEL	7-13-02 0840
RECEIVED BY: Charlotte Nuhsdell	Date/Time 7/13/02 1130	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 18

Cooler ID: 333

Cooler Temperature:

FEDEX NUMBER:

SECOND SEMIANNUAL SAMPLING EVENT
LABORATORY ANALYTICAL RESULTS

JANUARY 2003

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF1942

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V243

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1B

SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF1942

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043008

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S4A2929

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/30/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	0.98	U	u
91-57-6	2-Methylnaphthalene	0.98	U	
91-58-7	2-Chloronaphthalene	0.98	U	
208-96-8	Acenaphthylene	0.98	U	
83-32-9	Acenaphthene	0.98	U	
86-73-7	Fluorene	0.98	U	
85-01-8	Phenanthrene	0.98	U	
120-12-7	Anthracene	0.98	U	
206-44-0	Fluoranthene	0.98	U	
129-00-0	Pyrene	0.98	U	
56-55-3	Benzo(a)anthracene	0.98	U	
205-99-2	Benzo(b)fluoranthene	0.98	U	
207-08-9	Benzo(k)fluoranthene	0.98	U	
50-32-8	Benzo(a)pyrene	0.98	U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U	
53-70-3	Dibenzo(a,h)anthracene	0.98	U	
191-24-2	Benzo(ghi)perylene	0.98	U	

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2042

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043011

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V324

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	3.6	
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	20.4	
1330-20-7	Xylenes (total)	130	

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF2042

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043004

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S4A2925

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/29/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	40.5	
91-57-6	2-Methylnaphthalene	32.0	
91-58-7	2-Chloronaphthalene	0.98	U
208-96-8	Acenaphthylene	0.98	U
83-32-9	Acenaphthene	0.98	U
86-73-7	Fluorene	0.98	U
85-01-8	Phenanthrene	0.98	U
120-12-7	Anthracene	0.98	U
206-44-0	Fluoranthene	0.98	U
129-00-0	Pyrene	0.98	U
56-55-3	Benzo(a)anthracene	0.98	U
205-99-2	Benzo(b)fluoranthene	0.98	U
207-08-9	Benzo(k)fluoranthene	0.98	U
50-32-8	Benzo(a)pyrene	0.98	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U
53-70-3	Dibenzo(a,h)anthracene	0.98	U
191-24-2	Benzo(ghi)perylene	0.98	U

FORM I SV-1 OLM03.0

DATA VALIDATION COPY

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF2044

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043010

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V323

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	3.5		=
108-88-3	Toluene	1.0	U	4
100-41-4	Ethylbenzene	20.5		=
1330-20-7	Xylenes (total)	130		=

DATA VALIDATION COPY

DUPLICATE

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF2044

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043005

Sample wt/vol: 1010 (g/mL) ML Lab File ID: S4A2926

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/29/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	26.3	
91-57-6	2-Methylnaphthalene	15.3	
91-58-7	2-Chloronaphthalene	0.99	U
208-96-8	Acenaphthylene	0.99	U
83-32-9	Acenaphthene	0.99	U
86-73-7	Fluorene	0.99	U
85-01-8	Phenanthrene	0.99	U
120-12-7	Anthracene	0.99	U
206-44-0	Fluoranthene	0.99	U
129-00-0	Pyrene	0.99	U
56-55-3	Benzo(a)anthracene	0.99	U
205-99-2	Benzo(b)fluoranthene	0.99	U
207-08-9	Benzo(k)fluoranthene	0.99	U
50-32-8	Benzo(a)pyrene	0.99	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U
53-70-3	Dibenzo(a,h)anthracene	0.99	U
191-24-2	Benzo(ghi)perylene	0.99	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2142

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043009

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V244

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

USR

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2	Benzene	183	~~184~~	ED
108-88-3	Toluene		1.2	
100-41-4	Ethylbenzene		9.9	
1330-20-7	Xylenes (total)	296	~~297~~	ED

DATA VALIDATION COPY

1B

SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2142

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043006

Sample wt/vol: 1010 (g/mL) ML Lab File ID: S4A2927

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/30/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	37.9	
91-57-6	2-Methylnaphthalene	2.4	
91-58-7	2-Chloronaphthalene	0.99	U
208-96-8	Acenaphthylene	0.99	U
83-32-9	Acenaphthene	0.99	U
86-73-7	Fluorene	0.99	U
85-01-8	Phenanthrene	0.99	U
120-12-7	Anthracene	0.99	U
206-44-0	Fluoranthene	0.99	U
129-00-0	Pyrene	0.99	U
56-55-3	Benzo(a)anthracene	0.99	U
205-99-2	Benzo(b)fluoranthene	0.99	U
207-08-9	Benzo(k)fluoranthene	0.99	U
50-32-8	Benzo(a)pyrene	0.99	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U
53-70-3	Dibenzo(a,h)anthracene	0.99	U
191-24-2	Benzo(ghi)perylene	0.99	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF2242

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043012

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V322

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	47.0	
108-88-3	Toluene	1.0	J
100-41-4	Ethylbenzene	105	
1330-20-7	Xylenes (total)	328	

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DATA VALIDATION COPY

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF2242

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043003

Sample wt/vol: 1010 (g/mL) ML Lab File ID: S4A2924

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/29/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	110		=
91-57-6	2-Methylnaphthalene	42.0		=
91-58-7	2-Chloronaphthalene	0.99	U	4
208-96-8	Acenaphthylene	0.99	U	
83-32-9	Acenaphthene	0.99	U	
86-73-7	Fluorene	0.99	U	
85-01-8	Phenanthrene	0.99	U	
120-12-7	Anthracene	0.99	U	
206-44-0	Fluoranthene	0.99	U	
129-00-0	Pyrene	0.99	U	
56-55-3	Benzo(a)anthracene	0.99	U	
205-99-2	Benzo(b)fluoranthene	0.99	U	
207-08-9	Benzo(k)fluoranthene	0.99	U	
50-32-8	Benzo(a)pyrene	0.99	U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U	
53-70-3	Dibenzo(a,h)anthracene	0.99	U	
191-24-2	Benzo(ghi)perylene	0.99	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3242

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043013

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V248

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	u
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF3242

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043002

Sample wt/vol: 1010 (g/mL) ML Lab File ID: S4A2923

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/29/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	0.78	J	J
91-57-6	2-Methylnaphthalene	0.99	U	U
91-58-7	2-Chloronaphthalene	0.99	U	
208-96-8	Acenaphthylene	0.99	U	
83-32-9	Acenaphthene	0.99	U	
86-73-7	Fluorene	0.99	U	
85-01-8	Phenanthrene	0.99	U	
120-12-7	Anthracene	0.99	U	
206-44-0	Fluoranthene	0.99	U	
129-00-0	Pyrene	0.99	U	
56-55-3	Benzo(a)anthracene	0.99	U	
205-99-2	Benzo(b)fluoranthene	0.99	U	
207-08-9	Benzo(k)fluoranthene	0.99	U	
50-32-8	Benzo(a)pyrene	0.99	U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.99	U	
53-70-3	Dibenzo(a,h)anthracene	0.99	U	
191-24-2	Benzo(ghi)perylene	0.99	U	

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3342

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043014

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V249

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.8		411
108-88-3	Toluene	0.56	J	
100-41-4	Ethylbenzene	1.0	U	4
1330-20-7	Xylenes (total)	1.0	U	4

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF3342

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043001

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S4A2922

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/29/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	0.22	J	J
91-57-6	2-Methylnaphthalene	0.98	U	U
91-58-7	2-Chloronaphthalene	0.98	U	
208-96-8	Acenaphthylene	0.98	U	
83-32-9	Acenaphthene	0.98	U	
86-73-7	Fluorene	0.98	U	
85-01-8	Phenanthrene	0.98	U	
120-12-7	Anthracene	0.98	U	
206-44-0	Fluoranthene	0.98	U	
129-00-0	Pyrene	0.98	U	
56-55-3	Benzo(a)anthracene	0.98	U	
205-99-2	Benzo(b)fluoranthene	0.98	U	
207-08-9	Benzo(k)fluoranthene	0.98	U	
50-32-8	Benzo(a)pyrene	0.98	U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U	
53-70-3	Dibenzo(a,h)anthracene	0.98	U	
191-24-2	Benzo(ghi)perylene	0.98	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BF3442

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5V320

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: not dec. _____ Date Analyzed: 02/05/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2	Benzene	1.0	U	u
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	1.0	U	

1B
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BF3442

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043

Matrix: (soil/water) WATER Lab Sample ID: 74043007

Sample wt/vol: 1020 (g/mL) ML Lab File ID: S4A2928

Level: (low/med) LOW Date Received: 01/27/03

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/28/03

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/30/03

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	1.1		=
91-57-6	2-Methylnaphthalene	0.98	U	
91-58-7	2-Chloronaphthalene	0.98	U	
208-96-8	Acenaphthylene	0.98	U	
83-32-9	Acenaphthene	0.98	U	
86-73-7	Fluorene	0.98	U	
85-01-8	Phenanthrene	0.98	U	
120-12-7	Anthracene	0.98	U	
206-44-0	Fluoranthene	0.98	U	
129-00-0	Pyrene	0.98	U	
56-55-3	Benzo(a)anthracene	0.98	U	
205-99-2	Benzo(b)fluoranthene	0.98	U	
207-08-9	Benzo(k)fluoranthene	0.98	U	
50-32-8	Benzo(a)pyrene	0.98	U	
193-39-5	Indeno(1,2,3-cd)pyrene	0.98	U	
53-70-3	Dibenzo(a,h)anthracene	0.98	U	
191-24-2	Benzo(ghi)perylene	0.98	U	

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

CHAIN OF CUSTODY RECORD

COC NO.: HLTM21

PROJECT NAME: HAAF LTM-BFF-Bldg. 133

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Patricia A Stoll (Printed Name): PATRICIA A. STOLL

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
BF3342	1/24/03	1715	WATER		2	2		74043001
BF3242	1/24/03	1515	WATER		2	2		74043002
BF2242	1/24/03	1440	WATER		2	2		74043003
BF2042	1/24/03	1340	WATER		2	2		74043004
BF2044	1/24/03	1340	WATER		2	2		74043005
BF2142	1/24/03	1235	WATER		2	2		74043006

REQUESTED PARAMETERS

200301399 M

RELINQUISHED BY: Patricia A Stoll — Date/Time: 1/27/03 1200 — RECEIVED BY: — Date/Time: — TOTAL NUMBER OF CONTAINERS: 12 — Cooler Temperature: 4°C

COMPANY NAME: SAIC — COMPANY NAME: — Cooler ID: 303 — FEDEX NUMBER: N/A

RECEIVED BY: — Date/Time: 1/27/03 1200 — RELINQUISHED BY: — Date/Time:

COMPANY NAME: GEL — COMPANY NAME:

RELINQUISHED BY: — Date/Time: 1/27/03 1450 — RECEIVED BY: — Date/Time: 1/27/03 1450

COMPANY NAME: GEL — COMPANY NAME: GEL

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800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM22

PROJECT NAME: HAAF LTM-BFF-Bldg. 133

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): P A Stoll (Printed Name): PATRICIA A. STOLL

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
BF3442	1/24/03	1640	WATER	2	2	4		74043007
BF1942	1/24/03	1600	WATER	2	2	4		74043008
BF2142	1/24/03	1235	WATER	2		2		74043009
BF2044	1/24/03	1340	WATER	2		2		74043010
BF2042	1/24/03	1340	WATER	2		2		74043011
BF2242	1/24/03	1440	WATER	2		2		74043012
BF3242	1/24/03	1515	WATER	2		2		74043013
BF3342	1/24/03	1715	WATER	2		2		74043014
TH0311	1/23/03	0745	WATER	2		2		74043015

REQUESTED PARAMETERS

P A Stoll 1/24/03

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 22	Cooler Temperature: 4°C
P A Stoll	1/27/03 1200	J Kirkland	1/27/03 1450	Cooler ID: 626	FEDEX NUMBER: N/A
COMPANY NAME: SAIC		COMPANY NAME: GEL			
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1/27/03 1200	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1/27/03 1450	COMPANY NAME:			

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APPENDIX IV

SITE RANKING FORM

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FIRST SEMIANNUAL SAMPLING EVENT

JULY 2002

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SITE RANKING FORM

Facility Name: **Former UST 117, Building 7002** **Ranked by:** **S. Stoller**

County: **Chatham** **Facility ID #:** **9-025113*1** **Date Ranked:** **10/4/02**

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

* *CAP-Part A sample BF2211*

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

* *CAP-Part A sampleBF2211*

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

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

Fill in the blanks: **(A.** **50** **) + (B.** **25** **) = (** **75** **) x (C.** **10** **) = (D.** **750** **)**

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 +		

* *No free product observed in vicinity of BF-MW-21 (AST 7003) plume*

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

☐	≤5 µg/L	= 0
☐	>5 - 100 µg/L	= 5
* ☒	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 500
☐	>10,000 µg/L	= 1500

* *Sample BF2132 (July 2002)*

Fill in the blanks: **(E.** **0** **) + (F.** **50** **) = (G.** **50** **)**

Facility Name: Former UST 117, Building 7002 **County:** Chatham **Facility ID #:** 9-025113*1

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	=	0

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

* For justification that withdrawal point is not hydraulically connected, see attached text.

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	=	0

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

☐	Impacted	=	500
☒	≤500'	=	50
☐	>500' - 1,000'	=	5
☐	>1,000'	=	2

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. 50) x (L. 50) = M. 2500

(M. 2500) + (D. 750) = N. 3250

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. 3250) x (P. 1) = (3250) + (Q. 0)

= 3250 (July 2002 – First Semiannual Monitoring Event; associated with the plume in the vicinity of BF-MW-21, AST 7003)

ENVIRONMENTAL SENSITIVITY SCORE

SECOND SEMIANNUAL SAMPLING EVENT

JANUARY 2003

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SITE RANKING FORM

Facility Name: **Former UST 117, Building 7002** **Ranked by:** **S. Stoller**

County: **Chatham** **Facility ID #:** **9-025113*1** **Date Ranked:** **4/18/03**

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

* *CAP-Part A sample BF2211*

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

* *CAP-Part A sampleBF2211*

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

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

Fill in the blanks: **(A.** **50** **) + (B.** **25** **) = (** **75** **) x (C.** **10** **) = (D.** **750** **)**

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 +		

* *No free product observed in vicinity of BF-MW-21 (AST 7003) plume*

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

☐	≤5 µg/L	= 0
☐	>5 - 100 µg/L	= 5
* ☒	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 500
☐	>10,000 µg/L	= 1500

* *Sample BF2142 (January 2003)*

Fill in the blanks: **(E.** **0** **) + (F.** **50** **) = (G.** **50** **)**

Facility Name: Former UST 117, Building 7002 **County:** Chatham **Facility ID #:** 9-025113*1

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	=	0

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

* For justification that withdrawal point is not hydraulically connected, see attached text.

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	=	0

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

☐	Impacted	=	500
☒	≤500'	=	50
☐	>500' - 1,000'	=	5
☐	>1,000'	=	2

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. 50) x (L. 50) = M. 2500

(M. 2500) + (D. 750) = N. 3250

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. 3250) x (P. 1) = (3250) + (Q. 0)

= 3250 (Jan 2003 – Second Semiannual Monitoring Event; associated with the plume in the vicinity of BF-MW-21, AST 7003)

ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROGEOLOGIC DATA

The following is presented to provide supplemental information to Item H of the Site Ranking Form and details relating to the geologic and hydrogeologic conditions at Hunter Army Airfield (HAAF), which support HAAF's determination that the water withdrawal points located at the airfield cannot be hydraulically connected to the surficial aquifer.

1.0 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 the southeastward-dipping subsurface strata ranges from 0 ft at the fall line, located approximately 350 miles inland from the Atlantic coast, to approximately 4,200 ft below ground surface (BGS) 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 ft west and 0.3 mile 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 ft thick and dominated by light gray to white fossiliferous limestone. The Miocene section is approximately 250 ft thick and consists of limestone, with a 160-ft-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; Huddlestun 1988). The interval from approximately 80 ft 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 (Huddlestun 1988).

2.0 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 result of sea-level fluctuations that occurred during the Pleistocene epoch. The surficial (Quaternary) deposits in Chatham and Bryan Counties, in decreasing elevation and age, are part of the Okefenokee, Wicomico, Penholoway, Pamlico, and Silver Bluff Terrace Complexes (Wilkes et al. 1974; GA DNR 1976; Huddlestun 1988).

HAAF, as well as most of Chatham County, is underlain by the Pleistocene Pamlico Terrace. The Pleistocene Satilla Formation (formerly known as the Pamlico Formation) consists of deposits of the Pamlico Terrace Complex and other terrace complexes in the region (Huddlestun 1988). The Satilla Formation is a lithologically heterogeneous unit that consists of variably bedded to nonbedded sand and variably bedded silty to sandy clay. During the Pleistocene epoch, these sand and clay deposits were formed in offshore and inner continental shelf, barrier island, and marsh/lagoonal-type environments (Huddlestun 1988). According to the *Geologic Map of Georgia* (GA DNR 1976), clay beds of marsh origin, which were deposited on the northwestern 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 Corrective Action Plan–Part A investigations, it was 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).

3.0 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 Artesian (Floridan) Aquifer and the surficial aquifer (Miller 1990). The Principal Artesian Aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer, approximately 800 ft in total thickness, is composed primarily of Tertiary-age limestone, including the Bug Island Formation, Ocala Group, and 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 ft beneath Savannah. In addition, according to 1980 estimates, more than 500 M gal of water per day were withdrawn from the Floridan for public and industrial use in southeast Georgia, more than in any other region.

The confining layer for the Principal Artesian (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 use (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 ft 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 ft BGS (Miller 1990). Groundwater in the surficial aquifer system is under unconfined, or water table, conditions. Locally, however, thin clay beds create confined or semiconfined conditions, as is the case at HAAF where thin, surficial clay beds are present in the western quadrant (GA DNR 1976).

Groundwater encountered at all the UST investigation sites is part of the surficial aquifer system. Based on the fact that all public and nonpublic water supply wells draw water from the Principal Artesian (Floridan) Aquifer and that the Hawthorn confining unit separates the Principal Artesian Aquifer from the surficial aquifer, it is concluded that there is no hydraulic interconnection between the surficial aquifer (and associated groundwater plumes, if applicable) located beneath former UST sites and identified water-supply withdrawal points at HAAF.

4.0 REFERENCES

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

Clark, W.Z., Jr. and A.C. Zisa 1976. *Physiographic Map of Georgia*, Department of Natural Resources, Environmental Protection Division, Georgia Geologic Survey (reprinted 1988).

Furlow, J.W. 1969. *Stratigraphy and Economic Geology of the Eastern Chatham County Phosphate Deposit, Department of Mines and Mining*, Division of Conservation, Georgia Geologic Survey, Bulletin 82.

GA DNR (Georgia Department of Natural Resources) 1976. *Geologic Map of Georgia*, Department of Natural Resources, Environmental Protection Division, Georgia Geologic Survey (reprinted 1997).

Herrick, S.M. 1961. *Well Logs of the Coastal Plain of Georgia*, Department of Natural Resources, Environmental Protection Division, Georgia Geologic Survey.

Huddlestun, P.F. 1988. *A Revision of the Lithostratigraphic Units of the Coastal Plain of Georgia, The Miocene through Holocene*, Department of Natural Resources, Environmental Protection Division, Georgia Geologic Survey, Bulletin 104.

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

Wilkes, R.L., J.H. Johnson, H.T. Stoner, and D.D. Bacon 1974. *Soil Survey of Bryan and Chatham Counties, Georgia*, U.S. Department of Agriculture Soil Conservation Service.

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APPENDIX V

REIMBURSEMENT APPLICATION

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Hunter Army Airfield is a federally owned facility and has funded the investigation for the former Underground Storage Tank 117 site, Facility ID #9-025113*1, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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ATTACHMENT A

SUMMARY OF FATE AND TRANSPORT MODELING

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A.0 FATE AND TRANSPORT MODELING

In summary, the Seasonal Soil Compartment Model was used to simulate the vertical transport of contaminants from the source area down through the vadose zone to the shallow groundwater table. The Analytical Transient 1-, 2-, 3-Dimensional Model was used to model contaminant migration to a potential downgradient receptor, an underground storm drain located approximately 120 ft southwest of the site. Benzene and naphthalene were the only two constituents to exceed their respective In-Stream Water Quality Standards (IWQSs) or risk-based screening levels during the Corrective Action Plan (CAP)–Part A and B investigations. A steady-state source for each constituent was assumed for conservatism, and the source was shut off after a steady-state condition had been achieved.

A.1 SUMMARY OF THE CAP–PART B REPORT FATE AND TRANSPORT MODELING RESULTS FOR BENZENE

The fate and transport modeling that was conducted as part of the CAP–Part B Report (SAIC 2001) was based on the analytical data collected during the CAP–Part A and B investigations. The assumption of a continuous source of contamination of infinite duration at the site was based on the maximum observed benzene concentration in groundwater (i.e., 553 µg/L in well BF-MW-22 in December 1999) during the CAP–Part A and B investigations. The modeling was performed to develop alternate concentration limits (ACLs) for the site. Because benzene was the only volatile organic compound at the site that exceeded its IWQS, an ACL of 634 µg/L was developed for benzene based on a dilution attenuation factor (DAF) of 8.9. The predicted 2-year concentrations are presented in Table A-1.

Table A-1. CAP–Part B Predicted 2-Year Maximum Benzene Concentrations in Groundwater at the Former Underground Storage Tank 117 Site

Monitoring Wells	Predicted Maximum Benzene Concentration (µg/L)			
	Jun-01	Dec-01	Jun-02	Dec-02
BF-MW-22	114.0	75.9	51.6	31.6
MF-MW-32	89.1	84.3	74.2	62.3

A.2 SUMMARY OF THE CAP–PART B REPORT FATE AND TRANSPORT MODELING RESULTS FOR NAPHTHALENE

The fate and transport modeling that was conducted as part of the CAP–Part B Report (SAIC 2001) was based on the analytical data collected during the CAP–Part A and B investigations. The assumption of a continuous source of contamination of infinite duration at the site was based on the maximum observed naphthalene concentration in groundwater (i.e., 528 µg/L in well BF-MW-22 in December 2000) during the CAP–Part A and B investigations. The modeling was performed to develop ACLs for the site. Because naphthalene was the only polynuclear aromatic hydrocarbon at the site that exceeded its risk-based screening level, an ACL of 820 µg/L was developed for naphthalene based on a DAF of 126.3.

A.3 CONCLUSIONS BASED ON FATE AND TRANSPORT MODELING RESULTS

The conclusions below are based on fate and transport modeling of analytical data collected during the CAP–Part A and B investigations and assuming a steady-state source at the site.

- Benzene concentrations in groundwater did not exceed the benzene ACL of 624 μg/L at the site in July 2002 and January 2003.

- Naphthalene concentrations in groundwater did not exceed the naphthalene ACL of 820 μg/L at the site in July 2002 and January 2003.

A.4 REFERENCES

SAIC (Science Applications International Corporation) 2001. *Corrective Action Plan–Part B Report for Former Underground Storage Tank 117, Building 7002, Facility ID 9-025113*1, Bulk Fuel Facility (HAA-09), Hunter Army Airfield, Georgia,* July.

ATTACHMENT B

REFERENCES

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REFERENCES

SAIC (Science Applications International Corporation) 1999. *Soil Gas Survey Report for the Bulk Fuel Facility (HAA-09) at Hunter Army Airfield, Georgia*, November.

SAIC 2000. *Corrective Action Plan–Part A Report for Former Underground Storage Tank 117, Building 7002, Facility ID 9-025113*1, Bulk Fuel Facility (HAA-09), Hunter Army Airfield, Georgia,* June.

SAIC 2001. *Corrective Action Plan–Part B Report for Former Underground Storage Tank 117, Building 7002, Facility ID 9-025113*1, Bulk Fuel Facility (HAA-09), Hunter Army Airfield, Georgia,* July.

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ATTACHMENT C

CERTIFICATES OF ANALYSIS

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GENERAL ENGINEERING LABORATORIES

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF1932
Sample ID: 63577001
Matrix: Water
Collect Date: 11-JUL-02 16:55
Receive Date: 13-JUL-02
Collector: Client

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatiles-GC/MS Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF 07/17/02	2108	185587	1
2-Methylnaphthalene	U	ND	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
enzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene		1.04	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	RMB 07/17/02	1213	185710	2
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.830	3.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	1213	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits

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(843) 556-8171 • Fax (843) 766-1178

GENERAL ENGINEERING LABORATORIES

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF1932
Sample ID: 63577001

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
2-Fluorobiphenyl		3510/8270 PAH Extend list Liquid		41%	(32%-109%)					
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		48%	(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		51%	(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		131%	(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		106%	(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede		104%	(58%-139%)					

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
- Actual result is greater than amount reported
Analyte found in the sample as well as the associated blank.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis

Reviewed by

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GENERAL ENGINEERING LABORATORIES

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2032
Sample ID: 63577002
Matrix: Water
Collect Date: 11-JUL-02 14:50
Receive Date: 13-JUL-02
Collector: Client

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-GC/MS Federal											
3510/8270 PAH Extend list Liquid											
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF	07/17/02	2209	185587	1
2-Methylnaphthalene		11.2	0.490	0.980	ug/L	1					
Acenaphthene	U	ND	0.490	0.980	ug/L	1					
Acenaphthylene	U	ND	0.490	0.980	ug/L	1					
Anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1					
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1					
enzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1					
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1					
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1					
Fluoranthene	U	ND	0.490	0.980	ug/L	1					
Fluorene	U	ND	0.490	0.980	ug/L	1					
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1					
Naphthalene		19.9	0.108	0.980	ug/L	1					
Phenanthrene	U	ND	0.490	0.980	ug/L	1					
Pyrene	U	ND	0.490	0.980	ug/L	1					
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene		2.55	0.330	1.00	ug/L	1	RMB	07/17/02	2221	185710	2
Ethylbenzene		32.1	0.210	1.00	ug/L	1					
Toluene		6.02	0.390	1.00	ug/L	1					
Xylenes (total)		136	0.830	3.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	2221	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	55%	(32%-109%)

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(843) 556-8171 • Fax (843) 766-1178

GENERAL ENGINEERING LABORATORIES

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2032
Sample ID: 63577002

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		55%		(33%-107%)				
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		48%		(36%-130%)				
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		100%		(67%-136%)				
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		105%		(62%-148%)				
Toluene-d8		5035/8260B BTEX in Liquid Fede		102%		(58%-139%)				

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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Valerie Davis
Reviewed by

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID:	BF2034	Project:	SAIC00101
Sample ID:	63577003	Client ID:	SAIC031
Matrix:	Water		
Collect Date:	11-JUL-02 14:50		
Receive Date:	13-JUL-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-GC/MS Federal											
3510/8270 PAH Extend list Liquid											
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF	07/17/02	2229	185587	1
2-Methylnaphthalene		12.9	0.490	0.980	ug/L	1					
Acenaphthene	U	ND	0.490	0.980	ug/L	1					
Acenaphthylene	U	ND	0.490	0.980	ug/L	1					
Anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1					
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1					
enzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1					
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1					
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1					
Fluoranthene	U	ND	0.490	0.980	ug/L	1					
Fluorene	U	ND	0.490	0.980	ug/L	1					
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1					
Naphthalene		19.5	0.108	0.980	ug/L	1					
Phenanthrene	U	ND	0.490	0.980	ug/L	1					
Pyrene	U	ND	0.490	0.980	ug/L	1					
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene		2.31	0.330	1.00	ug/L	1	RMB	07/17/02	1243	185710	2
Ethylbenzene		37.6	0.210	1.00	ug/L	1					
Toluene		8.70	0.390	1.00	ug/L	1					
Xylenes (total)		148	0.830	3.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	1243	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	60%	(32%-109%)

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2034
Sample ID: 63577003

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		63%		(33%-107%)				
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		70%		(36%-130%)				
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		107%		(67%-136%)				
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		103%		(62%-148%)				
Toluene-d8		5035/8260B BTEX in Liquid Fede		105%		(58%-139%)				

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U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Valerie Davis

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2132
Sample ID: 63577004
Matrix: Water
Collect Date: 11-JUL-02 15:05
Receive Date: 13-JUL-02
Collector: Client

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatiles-GC/MS Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene		41.5	0.392	0.980	ug/L	1	LOF 07/17/02	2250	185587	1
2-Methylnaphthalene		1.77	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene		1.76	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene		5.93	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene		19.0	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	E	172	0.330	1.00	ug/L	1	RMB 07/17/02	1313	185710	2
Ethylbenzene		11.6	0.210	1.00	ug/L	1				
Toluene		1.24	0.390	1.00	ug/L	1				
Xylenes (total)		343	0.830	3.00	ug/L	1				
Benzene		178	1.65	5.00	ug/L	5	RMB 07/18/02	0058	185710	3
Ethylbenzene		11.4	1.05	5.00	ug/L	5				
Toluene	U	ND	1.95	5.00	ug/L	5				
Xylenes (total)		357	4.15	15.0	ug/L	5				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	1313	185710
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/18/02	0058	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

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Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2132
Sample ID: 63577004

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
2	SW846 8260B									
3	SW846 8260B									

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	67%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	70%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	67%	(36%-130%)
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	99%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	104%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	103%	(58%-139%)
[illegible]omofluorobenzene	5035/8260B BTEX in Liquid Fede	106%	(67%-136%)
[illegible]omofluoromethane	5035/8260B BTEX in Liquid Fede	104%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	104%	(58%-139%)

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UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2232
Sample ID: 63577005
Matrix: Water
Collect Date: 11-JUL-02 15:55
Receive Date: 13-JUL-02
Collector: Client

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatiles-GC/MS Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	3.92	9.80	ug/L	10	LOF 07/18/02	2117	185587	1
2-Methylnaphthalene		133	4.90	9.80	ug/L	10				
Acenaphthene	U	ND	4.90	9.80	ug/L	10				
Acenaphthylene	U	ND	4.90	9.80	ug/L	10				
Anthracene	U	ND	4.90	9.80	ug/L	10				
Benzo(a)anthracene	U	ND	4.90	9.80	ug/L	10				
Benzo(a)pyrene	U	ND	4.90	9.80	ug/L	10				
Benzo(b)fluoranthene	U	ND	4.90	9.80	ug/L	10				
Benzo(ghi)perylene	U	ND	4.90	9.80	ug/L	10				
Benzo(k)fluoranthene	U	ND	4.90	9.80	ug/L	10				
Dibenzo(a,h)anthracene	U	ND	4.90	9.80	ug/L	10				
Fluoranthene	U	ND	4.90	9.80	ug/L	10				
Fluorene	U	ND	4.90	9.80	ug/L	10				
Indeno(1,2,3-cd)pyrene	U	ND	4.90	9.80	ug/L	10				
Naphthalene		168	1.08	9.80	ug/L	10				
Phenanthrene	U	ND	4.90	9.80	ug/L	10				
Pyrene	U	ND	4.90	9.80	ug/L	10				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		45.0	0.330	1.00	ug/L	1	RMB 07/17/02	1344	185710	2
Ethylbenzene	E	227	0.210	1.00	ug/L	1				
Toluene		2.51	0.390	1.00	ug/L	1				
Xylenes (total)		838	0.830	3.00	ug/L	1				
Benzene		40.5	1.65	5.00	ug/L	5	RMB 07/18/02	0032	185710	3
Ethylbenzene		207	1.05	5.00	ug/L	5				
Toluene	J	2.50	1.95	5.00	ug/L	5				
Xylenes (total)		911	4.15	15.0	ug/L	5				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	1344	185710
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/18/02	0032	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

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Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF2232
Sample ID: 63577005

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
2	SW846 8260B									
3	SW846 8260B									

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	79%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	145% *	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	57%	(36%-130%)
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	106%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	102%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	104%	(58%-139%)
[illegible]omofluorobenzene	5035/8260B BTEX in Liquid Fede	99%	(67%-136%)
[illegible]romofluoromethane	5035/8260B BTEX in Liquid Fede	104%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	103%	(58%-139%)

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H Holding time exceeded
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P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF3232
Sample ID: 63577006
Matrix: Water
Collect Date: 11-JUL-02 16:16
Receive Date: 13-JUL-02
Collector: Client

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatiles-GC/MS Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF 07/17/02	2331	185587	1
2-Methylnaphthalene		2.23	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene		7.11	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		1.68	0.330	1.00	ug/L	1	RMB 07/18/02	0006	185710	2
Ethylbenzene		20.7	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		103	0.830	3.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/18/02	0006	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	68%	(32%-109%)

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF3232
Sample ID: 63577006

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		70%	(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		66%	(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		101%	(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		105%	(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede		101%	(58%-139%)					

Notes:
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E Concentration exceeds instrument calibration range
H Holding time exceeded
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P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID:	BF3332	Project:	SAIC00101
Sample ID:	63577007	Client ID:	SAIC031
Matrix:	Water		
Collect Date:	11-JUL-02 16:35		
Receive Date:	13-JUL-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-Volatiles-GC/MS Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF 07/17/02	2351	185587	1
2-Methylnaphthalene	U	ND	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene	U	ND	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	J	0.990	0.330	1.00	ug/L	1	RMB 07/18/02	0242	185710	2
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.830	3.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/18/02	0242	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	65%	(32%-109%)

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF3332
Sample ID: 63577007

Project: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		68%	(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		53%	(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		115%	(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		105%	(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede		105%	(58%-139%)					

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis

Reviewed by

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GENERAL ENGINEERING LABORATORIES

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID:	BF3432	Proiect:	SAIC00101
Sample ID:	63577008	Client ID:	SAIC031
Matrix:	Water		
Collect Date:	11-JUL-02 17:15		
Receive Date:	13-JUL-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-GC/MS Federal											
3510/8270 PAH Extend list Liquid											
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF	07/18/02	0011	185587	1
2-Methylnaphthalene		2.66	0.490	0.980	ug/L	1					
Acenaphthene	U	ND	0.490	0.980	ug/L	1					
Acenaphthylene	U	ND	0.490	0.980	ug/L	1					
Anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1					
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1					
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1					
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1					
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1					
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1					
Fluoranthene	U	ND	0.490	0.980	ug/L	1					
Fluorene	U	ND	0.490	0.980	ug/L	1					
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1					
Naphthalene		5.84	0.108	0.980	ug/L	1					
Phenanthrene	U	ND	0.490	0.980	ug/L	1					
Pyrene	U	ND	0.490	0.980	ug/L	1					
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene	U	ND	0.330	1.00	ug/L	1	RMB	07/18/02	1156	185710	2
Ethylbenzene	U	ND	0.210	1.00	ug/L	1					
Toluene	U	ND	0.390	1.00	ug/L	1					
Xylenes (total)	U	ND	0.830	3.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	GRB2	07/16/02	2226	185586
SW846 8260B	8260B Volatiles In Liquid Federal	RMB	07/18/02	1156	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	75%	(32%-109%)

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: BF3432
Sample ID: 63577008

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		74%	(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		81%	(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		126%	(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		105%	(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede		105%	(58%-139%)					

Notes:
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Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Valerie Davis

Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID:	TBH012	Project:	SAIC00101
Sample ID:	63577009	Client ID:	SAIC031
Matrix:	Water		
Collect Date:	11-JUL-02 07:30		
Receive Date:	13-JUL-02		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	RMB 07/17/02	1045	185710	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.830	3.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
46 8260B	8260B Volatiles In Liquid Federal	RMB	07/17/02	1045	185710

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	125%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	106%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	104%	(58%-139%)

Notes:
The Qualifiers in this report are defined as follows :

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> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: October 4, 2002

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring

Client Sample ID: TBH012
Sample ID: 63577009

Proiect: SAIC00101
Client ID: SAIC031

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie A Davis
Reviewed by

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Science Applications International Corporation
151 Layfayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

1q-3

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll 63577%

Sampler (Signature) (Printed Name) Virginia Mullis

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417

PHONE NO: (843) 556-8171

REQUESTED PARAMETERS

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01	BF1932	7-11-02	1655	W		X			2		
02	BF2032	7-11-02	1450	W		X			2		
03	BF2034	7-11-02	1450	W		X			2		
04	BF2132	7-11-02	1505	W		X			2		
05	BF2232	7-11-02	1555	W		X			2		
06	BF3232	7-11-02	1616	W		X			2		

7-13-02

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
COMPANY NAME: SAIC	7-13-02 0840	COMPANY NAME: GEL	7/13/02 0840	Cooler ID: 1000	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	7/13/02 1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SAIC An Employee-Owned Company
Science Applications International Corporation
151 Layfayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll 63577%

Sampler (Signature) (Printed Name) Virginia Mullins

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
07 BF3332	7-11-02	1635	W		X		X	2		
08 BF3432	7-11-02	1715	W		X		X	2		

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417

PHONE NO: (843) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 4	Cooler Temperature:
COMPANY NAME: GRS/SAIC	7-13-02 0840	COMPANY NAME: GEL	7/13/02 0840	Cooler ID: 1003	FEDEX NUMBER:
RECEIVED BY: Paulette Wendell	Date/Time 7/13/02 1130	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SAIC An Employee-Owned Company
Science Applications International Corporation
151 Layfayette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: HLTM14

PROJECT NAME: Hunter LTM

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll 63577%

Sampler (Signature) (Printed Name) Virginia Hughes

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417

PHONE NO: (843) 556-8171

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01	BF1932	7-11-02	1655	W	X			X	2		
02	BF2032	7-11-02	1450	W	X			X	2		
03	BF2034	7-11-02	1450	W	X			X	2		
04	BF2132	7-11-02	1505	W	X			X	2		
05	BF2232	7-11-02	1555	W	X			X	2		
06	BF3232	7-11-02	1616	W	X			X	2		
07	BF3332	7-11-02	1635	W	X			X	2		
08	BF3432	7-11-02	1715	W	X			X	2		
09	TBH012	7-11-02	0730	W	X				2		

REQUESTED PARAMETERS

7-13-02

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 18	Cooler Temperature:
COMPANY NAME: GEL/SAIC	7-13-02 0840	COMPANY NAME: GEL	7-13-02 0840	Cooler ID: 333	FEDEX NUMBER:
RECEIVED BY: Paulette Mundell	Date/Time 7/13/02 1130	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF1942
Sample ID: 74043008
Matrix: Water
Collect Date: 24-JAN-03 16:00
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	KGB1 01/30/03	0056	229729	1
2-Methylnaphthalene	U	ND	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene	U	ND	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 02/05/03	0457	231305	2
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	0457	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Fluorobiphenyl	3510/8270 PAH Extend list Liquid	71%	(32%-109%)

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF1942
Sample ID: 74043008

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid		73%	(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid		79%	(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede		96%	(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede		116%	(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede		113%	(58%-139%)					

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
- Analyte found in the sample as well as the associated blank.
Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF2042	Project:	SAIC00203
Sample ID:	74043011	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 13:40		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		3.58	0.330	1.00	ug/L	1	CDS1 02/05/03	2102	231305	1
Ethylbenzene		20.4	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		130	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
'846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	2102	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	95%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	113%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	111%	(58%-139%)

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2042
Sample ID: 74043011

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis
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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2042
Sample ID: 74043004
Matrix: Water
Collect Date: 24-JAN-03 13:40
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	KGB1 01/29/03	2329	229729	1
2-Methylnaphthalene		32.0	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
`enzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
enzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene		40.5	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	68%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	69%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	73%	(36%-130%)

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2042
Sample ID: 74043004

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
Y Lab-specific qualifier - must be fully described in case narrative and data summary package
QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF2044	Project:	SAIC00203
Sample ID:	74043010	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 13:40		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		3.50	0.330	1.00	ug/L	1	CDS1 02/05/03	2034	231305	1
Ethylbenzene		20.5	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		130	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
'846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	2034	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	96%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	111%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	112%	(58%-139%)

Notes:
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> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2044
Sample ID: 74043010

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF2044	Project:	SAIC00203
Sample ID:	74043005	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 13:40		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/29/03	2351	229729	1
2-Methylnaphthalene		15.3	0.495	0.990	ug/L	1				
Acenaphthene	U	ND	0.495	0.990	ug/L	1				
Acenaphthylene	U	ND	0.495	0.990	ug/L	1				
Anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)pyrene	U	ND	0.495	0.990	ug/L	1				
`enzo(b)fluoranthene	U	ND	0.495	0.990	ug/L	1				
enzo(ghi)perylene	U	ND	0.495	0.990	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.495	0.990	ug/L	1				
Fluoranthene	U	ND	0.495	0.990	ug/L	1				
Fluorene	U	ND	0.495	0.990	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.495	0.990	ug/L	1				
Naphthalene		26.3	0.109	0.990	ug/L	1				
Phenanthrene	U	ND	0.495	0.990	ug/L	1				
Pyrene	U	ND	0.495	0.990	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	63%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	66%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	63%	(36%-130%)

Notes:
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Company : SAIC
Address : 151 Lafayette Drive
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Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2044
Sample ID: 74043005

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2142
Sample ID: 74043009
Matrix: Water
Collect Date: 24-JAN-03 12:35
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	E	184	0.330	1.00	ug/L	1	CDS1 02/05/03	0526	231305	1
Ethylbenzene		9.89	0.210	1.00	ug/L	1				
Toluene		1.18	0.390	1.00	ug/L	1				
Xylenes (total)		297	0.250	1.00	ug/L	1				
Benzene		183	1.32	4.00	ug/L	4	CDS1 02/05/03	1937	231305	2
Ethylbenzene		10.1	0.840	4.00	ug/L	4				
Toluene	U	ND	1.56	4.00	ug/L	4				
Xylenes (total)		296	1.00	4.00	ug/L	4				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	0526	231305
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	1937	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	95%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	115%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	113%	(58%-139%)
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	96%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	112%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	111%	(58%-139%)

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range

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Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2142
Sample ID: 74043009

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

ere the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF2142	Project:	SAIC00203
Sample ID:	74043006	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 12:35		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/30/03	0012	229729	1
2-Methylnaphthalene		2.36	0.495	0.990	ug/L	1				
Acenaphthene	U	ND	0.495	0.990	ug/L	1				
Acenaphthylene	U	ND	0.495	0.990	ug/L	1				
Anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)pyrene	U	ND	0.495	0.990	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Benzo(ghi)perylene	U	ND	0.495	0.990	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.495	0.990	ug/L	1				
Fluoranthene	U	ND	0.495	0.990	ug/L	1				
Fluorene	U	ND	0.495	0.990	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.495	0.990	ug/L	1				
Naphthalene		37.9	0.109	0.990	ug/L	1				
Phenanthrene	U	ND	0.495	0.990	ug/L	1				
Pyrene	U	ND	0.495	0.990	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	81%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	83%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	71%	(36%-130%)

Notes:
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Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2142
Sample ID: 74043006

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method

B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
Y Lab-specific qualifier - must be fully described in case narrative and data summary package
QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF2242	Project:	SAIC00203
Sample ID:	74043012	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 14:40		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		47.0	0.660	2.00	ug/L	2	CDS1 02/05/03	2005	231305	1
Ethylbenzene		105	0.420	2.00	ug/L	2				
Toluene		1.00	0.780	2.00	ug/L	2				
Xylenes (total)		328	0.500	2.00	ug/L	2				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
46 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	2005	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	99%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	114%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	114%	(58%-139%)

Notes:
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> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2242
Sample ID: 74043012

Proiect: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Valerie Davis
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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2242
Sample ID: 74043003
Matrix: Water
Collect Date: 24-JAN-03 14:40
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/29/03	2308	229729	1
2-Methylnaphthalene		42.0	0.495	0.990	ug/L	1				
Acenaphthene	U	ND	0.495	0.990	ug/L	1				
Acenaphthylene	U	ND	0.495	0.990	ug/L	1				
Anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)pyrene	U	ND	0.495	0.990	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Benzo(ghi)perylene	U	ND	0.495	0.990	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.495	0.990	ug/L	1				
Fluoranthene	U	ND	0.495	0.990	ug/L	1				
Fluorene	U	ND	0.495	0.990	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.495	0.990	ug/L	1				
Naphthalene		110	0.109	0.990	ug/L	1				
Phenanthrene	U	ND	0.495	0.990	ug/L	1				
Pyrene	U	ND	0.495	0.990	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	82%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	84%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	73%	(36%-130%)

Notes:
The Qualifiers in this report are defined as follows :

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> Actual result is greater than amount reported

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF2242
Sample ID: 74043003

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
V Lab-specific qualifier - must be fully described in case narrative and data summary package
QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Valerie Davis
Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
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Meeting Today's Needs with a Vision for Tomorrow

Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF3242	Project:	SAIC00203
Sample ID:	74043013	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 15:15		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 02/05/03	0720	231305	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
346 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	0720	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	94%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	114%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	109%	(58%-139%)

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3242
Sample ID: 74043013

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3242
Sample ID: 74043002
Matrix: Water
Collect Date: 24-JAN-03 15:15
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/29/03	2246	229729	1
2-Methylnaphthalene	U	ND	0.495	0.990	ug/L	1				
Acenaphthene	U	ND	0.495	0.990	ug/L	1				
Acenaphthylene	U	ND	0.495	0.990	ug/L	1				
Anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)anthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)pyrene	U	ND	0.495	0.990	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Benzo(ghi)perylene	U	ND	0.495	0.990	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.495	0.990	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.495	0.990	ug/L	1				
Fluoranthene	U	ND	0.495	0.990	ug/L	1				
Fluorene	U	ND	0.495	0.990	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.495	0.990	ug/L	1				
Naphthalene	J	0.781	0.109	0.990	ug/L	1				
Phenanthrene	U	ND	0.495	0.990	ug/L	1				
Pyrene	U	ND	0.495	0.990	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	82%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	82%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	80%	(36%-130%)

Notes:
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< Actual result is less than amount reported
> Actual result is greater than amount reported

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3242
Sample ID: 74043002

Proiect: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
V Lab-specific qualifier - must be fully described in case narrative and data summary package
QC Samples were not spiked with this compound.

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF3342	Project:	SAIC00203
Sample ID:	74043014	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 17:15		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		1.80	0.330	1.00	ug/L	1	CDS1 02/05/03	0749	231305	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	J	0.564	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
346 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	0749	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	94%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	116%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	113%	(58%-139%)

Notes:
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< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3342
Sample ID: 74043014

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis

Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3342
Sample ID: 74043001
Matrix: Water
Collect Date: 24-JAN-03 17:15
Receive Date: 27-JAN-03
Collector: Client

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	KGB1 01/29/03	2225	229729	1
2-Methylnaphthalene	U	ND	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene	J	0.216	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2-Fluorobiphenyl	3510/8270 PAH Extend list Liquid	77%	(32%-109%)
Nitrobenzene-d5	3510/8270 PAH Extend list Liquid	78%	(33%-107%)
p-Terphenyl-d14	3510/8270 PAH Extend list Liquid	62%	(36%-130%)

Notes:
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< Actual result is less than amount reported

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3342
Sample ID: 74043001

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Valerie Davis
Reviewed by

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	BF3442	Project:	SAIC00203
Sample ID:	74043007	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	24-JAN-03 16:40		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal										
3510/8270 PAH Extend list Liquid										
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	KGB1 01/30/03	0034	229729	1
2-Methylnaphthalene	U	ND	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	U	ND	0.490	0.980	ug/L	1				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	1				
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Benzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene	U	ND	0.490	0.980	ug/L	1				
Fluoranthene	U	ND	0.490	0.980	ug/L	1				
Fluorene	U	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490	0.980	ug/L	1				
Naphthalene		1.09	0.108	0.980	ug/L	1				
Phenanthrene	U	ND	0.490	0.980	ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 02/05/03	1908	231305	2
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-8270C Analysis Fed	RAW1	01/28/03	1531	229728
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	1908	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8270C	
2	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Fluorobiphenyl	3510/8270 PAH Extend list Liquid	67%	(32%-109%)

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: BF3442
Sample ID: 74043007

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Nitrobenzene-d5		3510/8270 PAH Extend list Liquid	71%		(33%-107%)					
p-Terphenyl-d14		3510/8270 PAH Extend list Liquid	74%		(36%-130%)					
Bromofluorobenzene		5035/8260B BTEX in Liquid Fede	100%		(67%-136%)					
Dibromofluoromethane		5035/8260B BTEX in Liquid Fede	111%		(62%-148%)					
Toluene-d8		5035/8260B BTEX in Liquid Fede	110%		(58%-139%)					

Notes:
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Analyte found in the sample as well as the associated blank.
Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Valerie Davis
Reviewed by

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Meeting Today's Needs with a Vision for Tomorrow

Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID:	TH0311	Project:	SAIC00203
Sample ID:	74043015	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	23-JAN-03 07:45		
Receive Date:	27-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 02/05/03	1840	231305	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
346 8260B	8260B Volatiles In Liquid Federal	CDS1	02/05/03	1840	231305

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	97%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	114%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	113%	(58%-139%)

Notes:
The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported
> Actual result is greater than amount reported
B Analyte found in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration exceeds instrument calibration range
H Holding time exceeded
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D
U Indicates the compound was analyzed for but not detected above the detection limit
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier - must be fully described in case narrative and data summary package
Y QC Samples were not spiked with this compound.

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Certificate of Analysis

Company : SAIC
Address : 151 Lafayette Drive
Oak Ridge, Tennessee 37831

Report Date: February 13, 2003

Contact: Leslie Barbour
Project: HAAF Long Term Monitoring, DO 21

Client Sample ID: TH0311
Sample ID: 74043015

Project: SAIC00203
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis
Reviewed by

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

CHAIN OF CUSTODY RECORD

COC NO.: HLTM21

PROJECT NAME: HAAF LTM-BFF-Bldg. 133

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) [signature] (Printed Name) PATRICIA A. STOLL

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (843) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
BF3342	1/24/03	1715	WATER		2	2		74043001
BF3242	1/24/02	1515	WATER		2	2		74043002
BF2242	1/24/03	1440	WATER		2	2		74043003
BF2Ø42	1/24/03	1340	WATER		2	2		74043004
BF2Ø44	1/24/03	1340	WATER		2	2		74043005
BF2142	1/24/03	1235	WATER		2	2		74043006

[signature] 1/27/03

RELINQUISHED BY: [signature]	Date/Time 1/27/03 1200	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: [signature]	Date/Time 1/27/03 1200	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [signature]	Date/Time 1/27/03 1450	RECEIVED BY: [signature]	Date/Time 1/27/03 1450
COMPANY NAME: GEL		COMPANY NAME: GEL	

TOTAL NUMBER OF CONTAINERS: 12

Cooler Temperature: 4°C

Cooler ID: 303

FEDEX NUMBER: N/A

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

CHAIN OF CUSTODY RECORD

COC NO.: HLTM22

PROJECT NAME: HAAF LTM-BFF-Bldg. 133

PROJECT NUMBER: 01-1624-04-2301-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): P A Stoll (Printed Name): PATRICIA A. STOLL

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
BF3442	1/24/03	1640	WATER	2	2	4		74043007
BF1942	1/24/03	1600	WATER	2	2	4		74043008
BF2142	1/24/03	1235	WATER	2		2		74043009
BF2044	1/24/03	1340	WATER	2		2		74043010
BF2042	1/24/03	1340	WATER	2		2		74043011
BF2242	1/24/03	1440	WATER	2		2		74043012
BF3242	1/24/03	1515	WATER	2		2		74043013
BF3342	1/24/03	1715	WATER	2		2		74043014
TH0311	1/23/03	0745	WATER	2		2		74043015

REQUESTED PARAMETERS

P A Stoll 1/24/03

RELINQUISHED BY: P A Stoll	Date/Time 1/27/03 1200	RECEIVED BY: J K Moore	Date/Time 1/27/03 1450	TOTAL NUMBER OF CONTAINERS: 22	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: 626	FEDEX NUMBER: N/A
RECEIVED BY:	Date/Time 1/27/03 1200	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 1/27/03 1450	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

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