FINAL

IMA

THIRD ANNUAL MONITORING ONLY REPORT

3d Inf Div (Mech)

Underground Storage Tank 122
Facility ID #9-089083
Building 7705
Fort Stewart, Georgia

Prepared for

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-02-D-0004
Delivery Order 0021

November 2003

SAIC®

FINAL

THIRD ANNUAL MONITORING ONLY REPORT
FOR
UNDERGROUND STORAGE TANK 122
FACILITY ID #9-089083
BUILDING 7705

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 0021

Prepared by

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

November 2003

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List of Abbreviations and Acronyms

ACL	alternate concentration limit
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
EPA	U.S. Environmental Protection Agency
GA EPD	Georgia Environmental Protection Division
IWQS	In-Stream Water Quality Standard
MCL	maximum contaminant level
NFAR	no further action required
SAIC	Science Applications International Corporation
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

MONITORING ONLY REPORT

Submittal Date: November 2003 Monitoring Report Number: 3rd Annual

For Period Covering: June 2002 to June 2003

Facility Name: UST 122, Building 7705 Street Address: East Lowe Circle (Wright Army Airfield)

Facility ID: 9-089083 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 30° 13′ 55″ Longitude: 82° 04′ 25″

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
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City:	Fort Stewart State: GA	City:	Oak Ridge State: TN
Zip Code:	31314-4927	Zip Code:	37831
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I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

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

Name: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 10/16/03

10/16/03

Georgia Stamp or Seal

II. PROJECT SUMMARY

(Appendix I, Figure 1: Site Location Map)

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

Former Underground Storage Tank (UST) 122, Facility ID #9-089083 was located near Building 7705 at Fort Stewart, Georgia. The tank and piping were excavated and removed on June 28, 1996. Science Applications International Corporation (SAIC) performed a Corrective Action Plan (CAP)–Part A investigation in 1998 to determine the extent of petroleum contamination at the site. One vertical-profile boring and seven temporary piezometers were installed during the investigation. The CAP–Part A Report (SAIC 1999) was submitted in August 1999 and recommended monitoring only at the site. As recommended in the Monitoring Only Plan, a soil boring (75-10) and three shallow monitoring wells (75-11, 75-12, and 75-13) were installed as part of the first semiannual sampling event in January 2000. The First Semiannual Monitoring Only Report (SAIC 2000a) recommended that two additional downgradient wells be installed to further delineate the leading edge of the groundwater plume, and wells 75-14 and 75-15 were installed in June 2000. The information associated with these well installation activities was provided in the First Annual Monitoring Only Report (SAIC 2000b)

The fate and transport modeling performed as part of the CAP–Part A Report (SAIC 1999) assumed a continuous source of contamination. The fate and transport modeling results were revised in the First Annual Monitoring Only Report (SAIC 2000b) using the results from the semiannual monitoring events to calibrate the model. As a result of the third monitoring event, the fate and transport modeling was recalibrated again, and the revised results are provided in Attachment A.

The Georgia Environmental Protection Division (GA EPD) Underground Storage Tank Management Program (USTMP) conducted a technical review of the First Annual Monitoring Only Report (SAIC 2000b) and provided comments in correspondence dated September 28, 2001 (Logan 2001). GA EPD requested that the monitoring only program be continued because the benzene concentrations for the most impacted wells (75-11 and 75-12) were not below the predicted concentrations for the most recent sampling event. During a phone conversation with William Logan of GA EPD and representatives from Fort Stewart and SAIC on October 24, 2001, Fort Stewart agreed to monitor the site in January 2002, and it was agreed that the benzene alternate concentration limit (ACL) of 713 µg/L would be used as the termination condition for the site.

The results of the third sampling event conducted in January 2002 indicated that the benzene concentration in one well exceeded the ACL of 713 µg/L. This was the first time that the benzene ACL had been exceeded, and the Second Annual Monitoring Only Report (SAIC 2002) recommended that the monitoring only program be continued. Funding was not available for the June 2002 sampling event, so sampling was resumed in January 2003.

The purpose of the annual monitoring summarized in this report is to confirm the results of the fate and transport modeling and that natural attenuation is taking place at the site. The benzene concentrations during the sampling events conducted between January 2000 and June 2003, with the exception of those in one well in January 2002, have remained below the ACL, and the latest site ranking score is 110. Thus, a no-further-action-required (NFAR) status is being recommended for the site.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

A. Potentiometric Data:

(Appendix I, Figures 2a and 2b: Potentiometric Surface Maps)
(Appendix II, Table 1: Groundwater Elevations)

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

During the sampling event in January 2003, groundwater elevations were measured in all of the monitoring wells to determine the groundwater flow direction. In January 2003, the groundwater flow direction was toward the east to southeast, and the groundwater gradient was approximately 0.0084 ft/ft. No free product was observed at the site.

During the sampling event in June 2003, groundwater elevations were measured in all of the monitoring wells to determine the groundwater flow direction. In June 2003, the groundwater flow direction was toward the east to southeast, and the groundwater gradient was approximately 0.0172 ft/ft. No free product was observed at the site.

B. Analytical Data:

(Appendix I, Figures 3a and 3b: Groundwater Quality Maps)
(Appendix I, Figure 4: Trend of Contaminant Concentrations)
(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 fourth sampling event in January 2003, monitoring wells 75-11, 75-12, 75-13, 75-14, and 75-15 were sampled for benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Method 8021B/8260B. Analytical results from the sampling event are summarized below.

- Benzene was detected in well 75-11 at a concentration of 46.9 µg/L and in well 75-12 at a concentration of 0.6J µg/L, which did not exceed the In-Stream Water Quality Standard (IWQS) of 71.28 µg/L or the ACL of 713 µg/L.

- Toluene was detected in only well 75-11 at a concentration of 0.39J µg/L, which did not exceed the IWQS of 200,000 µg/L.

- Ethylbenzene was detected in only well 75-11 at a concentration of 7 µg/L, which did not exceed the IWQS of 28,719 µg/L.

- Total xylenes were detected in only well 75-11 at a concentration of 4.4 µg/L. There is no ACL or IWQS for total xylenes; however, the concentration did not exceed the maximum contaminant level (MCL) of 10,000 µg/L.

BTEX compounds were not detected in wells 75-13, 75-14, and 75-15. The benzene concentrations at the site were below the IWQS of 71.28 µg/L and the GA EPD–approved ACL of 713 µg/L. Figure 4 shows the variations in benzene concentrations in groundwater for all the wells.

During the fifth sampling event in June 2003, monitoring wells 75-11, 75-12, 75-13, 75-14, and 75-15 were sampled for BTEX using EPA Method 8021B/8260B. Analytical results from the sampling event are summarized below.

- Benzene was detected in well 75-11 at a concentration of 258 µg/L and in well 75-12 at a concentration of 0.88J µg/L. The concentration in 75-11 exceeded the IWQS of 71.28 µg/L, but did not exceed the ACL of 713 µg/L.

- Toluene was detected in only well 75-11 at a concentration of 2.9 µg/L, which did not exceed the IWQS of 200,000 µg/L.

- Ethylbenzene was detected in only well 75-11 at a concentration of 28 µg/L, which did not exceed the IWQS of 28,719 µg/L.

- Total xylenes were detected in only well 75-11 at a concentration of 134 µg/L. There is no ACL or IWQS for total xylenes; however, the concentration did not exceed the MCL of 10,000 µg/L.

BTEX compounds were not detected in wells 75-13, 75-14, and 75-15. The benzene concentrations at the site were below the GA EPD–approved ACL of 713 µg/L. The benzene concentration in 75-11 exceeded the IWQS of 71.28 µg/L. Figure 4 shows the variations in benzene concentrations in groundwater for all the wells.

As recommended in the CAP–Part A Report (SAIC 1999), polynuclear aromatic hydrocarbon analysis for groundwater was not suggested 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 for all monitoring event scores.)*	600 (CAP–Part A Report) 105 (Jan. 2000 – First Monitoring Event) 105 (June 2000 – Second Monitoring Event) 105 (Jan. 2002 – Third Monitoring Event) 20 (Jan. 2003 – Fourth Monitoring Event) 110 (June 2003 – Fifth 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 is being conducted in accordance with Section III of the CAP–Part A Report (SAIC 1999) and as approved by the GA EPD USTMP in correspondence dated January 25, 2000 (Logan 2000). Conditions agreed to during a teleconference on October 24, 2001, determined that termination would be recommended if the measured benzene concentrations were less than the ACL of 713 µg/L.

In January 2002, the benzene concentrations in groundwater were above the ACL of 713 µg/L for the first time; therefore, the termination conditions approved by GA EPD were not met, and it was recommended in the Second Annual Monitoring Only Report (SAIC 2002) that semiannual monitoring be continued at the site for a minimum of one more year. As a result, semiannual sampling events were conducted in January and June 2003.

Fort Stewart respectfully requests that GA EPD USTMP assign Facility ID #9-089083 an NFAR status for the following reasons:

- The Monitoring Only Plan is being conducted in accordance with Section III of the CAP–Part A Report (SAIC 1999) and as approved by GA EPD USTMP in correspondence January 25, 2000 (Logan 2000) and conditions agreed to in a teleconference on October 24, 2001.

- The site scores for the last two rounds of semiannual groundwater sampling have been 20 and 110, which GA EPD USTMP representatives have indicated are acceptable scores for requesting an NFAR status (i.e., January 27, 1999, meeting between GA EPD, Fort Stewart, U.S. Army Corps of Engineers, and SAIC representatives).

- The revised fate and transport model summarized in Attachment A indicates 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 ACL of 713 µg/L during the semiannual monitoring events from January 2000 to June 2002, with the exception of those in one well in January 2002.

- The closest surface water bodies are a drainage ditch located 450 ft southeast (downgradient) of the site and Goshen Swamp located 7,500 ft southeast (downgradient) of the site.

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 UST 122 site, Building 7705, Facility ID #9-089083 using U.S. Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

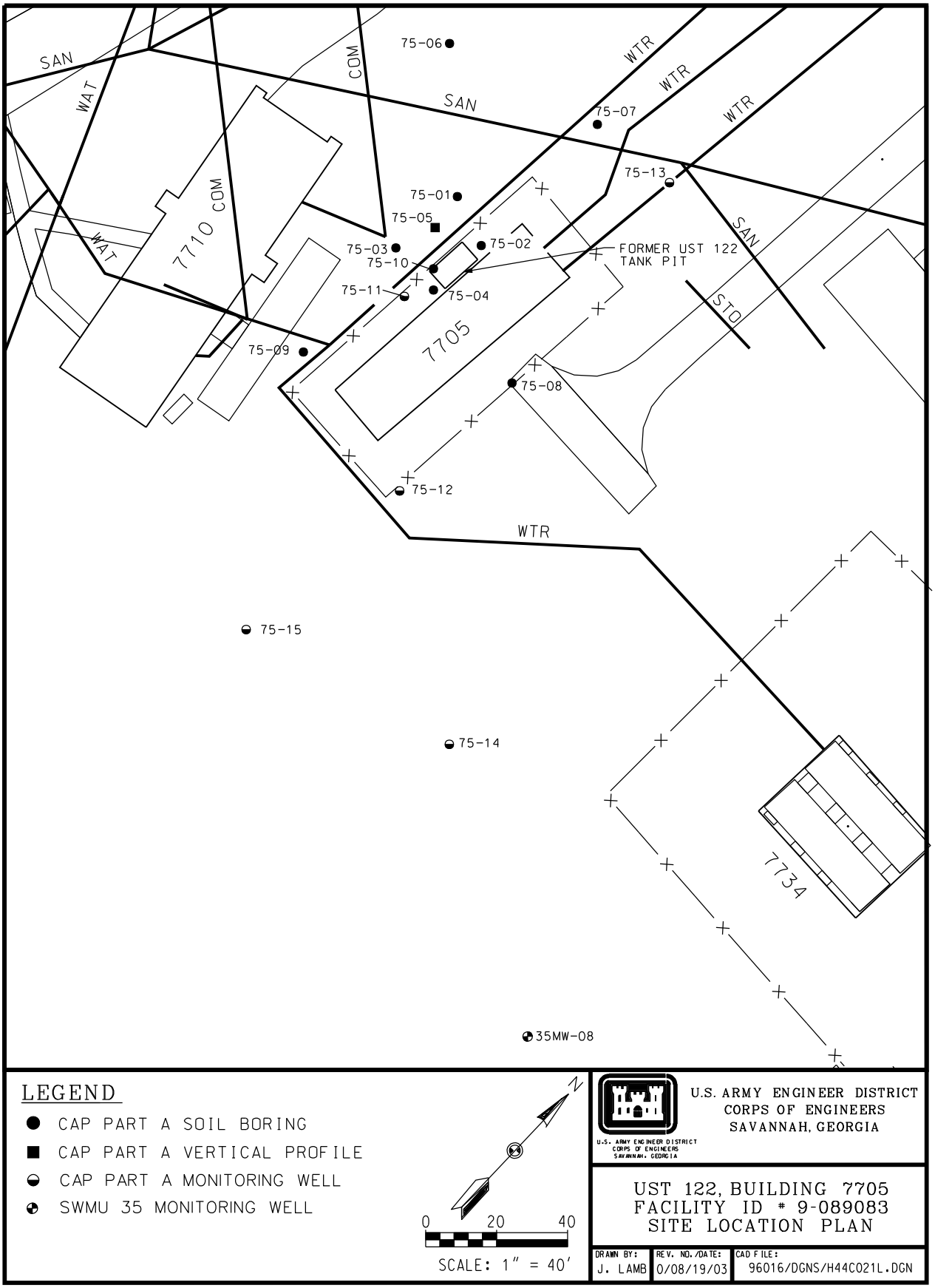

Figure 1. Location Map of UST 122 at Fort Stewart, Liberty County, Georgia

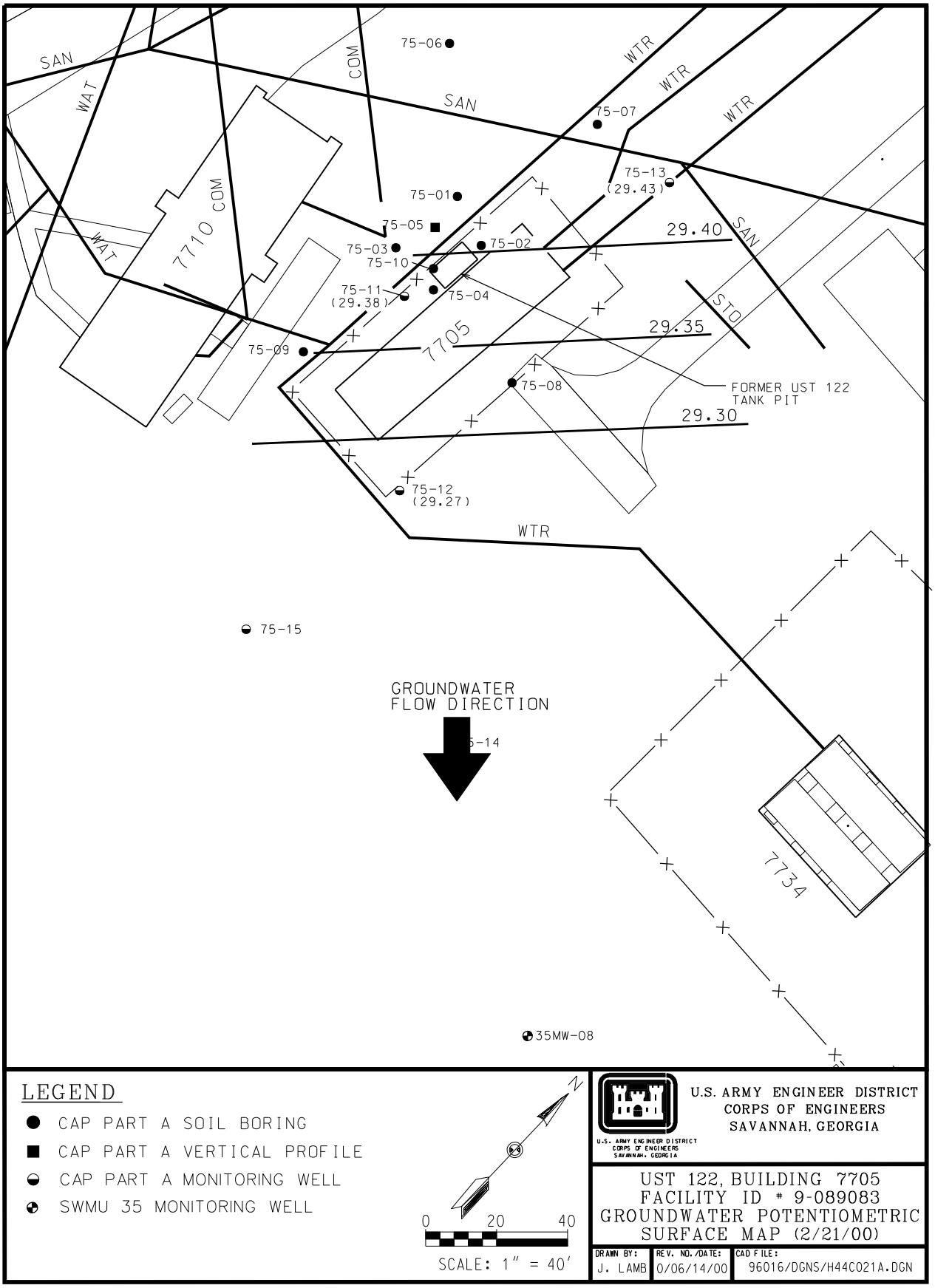

Figure 2a. Potentiometric Surface Map of the UST 122 Site (January 2003)

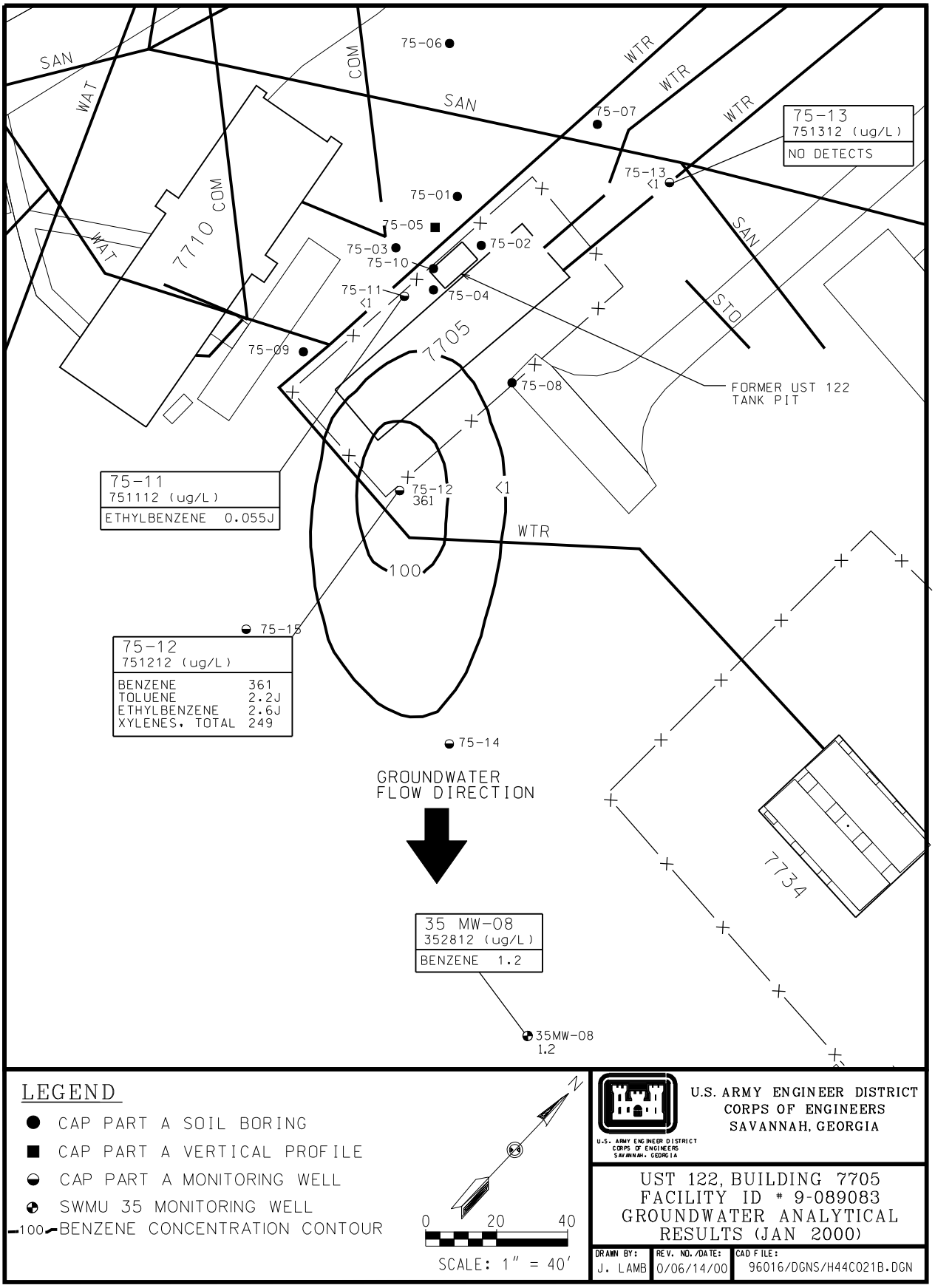

Figure 2b. Potentiometric Surface Map of the UST 122 Site (June 2003)

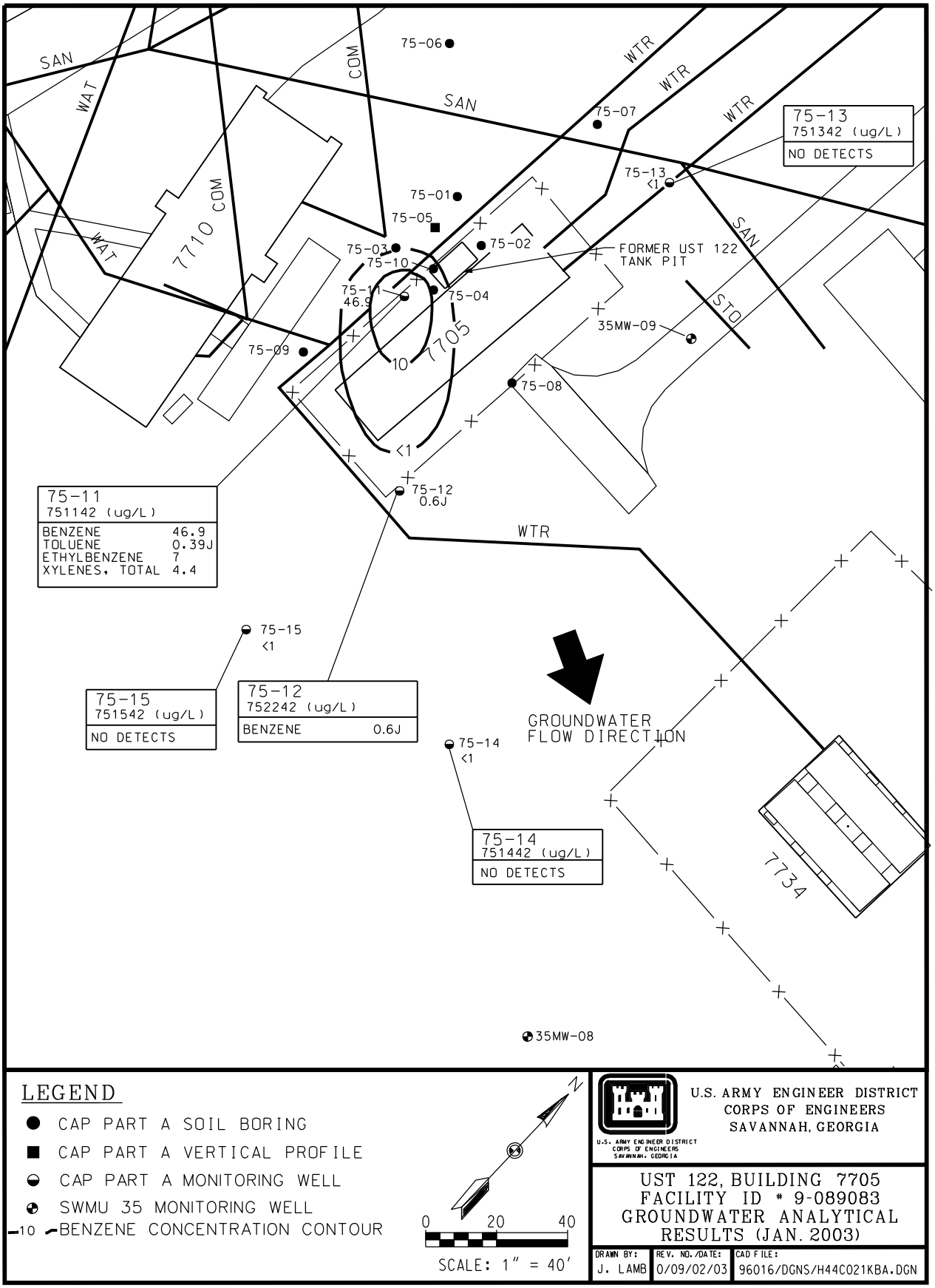

Figure 3a. Groundwater Quality Map for the UST 122 Site (January 2003)

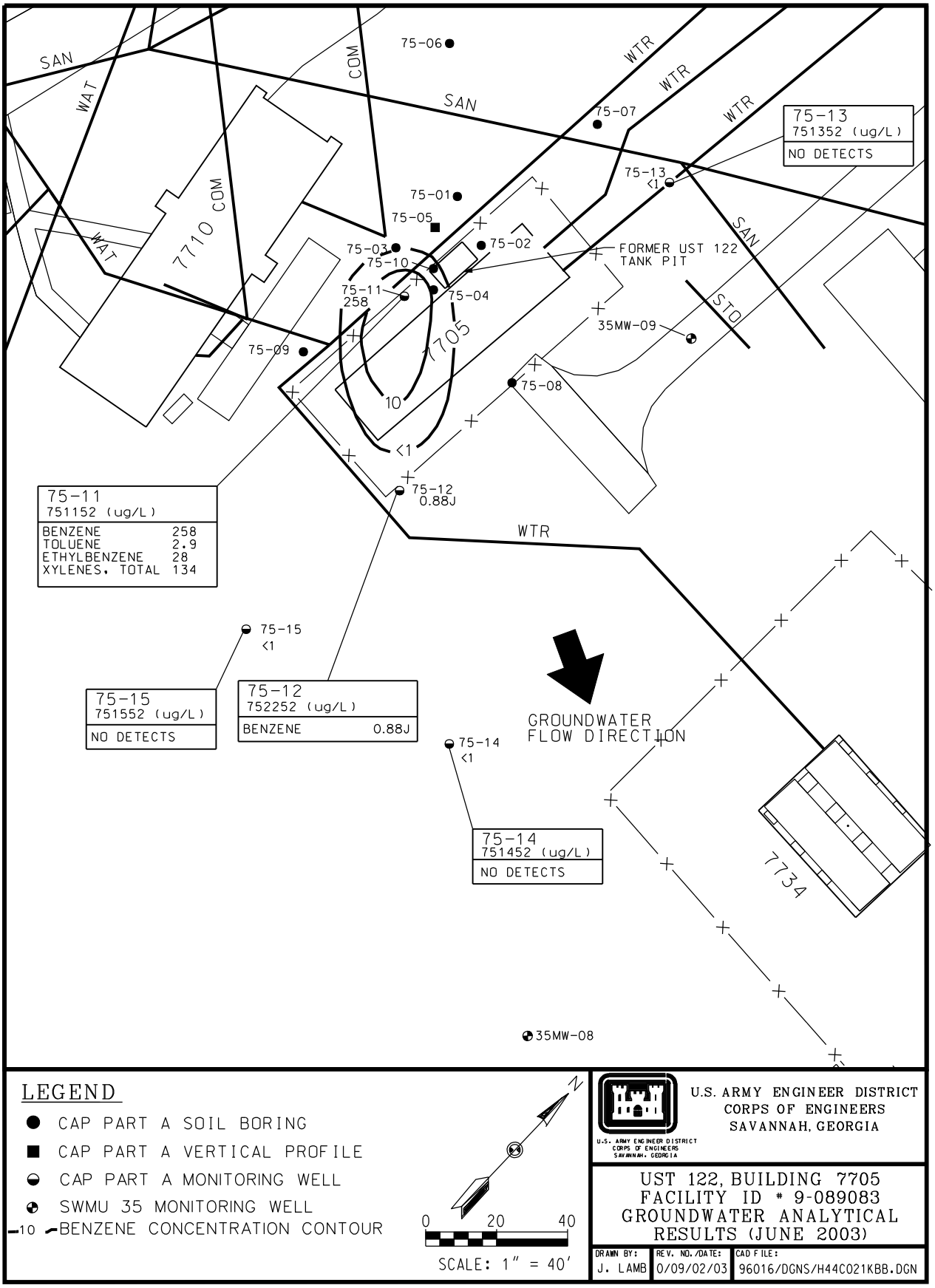

Figure 3b. Groundwater Quality Map for the UST 122 Site (June 2003)

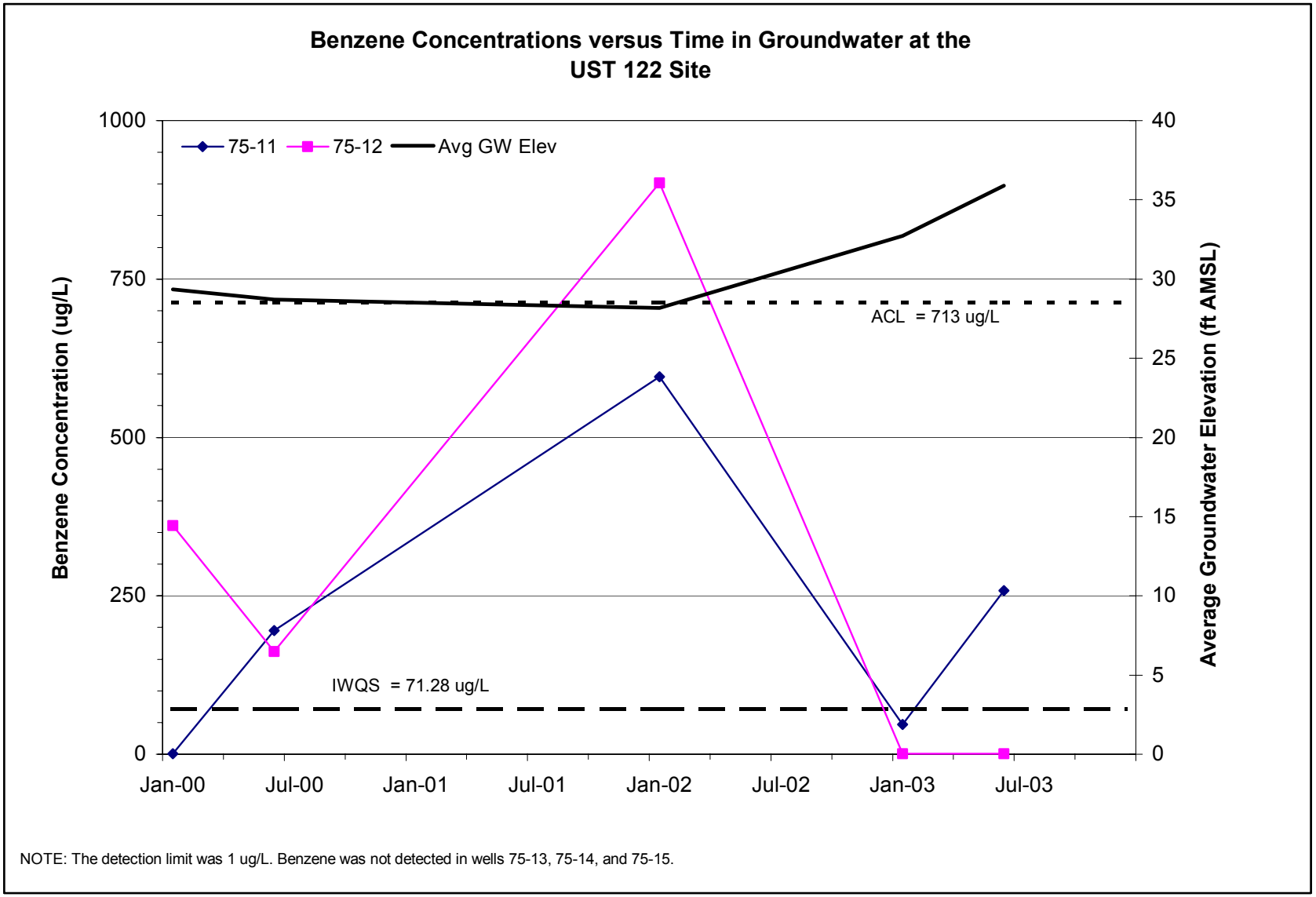

Figure 4. Trend of Contaminant Concentrations for the UST 122 Site

APPENDIX II

REPORT TABLES

Table 1. Groundwater Elevations

Well Number	Date of Measurement	Top of Casing Elevation (ft AMSL)	Screened Interval (ft BGS)	Water Depth (ft BTOC)	Groundwater Elevation (ft AMSL)
First Monitoring Event – January/February 2000					
75-11	02/21/00	44.05	12.9 – 22.9	14.67	29.38
75-12	02/21/00	43.59	13.2 – 23.2	14.32	29.27
75-13	02/21/00	43.25	13.4 – 23.4	13.82	29.43
Second Monitoring Event – June/July 2000					
75-11	07/25/00	44.05	12.9 – 22.9	15.71	28.34
75-12	07/25/00	43.59	13.2 – 23.2	15.34	28.25
75-13	07/25/00	43.25	13.4 – 23.4	14.80	28.45
75-14	07/25/00	42.09	8.5 – 18.5	13.93	28.16
75-15	07/25/00	42.63	9.7 – 19.7	14.42	28.21
Third Monitoring Event – January 2002					
75-11	01/20/02	44.05	12.9 – 22.9	15.84	28.21
75-12	01/20/02	43.59	13.2 – 23.2	15.46	28.13
75-13	01/20/02	43.25	13.4 – 23.4	14.96	28.29
75-14	01/20/02	42.09	8.5 – 18.5	14.01	28.08
75-15	01/20/02	42.63	9.7 – 19.7	14.54	28.09
Fourth Monitoring Event – January 2003					
75-11	01/21/03	44.05	12.9 – 22.9	11.03	33.02
75-12	01/21/03	43.59	13.2 – 23.2	10.94	32.65
75-13	01/21/03	43.25	13.4 – 23.4	10.40	32.85
75-14	01/21/03	42.09	8.5 – 18.5	9.91	32.18
75-15	01/21/03	42.63	9.7 – 19.7	9.75	32.88
Fifth Monitoring Event – June 2003					
75-11	06/21/03	44.05	12.9 – 22.9	7.78	36.27
75-12	06/21/03	43.59	13.2 – 23.2	7.43	36.16
75-13	06/21/03	43.25	13.4 – 23.4	6.86	36.39
75-14	06/21/03	42.09	8.5 – 18.5	7.15	34.94
75-15	06/21/03	42.63	9.7 – 19.7	6.97	35.66

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

Table 2. Groundwater Analytical Results

Sample Location	Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Total PAH (µg/L)
First Monitoring Event – January/February 2000								
75-11	751112	01/16/00	1 U	1 U	0.055 J	3 U	0.055	NA
75-12	751212	01/14/00	**361 =**	2.2 J	2.6 J	249 =	614.8	NA
75-13	751312	01/14/00	1 U	1 U	1 U	3 U	ND	NA
35MW-08	352812	01/29/00	1.2 =	1 U	1 U	3 U	1.2	ND
Second Monitoring Event – June 2000								
75-11	751122	06/23/00	**195 =**	2.3 J	7.1 =	152 =	356.4	NA
75-12	751222	06/23/00	**162 =**	5 U	5 U	94.9 =	256.9	NA
75-13	751322	06/23/00	1 U	1 U	1 U	3 U	ND	NA
75-14	751422	06/26/00	1 U	1 U	1 U	3 U	ND	ND
75-15	751422	06/26/00	1 U	1 U	1 U	3 U	ND	ND
Third Monitoring Event – January 2002								
75-11	751132	01/20/02	**596 =**	4.6 =	40 =	116 =	756.6	NA
75-12	751232	01/20/02	***902* =**	4.0 =	4.3 =	469 =	1,379.3	NA
75-13	751332	01/20/02	1 U	1 U	1 U	3 U	ND	NA
Fourth Monitoring Event – January 2003								
75-11	751142	01/21/03	46.9 =	0.39 J	7 =	4.4 =	58.69	NA
75-12	751242	01/21/03	0.6 J	1 U	1 U	1 U	0.6	NA
75-13	751342	01/21/03	1 U	1 U	1 U	1 U	ND	NA
75-14	751442	01/21/03	1 U	1 U	1 U	1 U	ND	NA
75-15	751542	01/21/03	1 U	1 U	1 U	1 U	ND	NA
Fifth Monitoring Event – June 2003								
75-11	751152	06/21/03	**258 =**	2.9 =	28 =	134 =	422.9	NA
75-12	751252	06/21/03	0.88 J	1 U	1 U	1 U	0.88	NA
75-13	751352	06/21/03	1 U	1 U	1 U	1 U	ND	NA
75-14	751452	06/23/03	1 U	1 U	1 U	1 U	ND	NA
75-15	751552	06/23/03	1 U	1 U	1 U	1 U	ND	NA
In-Stream Water Quality Standard (GA EPD Chapter 391-3-6)			71.28	200,000	28,718	NRC	NRC	NRC
Alternate Concentration Limit			713	—	—	—	—	—

NOTES:

Bold values exceed In-Stream Water Quality Standards.
Italic values exceed alternate concentration limits.
BTEX Benzene, toluene, ethylbenzene, and xylenes.
GA EPD Georgia Environmental Protection Division.
NA Not analyzed; PAH compounds were not required as part of the Monitoring Only Plan.
ND Not detected.
NRC No regulatory criteria.
PAH Polynuclear aromatic hydrocarbon.

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported.
J Indicates the value for the compound is an estimated value.
= Indicates 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 provided in this appendix are copies of those provided by GEL with the Science Applications International Corporation validation codes. Representatives from the Georgia Environmental Protection Division Underground Storage Tank Management Program and Fort Stewart agreed upon the format of the analytical data sheets and the information they contain during a meeting held on January 27, 1999.

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

STATE OF GEORGIA
ENVIRONMENTAL LABORATORY ACCREDITATION

	Name of Laboratory:	**General Engineering Laboratories, Inc.**
	Address:	P.O. Box 30712 2040 Savage Road Charleston, SC 29407
	Contact:	Wendy Dimmick
	Telephone Number:	(843) 556-8171
	Fax Number:	(843) 766-1178
#1	Accrediting Authority:	**State of South Carolina**
	Accreditation Number:	SC-10120001
	Effective Date:	Extension granted while recertification in process; January 27, 2003
	Expiration Date:	March 26, 2004
	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 there after)
	Expiration Date:	June 30, 2004
	Accreditation Scope:	SDWA, CWA, RCRA, CERCLA

DATA VALIDATION REASON CODES

Organic, Inorganic, and Radiological Analytical Data

Holding Times A01 Extraction holding times were exceeded. A02 Extraction holding times were grossly exceeded. A03 Analysis holding times were exceeded. A04 Analysis holding times were grossly exceeded. A05 Samples were not preserved properly. A06 Professional judgment was used to qualify the data.	**GC/MS Tuning** B01 Mass calibration was in error, even after applying expanded criteria. B02 Mass calibration was not performed every 12 hours. B03 Mass calibration did not meet ion abundance criteria. B04 Professional judgment was used to qualify the data.
Initial/Continuing Calibration – Organics C01 Initial calibration RRF was <0.05. C02 Initial calibration RDS was >30%. C03 Initial calibration sequence was not followed as required. C04 Continuing calibration RRF was <0.05. C05 Continuing calibration %D was >25%. C06 Continuing calibration was not performed at the required frequency. C07 Resolution criteria were not met. C08 RPD criteria were not met. C09 RDS criteria were not met. C10 Retention time of compounds was outside windows. C11 Compounds were not adequately resolved. C12 Breakdown of endrin or DDT was >30%. C13 Combined breakdown of endrin/DDT was >30%. C14 Professional judgment was used to qualify the data.	**Initial/Continuing Calibration – Inorganics** D01 ICV or CCV was not performed for every analyte. D02 ICV recovery was above the upper control limit. D03 ICV recovery was below the lower control limit. D04 CCV recovery was above the upper control limit. D05 CCV recovery was below the lower control limit. D06 Standard curve was not established with the minimum number of standards. D07 Instrument was not calibrated daily or each time the instrument was set up. D08 Correlation coefficient was <0.995. D09 Mid-range cyanide standard was not distilled. D10 Professional judgment was used to qualify the data.
ICP and Furnace Requirements E01 Interference check sample recovery was outside the control limit. E02 Duplicate injections were outside the control limit. E03 Post-digestion spike recovery was outside the control limit. E04 MSA was required but not performed. E05 MSA correlation coefficient was <0.995. E06 MSA spikes were not at the correct concentration. E07 Serial dilution criteria were not met. E08 Professional judgment was used to qualify the data.	**Blanks** F01 Sample data were qualified as a result of the method blank. F02 Sample data were qualified as a result of the field blank. F03 Sample data were qualified as a result of the equipment rinsate. F04 Sample data were qualified as a result of the trip blank. F05 Gross contamination exists. F06 Concentration of the contaminant was detected at a level below the CRQL. F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL. F08 Concentration of the contaminant was detected at a level that exceeds the action level. F09 No laboratory blanks were analyzed. F10 Blank had a negative value >2 times the IDL. F11 Blanks were not analyzed at required frequency. F12 Professional judgment was used to qualify the data.
Surrogate/Radiological Chemical Recovery G01 Surrogate/radiological chemical recovery was above the upper control limit. G02 Surrogate/radiological chemical recovery was below the lower control limit. G03 Surrogate recovery was <10%. G04 Surrogate recovery was zero. G05 Surrogate/radiological chemical recovery data was not present. G06 Professional judgment was used to qualify the data. G07 Radiological chemical recovery was <20%. G08 Radiological chemical recovery was >150%.	**Matrix Spike/Matrix Spike Duplicate (MS/MSD)** H01 MS/MSD recovery was above the upper control limit. H02 MS/MSD recovery was below the lower control limit. H03 MD/MSD recovery was <10%. H04 MS/MSD pairs exceeded the RPD limit. H05 No action was taken on MS/MSD limit. H06 Professional judgment was used to qualify the data. H07 Radiological MS/MSD recovery was <20%. H08 Radiological MS/MSD recovery was >160%. H09 Radiological MS/MSD samples were not analyzed at the required frequency.

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

FOURTH MONITORING EVENT

JANUARY 2003

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751142

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 73973

Matrix: (soil/water) WATER Lab Sample ID: 73973006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5U433

Level: (low/med) LOW Date Received: 01/24/03

% Moisture: not dec. _____ Date Analyzed: 01/31/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	46.9	
108-88-3	Toluene	0.39	J
100-41-4	Ethylbenzene	7.0	
1330-20-7	Xylenes (total)	4.4	

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DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751242

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 73973

Matrix: (soil/water) WATER Lab Sample ID: 73973007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5U434

Level: (low/med) LOW Date Received: 01/24/03

% Moisture: not dec. _____ Date Analyzed: 01/31/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	0.60	J
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	1.0	U

J 4

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751342

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 73973

Matrix: (soil/water) WATER Lab Sample ID: 73973010

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5U437

Level: (low/med) LOW Date Received: 01/24/03

% Moisture: not dec. _____ Date Analyzed: 01/31/03

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

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

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

DATA VALIDATION

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751442

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 73973

Matrix: (soil/water) WATER Lab Sample ID: 73973008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5U435

Level: (low/med) LOW Date Received: 01/24/03

% Moisture: not dec. _____ Date Analyzed: 01/31/03

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

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

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751542

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Gase No.: N/A SAS No.: N/A SDG No.: 73973

Matrix: (soil/water) WATER Lab Sample ID: 73973009

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5U436

Level: (low/med) LOW Date Received: 01/24/03

% Moisture: not dec. _____ Date Analyzed: 01/31/03

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

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

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

u

5

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM32

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	Oil & Grease	Total Phnols	pH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
Ø6Ø942	1/21/03	1005	WATER	2					2		
Ø6Ø642	1/21/03	1030	WATER	2					2		
Ø6Ø644	1/21/03	1030	WATER	2					2		
Ø6Ø842	1/21/03	1025	WATER	2					2		
Ø6Ø742	1/21/03	1045	WATER	2					2		
751142	1/21/03	1500	WATER	2					2		
751242	1/21/03	1540	WATER	2					2		
751442	1/21/03	1620	WATER	2					2		
751542	1/21/03	1625	WATER	2					2		
751342	1/21/03	1710	WATER	2					2		
TBØ31Ø	1/21/03	0745	WATER	2					2		

P Stoll 1/24/03

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 22	Cooler Temperature: 4°C
P Stoll	1/24/03 1200	Mike Hunter	1-24-03 1515	Cooler ID: #4	FEDEX NUMBER: N/A
COMPANY NAME: SAIC		COMPANY NAME: GEL			
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1/24/03 1200	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:	1/24/03 1515	COMPANY NAME:			

III-12

FIFTH MONITORING EVENT

JUNE 2003

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751152

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

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: ~~82889~~ 82890

Matrix: (soil/water) WATER Lab Sample ID: 82889003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7P411

Level: (low/med) LOW Date Received: 06/24/03

% Moisture: not dec. _____ Date Analyzed: 06/26/03

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

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

use

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	258 ~~299~~	~~E~~D	=
108-88-3	Toluene	2.9		=
100-41-4	Ethylbenzene	28.0		=
1330-20-7	Xylenes (total)	134		=

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751252

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

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: ~~82009~~ 82890

Matrix: (soil/water) WATER Lab Sample ID: 82889002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7P410

Level: (low/med) LOW Date Received: 06/24/03

% Moisture: not dec. _____ Date Analyzed: 06/26/03

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	0.88	J	J
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.0	U	↓
1330-20-7	Xylenes (total)	1.0	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751352

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

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: ~~82890~~ 82890

Matrix: (soil/water) WATER Lab Sample ID: 82889001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7P409

Level: (low/med) LOW Date Received: 06/24/03

% Moisture: not dec. _____ Date Analyzed: 06/26/03

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

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

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

4

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751452

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

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: ~~82889~~ 82894 D

Matrix: (soil/water) WATER Lab Sample ID: 82889015

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7P418

Level: (low/med) LOW Date Received: 06/24/03

% Moisture: not dec. _____ Date Analyzed: 06/26/03

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

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

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

751552

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

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: ~~82809~~ 82890

Matrix: (soil/water) WATER Lab Sample ID: 82889014

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7P417

Level: (low/med) LOW Date Received: 06/24/03

% Moisture: not dec. _____ Date Analyzed: 06/26/03

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

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

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

4

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM35

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	Oil & Grease	Total Phnols	pH	MTBE	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1A1226	6/20/03	1350	water	2					2	4		
1AØ626	6/21/03	1100	water	2					2	4		
1AØ622	6/21/03	1035	water	2					2	4		
1AØ522	6/21/03	0945	water	2					2	4		
1AØ822	6/21/03	0905	water	2					2	4		
751352	6/21/03	1714	water	2						2		
751252	6/21/03	1826	water	2						2		
751152	6/21/03	1836	water	2						2		
Ø6Ø952	6/21/03	1456	water	2						2		
Ø6Ø852	6/21/03	1541	water	2						2		
Ø6Ø752	6/21/03	1534	water	2						2		
Ø6Ø652	6/21/03	1450	water	2						2		
Ø6Ø654	6/21/03	1450	water	2						2		

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Patricia A Stoll	6/23/03 12/50	TOM CARTER	6/24/03 1255
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY: Tom Carter	Date/Time 6/24/03 1530
COMPANY NAME:		COMPANY NAME: GEL	
RELINQUISHED BY:	Date/Time	RECEIVED BY: Mike Sanders	Date/Time 6-24-03 1530
COMPANY NAME:		COMPANY NAME: GEL	

TOTAL NUMBER OF CONTAINERS: 96/102 (15 6/24/03)

Cooler ID: #1

Cooler Temperature: 4°C

FEDEX NUMBER: N/A

III-19

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM35

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	Oil & Grease	Total Phnols	pH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
37Ø682	6/21/03	1316	water	2					2		
37Ø684	6/21/03	1316	water	2					2		
37Ø982	6/21/03	1225	water	2					2		
37Ø782	6/21/03	1235	water	2					2		
TBØ313	6/20/03	0745	water	2					2		
751552	6/23/03	1620	water	2					2		
751452	6/23/03	1615	water	2					2		
TBØ315	6/23/03	1600	water	2					2		
									2		

P Stoll 6/24/03

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY	Date/Time
Patricia A Stoll	6/24/03 1250	TOM CARTER	6/24/03 1250
COMPANY NAME:		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY: TOM CARTER	Date/Time 6/24/03 1530
COMPANY NAME:		COMPANY NAME: GEL	
RELINQUISHED BY:	Date/Time	RECEIVED BY: Mike Hawkins	Date/Time 6-24-03 1530
COMPANY NAME:		COMPANY NAME: GEL	

TOTAL NUMBER OF CONTAINERS: 102

Cooler ID: #1

Cooler Temperature: 4°C

FEDEX NUMBER: N/A

APPENDIX IV

SITE RANKING FORM

FOURTH MONITORING EVENT

JANUARY 2003

SITE RANKING FORM

Facility Name: UST 122, Building 7705 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089083 **Date Ranked:** 4/24/03

SOIL CONTAMINATION (based on January 2000 soil data that superceded closure soil data)

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

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

* *Soil sample 751011 (January 2000)*

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

* *Soil sample 751011 (January 2000)*

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. 1) = (1) x (C. 10) = (D. 10)

GROUNDWATER CONTAMINATION (based on CAP-Part A groundwater data)

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

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

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

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

* *LTM sample 751142 (January 2003)*

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

Facility Name: UST 122, Building 7705 **County:** Liberty **Facility ID #:** 9-089083

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

* *Utilities and drainage ditch are located > 5 feet above the water table*

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. 2) + (K. 0) = L. 2

(G. 5) x (L. 2) = M. 10

(M. 10) + (D. 10) = N. 20

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. 20) x (P. 1) = (20) + (Q. 0)

= 20 (January 2003 – Fourth Sampling Event)
ENVIRONMENTAL SENSITIVITY SCORE

FIFTH MONITORING EVENT

JUNE 2003

SITE RANKING FORM

Facility Name: UST 122, Building 7705 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089083 **Date Ranked:** 8/6/03

SOIL CONTAMINATION (based on January 2000 soil data that superceded closure soil data)

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

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

* *Soil sample 751011 (January 2000)*

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

* *Soil sample 751011 (January 2000)*

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. 1) = (1) x (C. 10) = (D. 10)

GROUNDWATER CONTAMINATION (based on CAP-Part A groundwater data)

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

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

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

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

* *LTM sample 751152 (June 2003)*

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

Facility Name: UST 122, Building 7705 **County:** Liberty **Facility ID #:** 9-089083

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

* *Utilities and drainage ditch are located > 5 feet above the water table*

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. 2) + (K. 0) = L. 2

(G. 50) x (L. 2) = M. 100

(M. 100) + (D. 10) = N. 110

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. 110) x (P. 1) = (110) + (Q. 0)

= 110 (June 2003 – Fifth Sampling Event)
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROGEOLOGIC DATA

The following is presented to provide supplemental information to Item H of the Site Ranking Form and details relating to the geologic and hydrogeologic conditions at Fort Stewart to support determinations of groundwater flow pathway(s) or direction(s) and contaminant transport.

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 one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-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 Aquifer and the surficial aquifer. 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 primarily used 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; thus, 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/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie, Markshead, and Parachula, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 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 facts 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.

APPENDIX V

REIMBURSEMENT APPLICATION

Fort Stewart is a federally owned facility and has funded the investigation for the Underground Storage Tank 122 site, Building 7705, Facility ID #9-089083 using U.S. Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

ATTACHMENT A

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 two potential downgradient receptors: a drainage ditch located approximately 450 ft southeast of the site and Goshen Swamp located approximately 7,500 ft southeast 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 Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia,* (SAIC 1999) was based on the assumption of a continuous source of contamination at the site based on the maximum observed benzene concentration in groundwater [i.e., 1,670 µg/L in well 75-04 during the Corrective Action Plan (CAP)–Part A in May 1998]. A near steady-state source was assumed for conservatism. The steady-state source loading for benzene was calibrated as a 2.1 mg/hour continuous pulse for 100 years. The source area was assumed to be the size of the tank pit, which was 12 ft × 18 ft. Based on the modeling results, the estimated dilution attenuation factor (DAF) for benzene was infinity at the drainage ditch and at Goshen Swamp, indicating that the predicted concentrations at these receptors are zero. Because the modeling predicted that concentrations would never reach these receptors, an alternate concentration limit (ACL) was not developed for benzene.

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 semiannual monitoring, the fate and transport modeling results were revised in the *First Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia,* (SAIC 2000) to reflect more recent site conditions assuming a continuous source of contamination. The maximum observed benzene concentration in groundwater during the semiannual monitoring events (i.e., 361 µg/L in well 75-12 in January 2000) was used in the model. A near steady-state source was assumed for conservatism. The source, together with hydraulic conductivity and longitudinal dispersivity, were characterized through calibration. The steady-state source loading for benzene was revised to a 31.5 mg/hour continuous pulse for 5 years, which was developed by calibrating the groundwater concentrations observed during the June 2002 sampling event (195 µg/L in well 75-11 and 162 µg/L in well 75-12). The source area, located between wells 75-11 and 75-12, was assumed to be 7.5 ft × 12.5 ft based on model calibration. The estimated DAF for benzene was infinity at the drainage ditch and Goshen Swamp. ACLs were not developed for the drainage ditch or Goshen Swamp because the ACLs would be infinite for benzene. It was proposed that the site-specific ACL for benzene be an order of magnitude above the In-Stream Water Quality Standard (IWQS), resulting in an ACL of 713 µg/L.

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 semiannual monitoring, the fate and transport modeling results were revised in the *Second Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia* (SAIC 2002) to reflect more recent site conditions assuming a continuous source of contamination. The maximum observed benzene concentration in groundwater during the semiannual monitoring events (i.e., 902 µg/L at well 75-12 in January 2002) was used in the model. A near steady-state source was assumed for conservatism. The source size and source loading were characterized through calibration. The steady-state source loading for benzene was revised to a 56.9 mg/hour continuous pulse for 11 years, which was developed by calibrating the maximum groundwater concentrations observed during the January 2002 sampling event (596 µg/L in well 75-11 and 902 µg/L in well 75-12). The source area, located between wells 75-11

and 75-12, was assumed to be 10 ft × 47.5 ft based on model calibration. Based on the revised modeling results, the DAFs for benzene were 1,287 at the drainage ditch and infinity at Goshen Swamp. If the DAF of 1,287 were used to calculate an ACL, the value would be unreasonable; therefore, the ACL for the site remained at 713 μg/L.

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

The fate and transport modeling is being revised as part of this document to reflect the most recent site conditions assuming a continuous source of contamination. A near steady-state source was assumed for conservatism. The source size and source loading were characterized through calibration. The source was calibrated as a 30.7 mg/hour continuous pulse for 10 years located around well 75-11. The model was calibrated by matching the benzene concentration of 258 μg/L in well 75-11 during the June 2003 sampling event and assuming steady-state conditions. The soil properties remained the same as assumed in the last modeling performed for the Underground Storage Tank (UST) 122 site. The hydraulic gradient was recalculated based on the June 2003 potentiometric surface map. The recent increase in groundwater elevation had caused an increase in the hydraulic gradient (from 0.0013 in January 2002 to 0.0086 in June 2003). As a result, the dispersivity values were recalibrated for the modeling to reflect the current hydrogeologic conditions in the site.

Based on the revised modeling results, the DAFs for benzene were 40 at the drainage ditch and infinity at Goshen Swamp. Simulations of a 2-year period were conducted to predict the maximum concentrations of benzene in the downgradient wells through June 2005. The predicted maximum concentrations in the wells, based on the maximum observed benzene concentration of 258 μg/L in June 2003, are presented in Table A-1. The results of the revised fate and transport modeling are presented in Tables A-2 and A-3 and Figures A-1 and A-2.

The DAF at the drainage ditch is significantly reduced when compared with the DAF estimated from the previous modeling. This significant reduction of DAF is a result of the horizontal hydraulic gradient in groundwater having increased by approximately an order of magnitude during this period, thereby increasing the groundwater velocity in the same proportion. Therefore, the modeling results indicate higher contaminant migration because of both increased advection and dispersion. It should be noted, however, that this could be a temporary condition caused by severe wet conditions that existed in the past year. With normal (average-condition) precipitation, the water table would be lowered and the horizontal hydraulic gradient would decrease, thereby decreasing contaminant migration and increasing the DAF.

The ACL for benzene should remain an order of magnitude above the IWQS at 713 μg/L because the original DAF developed during the CAP–Part B report was infinite. The change in the site conditions has greatly reduced the DAF for benzene, and using the recalculated DAF would result in an ACL higher than the existing ACL. Because these site conditions might be temporary and the benzene concentrations have remained below the existing ACL, there is no need to recalculate the ACL.

A.2 FATE AND TRANSPORT MODELING CONCLUSIONS

The conclusions below are based on the revised fate and transport model, which assumed that the source is a continuous pulse for 10 years at the site based on the maximum observed benzene concentration (i.e., 258 μg/L) in groundwater during the last semiannual sampling event. The continuous pulse was used to calibrate the model based on the results of semiannual sampling.

- Benzene concentrations in groundwater in well 75-12 exceeded the ACL of 713 µg/L in January 2002; however, the ACL has not been exceeded in well 75-12 in the two subsequent monitoring events. None of the benzene concentrations in any of the other wells at the site has exceeded the ACL during the monitoring events.

- Benzene does not impact the closest downgradient receptor, a drainage ditch located 450 ft downgradient of the site, at concentrations above the IWQS.

A.3 REFERENCES

SAIC (Science Applications International Corporation) 1999. *Corrective Action Plan–Part A Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, August.

SAIC 2000. *First Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, December.

SAIC 2002. *Second Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, May.

Table A-1. Predicted Maximum Benzene Concentrations in Groundwater at the UST 122 Site

Well	Predicted Maximum Benzene Concentration (µg/L)			
	Jan. 2004	June 2004	Jan. 2005	June 2005
75-11	127	76.7	48.2	31
75-12	26.2	17.1	11.3	7.5
75-13	3.1	2.1	1.4	0.9
75-14	6.1	4.4	3.1	2.2
75-15	1.6	1	0.7	0.5

Table A-2. Natural Attenuation Modeling Results (Benzene Concentration versus Distance) for the UST 122 Site

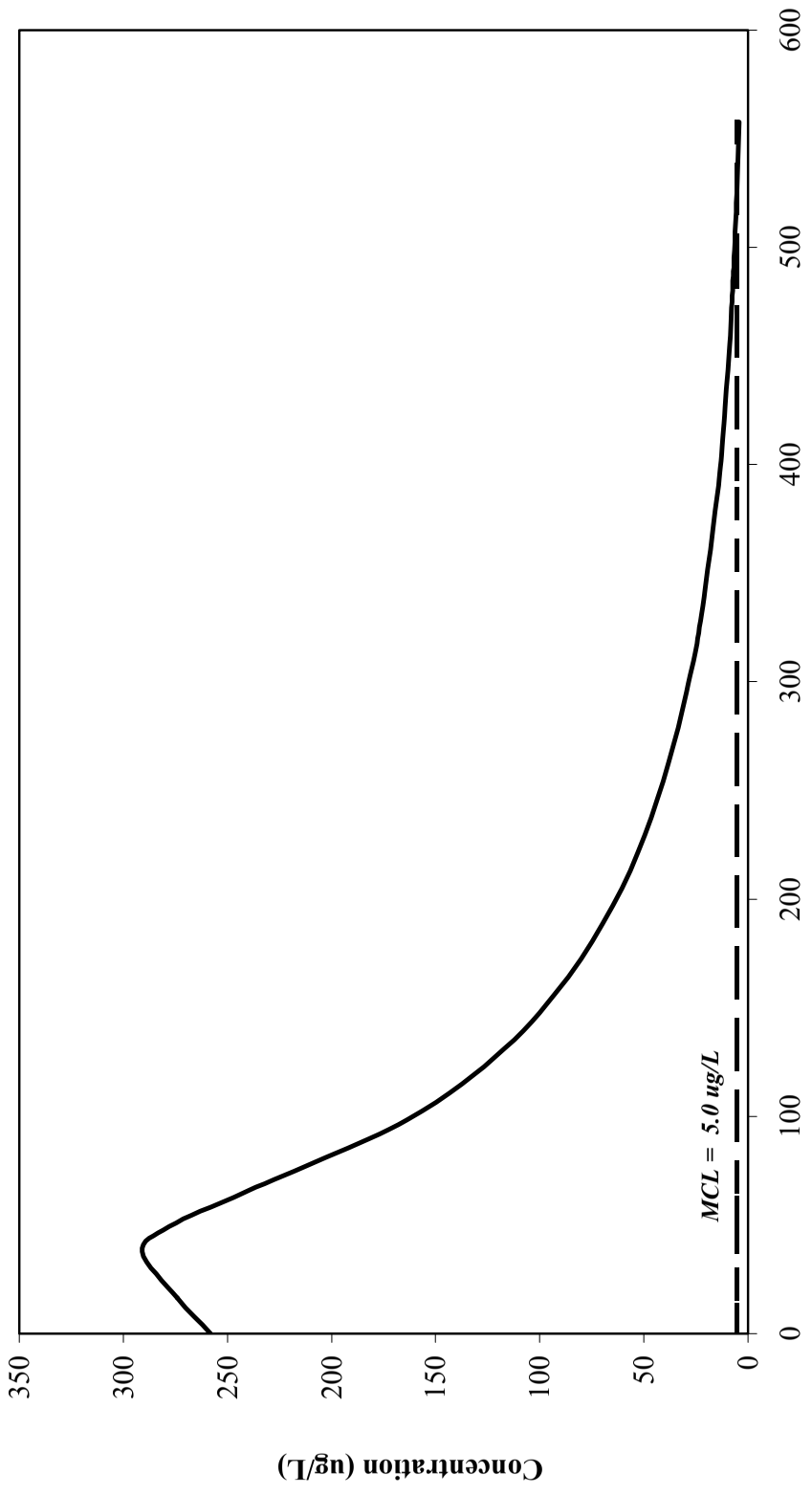
Distance from the Source (ft)	Distance from the Source (m)	Predicted Maximum Benzene Concentration in Groundwater (µg/L)
0.0	0.0	258
16.4	5.0	274
37.7	11.5	291
49.2	15.0	278
65.6	20.0	240
98.4	30.0	164
131.2	40.0	117
164.0	50.0	86
196.9	60.0	64.9
229.7	70.0	49.6
262.5	80.0	38.1
295.3	90.0	29.5
328.1	100.0	23
393.7	120.0	13.9
426.5	130.0	10.9
459.3	140.0	8.56
482.3	147.0	7.2
492.1	150.0	6.74
524.9	160.0	5.31
557.7	170.0	4.19
7,500.0	2,286.0	0

Table A-3. Natural Attenuation Modeling Results (Benzene Concentration versus Time) for the UST 122 Site

Time (years)	Predicted Benzene Concentration in Groundwater (μg/L)	
	75-11	75-12
0.0[a]	258	40.7
0.5	127	26.2
1.0	76.7	17.1
1.5	48.2	11.3
2.0	31	7.51
2.5	20.3	5.03
3.0	13.4	3.39
3.5	8.96	2.3
4.0	6.01	1.56
4.5	4.06	1.06
5.0	2.75	0.727
5.5	1.87	0.498
6.0	1.28	0.342
6.5	0.873	0.235
7.0	0.599	0.162
7.5	0.411	0.112
8.0	0.283	0.0773
8.5	0.195	0.0535

NOTE:
[a] Time zero is set at June 2003.

Figure A-1. AT123D-Modeled Maximum Concentration of Benzene along the Centerline of the Plume Beginning with the Source (258 µg/L at Monitoring Well 75-11 in June 2003)



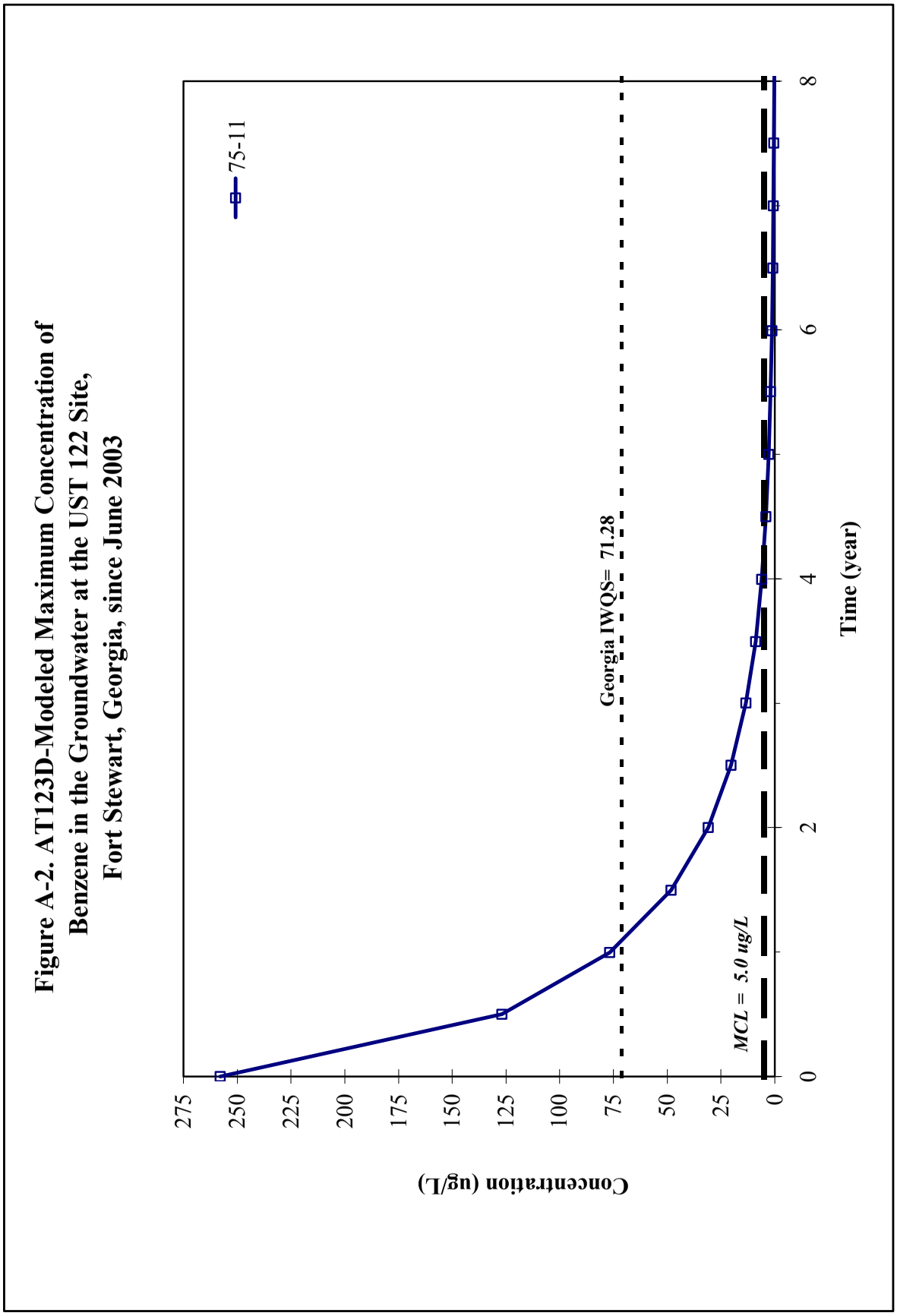


Figure A-2. AT123D-Modeled Maximum Concentration of Benzene in the Groundwater at the UST 122 Site, Fort Stewart, Georgia, since June 2003

Ft Stewart UST 122 Benzene (calibration: August 2003)

NO. OF POINTS IN X-DIRECTION	15
NO. OF POINTS IN Y-DIRECTION	3
NO. OF POINTS IN Z-DIRECTION	1
NO. OF ROOTS: NO. OF SERIES TERMS	400
NO. OF BEGINNING TIME STEP	121
NO. OF ENDING TIME STEP	235
NO. OF TIME INTERVALS FOR PRINTED OUT SOLUTION	6
INSTANTANEOUS SOURCE CONTROL = 0 FOR INSTANT SOURCE	1
SOURCE CONDITION CONTROL = 0 FOR STEADY SOURCE	0
INTERMITTENT OUTPUT CONTROL = 0 NO SUCH OUTPUT	1
CASE CONTROL =1 THERMAL, = 2 FOR CHEMICAL, = 3 RAD	2

AQUIFER DEPTH, = 0.0 FOR INFINITE DEEP (METERS) ...	0.1070E+02
AQUIFER WIDTH, = 0.0 FOR INFINITE WIDE (METERS) ...	0.0000E+00
BEGIN POINT OF X-SOURCE LOCATION (METERS)	-0.5000E+01
END POINT OF X-SOURCE LOCATION (METERS)	0.5000E+01
BEGIN POINT OF Y-SOURCE LOCATION (METERS)	-0.3000E+01
END POINT OF Y-SOURCE LOCATION (METERS)	0.3000E+01
BEGIN POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00
END POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00

POROSITY	0.2000E+00
HYDRAULIC CONDUCTIVITY (METER/HOUR)	0.7500E-01
HYDRAULIC GRADIENT	0.8600E-02
LONGITUDINAL DISPERSIVITY (METER)	0.1000E+02
LATERAL DISPERSIVITY (METER)	0.3000E+01
VERTICAL DISPERSIVITY (METER)	0.1000E+01
DISTRIBUTION COEFFICIENT, KD (M**3/KG)	0.1620E-03
HEAT EXCHANGE COEFFICIENT (KCAL/HR-M**2-DEGREE C)..	0.0000E+00

MOLECULAR DIFFUSION MULTIPLY BY POROSITY (M**2/HR)	0.3530E-05
DECAY CONSTANT (PER HOUR)	0.4012E-04
BULK DENSITY OF THE SOIL (KG/M**3)	0.1340E+04
ACCURACY TOLERANCE FOR REACHING STEADY STATE	0.1000E-02
DENSITY OF WATER (KG/M**3)	0.1000E+04
TIME INTERVAL SIZE FOR THE DESIRED SOLUTION (HR) ..	0.7300E+03
DISCHARGE TIME (HR)	0.8760E+05
WASTE RELEASE RATE (KCAL/HR), (KG/HR), OR (CI/HR) .	0.3070E-04

RETARDATION FACTOR	0.2085E+01
RETARDED DARCY VELOCITY (M/HR)	0.1546E-02
RETARDED LONGITUDINAL DISPERSION COEF. (M**2/HR) ..	0.1547E-01
RETARDED LATERAL DISPERSION COEFFICIENT (M**2/HR) .	0.4648E-02
RETARDED VERTICAL DISPERSION COEFFICIENT (M**2/HR).	0.1555E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.0000E+00 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
-1.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
-12.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
-1.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
-12.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.8760E+05 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.596E+00	0.563E+00	0.306E+00	0.214E+00	0.144E+00	0.791E-01	0.493E-01	0.330E-01	0.231E-01	0.167E-01
-1.	0.576E+00	0.546E+00	0.300E+00	0.211E+00	0.143E+00	0.787E-01	0.491E-01	0.329E-01	0.231E-01	0.167E-01
-12.	0.504E-01	0.596E-01	0.622E-01	0.599E-01	0.544E-01	0.416E-01	0.309E-01	0.230E-01	0.172E-01	0.130E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.123E-01	0.919E-02	0.690E-02	0.390E-02	0.292E-02
-1.	0.123E-01	0.917E-02	0.689E-02	0.390E-02	0.291E-02
-12.	0.994E-02	0.760E-02	0.582E-02	0.338E-02	0.255E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.9198E+05 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.229E+00	0.274E+00	0.291E+00	0.278E+00	0.240E+00	0.144E+00	0.765E-01	0.439E-01	0.281E-01	0.193E-01
-1.	0.222E+00	0.266E+00	0.283E+00	0.271E+00	0.234E+00	0.141E+00	0.757E-01	0.436E-01	0.280E-01	0.192E-01
-12.	0.277E-01	0.342E-01	0.407E-01	0.429E-01	0.440E-01	0.403E-01	0.326E-01	0.249E-01	0.187E-01	0.140E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.137E-01	0.101E-01	0.747E-02	0.419E-02	0.314E-02
-1.	0.137E-01	0.100E-01	0.745E-02	0.419E-02	0.314E-02
-12.	0.106E-01	0.805E-02	0.615E-02	0.358E-02	0.272E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.9636E+05 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.127E+00	0.156E+00	0.185E+00	0.193E+00	0.194E+00	0.164E+00	0.112E+00	0.677E-01	0.397E-01	0.245E-01
-1.	0.123E+00	0.152E+00	0.180E+00	0.188E+00	0.189E+00	0.160E+00	0.110E+00	0.667E-01	0.393E-01	0.243E-01
-12.	0.169E-01	0.211E-01	0.262E-01	0.286E-01	0.312E-01	0.329E-01	0.303E-01	0.253E-01	0.198E-01	0.151E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.162E-01	0.114E-01	0.823E-02	0.453E-02	0.339E-02
-1.	0.162E-01	0.113E-01	0.822E-02	0.452E-02	0.338E-02
-12.	0.114E-01	0.859E-02	0.652E-02	0.379E-02	0.289E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1007E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.767E-01	0.956E-01	0.118E+00	0.128E+00	0.138E+00	0.139E+00	0.117E+00	0.852E-01	0.555E-01	0.343E-01
-1.	0.746E-01	0.930E-01	0.115E+00	0.125E+00	0.134E+00	0.135E+00	0.115E+00	0.836E-01	0.547E-01	0.339E-01
-12.	0.107E-01	0.134E-01	0.171E-01	0.190E-01	0.215E-01	0.248E-01	0.253E-01	0.232E-01	0.196E-01	0.157E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.213E-01	0.138E-01	0.948E-02	0.496E-02	0.367E-02
-1.	0.211E-01	0.138E-01	0.946E-02	0.495E-02	0.367E-02
-12.	0.121E-01	0.919E-02	0.696E-02	0.402E-02	0.306E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1051E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.482E-01	0.605E-01	0.767E-01	0.849E-01	0.949E-01	0.106E+00	0.102E+00	0.864E-01	0.648E-01	0.443E-01
-1.	0.469E-01	0.589E-01	0.747E-01	0.826E-01	0.924E-01	0.103E+00	0.999E-01	0.845E-01	0.636E-01	0.436E-01
-12.	0.691E-02	0.872E-02	0.113E-01	0.127E-01	0.147E-01	0.179E-01	0.197E-01	0.196E-01	0.179E-01	0.153E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.286E-01	0.182E-01	0.118E-01	0.560E-02	0.405E-02
-1.	0.282E-01	0.180E-01	0.117E-01	0.558E-02	0.405E-02
-12.	0.124E-01	0.965E-02	0.740E-02	0.427E-02	0.325E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1095E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.310E-01	0.391E-01	0.504E-01	0.565E-01	0.647E-01	0.773E-01	0.818E-01	0.769E-01	0.649E-01	0.496E-01
-1.	0.302E-01	0.381E-01	0.490E-01	0.550E-01	0.630E-01	0.753E-01	0.798E-01	0.751E-01	0.635E-01	0.486E-01
-12.	0.454E-02	0.575E-02	0.751E-02	0.852E-02	0.999E-02	0.128E-01	0.148E-01	0.157E-01	0.154E-01	0.140E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.350E-01	0.234E-01	0.152E-01	0.668E-02	0.465E-02
-1.	0.344E-01	0.231E-01	0.151E-01	0.665E-02	0.463E-02
-12.	0.119E-01	0.975E-02	0.769E-02	0.454E-02	0.345E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.203E-01	0.257E-01	0.334E-01	0.378E-01	0.440E-01	0.552E-01	0.623E-01	0.634E-01	0.585E-01	0.493E-01
-1.	0.198E-01	0.250E-01	0.325E-01	0.368E-01	0.429E-01	0.538E-01	0.607E-01	0.619E-01	0.572E-01	0.482E-01
-12.	0.302E-02	0.382E-02	0.503E-02	0.574E-02	0.681E-02	0.898E-02	0.109E-01	0.121E-01	0.125E-01	0.121E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.381E-01	0.275E-01	0.189E-01	0.832E-02	0.559E-02
-1.	0.374E-01	0.271E-01	0.186E-01	0.825E-02	0.556E-02
-12.	0.109E-01	0.937E-02	0.769E-02	0.476E-02	0.365E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1183E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.134E-01	0.170E-01	0.223E-01	0.254E-01	0.300E-01	0.389E-01	0.461E-01	0.499E-01	0.494E-01	0.449E-01
-1.	0.131E-01	0.166E-01	0.217E-01	0.247E-01	0.292E-01	0.379E-01	0.449E-01	0.486E-01	0.482E-01	0.439E-01
-12.	0.202E-02	0.256E-02	0.339E-02	0.389E-02	0.465E-02	0.628E-02	0.787E-02	0.914E-02	0.990E-02	0.100E-01

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.377E-01	0.295E-01	0.217E-01	0.103E-01	0.689E-02
-1.	0.369E-01	0.289E-01	0.213E-01	0.102E-01	0.683E-02
-12.	0.954E-02	0.859E-02	0.737E-02	0.486E-02	0.381E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1226E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.896E-02	0.114E-01	0.150E-01	0.172E-01	0.205E-01	0.273E-01	0.336E-01	0.380E-01	0.398E-01	0.386E-01
-1.	0.872E-02	0.111E-01	0.146E-01	0.167E-01	0.199E-01	0.266E-01	0.327E-01	0.371E-01	0.389E-01	0.377E-01
-12.	0.136E-02	0.173E-02	0.230E-02	0.264E-02	0.318E-02	0.439E-02	0.564E-02	0.677E-02	0.762E-02	0.805E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.347E-01	0.291E-01	0.229E-01	0.121E-01	0.835E-02
-1.	0.339E-01	0.285E-01	0.225E-01	0.119E-01	0.825E-02
-12.	0.802E-02	0.756E-02	0.678E-02	0.481E-02	0.387E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1270E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.601E-02	0.763E-02	0.101E-01	0.116E-01	0.140E-01	0.191E-01	0.241E-01	0.284E-01	0.311E-01	0.317E-01
-1.	0.585E-02	0.743E-02	0.986E-02	0.113E-01	0.136E-01	0.186E-01	0.235E-01	0.277E-01	0.304E-01	0.310E-01
-12.	0.919E-03	0.117E-02	0.156E-02	0.180E-02	0.218E-02	0.306E-02	0.401E-02	0.496E-02	0.576E-02	0.631E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.302E-01	0.269E-01	0.226E-01	0.134E-01	0.966E-02
-1.	0.295E-01	0.264E-01	0.221E-01	0.132E-01	0.951E-02
-12.	0.654E-02	0.642E-02	0.600E-02	0.460E-02	0.381E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1314E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.406E-02	0.516E-02	0.687E-02	0.792E-02	0.957E-02	0.133E-01	0.172E-01	0.209E-01	0.238E-01	0.253E-01
-1.	0.395E-02	0.502E-02	0.669E-02	0.771E-02	0.932E-02	0.129E-01	0.168E-01	0.204E-01	0.232E-01	0.247E-01
-12.	0.624E-03	0.795E-03	0.106E-02	0.123E-02	0.150E-02	0.213E-02	0.285E-02	0.360E-02	0.429E-02	0.485E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.253E-01	0.237E-01	0.210E-01	0.139E-01	0.106E-01
-1.	0.247E-01	0.232E-01	0.205E-01	0.137E-01	0.104E-01
-12.	0.520E-02	0.530E-02	0.514E-02	0.424E-02	0.364E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1358E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.275E-02	0.350E-02	0.468E-02	0.541E-02	0.657E-02	0.925E-02	0.122E-01	0.152E-01	0.179E-01	0.197E-01
-1.	0.268E-02	0.341E-02	0.455E-02	0.526E-02	0.639E-02	0.901E-02	0.119E-01	0.149E-01	0.174E-01	0.192E-01
-12.	0.425E-03	0.542E-03	0.727E-03	0.843E-03	0.103E-02	0.148E-02	0.201E-02	0.259E-02	0.317E-02	0.368E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.205E-01	0.201E-01	0.187E-01	0.137E-01	0.109E-01
-1.	0.200E-01	0.197E-01	0.183E-01	0.134E-01	0.107E-01
-12.	0.406E-02	0.427E-02	0.429E-02	0.380E-02	0.337E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1402E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.187E-02	0.238E-02	0.319E-02	0.370E-02	0.451E-02	0.643E-02	0.866E-02	0.110E-01	0.133E-01	0.151E-01
-1.	0.182E-02	0.232E-02	0.311E-02	0.360E-02	0.439E-02	0.626E-02	0.844E-02	0.107E-01	0.129E-01	0.147E-01
-12.	0.291E-03	0.370E-03	0.498E-03	0.579E-03	0.710E-03	0.103E-02	0.142E-02	0.186E-02	0.232E-02	0.276E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.163E-01	0.166E-01	0.160E-01	0.129E-01	0.107E-01
-1.	0.159E-01	0.162E-01	0.157E-01	0.126E-01	0.105E-01
-12.	0.312E-02	0.338E-02	0.350E-02	0.330E-02	0.303E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1445E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.128E-02	0.163E-02	0.218E-02	0.254E-02	0.310E-02	0.447E-02	0.611E-02	0.793E-02	0.975E-02	0.114E-01
-1.	0.124E-02	0.158E-02	0.213E-02	0.247E-02	0.302E-02	0.436E-02	0.596E-02	0.772E-02	0.951E-02	0.111E-01
-12.	0.199E-03	0.254E-03	0.342E-03	0.398E-03	0.490E-03	0.716E-03	0.998E-03	0.133E-02	0.169E-02	0.205E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.126E-01	0.133E-01	0.134E-01	0.116E-01	0.101E-01
-1.	0.123E-01	0.130E-01	0.131E-01	0.114E-01	0.991E-02
-12.	0.237E-02	0.264E-02	0.280E-02	0.281E-02	0.265E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1489E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.873E-03	0.111E-02	0.150E-02	0.174E-02	0.214E-02	0.311E-02	0.431E-02	0.567E-02	0.712E-02	0.851E-02
-1.	0.850E-03	0.108E-02	0.146E-02	0.170E-02	0.208E-02	0.303E-02	0.419E-02	0.553E-02	0.694E-02	0.830E-02
-12.	0.137E-03	0.174E-03	0.235E-03	0.274E-03	0.338E-03	0.498E-03	0.701E-03	0.945E-03	0.122E-02	0.151E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.969E-02	0.105E-01	0.109E-01	0.102E-01	0.920E-02
-1.	0.945E-02	0.103E-01	0.106E-01	0.995E-02	0.900E-02
-12.	0.178E-02	0.203E-02	0.221E-02	0.233E-02	0.227E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1533E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.599E-03	0.763E-03	0.103E-02	0.120E-02	0.148E-02	0.216E-02	0.303E-02	0.405E-02	0.516E-02	0.630E-02
-1.	0.583E-03	0.743E-03	0.100E-02	0.117E-02	0.144E-02	0.211E-02	0.295E-02	0.394E-02	0.503E-02	0.614E-02
-12.	0.940E-04	0.120E-03	0.162E-03	0.189E-03	0.234E-03	0.347E-03	0.493E-03	0.672E-03	0.879E-03	0.110E-02

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.734E-02	0.817E-02	0.871E-02	0.867E-02	0.811E-02
-1.	0.716E-02	0.798E-02	0.850E-02	0.847E-02	0.793E-02
-12.	0.133E-02	0.154E-02	0.172E-02	0.191E-02	0.190E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1577E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.411E-03	0.525E-03	0.708E-03	0.826E-03	0.102E-02	0.151E-02	0.213E-02	0.288E-02	0.373E-02	0.463E-02
-1.	0.401E-03	0.511E-03	0.690E-03	0.805E-03	0.994E-03	0.147E-02	0.207E-02	0.280E-02	0.363E-02	0.451E-02
-12.	0.648E-04	0.827E-04	0.112E-03	0.131E-03	0.162E-03	0.241E-03	0.346E-03	0.476E-03	0.631E-03	0.804E-03

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.550E-02	0.627E-02	0.685E-02	0.722E-02	0.697E-02
-1.	0.537E-02	0.612E-02	0.669E-02	0.705E-02	0.681E-02
-12.	0.986E-03	0.116E-02	0.132E-02	0.153E-02	0.157E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1621E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.283E-03	0.361E-03	0.488E-03	0.570E-03	0.706E-03	0.105E-02	0.149E-02	0.204E-02	0.268E-02	0.338E-02
-1.	0.276E-03	0.352E-03	0.476E-03	0.556E-03	0.687E-03	0.102E-02	0.145E-02	0.199E-02	0.261E-02	0.330E-02
-12.	0.447E-04	0.570E-04	0.773E-04	0.904E-04	0.112E-03	0.168E-03	0.243E-03	0.337E-03	0.452E-03	0.583E-03

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.410E-02	0.476E-02	0.532E-02	0.590E-02	0.586E-02
-1.	0.399E-02	0.465E-02	0.519E-02	0.576E-02	0.573E-02
-12.	0.726E-03	0.871E-03	0.101E-02	0.122E-02	0.127E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1664E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.195E-03	0.249E-03	0.337E-03	0.394E-03	0.489E-03	0.730E-03	0.105E-02	0.145E-02	0.192E-02	0.246E-02
-1.	0.190E-03	0.243E-03	0.328E-03	0.384E-03	0.476E-03	0.711E-03	0.102E-02	0.141E-02	0.187E-02	0.240E-02
-12.	0.309E-04	0.394E-04	0.535E-04	0.626E-04	0.778E-04	0.117E-03	0.170E-03	0.238E-03	0.323E-03	0.421E-03

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.303E-02	0.359E-02	0.409E-02	0.474E-02	0.483E-02
-1.	0.295E-02	0.350E-02	0.399E-02	0.463E-02	0.472E-02
-12.	0.531E-03	0.648E-03	0.763E-03	0.956E-03	0.102E-02

STEADY STATE SOLUTION HAS NOT BEEN REACHED BEFORE FINAL SIMULATING TIME

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1708E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	170820.	5.	12.	15.	20.	30.	40.	50.	60.	70.
0.	0.135E-03	0.172E-03	0.233E-03	0.273E-03	0.339E-03	0.508E-03	0.735E-03	0.102E-02	0.138E-02	0.178E-02
-1.	0.131E-03	0.167E-03	0.227E-03	0.266E-03	0.330E-03	0.495E-03	0.716E-03	0.998E-03	0.134E-02	0.174E-02
-12.	0.213E-04	0.273E-04	0.370E-04	0.434E-04	0.540E-04	0.816E-04	0.119E-03	0.168E-03	0.230E-03	0.304E-03

CONTINUE

Y \ X	80.	90.	100.	120.	130.
0.	0.223E-02	0.268E-02	0.311E-02	0.376E-02	0.392E-02
-1.	0.217E-02	0.261E-02	0.303E-02	0.367E-02	0.383E-02
-12.	0.388E-03	0.479E-03	0.573E-03	0.743E-03	0.806E-03

ATTACHMENT B

REFERENCES

REFERENCES

Logan, William E. 2000. Letter to Ovidio Perez (Fort Stewart Directorate of Public Works, Environmental Branch) providing notice to implement the recommendations of the Corrective Action Plan–Part A Report, January 25.

Logan, William E. 2001. Letter to Gregory Stanley (Fort Stewart Directorate of Public Works, Environmental Branch) providing comments on the First Annual Monitoring Only Report, September 28.

SAIC (Science Applications International Corporation) 1999. *Corrective Action Plan–Part A Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, August.

SAIC 2000a. *First Semiannual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, June.

SAIC 2000b. *First Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, December.

SAIC 2002. *Second Annual Monitoring Only Report for Underground Storage Tank 122, Facility ID #9-089083, Building 7705, Fort Stewart, Georgia*, May.

ATTACHMENT C

CERTIFICATES OF ANALYSIS

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID:	751142	Project:	SAIC00103
Sample ID:	73973006	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	21-JAN-03 15:00		
Receive Date:	24-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene		46.9	0.330	1.00	ug/L	1	CDS1 01/31/03	0024	230558	1
Ethylbenzene		6.95	0.210	1.00	ug/L	1				
Toluene	J	0.393	0.390	1.00	ug/L	1				
Xylenes (total)		4.42	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0024	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	105%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	114%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	117%	(58%-139%)

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

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

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

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751142
Sample ID: 73973006

Proiect: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis
Reviewed by

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID:	751242	Project:	SAIC00103
Sample ID:	73973007	Client ID:	SAIC038
Matrix:	Water		
Collect Date:	21-JAN-03 15:40		
Receive Date:	24-JAN-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene	J	0.598	0.330	1.00	ug/L	1	CDS1	01/31/03	0053	230558	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1					
Toluene	U	ND	0.390	1.00	ug/L	1					
Xylenes (total)	U	ND	0.250	1.00	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0053	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	100%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	111%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	117%	(58%-139%)

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

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

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

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751242
Sample ID: 73973007

Proiect: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751342
Sample ID: 73973010
Matrix: Water
Collect Date: 21-JAN-03 17:10
Receive Date: 24-JAN-03
Collector: Client

Project: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 01/31/03	0219	230558	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0219	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	104%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	111%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	118%	(58%-139%)

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

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

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

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751342
Sample ID: 73973010

Proiect: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis
Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751442
Sample ID: 73973008
Matrix: Water
Collect Date: 21-JAN-03 16:20
Receive Date: 24-JAN-03
Collector: Client

Project: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 01/31/03	0122	230558	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0122	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	101%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	116%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	119%	(58%-139%)

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

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

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

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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751442
Sample ID: 73973008

Proiect: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC
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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751542
Sample ID: 73973009
Matrix: Water
Collect Date: 21-JAN-03 16:25
Receive Date: 24-JAN-03
Collector: Client

Project: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 01/31/03	0150	230558	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0150	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	103%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	117%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	119%	(58%-139%)

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

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

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

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Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: 751542
Sample ID: 73973009

Proiect: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis

Reviewed by

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: TB0310
Sample ID: 73973011
Matrix: Water
Collect Date: 21-JAN-03 07:43
Receive Date: 24-JAN-03
Collector: Client

Project: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	U	ND	0.330	1.00	ug/L	1	CDS1 01/31/03	0248	230558	1
Ethylbenzene	U	ND	0.210	1.00	ug/L	1				
Toluene	U	ND	0.390	1.00	ug/L	1				
Xylenes (total)	U	ND	0.250	1.00	ug/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	01/31/03	0248	230558

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Fede	109%	(67%-136%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Fede	119%	(62%-148%)
Toluene-d8	5035/8260B BTEX in Liquid Fede	123%	(58%-139%)

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

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

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

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

Certificate of Analysis

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

Report Date: February 11, 2003

Contact: Leslie Barbour
Project: Ft. Stewart LTM-UST 94A

Client Sample ID: TB0310
Sample ID: 73973011

Project: SAIC00103
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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

Valerie Davis

Reviewed by

SAIC An Employee-Owned Company
Science Applications International Corporation

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM32

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	REQUESTED PARAMETERS: BTEX	VOC	Oil & Grease	Total Phnols	pH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
Ø6Ø942	1/21/03	1005	WATER	2					2		
Ø6Ø642	1/21/03	1030	WATER	2					2		
Ø6Ø644	1/21/03	1036	WATER	2					2		
Ø6Ø842	1/21/03	1025	WATER	2					2		
Ø6Ø742	1/21/03	1045	WATER	2					2		
751142	1/21/03	1500	WATER	2					2		
751242	1/21/03	1540	WATER	2					2		
751442	1/21/03	1620	WATER	2					2		
751542	1/21/03	1625	WATER	2					2		
751342	1/21/03	1710	WATER	2					2		
TBØ31Ø	1/21/03	0745	WATER	2					2		

P Stoll 1/24/03

RELINQUISHED BY: Patricia A Stoll	Date/Time 1/24/03 1200	RECEIVED BY: Mike Dunlap	Date/Time 1-24-03 1515	TOTAL NUMBER OF CONTAINERS: 22	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: #4	FEDEX NUMBER: N/A
RECEIVED BY:	Date/Time 1/24/03 1200	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 1/24/03 1515	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751152
Sample ID: 82889003
Matrix: Water
Collect Date: 21-JUN-03 18:36
Receive Date: 24-JUN-03
Collector: Client

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal										
5035/8260B BTEX in Liquid Federal										
Benzene	E	299	0.330	1.00	ug/L	1	TLW 06/26/03	0827	259848	1
Ethylbenzene		28.0	0.210	1.00	ug/L	1				
Toluene		2.92	0.390	1.00	ug/L	1				
Xylenes (total)		134	0.250	1.00	ug/L	1				
Benzene		258	1.65	5.00	ug/L	5	TLW 06/26/03	1535	259848	2
Ethylbenzene		21.8	1.05	5.00	ug/L	5				
Toluene	J	2.20	1.95	5.00	ug/L	5				
Xylenes (total)		89.5	1.25	5.00	ug/L	5				

The following Analytical Methods were performed

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

Surrogate recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	82%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	85%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	83%	(76%-129%)
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	88%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	90%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	83%	(76%-129%)

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

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration 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.
UI Uncertain identification for gamma spectroscopy.

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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751152
Sample ID: 82889003

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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.

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

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

Valerie Davis
Reviewed by

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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751252
Sample ID: 82889002
Matrix: Water
Collect Date: 21-JUN-03 18:26
Receive Date: 24-JUN-03
Collector: Client

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics Federal											
5035/8260B BTEX in Liquid Federal											
Benzene	J	0.876	0.330	1.00	ug/L	1	TLW	06/26/03	0800	259848	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 recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	85%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	86%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	81%	(76%-129%)

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

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration 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.
UI Uncertain identification for gamma spectroscopy.
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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751252
Sample ID: 82889002

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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Valerie Davis

Reviewed by

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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751352
Sample ID: 82889001
Matrix: Water
Collect Date: 21-JUN-03 17:14
Receive Date: 24-JUN-03
Collector: Client

Project: SAIC03902
Client ID: SAIC038

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	TLW 06/26/03	0733	259848	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 recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	87%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	87%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	82%	(76%-129%)

Notes:
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> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration 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.
UI Uncertain identification for gamma spectroscopy.
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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751352
Sample ID: 82889001

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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

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Valerie Davis
Reviewed by

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Certificate of Analysis

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

Report Date: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751452
Sample ID: 82889015
Matrix: Water
Collect Date: 23-JUN-03 16:15
Receive Date: 24-JUN-03
Collector: Client

Project: SAIC03902
Client ID: SAIC038

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	TLW 06/26/03	1137	259848	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 recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	85%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	88%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	81%	(76%-129%)

Notes:
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> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration 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.
UI Uncertain identification for gamma spectroscopy.
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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751452
Sample ID: 82889015

Project: SAIC03902
Client ID: SAIC038

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: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751552
Sample ID: 82889014
Matrix: Water
Collect Date: 23-JUN-03 16:20
Receive Date: 24-JUN-03
Collector: Client

Project: SAIC03902
Client ID: SAIC038

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	TLW	06/26/03	1110	259848	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 recovery	Test	Recovery%	Acceptable Limits
Bromofluorobenzene	5035/8260B BTEX in Liquid Federal	87%	(69%-137%)
Dibromofluoromethane	5035/8260B BTEX in Liquid Federal	89%	(74%-144%)
Toluene-d8	5035/8260B BTEX in Liquid Federal	83%	(76%-129%)

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

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration 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.
UI Uncertain identification for gamma spectroscopy.
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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Certificate of Analysis

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

Report Date: July 30, 2003

Contact: Leslie Barbour
Project: Ft. Stewart Long Term Monitoring

Client Sample ID: 751552
Sample ID: 82889014

Project: SAIC03902
Client ID: SAIC038

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

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Valerie Davis

Reviewed by

82889, 82890

pg 1 of 3

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM35

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) [signature] (Printed Name) Patricia A. Stoll

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	VOC	Oil & Grease	Total Phnols	pH	MTBE	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TB0314	6/21/03	0745	water	2						2		
1A1822	6/20/03	1415	water	2					2	4		
1A2222	6/20/03	1315	water	2					2	4		
1A0122	6/20/03	1710	water	2					2	4		
1A0722	6/20/03	1805	water	2					2	4		
1A2022	6/20/03	1610	water	2					2	4		
1A2024	6/20/03	1610	water	2					2	4		
1A0322	6/20/03	1725	water	2					2	4		
1A0422	6/20/03	1640	water	2					2	4		
1A0222	6/20/03	1510	water	2					2	4		
1A0224	6/20/03	1510	water	2					2	4		
1A2122	6/20/03	1335	water	2					2	4		
1A1222	6/20/03	1420	water	2					2	4		

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[signature]	6/24/03	Tom Carter	6/24/03
COMPANY NAME: SAIC	1250	COMPANY NAME: GEL	1250
RECEIVED BY:	Date/Time	RELINQUISHED BY: Tom Carter	Date/Time 6/24/03
COMPANY NAME:		COMPANY NAME: GEL	1530
RELINQUISHED BY:	Date/Time	RECEIVED BY: Mike Graham	Date/Time 6-24-03
COMPANY NAME:		COMPANY NAME: GEL	1530

TOTAL NUMBER OF CONTAINERS: 102 96 6/24/03

Cooler ID: #1

Cooler Temperature: 4°C

FEDEX NUMBER: N/A

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM35

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	REQUESTED PARAMETERS: BTEX	VOC	Oil & Grease	Total Phnols	pH	MTBE	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1A12Z6	6/20/03	1350	water	2					2	4		
1AØ6Z6	6/21/03	1100	water	2					2	4		
1AØ622	6/21/03	1035	water	2					2	4		
1AØ522	6/21/03	0945	water	2					2	4		
1AØ822	6/21/03	0905	water	2					2	4		
751352	6/21/03	1714	water	2						2		
751252	6/21/03	1826	water	2						2		
751152	6/21/03	1836	water	2						2		
Ø6Ø952	6/21/03	1456	water	2						2		
Ø6Ø852	6/21/03	1541	water	2						2		
Ø6Ø752	6/21/03	1534	water	2						2		
Ø6Ø652	6/21/03	1450	water	2						2		
Ø6Ø654	6/21/03	1450	water	2						2		

RELINQUISHED BY: Patricia A Stoll	Date/Time 6/23/03 12/50	RECEIVED BY: TOM CARTER	Date/Time 6/24/03 1250	TOTAL NUMBER OF CONTAINERS: 96/02 15 6/24/03	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: #1	FEDEX NUMBER: N/A
RECEIVED BY:	Date/Time	RELINQUISHED BY: Tom Carter	Date/Time 6/24/03 1530		
COMPANY NAME:		COMPANY NAME: GEL			
RELINQUISHED BY:	Date/Time	RECEIVED BY: Mike Sanders	Date/Time 6-24-03 1530		
COMPANY NAME:		COMPANY NAME: GEL			

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM35

PROJECT NAME: Ft. Stewart LTM-D.O. 21

PROJECT NUMBER: 01-1624-04-5213-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	REQUESTED PARAMETERS: BTEX	VOC	Oil & Grease	Total Phnols	pH	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
37Ø682	6/21/03	1316	water	2					2		
37Ø684	6/21/03	1316	water	2					2		
37Ø982	6/21/03	1225	water	2					2		
37Ø782	6/21/03	1235	water	2					2		
TBØ313	6/20/03	0745	water	2					2		
751552	6/23/03	1620	water	2					2		
751452	6/23/03	1615	water	2					2		
TBØ315	6/23/03	1600	water	2					2		

R Stoll 6/24/03

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 102	Cooler Temperature: 4°C
R Stoll	6/24/03 1250	TOM CARTER	6/24/03 1250	Cooler ID: #1	FEDEX NUMBER: N/A
COMPANY NAME:		COMPANY NAME: GEL			
RECEIVED BY:	Date/Time	RELINQUISHED BY: TOM CARTER	Date/Time 6/24/03 1530		
COMPANY NAME:		COMPANY NAME: GEL			
RELINQUISHED BY:	Date/Time	RECEIVED BY: Mike Hankins	Date/Time 6-24-03 1530		
COMPANY NAME:		COMPANY NAME: GEL			