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FINAL

FIFTH ANNUAL MONITORING ONLY REPORT

IMA

3d Inf Div (Mech)

Underground Storage Tank 94A
Facility ID #9-089078
Building 1320
Fort Stewart, Georgia

Prepared for

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-02-D-0004
Delivery Order 0044

June 2005

SAIC®

05-036(E)/052505

FINAL

FIFTH ANNUAL MONITORING ONLY REPORT
FOR
UNDERGROUND STORAGE TANK 94A
FACILITY ID #9-089078
BUILDING 1320
FORT STEWART, 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 0044

Prepared by

Science Applications International Corporation
151 Lafayette Drive
Oak Ridge, TN 37830

June 2005

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List of Abbreviations and Acronyms

ACL	alternate concentration limit
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
EPA	U. S. Environmental Protection Agency
GA EPD	Georgia Environmental Protection Division
IRA	interim removal action
IWQS	In-Stream Water Quality Standard
NFAR	No Further Action Required
psi	pounds per square inch
PVC	polyvinyl chloride
SAIC	Science Applications International Corporation
STEP	Solutions To Environmental Problems, Inc.
USACE	U. S. Army Corps of Engineers
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

MONITORING ONLY REPORT

Submittal Date: June 2005 Monitoring Report Number: Fifth Annual

For Period Covering: April 2004 to April 2005

Facility Name: UST 94A, Building 1320 Street Address: Wilson Ave. and W. 18th Street

Facility ID: 9-089078 City: Fort Stewart County: Liberty Zip Code: 31314

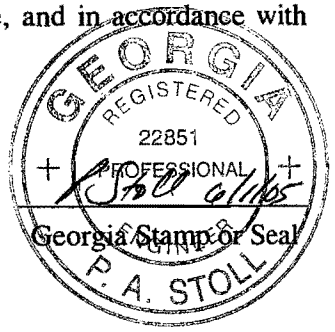
Latitude: 31° 52′ 40″ Longitude: 81° 37′ 48″

Submitted by UST Owner/Operator:		Prepared by Consultant/Contractor:	
Name:	Thomas C. Fry/ Environmental Branch	Name:	Patricia A. Stoll
Company:	U. S. Army/HQ 3d, Inf. Div. (Mech)	Company:	SAIC
Address:	Directorate of Public Works, Building 1137	Address:	P.O. Box 2501
	1550 Frank Cochran Drive		
City:	Fort Stewart State: GA	City:	Oak Ridge State: TN
Zip Code:	31314-4928	Zip Code:	37831

I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

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

Name: Patricia A. Stoll
Signature: Patricia A Stoll
Date: 6/1/05



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.

Underground Storage Tank (UST) 94A, Facility ID #9-089078, was located near Building 1320 at Fort Stewart, Georgia. It had a capacity of 1,000 gal and was used for the storage of used oil. The tank was removed, and the piping was excavated and removed on January 25, 1995. Science Applications International Corporation (SAIC) performed a Corrective Action Plan (CAP)–Part A investigation in 1996. Results of that investigation were documented in the *Corrective Action Plan–Part A Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia* (SAIC 1997), which was submitted to the Georgia Environmental Protection Division (GA EPD) in March 1997.

GA EPD Underground Storage Tank Management Program (USTMP) conducted a technical review of the CAP–Part A Report, and in correspondence dated July 30, 1997 (White 1997), GA EPD requested that fate and transport modeling be conducted to identify the risk of exposure. In correspondence dated March 19, 1998 (White 1998), GA EPD approved fate and transport modeling at the site using geological information obtained during the CAP–Part A and CAP–Part B investigations for Facility ID #9-089036. The results were summarized in the *Corrective Action Plan–Part A Addendum Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, which was submitted to GA EPD in July 1998 (SAIC 1998).

GA EPD conducted a technical review of the CAP–Part A Addendum Report and provided comments in correspondence dated November 16, 1998 (Logan 1998). The comments indicated that the target risk factor used in developing the benzene alternate concentration limit (ACL) was not sufficiently conservative and that three monitoring wells should be installed at the site at which semiannual monitoring would be performed.

On January 27, 1999, representatives from GA EPD USTMP, the Fort Stewart Directorate of Public Works, the U. S. Army Corps of Engineers (USACE), and SAIC met to discuss further action required at 15 former UST sites at Fort Stewart. UST 94A was one of the sites discussed. As a result of the meeting, GA EPD stated that the site would require monitoring. Fort Stewart agreed to re-rank the site using the September 1997 version of the CAP–Part A site ranking score; install a vertical-profile boring and three monitoring wells at the site; and perform semiannual monitoring for benzene, toluene, ethylbenzene, and xylenes (BTEX) only.

In January 2000, four monitoring wells (i.e., 37-06, 37-07, 37-08, and 37-09) were installed at the site. Well 37-09 was not sampled in January 2000 but was installed to obtain groundwater flow information. The results of that sampling effort were summarized in the *Corrective Action Plan–Part A Addendum #2 Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, which was submitted to GA EPD in June 2000 (SAIC 2000). The Monitoring Only Plan recommended semiannual monitoring of three monitoring wells (i.e., 37-06, 37-07, and 37-09) for BTEX. GA EPD conducted a technical review of the CAP–Part A Addendum #2 Report and provided comments in correspondence dated September 5, 2000 (Logan 2000a). The comments indicated that well 37-09 should be sampled. Analytical results for well 37-09, which was sampled as part of the first semiannual sampling event in June 2000, were submitted to

GA EPD in correspondence dated October 5, 2000. This correspondence was approved by GA EPD in correspondence dated December 18, 2000 (Logan 2000b).

Free Product reappeared in Aug 2001.

During the second semiannual sampling event, free product in excess of 1/8 in. was observed in well 37-06 on January 9, 2001, and GA EPD USTMP was notified of the product in correspondence dated February 1, 2001 (Stanley 2001). Free product removal using absorbent socks was implemented in January 2001. The absorbent socks were removed in April 2001, and no free product had accumulated within 1 week. Free product was observed again in August 2001, so the absorbent socks were again installed at that time. The absorbent socks have been removed and replaced periodically throughout the monitoring program. How often?

Before the fifth semiannual sampling event, well 37-06, which was constructed of 3/4-in. polyvinyl chloride (PVC), was over-drilled in June 2002 and reconstructed with 2-in. PVC casing and screen. In accordance with the Monitoring Only Plan, In-Stream Water Quality Standards (IWQSs) cited in Georgia Rule 391-3-6 have been used in the monitoring program as screening criteria and monitoring end points. Because of the close proximity of a storm drain to the former tank pit, the ACLs for this site are equal to the IWQSs.

In November 2004, Solutions To Environmental Problems, Inc. (STEP) completed an interim removal action (IRA) at the site. The IRA consisted of excavating a 22-ft x 15.8-ft x 6-ft deep area around well 37-06R. Prior to excavation, an oily substance was encountered at 3.8 ft and groundwater was measured to be at 4.05 ft below ground surface (BGS) in well 37-06R. During the excavation activities, a black zone that had a petroleum odor (presumably the free product-containing layer) was located at about 4 ft BGS. This layer was typically 4 in. thick and was still present at all four sidewalls. The excavation ceased at 6 ft BGS when the light gray sandy soil was very moist, which is indicative of groundwater. After excavation activities were completed, STEP installed a 4-in diameter well (37-06R2) to replace well 37-06R. The well, constructed with a 5-ft long, pre-packed well screen and riser pipe, was positioned inside the excavation using suitable supports, and gravel backfill was placed around the well to approximately 1 ft above the well screen. The remaining backfill, also #57 stone, was placed using the backhoe and compacted. The top 12 in. of the excavation were filled with 4,000-psi strength concrete and reinforced with #5 reinforcing steel placed at 24 in. on-center each-way. Additional information regarding the IRA was presented in the *Final Report for Interim Removal Activities at UST 89, Facility ID #9-089074, Building 1247 and UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia* (STEP 2005).

The fate and transport modeling was last revised based on the results of the semiannual monitoring events in the Third Annual Monitoring Only Report, and the results are summarized in Attachment A of this report. The purpose of the monitoring summarized in this report was to confirm that natural attenuation is taking place at the site and to document the results of the ninth and tenth semiannual sampling events.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

A. Potentiometric Data:

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

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

Free product was initially observed in well 37-06 at a thickness of 0.1 ft (1.2 in.) on January 9, 2001, and an absorbent sock was placed in the well on January 9, 2001. This observation of free product was the first at the site. GA EPD USTMP was notified of the free product by e-mail on January 10, 2001, and by official correspondence dated February 1, 2001. The absorbent socks have been removed and replaced during the monitoring program, as described in Table 1. In June 2002, well 37-06 was over-drilled, and a 2-in. PVC well (37-06R) was installed. Free product has continued to accumulate in well 37-06R, as indicated in Table 1. In November 2004, an area around well 37-06R was excavated and a 4-in. PVC well (37-06R2) was installed.

Free Product not observed due to absorbant socks. *

During the ninth semiannual sampling event in July 2004, groundwater elevations were measured in all of the monitoring wells. In July 2004, the groundwater flow direction was toward the west-southwest, and the groundwater gradient was approximately 0.05 ft/ft. Free product was not present in well 37-06R during this sampling event because absorbent socks had been placed in the well at the end of the last sampling event.

During the tenth semiannual sampling event in January 2005, groundwater elevations were measured in all of the monitoring wells. In January 2005, the groundwater flow direction was toward the west, and the groundwater gradient was approximately 0.05 ft/ft. Free product was not present in well 37-06R2 during this sampling event.

B. Analytical Data:

(Appendix I, Figure 3: Groundwater Quality Map)
(Appendix II, Table 2: Groundwater Analytical Results)
(Appendix III: Laboratory Analytical Results)

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

During the ninth semiannual sampling event in July 2004, monitoring wells 37-06R, 37-07, and 37-09 were sampled, and the samples were analyzed for BTEX using U. S. Environmental Protection Agency (EPA) Method 8021B/8260B. Analytical results from the sampling event are summarized below.

- Benzene was detected in two of three groundwater samples at concentrations of 32.9 (37-07) and 146 µg/L (37-06R), the second of which exceeded the ACL and IWQS.
- * Toluene was detected in one of three groundwater samples at a concentration of 0.59J µg/L (37-09). The concentration did not exceed the IWQS.
- Ethylbenzene was detected in one of three groundwater samples at a concentration of 26.8 µg/L (37-06R). The concentration did not exceed the IWQS.

- Total xylenes were not detected in any the groundwater samples.

The benzene concentration in 37-06R exceeded the IWQS and ACL of 71.28 µg/L. None of the other constituents exceeded the respective IWQS. Figure 4 shows the variations in benzene concentrations in groundwater for the wells in the monitoring only program.

During the tenth semiannual sampling event in January 2005, monitoring wells 37-06R2, 37-07, and 37-09 were sampled, and the samples were analyzed for BTEX using EPA Method 8021B/8260B. Analytical results from the sampling event are summarized below.

- Benzene was detected in two of three groundwater samples at concentrations of 0.93J and 14.7 µg/L. None of the concentrations exceeded the ACL and IWQS.
- Toluene was not detected in any of the groundwater samples.
- Ethylbenzene was detected in three of three groundwater samples at concentrations ranging from 1.8 to 2.9 µg/L. The concentrations did not exceed the IWQS.
- Total xylenes were detected in three of three groundwater samples at concentrations ranging from 1.3 to 4.7 µg/L. There is no IWQS, but the concentrations did not exceed the maximum contaminant level of 10,000 µg/L.

The benzene concentrations in 37-06R2 have decreased to values below the IWQS and ACL of 71.28 µg/L. None of the other constituents exceeded the respective IWQS. Figure 4 shows the variations in benzene concentrations in groundwater for the wells in the monitoring only program.

As recommended in the CAP–Part A Addendum #2 Report (SAIC 2000), polynuclear aromatic hydrocarbon analysis was not performed as part of the Monitoring Only Plan for the site.

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

(Appendix IV: Site Ranking Form)

Environmental Site Sensitivity Score:
(April 1999 version of the Site Ranking Form was used.)

15,100 (Jan. 2000—CAP–Part A Addendum #2 Report)
2,600 (June 2000 – First Semiannual Monitoring Event)
25,350 (Jan. 2001 – Second Semiannual Monitoring Event)
27,600 (June 2001 – Third Semiannual Monitoring Event)
27,600 (Jan. 2002 – Fourth Semiannual Monitoring Event)
27,600 (July 2002 – Fifth Semiannual Monitoring Event)
177,600 (Jan. 2003 – Sixth Semiannual Monitoring Event)
27,600 (June 2003 – Seventh Semiannual Monitoring Event)
2,600 (Jan. 2004 – Eighth Semiannual Monitoring Event)
2,600 (July 2004 – Ninth Semiannual Monitoring Event)
350 (Jan. 2005 – Tenth Semiannual Monitoring 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 was conducted in accordance with Section V of the CAP–Part A Addendum #2 Report (SAIC 2000) and approved by GA EPD USTMP in correspondence dated December 18, 2000 (Logan 2000b). Termination conditions approved in the CAP–Part A Addendum #2 Report indicate that termination will be requested once the measured benzene concentrations are below the ACL. Once the benzene IWQS has been achieved and the product thickness is less than 1/8 in., the Monitoring Only Plan may be terminated regardless of the site ranking score.

Fort Stewart respectfully requests that GA EPD USTMP assign Facility ID #9-089078 a No Further Action Required (NFAR) status for the following reasons:

- The Monitoring Only Plan is being conducted in accordance with Section III of the CAP–Part A Addendum #2 Report (SAIC 2000) and as approved by GA EPD USTMP in correspondence December 18, 2000 (Logan 2000b).
- Fort Stewart excavated an area around well 37-06R to remove any additional free product that was tied up in the soil.
- The site score for the last round of semiannual groundwater sampling was 350, which GA EPD USTMP representatives have indicated is an acceptable score for requesting an NFAR status (i.e., January 27, 1999, meeting between GA EPD, Fort Stewart, USACE, and SAIC representatives).
- The various revisions to the fate and transport model summarized in Attachment A indicate that benzene will never reach the nearest potential preferential pathway (i.e., a drainage ditch) at a concentration above the IWQS of 71.28 µg/L.
- The benzene concentrations in all wells were below the IWQS and ACL of 71.28 µg/L during the semiannual sampling event following the soil excavation.
- The closest surface water bodies are a drainage ditch located 500 ft west of the site and Mill Creek located 2,212 ft west of the site.
- Natural attenuation will continue to take place at the site, and the benzene concentrations at the site are below the IWQS.

The monitoring only program at this site will be discontinued.

VI. REIMBURSEMENT

Attached _____ *N/A* X

(Appendix V: Reimbursement Application)

Fort Stewart is a federally owned facility and has funded the investigation for the Former UST 94A site, Building 1320, Facility ID #9-089078, using U. S. Department of Defense Environmental Restoration Account Funds. Application for Georgia UST Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

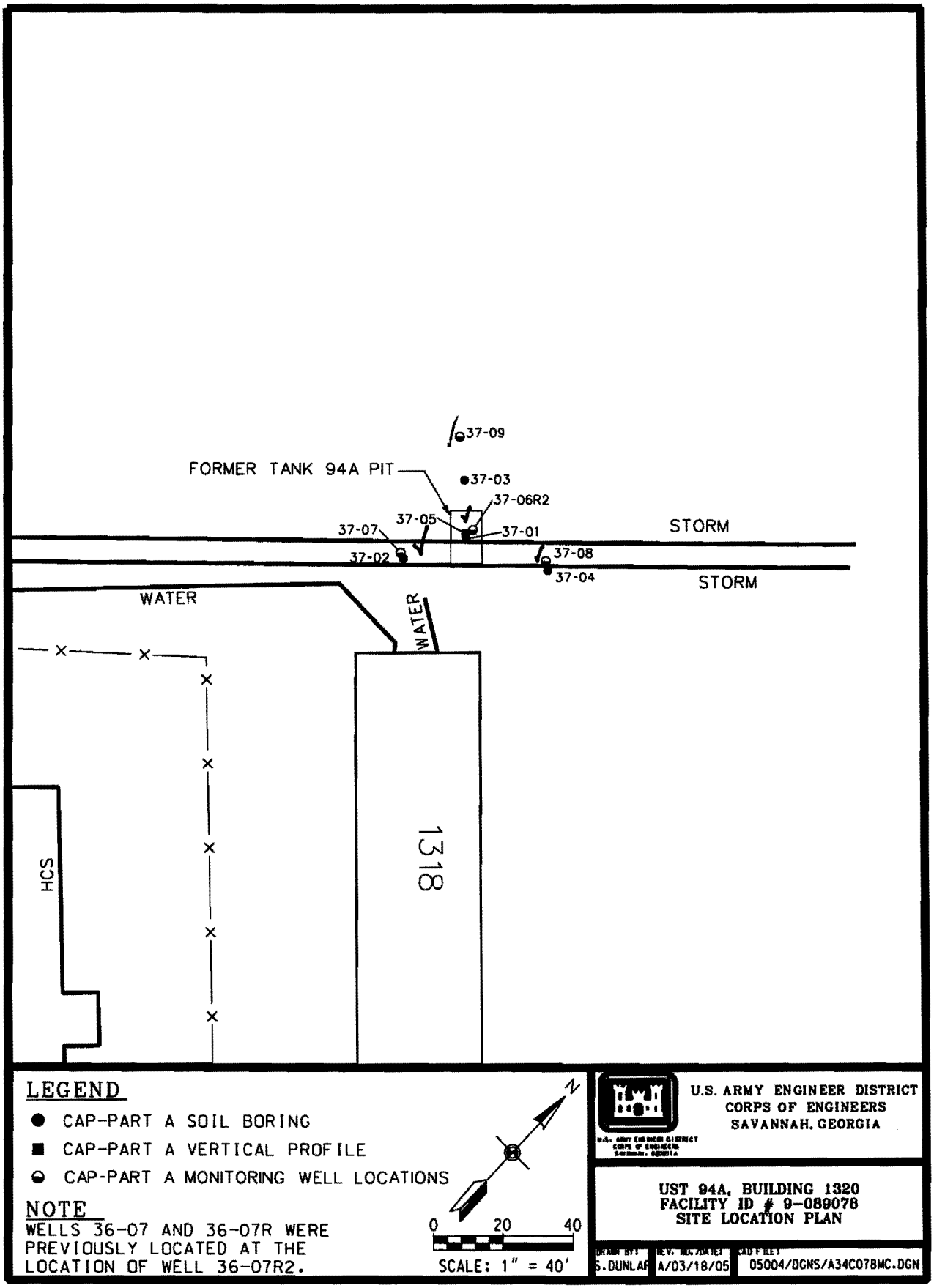


Figure 1. Location Map of UST 94A at Fort Stewart, Liberty County, Georgia

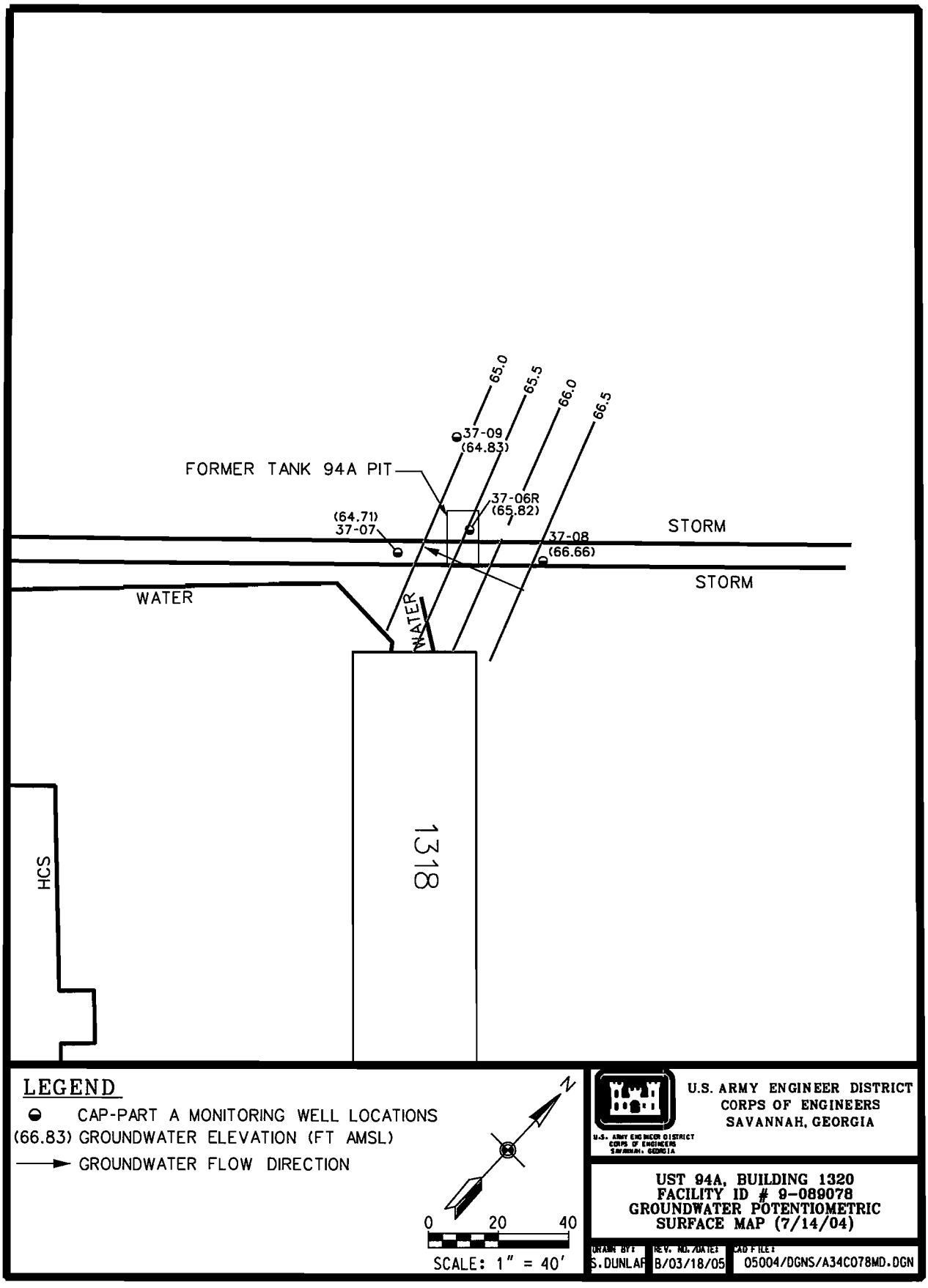


Figure 2a. Potentiometric Surface Map for the UST 94A Site (July 2004)

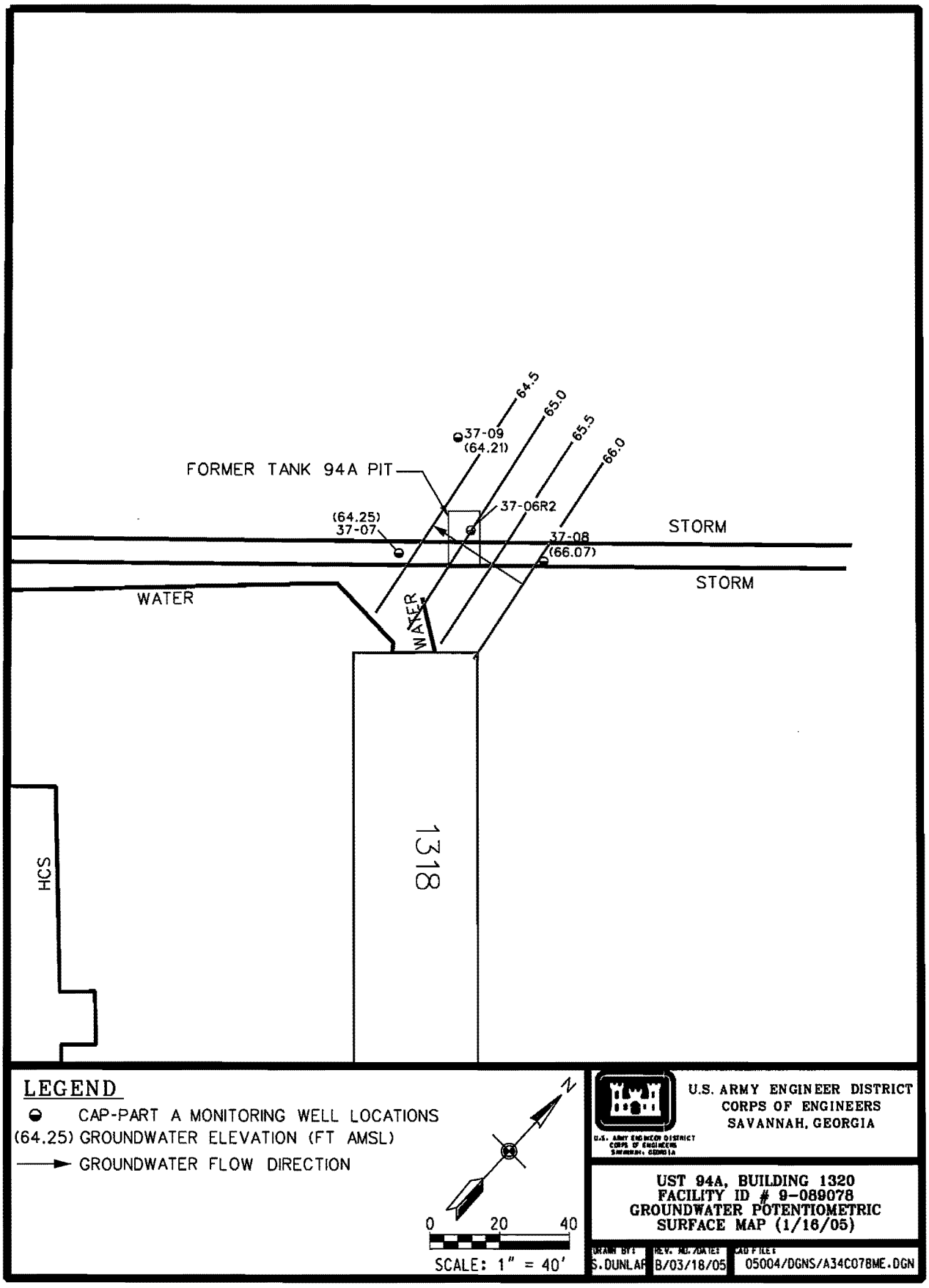


Figure 2b. Potentiometric Surface Map for the UST 94A Site (January 2005)

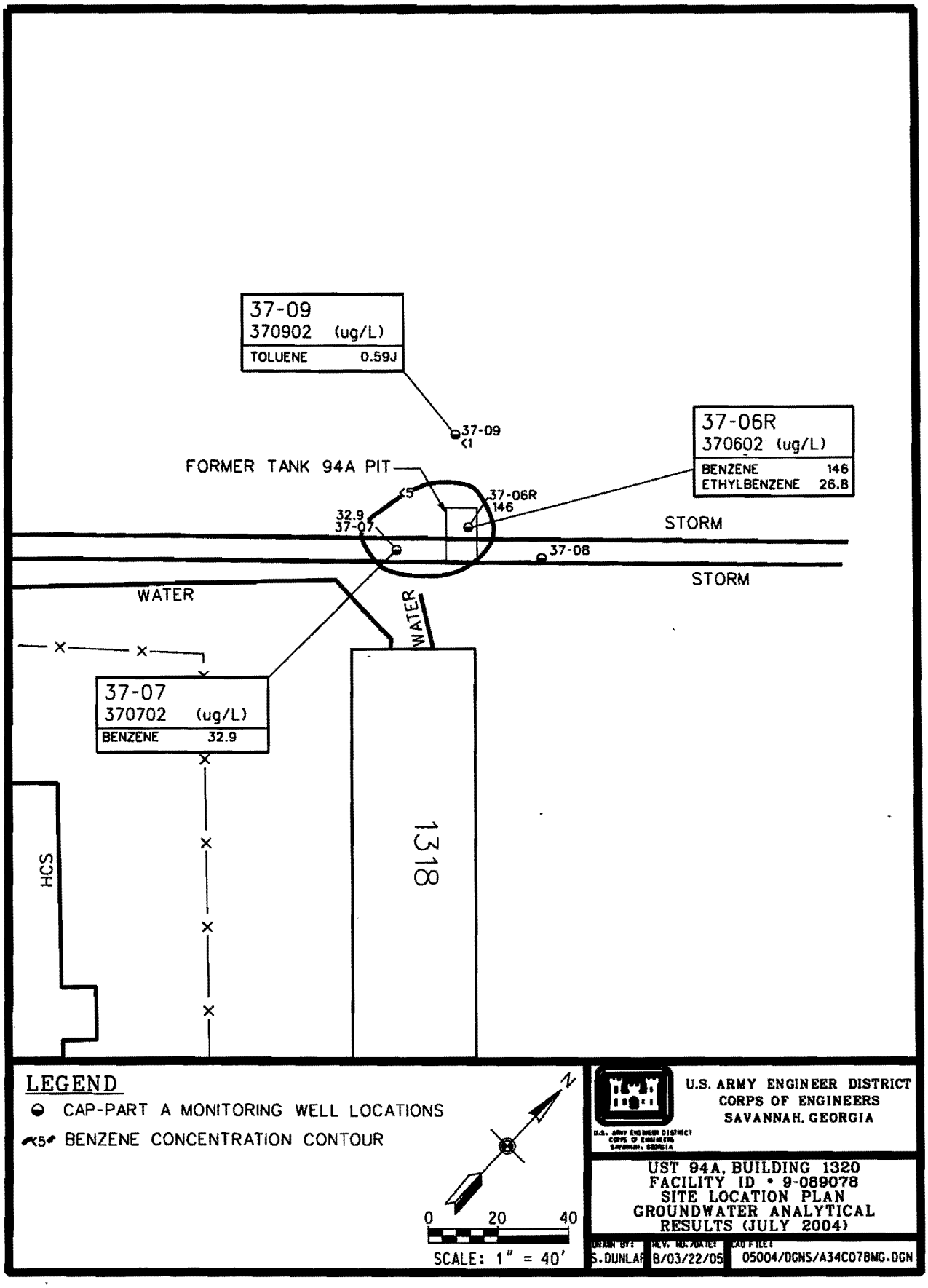


Figure 3a. Groundwater Quality Map for the UST 94A Site (July 2004)

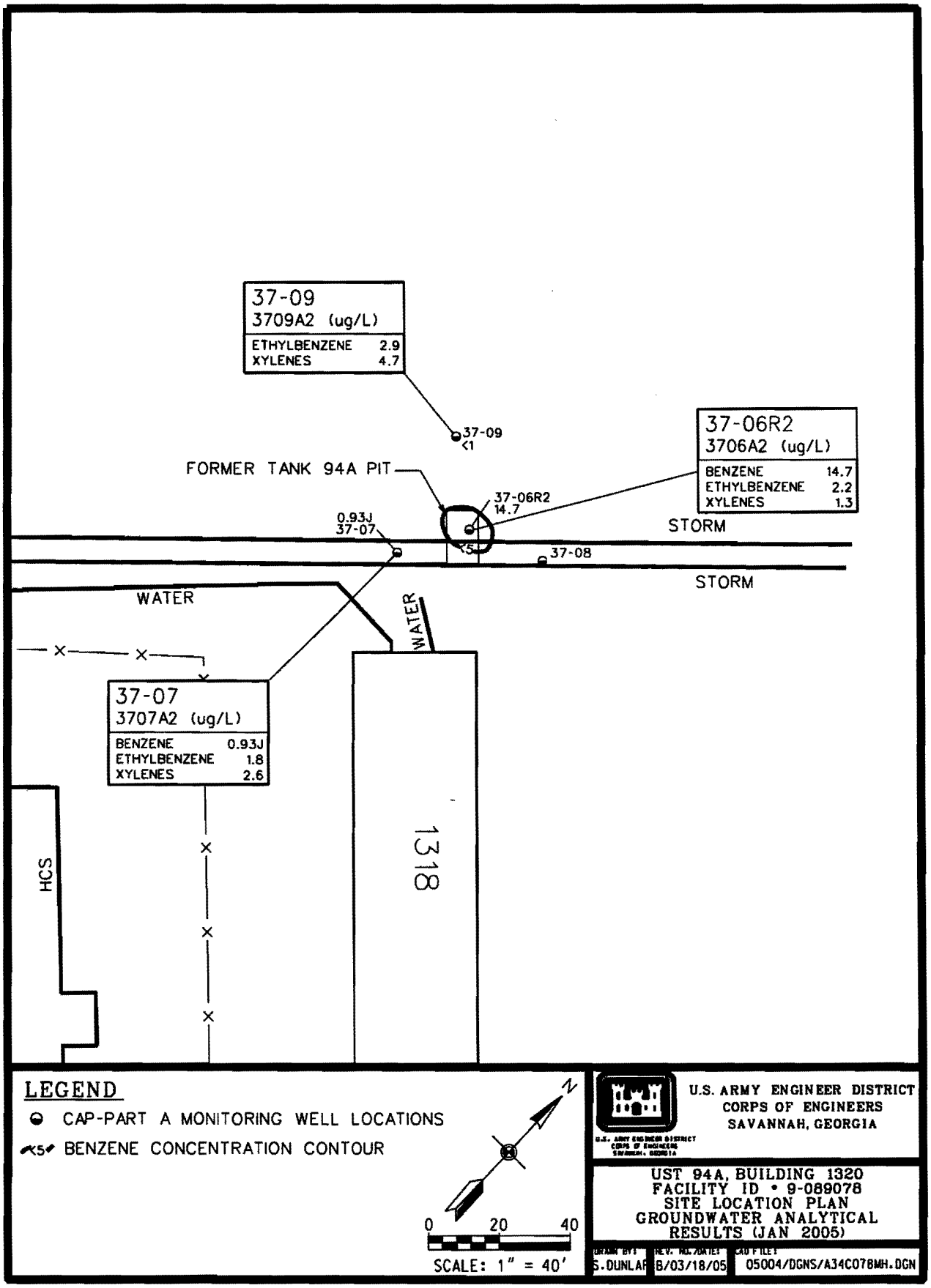


Figure 3b. Groundwater Quality Map for the UST 94A Site (January 2005)

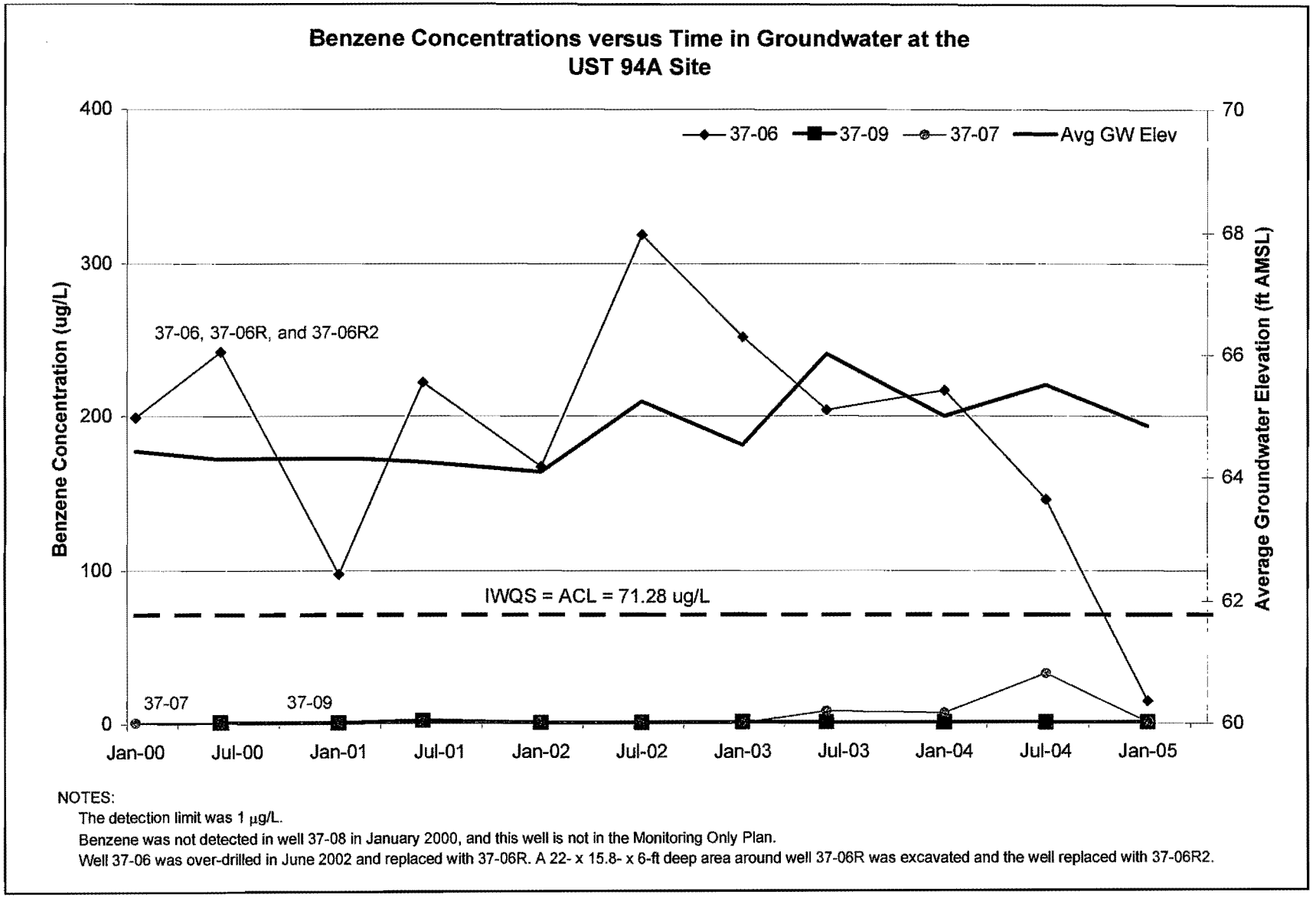


Figure 4. Trend of Benzene Concentrations at the UST 94A Site

APPENDIX II

REPORT TABLES

Table 1. Groundwater Elevations

Well Number	Date Measured	Top of Casing Elevation (ft AMSL)	Depth of Screened Interval (ft BGS)	Depth to Free Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
Corrective Action Plan–Part A Investigation – 2000							
37-06	02/21/00	69.62	1.7 – 11.7	—	3.49	sheen	66.13
37-07	02/21/00	70.15	3.7 – 13.7	—	6.28	0	63.87
37-08	02/21/00	69.88	5.7 – 15.7	—	5.94	0	63.94
37-09	02/21/00	68.78	4.7 – 14.7	—	5.00	0	63.78
First Semiannual Monitoring Event – June 2000							
37-06	06/29/00	69.62	1.7 – 11.7	—	2.75	0	66.87
37-07	06/29/00	70.15	3.7 – 13.7	—	6.16	0	63.99
37-08	06/29/00	69.88	5.7 – 15.7	—	6.76	0	63.12
37-09	06/29/00	68.78	4.7 – 14.7	—	5.56	0	63.22
Second Semiannual Monitoring Event – January 2001							
37-06[a]	01/09/01	69.62	1.7 – 11.7	4.05	4.15	0.10	65.56[b]
37-07	01/09/01	70.15	3.7 – 13.7	—	6.56	0	63.59
37-08	01/09/01	69.88	5.7 – 15.7	—	5.38	0	64.50
37-09	01/09/01	68.78	4.7 – 14.7	—	5.11	0	63.67
Absorbent Sock Replacement between Monitoring Events							
37-06[c]	04/09/01	69.62	1.7 – 11.7	—	2.50	0	67.12
Third Semiannual Monitoring Event – June 2001							
37-06[a]	08/09/01	69.62	1.7 – 11.7	2.15	2.33	0.18	67.45[b]
37-07	08/09/01	70.15	3.7 – 13.7	—	5.41	0	64.74
37-08	08/09/01	69.88	5.7 – 15.7	—	4.50	0	65.38
37-09	08/09/01	68.78	4.7 – 14.7	—	4.29	0	64.49
Fourth Semiannual Monitoring Event – January 2002							
37-06[d]	01/20/02	69.62	1.7 – 11.7	4.16	4.22	0.06	65.45[b]
37-07	01/20/02	70.15	3.7 – 13.7	—	6.82	0	63.33
37-08	01/20/02	69.88	5.7 – 15.7	—	5.65	0	64.23
37-09	01/20/02	68.78	4.7 – 14.7	—	5.44	0	63.34
Absorbent Sock Replacement between Monitoring Events							
37-06[d]	03/20/02	69.62	1.7 – 11.7	3.10	3.11	0.01	66.52

NOTES:

[a] An absorbent sock was placed in the well on the date indicated.

[b] The groundwater elevation was corrected using a density of 912 kg/m^3 for the product.

[c] The absorbent sock was removed before the date indicated and not reinstalled in the well.

[d] The absorbent sock was removed and replaced in the month indicated.

[e] The 3/4-in. well 37-06 was over-drilled in June 2002, and a 2-in. well was installed; therefore, a new top of casing was surveyed.

[f] Absorbent socks were removed and replaced; however, monthly absorbent sock replacement was not within the scope of work of this contractor between June 2003 and January 2005.

[g] Well construction detail and survey data were not provided in the *Final Report for Interim Removal Activities at UST 89, Facility ID #9-089074, Building 1247 and UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia* (STEP 2005).

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

Table 1. Groundwater Elevations (continued)

Well Number	Date Measured	Top of Casing Elevation (ft AMSL)	Depth of Screened Interval (ft BGS)	Depth to Free Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
Fifth Semiannual Monitoring Event – July 2002							
37-06R[c]	07/12/02	69.37[e]	3.9 – 13.9	—	3.96	0	65.41
37-07	07/12/02	70.15	3.7 – 13.7	—	5.17	0	64.98
37-08	07/12/02	69.88	5.7 – 15.7	—	4.28	0	65.60
37-09	07/12/02	68.78	4.7 – 14.7	—	3.80	0	64.98
Absorbent Sock Replacement between Monitoring Events							
37-06R[d]	07/15/02	69.37	3.9 – 13.9	4.06	4.10	0.04	65.31
37-06R[d]	08/16/02	69.37	3.9 – 13.9	4.93	5.89	0.96	64.35
37-06R[d]	09/22/02	69.37	3.9 – 13.9	4.51	7.05	2.54	64.64
37-06R[d]	10/22/02	69.37	3.9 – 13.9	4.30	7.51	3.21	64.79
37-06R[d]	12/19/02	69.37	3.9 – 13.9	4.37	7.45	3.08	64.73
Sixth Semiannual Monitoring Event – January 2003							
37-06R[d]	01/21/03	69.37[e]	3.9 – 13.9	4.50	7.60	3.1	64.60
37-07	01/21/03	70.15	3.7 – 13.7	—	5.62	0	64.53
37-09	01/21/03	68.78	4.7 – 14.7	—	4.31	0	64.47
Absorbent Sock Replacement between Monitoring Events							
37-06R[d]	02/20/03	69.37	3.9 – 13.9	4.72	5.72	1.0	64.56
37-06R[d]	03/19/03	69.37	3.9 – 13.9	3.60	4.90	1.3	65.66
37-06R[d]	04/25/03	69.37	3.9 – 13.9	4.26	5.05	0.79	65.04
37-06R[d]	05/16/03	69.37	3.9 – 13.9	4.32	4.93	0.61	65.00
Seventh Semiannual Monitoring Event – June 2003							
37-06R[d]	06/21/03	69.37[e]	3.9 – 13.9	4.16	4.34	0.18	65.19
37-07	06/21/03	70.15	3.7 – 13.7	—	3.97	0	66.18
37-08	06/21/03	69.88	5.7 – 15.7	—	3.22	0	66.66
37-09	06/21/03	68.78	4.7 – 14.7	—	2.73	0	66.05
Eighth Semiannual Monitoring Event – January 2004							
37-06R[f]	01/20/04	69.37[e]	3.9 – 13.9	—	5.01	0	64.36
37-07	01/20/04	70.15	3.7 – 13.7	—	5.79	0	64.36
37-08	01/20/04	69.88	5.7 – 15.7	—	2.95	0	66.93
37-09	01/20/04	68.78	4.7 – 14.7	—	4.44	0	64.34

NOTES:

[a] An absorbent sock was placed in the well on the date indicated.

[b] The groundwater elevation was corrected using a density of 912 kg/m^3 for the product.

[c] The absorbent sock was removed before the date indicated and not reinstalled in the well.

[d] The absorbent sock was removed and replaced in the month indicated.

[e] The 3/4-in. well 37-06 was over-drilled in June 2002, and a 2-in. well was installed; therefore, a new top of casing was surveyed.

[f] Absorbent socks were removed and replaced; however, monthly absorbent sock replacement was not within the scope of work of this contractor between June 2003 and January 2005.

[g] Well construction detail and survey data were not provided in the *Final Report for Interim Removal Activities at UST 89, Facility ID #9-089074, Building 1247 and UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia* (STEP 2005).

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

Table 1. Groundwater Elevations (continued)

Well Number	Date Measured	Top of Casing Elevation (ft AMSL)	Depth of Screened Interval (ft BGS)	Depth to Free Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
Ninth Semiannual Monitoring Event – July 2004							
37-06R[d]	07/14/04	69.37[e]	3.9 – 13.9	—	3.55	0	65.82
37-07	07/14/04	70.15	3.7 – 13.7	—	5.44	0	64.71
37-08	07/14/04	69.88	5.7 – 15.7	—	3.22	0	66.66
37-09	07/14/04	68.78	4.7 – 14.7	—	3.95	0	64.83
Tenth Semiannual Monitoring Event – January 2005							
37-06R2	01/16/05	unknown[g]	unknown[g]	—	4.37	0	unknown[g]
37-07	01/16/05	70.15	3.7 – 13.7	—	5.90	0	64.25
37-08	01/16/05	69.88	5.7 – 15.7	—	3.81	0	66.07
37-09	01/16/05	68.78	4.7 – 14.7	—	4.57	0	64.21

NOTES:

[a] An absorbent sock was placed in the well on the date indicated.
[b] The groundwater elevation was corrected using a density of 912 kg/m^3 for the product.
[c] The absorbent sock was removed before the date indicated and not reinstalled in the well.
[d] The absorbent sock was removed and replaced in the month indicated.
[e] The 3/4-in. well 37-06 was over-drilled in June 2002, and a 2-in. well was installed; therefore, a new top of casing was surveyed.
[f] Absorbent socks were removed and replaced; however, monthly absorbent sock replacement was not within the scope of work of this contractor between June 2003 and January 2005.
[g] Well construction detail and survey data were not provided in the *Final Report for Interim Removal Activities at UST 89, Facility ID #9-089074, Building 1247 and UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia* (STEP 2005).

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

Table 2. Groundwater Analytical Results

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
Corrective Action Plan–Part A Investigation - 2000								
37-06	370612	1.7 – 11.7	01/15/00	***199 J***	120 J	59.9 J	217 J	595.9
37-07	370712	3.7 – 13.7	01/15/00	1 U	1 U	1 U	3 U	ND
37-08	370812	5.7 – 15.7	01/15/00	1 U	1 U	1 U	3 U	ND
First Semiannual Monitoring Event – June 2000								
37-06	370622	1.7 – 11.7	06/23/00	***242*** =	45 =	88 =	116 =	491
37-07	370722	3.7 – 13.7	06/23/00	1 U	1 U	1 U	3 U	ND
37-09	370822	5.7 – 15.7	06/23/00	1.2 =	1 U	1 U	3 U	1.2
Second Semiannual Monitoring Event – January 2001								
37-06	370632	1.7 – 11.7	01/09/01	***97.9*** =	5.2 =	49 =	48.2 =	200.3
37-07	370732	3.7 – 13.7	01/09/01	1 U	1 U	1 U	3 U	ND
37-09	370832	5.7 – 15.7	01/09/01	1 =	1 U	1 U	3 U	1
Third Semiannual Monitoring Event – June 2001								
37-06	370642	1.7 – 11.7	06/08/01	***222*** =	13.6 =	75 =	98 =	408.6
37-07	370742	3.7 – 13.7	06/08/01	0.82 J	1 U	1.5 =	2.1 J	4.42
37-09	370842	5.7 – 15.7	06/08/01	2.4 =	1 U	3 =	4.1 =	9.5
Fourth Semiannual Monitoring Event – January 2002								
37-06	370652	1.7 – 11.7	01/20/02	***167*** =	10 U	74.4 =	37.2 =	278.6
37-07	370752	3.7 – 13.7	01/20/02	1 U	1 U	1 U	3 U	ND
37-09	370852	5.7 – 15.7	01/20/02	0.96 J	1 U	1 U	3 U	0.96
Fifth Semiannual Monitoring Event – July 2002								
37-06R	370662	3.9 – 13.9	07/12/02	***319*** =	5.8 =	134 =	130 =	588.8
37-07	370762	3.7 – 13.7	07/12/02	1 U	1 U	1 U	3 U	ND
37-09	370862	5.7 – 15.7	07/12/02	0.92 J	1 U	1 U	3 U	0.92
Sixth Semiannual Monitoring Event – January 2003								
37-06R	370672	3.9 – 13.9	01/21/03	***252*** =	5 U	28.6 =	5 U	280.6
37-07	370772	3.7 – 13.7	01/21/03	0.33 J	1 U	1 U	1 U	0.33
37-09	370872	5.7 – 15.7	01/21/03	1.2 =	1 U	1 U	1 U	1.2
In-Stream Water Quality Standards (GA EPD Chapter 391-3-6)				71.28	200,000	28,718	NRC	NRC
Alternate Concentration Limits				71.28	—	—	—	—

NOTES:

Bold values exceed In-Stream Water Quality Standards.
Italic values exceed alternate concentration limits.
BGS Below ground surface.
BTEX Benzene, toluene, ethylbenzene, and xylenes.
GA EPD Georgia Environmental Protection Division.
ND Not detected.
NRC No regulatory criterion.

Data Qualifiers

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

Table 2. Groundwater Analytical Results (continued)

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
Seventh Semiannual Monitoring Event – June 2003								
37-06R	370682	3.9 – 13.9	06/21/03	***204*** =	1 U	34.7 =	1.8 =	240.5
37-07	370782	3.7 – 13.7	06/21/03	8.2 =	1 U	1 U	1 U	8.2
37-09	370882	5.7 – 15.7	06/21/03	1 U	1 U	1 U	1 U	ND
Eighth Semiannual Monitoring Event – January 2004								
37-06R	370692	3.9 – 13.9	01/20/04	***217*** =	1.4 =	81 =	14.4 =	313.8
37-07	370792	3.7 – 13.7	01/20/04	6.9 =	1 U	1 U	1 U	6.9
37-09	370992	5.7 – 15.7	01/20/04	1 U	1 U	1 U	1 U	ND
Ninth Semiannual Monitoring Event – July 2004								
37-06R	370602	3.9 – 13.9	07/20/04	***146*** =	2 U	26.8 =	2 U	172.8
37-07	370702	3.7 – 13.7	07/20/04	32.9 =	1 U	1 U	1 U	32.9
37-09	370902	5.7 – 15.7	07/20/04	1 U	0.59 J	1 U	1 U	0.59
Tenth Semiannual Monitoring Event – January 2005								
37-06R2	3706A2	unknown	01/16/05	14.7 =	1 U	2.2 =	1.3 =	18.2
37-07	3707A2	3.7 – 13.7	01/16/05	0.93 J	1 U	1.8 =	2.6 =	5.33
37-09	3709A2	5.7 – 15.7	01/16/05	1 U	1 U	2.9 =	4.7 =	7.6
In-Stream Water Quality Standards (GA EPD Chapter 391-3-6)				71.28	200,000	28,718	NRC	NRC
Alternate Concentration Limits				71.28	—	—	—	—

NOTES:

Bold values exceed In-Stream Water Quality Standards.
Italic values exceed alternate concentration limits.
BGS Below ground surface.
BTEX Benzene, toluene, ethylbenzene, and xylenes.
GA EPD Georgia Environmental Protection Division.
ND Not detected.
NRC No regulatory criterion.

Data Qualifiers

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

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 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 also 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 nondetected, "U." As a result of this extended validation process, copies of the original data sheets are not provided in this report. A summary of the validation and reason codes is provided in this section. Each data package generated for the underground storage tank project at Fort Stewart and Hunter Army Airfield contains a case narrative that is signed by the analytical laboratory project manager. Laboratory information and third-party certification are provided below.

STATE OF GEORGIA
ENVIRONMENTAL LABORATORY ACCREDITATION

	Name of Laboratory:	**General Engineering Laboratories, Inc.**
	Address:	P.O. Box 30712 2040 Savage Road Charleston, SC 29407
	Contact:	Bob Pullano or 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:	Extension granted while recertification in process, January 27, 2003
	Expiration Date:	March 26, 2005
	Accreditation Scope:	SDWA, CWA, RCRA, CERCLA
#2	Accrediting Authority:	**State of Florida**
	Accreditation Number:	E-87156
	Effective Date:	July 1, 2001 (initial and reaccredited on July 1 each year thereafter)
	Expiration Date:	June 30, 2005
	Accreditation Scope:	SDWA, CWA, RCRA, CERCLA

DATA VALIDATION REASON CODES

Organic, Inorganic, and Radiological Analytical Data

Holding Times

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

Gas Chromatography/Mass Spectroscopy Tuning

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

Initial/Continuing Calibration – Organics

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

Initial/Continuing Calibration – Inorganics

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

Inductively Coupled Plasma and Furnace Requirements

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

Blanks

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

Surrogate/Radiological Chemical Recovery

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

Matrix Spike/Matrix Spike Duplicate

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

DATA VALIDATION REASON CODES (continued)

Organic, Inorganic, and Radiological Analytical Data

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

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

Internal Area Summary
- K01 Area counts were outside the control limits.
- K02 Extremely low area counts or performance was exhibited by a major drop-off.
- K03 IS retention time varied by more than 30 sec.
- K04 Professional judgment was used to qualify the data.

Pesticide Cleanup Checks
- L01 10% recovery was obtained during either check.
- L02 Recoveries during either check were >120%.
- L03 Gel permeation chromatography cleanup recoveries were outside the control limits.
- L04 Florisil cartridge cleanup recoveries were outside the control limits.
- L05 Professional judgment was used to qualify the data.

Target Compound Identification
- M01 Incorrect identifications were made.
- M02 Qualitative criteria were not met.
- M03 Cross contamination occurred.
- M04 Confirmatory analysis was not performed.
- M05 No results were provided.
- M06 Analysis occurred outside 12-hour gas chromatography/mass spectroscopy window.
- M07 Professional judgment was used to qualify the data.
- M08 The %D between the two pesticide/polychlorinated biphenyl column checks was >25%.

Compound Quantitation and Reported CRQLs
- N01 Quantitation limits were affected by large off-scale peaks.
- N02 Method detection limits reported by the laboratory exceeded corresponding CRQLs.
- N03 Professional judgment was used to qualify the data.

Tentatively Identified Compounds
- O01 Compound was suspected laboratory contaminant and was not detected in the blank.
- O02 Tentatively identified compound result was not above 10 times the level found in the blank.
- O03 Professional judgment was used to qualify analytical data.

Laboratory Control Samples
- P01 Laboratory control sample (LCS) recovery was above the upper control limit.
- P02 LCS recovery was below the lower control limit.
- P03 LCS recovery was <50%.
- P04 No action was taken on the LCS data.
- P05 LCS was not analyzed at the required frequency.
- P06 Radiological LCS recovery was <50% for aqueous samples, <40% for solid samples.
- P07 Radiological LCS recovery was >150% for aqueous samples, >160% for solid samples.
- P08 Professional judgment was used to qualify the data.

Field Duplicate
- Q01 Field duplicate RPDs were >30% for waters and/or >50% for soils.
- Q02 Radiological DER was outside the control limit.
- Q03 Duplicate sample results were >5 times the CRDL.
- Q04 Duplicate sample results were <5 times the CRDL.

Radiological Calibration
- R01 Efficiency calibration criteria were not met.
- R02 Energy calibration criteria were not met.
- R03 Resolution calibration criteria were not met.
- R04 Background determination criteria were not met.
- R05 Quench curve criteria were not met.
- R06 Absorption curve criteria were not met.
- R07 Plateau curve criteria were not met.
- R08 Professional judgment was used to qualify the data.

Radiological Calibration Verification
- S01 Efficiency verification criteria were not met.
- S02 Energy verification criteria were not met.
- S03 Resolution verification criteria were not met.
- S04 Background verification criteria were not met.
- S05 Cross-talk verification criteria were not met.
- S06 Professional judgment was used to qualify the data.

NINTH SEMIANNUAL SAMPLING EVENT

JULY 2004

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

370602

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 117444

Matrix: (soil/water) WATER Lab Sample ID: 117444003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7V206

Level: (low/med) LOW Date Received: 07/22/04

% Moisture: not dec. _____ Date Analyzed: 08/03/04

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

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

USQ

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	146		
108-88-3	Toluene	2.0	U	
100-41-4	Ethylbenzene	26.8		
1330-20-7	Xylenes (total)	2.0	U	

DATA VALIDATION COPY

FORM I VOA OLM03.0

RINSATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

370606

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 117444

Matrix: (soil/water) WATER Lab Sample ID: 117444004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7V111

Level: (low/med) LOW Date Received: 07/22/04

% Moisture: not dec. _____ Date Analyzed: 08/02/04

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	0.97	J	J
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	1.0	U	U

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

370702

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 117444

Matrix: (soil/water) WATER Lab Sample ID: 117444002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7V205

Level: (low/med) LOW Date Received: 07/22/04

% Moisture: not dec. _____ Date Analyzed: 08/03/04

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	32.9	
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

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DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

370902

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 117444

Matrix: (soil/water) WATER Lab Sample ID: 117444005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7V112

Level: (low/med) LOW Date Received: 07/22/04

% Moisture: not dec. _____ Date Analyzed: 08/02/04

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	0.59	J	J
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	1.0	U	U

DATA VALIDATION COPY

SAIC An Employee-Owned Company
Science Applications International Corporation
PO Box 2501, 151 Lafayette Dr., Tennessee 37830 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GLTM46

PROJECT NAME: Fort Stewart LTM, D.O. 44

PROJECT NUMBER: 01-1055-04-8991-200

PROJECT MANAGER: ~~Patty Stoll~~ Sharon Stoller

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

1174447. REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29407

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	SVOC	Nitrite, Nitrate,Sulfate	Sulfide	Total Iron	Methane	Carbon Dioxide	Total Phosphorus	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TBØ4Ø4	7/20/04	0745	water	2									2		
37Ø7Ø2	"	1031	"	2									2		
37Ø6Ø2	"	0947	"	2									2		
37Ø6Ø6	"	0924	"	2									2		
37Ø9Ø2	"	0900	"	2									2		

P Stoll 7/22/04

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 10	Cooler Temperature: 4°C
[signature]	7/22/04	[signature]	7-22-04	Cooler ID: 76	FEDEX NUMBER: N/A
COMPANY NAME: SAIC	11:25	COMPANY NAME: GEL	1415		
RECEIVED BY: [signature]	Date/Time 7-22-04	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	11:25	COMPANY NAME:			
RELINQUISHED BY: [signature]	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:	14 15	COMPANY NAME:			

TENTH SEMIANNUAL SAMPLING EVENT

JANUARY 2005

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3706A2

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 128998

Matrix: (soil/water) WATER Lab Sample ID: 128998005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9U314

Level: (low/med) LOW Date Received: 01/17/05

% Moisture: not dec. _____ Date Analyzed: 01/26/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	14.7	
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	2.2	
1330-20-7	Xylenes (total)	1.3	

FORM I VOA OLM03.0

DATA VALIDATION

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3707A2

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 128998

Matrix: (soil/water) WATER Lab Sample ID: 128998003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9U313

Level: (low/med) LOW Date Received: 01/17/05

% Moisture: not dec. _____ Date Analyzed: 01/26/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2	Benzene	0.93	J	J
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.8		
1330-20-7	Xylenes (total)	2.6		

FORM I VOA OLM03.0

COPY

RINSATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3707A6

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 128998

Matrix: (soil/water) WATER Lab Sample ID: 128998004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9U310

Level: (low/med) LOW Date Received: 01/17/05

% Moisture: not dec. _____ Date Analyzed: 01/26/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	8.7		
100-41-4	Ethylbenzene	0.94	J	J
1330-20-7	Xylenes (total)	3.2		

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

3709A2

Lab Name: GEL, LLC. Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 128998

Matrix: (soil/water) WATER Lab Sample ID: 128998002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9U312

Level: (low/med) LOW Date Received: 01/17/05

% Moisture: not dec. _____ Date Analyzed: 01/26/05

GC Column: RTX-VOLATILES ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	1.0	U	U=U
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	2.9		
1330-20-7	Xylenes (total)	4.7		

VALIDATION COPY

SAIC An Employee-Owned Company
Science Applications International Corporation
PO Box 2501, 151 Lafayette Dr., Tennessee 37830 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GLJ7145

PROJECT NAME: Ft. Stewart UST Long Term Monitoring

PROJECT NUMBER: 01-1065-04-6991-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29407

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	MTBE	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TB060411	1/16/05	815	Water	2		2		128498
37Ø9A2		1410		2		2		
37Ø7A2		1435		2		2		
37Ø7A6		1430		2		2		
37Ø6A2		1505		2		2		
33Ø87U		1549		2		2		
33Ø872		1600		2		2		
Ø319VP		0915		2		2		
Ø314VP		0945		2		2		
Ø312VP		1020		2		2		
Ø311VP		1110		2		2		
Ø3Ø5VP		1140		2		2		
Ø318VP		1210		2		2		

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 108	Cooler Temperature: 4°C
COMPANY NAME: SAIC	1/17/05 1150	COMPANY NAME: GEL	1.17.5 455	Cooler ID: 131	FEDEX NUMBER: NA
RECEIVED BY: Ben Watkins	1/17/05 1150	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY: Ben Watkins	1/17/05 1455	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

7065017532

III-17

APPENDIX IV

SITE RANKING FORM

NINTH SEMIANNUAL SAMPLING EVENT

JULY 2004

SITE RANKING FORM

Facility Name: UST 94A, Building 1320 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089078 **Date Ranked:** 9/7/04

SOIL CONTAMINATION

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

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

B. Total Benzene -
Maximum Concentration found on the site

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

* *Closure sample T94A-A-S (1995)*

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

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

Fill in the blanks: **(A. 0) + (B. 10) = (10) x (C. 10) = (D. 100)**

GROUNDWATER CONTAMINATION

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

- * ☒ No free product = 0
- ☐ Sheen - 1/8" = 250
- ☐ >1/8" - 6" = 500
- ☐ >6" - 1ft. = 1,000
- ☐ For every additional inch, add another 100 points = 1000 +

* *No free product in July 2004*

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

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

* *Sample 370602 (July 2004)*

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

Facility Name: UST 94A, Building 1320 **County:** Liberty **Facility ID #:** 9-089078

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

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

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

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

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50

(G. 50) x (L. 50) = M. 2,500

(M. 2,500) + (D. 100) = N. 2,600

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: (N. 2,600) x (P. 1) = (2,600) + (Q. 0)

= 2,600 (July 2004 – Ninth Semiannual Monitoring Event)
ENVIRONMENTAL SENSITIVITY SCORE

TENTH SEMIANNUAL SAMPLING EVENT

JANUARY 2005

SITE RANKING FORM

Facility Name: UST 94A, Building 1320 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089078 **Date Ranked:** 3/8/05

SOIL CONTAMINATION

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

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

B. Total Benzene -
Maximum Concentration found on the site

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

* *Closure sample T94A-A-S (1995)*

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

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

Fill in the blanks: **(A. 0) + (B. 10) = (10) x (C. 10) = (D. 100)**

GROUNDWATER CONTAMINATION

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

- * ☒ No free product = 0
- ☐ Sheen - 1/8" = 250
- ☐ >1/8" - 6" = 500
- ☐ >6" - 1ft. = 1,000
- ☐ For every additional inch, add another 100 points = 1000 +

* *No free product in July 2004*

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

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

* *Sample 3706A2 (January 2005)*

Fill in the blanks: **(E. 0) + (F. 5) = (G. 5)**

Facility Name: UST 94A, Building 1320 **County:** Liberty **Facility ID #:** 9-089078

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

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

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

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

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: **(H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50**

(G. 5) x (L. 50) = M. 250

(M. 250) + (D. 100) = N. 350

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: **(N. 350) x (P. 1) = (350) + (Q. 0)**

= 350 (January 2005 – Tenth Semiannual Monitoring Event)
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROGEOLOGIC DATA

The following provides supplemental information to Item H of the Site Ranking Form. It also provides details relating to the geologic and hydrogeologic conditions at Fort Stewart that support Fort Stewart's determination that the water withdrawal points located at the site are not hydraulically connected to the surficial aquifer.

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward-dipping strata that increase in thickness from 0 ft at the fall line, located approximately 150 miles inland from the Atlantic coast, to approximately 4,200 ft at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 ft below ground surface (BGS). This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 ft thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 ft thick and dominated by limestone, with a 175-ft-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 ft to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately 1/4 mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-ft section, the lowermost 110 ft of which consisted predominantly of limestone sediments, above which 245 ft of dark green phosphatic clay typical of the Hawthorn Group were encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 ft of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 in. in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 in. The subsoil is predominantly sandy clay loam and extends to a depth of 72 in. or more (Herrick and Vochis 1963).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian Aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, Ocala Group, and Suwannee Limestone. These formations are approximately 800 ft thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 ft in thickness. This aquifer is used primarily for domestic lawn and

agricultural irrigation. The top of the water table ranges from approximately 2 to 10 ft BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site but is believed to be located at 40 to 50 ft BGS; therefore, the effective aquifer thickness would be approximately 35 to 45 ft. Soil surveys for Liberty and Long Counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian Aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 ft. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/second. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie, Markshead, and Parachula, listed from youngest to oldest.

The Coosawhatchie Formation is predominantly composed of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 ft thick in the Savannah, Georgia, area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 ft thick in the Savannah, Georgia, area and consists of light-colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite and is approximately 10 ft thick in the Savannah, Georgia, area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

Groundwater encountered at all the underground storage tank (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 Fort Stewart.

3.0 REFERENCES

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

Geraghty and Miller 1993. *RCRA Facility Investigation Work Plan, Fort Stewart, Georgia.*

Herrick, S.M., and R.C. Vochis 1963. *Subsurface Geology of the Georgia Coastal Plain*, Georgia Geologic Survey Information Circular 25.

Looper, Edward E. 1980. *Soil Survey of Liberty and Long Counties, Georgia*, U. S. Department of Agriculture, Soil Conservation Service.

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

ATTACHMENT A

FATE AND TRANSPORT MODELING RESULTS

A.1 FATE AND TRANSPORT MODELING

In summary, the Analytical Transient 1-, 2-, 3-Dimensional Model was used to model contaminant migration to three potential downgradient receptors: a storm drain that runs through the former tank pit; a drainage ditch approximately 500 ft west of the site; and Mill Creek, located approximately 2,120 ft west of the site.

A.1.1 Summary of CAP–Part A Report Fate and Transport Modeling Results

The fate and transport modeling performed as part of the *Corrective Action Plan–Part A Addendum Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* (SAIC 1998) was based on the assumption that the source of contamination was continuous for 10 years at the site based on the maximum observed benzene concentration in groundwater [i.e., 260 µg/L in well 37-01 during the Corrective Action Plan (CAP)–Part A in September 1996]. The fate and transport modeling results indicated that the benzene plume would not reach the drainage ditch or Mill Creek at detectable concentrations. Benzene was the only constituent at the site that exceeded its In-Stream Water Quality Standard (IWQS); therefore, an alternate concentration limit (ACL) was developed for only benzene based on risk-based numbers. Comments provided by the Georgia Environmental Protection Division on the CAP–Part A Addendum Report (SAIC 1998) indicated that the target risk factor used in developing the benzene ACL was not sufficiently conservative. As a result, four permanent monitoring wells were installed at the site, and the fate and transport conditions were re-evaluated based on the storm drain that runs through the former tank pit. The fate and transport modeling was not revised as part of the CAP–Part A Addendum #2 Report (SAIC 2000); however, it was concluded that the dilution attenuation factor (DAF) associated with the storm drain would be 1. It was recommended, therefore, that the ACL for benzene be the same as the IWQS of 71.28 µg/L

A.1.2 Summary of First Annual Monitoring Only Report Fate and Transport Modeling Results

As a result of the benzene concentrations observed during the CAP–Part A investigation and 1 year of semiannual monitoring, the fate and transport modeling results were revised in the *First Annual Monitoring Only Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* (SAIC 2001) to reflect more recent site conditions assuming a continuous source of contamination and using the maximum observed benzene concentration in groundwater during the semiannual monitoring events (i.e., 242 µg/L at well 37-06 in June 2000). The source was assumed to be 10 by 15 ft based on the plume and was calibrated as a 1.57-mg/hour continuous pulse for 8 years. The estimated DAFs for benzene were 1 at the storm drain and infinity at the drainage ditch and Mill Creek. Because the DAF for the storm drain remained the same, the ACL of 71.28 µg/L was not revised.

A.1.3 Summary of Second Annual Monitoring Only Report Fate and Transport Modeling Results

As a result of the benzene concentrations observed during the CAP–Part A investigation and 2 years of semiannual monitoring, the fate and transport modeling results were revised in the *Second Annual Monitoring Only Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* (SAIC 2002) to reflect more recent site conditions assuming a continuous source of contamination and using the maximum observed benzene concentration in groundwater during the semiannual monitoring events (i.e., 222 µg/L at well 37-06 in June 2001). A near steady-state source was assumed for conservatism. The steady-state source loading for benzene was revised to 1.0 mg/hour, which was developed by calibrating the maximum groundwater concentrations observed during the June 2001 and

January 2002 sampling events (0.222 and 0.167 mg/L, respectively, in well 37-06). Based on the revised modeling results, the DAFs for benzene remained at 1.0 for the storm drain, infinity at the drainage ditch, and infinity at Mill Creek. Because the DAF for the storm drain remained the same, the ACL of 71.28 µg/L was not revised.

A.1.3 Summary of Third Annual Monitoring Only Report Fate and Transport Modeling Results

As a result of the benzene concentrations observed during the CAP–Part A investigation and 3 years of semiannual monitoring, the fate and transport modeling results were revised in the *Third Annual Monitoring Only Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* (SAIC 2003) to reflect more recent site conditions assuming a continuous source of contamination and using the maximum observed benzene concentration in groundwater during the semiannual monitoring events (i.e., 319 µg/L at well 37-06 in July 2002). A near steady-state source was assumed for conservatism. The steady-state source loading for benzene was revised to 0.08 mg/hour, which was developed by calibrating the maximum groundwater concentrations observed during the July 2002 and January 2003 sampling events (0.319 and 0.252 mg/L, respectively, in well 37-06). Based on the revised modeling results, the DAFs for benzene remained at 1 for the storm drain, infinity at the drainage ditch, and infinity at Mill Creek. Because the DAF for the storm drain remained the same, the ACL of 71.28 µg/L was not revised.

A.1.5 Fate and Transport Modeling Conclusions

The fate and transport model continues to be revised periodically based on the results of semiannual sampling and assumes a continuous source of contamination of infinite duration at the site based on the most recently observed maximum benzene concentration. The last time the fate and transport modeling was revised, the model was based on the maximum observed benzene concentration of 319 µg/L in groundwater at the source in July 2002. The fate and transport modeling and semiannual monitoring results led to the conclusions below.

- Benzene concentrations in groundwater exceeded the IWQS and ACL of 71.28 µg/L in well 37-06 at the site during the semiannual sampling events from June 2000 to July 2004.
- Following the November 2004 interim removal action, the January 2005 concentrations were below the IWQS and ACL.
- Benzene does not impact the closest surface water body, a drainage ditch located 500 ft west of the site, at concentrations above the IWQS.
- Benzene concentrations are not following the concentrations predicted because of the presence of free product at the site in well 37-06R.

A.2 REFERENCES

SAIC (Science Applications International Corporation) 1998. *Corrective Action Plan–Part A Addendum Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* Oak Ridge, Tennessee, July.

SAIC 2000. *Corrective Action Plan–Part A Addendum #2 Report for UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia,* Oak Ridge, Tennessee, June.

SAIC 2001. *First Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

SAIC 2002. *Second Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

SAIC 2003. *Third Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

ATTACHMENT B

REFERENCES

REFERENCES

Logan, William E. 1998. Letter to John Spears (Fort Stewart Directorate of Public Works, Environmental Branch), November 16.

Logan, William E. 2000a. Letter to Colonel Gregory V. Stanley (Fort Stewart Directorate of Public Works, Environmental Branch), September 5.

Logan, William E. 2000b. Letter to Colonel Gregory V. Stanley (Fort Stewart Directorate of Public Works, Environmental Branch), December 18.

SAIC (Science Applications International Corporation) 1997. *Corrective Action Plan–Part A Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, March.

SAIC 1998. *Corrective Action Plan–Part A Addendum Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, July.

SAIC 2000. *Corrective Action Plan–Part A Addendum #2 Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, June.

SAIC 2001. *First Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

SAIC 2002. *Second Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

SAIC 2003. *Third Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

SAIC 2004. *Fourth Annual Monitoring Only Report for Underground Storage Tank 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, Oak Ridge, Tennessee, April.

Stanley, Gregory V. 2001. Letter to William E. Logan (Georgia Environmental Protection Division, Underground Storage Tank Management Program), February 1.

STEP (Solutions To Environmental Problems, Inc.) 2005. *Final Report for Interim Removal Activities at UST 89, Facility ID #9-089074, Building 1247 and UST 94A, Facility ID #9-089078, Building 1320, Fort Stewart, Georgia*, February.

White, Kenneth F. 1997. Letter to John Spears (Fort Stewart Directorate of Public Works, Environmental Branch), July 30.

White, Kenneth F. 1998. Letter to John Spears (Fort Stewart Directorate of Public Works, Environmental Branch), March 19.

ATTACHMENT C

CERTIFICATES OF ANALYSIS

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370602
Sample ID: 117444003
Matrix: Water
Collect Date: 20-JUL-04 09:47
Receive Date: 22-JUL-04
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		147	0.660	2.00	ug/L	2	DLS 08/03/04	1138	354165	1
Ethylbenzene		26.8	0.420	2.00	ug/L	2				
Toluene	U	ND	0.780	2.00	ug/L	2				
Xylenes (total)	U	ND	0.500	2.00	ug/L	2				
Benzene		187	1.65	5.00	ug/L	5	DLS 08/02/04	1337	354165	2
Ethylbenzene		38.7	1.05	5.00	ug/L	5				
Toluene	U	ND	1.95	5.00	ug/L	5				
Xylenes (total)	U	ND	1.25	5.00	ug/L	5				

The following Analytical Methods were performed

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

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	89	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	101	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	93	(80%-116%)
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	91	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	102	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	93	(80%-116%)

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

B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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 target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370602
Sample ID: 117444003

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	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.

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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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370606
Sample ID: 117444004
Matrix: Water
Collect Date: 20-JUL-04 09:24
Receive Date: 22-JUL-04
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene	U	ND	0.330	1.00	ug/L	1	DLS	08/02/04	1404	354165	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1					
Toluene	J	0.968	0.390	1.00	ug/L	1					
Xylenes (total)	U	ND	0.250	1.00	ug/L	1					

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	87	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	103	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	94	(80%-116%)

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

B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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 target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370606
Sample ID: 117444004

Project: SAIC06001
Client ID: SAIC060

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

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Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370702
Sample ID: 117444002
Matrix: Water
Collect Date: 20-JUL-04 10:31
Receive Date: 22-JUL-04
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		32.9	0.330	1.00	ug/L	1	DLS 08/03/04	1111	354165	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 Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	91	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	103	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	95	(80%-116%)

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

B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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 target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370702
Sample ID: 117444002

Project: SAIC06001
Client ID: SAIC060

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

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Reviewed by

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Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370902
Sample ID: 117444005
Matrix: Water
Collect Date: 20-JUL-04 09:00
Receive Date: 22-JUL-04
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	DLS 08/02/04	1431	354165	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	J	0.594	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	90	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	101	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	91	(80%-116%)

Notes:
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E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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 target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: 370902
Sample ID: 117444005

Proiect: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis
Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: TB0404
Sample ID: 117444001
Matrix: Water
Collect Date: 20-JUL-04 07:45
Receive Date: 22-JUL-04
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene	U	ND	0.330	1.00	ug/L	1	DLS	08/02/04	1458	354165	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 Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	92	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	102	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	92	(80%-116%)

Notes:
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E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
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U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: August 30, 2004

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM D.O. 44**

Client Sample ID: TB0404
Sample ID: 117444001

Proiect: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Reviewed by

Science Applications International Corporation
An Employee-Owned Company

PO Box 2501, 151 Lafayette Dr., Tennessee 37830 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GLTM146

PROJECT NAME: Fort Stewart LTM, D.O. 44

PROJECT NUMBER: 01-1055-04-8991-200

PROJECT MANAGER: ~~Patty Stoll~~ Sharon Stella

Sampler (Signature) **(Printed Name)** PATRICIA A. STOLL

117444/. REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	SVOC	Nitrite, Nitrate,Sulfate	Sulfide	Total Iron	Methane	Carbon Dioxide	Total Phosphorus	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TB0404	7/20/04	0745	water	2									2		
370702		1031		2									2		
370602		0947		2									2		
370606		0924		2									2		
370902		0900		2									2		

P. Stoll 7/22/04

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29407

PHONE NO: (843) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 10	Cooler Temperature: 4°C
P. Stoll	7/22/04	[illegible]	7-22-04		
COMPANY NAME: SAIC	11:25	COMPANY NAME: Gel	1415	Cooler ID: 76	FEDEX NUMBER: N/A
RECEIVED BY: Ben Watson	Date/Time 7-22-04	RELINQUISHED BY:	Date/Time		
COMPANY NAME: Gel	11:25	COMPANY NAME:			
RELINQUISHED BY: Ben Watson	Date/Time 7-22-04	RECEIVED BY:	Date/Time		
COMPANY NAME:	14:15	COMPANY NAME:			

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3706A2
Sample ID: 128998005
Matrix: Water
Collect Date: 16-JAN-05 15:05
Receive Date: 17-JAN-05
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		14.7	0.330	1.00	ug/L	1	GRB2 01/26/05	2339	397280	1
Ethylbenzene		2.25	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		1.27	0.250	1.00	ug/L	1				

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	100	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	104	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	109	(80%-116%)

Notes:
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** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3706A2
Sample ID: 128998005

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3707A2
Sample ID: 128998003
Matrix: Water
Collect Date: 16-JAN-05 14:35
Receive Date: 17-JAN-05
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	J	0.927	0.330	1.00	ug/L	1	GRB2 01/26/05	2312	397280	1
Ethylbenzene		1.86	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		2.60	0.250	1.00	ug/L	1				

The following Analytical Methods were performed

od	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	108	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	106	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	115	(80%-116%)

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

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** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3707A2
Sample ID: 128998003

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3707A6
Sample ID: 128998004
Matrix: Water
Collect Date: 16-JAN-05 14:30
Receive Date: 17-JAN-05
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	GRB2 01/26/05	2150	397280	1
Ethylbenzene	J	0.940	0.210	1.00	ug/L	1				
Toluene		8.75	0.390	1.00	ug/L	1				
Xylenes (total)		3.17	0.250	1.00	ug/L	1				

The following Analytical Methods were performed

od	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	109	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	105	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	112	(80%-116%)

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

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3707A6
Sample ID: 128998004

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis
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Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3709A2
Sample ID: 128998002
Matrix: Water
Collect Date: 16-JAN-05 14:10
Receive Date: 17-JAN-05
Collector: Client

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	GRB2 01/26/05	2245	397280	1
Ethylbenzene		2.90	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)		4.72	0.250	1.00	ug/L	1				

The following Analytical Methods were performed

od	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	107	(76%-115%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	108	(72%-136%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	112	(80%-116%)

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

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical 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.
R Sample results are rejected due to sample preservation with HCl.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

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

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

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

Report Date: March 8, 2005

Contact: Ms. Leslie Barbour
Project: **Ft. Stewart LTM**

Client Sample ID: 3709A2
Sample ID: 128998002

Project: SAIC06001
Client ID: SAIC060

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	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.

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

Science Applications International Corporation
An Employee-Owned Company
PO Box 2501, 151 Lafayette Dr., Tennessee 37830 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GL-145

PROJECT NAME: Ft. Stewart UST Long Term Monitoring

PROJECT NUMBER: 01-1055-04-8991-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29407

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	MTBE	REQUESTED PARAMETERS	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TB0411	1/16/05	815	Water	2			2		128498
37Ø9A2		1410		2			2		
37Ø7A2		1435		2			2		
37Ø7A6		1430		2			2		
37Ø6A2		1505		2			2		
33Ø876		1549		2			2		
33Ø872		1600		2			2		
Ø319VP		0915		2			2		
Ø314VP		0945		2			2		
Ø312VP		1020		2			2		
Ø311VP		1110		2			2		
Ø3Ø5VP		1140		2			2		
Ø318VP		1210		2			2		

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Patricia A Stoll	1/17/05 1150	[illegible]	1.17.05 1455
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: Ben Watkins	Date/Time 1/17/05 1150	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: Ben Watkins	Date/Time 1/17/05 1455	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 108

Cooler ID: 131

Cooler Temperature: 4°C

FEDEX NUMBER: NA

ORIGINAL COC LOCATED IN UST#11 #12 NINTH SEMI ANNUAL PROGRESS REPORT