FINAL



FIRST ANNUAL MONITORING ONLY REPORT



IMA

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



DOCUMENT 8

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

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

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

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July 2003

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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: <u>April 2002</u> to <u>April 20</u>	03	_					
Facility Name: Former UST 117 Street Address: Bulk Fuel Facility, Building 7002								
Facility ID:	9-025113 City: Savannah Cou	inty: Chath	am Zip Code: <u>31409</u>					
Latitude: _	Latitude: 32°01'43" Longitude: 81°08'37"							
Submitted b	y UST Owner/Operator:	Prepared by	Consultant/Contractor:					
Name:	Thomas C. Fry/Environmental Branch	Name:	Patricia A. Stoll					
Company:	U.S. Army/HQ 3d, Inf. Div. (Mech)	Company:	SAIC					
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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: Para a Stall			
Date:	6/20/03		



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 μ g/L and an ACL for naphthalene of 820 μ g/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. <u>Potentiometric Data</u>:

(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. <u>Analytical Data</u>:

(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 μ g/L. One of the samples exceeded the IWQS of 71.28 μ g/L; however, the concentration did not exceed the ACL of 634 μ g/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 μ g/L. None of the concentrations exceeded the IWQS of 200,000 μ g/L.

- Ethylbenzene was detected in four of the seven groundwater samples at concentrations ranging from 11.6 to 207 μ g/L. None of the concentrations exceeded the IWQS of 28,719 μ g/L.
- Total xylenes were detected in four of the seven groundwater samples at concentrations ranging from 103 to 911 μ g/L. There is no ACL or IWQS for total xylenes; however, the concentrations did not exceed the MCL of 10,000 μ g/L.
- Naphthalene was detected in six of the seven groundwater samples at concentrations ranging from 1 to 168 μ g/L. There is no IWQS for naphthalene; however, the concentrations did not exceed the ACL of 820 μ g/L.
- 2-Methylnaphthalene was detected in five of the seven groundwater samples at concentrations ranging from 1.8 to 133 μ g/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 μ g/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 μ g/L, respectively. The benzene concentration in BF-MW-21R exceeded the IWQS of 71.28 μ g/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 μ g/L. One of the samples exceeded the IWQS of 71.28 μ g/L; however, the concentration did not exceed the ACL of 634 μ g/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 μ g/L. None of the concentrations exceeded the IWQS of 200,000 μ g/L.
- Ethylbenzene was detected in three of the seven groundwater samples at concentrations ranging from 9.9 to 105 μ g/L. None of the concentrations exceeded the IWQS of 28,719 μ g/L.

- Total xylenes were detected in three of the seven groundwater samples at concentrations ranging from 130 to 328 μ g/L. There is no ACL or IWQS for total xylenes; however, the concentrations did not exceed the MCL of 10,000 μ g/L.
- Naphthalene was detected in six of the seven groundwater samples at concentrations ranging from 0.22J to 110 μ g/L. There is no IWQS for naphthalene; however, the concentrations did not exceed the ACL of 820 μ g/L.
- 2-Methylnaphthalene was detected in three of the seven groundwater samples at concentrations ranging from 2.4 to 42 μ g/L. There is no ACL or IWQS for 2-methylnaphthalene.

None of the benzene or naphthalene concentrations exceeded the ACL of 634 or 820 μ g/L, respectively. The benzene concentration in BF-MW-21R exceeded the IWQS of 71.28 μ g/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:	3,250 (CAP–Part B Report)
(April 1999 version of the Site Ranking Form	3,250 (July 2002 – First semiannual sampling event)
was used for all scores.)	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 concentration with respect to Release #1, the benzene the 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

(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.

Attached N/A X

APPENDIX I

REPORT FIGURES



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

APPENDIX II

REPORT TABLES

Table 1. Groundwater Elevations

		Top of	Depth of	Depth of			Corrected		
Well	Data	Casing	Screened	Free	Water	Product	Groundwater		
Number	Date Measured	Elevation (ft AMSL)	Interval (ft BGS)	Product (ft BTOC)	Depth (ft BTOC)	Thickness (ft)	Elevation ^a (ft AMSL)		
Tumber	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:

Above mean sea level. AMSL BGS

Below ground surface.

BTOC Below top of casing.

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 ^{<i>a</i>}
BF-MW-E6	07/11/02	13.76	3.7 - 13.7		3.69	0	10.07
		Second Semic	annual Monite	oring 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

Table 1. Groundwater Elevations (continued)

NOTES:

^a Corrected groundwater elevation based on an product density of 880 kg/m³.

AMSL Above mean sea level.

BGS Below ground surface.

BTOC Below top of casing.

							Total
Sample	~ ~ ~	Date	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX
Location	Sample ID	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
			-Part B Inve	estigation –	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 Semia	nnual Samp	oling 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
	Se	cond Semiar	nual Sampl	ling 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				

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

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.

Sample Location	Sample ID	Date Sampled	Naphthalene (µg/L)	2-Methylnaphthalene (μg/L)	2-Choronaphthalene (μg/L)	Acenaphthylene (μg/L)	Fluorene (µg/L)
	DE1022		Part B Inves	0		0.00 11	0.00.11
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
			nual Sampli				
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
			nual Sampli	0			
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
	Concentration	<i>.</i>	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	Screened		Coordinat	es (NAD83)	Elevation	(NAVD88)
Boring/Well Number	Date Installed	Depth (ft BGS)	Interval (ft BGS)	Type of Completion	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 PVC Below ground surface. Polyvinyl chloride.

APPENDIX III

LABORATORY ANALYTICAL RESULTS

ANALYTICAL LABORATORY INFORMATION AND DATA VALIDATION CODES

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: Address:	General Engineering Laboratories, Inc. 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: Accreditation Number: Effective Date: Expiration Date: Accreditation Scope:	State of Florida E-87156 July 1, 2001 June 30, 2003 SDWA, CWA, RCRA, CERCLA

DATA VALIDATION REASON CODES

	Organic, Inorganic, and Re	adiolo	gical Analytical Data
Holdi	ng Times	GC/I	MS Tuning
A01	Extraction holding times were exceeded.	B01	Mass calibration was in error, even after applying expanded
A02	Extraction holding times were grossly exceeded.		criteria.
A03	Analysis holding times were exceeded.	B02	Mass calibration was not performed every 12 hours.
A04	Analysis holding times were grossly exceeded.		Mass calibration did not meet ion abundance criteria.
A05	Samples were not preserved properly.		Professional judgment was used to qualify the data.
		D04	Toressional judgment was used to quarry the data.
A06	Professional judgment was used to qualify the data.	T	
	I/Continuing Calibration – Organics		al/Continuing Calibration – Inorganics
C01	Initial calibration RRF was <0.05.		ICV or CCV was not performed for every analyte.
C02	Initial calibration RDS was >30%.		ICV recovery was above the upper control limit.
C03	Initial calibration sequence was not followed as required.		ICV recovery was below the lower control limit.
C04	Continuing calibration RRF was <0.05.		CCV recovery was above the upper control limit.
C05	Continuing calibration %D was >25%.		CCV recovery was below the lower control limit.
C06	Continuing calibration was not performed at the required	D06	Standard curve was not established with the minimum
	frequency.		number of standards.
C07	Resolution criteria were not met.	D07	Instrument was not calibrated daily or each time the
C08	RPD criteria were not met.		instrument was set up.
C09	RDS criteria were not met.		Correlation coefficient was <0.995.
C10	Retention time of compounds was outside windows.		Mid-range cyanide standard was not distilled.
C11	Compounds were not adequately resolved.	D10	Professional judgment was used to qualify the data.
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.		
ICP a	nd Furnace Requirements	Blan	ks
E01	Interference check sample recovery was outside the	F01	Sample data were qualified as a result of the method blank.
	control limit.	F02	
E02	Duplicate injections were outside the control limit.	F03	Sample data were qualified as a result of the equipment
E03	Post-digestion spike recovery was outside the control		rinsate.
	limit.	F04	Sample data were qualified as a result of the trip blank.
E04	MSA was required but not performed.	F05	Gross contamination exists.
E05	MSA correlation coefficient was <0.995.	F06	Concentration of the contaminant was detected at a level
E06	MSA spikes were not at the correct concentration.		below the CRQL.
E07	Serial dilution criteria were not met.	F07	Concentration of the contaminant was detected at a level
E08	Professional judgment was used to qualify the data.		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.
			Blank had a negative value >2 times the IDL.
			Blanks were not analyzed at required frequency.
			Professional judgment was used to qualify the data.
Surro	gate/Radiological Chemical Recovery		rix Spike/Matrix Spike Duplicate (MS/MSD)
G01	Surrogate/radiological chemical recovery was above		MS/MSD recovery was above the upper control limit.
001	the upper control limit.		MS/MSD recovery was below the lower control limit.
G02	Surrogate/radiological chemical recovery was below the		MD/MSD recovery was selow the lower control mint. MD/MSD recovery was <10%.
002	lower control limit.		MS/MSD recovery was <10%. MS/MSD pairs exceeded the RPD limit.
G03	Surrogate recovery was <10%.		No action was taken on MS/MSD limit.
G03 G04	Surrogate recovery was zero.		Professional judgment was used to qualify the data.
	Surrogate/radiological chemical recovery data was not		
G05			Radiological MS/MSD recovery was <20%.
G06	present. Professional judgment was used to qualify the data.		Radiological MS/MSD recovery was >160%.
		п09	Radiological MS/MSD samples were not analyzed at the
G07	Radiological chemical recovery was <20%.		required frequency.
G08	Radiological chemical recovery was >150%.	.	
	ix Spike		pratory Duplicate
I01	MS recovery was above the upper control limit.	J01	Duplicate RPD/radiological duplicate error ratio (DER)
102	MS recovery was below the lower control limit.	100	was outside the control limit.
I03	MS recovery was <30%.	J02	Duplicate sample results were >5 times the CRDL.
I04	No action was taken on MS data.	J03	Duplicate sample results were <5 times the CRDL.
105	Professional judgment was used to qualify the data.	J04	Professional judgment was used to qualify the data.
1		J05	Duplicate was not analyzed at the required frequency.

Organic, Inorganic, and Radiological Analytical Data

DATA VALIDATION REASON CODES (continued)

	Organic, Inorganic, ana Ki				
Internal Area Summary			Pesticide Cleanup Checks		
K01	Area counts were outside the control limits.		10% recovery was obtained during either check.		
K02	Extremely low area counts or performance was exhibited	L02	Recoveries during either check were >120%.		
	by a major drop-off.		GPC cleanup recoveries were outside the control limits.		
K03	IS retention time varied by more than 30 sec.		Florisil cartridge cleanup recoveries were outside the control		
K04	Professional judgment was used to qualify the data.	-	limits.		
	Trotessional Jaughtone was about to quantif the auta.	1.05	Professional judgment was used to qualify the data.		
Target Compound Identification			pound Quantitation and Reported CRQLs		
M01	Incorrect identifications were made.		Quantitation limits were affected by large off-scale peaks.		
M02	Qualitative criteria were not met.		MDLs reported by the laboratory exceeded corresponding		
M02 M03	Cross contamination occurred.	1102	CRQLs.		
M04	Confirmatory analysis was not performed	N03	Professional judgment used to qualify the data.		
M04	No results were provided.	1105	Toressional judgment used to quarry the data.		
M05 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%.				
	tively Identified Compounds (TICs)		bratory Control Samples (LCSs)		
O01	Compound was suspected laboratory contaminant and		LCS recovery was above upper control limit.		
	was not detected in the blank.		LCS recovery was below lower control limit.		
O02	TIC result was not above 10 times the level found in		LCS recovery was <50%.		
	the blank.		No action was taken on the LCS data.		
O03	Professional judgment was used to qualify analytical data.		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		Radiological Calibration			
Q01	Field duplicate RPDs were >30% for waters and/or >50%		Efficiency calibration criteria were not met.		
	for soils.	R02	Energy calibration criteria were not met.		
Q02	Radiological field duplicate error ratio (DER) was outside		Resolution calibration criteria were not met.		
	the control limit.		Background determination criteria were not met.		
O03	Duplicate sample results were >5 times the CRDL.		Quench curve criteria were not met.		
Q04	Duplicate sample results were <5 times the CRDL.		Absorption curve criteria were not met.		
	r ····································		Plateau curve criteria were not met.		
			Professional judgment was used to qualify the data.		
Radiological Calibration Verification			Jangaren and about to quanty the unit.		
S01	Efficiency verification criteria were not met.				
S02	Energy verification criteria were not met.				
S02 S03	Resolution verification criteria were not met.				
S03	Background verification criteria were not met.				
S04	Cross-talk verification criteria were not met.				
	Professional judgment was used to qualify the data.				
S06					

Organic, Inorganic, and Radiological Analytical Data
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FIRST SEMIANNUAL SAMPLING EVENT LABORATORY ANALYTICAL RESULTS

JULY 2002

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VOLATILE	1A ORGANICS ANALYSIS	DATA SHEET	EPA SAMPLE NO.
Lab Name: GENERAL ENG	GINEERING LABOR C	Contract: N/A	BF1932
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:	15310
Level: (low/med)	LOW	Date Received	: 07/13/02
<pre>% Moisture: not dec.</pre>		Date Analyzed	: 07/17/02
GC Column: DB-624	ID: 0.25 (mm)	Dilution Fact	or: 1.0
Soil Extract Volume:	(uL)	Soil Aliquot	Volume:(uL
CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/I	- /

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DATA VALIDATION

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: GENERAL EN	GINEERING LABOR Contract	: N/A	BF1932
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
<pre>% Moisture:</pre>	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 Facto	r: 1.0
GPC Cleanup: (Y/N)	N		

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG,	S: /L	Q
91-57-6 91-58-7 208-96-8 83-32-9 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 205-99-2 207-08-9 50-32-8 193-39-5 53-70-3	Naphthalene 2-Methylnapht 2-Chloronapht Acenaphthylene Fluorene Fluorene Fluoranthrene Fluoranthene Fluoranthene Pyrene Benzo (a) anthra Benzo (b) fluora Benzo (a) pyrene Indeno (1, 2, 3-c Dibenzo (a, h) ar Benzo (ghi) pery	halene	0.98 0.98 0.98 0.98 0.98	

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1A VOLATILE ORGANICS ANALY	SIS DATA SHEET
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) M	L Lab File ID: 18331
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
71-43-2Benzene 108-88-3Toluene 100-41-4Ethylbenzene 1330-20-7Xylenes (tota	$ \begin{array}{c} 2.5 \\ 6.0 \\ 32.1 \\ 136 \\ \end{array} $

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DATA VALIDATION

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: GENERAL ENGIN	NEERING LABOR Contract:	BF2032
Lab Code: N/A Cas	se No.: N/A SAS No.:	N/A SDG No.: 63577
Matrix: (soil/water) WA	ATER	Lab Sample ID: 63577002
Sample wt/vol: 10)20 (g/mL) ML	Lab File ID: S8G1709
Level: (low/med) LO	Ŵ	Date Received: 07/13/02
% Moisture: de	ecanted: (Y/N)	Date Extracted:07/16/02
Concentrated Extract Vo	olume: 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 UN (ug/L or ug/Kg)	NITS: UG/L	Q
91-57-6 91-58-7 208-96-8 83-32-9 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 205-99-2 207-08-9 50-32-8 193-39-5 53-70-3	Naphthalene 2-Methylnapht 2-Chloronapht Acenaphthylen Fluorene Fluorene Phenanthrene Fluoranthene Pyrene Benzo (a) anthr Benzo (b) fluor Benzo (b) fluor Benzo (a) pyren Benzo (a, h) a Benzo (ghi) per	acene acene anthene cd) pyrene nthracene	19.9 11.2 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98	ממממממממ

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VOLATILE	1A ORGANICS ANALYSIS DAT.	A SHEET	EPA SAMPLE NO.
Lab Name: GENERAL EN	GINEERING LABOR Contra	act: N/A	BF2034
Lab Code: N/A	Case No.: N/A SAS 1	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:	15311
Level: (low/med)	LOW	Date Received	: 07/13/02
<pre>% Moisture: not dec.</pre>		Date Analyzed	: 07/17/02
GC Column: DB-624	ID: 0.25 (mm)	Dilution Fact	or: 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 108-88-3-----Toluene 100-41-4-----Ethylbenzene 1330-20-7-----Xylenes (total) CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q 8.7 37.6 148 148

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: GENERAL ENG	SINEERING LABOR Contract	: N/A
Lab Code: N/A C	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
<pre>% Moisture:</pre>	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	
	CONCE	NTRATION UNITS:

(ug/L or ug/Kg) UG/L CAS NO. COMPOUND Q 91-20-3-----Naphthalene 19.4 91-57-6----2-Methylnaphthalene 12.9 91-58-7-----2-Chloronaphthalene 0.98 0 L 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 0 205-99-2-----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 Ũ

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET	EPA SAMPLE NO.
Lab Name: GENERAL ENGINEERING LABOR Contract: N/A	BF2132
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:	15312
Level: (low/med) LOW Date Received	: 07/13/02
<pre>% Moisture: not dec Date Analyzed</pre>	: 07/17/02
GC Column: DB-624 ID: 0.25 (mm) Dilution Factor	or: 1.0
Soil Extract Volume:(uL) Soil Aliquot	Volume:uL
CONCENTRATION UNITS CAS NO. COMPOUND (ug/L or ug/Kg) UG/I	US of the second
71-43-2Benzene 172 108-88-3Toluene 172 100-41-4Ethylbenzene 330-20-7	1.2
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IB EPA SAMPLE NO. SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET BF2132 Lab Name: GENERAL ENGINEERING LABOR Contract: N/A BF2132 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: 58G1711 Level: (low/med) LOW Date Received: 07/13/02 Noisture: Office Concentrated Extract Volume: 1.00 (mL) Moisture: 0.5 (uL) Dilution Factor: 1.0 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	(ug/L or			Q	
91-57-6 91-58-7 208-96-8 83-32-9 86-73-7 120-12-7 206-44-0 129-00-0 56-55-3 205-99-2 207-08-9 50-32-8 193-39-5	Naphthalene 2-Methylnaphtha 2-Chloronaphtha Acenaphthylene Acenaphthene Fluorene Phenanthrene Phenanthrene Pyrene Benzo (a) anthrac Benzo (b) fluoran Benzo (a) pyrene Benzo (a, pyrene Dibenzo (a, h) ant Benzo (ghi) peryl	ene thene thene byrene hracene		19.0 1.8 41.5 1.8 0.98 5.9 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.		11-+21/3
F			I		l	

CONCENTRATION UNITS:

FORM I SV-1

DATA VALIDATION COPY

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1A VOLATILE ORGANICS ANALYSIS DATA SH	EPA SAMPLE NO.
Lab Name: GENERAL ENGINEERING LABOR Contract:	N/A BF2232
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
<pre>% Moisture: not dec</pre>	Date Analyzed: 07/17/02
GC Column: DB-624 ID: 0.25 (mm) I	Dilution Factor: 1.0
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL
	TRATION UNITS: Dr ug/Kg) UG/L Q
71-43-2Benzene 108-88-3Toluene 100-41-4Ethylbenzene 1330-20-7Xylenes (total)	45.0 2.5 207 226 PD 9/1 238 E D

FORM I VOA

1BEPA SAMPLE NO. SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 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 CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 0 91-20-3-----Naphthalene -168 91-57-6-----2-Methylnaphthalene 133 -91-58-7-----2-Chloronaphthalene 9.8 0 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 50-32-8-----Benzo (a) pyrene 193-39-5-----Indeno (1, 2, 3-cd) pyrene 9.8 U 9.8 U 9.8 U 53-70-3-----Dibenzo (a, h) anthracene 9.8 U 191-24-2-----Benzo (ghi) perylene 9.8 U UJ C05

FORM I SV-1

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DATA VALIDATION COPY

VOLATILE	1A ORGANICS ANALYSIS	DATA SHEET	EPA SAMPLE NO.
Lab Name: GENERAL ENG	GINEERING LABOR Co	ontract: N/A	BF3232
Lab Code: N/A	Case No.: N/A S	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:	15335
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 Facto	pr: 1.0
Soil Extract Volume:	(uL)	Soil Aliquot N	Jolume:(uL
CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/I	· · · · · · · · · · · · · · · · · · ·

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FORM I VOA

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DATA VALIDATION COPY 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: GENERAL ENG	GINEERING LABOR Contract	BF3232
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
<pre>% Moisture:</pre>	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	CONCENTRATIC (ug/L or ug)		Q	
91-57-6 91-58-7 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 205-99-2 207-08-9 50-32-8 193-39-5	Phenanthrene Anthracene Fluoranthene	ene	7.1 2.2 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98		11 11 3

FORM I SV-1

OLM03.b

III-22

DATA VALIDATION COPY

EPA SAMPLE NO. 1A VOLATILE ORGANICS ANALYSIS DATA SHEET BF3332 Lab Name: GENERAL ENGINEERING LABOR Contract: N/A Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 63577 Lab Sample ID: 63577007 Matrix: (soil/water) WATER Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S341 Date Received: 07/13/02 Level: (low/med) LOW % Moisture: not dec. Date Analyzed: 07/18/02 Dilution Factor: 1.0 GC Column: DB-624 ID: 0.25 (mm) Soil Extract Volume: ____(uL) Soil Aliquot Volume: _____ (µL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/I		Q	
71-43-2 108-88-3 100-41-4 1330-20-7		<u></u>	0.99 1.0 1.0 3.0	ប ប	h3

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EPA SAMPLE NO. 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 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 CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 0 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 U 86.0 207-08-9-----Benzo(k) fluoranthene

FORM I SV-1

50-32-8-----Benzo (a) pyrene

193-39-5-----Indeno (1, 2, 3-cd) pyrene_

53-70-3-----Dibenzo (a, h) anthracene

191-24-2----Benzo (ghi) perylene

OLMO3.0

0.98 U

0.98lU

0.98 U

0.98 U

0.98 U

DATA VALIDATION COPY

1A VOLATILE ORGANICS ANALYS	IS DATA SHEET
Lab Name: GENERAL ENGINEERING LABOR	Contract: N/A BF3432
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	
Level: (low/med) LOW	Date Received: 07/13/02
<pre>% Moisture: not dec.</pre>	Date Analyzed: 07/18/02
GC Column: DB-624 ID: 0.25 (mm)	Dilution Factor: 1.0
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uI
CAS NO. COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q
71-43-2Benzene 108-88-3Toluene 100-41-4Ethylbenzene 1330-20-7Xylenes (total	1.0 U 1.0 U 1.0 U 1.0 U 1.0 U 1.0 U 1.0 U

FORM I VOA

DATA VALIDATION COPY

1B EPA SAMPLE NO. SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 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.

91-20-3Naphthalene 5.8 91-57-62-Methylnaphthalene 2.6 91-58-72-Chloronaphthalene 0.98 208-96-8Acenaphthylene 0.98	CAS NO.	COMPOUND (ug/L or us	g/Kg) UG/L (Q
83-32-9Acenaphthene	91-57-6 91-58-7 208-96-8 83-32-9 86-73-7 85-01-8	2-Methylnaphthalene 2-Chloronaphthalene Acenaphthylene Acenaphthene Fluorene Fluorene Phenanthrene Fluoranthene Pyrene Benzo (a) anthracene Benzo (b) fluoranthene Benzo (k) fluoranthene Benzo (a) pyrene Benzo (a) pyrene Benzo (a, h) anthracene	2.6 0.98 U 0.98 U	

CONCENTRATION UNITS:

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FORM I SV-1

IA VOLATILE ORGANICS ANALYSIS DATA	· · · · · · · · · · · · · · · · · · ·
Lab Name: GENERAL ENGINEERING LABOR Contract	t: N/A TBH012
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
<pre>% Moisture: not dec</pre>	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
	ENTRATION UNITS: Lorug/Kg) UG/L Q
71-43-2Benzene 108-88-3Toluene 100-41-4Ethylbenzene 1330-20-7Xylenes (total)	1.0 U 1.0 U 1.0 U 1.0 U 3.0 U

FORM I VOA

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DATA VALIDATION COPY

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COC NO .: HETMIN

151 Leyfeyette Drive, Oak Ridge, Tennessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

	PROJECT NAME: Hunte	er LTM									REQI	JEST	ED P/	ARA	MET	ERS						_	LABORATORY N	
	PROJECT NUMBER: 01	-1624-04-2301-	200																				General Engineer	ing Laboratory
	PROJECT MANAGER:	Patty Stoll	635	577%							1												LABORATORY A 2040 Savage Ro Charleston, SC 2	ad
	Sampler (Signature)		Printed Name) VIELONA				BTEX	Lead														ਙŀ	PHONE NO: (84	3) 556-8171
L	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TCLP	TCLPL						•								No. 0	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
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02	BF-2032	7-11-02	1450	W		X														4 5		য	······································	
03	BF-2034	7-11-02	1450	w		X					·						_				-	2	•	
24	BFQ/32	7-11-02		W	-	X									20	- · .				·	_	\mathbf{Z}		
٥5	BF2232	7-11-02	1555	w		X				_				_							<u>e</u>			
	BF3232	7-1-02	1616	h/		시	_		_		-										_Þ	য	2	
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	failottemen	all 7/	3/02																					
	COMPANY NAME:	150	COMP	ANY NAME:																				
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151 Laylayette Drive, Oak Ridge, Tennessee 37831/865/ 481-4600

CHAIN OF CUSTODY RECORD

20= 2, COC NO .: HLTMIH

	PROJECT NAME: Hunter	r LTM					_												LABORATORY N General Engineer					
	PROJECT NUMBER: 01-	1624-04-2301-	200																				General Engineer	
-	PROJECT MANAGER: P	Patty Stoli	635	77%																		Vials:	LABORATORY A 2040 Savage Ro Charleston, SC 2	ad
	Sampler (Signature)	(F	rinted Name)	AMUILIA			BTEX	Lead														Bottles/	PHONE NO: (84	3) 556-8171
	Sample ID	Date Collected	Time Collector		BTEX	PAH		TCLP L						'								No. of E	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
57	BF3332	7-11-02	1635	W		Ż						•									-	Ŕ		
B	BF3432	7-11-02	1715	W		X									Ċ.							0)		
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د	AUCEIVED BY	dea 7/1	te/Time RELI	NQUISHED BY:					Date	e/Tim	ne													
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151 Laylayatte Drive, Oak Ridge, Tannessee 37831(865) 481-4600

CHAIN OF CUSTODY RECORD

30=3 COC NO .: HLTM14

	PROJECT NAME: Hunter LT	M																LABORATORY NAME:			
	PROJECT NUMBER: 01-162	24-04-2301-20	0																	General Engineeri	ng Laboratory
	PROJECT MANAGER: Patty	y Stoll	63	577%															/ials:	LABORATORY AI 2040 Savage Roa Charleston, SC 2	ad
	Sampler (Signature)	(Prin	ted Name)																les/ \	PHONE NO: (84:	3) 556-8171
	4	$ \longrightarrow V $	I IZ LAI NA	Miscus	5	BTEX	Lead												f Boti	······	·
	Sample ID Da	ate Collected	Time Collected	Matrix	BTEX	TCLP	15												No. of	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
И	BF1932 7	-11-02	1655	W	X			4	т. С. т.						\square				Z		
,2		-11-02	1450	W	X														2	×	
3	BF2034 7	-11-02	1450	W	X											-12	17		<u>Vi</u>		
14	BF2132 7	-11-02	1505	W	X			·											প		
,5	BF2232 7.	-11-02	1555	Ŵ	X		~ 1												ũ		
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C			COMP	ANY NAME:	9		4			-02	Coole	· ID:	N	3	2					FEDEX NUMBER	:
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ζ	Aulite Min	del 7	71ime RELINC	DUISHED BY:				Dat	e/Tim	ne											
	COMPANY NAME:	113	COMP/	ANY NAME:																	
	RELINQUISHED BY:	Date	· · · · · · · · · · · · · · · · · · ·	ED BY:			╈	Dat	e/Tim	18											
5	COMPANY NAME:		COMP	ANY NAME:																	

SECOND SEMIANNUAL SAMPLING EVENT LABORATORY ANALYTICAL RESULTS

JANUARY 2003

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1A VOLATILE ORGANICS ANALYSIS DA	EPA SAMPLE NO.
Lab Name: GENERAL ENGINEERING LABS Cont	tract: N/A []
Lab Code: N/A Case No.: N/A SA:	S 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)

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

COMPOUND CAS NO. Q Т 1 1

 71-43-2-----Benzene_____

 108-88-3-----Toluene_____

 100-41-4----Ethylbenzene_____

 1330-20-7-----Xylenes (total)

 1.000 iU 1.000 1.00 1.0|0 1.

FORM I VOA

OLM03.0

DATA VALIDATION COPY

1B SVOA ORGANICS ANALYSIS DATA SHEET

CAS NO.

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01011 0		
Lab Name: GENERAL EN	GINEERING LABOR Contract	: N/A BF1942
hab hame. Obhbicka bin		
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
<pre>% Moisture:</pre>	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	

CONCENTRATION UNITS: COMPOUND (ug/L or ug/Kg) UG/L -Naphthalene_____ | 0.98|U -2-Methylnaphthalene 0.98|U

		•	
1	91-20-3Naphthalene	0.98 U	14
Ì	91-57-62-Methylnaphthalene		1.1
i	91-58-72-Chloronaphthalene		i I
i	208-96-8Acenaphthylene		i I
i	83-32-9Acenaphthene		i 1
i	86-73-7Fluorene	0.98 U	i I
i	85-01-8Phenanthrene	0.98 U	i I
i	120-12-7Anthracene	0.98IU	i I
i	206-44-0Fluoranthene	0.98[U	i ł
i	129-00-0Pyrene	0.98 U	i I
i	56-55-3Benzo (a) anthracene	0.9810	i I
i	205-99-2Benzo (b) fluoranthene		i I
i	207-08-9Benzo(k)fluoranthene		i I
i	50-32-8Benzo (a) pyrene		i I
i	193-39-5Indeno (1, 2, 3-cd) pyrene		il
i	53-70-3Dibenzo(a,h)anthracene		il
i	191-24-2Benzo (ghi) perylene		i١
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DATA VALIDATION COPY

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FORM I SV-1

OLM03.0

1A	EPA SAMPLE NO.
VOLATILE ORGANICS ANALYSIS	DATA SHEET
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
<pre>% Moisture: not dec</pre>	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 UNIT (ug/L or ug/Kg) UC		
108-88-3 100-41-4	Benzene Toluene Ethylbenzene_ Xylenes (tota		3.6 1.0 20.4 130	11 2 11 1

FORM I VOA

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OLM03.0

DATA VALIDATION COPY

		1B		
SVOA	ORGANICS	ANALYSIS	DATA	SHEET

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BF2042 Lab Name: GENERAL ENGINEERING LABOR Contract: N/A Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 74043 Lab Sample ID: 74043004 Matrix: (soil/water) WATER 1020 (g/mL) ML Lab File ID: S4A2925 Sample wt/vol: Date Received: 01/27/03 Level: (low/med) LOW % Moisture: _____ decanted: (Y/N)____ Date Extracted:01/28/03 1.00(mL) Date Analyzed: 01/29/03 Concentrated Extract Volume: Dilution Factor: 1.0 Injection Volume: 0.5(uL)

GPC Cleanup: (Y/N) N

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L		Q
	_		ł		1	I
91-20-3	Naphthalene		1		40.51	I=
91-57-6	2-Methylnaphtha	lene	1		32.01	1=
91-58-7	2-Chloronaphtha	lene	1		0.98 U	16
208-96-8	Acenaphthylene_		1		0.98 U	
83-32-9	Acenaphthene		I		0.98 U	1
86-73-7	Fluorene		1		0.98 U	
85-01-8	Phenanthrene		1		0.98 U	
120-12-7	Anthracene		1		U.98[U	1
206-44-0	Fluoranthene		1		U.98 U	- 1
129-00-0	Pyrene		1		0.9810	i l
56-55-3	Benzo(a)anthrac	ene	1		0.9810	i i i
205-99-2	Benzo(b)fluoran	thene			0.98JU	il
207-08-9	Benzo(k)fluoran	thene	1		0.98 U	i i i
50-32-8	Benzo (a) pyrene_				0.98JU	i i
193-39-5	Indeno (1, 2, 3-cd)pyrene	1		0.9810	i l
53-70-3	Dibenzo (a, h) ant	hracene	I		0.9810	i i
191-24-2	Benzo (ghi) peryl	ene	! 1		0.9810	

FORM I SV-1

OLM03.0

1A	EPA SAMPLE NO.
VOLATILE ORGANICS ANALYSIS DATA S	
Lab Name: GENERAL ENGINEERING LABS Contract	1 BF2044
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
<pre>% Moisture: not dec</pre>	Date Analyzed: 02/05/03
GC Column: DB-624 ID: 0.25 (mm)	Dilution Factor: 1.0
Soil Extract Volume:(uL)	Soil Aliquot Volume:(u

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/		
		 	3.5 1.0 U 20.5 130	1411

FORM I VOA

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EPA SAMPLE NO.

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Tab Name: GENERAT EN	SINEERING LABOR Contract	BF2044
Lab Name: GENERAL EN	SIMERING EADOR CONCIDEN	· · · · · · · · · · · · · · · · · · ·
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
<pre>% Moisture:</pre>	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. COMP	OUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/I		Q
Ţ					! !
	91-20-3Naph	thalene		-	F
	91-57-62-Me	thylnaphthal	lene	15.3	IIS
1	91-58-72-Ch	loronaphthal	ene	0.99	N U
ł	208-96-8Acen	aphthylene_		0.99	U I
1	83-32-9Acen	aphthene		0.99	ΙŪ Ι
1	86-73-7Fluo	rene	1	0.99	ן טן
1	85-01-8Phen	anthrene		0.99	iu i
Ì	120-12-7Anth	racene	I	0.99	ίυ ί
Ì	206-44-0Fluo	ranthene		0.99	io i
Ì	129-00-0Pyre	ne		0.99	σί
Ì	56-55-3Benz	o(a)anthrace	ene	0.99	σ
Ì	205-99-2Benz	o(b)fluorant	hene	0.99	υ
È	207-08-9Benz			0.99	σ
ł	50-32-8Benz			0.99	υί
Í	193-39-5Inde	no(1,2,3-cd)	pyrene	0.99	υί
Í	53-70-3Dibe	nzo(a,h)anth	iracene	0.99	iu i
Í	191-24-2Benz	o(ghi)peryle	ene	0.99	σ
I.			i		ii↓

FORM I SV-1

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET	EPA SAMPLE NO.
Lab Name: GENERAL ENGINEERING LABS Contract: N/A	BF2142
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
<pre>% Moisture: not dec Date Analyzed:</pre>	02/05/03
GC Column: DB-624 ID: 0.25 (mm) Dilution Facto	r: 1.0
Soil Extract Volume:(uL) Soil Aliquot V	olume:(uL)
CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L	
108-88-3Toluene	
100-41-4Ethylbenzene 1330-20-7Xylenes (total) 290	9.91 297_ED I= II

OLM03.0

DATA VALIDATION COPY

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		1B		
SVOA	ORGANICS	ANALYSIS	DATA	SHEET

BF2142 Lab Name: GENERAL ENGINEERING LABOR Contract: N/A 1 SDG No.: 74043 Lab Code: N/A Case No.: N/A SAS No.: N/A Lab Sample ID: 74043006 Matrix: (soil/water) WATER Sample wt/vol: 1010 (g/mL) ML Lab File ID: S4A2927 Date Received: 01/27/03 Level: (low/med) LOW Date Extracted:01/28/03 % Moisture: _____ decanted: (Y/N)____ Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/30/03 Dilution Factor: 1.0 Injection Volume: 0.5(uL)

GPC Cleanup: (Y/N) N

	CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/	
ì	91-20-3	Naphthalene	i	37.9jj=
Ì		2-Methylnaphtha		2.4
Ì		2-Chloronaphtha		0.99 U U
Ì		Acenaphthylene		0.9910 1
Ì		Acenaphthene		0.9910
T		Fluorene		0.9910
ł	85-01-8	Phenanthrene		0.99 0
1	120-12-7	Anthracene	I	0.9910 1
Ì	206-44-0	Fluoranthene		0.9910 1
I	129-00-0	Pyrene	1	0.9910 1
1	56-55-3	Benzo (a) anthrad	cene	0.9910 1
ł	205-99-2	Benzo(b)fluoran	thene	0.99 0
1	207-08-9	Benzo(k)fluoran	nthenel	0.99 0
1	50-32-8	Benzo (a) pyrene_		0.9910 1
Ì		Indeno (1, 2, 3-co		0.99 0
Ì		Dibenzo (a, h) ant		0.99 0
I		Benzo (ghi) pery		0.9910
1.			l	II*

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	1A		EPA SAMPLE NO.
VOLATILE	ORGANICS ANALYSIS DATA S	HEET . 	BF2242
Lab Name: GENERAL ENG	GINEERING 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
<pre>% Moisture: not dec.</pre>		Date Analyzed:	02/05/03
GC Column: DB-624	ID: 0.25 (mm)	Dilution Facto	r: 2.0
Soil Extract Volume:	(uL)	Soil Aliquot V	olume:(uL)

	CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/I	
Ì	71-43-2 108-88-3 100-41-4 1330-20-7	-Toluene		47.0

OLM03.0

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18 SVOA ORGANICS ANALYSIS DATA SHEET

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Lab Name: GENERAL ENG	INEERING LABOR Contract:	BF2242
	Lase No.: N/A SAS No.:	
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
<pre>% Moisture:</pre>	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

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

	CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L		Q
Î	· · · · · · · · · · · · · · · · · · ·			1			I
	91-20-3	Naphthalene		I		110	
F	91-57-6	2-Methylnaphtha	lene	I		42.01_	1=
1	91-58-7	2-Chloronaphtha	lene	I		0.9910	14
	208-96-8	Acenaphthylene_				0.9910	1.
	83-32-9	Acenaphthene				0.99 U	11
	86-73-7	Fluorene				0.99 U	
	85-01-8	Phenanthrene		I		0.9910	
1		Anthracene				0.99 U	
1	206-44-0	Fluoranthene		I		0.9910	11
	129-00-0	Pyrene		I		0.99 U	
1	56-55-3	Benzo (a) anthrac	ene	I		0.9910	11
	205-99-2	Benzo(b)fluoran	thene	I		0.9910	
I	207-08-9	Benzo(k)fluoran	thene	I		0.9910	1
ł	50-32-8	Benzo(a)pyrene_		I		0.9910	11
ł	193-39-5	Indeno (1, 2, 3-cd)pyrene	I		0.9910	11
1	53-70-3	Dibenzo(a,h)ant	hracene	I		0.99 U	11
1	191-24-2	Benzo(ghi)peryl	ene			0.99 U	11
١.		· · · · · · · · · · · · · · · · · · ·		I		1	I

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DATA VALIDATION COPY

1A Volatile organics analysis data :	EPA SAMPLE NO. Sheet
Lab Name: GENERAL ENGINEERING LABS Contract	BF3242
Lab Code: N/A Case No.: N/A SAS No	
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	
		!		 I
71-43-2	Benzene		1.0 U	10
108-88-3	Toluene		1.0 0	11
100-41-4	Ethylbenzene_		1.00	1
	Xylenes (tota		1.0 U	
	-	l		_i_

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		1B		
SVOA	ORGANICS	ANALYSIS	DATA	SHEET

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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
<pre>% Moisture: decanted: (Y/N)</pre>	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

91-57-62-Methylnaphthalene 0.99 U 91-58-72-Chloronaphthalene 0.99 U 208-96-8Acenaphthylene 0.99 U 83-32-9Acenaphthene 0.99 U	5
91-57-62-Methylnaphthalene 0.99 U 91-58-72-Chloronaphthalene 0.99 U 208-96-8Acenaphthylene 0.99 U 83-32-9Acenaphthene 0.99 U	5
91-57-62-Methylnaphthalene 0.99 U 91-58-72-Chloronaphthalene 0.99 U 208-96-8Acenaphthylene 0.99 U 83-32-9Acenaphthene 0.99 U	-
91-58-72-Chloronaphthalene 0.99 U 208-96-8Acenaphthylene 0.99 U 83-32-9Acenaphthene 0.99 U	u
208-96-8Acenaphthylene 0.99 U 83-32-9Acenaphthene 0.99 U	١
83-32-9Acenaphthene 0.99 U	I.
	1
86-73-7Fluorene 0.99 U	
85-01-8Phenanthrene0.99 U	
120-12-7Anthracene 0.99 U	1
206-44-0Fluoranthene 0.99 U	
129-00-0Pyrene 0.99 U	
56-55-3Benzo(a) anthracene 0.99 U	
205-99-2Benzo(b)fluoranthene 0.99 U	
207-08-9Benzo(k) fluoranthene 0.99 U	
50-32-8Benzo(a)pyrene 0.99 U	1
193-39-5Indeno(1,2,3-cd)pyrene 0.99 U	
53-70-3Dibenzo(a, h) anthracene 0.99 U	
191-24-2Benzo(ghi)perylene 0.99 U	
	₹.

FORM I SV-1

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DATA VALIDATION COPY

VOLATILE	1A ORGANICS ANALYSI	S DATA SHEET	EPA SAMPLE NO.
Lab Name: GENERAL EN	GINEERING LABS	 Contract: N/A	BF3342
		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
<pre>% Moisture: not dec.</pre>		Date Analyzed:	02/05/03
GC Column: DB-624	ID: 0.25 (mm)	Dilution Facto	or: 1.0
Soil Extract Volume:	(uL)	Soil Aliquot V	Volume:(uL)

		CONCENTRA	ATION UN	NITS:
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L

		· · · ·	<u> </u>
•	71-43-2Benzene	1.8	
1	108-88-3Toluene	0.56	C L
1	100-41-4Ethylbenzene	1.0	U 14
Ì	1330-20-7Xylenes (total)	1.0	υ 14
1.		1 <u></u>	I

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SVOA	ORGANICS	ANALYSIS	DATA	SHEET

EPA SAMPLE NO.

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		BF3342
Lab Name: GENERAL ENG	SINEERING 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
ł 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 U (ug/L or ug/Kg)		Q	
91-20-3 91-57-6 91-58-7 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 205-99-2 207-08-9	Naphthalene_ 2-Methylnapht 2-Chloronapht Acenaphthylen Fluorene Fluorene Phenanthrene Fluoranthene Fluoranthene Benzo (a) anthr Benzo (b) fluor	halene	0.22 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98		51
193-39-5 53-70-3	Benzo (a) pyren Indeno (1, 2, 3- Dibenzo (a, h) a Benzo (ghi) per	cd)pyrene nthracene	0.98 0.98 0.98 0.98		•

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	1A		EPA SAMPLE NO.
VOLATILE	ORGANICS ANALYSIS DATA S	HEET _	
Lab Name: GENERAL ENG	GINEERING LABS Contract	: N/A]	BF3442
			•
Lab Code: N/A	Case No.: N/A SAS No.	: N/A SDG I	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
<pre>% Moisture: not dec.</pre>		Date Analyzed:	02/05/03
GC Column: DB-624	ID: 0.25 (mm)	Dilution Factor	r: 1.0
Soil Extract Volume:	(uL)	Soil Aliquot Vo	olume:(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
108-88-3	Benzene Toluene Ethylbenzene_ Xylenes (tota		1.0 U 1.0 U 1.0 U 1.0 U 1.0 U	- - - - -

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SVOA	ORGANICS	ANALYSIS	DATA	SHEET

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Lab Name: GENERAL ENG	SINEERING LABOR Contract:	BF3442
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
<pre>% Moisture:</pre>	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	

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

OMPOUND	(ug/L	or	ua/Ka)	UG/L		0
	-		J. J.			¥
			1			
aphthalene			I		1.11	=
-Methylnaphthal	ene				0.9810	10
-Chloronaphthal	ene		I		0.9810	11
cenaphthylene			I		0.98 U	- F -
cenaphthene					0.98 U	i I
luorene					0.98]U	i I
henanthrene					0.980	il
nthracene					0.98jU	i l
luoranthene					0.98 U	il
vrene			i		0.9810	il
enzo (a) anthrace	ine				0.98ju	- i I
					0.98 U	i t
enzo(k)fluorant	hene		i		0.98 U	ił
enzo(a)pyrene			i i		0.98 U	i l
ndeno (1, 2, 3-cd)	pyrene		i			- i f
ibenzo(a,h)anth	racene		— i			i l
enzo(ahi)pervle	пе		;			
	-Methylnaphthal -Chloronaphthal cenaphthylene cenaphthene luorene henanthrene nthracene yrene enzo (a) anthrace enzo (b) fluorant enzo (b) fluorant enzo (k) fluorant enzo (a) pyrene ndeno (1, 2, 3-cd) ibenzo (a, h) anth	-Methylnaphthalene -Chloronaphthalene cenaphthylene luorene henanthrene nthracene yrene enzo (a) anthracene enzo (b) fluoranthene enzo (k) fluoranthene enzo (a) pyrene ndeno (1, 2, 3-cd) pyrene ibenzo (a, h) anthracene	-Methylnaphthalene -Chloronaphthalene cenaphthylene cenaphthene luorene henanthrene nthracene yrene enzo (a) anthracene enzo (b) fluoranthene enzo (b) fluoranthene enzo (k) fluoranthene enzo (a) pyrene ndeno (1, 2, 3-cd) pyrene ibenzo (a, h) anthracene	aphthalene -Methylnaphthalene -Chloronaphthalene -Chloronaphthalene .cenaphthylene .cenaphthene luorene henanthrene luoranthene luoranthene yrene enzo (a) anthracene enzo (b) fluoranthene enzo (a) pyrene ndeno (1, 2, 3-cd) pyrene ibenzo (a, h) anthracene	-Methylnaphthalene -Chloronaphthalene cenaphthylene cenaphthene luorene henanthrene nthracene iluoranthene yrene enzo (a) anthracene enzo (b) fluoranthene enzo (k) fluoranthene enzo (a) pyrene ndeno (1, 2, 3-cd) pyrene ibenzo (a, h) anthracene	-Methylnaphthalene 0.98 U -Chloronaphthalene 0.98 U .cenaphthylene 0.98 U .cenaphthene 0.98 U .cenaphthene 0.98 U !uorene 0.98 U !uorene 0.98 U !uorene 0.98 U !uorene 0.98 U !uoranthene 0.98 U

FORM I SV-1

OLM03.0

DATA VALIDATION COPY

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

CHAIN OF CUSTODY RECORD

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COC NO .: HLTM21

PROJECT NAME: HA	AF LTM-BFF-Bldg.	. 133			1			1	REQU	JESTE	D P/		ETEI	as	<u> </u>	r T			LABORATORY General Enginee	
PROJECT NUMBER: PROJECT MANAGER	· · · · · · · · · · · · · · · · · · ·	90																	LABORATORY 2040 Savage Ra Charleston, SC	aod
Sampler (Signature)	(P) Pr	ninted Name) Ricia A.C	<u> </u>	1														Bottles/ VI	PHONE NO: (84	13) 556-8171
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH											1		No. of	OVA SCREENING	OBSERVATIONS, COMMENT SPECIAL INSTRUCTIONS
BF3342	1/24/03	1715	WATER		2				╈	\uparrow			\square		+-			Ż		74043001
BF3242	1/24/03	1515	WATER	+	Z			╀╌┾		┼┼	┢		\vdash		+-	\vdash		2		74043000
BF2242	1/24/03	14.40	WATER		2							1				┼╌┞		2		74043003
BF2\$42	1/24/03	1340	WATER		2													Z		74043004
BF2\$44	1/24/03	1340	WATER		Z													Ζ		74043005
BF2142	1/24/03	12.35	WATER		2													Ζ		74043006
				R	5/10/1/0	4	103													
																			· · · · · · · · · · · · · · · · · · ·	
RELINOUISHED BY:	(1) Day	e/Timer RECE	IVED BY:	-	L		Da	te/Tim	•	ΤΟΤΑ		MBEF	R OF	CON	TAINE	RS:	12	- -	Cooler Tempera	ature: 4°C
COMPANY NAME:	1/2	-7/03 COMP	ANY NAME:							Coole	r ID:	ؽ	30	3					FEDEX NUMBE	NIA
RECEIVED BY:	Date	e/Time RELIN	QUISHED BY	:			Da	te/Tim	e											
COMPANY NAME:		COMP	ANY NAME:																	
RELINOWSHED BY:		7/02	WED BY:	<u>e</u>) -		16	te/Tim	-3											
SUMPANT NAME:		450 (DEL				/'	45	0											



CHAIN OF CUSTODY RECORD

COC NO .: HLTM22

800 Oak Ridge Turnplke, Oak F	Ridge, TN 37831 (423)	481-4600			CH		10	r C	US	101	JYI	HE	501	10							11617966
PROJECT NAME: HAA	F LTM-BFF-Bldg.	133					-	1	RE		STED	PAR		TER	3 -T	тт	Т-Т			LABORATORY I General Enginee	
<u></u>	ECT NUMBER: 01-1624-04-2301-200 ECT MANAGER: Patty Stoll																			LABORATORY A 2040 Savage Ra Charleston, SC	aod
Sampler (Signature)		inted Name) ICIA A. ST																	ᆋ上	PHONE NO: (84	.3) 556-8171
Sample ID	Date Collected	ICIA H. OT Time Collected	Matrix	BTEX	PAH														No. of	OVA SCREENING	OBSERVATIONS, COMMENT SPECIAL INSTRUCTIONS
ZF3442	1/24/03	1640	WATER	z														_	4		74643007
BF 1942	1/24/03	1600	WATER	Z	2														1 z		74043008
BF 2142	1/24/03	1235	WARER	2															ż		74043009
BF2Ø44	1/24/03	1340	WATER	2															2		74043010
BFZØ4Z	1/24/03	1340	WATER	2															2		74043011
BF2242	1/24/03	1440	WATER	2															Z		74043012
BF3242	1/24/03	1515	WATER	2																	74043013
BF3342	1/24/03	1715	WATER	2															Z		74043014
THØ311	123/03	0745	WATER	2															2		74043015
<u></u>							_ b _	54						_	=	╞═╪╴		_			
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RELINQUISHED BY:			IVED BY:		_			ate/T					BER	OF C	ONTA	INERS	i: 	22		Cooler Tempera	ature: 9°C
COMPANY NAME: SHC	7		ANY NAME:		-	_	-		57		oler II	D:		6	26						εκ: Ν/Α
RECEIVED BY		a/Tipne RELIN アップ	QUISHED BY	:			Di	ate/T	ime												
COMPANY NAME:	_ ''	COMP	ANY NAME:																		
REHINDUISHED BY:	S 1/2	Tinhe RECE	IVED BY:				Di	ate/T	ime												
COMPANY NAME	- 14	SZ) COMP	PANY NAME:																		

APPENDIX IV

SITE RANKING FORM

FIRST SEMIANNUAL SAMPLING EVENT

JULY 2002

SITE RANKING FORM

Facility	Name:	Former UST	117, B	uildi	ng 7002		Ranke	ed by:	S. Stoller			
County	/: Cha	tham Faci	lity ID #	t: <u>9-</u>	025113*1		Date F	Ranked:	10/4/02			
<u>SOIL C</u>		<u>IINATION</u>										
A.	(Assum	um Concentrati ne <0.660 mg/k				В.		Benzene - num Conce	ntration found	d on	the site	
	was sic	ored on-site.)						≤0.005 mg	g/kg	=	0	
		≤0.660 mg/kg		=	0			>0.005(05 mg/kg	=	1	
		>0.66 - 1 mg/ł	kg	=	10			>0.05 - 1 r	mg/kg	=	10	
		>1 - 10 mg/kg		=	25	*	\boxtimes	>1 - 10 mỹ	g/kg	=	25	
*		>10 mg/kg P-Part A sample Bl		=	50			>10 - 50 n	ng/kg	=	40	
	0AI		2211				•	>50 mg/kg CAP-Part A sa] ampleBF2211	=	50	
C.		o Groundwater elow land surfa										
		>50' bls	= 1									
		>25' - 50' bls	= 2	2								
		>10' - 25' bls	= 5	5								
	\bowtie	\leq 10' bls	= 1	0								
Fill in t	he blan	ks: (A. <u>50</u>)_) + (E	3. <u>2</u>	<u>5</u>) = (<u>75</u>) x (C.	10	_) = (D. <u>7</u>	<u>50</u>)			
GROU	NDWAT	ER CONTAMIN		1								
E.	liquid h	roduct (Nonaqu ydrocarbons; s nition of "sheen	ee Guic			F.	Maxim (One v		ne - ntration at the e located at t		•	
*	\boxtimes	No free produ	ct = 0					≤5 µg/L			= 0	
		Sheen - 1/8"	= 25	50				≥5 μg/⊏ >5 - 100 μ	a/l		= 5	
		>1/8" - 6"	= 50	00		*		>100 - 1,0	0		= 50	
		>6" - 1ft.	= 1,	000					0,000 μg/L		= 50 = 500	
	□ * No :	For every add 100 points = <u>1</u> free product observ	,000 +			T 7003)	D plume	>10,000 µ)	= 300 = 1500	
Fill in t	Fill in the blanks: (E. <u>0</u>) + (F. <u>50</u>) = (G. <u>50</u>)											

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.

Η. Public Water Supply I. Non-Public Water Supply Impacted = 2000Impacted 1000 = 500 <500' = 500 <100' = >500' - ¼ mi = 25 >100' - 500' 25 = ¼ mi - 1 mi >500' - ¼ mi = 10 = 5 >1 mi - 2 mi = 2 >¼ - ½ mi 2 = * \boxtimes > 2 mi \boxtimes = 0 >1⁄2 mi 0 = For lower susceptibility areas only: For lower susceptibility areas only: \square >1 mi = 0>¼ mi 0 = Note: If site is in lower susceptibility area, do not use the shaded areas. For iustification that withdrawal point is not hydraulically connected, see attached text. J. Distance from nearest Contaminant Plume K. Distance from any Free Product boundary to downgradient Surface Waters to basements and crawl spaces **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 = Impacted = 500 <500' = 50 \boxtimes <500' = 50 >500' - 1.000' = 5 >500' - 1.000' = 5 \square >1,000' or = 0 >1.000' = 2 no free product. Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) =50 L. $(G. 50) \times (L. 50) =$ 2500 М. (M. 2500) + (D. <u>750</u>) = N.<u>32</u>50 Ρ. SUSCEPTIBILITY AREA MULTIPLIER \square If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5 \boxtimes All other sites = 1Q. **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 \boxtimes No = 0Fill in the blanks: $(N. 3250) \times (P. 1) = (3250) + (Q. 0)$ = 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

SITE RANKING FORM

Facility Name: Former UST 117, Building 7002								Ranked by: S. Stoller					
County	/: Cha	tham Facil	ity ID #	t: 9-	025113*1		Date F	Ranked:	4/18/03				
SOIL C		<u>IINATION</u>											
A.	(Assum	um Concentratione <0.660 mg/kg				B.		Benzene - num Concer	ntration found	d on	the site		
	was sic	ored on-site.)						≤0.005 mg	j/kg	=	0		
		≤0.660 mg/kg		=	0			>0.0050)5 mg/kg	=	1		
		>0.66 - 1 mg/k	g	=	10			>0.05 - 1 r	ng/kg	=	10		
		>1 - 10 mg/kg		=	25	*	\boxtimes	>1 - 10 mg	g/kg	=	25		
*		>10 mg/kg P-Part A sample BF		=	50			>10 - 50 m	ng/kg	=	40		
	0/1						□ ∗	>50 mg/kg CAP-Part A sa		=	50		
C.		o Groundwater elow land surfa							·				
		>50' bls	= 1										
		>25' - 50' bls	= 2										
		>10' - 25' bls	= 5										
	\bowtie	≤10' bls	= 1	0									
Fill in t	he blan	ks: (A. <u>50</u>)_) + (E	3. <u>2</u>	<u>5</u>) = (<u>75</u>) x (C.	10	_) = (D. <u>7</u>	<u>50</u>)				
<u>GROUI</u>	NDWAT	ER CONTAMIN		l									
E.	liquid h	roduct (Nonaqu ydrocarbons; s nition of "sheen	ee Guic			F.	Maxim (One v		ne - ntration at the e located at t				
*	\boxtimes	No free produ	ct = 0					≤5 µg/L			= 0		
		Sheen - 1/8"	= 25	50				≥o μg/∟ >5 - 100 μ	a/l		= 5		
		>1/8" - 6"	= 50	00		*		>100 - 1,0	-		= 50		
		>6" - 1ft.	= 1,	000									
	□ * No i	For every add 100 points = <u>1</u> free product observ	,000 +			T 7003)	D D Dlume	>10,000 µ	0,000 μg/L g/L 2142 (January 2	003)	= 500 = 1500		
Fill in t	he blan	ks: (E	<u>0</u>)+	(F	<u>50</u>) = (G	<u>50</u>)							

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.

Η. Public Water Supply I. Non-Public Water Supply Impacted = 2000Impacted 1000 = 500 <500' = 500 <100' = >500' - ¼ mi = 25 >100' - 500' 25 = ¼ mi - 1 mi >500' - ¼ mi = 10 = 5 >1 mi - 2 mi = 2 >¼ - ½ mi 2 = * \boxtimes > 2 mi \boxtimes = 0 >1⁄2 mi 0 = For lower susceptibility areas only: For lower susceptibility areas only: \square >1 mi = 0>¼ mi 0 = Note: If site is in lower susceptibility area, do not use the shaded areas. For iustification that withdrawal point is not hydraulically connected, see attached text. J. Distance from nearest Contaminant Plume K. Distance from any Free Product boundary to downgradient Surface Waters to basements and crawl spaces **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 = Impacted = 500 <500' = 50 \boxtimes <500' = 50 >500' - 1.000' = 5 >500' - 1.000' = 5 \square >1,000' or = 0 >1.000' = 2 no free product. Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) =50 L. $(G. 50) \times (L. 50) =$ 2500 М. (M. 2500) + (D. <u>750</u>) = N.<u>32</u>50 Ρ. SUSCEPTIBILITY AREA MULTIPLIER \square If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5 \boxtimes All other sites = 1Q. **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 \boxtimes No = 0Fill in the blanks: $(N. 3250) \times (P. 1) = (3250) + (Q. 0)$ = 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.

APPENDIX V

REIMBURSEMENT APPLICATION

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.

ATTACHMENT A

SUMMARY OF FATE AND TRANSPORT MODELING

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 μ g/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 μ g/L was developed for benzene based on a dilution attenuation factor (DAF) of 8.9. The predicted 2year 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	Predicted Maximum Benzene Concentration (µg/L)											
Wells	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 μ g/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 μ g/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 μ g/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

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.

ATTACHMENT C

CERTIFICATES OF ANALYSIS



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company											
Address :	151 Lafayette Dr. Oak Ridge, Tenn										
Contact:	Leslie Barbour					Re	port Date	Octo	ber 4, 2	2002	
Project:	HAAF Long Ten	m Monitoring						Page	e 1	of	2
	Client Sample	ID:	BF1932		Proje		SAIC00	101			
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		63577001 Water 11-JUL-02 13-JUL-02	16:55	Clier	nt ID:	SAIC03				
Parameter	Oualifier	Result	ClientDL	RL	Units	DF	Analyst	Date	Time	Batcl	h Metho
Semi-Volatiles-GC/MS									1 mil	Dutt	
3510/8270 PAH Exten											
2-Chloronaphthalene	U U	ND	0.392	0.980	ug/L	1	LOF 0	7/17/02	2108	18558	71
2-Methylnaphthalene		ND	0.392	0.980	ug/L ug/L	1	LOI	//1//02	2100	10550	/ 1
Acenaphthene	Ŭ	ND	0.490	0.980	ug/L	1					
Acenaphthylene	Ŭ	ND	0.490	0.980	ug/L	1					
Anthracene	Ŭ	ND	0.490	0.980	ug/L ug/L	1					
Benzo(a)anthracene	Ŭ	ND	0.490	0.980	ug/L ug/L	1					
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L ug/L	1					
				0.980		1					
enzo(b)fluoranthene		ND	0.490		ug/L	1					
-Benzo(ghi)perylene	U U	ND ND	0.490	0.980 0.980	ug/L	1					
Benzo(k)fluoranthene			0.490		ug/L	1					
Dibenzo(a,h)anthrace		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)pyre	ne 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 Volatile Organics Fede	U	ND	0.490	0.980	ug/L	1					
5035/8260B BTEX in .	•			1.00	~						
Benzene	U	ND	0.330	1.00	ug/L	1	RMB (7/17/02	1213	185710	02
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 M		med	· · · · · · · · · · · · · · · · · · ·								
Method	Description			Analyst	Date	Time	-	Batch			
SW846 3510C	3510C BNA L	іq. Ртер-8270С А	nalysis Fed	GRB2	07/16/02	2226					
SW846 8260B	8260B Volatile	s In Liquid Feder	ral	RMB	07/17/02	1213					
The following Analyti	cal Methods were	performed									
Method	Description				Analyst Comm	ents					
1	SW846 8270C										
2	SW846 8260B										
Surrogate recovery	Test		Rece	overy%	Acceptab	le Limit	2				
Surrogate recovery	I (3)		Rece	0 v CI Y 70	Acceptan	ac ramit					

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178




Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn					R	eport Date: Octo	ober 4, 2	2002	
Contact:	Leslie Barbour						-			
Project:	HAAF Long Ten	m Monitoring					Pag	ge 2	of	2
	Client Sample Sample ID:		3F1932 53577001		Proie Clier	ect: at ID:	SAIC00101 SAIC031			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
2-Fluorobiphenyl	3510/827	0 PAH Extend list Liqui	id	41%	(32%	6-109%)	•		
Nitrobenzene-d5	3510/827	0 PAH Extend list Liqui	iđ	48%	(339	6-107%)			
p-Terphenyl-d14	3510/827	0 PAH Extend list Liqui	id	51%	(36%	6-130%)			
Bromofluorobenzene	5035/826	0B BTEX in Liquid Fed	leı	131%	(679	6-136%)			
Dibromofluoromethane	5035/826	OB BTEX in Liquid Fed	leı	106%	(62%	6-148%)			
Toluene-d8	5035/826	0B BTEX in Liquid Fed	leı	104%	(58%	6-139%)			

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.

- Concentration exceeds instrument calibration range
- H Holding time exceeded
- Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J
- Ρ 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.
- Х Lab-specific qualifier - must be fully described in case narrative and data summary package
- Υ QC Samples were not spiked with this compound.

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Certificate of Analysis

Company :	SAIC								
Address :	151 Lafayette Dr	ive							
	Oak Ridge, Tenn								
Contact:	Leslie Barbour					Rep	oort Date: Octol	per 4, 2002	
Project:	HAAF Long Ter	m Monitoring					Page	1 of	2
	-	-							
·	Client Sample	ID:	BF2032		Proje		SAIC00101		
	Sample ID:		63577002		Cher	nt ID:	SAIC031		
	Matrix: Collect Date:		Water						
	Receive Date:		11-JUL-02						
p	Collector:		13-JUL-02 Client						
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Bat	ich Meth
Semi-Volatiles-GC/MS F	ederal								
3510/8270 PAH Extend	ist Liquid								
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF 07/17/02	2209 1855	87 1
2-Methylnaphthalene		11.2	0.490		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		ug/L	1			
Benzo(a)anthracene	U	ND	0.490		ug/L	1			
Benzo(a)pyrene	U	ND	0.490		ug/L	1			
Senzo(b)fluoranthene	U	ND	0.490		ug/L	1			
enzo(ghi)perylene	U	ND	0.490		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		ug/L	1			
Fluorene	U	ND	0.490	0.980	ug/L	1			
Indeno(1,2,3-cd)pyrene	U	ND	0.490		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 Federa	1								
5035/8260B BTEX in Li	guid Federal								
Benzene	•	2.55	0.330	1.00	ug/L	1	RMB 07/17/02	2221 1857	10 2
Ethylbenzene		32.1	0.210		ug/L	1			10 2
Toluene		6.02	0.390		ug/L	1			
Xylenes (total)		136	0.830		ug/L	1			
The following Prep Met	hade were perfo	rmed							
Method	Description			Analyst	Date	Time	Prep Batch		
SW846 3510C		in Dren 82700 Anal	usis Fed	GRB2	07/16/02				
		iq. Prep-8270C Anal	y 515 FCU			2226	185586		
SW846 8260B	8260B Volatile	es In Liquid Federal		RMB	07/17/02	2221	185710		
The following Analytica	l Methods were	performed							
Method	Description			l	Analyst Comm	ents	14		
1	SW846 8270C	·····						-	
2	SW846 8260B								
Surrogate recovery	Test		Rec	overv%	Acceptab	le Limits			
2-Fluorobiphenyl	2510/022	70 PAH Extend list L	iouid	55%	(00)	%-109%)			

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Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn						Re	eport Date:	Octol	oer 4, 2	:002	
Contact:	Leslie Barbour							•				
Project:	HAAF Long Ter	m Monitoring							Page	2	of	2
	Client Sample Sample ID:	ID:	BF20 6357)32 7002		Proie Clien		SAIC0010 SAIC031	1			
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	te	Time	Batch	Method
Nitrobenzene-d5	3510/827	0 PAH Extend lis	st Liquid		55%	(339	6-107%))				
p-Terphenyl-d14	3510/827	0 PAH Extend li	st Liquid		48%	(36%	6-130%))				
Bromofluorobenzene	5035/826	0B BTEX in Liq	uid Fede	1	00%	(679	6-136%))				
Dibromofluoromethane	5035/826	0B BTEX in Liq	uid Fede	1	05%	(62%	6-148%))				
Toluene-d8	5035/826	0B BTEX in Liq	uid Fede	j	02%	(58%	%-13 9%))				

Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- n Analyte found in the sample as well as the associated blank. Concentration exceeds instrument calibration range
- Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- Р 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 х
- QC Samples were not spiked with this compound. Y

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Certificate of Analysis

151 Lafayette Dri	ive								
Oak Ridge, Tenn									
Leslie Barbour					Re	port Date: Oct	ober 4, 2002		
	m Monitoring					Pa	re I of	2	
TIAAP Long Ten	in Molinoring								
Client Sample	ID:	BF2034							
Sample ID:		63577003		Clier	nt ID:	SAIC031			
		Water							
		11-JUL-02	2 14:50						
		13-JUL-02	2						
Qualifier	Result		RL	Units	DF	AnalystDate	Time Ba	tch Meth	
ederal									
ist Liquid									
·U	ND	0.392	0.980	ug/L	1	LOF 07/17/0	2 2229 1855	587 1	
	12.9			ug/L	1			-	
U	ND	0.490	0.980	ug/L	1				
U	ND	0.490	0.980	ug/L	1				
U	ND	0.490	0.980	ug/L	1				
U	ND			ug/L	1				
				ug/L	1				
					1				
					1				
				ug/L	l				
					1				
				-	-				
				-	-				
U					•				
ŦT				-					
				•	-				
	ND	0.490	0.300	ugуL	1				
fuiti l'etterat	2 21	0.220	1.00	ngЛ	1	DMD 07/17/0	2 1242 195	710 2	
	-				-	KMD 0//1//0	2 1245 185	710 2	
	148			ug/L ug/L	1				
hods were perfo	međ								
Description			Analyst	Date	Time	Prep Batcl	 1		
	a Prep-8270C An	alveis Fed							
	• •	•							
ezood volatie	is in ciquiu reucia	l	RMD	0//1//02	1245	185/10			
	performed			Amalanat Commun					
· · · · · · · · · · · · · · · · · · ·				Maryst Comm	ents				
SW846 8260B									
Test		Ree	covery%	Acceptab	le Limits	5			
3510/827	0 PAH Extend list	Liquid	60%	(32)	%-109%)				
	Client Sample ID: Matrix: Collect Date: Receive Date: Collector: Qualifier ederal list Liquid U U U U U U U U U U U U U U U U U U U	HAAF Long Term Monitoring Client Sample ID: Sample ID: Matrix: Collect Date: Receive Date: Collector: Qualifier Result ederal list Liquid U ND U	HAAF Long Term Monitoring Client Sample ID: BF2034 Sample ID: G3577003 Matrix: Water Collect Date: 11-JUL-02 Receive Date: 13-JUL-02 Collector: Client Qualifier Result DL ederal list Liquid U ND 0.392 12.9 0.490 U ND 0.490 IU ND 0.490 U ND 0.490 C U ND 0.490 U ND 0.490 U ND 0.490 IU ND 0.490 U ND 0.490 U ND 0.490 IU ND 0.490 II MD 0.490	HAAF Long Term MonitoringClient Sample ID: $G3577003$ Matrix:Sample ID: $G3577003$ Matrix:WaterCollect Date:11-JUL-0214:50Receive Date:13-JUL-02 ClientQualifierResultUND0.3920.980UND0.4900.980100.49011100	HAAF Long Term MonitoringClient Sample ID:G3577003ProidSample ID:G3577003ClientWaterClientCollect Date:11-JUL-02ClientQualifierResultDLRLUnitsQualifierResultDLRLUnitsQualifierResultDLRLUnitsQualifierResultDLRLUnitsQualifierResultDLRLUnitsQualifierResultDLRLUnitsUND0.390ug/LUND0.4900.980ug/LUND0.4900.980ug/LUND0.4900.980ug/LUND0.4900.980ug/LUND0.4900.980ug/LU <th cols<="" td=""><td>Lesiie Barbour HAAF Long Term Monitoring Client Sample ID: 63577003 Sample ID: 63577003 Matrix: Water Collect Date: 11-JUL-02 14:50 Receive Date: 13-JUL-02 Collector: Client Qualifier Result DL RL Units DF ederal Ital 2.9 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L 1</td><td>Leslie Barbour Pag HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC031 Matrix: Water Collect Date: 11-UL-02 14:50 SAIC031 Receive Date: 13-UL-02 Collector: Client Duits DF AnalystDate ederal Its: Liquid U ND 0.392 0.980 ug/L 1 LOF 07/17/0 U ND 0.490 0.980 ug/L 1 LO 1</td><td>HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Matrix: Water Collect Date: 11.7UL-02 14:50 Receive Date: 13.7UL-02 Collect Date: Client Qualifier Result DL RL Units DF AnalystDate Time Ba ederal 13.7UL-02 14.00 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L</td></th>	<td>Lesiie Barbour HAAF Long Term Monitoring Client Sample ID: 63577003 Sample ID: 63577003 Matrix: Water Collect Date: 11-JUL-02 14:50 Receive Date: 13-JUL-02 Collector: Client Qualifier Result DL RL Units DF ederal Ital 2.9 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L 1</td> <td>Leslie Barbour Pag HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC031 Matrix: Water Collect Date: 11-UL-02 14:50 SAIC031 Receive Date: 13-UL-02 Collector: Client Duits DF AnalystDate ederal Its: Liquid U ND 0.392 0.980 ug/L 1 LOF 07/17/0 U ND 0.490 0.980 ug/L 1 LO 1</td> <td>HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Matrix: Water Collect Date: 11.7UL-02 14:50 Receive Date: 13.7UL-02 Collect Date: Client Qualifier Result DL RL Units DF AnalystDate Time Ba ederal 13.7UL-02 14.00 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L</td>	Lesiie Barbour HAAF Long Term Monitoring Client Sample ID: 63577003 Sample ID: 63577003 Matrix: Water Collect Date: 11-JUL-02 14:50 Receive Date: 13-JUL-02 Collector: Client Qualifier Result DL RL Units DF ederal Ital 2.9 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L 1	Leslie Barbour Pag HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC031 Matrix: Water Collect Date: 11-UL-02 14:50 SAIC031 Receive Date: 13-UL-02 Collector: Client Duits DF AnalystDate ederal Its: Liquid U ND 0.392 0.980 ug/L 1 LOF 07/17/0 U ND 0.490 0.980 ug/L 1 LO 1	HAAF Long Term Monitoring Project: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Sample ID: 63577003 Client ID: SAIC00101 Matrix: Water Collect Date: 11.7UL-02 14:50 Receive Date: 13.7UL-02 Collect Date: Client Qualifier Result DL RL Units DF AnalystDate Time Ba ederal 13.7UL-02 14.00 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 LOF 07/17/02 2229 1853 U ND 0.490 0.980 ug/L 1 U ND 0.490 0.980 ug/L

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Certificate of Analysis

Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn						Re	eport Date:	Octob	рег 4, 2	:002	
Contact:	Leslie Barbour							•		,		
Project:	HAAF Long Ter	m Monitoring							Page	2	of	2
	Client Sample Sample ID:	ID:	BF20 63577			Proie Clien	ect: at ID:	SAIC0010 SAIC031	1			
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	te	Time	Batch	n Method
Nitrobenzene-d5	3510/827	0 PAH Extend list L	.iquid		63%	(339	6-107%))				
p-Terphenyl-d14	3510/827	0 PAH Extend list L	iquid		70%	(36%	6-130%))				
Bromofluorobenzene	5035/826	0B BTEX in Liquid	Fede	1	07%	(679	6-136%))				
Dibromofluoromethane	5035/826	0B BTEX in Liquid	Fede	1	03%	(629	6-148%))				
Toluene-d8	5035/826	0B BTEX in Liquid	Fede	1	05%	(58%	%-139%))				

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- Holding time exceeded
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- The response between the confirmation column and the primary column is >40%D P
- 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 Х
- Y QC Samples were not spiked with this compound.

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Certificate of Analysis

Company :	SAIC									
Address :	151 Lafayette Dri	ive								
Address .	Oak Ridge, Tenn									
	-					Rep	ort Date: Octo	ber 4, 200	2	
Contact:	Leslie Barbour									
Project:	HAAF Long Terr	m Monitoring					Pag	e 1 c	of 2	2
	Client Sample	D:	BF2132		Proje	ect:	SAIC00101			
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		63577004 Water 11-JUL-02 13-JUL-02 Client	15:05	Clier	nt ID:	SAIC031			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time B	atch	Metho
emi-Volatiles-GC/MS F	ederal						_	······································	<u> </u>	
3510/8270 PAH Extend	list Liouid									
2-Chloronaphthalene		41.5	0.392	0.980	ug/L	1	LOF 07/17/02	2250 185	5587	1
2-Methylnaphthalene		1.77	0.490	0.980	ug/L	1	101 0/11/02	, 22,50 10.		
Acenaphthene	U	ND	0.490	0.980	ug/L	1				
Acenaphthylene	Ŭ	1.76	0.490	0.980	ug/L	i				
Anthracene	U	ND	0.490	0.980	ug/L	1				
Benzo(a)anthracene	Ŭ	ND	0.490	0.980	ug/L	1				
Benzo(a)pyrene	Ŭ	ND	0.490	0.980	ug/L	1				
Renzo(b)fluoranthene	Ŭ	ND	0.490	0.980	ug/L	1				
enzo(ghi)perylene	Ŭ	ND	0.490	0.980	•	1				
-Benzo(k)fluoranthene	U	ND	0.490	0.980	ug/L	1				
Dibenzo(a,h)anthracene		ND			ug/L	1				
Fluoranthene	: U U		0.490	0.980	ug/L	I				
	U	ND	0.490	0.980	ug/L	1				
Fluorene	TI	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				
olatile Organics Federa	1									
5035/8260B BTEX in Li	quid Federal									
Benzene	E	172	0.330	1.00	ug/L	1	RMB 07/17/02	2 1313 18	5710	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	2 0058 18	5710	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 Met	hods were perfor	med								
Method	Description			Analyst	Date	Time	Prep Batch			
W846 3510C	3510C BNA L	iq. Prep-8270C Ana	lysis Fed	GRB2	07/16/02	2226	185586			
SW846 8260B		s In Liquid Federal	=	RMB	07/17/02	1313	185710			
SW846 8260B		s In Liquid Federal		RMB	07/18/02	0058	185710			
	1 Mothod	• • - F ••								
The following Analytica Method	Description	performed			nalyst Comm	ents				
>				P	mayor comm					

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Certificate of Analysis

Company : Address :	SAIC 151 Lafayette Driv	/e										
	Oak Ridge, Tennes	ssee 37831					D	eport Date:	Oate	abor 1.7	002	
Contact:	Leslie Barbour						K	port Date:	Oca	JUEI 4, 2	.002	
Project:	HAAF Long Term	Monitoring							Pag	ge 2	of	2
	Client Sample II Sample ID:	D:	BF21 6357			Proie Clien	ect: nt ID:	SAIC001 SAIC031				
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystI	Date	Time	Batch	Method
2	SW846 8260B		·									
3	SW846 8260B											
Surrogate recovery	Test			Recove	ery %	Acceptabl	le Limit	5				
2-Fluorobiphenyl	3510/8270	PAH Extend list I	Liquid		67%	(329	%-109%)				
Nitrobenzene-d5		PAH Extend list I	-		70%	(339	%-107%)				
p-Terphenyl-d14	3510/8270	PAH Extend list I	Liquid		67%	(369	%-130%)				
Bromofluorobenzene	5035/8260	B BTEX in Liquic	i Fede		99%	(67%	%-136%))				
Dibromofluoromethane	5035/8260	B BTEX in Liquid	l Fede	J	04%	(629	%-148%)				
Toluene-d8	5035/8260	B BTEX in Liquic	l Fede	1	03%	(589	%-139%)				
nofluorobenzene	5035/8260	B BTEX in Liquic	d Feder	1	06%	(679	%-136%)				
omofluoromethane	5035/8260	B BTEX in Liquic	d Fede	i	04%		%-148%					
Toluene-d8	5035/8260	B BTEX in Liquic	d Fede	3	04%	(589	%-139%)				
UI Uncertain identifi X Lab-specific qual	ss than amount rep eater than amount the sample as well ceeds instrument c eeded ated value. The re ween the confirmat pound was analyz ication for gamma	ported reported as the associate alibration range sult was greater tion column and ed for but not de spectroscopy. y described in ca	than the the prim etected al	ary colu bove the	mn is >409 detection l	%D imit	reportin	ng limit.				
The above sample is	reported on an "as	s received" basis	s.									
Where the analytical r requirements of the N							t all of t	the				
This data report has be standard operating pro- Valeue b								nc.				

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Certificate of Analysis

Company :	SAIC									
Address :	151 Lafayette Dri	ive								
Address .	Oak Ridge, Tenn									
	ouk Riege, remi	23500 57051				Rej	port Date: Octo	ber 4, 2	002	
Contact:	Leslie Barbour						-			
Project:	HAAF Long Ter	m Monitoring					Page	e 1	of	2
	Client Sample	D:	BF2232		Proie		SAIC00101			
	Sample ID:		63577005		Clier	nt ID:	SAIC031			
	Matrix:		Water							
	Collect Date: Receive Date:		11-JUL-02							
	Collector:		13-JUL-02 Client							
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Metho
emi-Volatiles-GC/MS F	ederal									
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				
Renzo(b)fluoranthene	U	ND	4.90	9.80	ug/L	10				
enzo(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		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				
olatile Organics Federa										
5035/8260B BTEX in Lie	quid 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 Met		med								
Method	Description			Analyst	Date	Time	Prep Batch			
W846 3510C	3510C BNA Li	q. Prep-8270C Ar	alysis Fed	GRB2	07/16/02	2226	185586			
W846 8260B	8260B Volatile	s In Liquid Federa	al	RMB	07/17/02	1344	185710			
SW846 8260B		s In Liquid Federa		RMB	07/18/02	0032				
The following Analytica	l Methods were 1	performed								
Method	Description			A	Analyst Comm	ents				
	SW846 8270C									

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Certificate of Analysis

Company Address :	: SAIC 151 Lafayette Driv Oak Ridge, Tenne						n			1000	
Contact:	Leslie Barbour						ĸ	eport Date: Oct	ober 4, 2	2002	
Project:	HAAF Long Tem	n Monitoring						Pa	ge 2	of	2
	Client Sample I Sample ID:	D:	BF2232 635770			Proie Clier	ect: nt ID:	SAIC00101 SAIC031			
Parameter	Qualifier	Result]	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
2	SW846 8260B										
3	SW846 8260B										
Surrogate recovery	Test		F	Recove	ry %	Acceptabl	le Limit	s			
2-Fluorobiphenyl	3510/8270	PAH Extend list I	Liquid		79%	(329	%-109%)			
Nitrobenzene-d5	3510/8270	PAH Extend list I	Liquid	1	45% *	(339	%-107%)			
p-Terphenyl-d14	3510/8270	PAH Extend list L	Liquid		57%	(369	%-130%)			
Bromofluorobenzene	5035/8260	B BTEX in Liquid	1 Fede	1	.06%	(679	%-136%)			
Dibromofluoromethane	5035/8260	B BTEX in Liquid	i Fede	1	02%	(629	%-148%)			
Toluene-d8	5035/8260	B BTEX in Liquid	i Fede	1	04%	(585	%-13 <mark>9</mark> %)			
⁻ omofluorobenzene	5035/8260	B BTEX in Liquid	1 Fede		99 %	(679	%-136%)			
romofluoromethane	5035/8260)B BTEX in Liquid	1 Fede	1	04%	(629	%-148%)			
Toluene-d8	5035/8260)B BTEX in Liquid	1 Feder	1	.03%	(589	<i>‰-139%</i>)			
_	nis report are define										
> Actual result is g	less than amount reg greater than amount	t reported									
	n the sample as wel		d blank.								
	xceeds instrument c	alibration range									
H Holding time ex J Indicates an estin			Alaan Alaa J a			1		. .			
P The response be	mated value. The re tween the confirmation	tion column and	the primer		n limit, dut me is > 400	less than the	reporti	ng limit.			
U Indicates the co	mpound was analyz	zed for but not de	etected above	y coitti ve the	detection li	mit					
	ification for gamma		active above	i c uic	uccentral II	11111					
	alifian must he full				1.4						

- 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 Dr	ive								
	Oak Ridge, Tenn									
Castast	Leelie Deekeur					Re	port Date: Oct	ober 4, 2	2002	
	Leslie Barbour						D		. 6	•
Project:	HAAF Long Ter	m Monitoring					Pag	ge l	of	2
	Client Sample	ID:	BF3232		Ртоје		SAIC00101			
	Sample ID:		63577006		Clier	nt ID:	SAIC031			
	Matrix:		Water							
	Collect Date: Receive Date:		11-JUL-02							
	Collector:		13-JUL-02 Client							
Parameter	Qualifier	Result	DL		Units	DF	AnalystDate	Time	Batch	Metho
emi-Volatiles-GC/MS F	ederal		· · · · · · · · · · · · · · · · · · ·							
3510/8270 PAH Extend	list Liquid									
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	LOF 07/17/0	2 2331	185587	1
2-Methylnaphthalene		2.23	0.490	0.980	ug/L	1				
Acenaphthene	U	ND	0.490		ug/L	1				
Acenaphthylene	U	ND	0.490		ug/L	1				
Anthracene	U	ND	0.490		ug/L	1				
Benzo(a)anthracene	U	ND	0.490		ug/L	1				
Benzo(a)pyrene	U	ND	0.490		ug/L	1				
Renzo(b)fluoranthene	U	ND	0.490		ug/L	1				
enzo(ghi)perylene	U	ND	0.490		ug/L	1				
Benzo(k)fluoranthene	U	ND	0.490		ug/L	1				
Dibenzo(a,h)anthracene		ND	0.490		ug/L	ł				
Fluoranthene	U	ND	0.490		ug/L	1				
Fluorene	U	ND	0.490		ug/L	1				
Indeno(1,2,3-cd)pyrene	U	ND	0.490		ug/L	1				
Naphthalene		7.11	0.108		ug/L	1				
Phenanthrene	U	ND	0.490		ug/L	1				
Pyrene	U	ND	0.490	0.980	ug/L	1				
Volatile Organics Federa	d .									
5035/8260B BTEX in Lie	quid Federal									
Benzene		1.68	0.330) 1.00	ug/L	1	RMB 07/18/0	2 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 Met	hods were perfo	med								
Method	Description			Analyst	Date	Time	Prep Batch	 1		
SW846 3510C	3510C BNA L	iq. Prep-8270C An	alvsis Fed	GRB2	07/16/02	2226				
SW846 8260B		s In Liquid Federa		RMB	07/18/02	0006				
5 # 040 82000	S200B Volatile	S III LIQUIU FEUCIA	I	KND	0//18/02	0000	185710			
The following Analytica		performed								
Method	Description			1	Analyst Comm	ents				
1	SW846 8270C								· · · · · · · · · · · · · · · · · · ·	
2	SW846 8260B									
Surrogate recovery	Test		Re	covery%	Acceptab	le Limits	;			
ㆍ Fluorobiphenvl	3510/827	0 PAH Extend list					· · · · · · · · · · · · · · · · · · ·			·······
가 Fluorobiphenyl	3510/827	0 PAH Extend list	Liquiđ	68%		%-109%)	· · · · · · · · · · · · · · · · · · ·			

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Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn						R	eport Date:	Octol	ber 4, 2	2002	
Contact:	Leslie Barbour									,		
Project:	HAAF Long Ter	m Monitoring							Page	2	of	2
	Client Sample Sample ID:	ID:	BF323 635770	-		Proje Clier	ect: nt ID:	SAIC0010 SAIC031)1			
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	ite	Time	Batch	Method
Nitrobenzene-d5	3510/827	0 PAH Extend lis	t Liquid		70%	(339	6-107%)				
p-Terphenyl-d14	3510/827	0 PAH Extend lis	t Liquid		66%	(369	%-130%)				
Bromofluorobenzene	5035/826	OB BTEX in Liqu	id Fede		101%	(679	%-136%))				
Dibromofluoromethane	5035/826	0B BTEX in Liqu	uid Feder		105%	(629	%-148%))				
Toluene-d8	5035/826	0B BTEX in Liqu	id Fede		101%	(589	%-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 >
- m Analyte found in the sample as well as the associated blank. Concentration exceeds instrument calibration range
- Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- Р The response between the confirmation column and the primary column is >40%D
- Indicates the compound was analyzed for but not detected above the detection limit U
- UI Uncertain identification for gamma spectroscopy.
- Lab-specific qualifier must be fully described in case narrative and data summary package Х
- Y QC Samples were not spiked with this compound.

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² -Fluorobipheny		······································	70 PAH Extend list		65%		2%-109%)	·			
Surrogate reco)verv	Test		P	covery%	Accepta	ble Limit:	5			
2		SW846 8260B									
1		SW846 8270C	··								
Method	Analytica	Description	periorineu			Analyst Com	nents				
The following	Analytical	l Methods were	nerformed								
SW846 8260B			les In Liquid Federa		RMB	07/18/02	0242				
SW846 3510C		3510C BNA I	iq. Prep-8270C Ar	alysis Fed	GRB2	07/16/02	2226	185586			
Method		Description			Analyst	Date	Time	e Prep Batch			
	Prep Metl	hods were perfo	rmed								
	.,	U	112	0.05	0 5.00	ugr	1				
Xylenes (tota	h	U U	ND	0.39		ug/L ug/L	1				
Ethylbenzene Toluene		U U	ND ND	0.21 0.39		ug/L	1				
Benzene		J	0.990	0.33		ug/L.	1	RMB 07/18/02	0242	185710	2
5035/8260B B	TEX in Liq		0.000	_							
Volatile Organi											
Pyrene		U.	ND	0.49	0 0.980	ug/L	1				
Phenanthrene		U	ND	0.49		ug/L	1				
Naphthalene		U	ND	0.10		ug/L	1				
Indeno(1,2,3-	cd)pyrene	U	ND	0.49		ug/L	ī				
Fluorene		Ŭ	ND	0.49		ug/L	1				
Fluoranthene		Ŭ	ND	0.49		ug/L	1				
Dibenzo(a,h)			ND	0.49		ug/L ug/L	1				
-Benzo(k)fluo		U	ND ND	0.49 0.49		ug/L ug/L	1				
enzo(b)fluo enzo(ghi)pe		U U	ND ND	0.49		ug/L	1				
Benzo(a)pyre Benzo(b)fluo		U U	ND ND	0.49		ug/L	1				
Benzo(a)anth		U	ND	0.49		ug/L	1				
Anthracene		U	ND	0.49		ug/L	1				
Acenaphthyle	ene	U	ND	0.49		ug/L	1				
Acenaphthen		U	ND	0.49		ug/L	1				
2-Methylnaph		U	ND	0.49	0 0.980	ug/L	1				
2-Chloronaph	thalene	U	ND	0.39	2 0.980	ug/L	1	LOF 07/17/02	2351	185587	1
3510/8270 PA	H Extend l	ist Liquid									
Semi-Volatiles-	GC/MS Fe	ederal						· · · · · · · · · · · · · · · · · · ·			
Parameter		Qualifier	Result	D	L RL	Units	DF	AnalystDate	Time	Batch	Metho
		Collect Date: Receive Date: Collector:		11-JUL-0 13-JUL-0 Client							
		Sample ID: Matrix:		63577007 Water	1	-		0.10001			
		Client Sample	EID:	BF3332	_		iect: ent ID:	SAIC00101 SAIC031			
Pro	oject:	HAAF Long Te	erm Monitoring					Pag	e l	of	2
Co	ntact:	Leslie Barbour						port Dute. Otto		2002	
		Oak Riuge, Ten	nessee 57851				Re	eport Date: Octo	ber 4	2002	
Ad		151 Lafayette D Oak Ridge, Ten									
		IEI I stand D									

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Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn						R	eport Date:	Octoł	oer 4, 2	2002	
Contact:	Leslie Barbour								•••••			
Project:	HAAF Long Ter	m Monitoring							Page	2	of	2
	Client Sample Sample ID:	ID:	BF33 6357			Proje Clier	ect: nt ID:	SAIC0010 SAIC031	1			
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	ite	Time	Batch	Method
Nitrobenzene-d5	3510/827	0 PAH Extend list	Liquid		68%	(339	%-107%)				
p-Terphenyl-d14	3510/827	0 PAH Extend list	Liquid		53%	(369	%-130% [*])				
Bromofluorobenzene	5035/826	OB BTEX in Liqui	d Fede		115%	(679	%-136%)				
Dibromofluoromethane	5035/826	0B BTEX in Liqui	d Fede		105%	(629	%-148%)				
Toluene-d8	5035/826	0B BTEX in Liqui	id Fede		105%	(584	%-139%)				

Notes:

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Certificate of Analysis

Company :	SAIC								
Address :	151 Lafayette Dr	rive							
	Oak Ridge, Tenn					n		4 0000	
Contact:	Leslie Barbour					Rep	ort Date: Octol	xer 4, 2002	
Project:	HAAF Long Ter	m Monitoring					Page	l of	2
	Client Sample	ID:	BF3432		Proje		SAIC00101		
	Sample ID:		63577008		Clier	nt ID:	SAIC031		
	Matrix:		Water						
	Collect Date:		11-JUL-02	17:15					
	Receive Date: Collector:		13-JUL-02 Client						
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Batch	Metho
emi-Volatiles-GC/MS F	ederal								
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			
Penzo(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		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 Dharastharas		5.84	0.108	0.980	ug/L	1			
Phenanthrene	U U	ND	0.490	0.980	ug/L	1			
Pyrene Volatile Organics Federa		ND	0.490	0.980	ug/L	1			
5035/8260B BTEX in Lid									
Benzene	U	ND	0.330	1.00	ug/L	1	RMB 07/18/02	1156 185710	2
Ethylbenzene	Ŭ	ND	0.210	1.00	ug/L	1	King 07/16/02	1150 165710	4
Toluene	Ŭ	ND	0.390	1.00	ug/L	1			
Xylenes (total)	Ũ	ND	0.830	3.00	ug/L	1			
The following Prep Met	hads were nerfa	rmed							
Method	Description			Analyst	Date	Time	Prep Batch		
SW846 3510C	3510C BNA L	iq. Prep-8270C Analys	is Fed	GRB2	07/16/02	2226	185586		
SW846 8260B		es In Liquid Federal		RMB	07/18/02	1156	185710		
The following Analytica	l Methods were	performed							
Method	Description			<i>I</i>	Analyst Comm	ents			
1	SW846 8270C								
2	SW846 8260B								
Surrogate recovery	Test		Rec	overy%	Acceptab	le Limits			
? Fluorobiphenyl	3510/827	70 PAH Extend list Liq		75%		%-109%)			

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Company : Address :	SAIC 151 Lafayette Dr Oak Ridge, Tenn						R	eport Date:	Octo	per 4, 2	2002	
Contact:	Leslie Barbour							-poir =				
Project:	HAAF Long Ter	m Monitoring							Page	2	of	2
	Client Sample Sample ID:	ID:	BF34 6357	432 7008		Proie Clier	ect: nt ID:	SAIC0010 SAIC031	1			
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	ite	Time	Batch	n Method
Nitrobenzene-d5	3510/827	0 PAH Extend list	Liquid		74%	(339	%-107%))				· · -
p-Terphenyl-d14	3510/827	0 PAH Extend list	Liquid		81%	(369	%-130%))				
Bromofluorobenzene	5035/826	0B BTEX in Liqu	id Fede	1	26%	(679	%-136%))				
Dibromofluoromethane	5035/826	0B BTEX in Liqu	id Fede	1	05%	(629	%-148%))				
Toluene-d8	5035/826	0B BTEX in Liqu	id Fede	1	05%	(589	%-139%)				

Notes:

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- Actual result is greater than amount reported >
- Analyte found in the sample as well as the associated blank. Concentration exceeds instrument calibration range
- Holding time exceeded
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- Ρ 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 х
- QC Samples were not spiked with this compound. Υ

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Company :	SAIC									
Address :	151 Lafayette Dri	ve								
riddross .	Oak Ridge, Tenne									
Contact:	Leslie Barbour					Re	port Date: Octo	ber 4, 2	002	
Project:	HAAF Long Terr	n Monitoring					Page	e 1	of	2
	Client Sample I	D:	TBH012		Proj	iect:	SAIC00101			
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		63577009 Water 11-JUL-02 13-JUL-02 Client		Clie	nt ID:	SAIC031			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Metho
Volatile Organics Feder	ral									•
5035/8260B BTEX in L	iquid 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 Me	ethods were perform	med								
Method	Description			Analyst	Date	Time	Prep Batch			
46 8260B	8260B Volatiles	s In Liquid Federal		RMB	07/17/02	1045	185710			
\sim							100110			
The following Analytic Method	cal Methods were p Description	erformed			Analyst Comm	onto	···· ·· <u></u>		••• • •••• •	
1	SW846 8260B					ешіз				
•	5 11 040 02002									
Surrogate recovery	Test		Rec	overy %	Acceptal	ole Limits	s			
Bromofluorobenzene	5035/8260	OB BTEX in Liquid Fe	ede	125%	(67	/%-1 36 %)				
Dibromofluoromethane	5035/8260	0B BTEX in Liquid Fe	edei	106%	(62	.%-148%)	i i i i i i i i i i i i i i i i i i i			
Toluene-d8	5035/8260	0B BTEX in Liquid Fo	ede	104%	(58	\$%-139%)				
Notes: The Qualifiers in thi	is report are define	ed as follows :								
< Actual result is le	ess than amount re	norted								
	reater than amoun									
		ll as the associated b	ylank							
	ceeds instrument of		Julix.							
H Holding time exc										
0		esult was greater that	an the detec	tion limit bu	it less than the	- reportin	o limit			
P The response bet	ween the confirma	ation column and the	e primary co	1000000000000000000000000000000000000	%D	. ispoint	0			
U Indicates the con	npound was analy	zed for but not detec	ted above t	he detection	limit					
UI Uncertain identii	fication for gamma	a spectroscopy.								
		lly described in case	narrative a	nd data summ	nary package					
	e not sniked with				v					

Y QC Samples were not spiked with this compound.

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

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Parameter	Qualifier Result	DL	RL	Units D	F Analyst	Date	Time	Batch	Method
	Sample ID:	63577009		Client ID:	SAIC03	1			
	Client Sample ID:	TBH012		Project:	SAIC00				
Project:	HAAF Long Term Monitorin	ng				Pag	e 2	of	2
Contact:	Leslie Barbour				Report Date:	: 0010	0er 4, 2	2002	
	Oak Ridge, Tennessee 3783	1			Report Date:	· Oato	hord ?	000	
Address :	151 Lafayette Drive								
Company :	SAIC								

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CHAIN OF CUSTODY RECORD

19-3 COC NO .: HETM14

	PROJECT NAME: Hunto	er LTM						<u> </u>			REC	DUES		RAME	TERS	1			1 1		LABORATORY NA General Engineeri	
	PROJECT NUMBER: 01 PROJECT MANAGER:			635	577%															/ Vials:	LABORATORY A 2040 Savage Ro Charleston, SC 2	DDRESS: ad
	Sampler (Signature)		(Printed Nam	e)	UNUN			ă	Z											Bottles	PHONE NO: (84:	3) 556-8171
4	Sample ID	Date Collect		oliected	Matrix		PAH	TCLP BTEX	ICLP L											No. of	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
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		7-11-00			Ŵ		X	21 574, 22, 24											4	a		
-	BF2034	7-11-02			w		X						Č							a		• •
04	BFQ132	7-11-0.			W		X				1. 19 A. 19									N		
05	BF2222	7-11-02		55	W		X	0 101 101 101												Ň		
06	BF3232	7-11-02	-		W	1	X		12.0 . 83										2	2	7	
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	12		-13-02	115	alter		_			13A			ler ID:						Ø	\sim	FEDEX NUMBER	
	COMPANY NAME:	i	340		ANY NAME:					840			,	∞	\bigcirc						· · · · · · · · · · · · · · · · · · ·	
	RECEIVED BY:		Date/Time 413/02		DUISHED BY:)ate/Tir	me											
	COMPANY NAME:		P	COMP	ANY NAME:																	
	RELINQUISHED BY:		Date/Time	RECEIV	VED BY:				D)ate/Tir	ne											
	COMPANY NAME:			COMP	ANY NAME:																	



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20F(3) COC NO .: HLTM14

CHAIN OF CUSTODY RECORD

	151 Laylayette Drive, Oak Ridg	e, Tennessee 37831(80	55; 481-4600		C	HA		OFC	USI		YKE	COR	<u> </u>						FICINIT
	PROJECT NAME: Hunte	r LTM		-		<u>т</u>	1		REC		TED PA	RAMET	ERS		тт			ABORATORY N eneral Engineer	
	PROJECT NUMBER: 01-	1624-04-2301-2	00															ABORATORY A 040 Savage Ro	
	PROJECT MANAGER: I	Patty Stoll	635	77%														harleston, SC 2	
	Sampler (Signature) A	(Pri	inted Name) VI RCs INVA	1		X	Leed 1									Rottine E	Pł	HONE NO: (84	3) 556-8171
	Sample ID	Date Collected	Time Collected	Matrix	BTEX PAH	TCLP BTEX	TCLP L									je N		OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
5	BF-3332	7-11-02	1635	ω												3			
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	RELINQUISHED BY:	Date		VED BY:	EL 2.03	622		Date/Ti	me	тот	AL NU	MBER O	F CONT	AINERS	4	Z	С	ooler Temperat	ure:
	har		300/2	aller.	e-	_		ţıze)て	Coo	ler ID:						F	EDEX NUMBER	:
	COMPANY NAME:	08	40 COMP				b	840	•			10	00	3					
د		dee 7/12		QUISHED BY:				Date/Ti										<u> </u>	
	COMPANY NAME:	113	SO COMP	ANY NAME:															
	RELINQUISHED BY:	Date	/Time RECEI	VED BY:				Date/Ti	me	~									
-	COMPANY NAME:		СОМР	ANY NAME:															
-																			



CHAIN OF CUSTODY RECORD

393 COC NO .: HLTM14

	151 Leyfeyette Drive, Oak Ridg	ye, Tennessee 3.	7831/86	5) 481-4600			CI	HA		U	- CU	SIC	זענ	RE	CUK							11-1117
	PROJECT NAME: Hunte	er LTM				_		r	T	, 		REQU	ESTED		RAMET	ERS		T			LABORATORY N General Engineer	
	PROJECT NUMBER: 01	-1624-04-2:	301-20	0								·						:			LABORATORY A	
	PROJECT MANAGER:	Patty Stoll	. v	6	3577%																2040 Savage Ro Charleston, SC 2	
	Sampler (Signature)		(Prir	ited Name)				BTEX	Lead											Bottles/	PHONE NO: (84	3) 556-8171
	Sample ID	Date Colle		Time Collected	Matrix	BTEX	PAH		TCLPL											No. of	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01	BF1932	7-11-0	22	1655	W	X						1975 1975 1975		1. N. 1.					ł	2	¥	
62	BF2032		12	1450	W	X							6. A. B.							2		
x3	BF2034		22	1450	W	X														8	·	
04	BFAIJA	7-11-	02	1505	W	K						900 A		2					<u>د ا</u>	2	•	
50	BF-2232	7-11-0	20	1535	Ŵ	X													6	9		
ole	BF 3232	7-11-4	2	1616	W.	K	1													2		
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(1720		7-13	3-0-1/2	~elt	Y	2-	~	1	7.	-/3-1	ds (ooler	ID:	~	75	>				FEDEX NUMBER	:
	COMPANY NAME:	ie	08	40 0	SEC				5		74A				3	3	>					
ζ	Aulite M	mdel		7 1	QUISHED BY:					Dat	e/Time	Ð										
	COMPANY NAME:		-יזד 113	3/02	ANY NAME:			<u> </u>														
	RELINQUISHED BY:		Date		VED BY:				╈	Dat	e/Tim	•										
	COMPANY NAME:			COM	ANY NAME:																	



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Certificate of Analysis

Company	SAIC								
• •	SAIC 151 Lafayette Dr	ive							
	Oak Ridge, Tenn								
	Oak Ridge, Tenn	C33CC 57051				Rep	ort Date: Febr	uary 13, 2003	
Contact:	Leslie Barbour								
Project:	HAAF Long Ter	m Monitoring, DO 21	ł				Page	e I of	2
	Client Sample	ID:	BF1942		Proie		SAIC00203		
	Sample ID:		74043008		Clier	nt ID:	SAIC038		
	Matrix:		Water						
	Collect Date: Receive Date:		24-JAN-03						
	Collector:		27-JAN-03 Client						
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Batcl	h Method
Semi-volatile Mass spec C)rganics Federal						· · · · · · · · · · · · · · · · · · ·		
3510/8270 PAH Extend l	-								
2-Chloronaphthalene	υ	ND	0.392	0.980	ug/L	1	KGB1 01/30/03	0056 229729	9 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	i			
Benzo(a)pyrene	U	ND	0.490	0.980	ug/L	. 1			
Benzo(b)fluoranthene	U	ND	0.490	0.980	ug/L	1			
Jenzo(ghi)perylene	U	ND	0.490	0.980	ug/L	1			
 Benzo(k)fluoranthene 	U	NÐ	0.490	0.980	ug/L	I			
Dibenzo(a,h)anthracene		ND	0.490	0.980	ug/L	1			
Fluoranthene	U	ND	0.490	0.980	ug/L	l			
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 Federa									
5035/8260B BTEX in Liq									
Benzene	U	ND	0.330	1.00	ug/L		CDS1 02/05/03	0457 23130	5 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 Met	hods were perfo	rmed							
Method	Description			Analyst	Date	Time	Prep Batch		
SW846 3510C	3510C BNA L	iq. Prep-8270C Analy	sis Fed	RAWI	01/28/03	1531	229728		
SW846 8260B	8260B Volatile	es In Liquid Federal		CDS1	02/05/03	0457	231305		
The following Analytica	l Methods were	nerformed							
Method	Description				Analyst Comm	ents			
1	SW846 8270C		· ···· ···· - ··· ·	·····	v				
2	SW846 8260B								
	5								
Surrogate recovery	Test		Rec	overy%	Acceptab	le Limits	••••••		
⁷ Fluorobiphenyl	3510/827	70 PAH Extend list Li	iquid	71%	(32	%-109%)			



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Certificate of Analysis

amete	r	Qualifier	Result	DL	RL	Units	DF	AnalystDa	ate	Time	Batch	Me
_		Sample ID:		74043008		Client I	D:	SAIC038				
		Client Sample 1	ID:	BF1942		Project:		SAIC0020)3			
	Project:	HAAF Long Terr	m Monitoring, D	00 21					Page	2	of	2
	Contact:	Leslie Barbour					K	epon Date.	reoru	ary 15	, 2005	
		Oak Ridge, Tenn	essee 37831				R	eport Date:	Febru	ary 13	2003	
	Address :	151 Lafayette Dri	ive									
	Company :	SAIC										

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch M	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	5035/8260	B BTEX in Liquid Feder		96%	(67%	-136%)				
Dibromofluoromethane	5035/8260	B BTEX in Liquid Feder	1	16%	(62%	-148%)				
Toluene-d8	5035/8260	B BTEX in Liquid Feder	1	13%	(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.
- 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, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

2

Reviewed by



GENERAL ENGINEERING LABORATORIES, LLC

a Member of THE GEL GROUP, INC. Meeting Today's Needs with a Vision for Tomorrow

Certificate of Analysis

Company :	SAIC								
Address :	151 Lafayette Dr	ive							
	Oak Ridge, Tenn	essee 37831							
Contact:	Leslie Barbour					Re	port Date: Feb	uary 13, 2003	
Project:		m Monitoring, DO 21					Pag	e l of	2
Fioject.	HAAF LONG TO	n Montoring, DO 21					1 45		2
	Client Sample	ID:	BF2042		Proje		SAIC00203		
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		74043011 Water 24-JAN-03 1 27-JAN-03 Client		Clier		SAIC038		
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Batch	Metho
Volatile Organics Feder	al							· ···	
5035/8260B BTEX in L	iquid Federal								
Benzene		3.58	0.330	1.00	ug/L	1	CDS1 02/05/03	3 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 Me	thods were perfor	med							
Method	Description			Analyst	Date	Time	Prep Batch	l	
'846 8260B	8260B Volatile	s In Liquid Federal		CDSI	02/05/03	2102	231305		
The following Analytic	al Methods were p	erformed							
Method	Description			Α	Analyst Comm	ents			
1	SW846 8260B	· · · · · · · · · · · · · · · · · · ·							
Surrogate recovery	Test		Recov	ery%	Acceptab	le Limits	;		
Bromofluorobenzene	5035/826	0B BTEX in Liquid Fe	de	95%	(679	%-136%)			
Dibromofluoromethane	5035/826	0B BTEX in Liquid Fe	dei	113%	(624	%-148%)			
Foluene-d8	5035/826	0B BTEX in Liquid Fe	dei	111%	(58)	%- <mark>139%</mark>)			
Notes:									
The Qualifiers in this	s report are defin	ed as follows :							

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
- Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J
- Ρ The response between the confirmation column and the primary column is >40%D
- Indicates the compound was analyzed for but not detected above the detection limit U
- UI Uncertain identification for gamma spectroscopy.
- Х 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 Dr	ive									
	Oak Ridge, Tenn	essee 37831									
						R	eport Date: Fe	bruary	13, 1	2003	
Contact:	Leslie Barbour										
Project:	HAAF Long Ter	m Monitoring, D	0 21				Р	age	2	of	2
	Client Sample	ID:	BF2042		Proje	ect:	SAIC00203				
	Sample ID:		74043011		Clier	nt ID:	SAIC038				
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Tin	ne	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.

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.

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Certificate of Analysis

Company : SAIC Address : 151 Lafayette Drive Oak Ridge, Tenness Contact: Leslie Barbour Project: HAAF Long Term I Client Sample ID: Matrix: Collect Date: Receive Date: Collector: Parameter Qualifier Semi-volatile Mass spec Organics Federal 3510/8270 PAH Extend list Liquid 2-Chloronaphthalene U 2-Methylnaphthalene U Acenaphthylene U Acenaphthylene U Benzo(a)anthracene U Benzo(a)pyrene U 'enzo(b)fluoranthene U enzo(ghi)perylene U Fluoranthene U Fluorene U Naphthalene Phenanthrene U Pyrene U The following Prep Methods were performe Method Description	xee 37831 Monitoring, DO 21 : BF 744 Wa 24- 27. Cli Result ND 32.0 ND ND ND ND ND ND ND ND ND	2042 043004 ater JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L		eport Date: Febru Pagu SAIC00203 SAIC038 AnalystDate KGB1 01/29/03	e 1 Time	of Batch	2 Method
Oak Ridge, TennessContact:Leslie BarbourProject:HAAF Long Term IProject:HAAF Long Term IClient Sample ID: Matrix: Collect Date: Receive Date: Collector:ParameterQualifierSemi-volatile Mass spec Organics Federal3510/8270 PAH Extend list Liquid 2-Chloronaphthalene2-ChloronaphthaleneUAcenaphtheneUAcenaphtheneUBenzo(a)anthraceneUBenzo(a)pyreneUBenzo(a)pyreneUBenzo(a)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUPluoreneUNaphthaleneUPreneUNaphthaleneUPluoreneUNaphthaleneUPluoreneUNaphthaleneUPluoreneUNaphthaleneVPluoreneUNaphthaleneVPhenanthreneUNaphthaleneVPhenanthreneUNaphthaleneVPhenanthreneUNaphthaleneVPhenanthreneUNaphthaleneVPhenanthreneVPyreneU	xee 37831 Monitoring, DO 21 : BF 744 Wa 24 27 Cli Result ND 32.0 ND ND ND ND ND ND ND ND ND	043004 hter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Clien Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	ect: nt ID: DF	Page SAIC00203 SAIC038 AnalystDate	e 1 Time	of Batch	Method
Contact:Leslie BarbourProject:HAAF Long Term IClient Sample ID: Matrix: Collect Date: Receive Date: Collector:ParameterQualifierSemi-volatile Mass spec Organics Federal3510/8270 PAH Extend list Liquid 2-Chloronaphthalene2-ChloronaphthaleneUAcenaphtheneUAcenaphtheneUBenzo(a)anthraceneUBenzo(a)pyreneUBenzo(a)pyreneUBenzo(k)fluorantheneUPluoreneUFluorantheneUPrivantheneUPenzo(a,h)anthraceneUPenzo(a,h)anthraceneUPhorantheneUPhorantheneUPhorantheneUPhoreneUPhoreneUNaphthaleneUPhorantheneUPhorantheneUPhoreneUNaphthalenePhenanthrenePhenanthreneUPyreneU	Monitoring, DO 21 : BF 744 Wa 24- 27- Cli Result ND 32.0 ND ND ND ND ND ND ND ND ND	043004 hter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Clien Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	ect: nt ID: DF	Page SAIC00203 SAIC038 AnalystDate	e 1 Time	of Batch	Method
Project:HAAF Long Term IClient Sample ID: Matrix: Collect Date: Receive Date: Collector:ParameterQualifierSemi-volatile Mass spec Organics Federal3510/8270 PAH Extend list Liquid2-ChloronaphthaleneU2-MethylnaphthaleneAcenaphtheneUAnthraceneUBenzo(a)pyreneUBenzo(a)pyreneUBenzo(k)fluorantheneUPluoreneUPluoreneUSenzo(x)pyreneUPluoreneUPluoreneUNaphthalenePluoreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneUNaphthalenePhenanthreneU<	: BF 74(Wa 24. 27. Cli Result ND 32.0 ND ND ND ND ND ND ND ND ND	043004 hter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Clien Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	DF	SAIC00203 SAIC038 AnalystDate	Time	Batch	Method
Client Sample ID: Matrix: Collect Date: Receive Date: Collect Date: Receive Date: Collector: Parameter Qualifier Semi-volatile Mass spec Organics Federal 3510/8270 PAH Extend list Liquid 2-Chloronaphthalene U 2-Methylnaphthalene U Acenaphthylene U Accenaphthylene U Anthracene U Benzo(a)anthracene U Benzo(a)anthracene U Benzo(a)pyrene U 'enzo(b)fluoranthene U enzo(ghi)perylene U Benzo(a,h)anthracene U Fluoranthene U Fluoranthene U Fluorene U Indeno(1,2,3-cd)pyrene U Naphthalene Phenanthrene U Pyrene U	: BF 74(Wa 24. 27. Cli Result ND 32.0 ND ND ND ND ND ND ND ND ND	043004 hter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Clien Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	DF	SAIC00203 SAIC038 AnalystDate	Time	Batch	Method
Sample ID: Matrix: Collect Date: Receive Date: Collector: Parameter Qualifier Semi-volatile Mass spec Organics Federal 3510/8270 PAH Extend list Liquid 2-Chloronaphthalene U 2-Methylnaphthalene U Acenaphthylene U Accenaphthylene U Anthracene U Benzo(a)anthracene U Benzo(a)pyrene U 'enzo(b)fluoranthene U enzo(ghi)perylene U Benzo(a,h)anthracene U Fluoranthene U Fluorene U Indeno(1,2,3-cd)pyrene U Naphthalene Phenanthrene U Pyrene U	744 W3 24 27 Cli Result 32.0 ND ND ND ND ND ND ND ND ND	043004 hter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Clien Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	DF	SAIC038 AnalystDate			- .
Matrix: Collect Date: Receive Date: Collector:ParameterQualifierSemi-volatile Mass spec Organics Federal3510/8270 PAH Extend list Liquid2-ChloronaphthaleneU2-MethylnaphthaleneUAcenaphtheneUAcenaphthyleneUBenzo(a)anthraceneUBenzo(a)pyreneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluoreneUFluoreneUNaphthaleneUPreso(a,h)anthraceneUBenzo(k)fluorantheneUPluorantheneUFluoreneUNaphthalenePhenanthrenePluoreneUNaphthaleneUPluoreneUNaphthalenePhenanthrenePhenanthreneUPluoreneUNaphthalenePhenanthrenePhenanthreneUPoreneUNaphthalenePhenanthrenePhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthreneUPhenanthrene <td>Wa 24 27 Cli Result 32.0 ND ND ND ND ND ND ND ND ND</br></br></br></td> <td>tter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490</td> <td>RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980</td> <td>Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L</td> <td>DF</td> <td>AnalystDate</td> <td></td> <td></td> <td>- .</td>	Wa 24 27 Cli Result 32.0 ND 	tter JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L	DF	AnalystDate			- .
Collect Date: Receive Date: Collector:ParameterQualifierSemi-volatile Mass spec Organics Federal3510/8270 PAH Extend list Liquid2-ChloronaphthaleneU2-MethylnaphthaleneUAcenaphtheneUAcenaphthyleneUBenzo(a)anthraceneUBenzo(a)pyreneUBenzo(a)pyreneUBenzo(a)pyreneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluorantheneUPluoreneUNaphthaleneUPreneUNaphthaleneUPhenanthreneUThe following Prep Methods were performation	24- 27- Cli Result ND 32.0 ND ND ND ND ND ND ND ND	JAN-03 JAN-03 ent DL 0.392 0.490 0.490 0.490 0.490 0.490 0.490 0.490	RL 0.980 0.980 0.980 0.980 0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	! 1 1				- .
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3510/8270 PAH Extend list Liquid 2-Chloronaphthalene 2-Methylnaphthalene Acenaphthene U Acenaphthylene U Anthracene U Benzo(a)anthracene U Benzo(a)pyrene U enzo(b)fluoranthene U enzo(ghi)perylene U Benzo(a,h)anthracene U Pluoranthene U Fluoranthene U Fluorene U Indeno(1,2,3-cd)pyrene U Naphthalene Pyrene Pyrene U	32.0 ND ND ND ND ND	0.490 0.490 0.490 0.490 0.490 0.490 0.490	0.980 0.980 0.980 0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L ug/L ug/L	1	KGB1 01/29/03	2329	229729	1
2-Chloronaphthalene U 2-Methylnaphthalene U Acenaphthene U Acenaphthylene U Actenaphthylene U Anthracene U Benzo(a)anthracene U Benzo(a)pyrene U 'enzo(b)fluoranthene U Benzo(k)fluoranthene U Benzo(k)fluoranthene U Dibenzo(a,h)anthracene U Fluoranthene U Fluorene U Naphthalene Phenanthrene Phenanthrene U Naphthalene U Pyrene U	32.0 ND ND ND ND ND	0.490 0.490 0.490 0.490 0.490 0.490 0.490	0.980 0.980 0.980 0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L ug/L ug/L	1	KGB1 01/29/03	2329	229729	1
2-Methylnaphthalene Acenaphthene U Acenaphthylene U Anthracene U Benzo(a)anthracene U Benzo(a)anthracene U Benzo(a)pyrene U 'enzo(b)fluoranthene U Benzo(k)fluoranthene U Benzo(k)fluoranthene U Dibenzo(a,h)anthracene U Fluoranthene U Fluoranthene U Naphthalene Phenanthrene Phyrene U	32.0 ND ND ND ND ND	0.490 0.490 0.490 0.490 0.490 0.490 0.490	0.980 0.980 0.980 0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L ug/L ug/L	1	KGB1 01/29/03	2329	229729	1
AcenaphtheneUAcenaphthyleneUAcenaphthyleneUAnthraceneUBenzo(a)anthraceneUBenzo(a)pyreneU'enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluorantheneUIndeno(1,2,3-cd)pyreneUNaphthalenePyrenePhenanthreneUThe following Prep Methods were performed	ND ND ND ND ND	0.490 0.490 0.490 0.490 0.490 0.490	0.980 0.980 0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L ug/L	1				
AcenaphthyleneUAnthraceneUBenzo(a)anthraceneUBenzo(a)pyreneU`enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthalenePhenanthrenePyreneU	ND ND ND ND ND	0.490 0.490 0.490 0.490	0.980 0.980 0.980 0.980	ug/L ug/L ug/L ug/L					
AnthraceneUBenzo(a)anthraceneUBenzo(a)pyreneU'enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthalenePhenanthrenePyreneU	ND ND ND ND	0.490 0.490 0.490	0.980 0.980 0.980	ug/L ug/L ug/L	1 1 1 1				
Benzo(a)anthraceneUBenzo(a)pyreneU'enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthaleneUPyreneU	ND ND ND	0.490 0.490	0.980 0.980	ug/L ug/L	1 1 1				
Benzo(a)pyreneU`enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthalenePhenanthrenePhyreneU	ND ND	0.490	0.980	ug/L	1				
enzo(b)fluorantheneUenzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthalenePhenanthrenePhenanthreneUThe following Prep Methods were performed	ND				1				
enzo(ghi)peryleneUBenzo(k)fluorantheneUDibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthalenePhenanthrenePhyreneUThe following Prep Methods were performed		0 400							
Benzo(k)fluoranthene U Dibenzo(a,h)anthracene U Fluoranthene U Fluorene U Indeno(1,2,3-cd)pyrene U Naphthalene Phenanthrene Phyrene U		0.470	0.980	ug/L	1				
Dibenzo(a,h)anthraceneUFluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthaleneUPhenanthreneUPyreneUThe following Prep Methods were performed	ND	0.490	0.980	ug/L	1				
FluorantheneUFluoreneUIndeno(1,2,3-cd)pyreneUNaphthaleneUPhenanthreneUPyreneUThe following Prep Methods were performed	ND	0.490	0.980	ug/L	1				
FluoreneUIndeno(1,2,3-cd)pyreneUNaphthaleneUPhenanthreneUPyreneU	ND	0.490	0.980	ug/L	1				
Indeno(1,2,3-cd)pyrene U Naphthalene U Phenanthrene U Pyrene U The following Prep Methods were performed	ND	0.490	0.980	ug/L	1				
Naphthalene Phenanthrene U Pyrene U The following Prep Methods were performed	ND	0.490	0.980	ug/L	1				
Phenanthrene U Pyrene U The following Prep Methods were performed	ND	0.490	0.980	ug/L	l				
Pyrene U The following Prep Methods were performed	40.5	0.108	0.980	ug/L	1				
The following Prep Methods were performe	ND	0.490	0.980	ug/L	1				
· · · · · · · · · · · · · · · · · · ·	ND	0.490	0.980	ug/L	1				
	ed								
niemou Deservon			Analyst	Date	Time	e Prep Batch			
SW846 3510C 3510C BNA Liq.	Prep-8270C Analysis F	ed	RAWI	01/28/03	1531	229728			
The following Analytical Methods were per	formed								
Method Description			A	analyst Comm	ents				
l SW846 8270C									
Surrogate recovery Test		Reco	very%	Acceptab	ole Limit	8			
2-Fluorobiphenyl 3510/8270 I	PAH Extend list Liquid		68%	(32	%-109%	• • • •			
	•		69%						
	PAH Extend list Liquid				%-107%				
p-Terphenyl-d14 3510/8270 I	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 1



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Certificate of Analysis

Parameter		Qualifier	Result	DL	RL	Units	DF	AnalystDa	ate	Time	Batch	Method
				74043004		Cher	nt ID:	SAIC038				
		Client Sample	ID:	BF2042		Proje		SAIC0020)3			
Proje	ect:	HAAF Long Ter	m Monitoring, D	O 21					Page	2	of	2
Conta	act:	Leslie Barbour					K	eport Date.	reoru	ary 15	, 2005	
		Oak Ridge, Tenn	tessee 37831				D	eport Date:	Febru	ary 13	2003	
Comj Addr	pany : ress :	SAIC 151 Lafayette Dr	rive									

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 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.

Via

Reviewed by



GENERAL ENGINEERING LABORATORIES, LLC

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Certificate of Analysis

Company :	SAIC									
Address :	151 Lafayette Dri	ive								
	Oak Ridge, Tenn	essee 37831				Da	port Date: Feb	13	2003	
Contact:	Leslie Barbour					Kt	port Date. Peor	uary 15	, 2005	
Project:	HAAF Long Terr	m Monitoring, DO 21					Pag	e l	of	2
	Client Sample	ID:	BF2044		Proj	ect:	SAIC00203			
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		74043010 Water 24-JAN-03 27-JAN-03 Client		Clie	nt ID:	SAIC038			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Feder	al									
5035/8260B BTEX in L	iquid Federal									
Benzene		3.50	0.330	1.00	ug/L	1	CDS1 02/05/03	3 2034 (231305	1
Ethylbenzene		20.5	0.210	1.00	ug/L	I				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		130	0.250	1.00	ug/L	1				
The following Prep Me	thods were perfor	med								
Method	Description			Analyst	Date	Time	Prep Batch	I		
/846 8260B	8260B Volatile	s In Liquid Federal		CDS1	02/05/03	2034	231305			·
The following Analytic	al Methods were p	performed								
Method	Description			A	Analyst Comm	ents				
1	SW846 8260B	· · · · · · · · · · · · · · · · · · ·								
Surrogate recovery	Test		Reco	overy%	Acceptab	le Limits	ì			
Bromofluorobenzene	5035/826	0B BTEX in Liquid Fe	de	96%	(67	%-136%)				
Dibromofluoromethane	5035/826	0B BTEX in Liquid Fe	dei	111%	(62	%-148%)				
Toluene-d8	5035/826	0B BTEX in Liquid Fe	dei	112%	(58	%-139%)				
Notes: The Qualifiers in thi	is report are defin	ed as follows :								

< Actual result is less than amount reported

Actual result is greater than amount reported >

В 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

Holding time exceeded Η

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

Р 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 Х

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

Parameter	Qualifier Result	DL	RL	Units	DF	AnalystDate		Batch	Method
	Sample ID:	74043010		Clien		SAIC038			
	Client Sample ID:	BF2044		Proje		SAIC00203			
Project:	HAAF Long Term Monitoring	, DO 21				Pag	ge 2	of	2
Contact:	Leslie Barbour				K	eport Date. Teo	iuaiy ij	, 2003	
	Oak Ridge, Tennessee 37831				D	eport Date: Feb	moru 13	2002	
Address :	151 Lafayette Drive								
Company :	SAIC								

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.

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Certificate of Analysis

	151 Lafayette Dr	ive								
	Oak Ridge, Tenn	essee 37831				_				
:t:	Leslie Barbour					Re	port Date: Feb	uary 13	, 2003	
		- Monitoring D(2.21				Pag	љ I	of	2
C:	HAAF Long Ter	m Monitoring, DC) 21				Гад	,c I	01	4
	Client Sample	ID:	BF2044				SAIC00203			
	Sample ID:		74043005		Che	nt ID:	SAIC038			
			Water							
				IG	Unite	DE	AnalyctDate	Time	Dotoh	Motho
	· · ·		D1.	RL	Units	D1	AnalystDate	1 mie	Date	wietho
-	_									
	•	NT	0.204	0.000					220720	
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lene	11				-	-				
						-				
no					-	1				
ne						1				
hana	-				÷					
					-	1				
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					-	1				
facene					•	1				
					-	1				
wrene					-	•				
syrence	U				-					
	П					-				
	Ŭ	ND	0.495	0.990	ug/L ug/L	1				
n Matl	ade wara narfa	mad								
h men	• · · · • •	neu		Analyst	Date	Time	Prep Batch			
		in Prep-8270C A	nalvsis Fed	•	· · · · · · · · · · · · · · · · · · ·		•			
		.q. 110p 02700 11	hu y <i>5</i> ,57700		01/20/05	1551	227720			
lytical		performed			<u> </u>					
	Description			4	Analyst Comm	ents				
	SW846 8270C									
y	Test		Rec	overy%	Acceptab	le Limit	5			
	3510/827	0 PAH Extend lis	t Liquid	63%	(32	%-109%	+			
			-	66%						
			•							
	t: spec C <i>ixtend l</i> lene lene lene hene macene pyrenc p Meth	t: HAAF Long Ter Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: Qualifier spec Organics Federal Extend list Liquid lene U lene U thene U thene U thene U pyrene U pyrene U pyrene U u thene perfor Description 3510C BNA L alytical Methods were p Description SW846 8270C ty Test 3510/827 3510/827	t: HAAF Long Term Monitoring, DO Client Sample ID: Sample ID: Matrix: Collect Date: Receive Date: Collector: Qualifier Result spec Organics Federal Extend list Liquid lene U ND lene I5.3 U ND U ND tu ND tu ND tu ND tu ND thene U	t: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043005 Matrix: Water Collect Date: 24-JAN-03 Receive Date: 27-JAN-03 Collector: Client Qualifier Result DL spec Organics Federal Extend list Liquid lene U ND 0.396 lene 15.3 0.495 U ND 0.495 U ND 0.495 ene U ND 0.495 ene U ND 0.495 hene U ND 0.49	t: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043005 Matrix: Water Collect Date: 24-JAN-03 13:40 Receive Date: 27-JAN-03 Collector: Client Qualifier Result DL RL spec Organics Federal Extend list Liquid lene U ND 0.396 0.990 U ND 0.495 0.990 Mu ND 0.495 0.990 U ND 0.495 0.990 ND 0.495 0.990 Matrix 0.495 0.990 ND 0.495 0.990 NTD 0.	t: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043005 Clie Matrix: Water Collect Date: 24-JAN-03 13:40 Receive Date: 27-JAN-03 Collector: Client Qualifier Result DI RL Units spec Organics Federal Xetend list Liquid Lene U ND 0.396 0.990 ug/L lene 15.3 0.495 0.990 ug/L U ND 0.495 0.990 ug/L tu ND 0.495 0.990 ug/L u ND 0.495 0.990 ug/L tu ND 0.495 0.990 ug/L bene U ND 0.495 0.990 ug/L hene Si Si 0.6 BNA Liq. Prep-8270C Analysis Fed RAWI 01/28/03 alytical Methods were performed Description Analyst Comm SW846 8270C ry Test Recovery Acceptat 3510/8270 PAH Extend list Liquid 63% (32 3510/8270 PAH Extend list Liquid 66% (33	t: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043005 Client ID: Matrix: Water Collect Date: 24-JAN-03 13:40 Receive Date: 27-JAN-03 Collector: Client Qualifier Result DL RL Units DF spee Organics Federal Xetend list Liquid lene U ND 0.396 0.990 ug/L 1 lene 15.3 0.495 0.990 ug/L 1 U ND 0.495 0.990 ug/L 1 hene U ND 0.495 0.990 ug/L 1 hene U ND 0.495 0.990 ug/L 1 in U ND 0.495 0.990 ug/L 1 ND 0.495 0.990 ug/L 1 ND 0.495 0.990 ug/L 1 hene U ND 0.495 0.990 ug/L 1 pyrenc U ND 0.495 0.990 ug/L 3 Sigrifical Methods were performed Description Analyst Comments SW846 8270C T Test Recovery Acceptable Limite 3510/8270 PAH Extend list Liquid 63% (32%-109%) 3510/8270 PAH Extend list Liquid 63% (32%-109%)	t: HAAF Long Term Monitoring, DO 21 $\begin{array}{c c c c c c c c c c c c c c c c c c c $	t: HAAF Long Term Monitoring, DO 21 Page 1 Client Sample ID: 74043005 Sample ID: 74043005 Matrix: Water Collect Date: 24-JAN-03 13:40 Receive Date: 27:JAN-03 Collector: Client Dualifier Result DL RL Units Df AnalystDate Time spec Organics Federal Itimation Itimat	t: HAAF Long Term Monitoring, DO 21 Page 1 of Client Sample ID: 74043005 Client ID: SAIC00203 SAIC038 Image: SAIC038 Imag

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

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystD	ate	Time	Batch	Method
	Client Sample ID: Sample ID:	:	BF2044 74043005		Proje Clien		SAIC002 SAIC038				
Project:	HAAF Long Term N	Monitoring, DO 2	l					Page	2	of	2
Contact:	Leslie Barbour					R	eport Date:	Febru	ary 13,	2003	
Company : Address :	SAIC 151 Lafayette Drive Oak Ridge, Tenness										

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.

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Certificate of Analysis

Company Address :	151 Lafayette Dri									
		ve								
	Oak Ridge, Tenne									
Contract	Leel's Deckerry					Re	port Date: Febr	uary 13,	2003	
Contact:	Leslie Barbour								c	•
Project:	HAAF Long Tern	n Monitoring, DO 21	l				Page	2	of	2
	Client Sample I	D:	BF2142		Proi		SAIC00203			÷
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		74043009 Water 24-JAN-03 27-JAN-03 Client		Clie	nt ID:	SAIC038			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Fede	eral		· · · · · · · · · · · ·							
5035/8260B BTEX in	Liquid Federal									
Benzene	Е	184	0.330	1.00	ug/L	1	CDS1 02/05/03	0526 2	31305	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	1937-2	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 M	lethods were perform	med								
Method	Description			Analyst	Date	Time	e Prep Batch			
SW846 8260B	8260B Volatiles	s In Liquid Federal		CDS1	02/05/03	0526	231305			
SW846 8260B	8260B Volatiles	s In Liquid Federal		CDS1	02/05/03	1937	231305			
The following Analyti	ical Methods were n	erformed								
Method	Description	ciroimcu	· -		Analyst Comn	ients				
1	SW846 8260B	· · · · · · · · · · · · · · · · · · ·								
2	SW846 8260B									
Surrogate recovery	Test		Rec	overy%	Accepta	ble Limits	2			
Bromofluorobenzene		B BTEX in Liquid I		95%		%-136%)				-
Dibromofluoromethane		B BTEX in Liquid 1		115%	•					
Toluene-d8		-				2%-148%)				
		OB BTEX in Liquid I		113%		3%-139%)				
Bromofluorobenzene		B BTEX in Liquid I		96%	-	(%-136%)				
Dibromofluoromethane		DB BTEX in Liquid I		112%		2%-148%)				
Toluene-d8	5035/8260	OB BTEX in Liquid I	Fede	111%	(58	3%-139%))			
Notes: The Qualifiers in th	nis report are define	ed as follows :								

Actual result is less than amount reported <

Actual result is greater than amount reported >

В 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.

τ; Concentration exceeds instrument calibration range



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Certificate of Analysis

Company :	SAIC										
Address :	151 Lafayette Dr	ive									
	Oak Ridge, Tenn	essee 37831 ·									
						R	eport Date:	Februar	гу 13.	, 2003	
Contact:	Leslie Barbour										
Project:	HAAF Long Terr	m Monitoring, DO	21					Page	2	of	2
	Client Sample	ID:	BF2142		Proje		SAIC002	03			
	Sample ID:		74043009		Clier	nt ID:	SAIC038				
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystD	ate T	ime	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.

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.

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Reviewed by



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Certificate of Analysis

	51 Lafayette Dri Dak Ridge, Tenno	ve								
C	Jak Ridge, Tenne									
		essee 37831								
Contact: I	eslie Barbour.					Re	port Date: Febi	uary 13, 1	2003	
		Marine test DO 2					Dog	e I	of 2	,
Project: I	HAAF Long Terr	n Monitoring, DO 2	1				Pag	e i	01 2	2
	Client Sample I	D:	BF2142		Proj		SAIC00203			
	Sample ID:		74043006		Che	nt ID:	SAIC038			
	Matrix:		Water							
	Collect Date: Receive Date:		24-JAN-03	12:35						
	Collector:		27-JAN-03 Client							
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec O	rganics Federal									
3510/8270 PAH Extend li										
2-Chloronaphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/30/03	0012 22	29729	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	ł				
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	I				
Fluoranthene	U	ND	0.495	0.990	ug/L	l	*			
Fluorene	U U	ND	0.495	0.990	ug/L	1				
Indeno(1,2,3-cd)pyrene Naphthalene	U	ND 37.9	0.495	0.990	ug/L	1				
Phenanthrene	U	ND	0.109	0.990	ug/L	1				
Pyrene	U	ND	0.495	0.990 0.990	ug/L ug/L	1				
(TTL - P.)]										
The following Prep Meth	-	med		·						
Method	Description			Analyst	Date	Time				
SW846 3510C	3510C BNA Li	q. Prep-8270C Anal	ysis Fed	RAWI	01/28/03	1531	229728			
The following Analytical	Methods were p	erformed								
Method	Description			A	Analyst Comm	ents				
1	SW846 8270C	1997 * 18. Additional control of 1 997 1997 1997 1997 1								
Surrogate recovery	Test		Reco	overy%	Acceptab	le Limits	i			
2-Fluorobiphenyl	3510/827	OPAH Extend list L	iquid	81%	(32	%-109%)				
Nitrobenzene-d5		OPAH Extend list L	,	83%	-	%-107%)				
p-Terphenyl-d14		OPAH Extend list L	•	0 <i>5 %</i> 71%		%-130%)				
P respicação div	5510 02 /	CITIL DACING HOLE	iquiù	1170	(50	-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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Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate			Method
	Sample ID:		74043006		Cher	nt ID:	SAIC038			
	Client Sample	ID:	BF2142		Proie		SAIC00203			
Project:	HAAF Long Ter	m Monitoring, D	0 21				Pa	ge 2	of	2
Contact:	Leslie Barbour					ĸ	leport Date: Feb	ruary 13	, 2003	
	Oak Ridge, Tenr	nessee 37831				n	on ont Datas - Data	17	2007	
Address :	151 Lafayette Di	rive								
Company :	SAIC									

- 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 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.

Reviewed by



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Products Data Rule Control Report Date: February 13, 2003 Contact: Leslie Barbour Page 1 of 2 Project: HAAF Long Term Monitoring, DO 21 Page 1 of 2 Client Sample ID: 74043012 Client ID: Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27-JAN-03 Client ID: SAIC00203 Collect Date: 24-JAN-03 14:40 Client ID: SAIC038 Volatile Organics Federal Collector: Client DF AnalystDate Time S035/8260B 8TEX in Liquid Federal Benzene 47.0 0.660 2.00 ug/L 2 CDSI 02/05/03 2005 231305 Ethylbenzene 105 0.420 2.00 ug/L 2 CDSI 02/05/03 2005 231305 Toluene 1.00 0.780 2.00 ug/L 2 The following Prep Methods were performed Analyst Date Time Prep Batch 46 8260B 8260B Volatiles In Liquid Federal CDSI 02/05/03 2005 231305 The following Analytical Methods were performed Analyst Comments 1		Company : Address :	SAIC 151 Lafayette Dri	Ve								
Contact:Leslie BarbourProject:HAAF Long Term Monitoring, DO 21Page 1 of 2Client Sample ID:BF2242Project:SAIC00203Sample ID:74043012Client ID:SAIC038Matrix:WaterCollect Date:24-JAN-03 14:40Receive Date:27-JAN-03ClientFAnalyst DateResultDLRLUnitsDFParameterQualifierResultDLRLUnitsDFAnalyst DebratiClientClientTimeBatch IS035/8260B BTEX in Liquid FederalBenzene47.00.6602.00ug/L2CDS1Benzene1.000.7802.00ug/L222231305Ethylbenzene1.000.7802.00ug/L2222Toluene1.000.7802.00ug/L2223283283205231305Afe 8260B8260B Volatiles In Liquid FederalCDS102/05/0320052313054446231305444	~	1001055 .										
Project:HAAF Long Term Monitoring, DO 21Page 1 of 2Client Sample ID: Matrix:74043012 Water Collect Date: Collect Date: Collector:Project: SAIC038SAIC0203 	0	-						Re	port Date: Febr	uary 13	, 2003	
Client Sample ID: BF2242 Project: SAIC00203 Sample ID: 74043012 Client ID: SAIC038 Matrix: Water Collect Date: 24-JAN-03 14:40 Collect Date: 24-JAN-03 14:40 SAIC038 Collector: 27-JAN-03 Client DL Parameter Qualifier Result DL RL Units DF AnalystDate Time Batch 1 Volatile Organics Federal Benzene 47.0 0.660 2.00 ug/L 2 CDS1 02/05/03 2005 231305 Ethylbenzene 105 0.420 2.00 ug/L 2 CDS1 02/05/03 2005 231305 Ethylbenzene 1.00 0.780 2.00 ug/L 2 The following Prep Methods were performed Analyst Date Time Prep Batch 46 8260B 8260B Volatiles In Liquid Federal CDS1 02/05/03 2005 231305 The following Analytical Methods were performed CDS1 02/05/03 2005 231305 The following Analytical Methods were performed Method Description Analyst Comments </th <th></th> <th>c</th> <th>-</th>											c	-
Sample ID: Matrix: Collect Date: Collect Date: Collect Date: Collector:74043012 Water 24-JAN-03 14:40 27-JAN-03 ClientClient ID:SAIC038ParameterQualifierResultDLRLUnitsDFAnalystDateTimeBatch 1Volatile Organics FederalEderalDLRLUnitsDFAnalystDateTimeBatch 1S035/8260B BTEX in Liquid FederalBenzene47.00.6602.00ug/L2CDS102/05/032005231305Benzene47.00.6602.00ug/L2CDS102/05/032005231305Ethylbenzene1050.4202.00ug/L2CDS102/05/032005231305The following Prep Methodswere performedMethodDateTimePrep Batch/46 8260B8260B Volatiles In Liquid FederalCDS102/05/032005231305The following Analytical Methods were performedAnalystDateTimePrep Batch/1SW846 8260BSw846 8260BSw846 8260BSw846 8260BSw846 8260B	P	Project:	HAAF Long Terr	n Monitoring, DO 2	1				Pag	e I	ot	2
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 1 Volatile Organics Federal			Client Sample I	D:	BF2242							
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 Ethylbenzene 105 0.420 2.00 ug/L 2 Toluene 2 Toluene 1.00 0.780 2.00 ug/L 2 2 The following Prep Methods were performed 328 0.500 2.00 ug/L 2 The following Prep Methods were performed Analyst Date Time Prep Batch .46 8260B 8260B Volatiles In Liquid Federal CDS1 02/05/03 2005 231305 The following Analytical Methods were performed CDS1 02/05/03 2005 231305 The following Analytical Methods were performed Analyst Comments 1 SW846 8260B SW846 8260B SW846 SW84			Matrix: Collect Date: Receive Date:		Water 24-JAN-03 27-JAN-03	- · · · -	Clie	nt ID:	SAIC038			
5035/8260B BTEX in Liquid Federal Benzene 47.0 0.660 2.00 ug/L 2 CDS1 02/05/03 2005 231305 Ethylbenzene 105 0.420 2.00 ug/L 2 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 CDS1 02/05/03 2005 231305 1 SW846 8260B SW846 8260B SW846 8260B SW846 8260B SW846 8260B	Parameter		Qualifier	Result		RL	Units	DF	AnalystDate	Time	Batch	Method
Benzene 47.0 0.660 2.00 ug/L 2 CDS1 02/05/03 2005 231305 Ethylbenzene 105 0.420 2.00 ug/L 2 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 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 2005 231305 1 SW846 8260B Stription Stription <t< td=""><td>atile Organ</td><td>nics Federa</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	atile Organ	nics Federa	1									
Ethylbenzene1050.4202.00ug/L2Toluene1.000.7802.00ug/L2Xylenes (total)3280.5002.00ug/L2The following Prep Methods were performedMethodDescriptionAnalystDateTimePrep Batch.46 8260B8260B Volatiles In Liquid FederalCDS102/05/032005231305The following Analytical Methods were performedAnalyst CommentsAnalyst Comments1SW846 8260BSW846 8260BSW846 8260BSW846 8260B	035/8260 B (BTEX in Li	quid Federal									
Toluene1.000.7802.00ug/L2Xylenes (total)3280.5002.00ug/L2The following Prep Methods were performedMethodDescriptionAnalystDateTimePrep Batch.46 8260B8260B Volatiles In Liquid FederalCDS102/05/032005231305The following Analytical Methods were performedAnalyst CommentsAnalyst Comments1SW846 8260BSW846 8260BSW846 8260BSW846 8260B				47.0	0.660	2.00	ug/L	2	CDS1 02/05/03	2005 2	231305	1
Xylenes (total)3280.5002.00ug/L2The following Prep Methods were performed MethodDescriptionAnalystDateTimePrep Batch.46 8260B8260B Volatiles In Liquid FederalCDS102/05/032005231305The following Analytical Methods were performed MethodDescriptionAnalyst Comments1SW846 8260B		ne					ug/L	2				
The following Prep Methods were performed Method Description .46 8260B 8260B Volatiles In Liquid Federal CDS1 02/05/03 2005 231305 The following Analytical Methods were performed Method Description Analyst Comments					0.780		ug/L					
MethodDescriptionAnalystDateTimePrep Batch.46 8260B8260B Volatiles In Liquid FederalCDS102/05/032005231305The following Analytical Methods were performed MethodDescriptionAnalyst Comments1SW846 8260BSW846 8260B	Xylenes (tot	tal)		328	0.500	2.00	ug/L	2				
.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 SW846 8260B SW846 8260B	he following	g Prep Met	hods were perfor	med								
The following Analytical Methods were performed Analyst Comments Method Description Analyst Comments I SW846 8260B SW846 8260B	ethod		Description			Analyst	Date	Time	Prep Batch			
Method Description Analyst Comments I SW846 8260B SW846 8260B	,46 8260B	}	8260B Volatile	s In Liquid Federal		CDS1	02/05/03	2005	231305			
I SW846 8260B	ae following	g Analytica	l Methods were p	erformed								
	ethod		Description				Analyst Comm	ients				
2 SW846 8260B			SW846 8260B									
			SW846 8260B									
Surrogate recovery Test Recovery% Acceptable Limits	irrogate rec	covery	Test		Rec	overy%	Acceptat	ole Limits				
Bromofluorobenzene 5035/8260B BTEX in Liquid Feder 99% (67%-136%)	omofluorobe	enzene	5035/8260	OB BTEX in Liquid	Feder	99%	(67	(%-136%)		· · · ·		
Dibromofluoromethane 5035/8260B BTEX in Liquid Feder 114% (62%-148%)	oromofluoro	omethane	5035/826	OB BTEX in Liquid	Fede	114%	(62	.%-148%)				
Toluene-d8 5035/8260B BTEX in Liquid Feder 114% (58%-139%)	luene-d8		5035/826	B BTEX in Liquid	Feder	114%	(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
- В 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.
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- Η Holding time exceeded
- Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J
- P The response between the confirmation column and the primary column is >40%D
- Indicates the compound was analyzed for but not detected above the detection limit U
- UI Uncertain identification for gamma spectroscopy.
- Х 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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Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Tir	ne	Batch	Method
	Sample ID:		74043012			nt ID:	SAIC038				
	Client Sample ID:		BF2242		Project:		SAIC00203				
Project:	HAAF Long Ter	m Monitoring, D	0 21				P	age	2	of	2
Contact:	Leslie Barbour					к	eport Date: Fe	oruary	13,	2003	
	Oak Ridge, Tenn	iessee 37831				р	oment Dutas - Er	b	12	2002	
Company : Address :	SAIC 151 Lafayette Dr	rive									
C	E A LC										

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 operatipg procedures. Please direct any questions to your Project Manager, Valerie Davis.

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Certificate of Analysis

Company :	SAIC									
• •	151 Lafayette Dri	ve								
Contact:	Leslie Barbour					Re	port Date: Febr	uary 13	, 2003	
			21				Dag	o 1	of	2
Project:	HAAF Long Ten	n Monitoring, DC)21				гад	c I	01	L
		D:	BF2242				SAIC00203			
	Sample ID:		74043003		Che	nt ID:	SAIC038			
r	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Metho
e Mass spec (Drganics Federal						2			
-	-									
aphthalene	์ บ	ND	0.396	0.990	ug/L	1	KGB1 01/29/03	2308	229729	1
aphthalene		42.0	0.495	0.990	ug/L	i			,	-
nene	U	ND	0.495	0.990		1				
nylene	U	ND	0.495	0.990		ī				
e	U	ND	0.495	0.990		1				
nthracene	U	ND	0.495	0.990	-	1				
yrene	U	ND	0.495	0.990	-	1				
luoranthene	U	ND	0.495	0.990	ug/L	1				
)perylene	U	ND	0.495	0.990	<i>v</i>	1				
luoranthene	U	ND	0.495	0.990	•	1				
h)anthracene	U	ND	0.495	0.990		1				
ene	U	ND	0.495	0.990	ug/L	1				
	U	ND	0.495	0.990	-	1				
2,3-cd)pyrene	U U	ND	0.495	0.990	ug/L	1				
ne		110	0.109	0.990	ug/L	1				
ene	U	ND	0.495	0.990	ug/L	1				
	U	ND	0.495	0.990	ug/L	1				
ng Prep Metl	hods were perfor	med								
	Description			Analyst	Date	Time	Prep Batch			
c	3510C BNA Li	q. Prep-8270C Ar	alysis Fed	RAWI	01/28/03	1531	229728			
ng Analytica		ertormed	<u> </u>		Apalyst Comm	ents				
	· · · • • • • • • • • • • • • • • • • •				inaryst Comm					
	SW846 8270C									
ecovery	Test		Rec	overy%	Acceptab	le Limits	5			
enyl	3510/827	0 PAH Extend list	t Liquid	82%	(32	%-109%)				
e-d5		0 PAH Extend lis	-	84%		%-107%)				
	5510/02/	o i / iii Extend lis	- Siquio	0-7/0	(55	10-10170)	1			
d14	2510/027	0 PAH Extend lis	t Liquid	73%	101	%-130%)				
	Address : Contact: Project: r Mass spec (PAH Extend I aphthalene aphthalene aphthalene aphthalene aphthalene aphthalene aphthalene bylene c nthracene yrene luoranthene perylene luoranthene aphthalene	Address : 151 Lafayette Dri Oak Ridge, Tenne Contact: Leslie Barbour Project: HAAF Long Terr Client Sample ID: Matrix: Collect Date: Receive Date: Collector: r Qualifier e Mass spec Organics Federal PAH Extend list Liquid aphthalene bene U uylene U e U nthracene U huoranthene U hanthracene U huoranthene U huo	Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DC Client Sample ID: Matrix: Collect Date: Receive Date: Collector: Sample ID: Matrix: Collect Date: Receive Date: Collector: r Qualifier Result e Mass spec Organics Federal PAH Extend list Liquid aphthalene U ND aphthalene U ND uplene U ND c U ND nylene U ND uoranthene U ND uprene U ND uoranthene U ND uoranthene U ND uoranthene U ND uoranthene U ND y2,3-cd)pyrene U ND ne 110 ND ene U ND ng Analytical Methods were performed Description GW846 8270C SW846 8270C recovery Test enyl 3510/8270 PAH Extend lis <td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Yata Yater Collect Date: 24-JAN-03 Receive Date: Collector: Client r Qualifier Result DL Mass spec Organics Federal PAH Extend list Liquid aphthalene 42.0 U ND 0.396 aphthalene U ND viene U ND 0.495 rece U ND 0.495 pigene U ND 0.495 uoranthene U ND 0.495 luoranthene U ND 0.495 luoranthene U ND 0.495 uoranthene U ND 0.495 luoranthene U ND 0.495 perylene U ND 0.495 sine U ND 0.495 <td< td=""><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: Collect Date: 24-JAN-03 14:40 Receive Date: Collector: Client r Qualifier Result DL RL Mass spec Organics Federal PAH Extend list Liquid aphthalene U U ND optime U ND 0.495 optime U ND 0.495 optime U uptantene U uptantene U uptantene U uptantene U verane U uptantene U uptantene U uptantacene U ND 0.495 uptantacene U uptantacene U uptantacene U uptantacene</td><td>Address: 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: Collect Date: 24-JAN-03 14:40 Receive Date: DL RL Units r Qualifier Result DL RL Units r Mathalene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L upthalene U ND 0.495 0.990 ug/L upret U ND <td< td=""><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: BF2242 Project: Sample ID: 74043003 Client ID: Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27JAN-03 Collector: Client T r Qualifier Result DL RL Units DF PMEstend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 0.990 ug/L 1 nghthalene U ND 0.495 0.990 ug/L 1 toranthene U ND 0.495 0.990 ug/L 1 nghthalene U ND 0.495 0.990 ug/L 1 uoranthene U ND 0.495 0.990 ug/L 1 huracene U ND 0.495 0.990 ug/L 1 iuoranthene U ND 0.495 0.990 ug/L 1 ine Score U ND 0.495 0.990 ug/L 1 ing Analytical Methods were performed Description Analyst Fed RAW1 01/28/03 1531 ing Analytical Methods were performed Description Analyst Comments SW346 8270C recovery Test <u>Recovery Acceptable Limit</u> enyl 3510/8270 PAH Extend list Liquid 82% (32%-099%)</td><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27-JAN-03 Collect Date: 24-JAN-03 14:40 Receive Date: 27-JAN-03 Collect Organics Federal PAH Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 toranthene U ND 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495</td><td>Address i 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 1531 229728 Receivery Test Recovery Acceptabe Limits Receivery Receivery Acceptabe Limits Receivery Receiver Accept</td><td>Address: 151 Lafsyetic Drive Oak Ridge, Tennessee 37831 Report Date: Pervious 13, 2003 Contact: Leslie Barbour Page I of Project: HAAF Long Term Monitoring, DO 21 Page I of Client Sample ID: 74043003 Client ID: SAIC00203 Matrix: Water Client D: SAIC00203 Collect Date: 24-JAN-03 14:40 SAIC00203 Receive Date: 27-JAN-03 Client D: SAIC0320 Collector: Client DL RL Units DF AnalystDate Time Batch PM Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 Image Im</td></td<></td></td<></td>	Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Yata Yater Collect Date: 24-JAN-03 Receive Date: Collector: Client r Qualifier Result DL Mass spec Organics Federal PAH Extend list Liquid aphthalene 42.0 U ND 0.396 aphthalene U ND viene U ND 0.495 rece U ND 0.495 pigene U ND 0.495 uoranthene U ND 0.495 luoranthene U ND 0.495 luoranthene U ND 0.495 uoranthene U ND 0.495 luoranthene U ND 0.495 perylene U ND 0.495 sine U ND 0.495 <td< td=""><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: Collect Date: 24-JAN-03 14:40 Receive Date: Collector: Client r Qualifier Result DL RL Mass spec Organics Federal PAH Extend list Liquid aphthalene U U ND optime U ND 0.495 optime U ND 0.495 optime U uptantene U uptantene U uptantene U uptantene U verane U uptantene U uptantene U uptantacene U ND 0.495 uptantacene U uptantacene U uptantacene U uptantacene</td><td>Address: 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: Collect Date: 24-JAN-03 14:40 Receive Date: DL RL Units r Qualifier Result DL RL Units r Mathalene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L upthalene U ND 0.495 0.990 ug/L upret U ND <td< td=""><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: 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Receivery Test Recovery Acceptabe Limits Receivery Receivery Acceptabe Limits Receivery Receiver Accept</td><td>Address: 151 Lafsyetic Drive Oak Ridge, Tennessee 37831 Report Date: Pervious 13, 2003 Contact: Leslie Barbour Page I of Project: HAAF Long Term Monitoring, DO 21 Page I of Client Sample ID: 74043003 Client ID: SAIC00203 Matrix: Water Client D: SAIC00203 Collect Date: 24-JAN-03 14:40 SAIC00203 Receive Date: 27-JAN-03 Client D: SAIC0320 Collector: Client DL RL Units DF AnalystDate Time Batch PM Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 Image Im</td></td<></td></td<>	Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: Collect Date: 24-JAN-03 14:40 Receive Date: Collector: Client r Qualifier Result DL RL Mass spec Organics Federal PAH Extend list Liquid aphthalene U U ND optime U ND 0.495 optime U ND 0.495 optime U uptantene U uptantene U uptantene U uptantene U verane U uptantene U uptantene U uptantacene U ND 0.495 uptantacene U uptantacene U uptantacene U uptantacene	Address: 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: Collect Date: 24-JAN-03 14:40 Receive Date: DL RL Units r Qualifier Result DL RL Units r Mathalene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L rene U ND 0.495 0.990 ug/L upthalene U ND 0.495 0.990 ug/L upret U ND <td< td=""><td>Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: BF2242 Project: Sample ID: 74043003 Client ID: Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27JAN-03 Collector: Client T r Qualifier Result DL RL Units DF PMEstend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 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intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495</td><td>Address i 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 1531 229728 Receivery Test Recovery Acceptabe Limits Receivery Receivery Acceptabe Limits Receivery Receiver Accept</td><td>Address: 151 Lafsyetic Drive Oak Ridge, Tennessee 37831 Report Date: Pervious 13, 2003 Contact: Leslie Barbour Page I of Project: HAAF Long Term Monitoring, DO 21 Page I of Client Sample ID: 74043003 Client ID: SAIC00203 Matrix: Water Client D: SAIC00203 Collect Date: 24-JAN-03 14:40 SAIC00203 Receive Date: 27-JAN-03 Client D: SAIC0320 Collector: Client DL RL Units DF AnalystDate Time Batch PM Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 Image Im</td></td<>	Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: BF2242 Project: Sample ID: 74043003 Client ID: Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27JAN-03 Collector: Client T r Qualifier Result DL RL Units DF PMEstend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 0.990 ug/L 1 aphthalene 42.0 0.495 0.990 ug/L 1 nghthalene U ND 0.495 0.990 ug/L 1 toranthene U ND 0.495 0.990 ug/L 1 nghthalene U ND 0.495 0.990 ug/L 1 uoranthene U ND 0.495 0.990 ug/L 1 huracene U ND 0.495 0.990 ug/L 1 iuoranthene U ND 0.495 0.990 ug/L 1 ine Score U ND 0.495 0.990 ug/L 1 ing Analytical Methods were performed Description Analyst Fed RAW1 01/28/03 1531 ing Analytical Methods were performed Description Analyst Comments SW346 8270C recovery Test <u>Recovery Acceptable Limit</u> enyl 3510/8270 PAH Extend list Liquid 82% (32%-099%)	Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Date: 27-JAN-03 Collect Date: 24-JAN-03 14:40 Receive Date: 27-JAN-03 Collect Organics Federal PAH Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 toranthene U ND 0.495 0.990 ug/L 1 ene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 projene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495 0.990 ug/L 1 intracene U ND 0.495 0.990 ug/L 1 bitracene U ND 0.495	Address i 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Leslie Barbour Project: HAAF Long Term Monitoring, DO 21 Client Sample ID: 74043003 Matrix: Water Collect Date: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 14:40 Receive Parton: 24-JAN-03 1531 229728 Receivery Test Recovery Acceptabe Limits Receivery Receivery Acceptabe Limits Receivery Receiver Accept	Address: 151 Lafsyetic Drive Oak Ridge, Tennessee 37831 Report Date: Pervious 13, 2003 Contact: Leslie Barbour Page I of Project: HAAF Long Term Monitoring, DO 21 Page I of Client Sample ID: 74043003 Client ID: SAIC00203 Matrix: Water Client D: SAIC00203 Collect Date: 24-JAN-03 14:40 SAIC00203 Receive Date: 27-JAN-03 Client D: SAIC0320 Collector: Client DL RL Units DF AnalystDate Time Batch PM Extend list Liquid aphthalene 42.0 0.495 0.990 ug/L 1 Image Im

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

	Sample ID:	74043003	Client ID: SAIC038
Project:	HAAF Long Term Monitoring, I	DO 21 BF2242	Page 2 of 2 Project: SAIC00203
Contact:	Leslie Barbour		Report Date: February 13, 2003
Company : Address :	SAIC 151 Lafayette Drive Oak Ridge, Tennessee 37831		

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 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.

Reviewed by



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Certificate of Analysis

Company :	SAIC									
Address :	151 Lafayette Dri									
	Oak Ridge, Tenne	essee 37831				Pe	port Date: Febr	12 June 12	2002	
Contact:	Leslie Barbour					Re	post Date. reos	uary 15,	2005	
Project:	HAAF Long Terr	n Monitoring, DO 21					Pag	e l	of	2
	Client Sample I	D:	BF3242		Proje		SAIC00203			
	Sample ID: Matrix: Collect Date: Receive Date: Collector:		74043013 Water 24-JAN-03 1 27-JAN-03 Client	5:15	Clier	nt ID:	SAIC038			
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Feder	al									
5035/8260B BTEX in L	iquid Federal									
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 02/05/03	0720 2	231305	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	I				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				
The following Prep Me	thods were perform	med								
Method	Description		A	nalyst	Date	Time	Prep Batch			
346 8260B	8260B Volatiles	s In Liquid Federal	C	DSI	02/05/03	0720	231305	• • • • •		
The following Analytic	and the second sec	erformed			· · · · · · · · · · · · · · · · · · ·					
Method	Description			A	analyst Comm	ents				
1	SW846 8260B									
Surrogate recovery	Test		Recove	ery%	Acceptab	le Limits				
Bromofluorobenzene	5035/8260	B BTEX in Liquid Fe	dei	94%	(67	%-136%)				
Dibromofluoromethane		DB BTEX in Liquid Fe		114%	(62)	%-148%)				
Toluene-d8	5035/8260	DB BTEX in Liquid Fe	dei	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.
- The response between the confirmation column and the primary column is >40%D Ρ
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- Х 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

Parameter	Qualifier Result	DL RL	Units DF AnalystDate Time Batch Method
	Sample ID:	74043013	Client ID: SAIC038
	Client Sample ID:	BF3242	Project: SAIC00203
Project:	HAAF Long Term Monitoring,	DO 21	Page 2 of 2
Contact:	Leslie Barbour		Report Date: February 13, 2003
Company : Address :	SAIC 151 Lafayette Drive Oak Ridge, Tennessee 37831		Papart Data, Eshruari 12, 2002

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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Reviewed by



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Certificate of Analysis

	Company :	SAIC									
	Address :	151 Lafayette D	rive								
		Oak Ridge, Teni	nessee 37831				Da	most Data		2002	
	Contact:	Leslie Barbour					Ke	port Date: Febr	uary 13	, 2003	
	Project:	HAAF Long Te	rm Monitoring, I	DO 21				Page	e 1	of	2
		Client Sample	ID:	BF3242		Proi	ect:	SAIC00203			
		Sample ID: Matrix: Collect Date: Receive Date: Collector:		74043002 Water 24-JAN-03 27-JAN-03 Client		Clie	nt ID:	SAIC038			
Parameter	r	Qualifier	Result	ÐL	RL	Units	DF	AnalystDate	Time	Batch	Metho
Semi-volatile	e Mass spec (Drganics Federa	1	· ····				=		·· ···	
3510/8270	PAH Extend i	list Liquid									
2-Chloron	aphthalene	U	ND	0.396	0.990	ug/L	1	KGB1 01/29/03	2246	229729	1
	aphthalene	U	ND	0.495	0.990	ug/L	1				
Acenaphth	iene	U	ND	0.495	0.990	ug/L	1				
Acenaphth	nylene	U	ND	0.495	0.990	ug/L	1				
Anthracen	e	U	ND	0.495	0.990	ug/L	1				
Benzo(a)a	nthracene	U	ND	0.495	0.990	ug/L	1				
Benzo(a)p	yrene	U	ND	0.495	0.990	ug/L	1				
`enzo(b)f	luoranthene	U	ND	0.495	0.990	ug/L	1				
enzo(ghi)perylene	U	ND	0.495	0.990	ug/L	1				
Benzo(k)f	luoranthene	U	ND	0.495	0.990	ug/L	1				
Dibenzo(a	n,h)anthracene	e U	ND	0.495	0.990	ug/L	1				
Fluoranthe	ene	U	ND	0.495	0.990	ug/L	1				
Fluorene		U	ND	0.495	0.990	ug/L	1				
	2,3-cd)pyrene	U	ND	0.495	0.990	ug/L	1				
Naphthale		J	0.781	0.109	0.990	ug/L	1				
Phenanthr	ene	U	ND	0.495	0.990	ug/L	1				
Pyrene		U	ND	0.495	0.990	ug/L.	1				
The followi	ng Prep Met	hods were perfo	rmed								
Method		Description			Analyst	Date	Time	Prep Batch			
SW846 3510	C	3510C BNA L	iq. Prep-8270C	Analysis Fed	RAW1	01/28/03	1531	229728			
The followi	ng Analytica	l Methods were	performed								
Method		Description	••••••		I	Analyst Comm	ents				
1		SW846 8270C									
Surrogate r	ecovery	Test		Rec	overy%	Acceptat	ole Limits	5			
2-Fluorobiph	enyl	3510/82	70 PAH Extend	list Liquid	82%	(32	%-109%)				
	•		70 PAH Extend	•	82%		%~107%)				
Nitrobenzene		2010/02	o i mi Datonu	not inquiti	02.70	(33	10-10/70	,			
Nitrobenzene p-Terphenyl-			70 PAH Extend	liet Liquid	80%	176	%-130%)				

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

Project:	HAAF Long Term Monitoring, I	DO 21	Page 2 of 2
	Client Sample ID:	BF3242	Project: SAIC00203
	Sample ID:	74043002	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.
- 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.

au

Reviewed by



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Certificate of Analysis

Compan Address		1 1/2								
Address	Oak Ridge, Ten									
Contact:	Leslie Barbour					Re	port Date: Febr	uary 13	, 2003	
Project:		rm Monitoring, DO 2	1				Page	e 1	of	2
	Client Sample Sample ID: Matrix: Collect Date: Receive Date:		BF3342 74043014 Water 24-JAN-03	17:15	Proi Clie		SAIC00203 SAIC038			
	Collector:		27-JAN-03 Client							
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Fee	deral								•	
5035/8260B BTEX i	n Liquid Federal									
Benzene		1.80	0.330	1.00	ug/L	1	CDS1 02/05/03	0749	231305	t
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene Xylenes (total)	J U	0.564 ND	0.390 0.250	1.00 1.00	ug/L ug/L	1 1				
The following Prep	Methods were perfo	rmed								
Method	Description			Analyst	Date	Time	Prep Batch	··· ··· -		
;46 8260B	8260B Volatil	es In Liquid Federal		CDSI	02/05/03	0 7 49	231305			
The following Anały	tical Methods were	performed								
Method	Description		· · · ·	A	Analyst Comm	ents				
1	SW846 8260B									
Surrogate recovery	Test		Reco	very%	Acceptab	le Limits				
Bromofluorobenzene	5035/82	60B BTEX in Liquid	Fede	94%	(67	%-136%)				
Dibromofluoromethar	ne 5035/82	60B BTEX in Liquid	Fede	116%	(62	%-148%)				
Toluene-d8	5035/82	60B BTEX in Liquid	Fede	113%	(58	%-1 39%)				
Notes:										

The Qualifiers in this report are defined as follows :

Actual result is less than amount reported <

> Actual result is greater than amount reported

В 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

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

Р 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 Х

Υ 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 : Address :	SAIC 151 Lafayette Dri									
Contact:	Oak Ridge, Tenn Leslie Barbour	essee 3/831				R	eport Date: Fel	oruary 13	, 2003	
Project:	HAAF Long Ten	m Monitoring, De	D 21				Pa	ge 2	of	2
	Client Sample Sample ID:	C.	BF3342 74043014		Proie Clien		SAIC00203 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.

blai Wa

Reviewed by



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Certificate of Analysis

Company :	SAIC								
	151 Lafayette Driv	ve							
	Oak Ridge, Tenne								
	-	3300 37031				Re	port Date: Febru	ary 13, 2003	
Contact:	Leslie Barbour								
Project:	HAAF Long Tern	n Monitoring, DO 21					Page	l of	2
	Client Sample I	D:	BF3342		Ргој		SAIC00203		
	Sample ID:		74043001		Clie	nt ID:	SAIC038		
	Matrix:		Water						
	Collect Date:		24-JAN-03	17:15					
	Receive Date: Collector:		27-JAN-03						
Parameter			Client						
	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Batch	Method
Semi-volatile Mass spec (-								
3510/8270 PAH Extend l	-								
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			
Penzo(a)pyrene	U	ND	0.490	0.980	ug/L	I	•		
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	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 Metl	hods were perfor	ned							
Method	Description			Analyst	Date	Time	Prep Batch		· ···
SW846 3510C	3510C BNA Lic	I. Prep-8270C Analysi	is Fed	RAWI	01/28/03	1531	229728		
The following Amelitics	Mothod	anformed.							
The following Analytica Method	Description	ertormed			Analyst Comm	onte			
MELIIOU	•			F	vnaryst Comm	ents			
I	SW846 8270C								
Surrogate recovery	Test		Reco	overy%	Acceptab	le Limits	5		
2-Fluorobiphenyl	3510/8270	PAH Extend list Liqu	uid	77%	(32	%-109%))		
Nitrobenzene-d5		PAH Extend list Liqu		78%		$\frac{1070}{6}$			
		•				,			
p-Terphenyl-d14	5510/82/0	PAH Extend list Liqu	ыа	62%	(36	%-130%))		
Notes: The Oualifiers in this	report are define	d as follows [.]							

The Qualifiers in this report are defined as follows :

Actual result is less than amount reported <



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Certificate of Analysis

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate		Batch	Method
	Client Sample I Sample ID:	D:	BF3342 74043001		Proie Clien	t ID:	SAIC00203 SAIC038			
Project:	HAAF Long Ten	n Monitoring, D	O 21				Р	age 2	of	2
Contact:	Leslie Barbour	57851				R	eport Date: Fe	ebruary 13	, 2003	
Company : Address :	SAIC 151 Lafayette Dri Oak Ridge, Tenno									

Actual result is greater than amount reported >

- Analyte found in the sample as well as the associated blank. В
- BD Flag for results below the MDC or a flag for low tracer recovery.
- Concentration exceeds instrument calibration range E
- н 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 Uncertain identification for gamma spectroscopy.
- Lab-specific qualifier must be fully described in case narrative and data summary package
- 7 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.

Û

Reviewed by



GENERAL ENGINEERING LABORATORIES, LLC

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Certificate of Analysis

Company :	SAIC								
Address :	151 Lafayette Dr	ive							
Address .	Oak Ridge, Tenn								
	_					Re	port Date: Febru	uary 13, 2003	
Contact:	Leslie Barbour								
Project:	HAAF Long Ter	m Monitoring, DO 21					Page	e I of	2
	Client Sample	ID:	BF3442		Proie		SAIC00203		
	Sample ID:		74043007		Clier	nt ID:	SAIC038		
	Matrix:		Water						
	Collect Date: Receive Date:		24-JAN-03						
	Collector:		27-JAN-03 Client						
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time Batch	Method
Semi-volatile Mass spec (Organics Federal								
3510/8270 PAH Extend									
2-Chloronaphthalene	U	ND	0.392	0.980	ug/L	1	KGB1 01/30/03	0034 229729	I
2-Methylnaphthalene	Ū	ND	0.490	0.980	ug/L	1	10001 01,00,00	0031 22//2/	
Acenaphthene	U	ND	0.490	0.980	ug/L	ĩ			
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			
Penzo(b)fluoranthene	U	ND	0.490	0.980	ug/L.	I			
Jenzo(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		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 Federa									
5035/8260B BTEX in Li	•								
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 Met	hods were perfo	rmed							
Method	Description			Analyst	Date	Time	Prep Batch		
SW846 3510C	3510C BNA L	iq. Prep-8270C Analy	sis Fed	RAW1	01/28/03	1531	229728		
SW846 8260B	8260B Volatile	es In Liquid Federal		CDS1	02/05/03	1908	231305		
The following Analytica	Methods wares	performed							
Method	Description	pertormed			nalyst Comm	ents			
1	SW846 8270C			• • • • • • • • • • • • • • • • • • • •					
2	SW846 8260B								
Surrogate recovery	Test		Rec	overy%	Acceptab	le Limits	:		
Tluorobiphenyl	3510/827	0 PAH Extend list Li		67%	· •	%-109%)			
	00100041			01.10	(32	. 10770]			



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Certificate of Analysis

Company :	SAIC											
Address :	151 Lafayette Dr	ive										
	Oak Ridge, Tenn	essee 37831										
							Re	eport Date:	Febru	агу 13	, 2003	
Contact:	Leslie Barbour											
Project:	HAAF Long Ter	m Monitoring, DC	21						Page	2	of	2
	Client Sample ID: Sample ID:			BF3442 74043007			Project: SAIC00 Client ID: SAIC03					
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDa	ate	Time	Batch	1 Method
Nitrobenzene-d5	3510/827	0 PAH Extend list	Liquid		71%	(33	%-107%)				
p-Terphenyl-d14	3510/827	0 PAH Extend list	t Liquid		74%	(36	%-130%))				
Bromofluorobenzene	5035/826	0B BTEX in Liqui	id Feder		100%	(67	%-136%))				
Dibromofluoromethane	5035/826	0B BTEX in Liqui	id Fede		111%	(62	%-148%))				

110%

(58%-139%)

Notes:

>

Toluene-d8

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

5035/8260B BTEX in Liquid Feder

- 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.

Reviewed by



a Member of THE GEL GROUP, INC.

Meeting Today's Needs with a Vision for Tomorrow

Certificate of Analysis

Company : Address :	151 Lafayette Di															
	Oak Ridge, Tenr	nessee 37831				Re	port Date: Febr	iary 13	2003							
Contact:	Leslie Barbour				Report Date: February 13, 2003											
Project:	HAAF Long Ter	rm Monitoring, DO 2	1				Page	age 1 of 2								
	Client Sample	ID:	TH0311		Proje		SAIC00203									
		74043015 Water 23-JAN-03 27-JAN-03 Client		Clier	nt ID:	SAIC038										
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method						
Volatile Organics Fede	ral															
5035/8260B BTEX in I	Liquid Federal															
Benzene	Ū	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 M	ethods were perfo	rmed														
Method	Description			Analyst	Date	Time	Prep Batch									
J46 8260B	8260B Volatile	es In Liquid Federal		CDSI	02/05/03	1840	231305									
The following Analyti	cal Methods were j	performed														
Method	Description			A												
1	SW846 8260B															
Surrogate recovery	Test		Rec	overy %	Acceptab	le Limits										
Bromofluorobenzene	5035/826	60B BTEX in Liquid	Fede	9 7%	(67)	%-136%)	(
Dibromofluoromethane	5035/826	50B BTEX in Liquid	Fede	114%	(62)	%-148%)										
Toluene-d8	5035/826	60B BTEX in Liquid	Feder	113%	(58)	%-1 39%)										
Notes																

Notes:

The Qualifiers in this report are defined as follows :

< Actual result is less than amount reported

Actual result is greater than amount reported >

В Analyte found in the sample as well as the associated blank.

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Ρ The response between the confirmation column and the primary column is >40%D

Indicates the compound was analyzed for but not detected above the detection limit U

UI Uncertain identification for gamma spectroscopy.

Lab-specific qualifier - must be fully described in case narrative and data summary package х

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 : Address :	SAIC 151 Lafayette Driv	10									
Address :	Oak Ridge, Tenne					р	anort Data	Dohmo	- 17	2002	
Contact:	Leslie Barbour					г	leport Date:	reorua	19 15.	, 2005	
Project:	HAAF Long Term	n Monitoring, D	O 21					Page	2	of	2
	HAAF Long Term Monitoring, DO Client Sample ID:		TH0311		Proje	ect:	SAIC0020	3			
	Sample ID:		74043015		Clier	nt ID:	SAIC038				
Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDa	te T	ime	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.

Valen Wan

Reviewed by



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

CHAIN OF CUSTODY RECORD

COC NO .: HLTM21

PROJECT NAME: HAAF LTM-BFF-Bidg. 133 PROJECT NUMBER: 01-1624-04-2301-200																			<u> </u>	LABORATORY NAME: General Engineering Laboratory				
														ŀ							LABORATORY	- · ·		
PROJECT MANAGER: Patty Stoll																				Vials:	2040 Savage Ri Charleston, SC			
Sampler (Signature) (Printed Name) Para C.S. PATRICIA A. STOLL																			Bottles/ V	PHONE NO: (84	13) 556-8171			
Sample ID	Date Collected	Time Collected	Matrix	- Ă	PAH															No. of	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS		
BF3342	1/24/03	1715	WATER		2			2												Ż		74043001		
BF3242	1/24/03	1515	WATER		2					.,									1	2		74043002		
BF2242	1/24/03	14.40	WATER		2					í.										2		74043003		
BF2\$92	1/21/03	1340	WATER		2															Z		74043004		
BF2\$44	1/24/03	1340	WATER		Z															Ζ		74043005		
BF2142	1/24/03	1235	WATER		2						-				_	-			-	S		74043006		
					C.J.	Û				+-			+					1						
			1			T 1	10	3																
				$\left \right $			-								-				-					
	A b -t		VED BY:		2																			
RELINGUISHED BY:		-7 Jor	VED BY:				'	Jate/	Time				IMBE		FCO	INTA	INEF	S:	12	-	Cooler Tempera	r		
COMPANY NAME: SAC 1250 COMPANY NAME:											Cooler ID: 303													
RECEIVED BY: Date/Time RELINQUISHED BY:								Date/	Time															
COMPANY NAME:																								
RELINCHISHED BY: Date/Time RECEIVED BY:				یں س	}		c ۱		Time 7 /0															
COMPANY NAME:							/	14	්රා															



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

8

CHAIN OF CUSTODY RECORD

COC NO .: HLTM22

PROJECT NAME: HAAF LTM-BFF-Bidg. 133 PROJECT NUMBER: 01-1624-04-2301-200 PROJECT MANAGER: Patty Stoll																			LABORATORY NAME: General Engineering Laboratory				
																					LABORATORY 2040 Savage Ra Charleston, SC	od	
· · · · · · · · · · · · · · · · · · ·									ľ											Vials:			
Sempler (Signature) (Printed Name)																			Bottles	PHONE NO: (84	3) 556-8171		
Sample ID	Date Collected	Time Collected	Matrix		PAH					Í										No. of	OVA SCREENING	OBSERVATIONS, COMMENT SPECIAL INSTRUCTIONS	
BF3442	1/24/03	1640	WATER	Z	110.0										-				-	4	<u> </u>	74643007	-1
BF 1942	1/24/03	1600	WATER	Z	S	1 - F													╈	4		74043008	-
BF 2142	1/24/03	1235	WARER	2	-		C.									1-			┥	Ż		74643009	_
BF2Ø44	1/24/03	1340	WATER	2				2												2		74043010	1
BFZØ4Z	1/24/03	1340	WATER	2																2		74043011	1
BF2242	1/24/03	1440	WATER	2										2						Ζ		7-4043012	
BF3242	1/24/03	1515	WATER	Z																2		74043013	
BF3342	1/24/03	1715	WATER	2				:						.i						2		74043014	
THØ311	123/03	0745	WATER	2																2	-	74043015	,
							_	14	<u> </u>							+							
						Ľ		が															
				T				10 7	1						·	4			_				
						ĽЦ																	
RELINQUISHED BY:			VED BY:					ate/1			OTA		MBE		FCC	NTA	INER	S:	22	2	Cooler Temperature: 92		
COMPANY NAME: SALC 1200 COMPANY NAME: 1200 COMPANY NAME: COMPANY NAME					- 1/27/03 1450						1 1 2 1											^{R:} /∕}	
RECEIVED BY/ Date/Time RELINQUISHED BY:							D	ate/1	lime .												be		
COMPANY MAME: 1200 COMPANY NAME:																							
RELINCUISHED AT:		Tinhe RECEI	VED BY:				D	ate/1	Time														
COMPANY NAME:																							

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