FINAL



CORRECTIVE ACTION PLAN—PART B



Underground Storage Tank 100A Facility ID #9-089080 Building 1349 Fort Stewart, Georgia

Prepared for



U.S. ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT

Contract No. DACA21-02-D-0004 Delivery Order No. 64

November 2009



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Prepared for U.S. Army Corps of Engineers, Savannah District Under Contract No. DACA21-02-D-0004 Delivery Order No. 64

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

November 2009

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List of Abbreviations and Acronyms

| ACL | alternate concentration limit |
|----------|--|
| AMSL | above mean sea level |
| AT123D | Analytical Transient 1-, 2-, 3-Dimensional |
| ATL | alternate threshold level |
| BGS | below ground surface |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CAP | Corrective Action Plan |
| CY | calendar year |
| DAF | dilution attenuation factor |
| DPT | direct-push technology |
| DPW | Directorate of Public Works |
| F&T | fate and transport |
| FSMR | Fort Stewart Military Reservation |
| GA EPD | Georgia Environmental Protection Division |
| GUST | Georgia Underground Storage Tank |
| IWQS | In-Stream Water Quality Standard |
| MNA | monitored natural attenuation |
| NFA | no further action |
| OWS | oil/water separator |
| PAH | polycyclic aromatic hydrocarbon |
| RCRA | Resource Conservation and Recovery Act |
| RFI | RCRA Facility Investigation |
| SAIC | Science Applications International Corporation |
| SESOIL | <u>Seasonal Soil</u> Compartment (model) |
| STL | soil threshold level |
| SVOC | semivolatile organic compound |
| SWMU | solid waste management unit |
| USACE | U. S. Army Corps of Engineers |
| UST | underground storage tank |
| USTMP | Underground Storage Tank Management Program |
| VOC | volatile organic compound |
| | |

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Georgia Department of Natural Resources

Environmental Protection Division Land Protection Branch **Underground Storage Tank Management Program** 4244 International Parkway, Suite 104 Atlanta, Georgia 30354 Phone (404) 362-2687 FAX (404) 362-2654

CORRECTIVE ACTION PLAN PART B

| Facility Na | me: | UST 100A | (former) | ly SWMU 27I | F) | | - | | |
|--------------------|----------|------------------|------------|--------------------------------|-------------|---------------|-------------|-----------|-----------|
| Street Add | ress: | Building 1 | 349 | | | | | | |
| City: | - | Fort Stewa | ırt | | Coi | inty: | Liberty | | |
| Facility ID | #: | 9-089080 | | | | | | | |
| Latitude: | | 31° 52' 46 | ,, | Longitude: -81° 37' 50" | | | | | |
| | | | | | | | | | |
| Submitted | by UST (| Owner/Ope | rator: | | Prepared by | y: | | | |
| Name: | Thomas | C. Fry (En | v. Brancl | h) | Name: | Patty S | toll | | |
| Company: | US Arm | 1y/HQ 3rd I | nf. Div. (| (Mech) | Company: | Science | e Applicati | ons Inter | rnational |
| | | | | | | Corpor | ation | | |
| Address: | DPW E | NRD Env. I | Br. | | Address: | <u>151 La</u> | fayette Dri | ve | |
| | 1550 Fr | ank Cochra | n | | | P.O. Bo | ox 2501 | | |
| City: | Fort Ste | wart | State: | GA | City: | Oak Ri | dge | State: | TN |
| Zip Code: | 31314-4 | 1927 | | | Zip Code: | 37831 | | | |
| Telephone | (912)-7 | 67-7919 | | | Telephone: | (865)-4 | 81-8791 | | |
| | | | | | | | | | |

1.0 PLAN CERTIFICATION

A. UST Owner/Operator

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and complete, and the plan satisfies all criteria and requirements of Rule 391-3-15-.09 of the Georgia Rules for Underground Storage Tank Management.

Tressa Rutland Name:

Signature:

Date:

B. Professional Engineer or Professional Geologist

Name:

Date:

Patricia Stoll atis Signature: 11/12/09



Check all boxes below that apply. Attach supporting documentation, i.e., narrative, figures, tables, maps, boring/well logs, etc., for all items checked. Supporting documentation should be three-hole punched and prepared in conformity with the guidance document "Underground Storage Tank (UST) Release: Corrective Action Plan – Part B (CAP-B) Content", GUST-7B.

II. SITE INVESTIGATION REPORT

A. Local and Site Hydrogeology:

- Documentation of Local Groundwater Conditions
- Stratigraphic Boring Logs
- Stratigraphic Cross Sections
- Referenced or Documented Calculations of Relevant Aquifer Parameters
- Direction of Groundwater Flow
 - Table of Monitoring Well Data
 - Potentiometric Map
 - Flow Net Superimposed on a Base Map

B. Horizontal and Vertical Extent of Contamination:

- Soil Groundwater
- Free Product Surface Water

III. REMEDIAL ACTION PLAN

A. Corrective Action Completed or In-Progress:

- Recovery/Removal of Free-Product (Non-aqueous Phase Hydrocarbons) Adsorbent socks have been utilized at MW4 and MW12 to address intermittent product.
- Remediation/Treatment of Contaminated Backfill Material & Native Soils

Other (specify) An investigation determined that the piping to the former waste oil tank UST 100A was not properly abandoned at the time of tank removal in 1996; these lines were properly grouted and abandoned in 2007 to eliminate this potential ongoing source to subsurface contamination.

| В. | Ob | jective of Corrective Action: |
|----|--------|---|
| | | Remove Free Product That Exceeds One-Eighth Inch |
| | | Remediate Groundwater Contamination That Exceeds: |
| | | Maximum Contaminant Levels (MCLs) |
| | | OR |
| | | In-stream Water Quality Standards |
| | | Remediate Soil Contamination That Exceeds: |
| | | Threshold Values Listed in Table A |
| | | OR |
| | | Threshold Values Listed in Table B |
| | | OR |
| | | Alternate Threshold Levels (ATLs) |
| | | Provide Risk Based Corrective Action |
| | | Remediate Soil and/or Groundwater Contamination That Exceeds Alternate Concentration Limits (ACLs) and Monitor Residual Contaminants |
| | | OR |
| | | Monitor Soil and/or Groundwater Contamination That Exceeds Levels in Rule09 (3) But Is Less Than ACLs |
| C. | Design | Operation of Corrective Action Systems: |
| | | Soil Groundwater Free Product Surface Water |
| D. | Impler | nentation (Section III.D): |
| | Incl | udes, as a minimum, the following: |
| | • | Plan to decommission equipment/wells and close site. |

Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

IV. PUBLIC NOTICE

| Centried Letters to Aulagent, and I otentiany Affected Property Owners and Local On- | cent, and Potentially Affected Property Owners and Local Of | nticiais |
|--|---|----------|
|--|---|----------|

Legal Notice in Newspaper, as approved by EPD

Other EPD-approved Method (specify): <u>Site is located within the confines of Fort Stewart, a</u> <u>federal facility. Public notice was conducted under the RCRA program.</u>

V. CLAIM FOR REIMBURSEMENT: (For GUST Trust Fund sites only)

- GUST Trust Fund Application (GUST-36), must be attached if applicable
- Cost Proposal
 - Non-Reimbursable Costs

OR

- Reimbursable Costs
 - Total Project Costs
 - Costs incurred to date, per GUST-92
 - Estimated costs to complete corrective action, per GUST-92
 - Invoices and Proofs-of-Payment for Costs Incurred to Date

Proposed Schedule For Reimbursement

Lump Sum Payment Upon Completion Of Corrective Action

OR

- Interim Payments With Final Payment Upon Completion
- Not Applicable

2.0 SITE INVESTIGATION REPORT

This section represents the Site Investigation Report for Underground Storage Tank (UST) 100A, Building 1349, Facility ID# 9-089080, located at Fort Stewart, Georgia. This Corrective Action Plan (CAP)– Part B Report follows the guidance published by the Georgia Environmental Protection Division (GA EPD) in February 1995; however, the organization of the appendices for this report mirrors that of the appendices listed in the CAP–Part A template issued by GA EPD in May 1998 (GA EPD 1995). Report figures and tables are located in Appendices I and II, respectively.

The location of UST 100A at Fort Stewart is illustrated in Figure 1. The UST 100A site is located within an average of higher groundwater pollution susceptibility area, is greater than 500 ft from a withdrawal point, and is more than 500 ft from a surface water body. Because public water supply wells exist within 2 miles of the site, as defined in Georgia Underground Storage Tank (GUST) Management Rule 391-5-15-.09, the appropriate soil threshold levels (STLs) are those presented in Table A, Column 2 of GUST Rules 391-5-15. The site was formerly regulated under the Resource Conservation and Recovery Act (RCRA) and identified as Solid Waste Management Unit (SWMU) 27F, northwest of Building 1340, but has been regulated under the GA EPD UST Management Program (USTMP) since its official transfer to the program as per the correspondence from the GA EPD Hazardous Waste Management Branch, dated September 23, 2008. Previous investigations and corrective actions at the site were originally conducted under RCRA. Throughout this document, the site will be referred to under its current designation (i.e., UST 100A) for consistency.

A site map of UST 100A and the vicinity is shown in Figure 2a. UST 100A was a 1,000-gal waste oil UST located south of the oil/water separator (OWS) northwest of Building 1340, one of two OWSs that support the vehicle maintenance activities of the 3d Engineer Brigade. The OWS is located along the northwestern boundary of the motor pool area, approximately 650 ft northwest of Building 1340 and adjacent to a covered maintenance area identified as Building 1390. The maintenance pad consisted of six bays, three of which have inspection pits that allow military personnel to access underneath the military vehicles. A floor drain is located in each of the inspection pits to collect any drainage (i.e., spills and water) that may collect in the inspection pit. The floor drains are piped to the OWS by way of a common 6-in.-polyvinyl chloride pipe. In addition, a drain in the sliding collection tray flows to a trough located on the east side of each inspection pit. Each trough transitions into a 3-in.-diameter steel pipe that flows below ground to a common 4-in.-diameter cast iron pipe that discharged to UST 100A, a 1,000-gal waste oil UST located south of the OWS. UST 100A was removed in 1996 and the pipes purportedly abandoned. Maintenance activities for military vehicles were performed at the maintenance pad up to 2001 when the facility was purportedly shut down. The closure consisted of placing plywood over the metal grates covering the OWS.

A site inspection of the facility in early calendar year (CY) 2007 indicated that the maintenance facility had been sporadically used since 2001. Vehicles have been observed at the facility and waste oil had accumulated in the OWS. In addition, the 3-in.-diameter pipe in the inspection pit closest to the OWS was found to be open. It is not known if the pipe was not plugged during the abandonment of the UST in 1996 or whether the plug had been removed. The 3-in.-diameter pipes in the other two inspection pits had grouted ends. Maintenance activities were identified as late as July 2007. It is believed that these operations may have been the source of further contamination if the integrity of the OWS and its piping had been compromised. An evaluation of the integrity of the OWS and piping was conducted in May of 2007; this evaluation consisted of cleaning out the liquid and solid material in the OWS; cleaning the interior of the OWS; visually inspecting the OWS and piping; evaluating the integrity of the piping using a combination of visual inspection, smoke testing, low-pressure air testing, and static water testing; properly abandoning the pipe to the removed waste oil UST; and installing an aluminum, locked cover on top of the OWS to prevent its future use. In addition,

the Fort Stewart Military Reservation (FSMR) Directorate of Public Works (DPW) has initiated engineering controls to prevent the use of the facility.

A CAP-Part A has not been developed for UST 100A. The site was officially transferred to the GA EPD USTMP on September 23, 2008, as per the correspondence from the GA EPD Hazardous Waste Management Branch. Science Applications International Corporation (SAIC) developed and submitted the Revised Final CAP for the 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) dated July 2004 under the RCRA program (SAIC 2004). Based upon the recommendations of the Phase II RCRA Facility Investigation (RFI), monitored natural attenuation (MNA) was selected as the corrective action for groundwater and soil. The alternative also consisted of land use restrictions to prohibit disturbance of surface and subsurface soil and groundwater and biennial soil sampling and groundwater sampling through the MNA period. Based upon the results of the first two biennial sampling events (CY 2002 and CY 2004), additional sampling was conducted to evaluate and delineate the nature and extent of subsurface soil contamination. The nature and extent of contamination in other site media had been adequately delineated through previous investigations.

To provide sufficient contextual basis for the Remedial Action Plan developed in Section III of this CAP–Part B Report, a background summary of RCRA-related investigations is presented in Section II. This CAP–Part B Report for UST 100A was developed for the Fort Stewart DPW, Environmental Branch, through the U. S. Army Corps of Engineers (USACE), Savannah District, by SAIC under contract number DACA21-02-D-0004, Delivery Order number 64.

2.1 REGIONAL, LOCAL, AND SITE HYDROGEOLOGY

Discussion of the local and site hydrogeology is based on field observations and investigative activities performed during the previous investigations performed under RCRA and is summarized herein to provide context for the proposed remedial action.

2.1.1 Documentation of Local Groundwater Conditions

2.1.1.1 Groundwater usage

According to the *Groundwater Pollution Susceptibility Map of Georgia* (GA EPD 1992), UST 100A, Facility ID #9-089080 is located within an average groundwater pollution susceptibility area. A total of seven groundwater supply wells are located within a 2-mile radius of the Fort Stewart garrison area. Six of these wells are located within the confines of the garrison area. The other well is located at Wright Army Airfield, approximately 1.2 miles northeast of the garrison area. All of the groundwater supply wells are classified as public wells that supply water to Fort Stewart for drinking and non-drinking purposes. These wells are approximately 450 ft deep and draw groundwater from the Principal Artesian (also known as the Floridan) aquifer. According to Fort Stewart DPW personnel, chlorine and fluoride are added to the groundwater at the well heads prior to the water being pumped into storage tanks and/or water towers. The locations of the wells within the 2-mile radius, along with a 500-ft radius drawn around each well, are shown in Figure 3. Based on the location of UST 100A relative to the identified groundwater supply wells, it is located approximately 1,500 ft from Well #3 and is classified as being located greater than 500 ft from a withdrawal point.

2.1.1.2 Aquifer description

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island

Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 ft thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

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 Formation, Markshead Formation, and Parachula Formation, 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 consists of sand, clay, limestone, and dolomite and is approximately 10 ft thick in the Savannah, Georgia, area.

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 below ground surface (BGS). However, soil surveys for Liberty and Long counties also describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

2.1.1.3 Site-specific hydrogeology

Based on site-specific lithology, groundwater of the surficial aquifer has been divided into a shallow and a deep surficial aquifer. A clay-confining layer approximately 2 to 3 ft in thickness is encountered at a depth of approximately 8 to 12 ft BGS across the site. The water table for the surficial aquifer occurs at an average depth of approximately 7 ft BGS. Perched groundwater may also be encountered above the clay layer. The surficial aquifer is separated from the Floridan aquifer by the greenish clay of the Hawthorn Formation. Based on the boring logs for the deep site wells, the Hawthorn Formation was encountered at depths of 40 ft BGS (MW2), 36 ft BGS (MW8), and 33 ft BGS (MW11).

2.1.1.4 Potential discharge to surface water

Several surface water bodies are located within a 1-mile radius of the Fort Stewart garrison area and are shown in Figure 3.

No permanent surface water bodies or conveyances are present at this site and no surface drainage features exist around the site that may directly receive potential surface water runoff. However, there is a man-made drainage ditch approximately 450 ft south (downgradient) from the site. The drainage ditch receives miscellaneous drainage and surface water runoff from the northwestern side of the garrison area and discharges into Mill Creek approximately 2,400 ft to the west.

Several buried utilities are present within proximity to UST 100A and may represent preferential pathways for migration (shown in Figure 2b). A wastewater line exits the adjacent OWS and forms a junction with sewer manhole #27, located approximately 35 ft to the southeast. However, the manhole invert is located at an elevation of approximately 65 ft above mean sea level (AMSL), which is approximately 3.5 ft above the average groundwater elevation of 61.5 ft AMSL. Additionally, a storm drain is also located approximately 120 ft

southeast of UST 100A. The invert elevation of the nearest catch basin on this storm line (i.e., CB242) is approximately 61.5 ft AMSL, which is at or near the water table elevation.

2.1.2 Stratigraphy

2.1.2.1 Regional stratigraphy

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 BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

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

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately 1/4 mile north of the runway at Wright Army Airfield within FSMR. The log for this well describes a 410-ft section, the lowermost 110 ft of which consisted predominantly of limestone sediment, 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 this sediment 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).

2.1.2.2 Site-specific stratigraphy

Boring logs collected during investigations to date indicate that the unconsolidated soil deposits present across the UST 100A site consist of alternating layers of sand and silty to clayey sands. A clay-confining layer approximately 2 to 3 ft in thickness is encountered at a depth of approximately 8 to 12 ft BGS across the site. Based on the boring logs for the deep site wells, the greenish clay of the Hawthorn Formation was encountered at depths of 40 ft BGS (MW2), 36 ft BGS (MW8), and 33 ft BGS (MW11).

A full compilation of the boring logs for UST 100A is presented in Appendix VIII.

2.1.3 Stratigraphic Cross-Sections

Stratigraphic cross-sections have been developed based on the soil boring logs collected at UST 100A. The north to south, southwest to northeast, and northeast to southwest cross-sections are shown in Figures 4a, 4b, and 4c, respectively. These cross-sections illustrate the geology described in Section 2.1.2.1.

2.1.4 Referenced or Documented Calculations

As part of the Phase II RFI and Addendum, geotechnical samples were collected during installation of the 18 site monitoring wells (SAIC 2000 and 2001). These results are summarized in Table 3.

2.1.5 Direction of Groundwater Flow

The potentiometric surface and direction of groundwater flow in April 2008 are shown in Figures 5a and 5b for the shallow and deep groundwater zones, respectively. Figures 5c and 5d show the potentiometric surface and direction of groundwater flow for the shallow and deep groundwater zones in the surficial aquifer, respectively, in March 2009.

The hydraulic gradient of the shallow surficial groundwater in April 2008 was approximately 0.0017 ft/ft. The hydraulic gradient for the shallow groundwater in March 2009 ranged from 0.00087 ft/ft at the west side of the site to 0.0025 ft/ft at the east portion of the site. In April 2008 and March 2009, the hydraulic gradient of the deep surficial groundwater was approximately 0.0013 ft/ft. The deep and shallow surficial groundwater flow direction is generally to the south and southwest.

The well construction details are summarized in Table 1 for UST 100A. Water level measurements collected from existing monitoring wells during the various historical investigations are presented in Table 2.

2.2 EXTENT OF CONTAMINATION

The horizontal and vertical extents of petroleum contamination in soil and groundwater have been delineated by activities performed during the UST closure and various RCRA field investigations. A brief description of environmental investigation efforts completed at the UST 100A site is presented below. All sample locations and monitoring wells at UST 100A are shown in Figure 2b.

UST Removal (Anderson Columbia Environmental Inc., 1996)

- Removal of the 1,000-gal waste oil tank was documented in a November 1996 closure report.
- A soil sample was collected at a depth of approximately 7 ft BGS, below the UST but above the underlying slab material, and analyzed for semivolatile organic compounds (SVOCs). No SVOCs were observed above the method detection limits.

Phase I RFI (SAIC 2000)

- A Phase I RFI was conducted at SWMU 27F in January through May of 1998 as 1 of the 16 sites under the Phase II RFI for 16 SWMUs at Fort Stewart (SAIC 2000).
- Four subsurface soil and groundwater samples were collected from soil borings (GP-01 through GP-04) using direct-push technology (DPT). Soil sample collection was based upon field headspace screening for volatile organic compounds (VOCs). Soil and groundwater samples were submitted for laboratory analysis of VOCs, SVOCs, and lead. The results for petroleum-related constituents are presented in Tables 4a and 4b for soil and Tables 5a and 5b for groundwater.
- No surface soil samples were collected based on field headspace screening for VOCs (i.e., no photoionization detector detections were observed in the 0 to 2-ft interval).
- No surface water or sediment samples were collected because no pathway exists for these media.

• An additional investigation to evaluate the nature and extent of potential soil and groundwater contamination was recommended.

Phase II RFI and Supplemental Phase II RFI (SAIC 2001)

- A Phase II RFI was performed in October 1999 and a supplemental Phase II RFI was performed in November 2000 and January 2001, the results of which were presented in the Addendum for SWMU 27F: 3D Engineering Brigade, Northwest of Building 1340, to the Revised Final Phase II RCRA Facility Investigation Report for 16 Solid Waste Management Units at Fort Stewart, Georgia (SAIC 2001).
- DPT techniques were used to collect 15 groundwater screening samples (from GP-05 through GP-19) for analysis of VOCs only. Two vertical-profile borings (VP-01 and VP-02) were installed at the groundwater screening locations with the highest levels of contamination to investigate vertical extent, and the vertical-profile samples analyzed for VOCs. The results of the screening were used to site 11 site monitoring wells (MW1 through MW11, comprised of 8 shallow and 3 deep wells), which were sampled for VOCs, SVOCs, and RCRA metals. The results for petroleum-related constituents in groundwater are presented in Tables 5a and 5b.
- Soil samples were collected at each monitoring well and analyzed for VOCs, SVOCs, and RCRA metals. Because MW10 was located in an area of significant contamination, all the subsurface soil intervals to the water table (five) were analyzed for VOCs. The results for petroleum-related constituents in soil are presented in Tables 4a and 4b.
- One recovery well (MW12) was installed to recover potential free product identified on a clay lens encountered at approximately 8 ft BGS during the Phase I RFI. No soil or groundwater samples were collected at this location.
- Based on the results and recommendations of the Phase II RFI, six shallow monitoring wells (MW13 through MW18) were installed and sampled in November 2000 to January 2001 along with sampling the existing site wells (MW1 through MW10). The results for petroleum-related constituents in groundwater are presented in Tables 5a and 5b.
- No surface water or sediment samples were collected during either the Phase II or supplemental evaluation because no pathway exists for these media.
- The development of a CAP was recommended to determine the appropriate corrective action(s) to address human health constituents of concern in groundwater (benzene) and soil [benzo(*a*)pyrene].

CY 2002 RCRA CAP Sampling (SAIC 2003)

- Activities conducted in 2002 are documented in the Corrective Action Plan Progress Report for Calendar Year (CY) 2002, 3d Engineering Brigade, Northwest of Building 1340 at Fort Stewart, Georgia.
- Two surface soil samples (0 to 1 ft BGS; SS-01 and SS-02) were collected in September 2002 adjacent to MW10 using a hand auger and analyzed for SVOCs. The results for petroleum-related constituents in soil are presented in Tables 4a and 4b.
- Groundwater samples were collected at thirteen shallow monitoring wells (MW1, MW3, MW4, MW5, MW6, MW7, MW9, MW10, MW14, MW15, MW16, MW17, and MW18) in September 2002 and

analyzed for VOCs, SVOCs and natural attenuation parameters. The results for petroleum related constituents in groundwater are presented in Tables 5a and 5b.

CY 2004 RCRA CAP Sampling (SAIC 2006a)

- Activities conducted in 2004 are documented in the Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2004, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia.
- Thirteen shallow monitoring wells (MW1, MW3, MW4, MW5, MW6, MW7, MW9, MW10, MW14, MW15, MW16, MW17, and MW18) were sampled in August 2004 and analyzed for VOCs, SVOCs, and natural attenuation parameters. The results for petroleum-related constituents in groundwater are presented in Tables 5a and 5b.
- Free product was measured at 0.14 in. in MW4 and at 0.05 in. in MW12. Absorbent socks were emplaced in both MW12 and MW4.

2.2.1 Subsurface Soil Investigation (SAIC 2006b)

- Based on the results of the first two biennial sampling events, additional subsurface soil sampling was conducted in September 2005 to refine the nature and extent of subsurface soil contamination, as documented in the Letter Report for the Subsurface Soil Investigation for the SWMU 27, 3d Engineer Brigade, Northwest of Building 1340 at Fort Stewart, Georgia.
- A total of 14 subsurface borings (SB-01 through SB-14) were installed at the site using a Geoprobe rig and Encore[®] sampling. Eight of the borings were installed around the south and east sides of the maintenance pad, two were installed on the north side of the pad, and four were installed downgradient of the soil borings indicating visible contamination (SB-11 through SB-14). Soil boring samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and SVOCs. The results for petroleum-related constituents in soil are presented in Tables 4a and 4b.
- Based on the sampling results, one additional soil boring was recommended to fully delineate the extent of contamination, and an investigation of the underground piping from the maintenance facility and OWS was recommended to determine if these lines had leaks that contributed to subsurface contamination.

CY 2007 RCRA CAP Sampling (SAIC 2007b)

- Activities conducted in 2007 are documented in the Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2007, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia.
- In May 2007, the inspection, cleaning, and integrity testing of the OWS and piping associated with the maintenance pad were conducted as recommended in the CY 2004 CAP Progress Report. This work was detailed in the *Completion Report for the Oil/Water Separator and Piping Evaluation for the SWMU 27, 3d Engineer Brigade, Northwest of Building 1340 at Fort Stewart, Georgia* (SAIC 2007a).
- Fourteen shallow monitoring wells (MW1, MW3, MW4, MW5, MW6, MW7, MW9, MW10, MW13, MW14, MW15, MW16, MW17, and MW18) were sampled in April 2007. MW13 was inadvertently not sampled in April and was subsequently sampled in July 2007. All groundwater samples were analyzed for VOCs, SVOCs, and natural attenuation parameters. The results for petroleum-related constituents in groundwater are presented in Tables 5a and 5b.

- Free product was not observed in MW4 and MW12 during the April 2007 groundwater sampling event.
- An additional subsurface soil investigation was recommended to fully delineate the extent of contamination, with the results of the OWS investigation utilized in selecting the subsequent boring locations.

CAP Progress Report for CY 2008 (SAIC 2008)

- Activities conducted in 2008 are documented in the Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2008, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia.
- A total of nine DPT soil borings (SB15 through SB23) and ten borings (SB26 through SB35) were installed in July 2007 and January 2008, respectively, at locations downgradient (i.e., south and southeast) of previous soil borings to refine the extent of subsurface soil contamination. Two soil samples were collected from each boring and analyzed for BTEX and SVOCs. The results for petroleum-related constituents in soil are presented in Tables 4a and 4b.
- One groundwater sample was collected from each of the 19 borings after the completion of the top of the clay-confining layer at approximately 10 to 12 ft BGS. The results for petroleum-related constituents in groundwater are presented in Tables 5a and 5b.
- In April 2008, two confirmatory surface soil samples (SS-03 and SS-04) were collected around MW10 to confirm that concentrations of SVOCs had remained below their respective remedial levels. The results for petroleum-related constituents in soil are presented in Tables 4a and 4b.

The laboratory analytical data for samples collected at UST 100A are provided in Appendix IV.

2.2.2 Delineation of Soil Contamination

During the various investigations described above, soil samples were collected from the following borings or monitoring wells:

- 1998 Four soil samples were collected from DPT soil borings (GP-01 through GP-04). One sample was collected from each location from the interval displaying the highest headspace screening reading.
- 1999 Twenty-six soil samples were collected from 11 monitoring well locations (MW1 through MW11) during installation. One surface and one subsurface sample were collected at each, with the exception of MW10, which was located in an area of significant contamination, and all the subsurface soil intervals to the water table (five) were collected for analysis.
- 2002 Two surface soil samples (SS-01 and SS-02) were collected in the vicinity of MW10.
- 2005 Fourteen soil samples were collected from DPT soil borings (SB-01 through SB-14) to refine the nature and extent of subsurface soil contamination at the maintenance pad.
- 2007 Eighteen soil samples were collected from DPT soil borings (SB-15 through SB-23) to refine the extent of subsurface soil contamination downgradient of the previous soil borings.

• 2008 – Twenty soil samples were collected from DPT soil borings (SB-26 through SB-35) to refine the extent of subsurface soil contamination downgradient of the previous soil borings. Two confirmatory surface samples were collected at MW10 (SS-03 and SS-04).

These soil samples were analyzed for various analytes during the various investigations. The BTEX and polycyclic aromatic hydrocarbon (PAH) results are presented in Tables 4a and 4b, respectively, and summarized below:

- Benzene was detected in 33 of 82 soil samples at concentrations ranging from 0.00035J mg/kg to 0.864 mg/kg. Eighteen of the concentrations exceeded the STL of 0.008 mg/kg.
- Toluene was detected in 15 of 82 soil samples at concentrations ranging from 0.00029J mg/kg to 4.22 mg/kg. None of the concentrations exceeded the STL of 10 mg/kg.
- Ethylbenzene was detected in 46 of 82 soil samples at concentrations ranging from 0.00019J mg/kg to 3.3J mg/kg. None of the concentrations exceeded the STL of 6 mg/kg.
- Xylenes were detected in 50 of 82 soil samples at concentrations ranging from 0.00029J mg/kg to 17.8J mg/kg. None of the concentrations exceeded the STL of 700 mg/kg.
- Acenaphthene was detected in 11 of 82 soil samples at concentrations ranging from 0.0189J mg/kg to 1.12J mg/kg. No STL is established for this constituent.
- Anthracene was detected in 10 of 82 soil samples at concentrations ranging from 0.0349J mg/kg to 0.493 mg/kg. No STL is established for this constituent.
- Benz(*a*)anthracene was detected in 5 of 82 soil samples at concentrations ranging from 0.0236J mg/kg to 3.94J mg/kg. No STL is established for this constituent.
- Benzo(*a*)pyrene was detected in 5 of 82 soil samples at concentrations ranging from 0.0173J mg/kg to 2.43J mg/kg. No STL is established for this constituent.
- Benzo(b)fluoranthene was detected in 6 of 82 soil samples at concentrations ranging from 0.0131J mg/kg to 2.88J mg/kg. No STL is established for this constituent.
- Benzo(*ghi*)perylene was detected in 4 of 82 soil samples at concentrations ranging from 0.0182J mg/kg to 0.885J mg/kg. No STL is established for this constituent.
- Benzo(k)fluoranthene was detected in 3 of 82 soil samples at concentrations ranging from 0.0203J mg/kg to 2.1J mg/kg. No STL is established for this constituent.
- Chrysene was detected in 6 of 82 soil samples at concentrations ranging from 0.0182J mg/kg to 3.6J mg/kg. No STL is established for this constituent.
- Fluoranthene was detected in 12 of 82 soil samples at concentrations ranging from 0.0268J mg/kg to 0.543J mg/kg. No STL is established for this constituent.
- Fluorene was detected in 24 of 82 soil samples at concentrations ranging from 0.0364J mg/kg to 10.5J mg/kg. No STL is established for this constituent.

- Indeno(1,2,3-cd)pyrene was detected in 3 of 82 soil samples at concentrations ranging from 0.0146J mg/kg to 0.0375J mg/kg. No STL is established for this constituent.
- Naphthalene was detected in 29 of 82 soil samples at concentrations ranging from 0.0152J mg/kg to 4.49J mg/kg. No STL is established for this constituent.
- Phenanthrene was detected in 35 of 82 soil samples at concentrations ranging from 0.011J mg/kg to 5.23J mg/kg. No STL is established for this constituent.
- Pyrene was detected in 33 of 82 soil samples at concentrations ranging from 0.0232J mg/kg to 8.22J mg/kg. No STL is established for this constituent.

The subsurface soil quality maps for UST 100A are shown in Figures 6 and 7 for BTEX compounds and PAHs, respectively. Benzene is the only constituent that exceeds its STL of 0.008 mg/kg (Table A, Column 2). The horizontal extent of soil contamination exceeding STLs is shown in Figure 6.

The vertical distribution of the contaminants in the soil column was determined through borings located in and around the immediate vicinity of former UST 100A and the adjacent maintenance pad. The results indicated that benzene exceeds its STL in borings collected in the interval immediately above the 2- to 3- ft-thick clay layer, which is encountered across the site at depths of approximately 8 to 12 ft BGS.

2.2.3 Delineation of Groundwater Contamination

During the various investigations described above, groundwater samples were collected from the following borings or monitoring wells:

- 1999 Fifteen DPT groundwater samples (GP-05 through GP-19) and two vertical-profile locations (VP-01 and VP-02).
- 2007 Nine DPT groundwater samples (SB-15 through SB-23) collected at the 12- to 16-ft BGS interval.
- 2008 Ten DPT groundwater samples (SB-26 through SB-35) collected at the 9- to 15-ft BGS interval.
- 2001 through 2009 A total of seven annual or biennial groundwater sampling events have been conducted in conjunction with investigations or performance monitoring (MW1 through MW18).

The groundwater samples were analyzed for various analytes during the various investigations. The BTEX and PAH results are presented in Tables 5a and 5b, respectively.

The results for the DPT sampling conducted in 1999, 2007, and 2008 are summarized below:

- Benzene was detected in 18 of 40 groundwater samples at concentrations ranging from 0.465J μg/L to 441 μg/L. Five of the concentrations exceeded the In-Stream Water Quality Standard (IWQS) of 51 μg/L.
- Toluene was detected in 5 of 40 groundwater samples at concentrations ranging from 0.267J μ g/L to 98.1 μ g/L. None of the concentrations exceeded the IWQS of 5,980 μ g/L.

- Ethylbenzene was detected in 21 of 40 groundwater samples at concentrations ranging from 0.515J μ g/L to 54.3 μ g/L. None of the concentrations exceeded the IWQS of 2,100 μ g/L.
- Xylenes were detected in 22 of 40 groundwater samples at concentrations ranging from 0.253J μ g/L to 166 μ g/L. No IWQS is established for this constituent.
- 2-Methylnaphthalene was detected in 17 of 19 groundwater samples at concentrations ranging from 0.461J μ g/L to 60.9 μ g/L. No IWQS is established for this constituent.
- Acenaphthene was detected in 8 of 19 groundwater samples at concentrations ranging from 0.881J μ g/L to 5.55 μ g/L. None of the concentrations exceeded the IWQS of 990 μ g/L.
- Anthracene was detected in 3 of 19 groundwater samples at concentrations ranging from 0.212J µg/L to 0.413J µg/L. None of the concentrations exceeded the IWQS of 40,000 µg/L.
- Fluorene was detected in 14 of 19 groundwater samples at concentrations ranging from 0.284J μ g/L to 3.61 μ g/L. None of the concentrations exceeded the IWQS of 5,300 μ g/L.
- Naphthalene was detected in 15 of 19 groundwater samples at concentrations ranging from 0.782J μ g/L to 86.2 μ g/L. No IWQS is established for this constituent.
- Phenanthrene was detected in 13 of 19 groundwater samples at concentrations ranging from 0.492J μg/L to 3.89 μg/L. No IWQS is established for this constituent.

The groundwater quality maps for BTEX and PAH in DPT groundwater samples are presented in Figures 8 and 9, respectively. Benzene is the only constituent that exceeds its IWQS in DPT groundwater. Benzene exceeded its IWQS of 51 μ g/L in the following five groundwater samples collected from DPT samples: GP-09 (141 μ g/L) at the 0- to 15-ft BGS interval, SB-19 (151 μ g/L) at the 12- to 16-ft BGS interval, SB-28 (347 μ g/L) at the 10- to 14-ft BGS interval, SB-29 (83.2 μ g/L) at the 9- to 13-ft BGS interval, and SB-31 (441 μ g/L) at the 9- to 13-ft BGS interval. The January 2008 detection at SB-31 represents the maximum benzene concentration in groundwater observed at the site. The lateral extent of the benzene contamination in groundwater from DPT samples is shown in Figure 8.

All shallow and deep site monitoring wells were sampled contemporaneously in January 2001. The results for this groundwater sampling event are summarized as follows:

- Benzene was detected in 7 of 17 groundwater samples at concentrations ranging from 0.17J μ g/L to 61 μ g/L. One of the concentrations exceeded the IWQS of 51 μ g/L.
- Toluene was detected in 5 of 17 groundwater samples at concentrations ranging from 0.33J μ g/L to 10 μ g/L. None of the concentrations exceeded the IWQS of 5,980 μ g/L.
- Ethylbenzene was detected in 7 of 17 groundwater samples at concentrations ranging from 0.1J μ g/L to 7 μ g/L. None of the concentrations exceeded the IWQS of 2,100 μ g/L.
- Xylenes were detected in 6 of 17 groundwater samples at concentrations ranging from 1.6J μg/L to 38.5 μg/L. No IWQS is established for this constituent.

- 2-Methylnaphthalene was detected in 6 of 17 groundwater samples at concentrations ranging from $1.7 \mu g/L$ to $31.9 \mu g/L$. No IWQS is established for this constituent.
- Acenaphthene was detected in 2 of 17 groundwater samples at concentrations of 0.68J μ g/L and 1.2 μ g/L. Neither of these concentrations exceeded the IWQS of 990 μ g/L.
- Fluorene was detected in 2 of 17 groundwater samples at concentrations of 0.98J µg/L and 2.1 µg/L. Neither of these concentrations exceeded the IWQS of 5,300 µg/L.
- Naphthalene was detected in 6 of 17 groundwater samples at concentrations ranging from 1 μ g/L to 37.2 μ g/L. No IWQS is established for this constituent.
- Phenanthrene was detected in 3 of 17 groundwater samples at concentrations ranging from 1.2 μ g/L to 1.9 μ g/L. No IWQS is established for this constituent.

The area of highest contamination is concentrated in the vicinity of MW14, which had benzene concentrations above the IWQS of 51 µg/L during the January 2001 sampling event at 61 µg/L, as well as the subsequent September 2002 sampling events at a concentration of 57.3 µg/L. MW14 is screened at the 2.9- to 12.9-ft BGS interval. No BTEX compounds or PAHs were detected in deep monitoring wells MW2 (28.8 to 38.8 ft BGS screened interval) or MW8 (30.9 to 40.9 ft BGS screened interval); at MW11 (29.4- to 39.4-ft BGS screened interval), only toluene was detected at a low estimated concentration. Groundwater contamination is confined to the shallow surficial or perched groundwater and has not migrated to the deep surficial groundwater. Contamination is prevented from migrating to surficial groundwater by the presence of the 2- to 3-ft-thick clay layer encountered at approximately 10 to 12 ft BGS across the site.

No groundwater samples from site monitoring wells have exhibited IWQS exceedances of any constituents during the August 2004, April 2007, April 2008, or March 2009 sampling events. The groundwater quality maps for BTEX and PAH from the last two annual sampling events at UST 100A, April 2008 and March 2009, are shown in Figures 10 through 13. Isoconcentration contour maps for BTEX constituents during the April 2008 sampling event are presented in Figures 14 through 17 and for the March 2009 sampling event are presented in Figures 18 through 21. Trending plots of benzene concentrations in groundwater versus time are presented in Appendix III for monitoring wells MW1 through MW18.

2.2.4 Delineation of Free Product Plume

In May 2001, 0.05 ft of thick, oily, black and viscous product was observed in MW12 during water level measurements (Table 2). This well was installed as a recovery well to recover potential free product identified on a clay lens encountered at approximately 8 ft BGS. The product was believed to be either residual soil contamination from either overflows from the adjacent OWS and/or the removed waste oil UST 100A. Small quantities of heavy petroleum products are trapped within the soil matrix and are slowly migrating to the perched groundwater located above the 2- to 3-ft-thick clay-confining layer encountered at approximately 8 to 12 ft BGS across the site. Subsequent to the observation of free product in May 2001, absorbent socks were emplaced in, and have been utilized at, both MW4 and MW12 through the present. During the sampling event in August 2004, free product was observed at both MW4 and MW12 at thicknesses of 0.14 and 0.05 ft, respectively. No free product was observed at either MW4 or MW12 during the April 2007, April 2008, or March 2009 groundwater sampling events.

2.2.5 Delineation of Surface Water Contamination

No surface water samples have been collected because there is no surface water body that intersects the dissolved contaminant plume. The closest surface water body is Mill Creek approximately 2,400 ft to the west. A man-made drainage ditch exists approximately 450 ft south of the site.

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3.0 REMEDIAL ACTION PLAN

3.1 CORRECTIVE ACTION COMPLETED OR IN PROGRESS

This section presents the actions completed to date in an effort to remove the source of contamination at the UST 100A site.

Removal of the 1,000-gal UST was completed in 1996 (Anderson Columbia Environmental Inc., 1996).

The selected corrective action in the RCRA CAP for UST 100A for treatment of soil and groundwater was MNA until site remedial levels have been achieved. This alternative was selected for remediation because it would effectively achieve the remedial levels in a reasonable period of time and would do so cost-effectively. CY 2002 and CY 2004 performance monitoring results indicated that contaminant concentrations in groundwater were not declining as predicted by modeling. Consequently, an additional subsurface investigation was performed, including an assessment of the OWS and associated piping, to determine if these structures posed an ongoing subsurface source.

The OWS and piping evaluation was performed in May 2007 and consisted of: (1) OWS cleanout, (2) OWS and pipe integrity testing, (3) pipeline abandonment, and (4) cover installation. The OWS and piping testing procedures and results were detailed in the Completion Report for the Oil/Water Separator and Piping Evaluation for the SWMU 27, 3d Engineer Brigade, Northwest of Building 1340 at Fort Stewart, Georgia (SAIC 2007a). During the evaluation, it was determined that the 3- and 4-in.-diameter steel piping that connected the three maintenance pads to the removed waste oil UST 100A had not been properly abandoned during the UST closure activities in 1996, and one opening remained available for potential dumping from the inspection pit located closest to the OWS and former UST 100A (Figure 2a). A small backhoe and hand tools were used to excavate to a depth of 4 ft to expose the end of the 4-in. waste oil pipeline, which would have entered UST 100A on its east side. The portion of the 4-in. waste oil line that was excavated was observed to be plugged and in good shape, and no soil staining from petroleum products was evident in the excavation. However, when the pipe was cut 18 in. from the terminal grouted end, it was determined that the 4-in. waste oil line was not fully grouted during UST closure, as well as 3-in. pipelines connecting to the waste oil line to the inspection pits. The pipes are now properly abandoned with grout and can no longer be used. Additionally, the trench drain was grouted flush to the surface down its full length to the OWS to prevent any potential use of the trench drain, and a metal cover was installed over the inspection pits to prevent easy access to the inspection pits and eliminate any potential discharge into the floor drains. The waste oil line connecting the inspection pits to the removed UST 100A was properly abandoned with grout and can no longer be used.

3.1.1 Recovery/Removal of Free Product

Removal of free product was conducted at MW4 and MW12 through the use of absorbent socks emplaced in both of these wells. The absorbent socks were replaced on a quarterly basis from 2001 through 2007. The purpose of MW12 was to function as a recovery well to recover potential free product identified on a clay lens encountered at approximately 8 ft BGS. During the sampling event in August 2004, free product was observed at both MW4 and MW12 at thicknesses of 0.14 and 0.05 ft, respectively. No free product was observed at either MW4 or MW12 during the April 2007, April 2008, or March 2009 groundwater sampling events.

3.1.2 Remediation/Treatment of Contaminated Backfill Material and Native Soil

The UST Closure Report did not indicate any soil contamination during the tank removal in 1996 (Anderson Columbia Environmental Inc., 1996). One confirmatory soil sample was collected at a depth of 7 ft BGS at a

point below the former UST but above the underlying slab. No contaminants were detected in the confirmatory sample, and no bulk soil was removed for remediation or treatment during or subsequent to the UST removal action.

3.2 OBJECTIVES OF CORRECTIVE ACTION

3.2.1 Removal of Free Product that Exceeds One-Eighth Inch

The information reported in historical documents has not indicated the presence of free product exceeding 1/8 in. at the UST 100A site since 2004. Sporadic free product on the order of 0.05 ft has been observed at MW4 (August 2004 only) and MW12 (May 2001 and August 2004), and an absorbent sock was utilized as a removal action. Free product has not been observed since 2004, and no additional recovery/removal of free product is required based on known site conditions.

3.2.2 Remediate Groundwater Contamination

The historical groundwater results indicate that the area of highest contamination is concentrated between MW7 and MW14. The benzene concentrations in MW14 exceeded the IWQS of 51 μ g/L during the January 2001 and September 2002 sampling events at 61 and 57.3 μ g/L, respectively. No groundwater samples from site monitoring wells have exhibited IWQS exceedances in the subsequent August 2004, April 2007, April 2008, and March 2009 sampling events.

No remedial objective with respect to groundwater is proposed because current concentrations of petroleum contaminants do not exceed the IWQS.

3.2.3 Remediate Soil Contamination

The historical soil sampling results from 1998 through 2008 for the UST 100A site indicate that benzene exceeds its STL in borings collected in the interval immediately above the 2- to 3-ft-thick clay layer that occurs at approximately 8 to 12 ft BGS and in the vicinity of the former UST and associated piping. This contaminated soil does not represent a significant continuing source of contaminants to groundwater because contamination is confined to the interval between 6 to 12 ft BGS and is prevented from migrating vertically due to the underlying confining clay layer.

3.2.4 Provide Risk-Based Corrective Action

A risk-based approach was utilized to determine the path for achieving site closure at the UST 100A site. Due to the nature of the contamination (petroleum hydrocarbon contamination of groundwater and subsurface soil), the risk-based approach was limited to human health concerns. Ecological risk concerns are minimal because of the land use (i.e., military industrial) surrounding the UST 100A site.

The following sections present the conceptual model of the exposure setting and potential receptors, as well as the general methodology employed to perform leaching with fate and transport (F&T) modeling, and the development of ATLs for soil and alternate concentration limits (ACLs) for groundwater.

3.2.4.1 Potential receptor survey

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The exposure assessment identifies any potentially complete pathways between the contaminant source and potential receptors. This involves identifying potential current and future receptors, release mechanisms through which contamination might come into contact with the receptors, and the routes of exposure through which the receptors might be exposed.

The UST 100A site is located within Fort Stewart, an active military Installation. The land use at the site is currently military industrial. In the direction of groundwater flow, there is a man-made drainage ditch approximately 450 ft south (downgradient) from the site. This drainage ditch is approximately 6 to 8 ft deep and 20 ft wide and is heavily vegetated with grass. The drainage ditch receives miscellaneous drainage and surface water runoff from the northwestern side of the garrison area and discharges into Mill Creek approximately 2,400 ft to the west. Both the shallow and the deep surficial aquifer may intercept the man-made drainage ditch located approximately 450 ft to the southwest of the site. Several buried utilities are present within proximity to UST 100A, which may represent preferential pathways for migration (shown in Figure 2b). A wastewater line exits the adjacent OWS and forms a junction with sewer manhole #27, located approximately 35 ft to the southeast. However, the manhole invert is located at an elevation of 61.5 ft AMSL. Additionally, a storm drain is also located approximately 120 ft southeast of UST 100A. The invert elevation of the nearest catch basin on this storm line (i.e., CB242) is approximately 61.5 ft AMSL, which is at or near the water table elevation.

No connection between site contamination and the current off-site receptors has been identified. Site contamination may migrate within the surficial aquifer. The Hawthorn Group, which is approximately 90 ft of clay, separates the surficial aquifer from the deep drinking water aquifer (i.e., the Floridan aquifer). There appears to be no vertical migration from the surficial aquifer to the Floridan aquifer. A water supply well (Well #3) is located approximately 1,600 ft side- and downgradient of the UST 100A site; however, the Hawthorn Group, a thick and highly effective confining unit, separates the water supply well from the surficial aquifer.

No current on-site receptors have been identified for the site. Potential future on-site receptors might include industrial workers and military residents. Potential future on-site industrial receptors may come in direct contact with site soil contamination during construction or excavation activities. No near-term on-site receptors are likely to come into contact with groundwater.

3.2.4.2. Fate and transport model

F&T modeling using well-known and commonly used groundwater pollutant F&T models was utilized to support the development of ACLs and ATLs for benzene in groundwater and soil, respectively, for the UST 100A site.

Site-specific dilution attenuation factors (DAFs) between the source and the potential receptor locations were developed. The DAF is a numerical value that represents the attempt to mathematically quantify the natural physical, chemical, and biological processes (e.g., advection-dispersion, sorption-retardation, biodegradation, and volatilization) that result in the decrease of a chemical concentration in an environmental medium. In simple terms, the DAF is the ratio of chemical concentration at the source (or the point of origin) to the concentration at the potential exposure point. DAFs reflect the natural attenuation concepts outlined in the American Society of Testing and Material's Risk-Based Corrective Action protocol (ASTM 1995).

Leaching with F&T models is used as a tool for developing DAFs. The application of leaching with F&T models at any release site must ensure that the modeling results are protective of human health and the

environment. Therefore, the selection process of a predictive model at a release site must consider its performance, characteristics, and applicability to the site being considered. The following characteristics were considered before selecting an appropriate model for the site:

- the model provides conservative predictions,
- the model is technically sound,
- the model is a public-domain model or is readily available,
- the model has received adequate peer review,
- the model has been applied to other similar sites, and
- the model is easy to use.

The Analytical Transient 1-, 2-, 3-Dimensional (AT123D) model meets all of the above criteria and was selected for performing F&T analysis for this site. AT123D is a well-known and commonly used analytical groundwater pollutant F&T model. This model computes the spatial-temporal concentration distribution of chemicals in the aquifer system and predicts the transient spread of a chemical plume through a groundwater aquifer. The F&T processes accounted for in AT123D are advection, dispersion, adsorption/retardation, and decay. This model can be used as a tool for estimating the dissolved concentration of a chemical in one, two, or three dimensions in the groundwater resulting from a mass release (either continuous or instant or depleting source) over a source area (i.e., point, line, area, or volume source).

The Seasonal Soil compartment (SESOIL) model is a semi-analytical computer code used to simulate the leaching and vertical transport of contaminants from the source areas down through the vadose zone to the shallow groundwater (water table). SESOIL is a one-dimensional, vertical transport code for the unsaturated soil zone and is designed to simultaneously model water transport and pollutant fate. The program was originally developed by the U. S. Environmental Protection Agency and has been extensively modified to enhance its capabilities.

SESOIL defines the "soil compartment" as a soil column extending from the ground surface through the unsaturated zone to the water table. Processes simulated in SESOIL include both the hydrologic cycle and pollutant cycle, each of which is a separate sub-module in the SESOIL code. The hydrologic cycle includes rainfall, surface runoff, infiltration, soil water content, evapotranspiration, and groundwater recharge. The pollutant cycle includes convective transport, volatilization, adsorption/desorption, and degradation/decay. A contaminant in SESOIL can partition in up to four phases (liquid, adsorbed, air, and nonaqueous-phase liquid).

SESOIL is well recognized and accepted by the scientific community utilizing soil-chemical fate models. Some of the attributes of SESOIL that make it particularly attractive and suitable for the vadose zone soil leaching at this site are as follows:

- SESOIL has been extensively validated and shown to work under a number of scenarios. It has also been used for similar applications in other parts of the country and is capable of providing the information required for this study.
- SESOIL has the advantage of fewer input requirements and faster run times than more complex unsaturated zone models, while still maintaining considerable resolution of the pollutant front in both time and space.
- The model can be divided into as few as two layers and as many as four layers, with as many as ten sub-layers in each of the layers. This compartmental nature of the model allows for user-specified tailoring to suit a particular site.

Modeling of leaching to groundwater by percolating rain water was performed with SESOIL. The results from SESOIL were combined with the existing groundwater plume to develop the source term for the saturated zone AT123D model. Thus, a steady-state model was developed by calibrating the model against the maximum concentration in groundwater beneath the site in March 2009. Potential receptors are a man-made drainage ditch, approximately 450 ft southwest of the site. A buried storm drain is also located approximately 120 ft southeast of the site, and based on the invert elevation of catch basin CB242, this utility line occurs at the water table. Therefore, the storm drain is considered a potential receptor.

The updated F&T modeling results are provided in Appendix V. The man-made storm drain approximately 180 ft southeast of the site was modeled as the nearest potential downgradient receptor that might encounter migrating groundwater contamination. Contaminant F&T simulations were performed to predict the maximum concentrations at these receptor locations over a simulation period of 100 years, assuming a continuous source (decaying) based on the maximum predicted benzene concentration in groundwater. The modeling indicated that the benzene concentration is not expected to ever exceed the IWQS of 51 μ g/L beyond 50 ft downgradient from MW14. Based on modeling results, a groundwater DAF for benzene at 50 ft downgradient of the source was 121.

3.2.4.3. Site-specific levels

ATLs for soil and ACLs for groundwater were developed for contaminants exceeding STLs or IWQSs using site-specific information from the leaching with F&T models and applicable regulatory levels.

ACLs. Benzene is the only constituent in groundwater to exceed the IWQS (51 μ g/L) based on data collected between 1999 and 2009. The storm drain utility line approximately 120 ft southeast of the site is the closest potential receptor for groundwater; however, groundwater modeling indicated that the benzene concentration is not expected to ever exceed its remedial level (IWQS of 51 μ g/L) beyond 50 ft downgradient from the source area at MW14. Modeling estimated a groundwater DAF of 121 for benzene at 50 ft downgradient of the source. The approach for calculating the ACL would be to utilize the DAF to the receptor in conjunction with the IWQS. However, this would produce an unrealistically high benzene ACL. As a result, a more conservative DAF of 10 was selected to calculate ACLs for VOCs. The compound-specific regulatory levels were used in conjunction with the DAF to develop constituent-specific ACLs (Appendix VI). An ACL of 510 μ g/L is proposed for benzene in groundwater. Groundwater samples collected from the monitoring wells do not exceed the ACL proposed for benzene.

ATLs. Benzene is the only constituent in soil to exceed the STL (0.008 mg/kg) based on data collected between 1999 and 2008. ATL calculations for benzene are presented in Appendix VI and are based on the migration of leachate to the water table using the results of the SESOIL modeling. An ATL of 1.1 mg/kg is proposed for benzene in soil. None of the soil samples collected to date exceed the proposed ATL for benzene.

3.2.4.2 Conclusions and recommendations

Upon transfer of the UST 100A site from RCRA to USTMP, as approved in September 2008, the purpose of the development of this CAP-Part B Report was to document the previous investigations with respect to the USTMP guidance. A CAP-Part A Report has not been prepared for UST 100A.

Fort Stewart respectfully requests that GA EPD USTMP assign Facility ID #9-089080 a no-further-action (NFA)-required status for the following reasons:

• Free product has only been intermittently observed at the site and has not been observed since 2004.

- All former storage tanks, piping, and associated structures have been either removed or properly plugged and abandoned.
- The horizontal and vertical extents of soil and groundwater contamination have been thoroughly characterized and documented throughout multiple phases of investigation under the RCRA program and summarized in this report.
- The benzene concentrations in groundwater at all monitoring wells have been below the IWQS of $51 \mu/L$ since September 2002.
- Benzene has never been detected above the proposed ACL of 510 μ /L in groundwater at UST 100A.
- Benzene is the only constituent in soil above the STL. No soil concentrations exceed the proposed ATL of 1.1 mg/kg for benzene.
- The closest preferential pathway (i.e., a storm drain) is located approximately 120 ft southeast of the site, while the closest potential surface water body (i.e., a drainage ditch) it located approximately 450 ft southwest of the site.
- Based on the historical soil data and most conservative sampling data (historical maxima), the site ranking score is 850 (Appendix VII).

No additional corrective action is recommended for soil and groundwater at the UST 100A site to achieve site closure.

3.3 DESIGN AND OPERATION OF CORRECTIVE ACTION SYSTEMS

No corrective action system is proposed for the site as the data indicate that the remediation objectives have been achieved. Risk-based screening results show that benzene is the only constituent in groundwater above its IWQS (51 μ g/L) but has never been detected above its proposed ACL of 510 μ g/L. Benzene is the only constituent in soil above its STL of 0.008 mg/kg, but has never been detected above its proposed ATL of 1.1 mg/kg. NFA is recommended for the UST 100A site.

3.4 IMPLEMENTATION

Approval of this CAP-Part B Report by GA EPD will constitute GA EPD's approval for decommissioning the monitoring wells. Abandonment of all site wells will be completed in accordance with the USACE Design Manual for monitoring wells. Decommissioning will comply with all applicable state and federal standards.

The following certification will be submitted to GA EPD within 30 days of submitting the final Completion Report:

I hereby certify that the Corrective Action Plan–Part B, dated______, 20__, for Fort Stewart, UST 100A site, Facility ID #9-089080, including any and all certified amendments thereto, has been implemented in accordance with the schedules, specifications, sampling programs, and conditions contained therein, and that the plan's stated objectives have been met.

Signature (Owner/Operator)

3.5 PUBLIC NOTIFICATION

The UST 100A site is located entirely within the confines of FSMR, a federal facility. The U. S. Government owns all of the property contiguous to the site. Specific public notifications in accordance with RCRA requirements were issued when the site was formerly identified as SWMU 27F under the RCRA program. No public notices have been issued for UST 100A under the GA EPD USTMP.

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4.0 CLAIM FOR REIMBURSEMENT

Fort Stewart is a federally owned facility and has funded the investigation for the UST 100A site (Facility ID# 9-089080) using U. S. Department of Defense Environmental Restoration Account Funds. Application for GUST Trust Fund reimbursement is not being pursued at this time.

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5.0 REFERENCES

- Anderson Columbia Environmental, Inc. 1996. Closure Report for Waste Oil Tank, Building 1349, Tank 100A, Facility ID Number 9-089080, Fort Stewart, Georgia, November.
- 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.
- ASTM (American Society for Testing and Materials) 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, ASTM E 1739-95, approved September 10, 1995.
- EPA (U. S. Environmental Protection Agency) 1996. Soil Screening Guidance, Office of Solid Waste and Emergency Response, EPA/540/R-94/101, available from U.S. Government Printing Office, Washington, D.C.
- GA EPD (Georgia Environmental Protection Department) 1992. Groundwater Pollution Susceptibility Map of Georgia.
- GA EPD 1995. Guidance Document for the Preparation of an Underground Storage Tank Corrective Action Plan, Part B, February.
- GA EPD 1996. Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units, Georgia Environmental Division, Atlanta, GA, November.
- GA EPD 2008. Rules of Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards, January.
- 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.
- SAIC (Science Applications International Corporation) 2000. Phase II RCRA Facility Investigation Report for 16 Solid Waste Management Units at Fort Stewart, Georgia (Revised Final), April.
- SAIC 2001. Addendum for SWMU 27F: 3D Engineering Brigade, Northwest of Building 1340, to the Revised Final Phase II RCRA Facility Investigation Report for 16 Solid Waste Management Units at Fort Stewart, Georgia, June.
- SAIC 2003. Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2002 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia, January.
- SAIC 2004. Revised Final Corrective Action Plan (CAP) for the 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia, July.

- SAIC 2006a. Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2004, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia, May.
- SAIC 2006b. Letter Report for the Subsurface Soil Investigation for the SWMU 27, 3d Engineer Brigade, Northwest of Building 1340 at Fort Stewart, Georgia, September.
- SAIC 2007a. Completion Report for the Oil/Water Separator and Piping Evaluation for the SWMU 27, 3d Engineer Brigade, Northwest of Building 1340 at Fort Stewart, Georgia, September.
- SAIC 2007b. Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2007, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia, October.
- SAIC 2008. Corrective Action Plan (CAP) Progress Report for Calendar Year (CY) 2008, 3d Engineering Brigade, Northwest of Building 1340 (SWMU 27F) at Fort Stewart, Georgia, July.

Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

APPENDIX I:

FIGURES

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Figure 1. Location Map for UST 100A Bi



Figure 2a. UST 100A Site Map, Including OWS and Piping Layout of Maintenance Pad, Building 1349



Figure 2b. UST 100A Site Mar



ice Water Bodies Within the Fort Stewart Garrison Area



Figure 4a. North to South Cross §



s Section of UST 100A, Building 1349



Figure 4c. Northeast to Southwest Cr



Figure 5a. Groundwater Potentiometric Surface Map (Shallow Zone) at UST 100A (April 2008)



Figure 5b. Groundwater Potentiometric Surface Map (Deep Zone) at UST 100A (April 2008)



Figure 5c. Groundwater Potentiometric Surface Map (Shallow Zone) at UST 100A (March 2009)



Figure 5d. Groundwater Potentiometric Surface Map (Deep Zone) at UST 100A (March 2009)

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Figure 6. BTEX Subsurface



| SB-17 07/11/07 12.0-16.0 ug/L Benzene < 10 | Benzene < 2 U < 2 U < 2 U < 2 U < 2 U Benzene < 2 U Senzene < 2 U Benzene < 2 U Benzene < 2 U Toluene < 2 U Ethylbenzene < 2 U Ethylbanzene < 2 U </td |
|---|---|
| SB-26 01/28/08 9.0-13.0 ug/L Benzene 0.628 J Toluene < 1U | X GP-08 09/25/99 0.0-17.8 ug/L Benzene < 2UJ |
| Ethylbenzene < 2 U | METAL STORAGE GP4 C GP2 |
| GP-10 09/29/99 0.0-15.0 ug/L Benzene 38.4 = 1000000000000000000000000000000000000 | PIPING FROM OWS TO WASTE ON TANK STE ON TANK 1006 1,000 CALLON WASTE ON TANK CREMOVED 19961 - 58-26 WEST SB-25 SB-24 |
| SB-18 07/11/07 12.0-16.0 ug/L Benzene < 1U | × |
| SB-28 01/28/08 10.0-14.0 ug/L Benzene 34.7 = Toluene < 2.22 U | X SB 30 CBP 60 M/7 SB-32 Y SB 30 SB 30 Y |
| 9.0-13.0 ug/L Benzene 83.2= Toluene < 1U | 10.0-14.0 ug/L Benzene 5.67 = Toluene < 10 |
| 9.0-13.0 ug/L 12.0-16.0 ug/L 9.0-13.0 Benzene 12.4 = Benzene 151= Benzene Benzene 151= Benzene Benzene 1000000000000000000000000000000000000 | ug/L 0.0-15.0 ug/L 12.0-16.0 ug/L 0.0-15.0 Benzene 141 Benzene 17.9 Benzene 17.9 Benzene 17.9 Benzene Toluene Benzene 17.9 Benzene Toluene Senzene |
| Second | |

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or Samples from DPT Points at UST 100A



Figure 10. BTEX Groundwater Qu



ity Map for UST 100A (April 2008)



Figure 12. BTEX Groundwater Qua



ty Map for UST 100A (March 2009)



Figure 13. Benzene Isoconcentration (



ntour Map for UST 100A (April 2008)



Figure 15. Ethylbenzene Isoconcentration



atour Map for UST 100A (April 2008)



Figure 17. Benzene Isoconcentratio



tour Map for UST 100A (March 2009)



Figure 20. Ethylbenzene Isoconcentration



tour Map for UST 100A (March 2009)

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APPENDIX II:

TABLES

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| <u>.</u> | | Well or | Coordinates | | Total | Screen | Top of Casing |
|-----------------------|----------------------|------------------------|------------------------|-----------|---------------|----------------------|------------------------|
| Well/Boring | Date Installed | Boring Type | Northing | Easting | Depth (ft) | Interval (ft BGS) | Elevation (ft AMSL) |
| No. | | Soil Boring | 684392.37 | 821509.30 | 16.0 | N/A | 68.71 |
| GP-01 | 01/18/98 | Soil Boring | 684379.47 | 821527.80 | 14.75 | N/A | 68.50 |
| GP-02 | 02/03/98 | Soil Boring | 684358.35 | 821538.38 | 14.1 | N/A | 67.97 |
| <u>GP-03</u> | 01/17/98 | Soil Boring | 684315.51 | 821513.22 | 14.5 | N/A | 67.86 |
| GP-04 | 02/03/98 | 2-in. PVC | 684433.25 | 821537.79 | 21.0 | 9.3 to 19.3 | 69.16 |
| <u>MW1</u> | 10/11/99 | 2-in. PVC | 684435.72 | 821557.10 | 45.0 | 28.8 to 38.8 | 69.27 |
| MW2 | 10/10/99 10/10/99 | 2-in. PVC | 684392.99 | 821630.44 | 25.0 | 10.4 to 20.4 | 68.45 |
| MW3 | 10/11/99 | 2-in. PVC | 684325.34 | 821527.60 | 18.0 | 5.9 to 15.9 | 68.02 |
| MW4 | 10/11/99 | 2-in. PVC 2-in. PVC | 684314.94 | 821527.00 | 20.0 | 8.8 to 18.8 | 67.99 |
| MW5 | | 2-in PVC 2-in PVC | 684253.33 | 821526.08 | 20.0 | 8.7 to 18.7 | 67.88 |
| MW6 | 10/11/99 | 2-in. PVC 2-in. PVC | 684315.20 | 821526.65 | 21.0 | 10.0 to 20.0 | 68.14 |
| <u>MW7</u> | 10/10/99 | 2-in. PVC 2-in. PVC | 684345.97 | 821550.05 | 43.0 | 30.9 to 40.9 | 68.34 |
| <u>MW8</u> | 10/11/99 | 2-in. PVC 2-in. PVC | 684347.37 | 821585.85 | 22.0 | 10.3 to 20.3 | 68.46 |
| <u>MW9</u> | 10/12/99 | 2-in. PVC 2-in. PVC | 684362.91 | 821540.80 | 22.0 | 11.0 to 21.0 | 68.70 |
| <u>MW10</u> | 10/10/99 | | 684358.83 | 821540.80 | 40.0 | 29.4 to 39.4 | 68.66 |
| <u>MW11</u> | 10/11/99 | 2-in. PVC 2-in. PVC | 684363.88 | 821530.44 | 10.0 | 5.0 to 9.7 | 68.74 |
| <u>MW12</u> | 10/12/99 | | 684278.17 | 821343.84 | 15.0 | 4.1 to 14.1 | 67.26 |
| <u>MW13</u> | 11/29/00 | 2-in PVC | 684278.63 | 821569.04 | 15.0 | 2.9 to 12.9 | 67.76 |
| MW14 | 11/31/00 | 2-in. PVC | | 821509.04 | 15.0 | 3.8 to 13.8 | 68.03 |
| MW15 | 11/29/00 | 2-in PVC | 684344.10 | 821565.74 | 15.5 | 5.0 to 15.0 | 67.64 |
| MW16 | 12/05/00 | 2-in. PVC | 684231.17 | 821505.74 | 15.5 | 4.9 to 14.9 | 69.08 |
| MW17 | 12/05/00 | 2-in PVC | 684226.55 | 821612.29 | 15.5 | 4.9 to 14.9 | 67.49 |
| MW18 | 12/05/00 | 2-in. PVC | 684270.23 684369.27 | 821552.37 | 12.0 | N/A | N/A |
| SB-01 | 09/19/05 | Soil Boring | 684377.00 | 821552.57 | 12.0 | N/A | N/A |
| SB-02 | 09/19/05 | Soil Boring | 684390.28 | 821500.74 | 12.0 | N/A | N/A |
| <u>\$B-03</u> | 09/16/05 | Soil Boring | 684399.38 | 821575.28 | 12.0 | N/A | N/A |
| SB-04 | 09/16/05 | Soil Boring | 684412.37 | 821585.55 | 12.0 | N/A | N/A |
| SB-05 | 09/16/05 | | 684418.08 | 821600.95 | 12.0 | N/A | N/A |
| SB-06 | 09/19/05 | Soil Boring | 684431.13 | 821600.75 | 16.0 | N/A | N/A |
| SB-07 | 09/16/05 | Soil Boring | 684441.27 | 821624.20 | 18.0 | N/A | N/A |
| SB-08 | 09/15/05 | Soil Boring | 684446.61 | 821559.10 | 12.0 | N/A | N/A |
| SB-09 | 09/19/05 | Soil Boring | 684403.70 | 821518.57 | 12.0 | N/A | N/A |
| SB-10 | | Soil Boring | 684393.22 | 821594.47 | 12.0 | N/A | N/A |
| SB-11 | | | 684367.31 | 821586.69 | 12.0 | N/A | N/A |
| SB-12 | 09/19/05 | Soil Boring | 684361.10 | 821569.06 | 12.0 | N/A | N/A |
| SB-13 | 09/20/05 | Soil Boring | 684349.89 | 821551.75 | 12.0 | N/A | N/A |
| SB-14 | 09/20/05 | Soil Boring | 684390.12 | 821538.81 | 16.0 | N/A | N/A |
| SB-15 | 07/11/07 | Soil Boring | 684409.33 | 821559.16 | 16.0 | N/A | N/A |
| SB-16 | 07/11/07 | Soil Boring | 684350.27 | 821528.78 | 16.0 | N/A | N/A |
| SB-17 | 07/11/07 | Soil Boring | 684337.21 | 821541.10 | 16.0 | N/A | N/A |
| SB-18 SB-19 | 07/11/07 | Soil Boring | 684324.15 | 821553,43 | 16.0 | N/A | N/A |
| SB-19 | 07/11/07 | Soil Boring | 684341.97 | 821555.45 | 16.0 | N/A | N/A |
| SB-20 | 07/12/07 | Soil Boring | 684359.78 | 821591.17 | 16.0 | N/A | N/A |
| SB-21 | 07/12/07 | Soil Boring | 684377.59 | 821610.04 | 16.0 | N/A | N/A |
| SB-22 SB-23 | 07/12/07 | Soil Boring | 684404.70 | 821612.90 | 16.0 | N/A | N/A |
| <u>SB-23</u> SB-24 | 07/12/07 | Soil Boring | 684371.58 | 821554.96 | 16.0 | N/A | N/A |

Table 1. Monitoring Well Construction and Soil Borings Summary, UST 100A

| | | Well or | Coordinates | | Total | Screen | Top of Casing |
|--------------------|-------------------|----------------|-------------|-----------|---------------|----------------------|------------------------|
| Well/Boring No. | Date Installed | Boring Type | Northing | Easting | Depth (ft) | Interval (ft BGS) | Elevation (ft AMSL) |
| SB-25 | 07/12/07 | Soil Boring | 684366.61 | 821549.71 | 16.0 | N/A | N/A |
| SB-26 | 01/28/08 | Soil Boring | 684338.18 | 821528.03 | 13.0 | N/A | N/A |
| SB-27 | 01/28/08 | Soil Boring | 684313.26 | 821524.46 | 14.0 | N/A | N/A |
| <u>SB-2</u> 8 | 01/29/08 | Soil Boring | 684324.25 | 821541.18 | 14.0 | N/A | N/A |
| SB-29 | 01/29/08 | Soil Boring | 684311.79 | 821539.40 | 13.0 | N/A | N/A |
| SB-30 | 01/29/08 | Soil Boring | 684299.33 | 821537.61 | 13.0 | N/A | N/A |
| SB-31 | 01/29/08 | Soil Boring | 684304.32 | 821553.22 | 13.0 | N/A | N/A |
| SB-32 | 01/29/08 | Soil Boring | 684328.71 | 821571.92 | 14.0 | N/A | N/A |
| SB-33 | 01/29/08 | Soil Boring | 684336.44 | 821587.24 | 14.0 | N/A | N/A |
| <u>SB-34</u> | 01/30/08 | Soil Boring | 684391.15 | 821611.47 | 15.0 | N/A | N/A |
| SB-35 | 01/30/08 | Soil Boring | 684415.77 | 821614.07 | 15.0 | N/A | N/A |

Table 1. Monitoring Well Construction and Soil Borings Summary, UST 100A (continued)

Note: All elevations are National Geodetic Vertical Datum 1988. Horizontal coordinates are North American Datum 1983.

AMSL = Above mean sea level,

BGS = Below ground surface.

N/A = Not applicable.

PVC = Polyvinyl chloride.

UST = Underground storage tank.
Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

Table 2. Water Levels

| Well Number | Date Measured | Top of Casing Elevation (ft AMSL) | Screened Interval (ft BGS) | Depth to Product (ft BTOC) | Depth to Water (ft BTOC) | Product Thickness (ft) | Corrected Groundwater Elevation ⁴ (ft AMSL) |
|----------------|------------------|--|----------------------------------|----------------------------------|--------------------------------|------------------------------|---|
| | | Wa | ter Level Measur | ements – May | 2001 | | |
| MW1 | 05/04/01 | 69.16 | 9.3 to 19.3 | · | 8.41 | 0 | 60.75 |
| MW2 | 05/04/01 | 69.27 | 28.8 to 38.8 | | 8.61 | 0 | 60.66 |
| MW3 | 05/04/01 | 68.45 | 10.4 to 20.4 | | 7.8 | 0 | 60.65 |
| MW4 | 05/04/01 | 68.02 | 5.9 to 15.9 | | 7.37 | 0 | 60.65 |
| MW5 | 05/04/01 | 67.99 | 8.8 to 18.8 | | 7.34 | 0 | 60.65 |
| MW6 | 05/04/01 | 67.88 | 8.7 to 18.7 | | 7.28 | 0 | 60.6 |
| MW7 | 05/04/01 | 68.14 | 10.0 to 20.0 | | 7.52 | 0 | 60.62 |
| MW8 | 05/04/01 | 68.34 | 30.9 to 40.9 | | 7.82 | 0 | 60.52 |
| MW9 | 05/04/01 | 68.46 | 10.3 to 20.3 | | 7.8 | 0 | 60.66 |
| MW10 | 05/04/01 | 68.70 | 11.0 to 21.0 | | 8.01 | 0 | 60.69 |
| MW11 | 05/04/01 | 68.66 | 29.4 to 39.4 | | 8.06 | 0 | 60.6 |
| MW12 | 05/04/01 | 68.74 | 5.0 to 9.7 | 7.89 | 7.94 | 0.05 | 60.85 |
| MW13 | 05/04/01 | 67.26 | 4.1 to 14.1 | | 6.62 | 0 | 60.64 |
| MW14 | 05/04/01 | 67.76 | 2.9 to 12.9 | | 7.15 | 0 | 60.61 |
| MW15 | 05/04/01 | 68.03 | 3.8 to 13.8 | | 7.37 | 0 | 60.66 |
| MW16 | 05/04/01 | 67.64 | 5.0 to 15.0 | | 7.07 | 0 | 60.57 |
| MW17 | 05/04/01 | 69.08 | 4.9 to 14.9 | | 7.46 | 0 | 61.62 |
| MW18 | 05/04/01 | 67.49 | 4.9 to 14.9 | | 6.86 | 0 | 60.63 |
| | | Water | · Level Measurem | ents – Septen | iber 2002 | | |
| MWI | 09/19/02 | 69.16 | 9.3 to 19.3 | | 8.36 | 0 | 60.8 |
| MW2 | 09/19/02 | 69.27 | 28.8 to 38.8 | | 8.54 | 0 | 60.73 |
| MW3 | 09/19/02 | 68.45 | 10.4 to 20.4 | | 7.7 | 0 | 60.75 |
| MW4 | 09/19/02 | 68.02 | 5.9 to 15.9 | | 7.48 | 0 | 60.54 |
| MW5 | 09/19/02 | 67.99 | 8.8 to 18.8 | | 7.27 | 0 | 60.72 |
| MW6 | NM | 67.88 | 8.7 to 18.7 | | NM | 0 | NM |
| MW7 | 09/19/02 | 68.14 | 10.0 to 20.0 | | 7.46 | Ö | 60.68 |
| MW8 | 09/19/02 | 68.34 | 30.9 to 40.9 | | 7.72 | 0 | 60.62 |
| MW9 | 09/19/02 | 68.46 | 10.3 to 20.3 | | 7.75 | 0 | 60.71 |
| MW10 | 09/19/02 | 68.70 | 11.0 to 21.0 | | 7.97 | 0 | 60.73 |
| MW11 | 09/19/02 | 68.66 | 29.4 to 39.4 | | 7,98 | 0 | 60.68 |
| MW12 | 09/19/02 | 68.74 | 5.0 to 9.7 | | 7.67 | 0 | 61.07 |
| MW13 | NM | 67.26 | 4,1 to 14.1 | | NM | 0 | NM |
| MW14 | 09/19/02 | 67.76 | 2.9 to 12.9 | | 7.08 | 0 | 60.68 |
| MW15 | 09/19/02 | 68.03 | 3.8 to 13.8 | | 7:31 | 0 | 60.72 |
| MW16 | 09/19/02 | 67.64 | 5.0 to 15.0 | | 6.34 | 0 | 61.3 |
| MW17 | . 09/19/02 | 69.08 | 4.9 to 14.9 | | 7.4 | 0 | 61.68 |
| MW18 | 09/19/02 | 67.49 | 4.9 to 14.9 | | 6.8 | 0 | 60.69 |
| | | Wa | ter Level Measure | ements – Augi | | | |
| MW1 | 08/19/04 | 69.16 | 9.3 to 19.3 | | 7.56 | 0 | 61.6 |
| MW2 | 08/19/04 | 69.27 | 28.8 to 38.8 | | 7.65 | 0 | 61.62 |
| MW3 | 08/19/04 | 68.45 | 10.4 to 20.4 | | 6.95 | 0 | 61.5 |
| MW4 | 08/19/04 | 68.02 | 5.9 to 15.9 | 6.38 | 6.52 | 0.14 | 61.65 |
| MW5 | 08/19/04 | 67.99 | 8.8 to 18.8 | | 6.55 | 0 | 61.44 |
| MW6 | 8/19/2004 | 67.88 | 8.7 to 18.7 | | 6.5 | 0 | 61.38 |

| Well Number | Date Measured | Top of Casing Elevation (ft AMSL) | Screened Interval (ft BGS) | Depth to Product (ft BTOC) | Depth to Water (ft BTOC) | Product Thickness (ft) | Corrected Groundwater Elevation " (ft AMSL) |
|----------------|------------------|--|----------------------------------|----------------------------------|--------------------------------|------------------------------|--|
| MW7 | 08/19/04 | 68.14 | 10.0 to 20.0 | | 6.7 | 0 | 61.44 |
| MW8 | 08/19/04 | 68.34 | 30.9 to 40.9 | | 6.87 | 0 | 61.47 |
| MW9 | 08/19/04 | 68.46 | 10.3 to 20.3 | | 7.01 | 0 | 61.45 |
| MW10 | 08/19/04 | 68.70 | 11.0 to 21.0 | | 7.17 | 0 | 61.53 |
| MW11 | 08/19/04 | 68.66 | 29.4 to 39.4 | | 7.13 | Ó | 61.53 |
| MW12 | 08/19/04 | 68.74 | 5.0 to 9.7 | 6.61 | 6.66 | 0.05 | 62.13 |
| MW13 | NM | 67.26 | 4.1 to 14.1 | | NM | 0 | NM |
| MW14 | 08/19/04 | 67.76 | 2.9 to 12.9 | | 6.35 | 0 | 61.41 |
| MW15 | 08/19/04 | 68.03 | 3.8 to 13.8 | | 6.58 | 0 | 61.45 |
| MW16 | 08/19/04 | 67.64 | 5.0 to 15.0 | | 4.98 | 0 | 62.66 |
| | 08/19/04 | 69.08 | 4.9 to 14.9 | | 6.7 | 0 | 62.38 |
| MW18 | 08/19/04 | 67.49 | 4.9 to 14.9 | | 6.07 | 0 | 61.42 |
| | | | ter Level Measur | ements – April | 1 2007 | | |
| <u>MW1</u> | 04/18/07 | 69.16 | 9.3 to 19.3 | | 8.67 | 0 | 60.49 |
| MW2 | 04/18/07 | 69.27 | 28.8 to 38.8 | | 8.79 | 0 | 60.48 |
| MW3 | 04/18/07 | 68.45 | 10.4 to 20.4 | | 8.02 | 0 | 60.43 |
| MW4 | 04/18/07 | 68,02 | 5.9 to 15.9 | | 7.65 | 0 | 60.37 |
| MW5 | 04/18/07 | 67.99 | 8.8 to 18.8 | | 7.06 | 0 | 60.93 |
| MW6 | 04/18/07 | 67.88 | 8.7 to 18.7 | | 7.53 | 0 | 60.35 |
| MW7 | 04/18/07 | <u>68.14</u> | 10.0 to 20.0 | | 7.76 | 0 | 60.38 |
| MW8 | 04/18/07 | 68.34 | 30.9 to 40.9 | | 7.99 | 0 | 60.35 |
| MW9 | 04/18/07 | 68.46 | 10.3 to 20.3 | | 8.06 | 0 | 60.4 |
| MW10 | 04/18/07 | 68.70 | 11.0 to 21.0 | | 8.25 | 0 | 60.45 |
| MWII | 04/18/07 | 68.66 | 29.4 to 39.4 | | 8.24 | 0 | 60.42 |
| MW12 | _04/18/07 | 68.74 | 5.0 to 9.7 | | 7.97 | 0 | 60.77 |
| MW13 | 04/18/07 | 67.26 | 4.1 to 14.1 | | 6.92 | 0 | 60.34 |
| MW14 | 04/18/07 | 67.76 | 2.9 to 12.9 | | 7.4 | 0 | 60.36 |
| MW15 | 04/18/07 | 68.03 | 3.8 to 13.8 | | 7.6 | 0 | 60.43 |
| MW16 | 04/22/07 | 67.64 | 5.0 to 15.0 | | 7.51 | 0 | 60.13 |
| MW17 | 04/18/07 | 69.08 | 4.9 to 14.9 | | 7.71 | 0 | 61.37 |
| MW18 | 04/18/07 | 67.49 | 4.9 to 14.9 | | 7.12 | 0 | 60.37 |
| | | | ter Level Measure | ements – April | 2008 | | |
| MW1 | 04/29/08 | 69.16 | 9.3 to 19.3 | | 7.8 | 0 | 61.36 |
| MW2 | 04/29/08 | 69.27 | 28.8 to 38.8 | | 7.9 | 0 | 61.37 |
| MW3 | 04/29/08 | 68.45 | 10.4 to 20.4 | | 7.18 | 0 | 61.27 |
| MW4 | 04/29/08 | 68.02 | 5.9 to 15.9 | | 6.77 | 0 | 61.25 |
| MW5 | 04/29/08 | 67.99 | 8.8 to 18.8 | ** | 6.73 | 0 | 61.26 |
| MW6 | 04/29/08 | 67.88 | 8.7 to 18.7 | | 6.69 | 0 | 61.19 |
| MW7 | 04/29/08 | 68.14 | 10.0 to 20.0 | | 6.95 | 0 | 61.19 |
| MW8 | 04/29/08 | 68.34 | 30.9 to 40.9 | | 7.11 | 0 | 61.23 |
| MW9 | 04/29/08 | 68.46 | 10.3 to 20.3 | | 7.21 | 0 | 61.25 |
| MW10 | 04/29/08 | 68.70 | 11.0 to 21.0 | | 7.25 | 0 | 61.45 |
| MW11 | 04/29/08 | 68.66 | 29.4 to 39.4 | | 7.39 | 0 | 61.27 |
| MW12 | 04/29/08 | 68.74 | 5.0 to 9.7 | | 7.05 | 0 | 61.69 |
| MW13 | 04/29/08 | 67.26 | 4.1 to 14.1 | | 6,11 | 0 | 61.15 |
| MW14 | 04/29/08 | 67.76 | 2.9 to 12.9 | | 6.58 | 0 | 61.18 |

Table 2. Water Levels (continued)

| Well Number | Date Measured | Top of Casing Elevation (ft AMSL) | Screened Interval (ft BGS) | Depth to Product (ft BTOC) | Depth to Water (ft BTOC) | Product Thickness (ft) | Corrected Groundwater Elevation ^a (ft AMSL) |
|----------------|------------------|--|----------------------------------|----------------------------------|--------------------------------|------------------------------|---|
| MW15 | 04/29/08 | 68.03 | 3.8 to 13.8 | | 6.77 | 0 | 61.26 |
| MW16 | 04/29/08 | 67.64 | 5.0 to 15.0 | | 6.45 | -0 | 61.19 |
| MW17 | 04/29/08 | 69.08 | 4.9 to 14.9 | | 6.85 | 0 | 62.23 |
| MW18 | 04/29/08 | 67.49 | 4.9 to 14.9 | | 6.25 | 0 | 61.24 |
| | | | er Level Measure | ments – Marc | h 2009 | | |
| MW1 | 03/10/09 | 69.16 | 9.3 to 19.3 | | 7.81 | 0 | 61.35 |
| MW2 | 03/10/09 | 69.27 | 28.8 to 38.8 | | 7.79 | 0 | 61.48 |
| MW3 | 03/10/09 | 68.45 | 10.4 to 20.4 | | 7.3 | 0 | 61.15 |
| MW4 | 03/10/09 | 68.02 | 5.9 to 15.9 | | 6.7 | 0 | 61.32 |
| MW5 | 03/10/09 | 67.99 | 8.8 to 18.8 | | 6.7 | 0 | 61.29 |
| MW6 | 03/10/09 | 67.88 | 8.7 to 18.7 | | 6.54 | 0 | 61.34 |
| MW7 | 03/10/09 | 68.14 | 10.0 to 20.0 | | 6.88 | 0 | 61.26 |
| MW8 | 03/10/09 | 68.34 | 30.9 to 40.9 | | 7 | 0 | 61.34 |
| MW9 | 03/10/09 | 68.46 | 10.3 to 20.3 | : : ==== | 7.15 | 0 | 61,31 |
| MW10 | 03/10/09 | 68.70 | 11.0 to 21.0 | | 7.33 | 0 | 61.37 |
| MW11 | 03/10/09 | 68.66 | 29.4 to 39.4 | | 7.28 | 0 | 61.38 |
| MW12 | 03/10/09 | 68.74 | 5.0 to 9.7 | | 7.06 | 0 | 61.68 |
| MW13 | 03/10/09 | 67.26 | 4.1 to 14.1 | | 6 | 0 | 61.26 |
| MW14 | 03/10/09 | 67.76 | 2.9 to 12.9 | | 6.49 | 0 | 61.27 |
| MW15 | 03/10/09 | 68.03 | 3.8 to 13.8 | | 6.71 | 0 | 61.32 |
| MW16 | 03/10/09 | 67.64 | 5.0 to 15.0 | | 6.42 | 0 | 61.22 |
| MW17 | 03/10/09 | 69.08 | 4.9 to 14.9 | | 6.84 | 0 | 62.24 |
| MW18 | 03/10/09 | 67.49 | 4.9 to 14.9 | - | 6.22 | 0 | 61.27 |

Table 2. Water Levels (continued)

^a Groundwater elevations in wells with product were corrected using the specific gravity of 912 kg/m³ for motor oil.

AMSL = Above mean sea level.

BGS = Below ground surface.

BTOC = Below top of casing.

NM = Not measured.

| Station | 27F-MW1 | 27E-MW2 | 27F-MW3 | 27F-MW4 | 27F-MWS | 27F-MW6 | 27F-MW7 | 27F-MW8 | 27F-MW9 |
|---|---|------------------------------|---------------------------------|--|------------------|--------------|---|---|----------|
| Sample ID | 7J1173 | 7,11273 | 7J1373 | 7J1473 | 7J1573 | 7J1673 | 7J1773 | 7,11873 | 7.11973 |
| Depth (ft) | 15 to 17 | 37 to 40 | 10.6 to 20.6 | 15 to 16 | 9 to 10 | 16 to 17 | 35 to 45 | 7.7 to 9.0 | 14 to 15 |
| Moisture Content (%) | 20.09 | 26.18 | 17.73 | 30.74 | 18.83 | 19.13 | 35.03 | 16.7 | 23.32 |
| Liquid Limit (%) | NP | NP | 81 | dN | NP | dN | 21.5 | 35 | 32.7 |
| Plastic Limit (%) | NP | NP | 17.7 | NP | dN | NP | 18.4 | 25.1 | 23.8 |
| Plasticity Index (%) | NP | NP | 0.3 | dN | NP | NP | 3.1 | 6.6 | 8.9 |
| Soil Classification | SW | SW | ML | SM | SM | SM | ML | ML | ML |
| Gravel (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| Sand (%) | 92.39 | 88.87 | 84.4 | 85.01 | 1:06 | 89.66 | 81.63 | 67.25 | 75.24 |
| Fines (%) | 7.61 | 11.13 | 15.6 | 14,99 | 6.6 | 10.34 | 18.17 | 32.75 | 24.76 |
| Specific Gravity | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Soil Porosity | νA | NA | NA | NA | NA | NA | NA | NA | NA |
| Bulk Density (pcf) | ΝA | NA | NA | ΝA | NA | NA | NA | NA | NA |
| Permeability (cm/sec) | | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Organic Carbon (mg/kg) | 6,900 | NA | NA | ΝÀ | NA | NA | NA | NA | NA |
| Station | 27F-MW10 | 27F-MW11 | 27F-MW13 | 27F-MW14 | 27F-MW15 | 27F-MW16 | 27F-MW17 | 27E_MW18 | |
| Sample ID | 7J1A73 | 7J1B73 | 7J1D82 | 7J1E82 | | 7J1G82 | 7J1H82 | 7J1182 | |
| Depth (ft) | 11 to 12 | 30 to 40 | 8.2 to 10.0 | 8.0 to 10.0 | 8.7 to 11.0 | 10.0 to 12.0 | 8.0 to 15.0 | 7.0 to 15.0 | |
| Moisture Content (%) | 23.9 | 22.92 | 17.0 | 16.0 | 18.0 | 20.0 | 20.0 | 21.0 | |
| Liquid Limit (%) | NP | NP | NP | NP | NP | NP | dN | ΝP | |
| Plastic Limit (%) | NP | NP | NP | NP | NP | NP | NP | NP | |
| Plasticity Index (%) | NP | NP | NP | NP | NP | NP | NP | NP | |
| Soil Classification | SW | SW | SM | SM | SM | SW | SM | SM | |
| Gravel (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Sand (%) | 92.8 | 94.82 | 84.1 | 86.2 | 86.2 | 88.9 | 85.4 | 84.6 | |
| Fines (%) | 7.2 | 5.18 | 15.9 | 13.8 | 13.8 | 11.1 | 14.6 | 15.4 | |
| Specific Gravity | 2.65 | NA | NA | NA | NA | NA | NA | NA | |
| Soil Porosity | 0.45 | NA | NA | NA | NA | ŇĂ | NA | NA | |
| Bulk Density (pcf) | 105.91 | NA | NA | NA | NA | ٨A | NA | NA | |
| Permeability (cm/sec) | 7.60E-04 | NA | NA | NA | NA | NA | NA | NA | |
| Total Organic Carbon (mg/kg) | | | NA | NA | ٨٨ | NA | NA | NA | |
| NA = Not analyzed. pcf NP = Non-plastic. USJ | <pre>pcf = Pounds per cubic foot. UST = Underground storage tank.</pre> | bic foot. I storage tank. | <u>Soil C</u> ML = sands, | <u>Soil Classifications</u> ML = Silts and fine sands, clayey fine sands, or claycy silts. | nds, clayey fine | | SM = Silty sands, sand silt mixtures. SW = Well-graded sands or gravelly | SM = Silty sands, sand silt mixtures. SW = Well-graded sands or gravely sands. | uds. |
| | | | | | | | , | • | |

Table 3. Summary of Geotechnical Analyses Performed at UST 100A

09-086(E)/111109

Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

II-8

| Sample | Sample | Depth | | Sample | Benzene | | Toluene | | Ethylbenzene | | Xylenes, Total | Total BTEX |
|---------|---------|--------------|----------|---------------|---------------------------------|--------|------------------------------------|----------------------|--------------|--------------|----------------|----------------|
| Station | ID | (ft BGS) | Date | 1 ype | (mg/kg) | - , | (<u>mg/kg)</u> | 1000 | (HIG/WG) | | (mg/ng/ | 1 \u. <u>8</u> |
| | | | | | I RCRA Facility Investigation (| Juve. | Stigation (1 | (9661 | | - | | UN |
| GP-01 | 71111 | 8.0 to 10.0 | 86/61/10 | Grab | 0.0062 | | C/00:0 | 3 5 | 0 0000 0 | | _ | |
| GP-02 | 711211 | 5.0 to 6.0 | 02/03/98 | Grab | 600.0 |]; | 0.0000 | 3 3 | + | - | - | 0.0001 |
| GP-03 | 7J1312 | 10.0 to 12.0 | 05/06/98 | Grab | 0.0014 | 3 | 0.0068 | 3 | + | - | ╇ | 1760.0 |
| GP-04 | 7J1411 | 8.0 to 10.0 | 02/03/98 | Grab | | Ð | 0.00051 | 5 | 0.006 U | ¹ | 0.006 U | ŊŊ |
| | | | | Phase II RCRA | | nvesti | Facility Investigation (1999-2000) | 9-200 | | - | ⊦ | |
| IWM | 171171 | 0.0 to 1.0 | | Grab | | ∍ | 0.0054 | Ŭ | 9 | | | QN |
| MWI | 7J1172 | 3.0 to 4.0 | 10/09/99 | Grab | 0.0018 | n | 0.0035 | IJ | | | | QN |
| MW2 | 172112 | 1.0 to 2.0 | 66/01/01 | Grab | 0.0056 | 5 | 0.0056 | Ú | 0.0056 UJ | _ | | QN |
| MW2 | 711272 | 2.5 to 5.0 | 66/01/01 | Grab | 0,002 | D | 0:0055 | ſŊ | 0.002 U | | _ | QN |
| MW3 | 711371 | 0.7 to 1.7 | 66/01/01 | Grab | 0.0011 | IJ | 0.0011 | Ú. | 0.0011 UJ | <u> </u> | 0.0011 UJ | DN |
| MW3 | 711372 | 7.5 to 10.0 | 66/01/01 | Grab | 0.0024 | ß | 0.0024 | ß | 0.0024 UJ | | _ | DN |
| MW4 | 711471 | 0.0 to 1.0 | 66/11/01 | Grab | 0.0018 | n | 0.0018 | 0 | 0.0018 UJ | <u> </u> | 0.0018 U | QN |
| MW4 | 711472 | 5.0 to 6.9 | 66/11/01 | Grab | 0.0026 | Þ | 0.0026 | U | 0.0026 U | | _ | QN |
| MW5 | 711571 | 0.6 to 1.6 | 66/01/01 | Grab | 0.0085 | ß | 0.0085 | U. | 0.0085 UJ | _ | _ | QN |
| MW5 | 7J1572 | 1.6 to 4.5 | 66/01/01 | Grab | 0.002 | D | 0.0024 | UJ | 0.002 U | <u>;</u> | _ | QN |
| MW6 | 711671 | 0.6 to 1.0 | 10/11/00 | Grab | 0.002 | D | 0.002 | U | | | | QN |
| MW6 | 711672 | 7.5 to 9.1 | 10/11/00 | Grab | 0.002 | Ŋ | 0.002 | CI | 0.002 U | | 0.0059 U | QN |
| NW7 | 71171 | 0.85 to 1.85 | 10/10/99 | Grab | 0.0099 | m | 0.0099 | Ū | U 0 0099 UJ | ſ | U 6600.0 | QN |
| MW7 | 71172 | 2.5 to 5.0 | 66/01/01 | Grab | 0.0022 | n | 0.002 | n | 0.002 UJ | ſ | 0.006 UJ | 0.0022 |
| MW8 | 711871 | 0.7 to 1.7 | 66/60/01 | Grab | 0.0022 | Þ | 0.0022 | Ð | 0.0022 UJ |] [| 0.0022 U | QN |
| MW8 | 7J1872 | 9.0 to 10.0 | 10/09/99 | Grab | 0.0064 | 1 | 0.0019 | ſŊ | 0.0096 = | | 0.0121 = | 0.0281 |
| 6MM | 1791671 | 0.6 to 1.6 | 10/12/99 | Grab | 0.002 | Ŋ | 0.002 | Û | 0.002 UJ | _ | 0.002 U | QN |
| 6MM | 711972 | 8.0 to 10.0 | 10/12/99 | Grab | 0.0081 | 1 | 0.0022 | Ŋ | | | | 0.0732 |
| MW10 | 12A1L7 | 0.0 to 1.0 | 66/01/01 | Grab | 0.0018 | n | 0.0018 | Ü | - | | _ | QN |
| MW10 | 7J1A74 | 2.0 to 4.0 | 10/10/99 | Grab | 0.0016 | Б | 0.0016 | IJ | 0.0016 U | | | QN |
| MW10 | 7J1A75 | 4.0 to 6.0 | 10/10/99 | Grab | 0.0018 | IJ | 0.0032 | IJ | UI 0.0019 UI | _ | 0.0054 UJ | QN |
| MW10 | 7J1A76 | 6.0 to 8.0 | 10/10/99 | Grab | 0.214 | D | 0.214 | IJ | 1.68 = | | 5.04 = | 6.72 |
| MW10 | 7J1A72 | 8.0 to 9.0 | 66/01/01 | Grab | 0.218 | n | 0.218 | UJ. | 1.51 = | <u></u> | 4.37 = | 5.88 |
| MW10 | 7J1A77 | 9.0 to 10.0 | 66/01/01 | Grab | 0.17 | n | 0.17 | U | 0.267 = | 1 | | 0.673 |
| MWII | 711871 | 0.0 to 1.0 | 66/01/01 | Grab | 0.0218 | D | 0.0218 | i;⇔ x li . | 0.0218 U | | 0.0218 U | 0.0218 |
| MWII | 7J1B72 | 8.0 to 10.0 | 10/10/09 | Grab | 0.251 | n | 0.251 | 5 | 0.672 J | | 2.07 J | 2.742 |

Table 4a. Soil Analytical Results (BTEX Compounds)

| Total BTEX | (mg/kg) | | 26.184 | 0.103 | 0.1235 | 2.5584 | 0.0022 | UN | GN | GN | QN | Q | 3.1577 | 0.2534 | 0.7373 | 2.2282 | | 0.02499 | 0.16357 | DN | 0.02357 | 0.0138 | 0.23513 | 0.04787 | 0.14103 | 6.8497 | 0.2878 | 0.03833 | 0.82389 | 0.20151 | 0.07523 | 0.1764 | 0.01483 | 0.00256 | 0.001 |
|----------------|----------|---------------------------------------|--------------|------------|------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|-------------|------------------------|-------------|--------------|------------|-------------|------------|-------------|------------|----------------|----------------|-------------|------------|--------------|--------------|--------------|------------|-------------|------------|-------------|
| fal | | | 5 | 5 | 5 | В | | | | | | D | - | U | ~ | - | | | 11 | D | 11 | 11 | 11 | 1 | H | H | H | U. | łł: | | | | 1 | - - | - |
| Xylenes, Total | (mg/kg) | | 17.8 | 0.0859 | 0.0898 | 1.85 | 0.0004 | 0.00086 | 0.00088 | 16000'0 | 0.001 | 0.001 | 2.38 | 0.132 | 0.5 | 0.652 | | 0.00649 | 0.121 | 0.00096 | 0.00159 | 0.00582 | 0.174 | 0.0388 | 0.0943 | 5.25 | 0.195 | 0.00792 | 0.586 | 0.0782 | 0.00433 | 0.0314 | 0.00128 | 0.0008 | 100.0 |
| cene | | | ſ | ſ | | 11 | 11 | Þ | | Þ | Ð | Э | | 1 | - , | ن بر | | 1 | 11 | n | | 1[| 1 | 11 | IJ | 11 | 1 | 11 | 11 | | H | | 11 | 11 | 1 I |
| Ethylbenzene | (mg/kg) | ng | 3.3 | 0.103 | 0.0337 | 0.644 | 0.0018 | 0.00086 | 0.00088 | 0.0001 | 0.001 | 0.001 | 0.729 | 0.0891 | 0,112 | 1.54 | | 0.0185 | 0.0383 | 0.00096 | 0.021 | 0.00689 | 0.0447 | 0.00834 | 0.0199 | 1.37 | 0.037 | 0.0282 | 0.15 | 0.114 | 0.0424 | 0.134 | 0.00821 | 0.00136 | 0.001 |
| e | | ampli | ſ | ſŊ | D | Þ | Э | 5 | | Э | 5 | 5 | Б | 5 | | З | pling | 5 | Þ | Б | D | n | | D | ĮĮ | - | 1Ľ | Э | ,U | - · | D | Ŋ | Ũ | U | 11 |
| Toluene | (mg/kg) | il Boring S | 4.22 | 0.0859 | 0.0899 | 0.0904 | 0.00096 | 0.00086 | 0.00088 | 0.00091 | 0'001 | 0.001 | 0.0927 | 0.00089 | 0.0346 | 0.0844 | Boring Sampling | 0.00092 | 0.00097 | 0.00096 | 0.00088 | 0.00106 | 0.00533 | 0.00092 | 0.00313 | 0.0477 | 0.0043 | 0.00093 | 0.00579 | 0.00039 | 0.00116 | 0.00094 | 0.00121 | 0.001 | 0 001 |
| 0 | | ish So | ſ | UJ | D | J | n | D | ∍ | D | D | ij | ŗ | II. | ſ | ſ | Soil B | D | - 11 | Ú | 11 | H. | Û | 5 | 11 | | li | 11 | 31 | ۔ | 13 | ر م | 11 | - | |
| Benzene | (mg/kg) | 2005 Direct-Push Soil Boring Sampling | 0.864 | 0.0859 | 0.0899 | 0.0644 | 0.00096 | 0.00086 | 0.00088 | 16000.0 | 0.001 | 0.001 | 0.0487 | 0.0323 | 0.0907 | 0.0362 | Direct-Push | 0.00092 | 0.00427 | 0.00096 | 0.00098 | 0.00109 | 0.0111 | 0.00073 | 0.0237 | 0.182 | 0.0515 | 0.00221 | 0.0821 | 0.00892 | 0.0285 | 0.011 | 0.00534 | 0.0004 | 0.001 |
| Sample | Type | September 20 | | Grab | Grab | Grab | Grab. | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | July 2007 | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab |
| 4 | Date | | 20/61/60 | 09/19/05 | 09/16/05 | 09/16/05 | 09/16/05 | 09/19/05 | 09/16/05 | 09/15/05 | 0/10/05 | 09/19/05 | 00/19/05 | 00/10/05 | 09/20/05 | 09/20/05 | | 20/11/20 | 0/11//0 | 07/11/07 | 0/11//0 | 07/11/07 | 07/11/07 | 0/11//02 | 20/11/20 | 07/11/07 | 07/11/07 | 07/11/07 | 07/11/07 | 07/12/07 | 07/12/07 | 07/12/07 | 07/12/07 | 07/12/07 | 07/12/07 |
| Depth | (It BGS) | | 10.0 to 12.0 | 6.0 to 8.0 | 6.0 to 8.0 | 10.0 to 12.0 | 9.5 to 10.5 | 10.0 to 12.0 | 8.0 to 10.0 | 10.0 to 12.0 | 6.0 to 8,0 | | 8.0 to 10.0 | 10.0 to 12.0 | 5.9 to 7.8 | 8.0 to 10.9 | 8.0 to 9.6 | 9.6 to 11.4 | 5.7 to 7.4 | 9.9 to 11.8 | 5./ to 7.4 | 9.9 to 11.8 | 5.5 to 7.0 | 8.0 to 10.0 | 5.9 to 7.6 | 8.0 to 10.5 | 5.8 to 7.6 | 8.0 to 10.5 | 0.8 to 3.2 | 9.8 to 11.6 |
| Sample | | - | 7,1181 | 7,11281 | 7J1381 | 711481 | 7J1581 | 7J1681 | 7J1781 | 7J1881 | 711981 | 7J1081 | 7J1A81 | 7J1B81 | 7J1C81 | 7J1K81 | | 7J1M81 | 7J1M82 | 7JIN81 | 7JIN82 | 7J1P81 | 7J1P82 | 7JIR81 | 7JLK82 | 11281 | 711582 | 18117/ | 78.[1[/ | 18011/ | 711082 | 18/11/2 | 7J1V82 | 7JIX81 | 7JIX82 |
| Sample | Station | 1 | SB-01 | SB-02 | SB-03 | SB-04 | SB-05 | SB-06 | SB-07 | SB-08 | SB-09 | SB-10 | SB-11 | SB-12 | SB-13 | SB-14 | | SB-15 | SB-15 | SB-16 | SB-16 | SB-17 | SB-17 | SB-18 | SB-18 50-10 | 50-19 50-19 | SB-19 | SB-20 | <u>58-20</u> | 5B-21 | 58-21 | SB-22 | SB-22 | SB-23 | SB-23 |

Table 4a. Soil Analytical Results (BTEX Compounds) (continued)

| Date |
|---|
| January 2008 Direct-Push Soil Boring Sampling |
| 01/28/08 Grab |
| 01/28/08 Grab |
| /28/08 Grab |
| 01/28/08 Grab |
| 01/29/08 Grab |
| 01/30/08 Grab |
| 01/30/08 Grab |
| 01/30/08 Grab |
| 01/30/08 Grab |
| Soil Threshold Level (Table A, Column B) |
| L P. Hand J. P. B. T. S. L. C. T. |

Table 4a. Soil Analytical Results (BTEX Compounds) (continued)

Bolded values exceed the soil threshold level.

BTEX = Benzene, toluene, ethylbenzene, and xylenes. BGS = Below ground surface.

ND = Not detected.

NRC = No regulatory criteria. RCRA = Resource Conservation and Recovery Act.

Laboratory Qualifiers

Indicates that the compound was detected at the concentration reported.
 U Indicates that the compound was not detected at the concentration reported.
 J Indicates that the value of the compound is an estimated value.

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Table 4b. Soil Anal;

| | | ····· | · ···· | | | | · · · · · | | T | | 1 | | 1 | | T |
|----------------|------------------|-------------------|----------------|----------------|-------------------------|---|------------------------|---------|-------------------------------|---|-------------------------|---------|---------------------------------|-----------|----------|
| Well | Sample ID | Depth (ft BGS) | Sample Date | Sample Type | Acenaphthene (mo/ko) | (8w/8m) | Anthracene (mo/too) | (mg/ng) | Benz(a)anthracene (medber) | | Benzo(<i>a</i>)pyrene | (Sugar) | Benzo(b)fluoranthene (mo/ko) | (IIIB/RB) | |
| | | | | 1 | | | | | | | | Pha | se I RCR | A Fa | acili |
| GP-01 | 7J1111 | 8.0 to 10.0 | 01/19/98 | Grab | 0.397 | U | 0.397 | U | 0.397 | U | 0.397 | U | 0.397 | U. | <u> </u> |
| GP-02 | 7J1211 | 5.0 to 6.0 | 02/03/98 | Grab | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | C |
| GP-03 | 7J1312 | 10.0 to 12.0 | 05/06/98 | Grab | 15.5 | U | 15.5 | U | 15.5 | U | 15.5 | U | 15.5 | U | |
| GP-04 | 7J1411 | 8.0 to 10.0 | 02/03/98 | Grab | 0.393 | U | 0.393 | U | 0.393 | U | 0.393 | U | 0.393 | U | C |
| | I | | | | | | | | | | Pl | ase l | II RCRA | Faci | lity |
| MW1 | 7J1171 | 0.0 to 1.0 | 10/09/99 | Grab | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | C |
| MW1 | 7J1172 | 3.0 to 4.0 | 10/09/99 | Grab | 0.366 | U | 0.366 | Ú | 0.366 | U | 0.366 | U | 0.0302 | J | C |
| MW2 | 7J1271 | 1.0 to 2.0 | 10/10/99 | Grab | 0.388 | U | 0.388 | U | 0.388 | U | 0.388 | U | 0.388 | U | C |
| MW2 | 7J1272 | 2.5 to 5.0 | 10/10/99 | Grab | 0.351 | U | 0.351 | U | 0.351 | U | 0.351 | U | 0.351 | Ū | C |
| MW3 | 7J1371 | 0.7 to 1.7 | 10/10/99 | Grab | 0.379 | U | 0.379 | U | 0.379 | U | 0.379 | U | 0.379 | U | C |
| MW3 | 7J1372 | 7.5 to 10.0 | 10/10/99 | Grab | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | Ć |
| MW4 | 7J1471 | 0.0 to 1.0 | 10/11/99 | Grab | 0.37 | U | 0.37 | U | 0.37 | U | 0.37 | U | 0.37 | U | |
| MW4 | 7J1472 | 5.0 to 6.9 | 10/11/99 | Grab | 0.388 | U | 0.388 | U | 0.388 | Ü | 0.388 | U | 0.388 | U | C |
| MW5 | 7J1571 | 0.6 to 1.6 | 10/10/99 | Grab | 0.392 | Ū | 0.392 | U | 0.392 | U | 0.392 | U | 0.392 | U | C |
| MW5 | 7J1572 | 1.6 to 4.5 | 10/10/99 | Grab | 0.366 | Ū | 0.366 | U | 0.366 | U | 0.366 | U | 0.366 | U | C |
| MW6 | 7J1671 | 0.6 to 1.0 | 10/11/99 | Grab | 0.383 | U | 0.383 | U | 0.383 | U | 0.383 | U | 0.383 | U | C |
| MW6 | 7J1672 | 7.5 to 9.1 | 10/11/99 | Grab | 0.402 | U | 0.402 | U | 0.402 | U | 0.402 | U | 0.402 | U | C |
| MW7 | 7J1771 | 0.85 to 1.85 | 10/10/99 | Grab | 0.392 | U | 0.392 | U | 0.392 | U | 0,392 | U | 0.392 | U | C |
| MW7 MW7 | 7J1772 | 2.5 to 5.0 | 10/10/99 | Grab | 0.379 | Ū | 0.379 | Ū | 0.379 | U | 0.379 | υ | 0.379 | U | C |
| MW8 | 7J1871 | 0.7 to 1.7 | 10/09/99 | Grab | 0.383 | U | 0.383 | Ū | 0.383 | U | 0.383 | U | 0.383 | U | C |
| MW8 | 7J1872 | 9.0 to 10.0 | 10/09/99 | Grab | 0.422 | Ū | 0.422 | Ū | 0.422 | Ū | 0.422 | U | 0.422 | U | 0 |
| MW9 | 7J1872 7J1971 | 0.6 to 1.6 | 10/12/99 | Grab | 0.388 | U | 0.388 | U | 0.388 | U | 0.388 | Ŭ | 0.388 | U | Ō |
| MW9 MW9 | 7J1971 | 8.0 to 10.0 | 10/12/99 | Grab | 42.2 | U | 42.2 | U | 42.2 | U | 42.2 | Ū | 42.2 | Ū | <u> </u> |
| MW10 | 7J1972 7J1A71 | 0.0 to 1.0 | 10/12/99 | Grab | 0.0425 | 1 | 0.492 | J | 3.94 | J | 2.43 | J | 2,88 | J | 0 |
| MW10 MW10 | 7J1A72 | 8.0 to 9.0 | 10/10/99 | Grab | 1.12 | Ĵ | 0.393 | Ĵ | 3.92 | U | 3.92 | U | 3.92 | U | |
| MW10 MW11 | 7J1B71 | 0.0 to 1.0 | 10/10/99 | Grab | 0.37 | Ū | 0.37 | U | 0.37 | U | 0.37 | U | 0.0345 | J | 0.0 |
| MWII | 7J1B71 7J1B72 | 8.0 to 10.0 | 10/10/99 | Grab | 4.02 | <u></u> | 4.02 | Ŭ | 4.02 | U | 4.02 | U | 4.02 | U | |
| | /JID/2 | 8.0 10 10.0 | 10/10/22 | 0140 | 4,02 | 0 | 1.02 | | | | | | eptember | | 2.54 |
| SS-01 | 7J7111 | 0.0 to 1.0 | 09/23/02 | Grab | 0.0357 | U | 0.0357 | U | 0.0357 | U | 0.0357 | U | 0.0357 | U | 0.0 |
| SS-02 | 7J7211 | 0.0 to 1.0 | 09/23/02 | Grab | 0.0367 | U | 0.0367 | U | 0.0367 | U | 0.0924 | = | 0.0367 | U | 0.0 |
| 33-02 | 737211 | 0.0 10 0.5 | 07/25/02 | 0140 | 0.0507 | <u> </u> | 0.0201 | | 0.0001 | - | | item | ber 2005 | | <u> </u> |
| SB-01 | 7J1181 | 10.0 to 12.0 | 09/19/05 | Grab | 0.0407 | U | 0.0669 | = | 0.0407 | U | 0.0407 | U | 0.0407 | U | 0.0 |
| SB-01 SB-02 | 7J1281 | 6.0 to 8.0 | 09/19/05 | Grab | 0.0378 | U | 0.493 | = | 0.0378 | U | 0.0378 | U | 0.0378 | Ū | 0.0 |
| SB-02 SB-03 | 7J1381 | 6.0 to 8.0 | 09/16/05 | Grab | 0.0378 | Ū | 0.0349 | J | 0.0378 | Ŭ | 0.0378 | U | 0.0378 | U | 0.0 |
| SB-03 SB-04 | 7J1481 | 10.0 to 12.0 | 09/16/05 | Grab | 0.101 | = | 0.117 | = | 0.0368 | U | 0.0368 | Ŭ | 0.0368 | Ū | 0.0 |
| SB-04 SB-05 | 7J1581 | 9.5 to 10.5 | 09/16/05 | Grab | 0.0396 | U | 0.0763 | = | 0.0396 | U | 0.0396 | Ū | 0.0396 | Ū | 0.0 |
| SB-05 SB-06 | 7J1581 7J1681 | 9.5 to 10.5 | 09/10/03 | Grab | 0.0379 | U | 0.0379 | U | 0.0379 | U | 0.0379 | U | 0.0379 | Ŭ | 0.(|
| SB-00 SB-07 | 7J1781 | 10.0 to 12.0 | 09/16/05 | Grab | 0.0377 | U | 0.0377 | U | 0.0377 | U | 0.0377 | U | 0.0377 | U | 0.0 |
| SB-07 | 7J1781 7J1881 | 10.0 to 12.0 | 09/10/03 | Grab | 0.0375 | U | 0.0375 | U | 0.0375 | U | 0.0375 | U | 0.0375 | Ŭ | 0.(|
| 5D-08 | 11001 | 10.0 10 12.0 | 09/10/00 | Giau | 0.0010 | 0 | 0.0575 | 5 | 0.0010 | ~ | 0.0010 | ~ | 212212 | <u> </u> | يبي |

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Results (PAHs) (continued)

| <u> </u> | | T | | T | | - | | | | | | | | | | | | |
|--------------------|-----------|----------|---------|-------------|---------|--------------|---------|---|---------|------------------------|----------|-------------|----------|--------------|---------|---------|---------|-----------------------|
| Benzo(ghi)perylene | (Jung/kg) | | (mg/kg) | Chrysene | (mg/kg) | Fluoranthene | (mg/kg) | Fluorene | (mg/kg) | Indeno(1,2,3-cd)pyrene | (mg/kg) | Naphthalene | (mg/kg) | Phenanthrene | (mg/kg) | Pyrene | (mg/kg) | Total PAHs (mg/kg) |
| 395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | 0.0395 | U | ND |
| 419 | Ŭ | 0.0419 | U | 0.0419 | U | 0.0419 | U | 0.0419 | U | 0.0419 | U | 0.0419 | Ū | 0.0419 | Ū | 0.0419 | U | ND |
| 377 | U | 0.0377 | U | 0.0377 | U | 0.0377 | U | 0.0844 | aci: | 0.0377 | Ū | 0.0377 | Ū | 0.237 | | 0.0405 | = | 0.4486 |
| 038 | U | 0.038 | U | 0.038 | U | 0.038 | U | 0.816 | = | 0.038 | U | 0.722 | · _ | 1.86 | = | 0.533 | = | 4,359 |
| 382 | U | 0.0382 | U | 0.0382 | U | 0.0382 | U | 0.0766 | | 0.0382 | Ū | 0.0359 | J | 0.221 | | 0.0382 | U | 0.3335 |
| 377 | U | 0.0377 | U | 0.0377 | U | 0.384 | = | 0.592 | = | 0.0377 | U | 0.654 | = | 1.66 | | 0.613 | = | 3.903 |
| Soil | Bor | ing Samp | ling | • | • | | | ۰ <u>ــــــــــــــــــــــــــــــــــــ</u> | | | L | | L | | I | 0,015 | | 3.705 |
| 038 | U | 0.038 | U | 0.038 | U | 0.038 | U | 0.122 | = | 0.038 | U | 0.0765 | = | 0.298 | | 0.0466 | = | 0.5431 |
| 399 | Ų | 0.0399 | U | 0.0399 | U | 0.0399 | U | 0.678 | = | 0.0399 | U | 0.768 | | 1.72 | == | 0.338 | | 3:504 |
| 377 | U | 0.0377 | U. | 0.0377 | U | 0.0377 | U | 0.0377 | U | 0.0377 | Ū | 0.0377 | U | 0.0377 | U | 0.0377 | - U | ND |
| 376 | U | 0.0376 | U | 0.0376 | U | 0.0376 | U | 0.0376 | U | 0.0376 | U | 0.244 | = | 0.829 | .= | 0.173 | = | 1.246 |
| 397 | U | 0.0397 | U | 0.0397 | U | 0.133 | = | 0.0397 | U | 0.0397 | U | 0.427 | = | 0.851 | | 0.216 | = | 1.627 |
| 394 | U | 0.0394 | U | 0.0394 | Ų | 0.0394 | U | 0.0394 | U | 0.0394 | U | 0.0394 | U | 0.0394 | U | 0.0394 | υ | ND |
| 392 | U | 0.0392 | Ŭ | 0.0392 | U | 0.086 | = | 0.0392 | U | 0.0392 | Ŭ | 0.154 | = | 0.538 | = | 0.163 | | 0.941 |
| 385 | U | 0.0385 | U | 0.0385 | Ŭ | 0.113 | Ŧ | 0.0385 | U | 0.0385 | U | 0.343 | = | 0.737 | | 0.214 | # | 1.407 |
| 353 | U | 0.0353 | U | 0.0353 | U | 0.0353 | U | 0.39 | = | 0.0353 | U | 0.215 | = | 0.871 | = | 0.187 | = | 1.663 |
| 398 | U | 0.0398 | U | 0.0398 | U | 0.0398 | U | 0.0398 | U | 0.0398 | Ū | 0.0398 | U | 0.0139 | J | 0.0398 | U | 0.0139 |
| 338 | U | 0.0388 | U | 0.0925 | = | 0.354 | = | 0.979 | <u></u> | 0.0388 | Ŭ | 1.2 | = | 2.6 | | 0.656 | E E | 5.9663 |
| 392 | U | 0.0392 | U | 0.0392 | U | 0.118 | | 0.319 | | 0.0392 | Ŭ | 0.281 | II I | 0.839 | = | 0.219 | = | 1.776 |
| 768 | U | 0.0768 | U | 0.0768 | U | 0.0768 | U | 0.682 | = | 0.0768 | U | 0.652 | ï | 1.62 | | 0.424 | = | 3.737 |
| 142 | U | 0.0442 | U | 0.0442 | U | 0.0442 | U | 0.157 | = | 0.0442 | Ū | 0.0759 | = | 0.425 | | 0.113 | | 0.8491 |
| 155 | U | 0.155 | U | 0.155 | Ŭ | 0.155 | U | 1.12 | = | 0.155 | Ū | 1.13 | = | 2.75 | = | 0.43 | =; | 6.033 |
| 126 | U | 0.0426 | Ŭ | 0.0426 | U | 0.0426 | U | 0.0426 | υ | 0.0426 | Ū | 0.0426 | U | 0.0357 | J | 0.0426 | U | 0.0357 |
| 346 | U | 0.0346 | U | 0.0346 | U | 0.0346 | U | 0.0346 | U | 0.0346 | Ū | 0.0346 | Ŭ | 0.0346 | Ŭ | 0.0346 | U | ND |
| 365 | U | 0.0365 | U | 0.0365 | U | 0.0365 | U | 0.0365 | U | 0.0365 | Ū | 0.0365 | U | 0.0365 | U | 0.0365 | U | ND |
| h So | il Bo | ring San | npling | g | | | | · · · · · | | | | | | | | 010000 | Ŭ | |
| 166 | U | 0.0366 | U | 0.0366 | U | 0.0366 | UJ | 0.0366 | U | 0.0366 | U | 0.0366 | U | 0.0366 | IJ | 0.0366 | U | ND |
| 194 | Ū | 0.0394 | U | 0.0403 | = | 0.173 | = | 0.357 | = | 0.0394 | U | 0.454 | = | 0.88 | = | 0.242 | = | 2.4372 |
| 85 | Ŭ | 0.0385 | U | 0.0385 | U | 0.0385 | U | 0.0385 | U | 0.0385 | U | 0.0385 | U | 0.0385 | υ | 0.0385 | U | ND |
| 188 | U | 0.0388 | U | 0.0388 | U | 0.0388 | U | 0.0388 | | 0.0388 | U | 0.0388 | U | 0.0388 | Ū | 0.0388 | Ŭ | ND |
| 84 | U | 0.0384 | U | 0.0384 | U | 0.0384 | U | 0.0384 | | 0.0384 | υ | 0.0384 | U | 0.0384 | Ū. | 0.0384 | Ŭ | ND |
| 71 | U. | 0.0371 | U | 0.0371 | υ | 0.0371 | U | 0.987 | | 0.0371 | U | 2.37 | = | 2.76 | = | 1.01 | = | 7.735 |
| 69 | U | 0.0369 | U | 0.0369 | U | 0.0369 | U | 0.0369 | | 0.0369 | Ū | 0.0369 | | 0,0369 | U | 0.0369 | U. | ND |
| 87 | U | 0.0387 | | 0.0387 | U | 0.0387 | | 0.0387 | | 0.0387 | Ũ | 0.0387 | | 0.0387 | Ŭ | 0.0387 | U | ND |
| 48 | U | 0.0348 | | 0.0348 | U | 0.0348 | | 0.0348 | | 0.0348 | U | 0.0348 | | 0.0348 | U | 0.0348 | U | ND |
| 86 | U | 0.0386 | | 0.0386 | U | 0.0386 | | 0.0386 | | 0.0386 | Ŭ | 0.0386 | | 0.0386 | υ | 0.0386 | υ | ND |
| 45 | .U | 0.0345 | | 0.0345 | | 0.0345 | | 0.0345 | | 0.0345 | _ | 0.0345 | | 0.0345 | U | 0.0345 | U | ND |
| 03 | U. | 0.0403 | | 0.0403 | | 0.0403 | | 0.0403 | _ | 0.0403 | | 0.0403 | | 0.0403 | | 0.0403 | U | ND |
| 82 | J | 0.0354 | | 0.0184 | I | 0.0354 | | 0.0354 | | 0.0166 | | 0.0354 | | 0.0354 | | 0.0403 | J | 0.1524 |
| | U | 0.0382 | | 0.0382 | U | 0.0303 | J | 0.0382 | | 0.0382 | _ | 0.0382 | U | 0.216 | | 0.0232 | | 0.3042 |
| 89 | J | 0.0357 | | 0.0182 | J | 0.0357 | | 0.0357 | | 0.0146 | | | υ | 0.011 | | 0.0299 | J | 0.1673 |
| | l | | | · · · · · . | | | | | - 1 | | <u>~</u> | 1,0001 | <u> </u> | 0.011 | | 0.04.77 | 1 | 0,1073 |

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Table 4b. Soil Analytical

| Well | Sample ID | Depth (ft BGS) | Sample Date | Sample Type | Accnaphthene (modka) | (Sv /Sm) | Anthracene | (mg/wg) | Benz(a)anthracene | (mg/vg/ | Benzo(a)pyrene | (mg/vg/ | $\operatorname{Benzo}(b)$ fluoranthene $(\operatorname{henc}(b))$ | | |
|-------|--------------|-------------------|----------------|----------------|-------------------------|----------|------------|---------|-------------------|---------|----------------|---------|---|-------|------|
| SB-33 | 7J13382 | 8.0 to 9.8 | 01/29/08 | Grab | 0.0388 | U | 0.0388 | U | 0.0607 | H | 0.0388 | U | 0.0388 | U | 0. |
| SB-34 | 7J13481 | 5.6 to 7.2 | 01/30/08 | Grab | 0.158 | Ш | 0.0387 | υ | 0.0387 | U | 0.0387 | U | 0.0387 | U | 0. |
| SB-34 | 7J13482 | 8.0 to 9.6 | 01/30/08 | Grab | 0.0189 | J | 0.0424 | U_ | 0.0424 | U | 0.0424 | U | 0.0424 | U | 0. |
| SB-35 | 7J13581 | 0.6 to 2.7 | 01/30/08 | Grab | 0.0369 | U | 0.0369 | U | 0.0369 | U | 0.0369 | U | 0.0369 | Ü | 0. |
| SB-35 | 7J13582 | 9.5 to 11.0 | 01/30/08 | Grab | 0.0382 | U | 0.0382 | U | 0.0382 | U | 0.0382 | U | 0.0382 | U | 0. |
| | | | | | | | | | | | | | May 20 | 08 SI | urfe |
| SS-03 | 7J7311 | 0.0 to 1.0 | 05/01/08 | Grab | 0.0356 | U | 0.0356 | U | 0.0356 | U | 0.052 | - | 0.0131 | J | 0. |
| SS-04 | 7J7411 | 0.0 to 1.0 | 05/01/08 | Grab | 0.0348 | U | 0.0348 | U | 0.0348 | U | 0.0348 | U | 0.0348 | U | 0. |
| | oil Threshol | d Level (Table) | A, Column 2 | .) | NRC | | NRC | | NRC | | NRC | | NRC | | |
| | | nate Threshold I | | | | | | | | | | | | | |

ND = Not detected.

NRC = No regulatory criteria.

PAH = Polycyclic aromatic hydrocarbon.

RCRA = Resource Conservation and Recovery Act.

Laboratory Qualifiers

Indicates that the compound was detected at the concentration reported,
 U Indicates that the compound was not detected at the concentration reported,
 J Indicates that the value of the compound is an estimated value.

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| | Interval | Sample | | Sample | Benzené | e | Toluene | <u>.</u> | Ethylbenzene | ٩ | Xylenes, Total | Total BTEX |
|-----------|--------------|-----------|----------|------------------|------------------------------------|----------|---------|----------|--------------|----|----------------|------------|
| Well | | UI | Date Pha | Phase II RCRA Fo | Facility Investigation (1999-2000) | stigatio | 1999-2 | 1000 | 148.47 | | | |
| GP-05 | 0.0 to 19.8 | 714551 | 09/22/99 | | 2 | | 2 | D | 2 1 | n | 6 U | DN |
| GP-06 | 0.0 to 15.5 | 714651 | 09/22/99 | Grab | 12.8 | | 7.6 | Б | 29.6 | | 65.8 = | 108.20 |
| GP-07 | 0.0 to 15.0 | 7J4751 | 09/22/99 | Grab | 38.4 | 11 | 16 | 11 | 5.7 | 1 | 13.4 = | 73.50 |
| GP-08 | 0.0 to 17.8 | 7J4851 | 09/25/99 | Grab | 5 | IJ | 3.3 | UJ | 2.6 | | 13.8 = | 16.40 |
| GP-09 | 0.0 to 15.0 | 7J4B51 | 09/28/99 | Grab | 141 | ŧI | 89 | 1 | 27.5 | 1 | 137 = | 394.50 |
| GP-10 | 0.0 to 15.0 | 7J4C51 | 09/29/99 | Grab | 2 | n | 2 | n | 2.3 | IJ | 14.7 = | 17.00 |
| GP-11 | 0.0 to 15.0 | 7J4D51 | 09/29/99 | Grab | 9.2 | 11 | 2 | U | 2 1 | 3 | 7.1 = | 16.30 |
| GP-12 | 0.0 to 15.0 | 7J4E51 | 09/29/99 | Grab | 3.8 | 11 | 2 | IJ | 12 | | 25.6 = | 41.40 |
| GP-13 | 0.0 to 15.0 | 7J4F51 | 09/29/99 | Grab | 2 | D | 2 | n | 2 | D | <u>6 U</u> | QN |
| GP-14 | 0.0 to 15.0 | 7J4G51 | 09/29/99 | Grab | 2 | 5 | 2 | n | 4.5 | 11 | 11.5 = | 16.00 |
| GP-15 | 0.0 to 15.0 | 7J4H51 | 09/29/99 | Grab | 8.2 | 11 | 2 | n | 1 | - | 16.1 = | 31.30 |
| GP-16 | 0.0 to 15.0 | 7J4J51 | 09/29/99 | Grab | 5 | U | 2 | D | 2 | υĮ | 6 U | QN |
| GP-17 | 0.0 to 14.0 | 7J4K51 | 09/29/99 | Grab | 2 | D | 2 | Б | 2 | U | 6 UJ | QN |
| GP-18 | 0.0 to 15.0 | 7J4M51 | 09/29/99 | Grab | 2 | D, | 2 | D. | 2 | U | 6 U | ND |
| GP-19 | 0.0 to 15.0 | 7J4N51 | 09/29/99 | Grab | 2 | D | 2 | n | 2 | U | 6 U | QN |
| VP-01 | 0.0 to 10.0 | 7J4951 | 09/28/99 | Grab. | 2 | D | 2 | n | 2 | D | 6 U | QN |
| VP-01 | 10.0 to 20.0 | 714952 | 09/28/99 | Grab | 2 | D | 2 | n | 2 | U | 6 U | <u>ND</u> |
| VP-01 | 20.0 to 30.0 | 7J4953 | 09/28/99 | Grab | 2 | n | 2 | n | 2 | n | 6 U | QN |
| VP-02 | 0.0 to 10.4 | 7J4A51 | 09/28/99 | Grab | 2 | D | 2 | Ū | 2 | n | 6 U | DN |
| VP-02 | 10.4 to 20.4 | 7J4A52 | 09/28/99 | Grab | 2 | D | 2 | D | 2 | n | 6 U | ND |
| VP-02 | 20.4 to 30.4 | 7J4A53 | 09/28/99 | Grab | 2 | D | 2 | ſŊ | 2 | n | 6 U | DN |
| MWI | 9.3 to 19.3 | 7J4171 | 11/02/99 | Grab | 2 | D | 2 | n | 5 | U | 6 U | QN |
| MW2 | 28.8 to 38.8 | 7J4271 | 11/03/99 | Grab | 2 | Ū | 2 | U. | 2 | n | 6 U | QN |
| MW3 | 10.4 to 20.4 | 714372 | 11/01/99 | Grab | 2 | D | 2 | Þ | 2 | U | 6 U | DN |
| MW4 | 5.9 to 15.9 | 7]4471 | 66/10/11 | Grab | 2 | Ŋ | 2. | D | 2 | n | 6 U | DN |
| MW5 | 8.8 to 18.8 | 7]4571 | 11/02/99 | Grab | 7 | n | 2 | Þ | 2 | U | 6 U | ND |
| MW6 | 8.7 to 18.7 | 7]467] | 66/10/11 | Grab | 2 | n | 6 | D | 2 | Ú | 6 U | ND |
| MW7 | 10.0 to 20.0 | 714771 | 11/01/99 | Grab | 2 | Ū | 3 | n | 2 | n | 6 U | ND |
| MW8 | 30.9 to 40.9 | 7J4871 | 11/03/99 | Grab | 2 | Ŋ | 61 | D | 2 | U | 6 U | QN |
| 6MM | 10.3 to 20.3 | 7J4971 | 11/02/99 | Grab | .4.6 | U | 2 | D | 2 | D | 3 J | 7.60 |
| N ATC/ 10 | | | | | | | | | - | | • | |

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| | Screened | | | | | | | | | | | - | |
|-------|--------------|----------|------------------|---|---------------------------------|----------|-----------|------------|--------------|------|----------------|------|------------|
| - | Interval | Sample | | Sample | Benzene | Je l | Toluene | ne | Ethylbenzene | zene | Xylenes, Total | | Total BTEX |
| Well | (ft BGS) | Ð | Date | Type | (µg/L) | | (µg/L) | (| (µg/L) | (| (μg/L) | | (µg/L) |
| MWII | 29.4 to 39.4 | 7J4B71 | 11/03/99 | Grab | 2 | D | 2 | 'n | 2 | D | 1 | | ΟN |
| MW13 | 4.1 to 14.1 | 7J4D71 | 11/29/00 | Grab. | 1 | U | 1 | n | | D | | n | ND |
| MW14 | 2.9 to 12.9 | 7J4E71 | 11/30/00 | Grab | 79.1 | 11 | 0.85 | 5 | 8.9 | 1 | 46.3 | | 135.15 |
| MW15 | 3.8 to 13.8 | 7J4F71 | 11/29/00 | Grab | 1 | n | 1 | Þ | | D | 3 [| | DN |
| MW16 | 5.0 to 15.0 | 7J4G71 | 12/05/00 | Grab | 2.1 | | Ι | Ŋ | | D | 0.31 J | | 2.41 |
| MW17 | 4.9 to 14.9 | 7J4H71 | 12/05/00 | Grab | 2 | 11 | | Ŋ, | | Þ | 0.3 J | | 2.30 |
| MW18 | 4.9 to 14.9 | 7J4J71 | 12/05/00 | Grab | 1 | n | 0.48 | 5 | | Þ | 3 U | | 0.48 |
| | | Sut | Supplemental Pha | ental Phase II RCRA Facility Investigation Sampling Event (2001 | acility Inv | estigati | ion Sampl | ling Ev | vent (2001) | | | | |
| 1 MM | 9.3 to 19.3 | 7J4172 | 01/02/01 | Grab | 1 | n | - | D | | D | 3 U | | DN |
| MW2 | 28.8 to 38.8 | 7J4272 | 01/06/01 | Grab | Ļ | U | 1 | n | | n | 3 N | - | ND |
| MW3 | 10.4 to 20.4 | 7J4372 | 01/05/01 | Grab | 1 | U. | 1 | D | | n | 3 U | | DN |
| MW4 | 5.9 to 15.9 | 7J4472 | 01/06/01 | Grab | 1.5 | 11 | 0.41 | · F | 1.3 | H | 6.3 = | 1 | 9.51 |
| MW5 | 8.8 to 18.8 | 7J4572 | 01/05/01 | Grab | - | U | 1 | D | | n | 3 U | | ND |
| MW6 | 8.7 to 18.7 | 7J4672 | 10/20/10 | Grab | 0.17 | J | 1 | D | 0.1 | ſ | 3 U | | 0.27 |
| MW7 | 10.0 to 20.0 | 7J4772 | 10/90/10 | Grab | 31.4 | 1 | 10 | 11 | 4.3 | 11 | 20.7 = | 11 | 66.40 |
| MW8 | 30.9 to 40.9 | 7J4872 | 01/08/01 | Grab | , | Ð | 1 | U | 1 | n | 3 N | | DN |
| 6MM | 10.3 to 20.3 | 7J4972 | 01/05/01 | Grab | 5.8 | 11 | | D | 0.44 | J | 3.6 = | | 9.84 |
| MW10 | 11.0 to 21.0 | 7J4A72 | 01/0/10 | Grab | 2.4 | 11 | 1.5 | H | 0.94 | J | 3.2 = | Ð | 8 04 |
| 1 MMI | 29.4 to 39.4 | 7J4B72 | 01/08/01 | Grab | - | D | 0.33 | J | 1 | Ŋ | 3 N | - | 0.33 |
| MW13 | 4.1 to 14.1 | 7J4D72 | 01/02/01 | Grab | | D | 1 | Ŋ | 1 | n | 3 0 | | QN |
| MW14 | 2.9 to 12.9 | 7J4E72 | 10/90/10 | Grab | 61 | 1í | 0.76 | J | 7 | 11 | 38.5 = | | 107.26 |
| MW15. | 3.8 to 13.8 | 7J4F72 | 01/06/01 | Grab | | D | 1 | Ú | - | Ŋ | 3 U | | DN |
| MW16 | 5.0 to 15.0 | 7J4G72 | 01/06/01 | Grab | 0.28. | - | | D | | n | 3 U | [| 3.28 |
| MW17 | 4.9 to 14.9 | 7J4H72 | 01/06/01 | Grab | - | Э | - | IJ | - | U | 3 N | | ND |
| MW18 | 4.9 to 14.9 | 7J4J72 | 01/08/01 | Grab | - | Ð | - | D | 0.9 | J | 1.6 J | | 2.50 |
| | | | CY 2002 | RCRA CAP | Bi-annual Sampling Event | Sampli | ing Event | (2002) | | | | | |
| MWI | 9.3 to 19.3 | 7J4173 | 09/19/02 | | 1 | n | 1 | U | 1 | n | n I | | QN |
| MW3 | 10.4 to 20.4 | 7J4373 | 09/20/02 | Grab | | U D | 1 | U | | 'n | n I | | QN |
| MW4 | 5.9 to 15.9 | 7J4473 | 09/20/02 | Grab | 0.53 | 11 | 1 | U | 2.7 | ĮI. | 9.6 - | | 13.83 |
| MW5 | 8.8 to 18.8 | 7J4573 | 09/19/02 | Grab | - | Ŭ, | | D | 1 | U. | 1 1 | | DN |
| MW6 | 8.7 to 18.7 | 7.14673. | 09/20/02 | Grab | - | Э | - | Ŋ | 1 | n | 1 U | 1 | QN |
| MW7 | 10.0 to 20.0 | 7J4773. | 09/19/02 | Grab | 4.3 | I | 0.98 | ſ | 0.68 | ſ | 1.8 = | | 7.76 |
| 6MM | 10.3 to 20.3 | 7J4973 | 09/19/02 | Grab | 4.4 | 11 | - | n | <u>0.25</u> | J | 1.7 = | | 6.35 |
| | | | | | | | | | | | | | |

| Total BTEX | (µg/L) | 7.70 | 89.00 | DN | DN | QN | 1.75 | | 0.64 | 0.45 | 6.60 | 4.38 | QN | 18.10 | 20.06 | 10.60 | 54.46 | 7.80 | 0.52 | QN | 1.66 | | QN | DN | 0.65 | QN | QN | 2.87 | 7.04 | 5.09 | ŊŊ | 51.68 | 1.12 | ŊŊ |
|----------------|--------------|--------------|-------------|-------------|-------------|--------------|-------------|------------------------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|--|-------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|
| otal | | III. | II | Þ | D | Э | - | Ī | ∍ | D | 11 | 1 | Э | N | 11 | 11 | 11 | 11 | D | C | 11 | | Э | D | | ⊐ | n | D | J | ŗ | Þ | J | 11 | Ð |
| Xvlenes, Total | (µg/L) | 3.8 | 27.8 | - | | - | | | | - | 6.6 | 3.6 | 1 | 4.5 | 1.8 | 5.8 | 10.8 | 7.8 | - | 1 | 1 | | - | | | | | - | 0.323 | 0.919 | - | 2.86 | 1.12 | - |
| ene | | II. | 1 | D | C | Э | - | | Þ | D | D | 5 | U | 11 | ſ | 11 | 5 | U. | D | U | J | | D | n | ٦ | D | D | - | Ľ. | .]] | D | J | Э | D |
| Ethylbenzene | (µg/L) | - | 2.9 | - | 1 | - - - | 0.37 | | | - | 1 | 0.23 | 1 | 1.4 | 0.86 | 1.4 | 0.76 | 1 | ľ | 1 | 0.66 | | - | | 0.645 | - | - | 0.273 | 0.366 | 1.17 | 1 | 0.42 | - | |
| | , _ | n | D | Ū | Ū | Э | D | (2004) | ŗ | J | U | ſ | n | n | | Ď | D | n | J | n | n | 7) | Ŋ | Ŋ | Þ | D | n | Ĵ, | Ŋ | J | n | n | IJ | n |
| Toluene | (IL) | 2 | | 1. | 1 | 1 | | Event | 0.64 | 0.45 | 1: | 0.55 | 1 | 2.2 | 1 | 2.7 | al : | 1 | 0.52 | . 1 | T | Svent (2007 | 1 | 5 L. | 1 | 1 | i [i | 1 | 1 | 916.0 | : 1 | I | - | - |
| 9 | 2 | 11 | It | D | n | U | Ĺ | Sampi | n | Ú | D | U | D. | 11 | .4 | П | 11 | n | n | D | Ū | oling I | U | ٦Ŋ. | Ð | Ŋ | D | 11 | 11 | 11 | Þ | İ | D | D |
| Renzene | (ng/L) | 2.9 | 57.3 | - | · | 1 | 0.38 | Bi-annual | 1 | 1 | - | 1 | - | 12.2 | 16.4 | 3.4 | 42.9 | + | - | - | | CAP Sam | - | ľ | - | 1 | . | 2.6 | 6.35 | 2.08 | | 48.4 | 1 | |
| Sample | Tvpe | Grab | Grab | Grab | Grab | Grab | Grab | PRCRA CAP Bi-annual Sampling | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | CY 2007 RCRA CAP Sampling Event (2007) | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab |
| | Date | 09/23/02 | 09/19/02 | 09/19/02 | 09/20/02 | 09/19/02 | 09/19/02 | CY 2002 | 08/19/04 | 08/19/04 | 8/20/2004 | 08/19/04 | 08/19/04 | 08/20/04 | 08/19/04 | 08/20/04 | 08/20/04 | 08/20/04 | 08/19/04 | 08/20/04 | 08/19/04 | _ | 04/22/07 | 04/19/07 | 4/18/2007 | 04/19/07 | 04/20/07 | 04/18/07 | 04/18/07 | 04/18/07 | 02/18/07 | 04/20/07 | 04/22/07 | 04/22/07 |
| Comple | Sampre ID | 7]4A73 | 7J4E73 | 7J4F73 | 7J4G73 | 7J4H73 | 7J4J73 | | 7J4174 | 7J4374 | 7J4474 | 7J4574 | 7)4674 | 7J4774 | 7)4974 | 7J4A74 | 7J4E74 | 7J4F74 | 7J4G74 | 7J4H74 | 7J4J74 | | 7J4178 | 714378 | 7J4478 | 7J4578 | 7J4678 | 734778 | 7J4978 | 7J4A78 | 7J4D78 | 7J4E78 | 7J4F78 | 7J4G78 |
| Screened | (ft BGS) | 11 0 to 21 0 | 2.9 to 12.9 | 3.8 to 13.8 | 5.0 to 15.0 | 4.9 to 14.9 | 4.9 to 14.9 | | 9.3 to 19.3 | 10.4 to 20.4 | 5.9 to 15.9 | 8.8 to 18.8 | 8.7 to 18.7 | 10.0 to 20.0 | 10.3 to 20.3 | 11.0 to 21.0 | 2.9 to 12.9 | 3.8 to 13.8 | 5.0 to 15.0 | 4.9 to 14.9 | 4.9 to 14.9 | | 9.3 to 19.3 | 10.4 to 20.4 | 5.9 to 15.9 | 8.8 to 18.8 | 8.7 to 18.7 | 10.0 to 20.0 | 10.3 to 20.3 | 11.0 to 21.0 | 4.1 to 14.1 | 2.9 to 12.9 | 3.8 to 13.8 | 5.0 to 15.0 |
| | Well | 01MM | MW14 | MW15 | MW16 | MW17 | MW18 | | IWM | MW3 | MW4 | MW5 | MW6 | MW7 | 6MM | MW10 | MW14 | MW15 | MW16 | MW17 | MW18 | | MWI | MW3 | MW4 | MW5 | MW6 | MW7 | MW9 | MW10 | MW13 | MW14 | MW15 | MW16 |

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| | ~ | | Τ | | | Τ | Т | 1 | 1 | Τ | | 1 | T | | <u> </u> | | Т | T | 1 | Т | T | | [| Γ | Γ | Τ | <u> </u> | T | Т | 1 | F | | 1 | Τ |
|----------|----------------------|-------------|-------------|-----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------|------------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|---------------------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|-------------|
| | Total BTEX | | 0.35 | | 10.94 | 11.27 | 10.64 | 10.32 | 199.38 | 32.30 | 6.05 | QN | 0.51 | | 5.05 | 3.97 | 385,16 | 105.50 | 15.07 | 759.40 | 5.67 | 35.52 | 0.30 | 0.25 | | DN | ŊD | 1.48 | QN | QN | 11.30 | 8.36 | 7.19 | DN |
| | otal | = |) = | | [| u | 11 | 11 | 1 | 11 | Ъ | 5 | 5 | | 1 | 11 | 11 | h | ⊃ | 1 | 5 | D | - | J | | | Þ | - | 5 | 5 | 11 | 5 | 11 | Þ |
| | Xylenes, Total | | | 4 | 8.61 | 8.26 | 8.14 | 8.12 | 30.6 | 11.4 | | - | | | 2.51 | 2.71 | 6.66 | 9.2 | 1.37 | 166 | 1.39 | 2.11 | 0.299 | , 0.253 | | | 1 | 0.488 | | | 1.44 | 0.525 | 3.13 | - |
| | zene | |) – | , | - | 11 | " | 1 | Ħ | 11 | n | n | n | | H | 5 | 11 | 11 | 1 | 11 | D | ſ | n | n | | Þ | D | - | | D | | 5 | 1) | Þ |
| | Ethylbenzene | | 0.35 | | 2.33 | 3.01 | 2.5 | 2.2 | 14.3 | 2.73 | | | 1 | ling | 16.1 | 0.794 | 31.5 | 13.1 | 1.3 | 54.3 | | 0.515 | 1 | 1 | | | 1 | 0.988 | | - | 0.936 | 0.485 | 1.75 | |
| | e | | 1 | ilama | 5 | Þ | n | 5 | 11 | 5 | n | n | D | Samp | Б | D | D | Ū | D | 1 | Ŋ | U | D | n | (| n | D | D | Þ | D | 11 | Þ | ľ | ก |
| | Toluene | 1 | | Groundwater Sampling | - | | | | 3:48 | 0.267 | I | 1 | 1 | undwater | | - | 2.22 | 1 | - | 98.1 | 1 | 1 | | | vent (2008) | | - | - | | | 1.68 | | 0.736 | |
| | Je | | = | Grou | 5 | Ð | 5 | | Ĥ | 1 | 11 | n | - | ng Gro | 5 | ſ | 1 | 11 | 1 | II. | li | 11 | Э | n | ling E) | D | U | U | n | IJ. | 1 | it | 1) | n |
| | Benzene (110/17) | - | | Soil Borin |]- | - | 1 | - | 151 | 17.9 | 6.05 | I | 0.506 | h Soil Bori | 0.628 | 0.465 | 347 | 83.2 | 12.4 | 441 | 5.67 | 35 | - | - | CAP Sampling Event (2008) | - | 1 | 1 | 1 | | 7.24 | 7.35 | 1.57 | 1 |
| | Sample Tvne | Grab | Grab | July 2007 Direct-Push Soil Boring | Grab | 08 Direct-Pusi | Grab 0.628 J 1 U | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | CY 2008 RCRA (| Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab |
| | Date | 04/20/07 | 04/22/07 | July 2007 | 20/11/20 | 20/11/20 | 07/11/07 | 0/11/02 | 0/11//20 | 02/11/07 | 07/12/07 | 07/12/07 | 07/12/07 | January 2008 | 01/28/08 | 01/28/08 | 01/29/08 | 01/29/08 | 01/29/08 | 01/29/08 | 01/29/08 | 01/29/08 | 01/30/08 | 01/30/08 | CY | 04/29/08 | 04/30/08 | 5/1/2008 | 04/29/08 | 04/29/08 | 04/30/08 | 04/29/08 | 05/01/08 | 04/30/08 |
| , (| Sample | 7J4H78 | 7J4J78 | | 7J4M11 | 7J4N11 | 7J4P11 | 7J4R11 | 7J4S11 | 7J4T11 | 7J4U11 | 7J4V11 | 7J4X11 | | 7142611 | 7J42711 | 7J42811 | 7J42911 | 7J43011 | 7J43111 | 7J43211 | 7J43311 | 7J43411 | 7J43511 | | 7J4175 | 7J4375 | 7J4475 | 7J4575 | 7J4675 | 714775 | 7J4975 | 7J4A75 | 7J4D75 |
| Screened | Interval (ft BGS) | 4.9 to 14.9 | 4.9 to 14.9 | | 12,0 to 16.0 | 12.0 to 16.0 | | 9.0 to 13.0 | 10.0 to 14.0 | 10.0 to 14.0 | 9.0 to 13.0 | 9.0 to 13.0 | 9.0 to 13.0 | 10.0 to 14.0 | 10.0 to 14.0 | 11.0 to 15.0 | 11.0 to 15.0 | | 9.3 to 19.3 | 10.4 to 20.4 | 5.9 to 15.9 | 8.8 to 18.8 | 8.7 to 18.7 | 10.0 to 20.0 | 10.3 to 20.3 | 11.0 to 21.0 | 4.1 to 14.1 |
| | Well | MW17 | MW18 | | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 | SB-20 | SB-21 | SB-22 | SB-23 | | SB-26 | SB-27 | SB-28 | SB-29 | SB-30 | SB-31 | SB-32 | SB-33 | SB-34 | SB-35 | | MWI | MW3 | MW4 | MW5 | MW6 | MW7 | 6MW | MW10 | MW13 |

| Total BTEX | 148/24) 51.04 | +0.1.0 | DN | DN | DN | 0.27 | March 2009 Sampling Event | QN | QN | 3.72 | ŊŊ | ND | 21.51 | 14.12 | 9.10 | DN | 51.81 | DN | DN | ND | ND | NRC | 8 |
|----------------------|------------------|-------------|-------------|-------------|-------------|-------------|---------------------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--|-------------------------------|
| | | 1 | 5 | Þ | D | U | 109 Samp | Ŋ | U | 11 | - D | Ũ | 11 | - | II | D | 8 | n | U | D | U | | |
| Xylencs, Total | | 70.1 | | | | 1 | March 20 | | 1 | 1.54 | 1 | 1 | 3.16 | 0.914 | 3.51 | - | 6.29 | 1 | 1 | 1 | ĺ | NRC | 1 |
| ene | | - | | D | , U | J | | U | U | 11 | n | U | | J | 1 | D | J | Ŋ | n | U | n | | |
| Ethylbenzene | | 67C'N | | - | 1 | 0.269 | | 1 | 1 | 1.73 | 1 | 1 | 1.67 | 0.705 | 2.54 | I | 0.719 | - | 1 | 1 | 1 | 2,100 | 1 |
| e | _ 11 | ∍ | Ð | U | U | Ŋ | | n | Ŋ | Ū. | n | n | ţ | n | J | U | n | n | n | n | D | | |
| Toluene | (<u>1/3</u> n) | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | - | 2.28 | 1 | 0.639 | 1 | 1 | I | 1 | 1 | 1 | 5,980 | 1 |
| 9 | - 11 | 11 | Ŋ | U | ň | n | | D | D | 'n | n | D | 1 | 11 | | U [| 11 | n | 'n | D | D | | |
| Benzene | (<u>1,8</u> 1) | 43.8 | - | 1 | 1 | - | | - | - | 0.452 | | - | 14.4 | 12.5 | 2.41 | 1 | 44.8 | 1 | 1 | 1 | - | 51 | 510 |
| Sample | 1 Npe | <u> </u> | Grab | Grab | Grab | Grab | | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | Grab | _ | |
| ŝ | Date | 04/30/08 | 04/30/08 | 04/30/08 | 05/01/08 | 05/01/08 | | 03/10/09 | 03/11/09 | 3/11/2009 | 03/11/09 | 03/10/09 | 03/10/09 | 03/12/09 | 03/11/00 | 03/10/09 | 60/01/00 | 03/12/09 | 03/11/09 | 03/11/09 | 03/11/09 | (February 200 | Limit |
| Sample | | 714E75 | 7J4F75 | 7J4G75 | 7J4H75 | 7J4J75 | | 7J4176 | 7J4376 | 7J4476 | 734576 | 7J4676 | 7J4776 | 734976 | 7J4A76 | 7J4D76 | 7J4E76 | 7J4F76 | 7J4G76 | 7J4H76 | 7J4J76 | ulity Standard | Alternate Concentration Limit |
| Screened Interval | (It BGS) | 2.9 to 12.9 | 3.8 to 13.8 | 5.0 to 15.0 | 4.9 to 14.9 | 4.9 to 14.9 | | 9.3 to 19.3 | 10.4 to 20.4 | 5.9 to 15.9 | 8.8 to 18.8 | 8.7 to 18.7 | 10.0 to 20.0 | 10.3 to 20.3 | 11.0 to 21.0 | 4.1 to 14.1 | 2.9 to 12.9 | 3.8 to 13.8 | 5.0 to 15.0 | 4.9 to 14.9 | 4.9 to 14.9 | In-Stream Water Ouality Standard (February 2009) | Alternate (|
| | Well | MW14 | MW15 | MW16 | MW17 | MW18 | | IWM | MW3 | MW4 | MW5 | MW6 | MW7 | MW9 | MW10 | MW13 | MW14 | MW15 | MW16 | MW17 | MW18 | In-St | |

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Table 5a. Groundwater Analytical Results (BTEX Compounds)

Bold values exceed the In-Stream Water Quality Standard.

BGS = Below ground surface.

BTEX = Benzene, toluene, ethylbenzene, and xylenes. CAP = Corrective Action Plan. CY = Calendar year.

ND = Not detected.

NRC = No regulatory criteria. RCRA = Resource Conservation and Recovery Act

Laboratory Qualifiers
Indicates that the compound was detected at the concentration reported.
U Indicates that the compound was not detected at the concentration reported.
J Indicates that the value of the compound is an estimated value.

Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

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Table 5b. Groundwater

| | Screened | | 1 | | | | |
|------------|--------------|--------|----------|--------|-------------------------|----------|-------------|
| | Interval | Sample | _ | Sample | 2-Methylnaphthalen | ie. | Acer |
| Well | (ft BGS) | ID | Date | Туре | (µg/L) | | |
| | | | | | Phase II RC | | acility |
| MW1 | 9.3 to 19.3 | 7J4171 | 11/02/99 | Grab | 10 | <u>U</u> | |
| MW2 | 28.8 to 38.8 | 7J4271 | 11/03/99 | Grab | 10.2 | <u>U</u> | <u> </u> |
| MW3 | 10.4 to 20.4 | 7J4372 | 11/01/99 | Grab | 4.1 | <u> </u> | |
| MW4 | 5.9 to 15.9 | 7J4471 | 11/01/99 | Grab | 10.2 | <u> </u> | · |
| MW5 | 8.8 to 18.8 | 7J4571 | 11/02/99 | Grab | 10 | <u>U</u> | · |
| MW6 | 8.7 to 18.7 | 7J4671 | 11/01/99 | Grab | 10.2 | <u> </u> | <u> </u> |
| MW7 | 10.0 to 20.0 | 7J4771 | 11/01/99 | Grab | 11.5 | U | |
| MW8 | 30,9 to 40.9 | 7J4871 | 11/03/99 | Grab | 10 | U | |
| MW9 | 10.3 to 20.3 | 7J4971 | 11/02/99 | Grab | 10.2 | U | |
| MW10 | 11.0 to 21.0 | 7J4A71 | 11/01/99 | Grab | 10.8 | J | |
| MW11 | 29.4 to 39.4 | 7J4B71 | 11/03/99 | Grab | 10 | U | |
| | | | | | Supplemental Phase II R | | Facili |
| MW1 | 9.3 to 19.3 | 7J4172 | 01/05/01 | Grab | 1 | U | · |
| MW2 | 28.8 to 38.8 | 7J4272 | 01/06/01 | Grab | 1 | <u> </u> | <u> </u> |
| <u>MW3</u> | 10.4 to 20.4 | 7J4372 | 01/05/01 | Grab | 1 | Ü | 5 |
| MW4 | 5.9 to 15.9 | 7J4472 | 01/06/01 | Grab | 15.6 | = | |
| MW5 | 8.8 to 18.8 | 7J4572 | 01/05/01 | Grab | 1 | <u> </u> | |
| MW6 | 8.7 to 18.7 | 7J4672 | 01/07/01 | Grab | 1 | U | |
| MW7 | 10.0 to 20.0 | | 01/06/01 | Grab | | | |
| MW8 | 30.9 to 40.9 | 7J4872 | 01/08/01 | Grab | 1 | <u>U</u> | : |
| MW9 | 10.3 to 20.3 | 7J4972 | 01/05/01 | Grab | 2.3 | = | |
| MW10 | 11.0 to 21.0 | 7J4A72 | 01/07/01 | Grab | 1.7 | | |
| MW11 | 29.4 to 39.4 | 7J4B72 | 01/08/01 | Grab | 1 | U | <u>.</u> |
| MW13 | 4.1 to 14.1 | 7J4D72 | 01/07/01 | Grab | 0.99 | U | |
| MW14 | 2.9 to 12.9 | 7J4E72 | 01/06/01 | Grab | 31.9 | = | |
| MW15 | 3.8 to 13.8 | 7J4F72 | 01/06/01 | Grab | 0.98 | U | <u> </u> |
| MW16 | 5.0 to 15.0 | 7J4G72 | 01/06/01 | Grab | 0.99 | U | |
| MW17 | 4.9 to 14.9 | 7J4H72 | 01/06/01 | Grab | 1 | U | |
| MW18 | 4.9 to 14.9 | 7J4J72 | 01/08/01 | Grab | 5.4 | = | <u> </u> |
| | | | | | CY 2002 RCRA | | ' Bi-an |
| MW1 | 9.3 to 19.3 | 7J4173 | 09/19/02 | Grab | 1 | U | ļ |
| MW3 | 10.4 to 20.4 | 7J4373 | 09/20/02 | Grab | 1 | U | |
| MW4 | 5.9 to 15.9 | 7J4473 | 09/20/02 | Grab | 33.3 | i í | |
| MW5 | 8.8 to 18.8 | 7J4573 | 09/19/02 | Grab | 1 | U | |
| MW6 | 8.7 to 18.7 | 7J4673 | 09/20/02 | Grab | 1 | U | |
| MW7 | 10.0 to 20.0 | 7J4773 | 09/19/02 | Grab | 1.3 | -= | |
| MW9 | 10.3 to 20.3 | 7J4973 | 09/19/02 | Grab | 1.4 | | . <u>.</u> |
| MW10 | 11.0 to 21.0 | 7J4A73 | 09/23/02 | Grab | 4.1 | = | |
| MW14 | 2.9 to 12.9 | 7J4E73 | 09/19/02 | Grab | 32 | = | |
| MW15 | 3.8 to 13.8 | 7J4F73 | 09/19/02 | Grab | 1 | U | |
| MW16 | 5.0 to 15.0 | 7J4G73 | 09/20/02 | Grab | 1 | Ü | |
| MW17 | 4.9 to 14.9 | 7J4H73 | 09/19/02 | Grab | 1.1 | U | <u> </u> |
| MW18 | 4.9 to 14.9 | 7J4J73 | 09/19/02 | Grab | 5.1 | = | |

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Ć

ical Results (PAHs) (continued)

| | | | | <u> </u> | | 1 | | | | r | | |
|--------------|------|--------------------------|-------|--------------|---------|----------|----------|--------------|---------------|------------|---------------|---------------|
| aphth | ene | Anthrace | ne | Fluore | | Naphthal | | Phenanth | - | Pyren | | Total PAHs |
| <u>1g/L)</u> | C | (μg/L) pling Event (2 | 1004 | <u>μg/L)</u> | | (µg/L) | | (µg/L) | | (μg/L) |) | <u>(μg/L)</u> |
| 0.96 | U U | 0.96 | | 0.96 | 1 11 | 0.00 | | 0.07 | T | | r | |
| 1 | U | 0.90 | | 0.90 | U U | 0.96 | | 0.96 | | 0.96 | | ND |
| 1.4 | | | | 2,6 | U == | 0.4 | J | 1 | U | | U | 0.40 |
| 1 | U | 1 | | 2.0 | U | 15.5 | = | 3.9 | = | 0.71 | J, | 57.51 |
| 1.1 | U | 1.1 | | 1 1.1 | | 1.4 | | 11 | U | | U | 1.40 |
| 1.1 | U | 1.1 | U | 1.1 | | 1.6 | = | 1.1 | <u>u</u> U | 1.1 | U | 1.60 |
| 0.56 | Ĵ | 0.96 | | 1.2 | = | 19.8 | | 1.2 | | 1.2 | <u>U</u> | 6.50 |
| 1.1 | Ū | 0.90 | U | 0.58 | J | 4.6 | = | 0.84 | | 0.96 | U | 34.36 |
| <u></u> 1 | J | 1.1 | | 2.6 | = | 4.0 | _ | 3.3 | _ J | <u>I.1</u> | <u>บ</u> บ | 12.42 |
| <u>i</u> | U | 1 | | 2.0 | U | 43 | | <u></u> 1 | U | 1 | | 75.40 |
| 1.1 | U | 1.1 | υ | 1.1 | U | 1.1 | <u>-</u> | 1.1 | U | 1.1 | U | 5.30 |
| - 11 | U | 1.1 | | 1.1 | U | 1.1 | U | 1.1 | U | 1.1 | U U | ND |
| 1 | U | 1 | U | 0.93 | J | 9.7 | = | 1.3 | = | 1 | U | ND |
| | | Event (2007) | 10 | 1 0.95 | J | 2./ | | 1.3 | | 1 | 0 | 22.53 |
| 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | ND |
| 1.952 | U | 0.952 | U | 0.952 | U | 0.502 | J | 0.952 | Ŭ | 0.952 | U | 0.50 |
| 1,943 | Ŭ | 0.943 | U | 0.421 | J | 3.11 | J. | 0.912 | J | 0.932 | U | 6.13 |
| 1,952 | U | 0.952 | Ū | 0.952 | U | 6.03 | = | 0.912 | U | 0.943 | U | 6.85 |
| 1.935 | Ŭ | 0.935 | U | 0.935 | U | 0.935 | υ | 0.935 | U | 0.932 | <u>U</u> | 0.85 ND |
| 1,952 | υ | 0.952 | U | 0.952 | U | 0.42 | J | 0.952 | U | 0.953 | U | 0.72 |
| .901 | Ŭ | 0.901 | U | 0.359 | J | 6.53 | | 0.37 | J | 0.932 | U: | 10.56 |
| 1.962 | Ū | 0.962 | Ū | 0.962 | Ŭ | 1.47 | = | 0.248 | J | 0.962 | U | 4.05 |
| 0.99 | Ū | 0.99 | Ŭ | 0.99 | U | 0.99 | U | 0.240 | U | 0.99 | U | |
| .673 | J | 0.935 | U | 1.61 | = | 30.8 | = | 1.96 | = | 0.935 | U | 40.53 |
| 1 | U | 1 | Ū | 1 | U | 6.58 | | 1 | U | 1 | Ŭ | 7.04 |
| - 1 | U | - 1 | U | 1 | Ū | 1 | U | 1 | Ŭ | 1 | Ŭ | ND |
| 935 | U | 0.935 | U | 0:935 | Ū | 0.935 | U | 0.935 | Ŭ | 0.935 | Ŭ | ND |
| .935 | U | 0.935 | U | 0.491 | J | 4.83 | = | 0.638 | J | 0.935 | U | 12.86 |
| wing | Groi | indwater San | nplir | 1g | | | | | | | - I | |
| .971 | U | 0.971 | U | 0.971 | U | 2.67 | = | 0.971 | U | ŇA | | 5.94 |
| 1 | U | 1 | Ŭ | 0.284 | J | 1.93 | = | 0.492 | J | NA | | 6.02 |
| .908 | J | 0.952 | U | 1.05 | = | 0.782 | J | 0.952 | U | NA | | 3.20 |
| .971 | U | 0.971 | U | 0.971 | U | 0.971 | U | 0.971 | | NA | | ND |
| .976 | J | 0.212 | J | 1.45 | = | 31.9 | | 1.91 | = | NA | | 68.25 |
| 1 | U | Ī | Ū, | 0.315 | J | 8.6 | | 0.506 | J | NA | | 12.41 |
| 1.01 | U | 1.01 | U | 1.14 | = | 20.5 | | 0.775 | J | NA | | 23.40 |
| .931 | υ | 0.931 | U | 0.73 | J | 0.931 | Ú | 1.21 | = | NA | - | 2.69 |
| 1.01 | U | 1.01 | U | 0.644 | J | 1.01 | U | 0.526 | J | NA | | 3.94 |
| | g Gr | oundwater S | | ling | | | | | | | | |
| 5.55 | = | 0.98 | U | 0.693 | J | 5.1 | = | 0.601 | J | NA | Ţ | 14.71 |
| 0.99 | = | 0.98 | U | 1.8 | = | 12.4 | = | 1.99 | = | NA | | 30.48 |
| 1.93 | = | 0.393 | J | 3.06 | = | 6.41 | = | 1.04 | ÷= | ŇA | | 15.55 |
| 2.56 | = | 0.971 | U | 3.23 | = | 38.4 | = | 2.6 | = | NÁ | | 55.13 |
| .881 | J | 0.98 | U | 1.56 | H | 17.8 | = | 1.77 | = | NA | | 22.91 |
| 2.1 | | 0.413 | J | 3.61 | = | 86.2 | = | 3.89 | = | NA | | 157.11 |
| 952 | U | 0.952 | U | 0.952 | U | 1.46 | = | 0.952 | U | NA | | 2.64 |
| | | | | | | | | | | | | |

Table 5b. Groundwater Anal

| Well | Screened Interval (ft BGS) | Sample ID | Date | Sample Type | 2-Methylnaphthaler (µg/L) | 16 | Ace |
|-------|----------------------------------|-----------------|--------------|----------------|------------------------------|--------------|--------------|
| SB-33 | 10.0 to 14.0 | 7J433 11 | 01/29/08 | Grab | 3.1 | = | |
| SB-34 | 11.0 to 15.0 | 7J43411 | 01/30/08 | Grab | 1.39 | = | |
| SB-35 | 11.0 to 15.0 | 7J43511 | 01/30/08 | Grab | 1 | U | |
| | | | | | CY 2008 | | <u>1 CAI</u> |
| MW1 | 9.3 to 19.3 | 7J4175 | 04/29/08 | Grab | 0.98 | U | |
| MW3 | 10.4 to 20.4 | 7J4375 | 04/30/08 | Grab | 0.971 | Ŭ | |
| MW4 | 5.9 to 15.9 | 7J4475 | 5/1/2008 | Grab | 0.735 | J | |
| MW5 | 8.8 to 18.8 | 7J4575 | 04/29/08 | Grab | 0.971 | U | |
| MW6 | 8.7 to 18.7 | 7J4675 | 04/29/08 | Grab | 0.962 | U | |
| MW7 | 10.0 to 20.0 | 7J4775 | 04/30/08 | Grab | 0.513 | J | |
| MW9 | 10.3 to 20.3 | 7J4975 | 04/29/08 | Grab | 3.74 | = | |
| MW10 | 11.0 to 21.0 | 7J4A75 | 05/01/08 | Grab | 2.51 | = | |
| MW13 | 4.1 to 14.1 | 7J4D75 | 04/30/08 | Grab | 0.98 | U | |
| MW14 | 2.9 to 12.9 | 7J4E75 | 04/30/08 | Grab | 7.8 | = | |
| MW15 | 3.8 to 13.8 | 7J4F75 | 04/30/08 | Grab | 0.98 | U | |
| MW16 | 5.0 to 15.0 | 7J4G75 | 04/30/08 | Grab | 0.971 | U | |
| MW17 | 4.9 to 14.9 | 7J4H75 | 05/01/08 | Grab | 0.952 | U | |
| MW18 | 4.9 to 14.9 | 7J4J75 | 05/01/08 | Grab | 7.18 | j | |
| | | | | | N | <i>larch</i> | 2009 |
| MW1 | 9.3 to 19.3 | 7J4176 | 03/10/09 | Grab | 1.05 | U | |
| MW3 | 10.4 to 20.4 | 7J4376 | 03/11/09 | Grab | 1.05 | U | |
| MW4 | 5.9 to 15.9 | 7J4476 | 3/11/2009 | Grab | 2.12 | = | |
| MW5 | 8.8 to 18.8 | 7J4576 | 03/11/09 | Grab | 1.05 | U | |
| MW6 | 8.7 to 18.7 | 7J4676 | 03/10/09 | Grab | 1.05 | U | |
| MW7 | 10.0 to 20.0 | 7J4776 | 03/10/09 | Grab | 1.34 | | <u> </u> |
| MW9 | 10.3 to 20.3 | 7J4976 | 03/12/09 | Grab | 5.66 | | |
| MW10 | 11.0 to 21.0 | 7J4A76 | 03/11/09 | Grab | 1.05 | U | |
| MW13 | 4.1 to 14.1 | 7J4D76 | 03/10/09 | Grab | 1.11 | U | |
| MW14 | 2.9 to 12.9 | 7J4E76 | 03/10/09 | Grab | 2.11 | = | |
| MW15 | 3.8 to 13.8 | 7J4F76 | 03/12/09 | Grab | 1.05 | U | |
| MW16 | 5.0 to 15.0 | 7J4G76 | 03/11/09 | Grab | 0.971 | U | |
| MW17 | 4.9 to 14.9 | 7J4H76 | 03/11/09 | Grab | 1.05 | <u> </u> | |
| MW18 | 4.9 to 14.9 | 7J4J76 | 03/11/09 | Grab | 9.86 | = | |
| In-S | Stream Water Qua | lity Standard | (February 20 | 09) | NRC | | |
| | Alternate C | Concentration | n Limit | | | | |

BGS = Below ground surface. CAP = Corrective Action Plan. ND = Not detected. NRC = No regulatory criteria.

CY = Calendar year. NA = Not analyzed.

PAH = Polycyclic aromatic hydrocarbon.

RCRA = Resource Conservation and Recovery Act.

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Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

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APPENDIX III:

CONCENTRATION VERSUS TIME PLOTS

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Fort Stewart UST CAP-Part B Report UST 100A, Building 1349, Facility ID #9-089080

APPENDIX IV:

ANALYTICAL RESULTS

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Certificate of Analysis

Company : SAIC 151 Lafayette Drive Address : Oak Ridge, Tennessee 37831 Report Date: April 14, 2009 Contact: Ms. Marie Simpson Project: Page l of 3 SWMU 27F/Bldg 1290 Ft. Stewart, GA (06-6199-34-5831-400) SAIC10600 Project: Client Sample ID: 7J4176 226139011 Client ID: SAIC106 Sample ID: Matrix: Water Collect Date: 10-MAR-09 15:30 **Receive Date:** 13-MAR-09 Collector: Client Parameter Qualifier Result DL RL Units DF AnalystDate Time Batch Method Semi-volatile Mass spec Organics Federal 3510/8270 PAH Extend list Liquid "As Received" 1.05 JMB3 03/18/09 1541 851278 1 0.368 ug/L1 2-Chloronaphthalene ND U ND 0.316 1.05 ug/L 1 2-Methylnaphthalene U 1.05 ug/L Acenaphthene U ND 0.326 1 0.211 1.05 ug/L 1 ND An-naphthylene U NĎ 0.211 1.05 ug/L 1 U acene 1.05 ug/L ND 0.211 ł b....zo(a)anthracene U 1.05 ug/L 0.211 Benzo(a)pyrene U ND 1 ug/L 1.05 ND 0.211 I Benzo(b)fluoranthene 11 ug/L Benzo(gin)perylene 0.211 1.05 ND ţ U 0.211 1.05 ug/L Benzo(k)fluoranthene ND ł U 0.211 1.05 ug/L ND Dibenzo(a,h)anthracene U 1 ug/L 0.211 1.05 ND U Pluoranthene 0.211 1.05 ug/L ND Fluorene 11 1.05 ug/L Indeno(1,2,3-cd)pyrene U ND 0.211 1.05 ug/L 0.316 ND Naphthalene U ł 1.05 ND 0.211 ug/L f Phenanthrene U ND 0.316 1.05 ug/L 1 U Pyrenc Volatile Organics Federal 5030B/8260B BTEX in Liquid Federal "As Received" 03/21/09 0027 852950 2 0.300 1 ACJ 1.00 ug/L ND Benzene U 0.250 1.00 ug/L 1 Ethylbenzenc U ND 0.250 1.00 ug/L 1 U ND Tolucne 0.600 1.00 ug/L 1 U ND Xyleries (total) The following Prep Methods were performed **Prep Batch** Date Time Description Analyst Method TXA2 03/17/09 2252 851276 3510C BNA Liq. Prep-8270 Analysis Fed SW846 3510C The following Analytical Methods were performed **Analyst Comments** Description Method SW846 8270C ł SW\$46 8260B $\mathbf{2}$ Acceptable Limits Recovery% Nominal .ogate/Tracer recovery Test Result

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| Company : Address : | SAIC 151 Lafáyette Drive Oak Ridge, Tennessee | 37831 | | | | | á . n | 1) (A 2000 |
|--|---|-----------------------|--------|---|------|------------------------|----------------------|-------------------|
| Contact: | Ms. Mane Simpson | | | | | | Report Date: Ap | rn 14, 2009 |
| Project: | SWMU 27F/Bldg 129 6199-34-5831-400) | 0 FL Stewart, GA (0 | რ- | | | | Pa | nge 2 of 3 |
| n aliter pare (), , , and , , , , , , , , , , , , , , , , , , , | Client Sample ID: Sample ID: | 7J4176 226139011 | | Annahar (1996) 1997 1997 1997 1997 1997 1997 1997 199 | | Project: Client ID: | SAIC10600 SAIC106 | μαρι |
| Pärameter | Qualifier R | esult | DL | R1, | Uŋ | its Di | F AnalystDate | Time Batch Method |
| Surrogate/Tracer recove | ry Test | | | Result | | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | 3510/8270 PAF Received" | Extend list Liquid "/ | ls. | 35.4 (| лgЛ. | 52.6 | 67 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 PAF Received" | Extend list Liquid "/ | 18 | 39.2 (| ug/L | 52.6 | 74 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 PAF Received | Extend list Liquid */ | \s | 44.2 | ugA. | 52.6 | 84 | (43%-123%) |
| 1,2-Dichloroethane-d4 | 5030B/8260B F Received* | STEX in Liquid Feder | al "As | 52.8 | ug/L | 50.0 | 106 | (67%~126%) |
| Bromofluorobenzene | 5030B/8260B E | BTEX in Liquid Feder | al "As | 54.4 | ug/L | 50.0 | 109 | (76%-121%) |

50.0

46.6 ug/L.

93

(77%-128%)

Notes:

Toluene-d8

The Qualifiers in this report are defined as follows :

Received*

Received"

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A. The TIC is a suspected aldol-condensation product

B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.

5030B/8260B BTEX in Liquid Federal "As

- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Organics-Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure

N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%

- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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| 'arameter | Qualifier R | esult | DI. | RL | Units | DF | AnalystDate | Тіше | Batch | Method |
|--|---|------------------------|--|---|----------------|----|----------------------|------------------------|---|--|
| ng separang pananang ang sa ng s | Client Sample ID: Sample ID: | 7J4176 226139011 | S.(m) 49540-182445. doi: 10.10445-1821-1937-1. | างกรุงแกรง (การสารายการสาราชีวิตารีตารสาราช | Proie Clien | | SAIC10600 SAIC106 | materia a construction | o professor de la companya de la com | an suaar i Sait saran (da shakari a) (i sha |
| Contact: Project: | Ms. Marie Simpson SWMU 27F/Bldg 12: 6199-34-5831-400) | 90 Ft. Stewart, GA (0) | 5- | unangijan, ' artisyten''' | | | р | age 3 | of | 3 |
| Company : Address : | 151 Lafayette Drive Oak Ridge, Tennessee | 37831 | | | | Re | port Date: A | oril 14, 20 | 909 | |

Y QC Samples were not spiked with this compound

- RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was 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.

s data report has been prepared and reviewed in accordance with GEL Laboratories LLC

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

Valeria ani

Reviewed by

ł

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

Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Dri | 174 | | | | | | | | | |
|--|--|-----------------|--|-------------------|---|----------------|---------------|---|-----------------------|--------|------------------------------------|
| Address : | Oak Ridge, Tenni | | 31 | | | | Dar | ort Dale: Apri | 114 2004 | 6 | |
| Contact: | Ms. Marie Simps | on | | | | | IX GA | ant trace. Poppi | 1147.200 | , | |
| Project: | SWMU 27F/Bld 6199-34-5831-40 | g 1290 Ft Ø) | | 16- | | | | Päg | e I | of | 3 |
| | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | | 7J4376 226139008 Water 11-MAR-09 1 13-MAR-09 Client | 3:50 | | Prote Clien | it ID: | SAIC10600 SAIC106 | - Alfred A | ***** | ulardiperant ally with headpointed |
| arameter | Qualifier | Result | | DĻ | RL | Units | DF | AnalystDate | Time 1 | Batch | Methot |
| emi-volatile Mass spec | | | | | | | | | | | |
| 510/8270 PAH Extend li | ist Liquid "As Recei | wed" | | | | | | | | | |
| Chloronaphthalene | U | ND | | 0.368 | 1.05 | ug/L | ŧ.) | MB3 03/18/09 | 1439 85 | 1278 | i |
| Methylnaphthalene | U | ND | | 0.316 | 1.05 | ug/L | 1 | | | | |
| cenaphthene | Ų | ND | | 0.326 | 1.05 | ug/L_ | 1 | | | | |
| cenaphthylene | U | ND | | 0.211 | 1.05 | ug/L | 1 | | | | |
| nthracene | U | ND | | 0.241 | 1.05 | ug/1_ | l | | | | |
| enzo(a)anthracene | Ľ | ND | | 0.211 | 1.05 | ug/L | I | | | | |
| enzo(à)pyrene | U | ND | | 0.211 | 1.05 | ug/L | Ļ | | | | |
| enzo(b)fluoranthene | U | ND | | 0.211 | 1.05 | ug/E | 1 | | | | |
| enzo(ghi)perylenc | U | ND | | 0.211 | 1.05 | ug/L | 1 | | | | |
| enzo(k)fluoramheire | U | ND | | 0.211 | 1.05 | ug/L | ł | | | | |
| ibenzo(a,h)anthracene | U | ND | | 0.211 | 1.05 | ug/L | l | | | | |
| uoranihene | U | ND | | 0,211 | 1.05 | ug/L | 1 | | | | |
| uorene | U | ND. | | 0.211 | 1.05 | ug/L | } | | | | |
| deno(1,2,3-cd)pytene | U | ND | | 0.211 | 1.05 | ug/L | 1 | | | | |
| aphthalene | U | NĐ | | 0.316 | 1.05 | ug/L | -1 | | | | |
| nenanthrene | U | ND | | 0.211 | 1.05 | ug/L | 1 | | | | |
| yrene | U | ND | | 0.316 | 1.05 | ug/L | 1 | | | | |
| olatile Organics Feder | ral | | | | | | | | | | |
| 030B/8260B BTEX in L | iquid Federal "As l | veceived" | | | | | | | | | |
| enzene | U | ND | | 0.300 | 1.00 | ug/L | | ACJ 03/20/09 | 2305-85 | 52950 | 2 |
| thylbenzeite | U | ND | | 0.250 | 1.00 | ug/L | 1 | | | | |
| oluene | U | ND | | 0.250 | 1.00 | ug/L | 1 | | | | |
| ylenes (total) | U | ND | | 0.600 | 1.00 | uy/L | 1 | | | | |
| The following Prep Me | ethods were perfo | rmed | | | | | | | | | |
| lethod | Description | | ran and definance 1.8 decision of | | Analyst | Date | Tinie | Prep Batch | 1 | | |
| W846 3510C | 3510C BNA L | ıq. Prep-8 | 270 Analysis Fee | 1 | TXA2 | 03/17/09 | 22.52 | 851276 | | | |
| | | ~ | | | | | | | | | |
| The following Analytic Method | tal Methods were Description | pertorme | а - реклани — торин т | | Å | nalyst Comm | ents | ana ana amin' ana amin' ami | and the second second | | 1.1 X 11.1 X 1 |
| A COMPANY A THE AND A CONTRACT OF A MARKET | SW846 8270C | , Puddela - | Superfraction for the Name Conference on the Conferen | , , whi there are | an an Anna an A | | of hardware - | 1997 - Alf Andrew, 1999 - Alf State | · •••• | ••• | 1 |
| 2 | SW846 8260B | | | | | | | | | | |
| ٠ | WITH TH CHOUSE | | | | | | | | | | |
| urregate/Tracer recov | very Test | | | | Result | Non | únal R | ecovery% | Accepta | ble Li | mits |

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Certificate of Analysis

Report Date: April 14, 2009

Page 2 of 3

| Company : | SAIC |
|-----------|---|
| Address : | 151 Lafayette Drive |
| | Oak Ridge, Tennessee 37831 |
| Contact: | Ms, Marie Simpson |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- |
| | 6199-34-5831-400) |
| | |

| | Client Sample I Sample ID: | ID: 7J4376 22613900 |)8 | | a - Takkanan Mada | Project: Client ID: | SAIC10600 SAIC106 | MS - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - |
|---------------------------|-------------------------------|------------------------|-------------|--------|-------------------|------------------------|----------------------|--|
| Parameter | Qualifier | Result | DL | RL | Uni | ts DI | 7 AnalystDate | Time Batch Method |
| Surrogate/Tracer recover; | y Test | | | Result | | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | 3510/8270 Received" | PAH Extend list Liq | uid "As | 40.0 (| ug/L | 52.6 | 76 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 Received | PAH Extend list Liq | uid "As | 45.1 | ug/L | 52.6 | 86 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 Received" | PAH Extend list Liq | uid "As | 42.4 | ug/L | 52.6 | 81 | (43%-123%) |
| 1,2-Dichloroethane-d4 | 5030B/826 Received" | 0B BTEX in Liquid | Federal "As | 53.8 | ug/L | 50.0 | 108 | (67%-126%) |
| (| 5030B/826 Received" | 0B BTEX in Liquid | Federal "As | 54.7 | ug/L | 50.0 | 109 | (76%-121%) |
| Toluene-d8 | 5030B/826 Received | 0B BTEX in Liquid | Federal "As | 47.1 | ug/L | 50.0 | 94 | (77%-128%) |

Notes:

The Qualifiers in this report are defined as follows :

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure

N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).

Quantifation is based on nearest internal standard response factor

N/A RPD or %Recovery limits do not apply.

- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%
- R Sample results are rejected
 - Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
 - Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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| Parameter | Qualifier Result | DL RL Units DF AnalystDate Time Batch Method |
|--|---|--|
| prove where we wanted a second s | Client Sample ID: 714376 Sample ID: 226139 | |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart 6199-34-5831-400) | Page 3 of 3 |
| Contact: | Oak Ridge, Tennessee 37831 Ms. Marie Simpson | Report Date: April 14, 2009 |
| Compan Address | · | |

Y QC Samples were not spiked with this compound

A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was 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 GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Un Jain

Reviewed by

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Certificate of Analysis

| Company : | SAIC | | | | | | | | | |
|--|-----------------------------|--|--|---|---|----------|--|---|------------------------------------|--|
| Address : | 151 Lafayette D | | | | | | | | | |
| | Oak Ridge, Ten | nessee 378 | 31 | | | D | | | 000 | |
| Contact: | Ms. Marie Simp | son | | | | FCI | eport Date: A | (JIII 14, Z | 007 | |
| Project: | | | . Stewart, GA (06- | | | | E | age l | of | 3 |
| 1103000 | 6199-34-5831-4 | | a che nu el cose fina | | | | | | | |
| 24.29441-1949-1947-1948-1948-1948-1949-1949-1949-1949-1949 | <u></u> | 115. | 714496 | alan (/ _{An} an an an a n an | Proie | | SAIC10600 | | top et an and | |
| | Client Sample Sample ID: | : I D ; | 7J4426 226139005 | | Clier | | SAIC10000 | | | |
| | Matrix: | | Water | | | | · | | | |
| | Collect Date: | | 11-MAR-09 09:00 | | | | | | | |
| | Receive Date: | | 13-MAR-09 | | | | | | | |
| | Collector: | محافظ والعرفي والمروز محرو ومحاوي | Client | ungalage and the second second | the distance of the | | | na ar an ann an an Anna | 1 | an muada a sub-sub-dobata - J- Stat |
| Parameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate | e Timo | Batch | Method |
| Semi-volatile Mass spec | Organics Federa | IL. | | | | | | | | |
| 3510/8270 PAH Extend la | ist Liquid "As Rec | eived" | | | | | | | | |
| 2-Chloronaphthalene | U | ND | 0.368 | 1.05 | ug/L | 1 | JMB3 03/18/ | 09 1337 | 851278 | I |
| 2-Methylnaphthalene | | 1.62 | 0.316 | 1.05 | ug/L | 1 | | | | |
| Acenaphthene | 1 | 0:890 | 0.326 | 1.05 | ug/L | l | | | | |
| Acenaphthylene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| licene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| ے (a)anthracene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Benzo(a)pyrene. | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Benzo(b)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Benzo(ghi)perylene | U | ND | 0.211 | 1.05 | úg/L | i | | | | |
| Benzo(k)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Dihenzo(a,h)anthracene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Fluoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | |
| Fluorene | L | 1.04 | 0.211 | 1.05 | ug/L | 1 | | | | |
| Indeno(1,2,3-cd)pyrene | U | ND | 0.211 | 1.05 1.05 | ug/L | 1 | | | | |
| Naphthalenc | | 10.5 | 0.316 | | ug/L. | 1 | | | | |
| Phenanthrene | | 1,28 | 0.211 | 1.05 | ug/L | 1 | | | | |
| Ругепе | . U | ND | 0.316 | 1,05 | ug/L | 1 | | | | |
| Volatile Organics Feder | | | | | | | | | | |
| 50308/82608 BTEX in L | iquid Federal "As | Received | | | | | | MA ALI | 970050 | 5 |
| Benzene | U | ND | 0.300 | 1.00 | ug/L | 1 | ACJ 03/20/ | 09 2144 | 937230 | 2 |
| Ethylbenzene | | 1.54 | 0.250 | 1.00 | ug/L | 1 | | | | |
| Toluene | U | ND | 0.250 | 1.00 | ug/L | 1 | | | | |
| Xylenes (total) | | 1.34 | 0.600 | 1.00 | ug/L | ī | | | | |
| The following Prep M | ethods were perfe | ormed | | and by the offers common | and the second | | eto en el secondo de la se | 10.000, 1.000, 10.000, 10.000, 10.000 | nanan vaaran tantihii | |
| Method | Description | A characteristic | y a transformation of the second s | Analyst | Date | Tim | e Prep Ba | tch | | |
| SW846 3510C | 3510C BNA | Liq. Prep-8 | 270 Analysis Fed | TXA2 | 03/17/09 | 225 | 2 851276 | an a | Care, Schwarzen Hallief, 770887404 | |
| | | | J | | | | | | | |
| The following Analytic Method | Description | periorme | a and a second second and a second se | anna mar Greadaith () ann ainmeann ar a gcar | Analyst Comm | ents | | | n yang ann '- 444 -95 | to reason the real is A |
| | | nga manang kang pang pang pang pang pang pang pang p | араат жана такжай Маришаны, (к. 1976) — к. с. Фолонуу, Канур (Краника кактанан как | | به المراجع الم المراجع المراجع | awalen n | - ar something was mere vikiling vikario | | namie webs ab 192 | |
| 1 | SW846 82700 | | | | | | | | | |
| 2 | SW846 8260I | 5 | | | | | | | | |
| у́ | verv Test | | | Résult | Nor | inal | Recovery‰ | Accer | stable L | imits |
| ogate/Tracer reco | very 1.624 | ···· | an an an an an ann an an Arden an an an an Arden | BUGDA | 11211 Martin Carlos A. Andre S. San | | 112.0 cases para conservations | | | 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1. |

Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennèssee 37831 | | g | leport Date | April 14, 2009 |
|------------------------|--|-------------------------------------|------------------------|---------------------|--|
| Contact: | Ms. Marie Simpson | | | ceptina coures of a | and the second sec |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- 6199-34-5831-400) | | | | Page 2 of 3 |
| | Client Sample ID: 7J4426 Sample ID: 226139005 | ους ποτομοτεις η το προστοριατικο τ | Project: Client ID: | SAIC1060 SAIC106 | 0 |
| Parameter | Qualifier Result DL | RL Uni | its DF | AnalystDa | te Time Batch Method |
| Surrogate/Fracer recov | ery Test | Result | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | 3510/8270 PAH Extend list Liquid "As Received" | 36.8 ug/1. | 52.6 | 70 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 PAH Extend fist Liquid "As Received" | 42.0 ug/L | 52.6 | 80 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 PAH Extend list Liquid "As. Received" | 39.1 ug/L | 52.6 | 74 | (43%-123%) |
| 1,2-Dichlotoethane-d4 | 5030B/8260B BTEX in Liquid Federal "As Received" | 51.2 ug/l. | 50.0 | 102 | (67%-126%) |
| Bromofluorobenzene | 3030B/8260B BTEX in Liquid Federal "As Received" | 54.1 ug/l. | 50.0 | 108 | (76%-121%) |
| Toluene-d8 | 5030B/8260B BTEX in Liquid Federal "As Received" | 45.7 ug/L | 50.0 | 91 | (77‰ 128%) |

Notes:

The Qualifiers in this report are defined as follows :

- ** Analyte is a surrogate compound
- Result is less than value reported <
- Result is greater than value reported >
- The TIC is a suspected aldol-condensation product А
- For General Chemistry and Organic analysis the target analyte was detected in the associated blank. В
- \mathcal{C} Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- Organics--Concentration of the target analyte exceeds the instrument calibration range E
- F Estimated Value.
- Analytical holding time was exceeded Н
- Value is estimated 1
- Matrix Related Failure M

Organics -- Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). N

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also P <70%

- R Sample results are rejected.
- Analyte was analyzed for, but not detected above the MDL, MDA, or LOD. U
- Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier Х

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| arameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate | Time | Batch | Method |
|---|---|------------------------|--|---|--------------|-------------------------|----------------------|----------------------------------|------------------|---------------------------------|
| , waar oo yoo ayaa ayaa kagawah kasa sa ii sa saaraadagaadaaaaaaaaa | Client Sample II Sample ID: | D: 7J4426 226139005 | understanderstad inner filt og som den som films film at den | inderstylene andersamtigien of die of a star with sec | Proi Clie | ect: nt ID: | SAIC10600 SAIC106 | anti-un autopati constantigation | nanan bikuna ara | erem experimentation affert - 1 |
| Contact: Project: | Ms. Marie Simpso SWMU 27F/Bldg 6199-34-5831-400 | 1290 Ft. Stewart, GA | 06- | · · · @=autodecontre (cov | | 1919 - Lancado y Branch | Pa | gc 3 | of | 3 |
| Address : | 151 Lafayette Driv Oak Ridge, Tennes | ssee 37831 | | | | R | eport Date: Ap | ril 14, 20 | 109 | |
| Company : | SAIC | | | | | | | | | |

Y QC Samples were not spiked with this compound

- A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was 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.

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

au л NON

Reviewed by

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Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Dri | ve | | | | | | | |
|--|--|---|--|-------------------------------|--|--------------------------------|--------------------|---|---------------------|
| 2. 2. 19 Mar 199 (199 199 199 199 199 199 199 199 19 | Oak Ridge, Tenno | | 31 | | | | | | |
| Comercia da | Ada Addinia Pinanas | rt 46 | | | | Repor | a Date: Apri | 1 14, 2009 | |
| Contuct: | Ms. Marie Simps | | and the second | | | | Daw | ~] | 3 |
| Project; | SWMU 27F/Bld 6199-34-5831-40 | | . Stewart, GA (06- | | | | Pag | c i of | 3 |
| tana ta dalamanta kaompanya kaompanya kaomini aminina tao 1000 amini milanga kao 1000. | ana an mar na an ann an ann ann ann ann an an Ann ann a | ha yan ini, dan inanaf di sila ya sa ka 197 | P na Ng national Pantana | | a cominant of the second of the second of the | na ana ao manana dina manana m | waa ah ah ah | A state with | |
| | Client Sample I Sample ID: Matrix: Collect Date: Receive Date: Collector: | ID: | 7J4476 226139004 Water 11-MAR-09 09:00 13-MAR-09 Client | | Proie Clier | | AIC10600 AIC106 | | |
| `aranicter | Qualifier | Result | DL | RI, | Units | DF A | nalystDate | Time Batch | Method |
| emi-volatile Mass spec | Organics Federal | | nyan an a | | an nganta ada na da na | | | | 1. C |
| SI0/8270 PAH Extend li | st Líquid "As Recei | wed" | | | | | | | |
| -Chloronaphthalene | U | ND | 0.368 | 1.05 | ug/L. | I JM | B3 03/18/09 | 1316-851278 | 1 |
| -Methylnaphthalene | | 2.12 | 0.316 | 1.05 | ug/L | 1 | | | |
| cenaphthene | Ĵ | 1.04 | 0.326 | 1.05 | ug/L | 1 | | | |
| cenaphthylene | Ú | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| nthracene | Ű | ND | 0.211 | 1.05 | ug/l. | 1 | | | |
| lenzo(a)anthracene | Û | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(a)pyrene | Ū | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(b)fluoranthene | Ŭ | ND | 0.211 | 1,05 | ug/L | ł | | | |
| Senzo(ghi)perylene | ŏ | ND | 0.211 | 1.05 | ug/L. | ł | | | |
| Senzo(k)fluoranthene | Ŭ | ND | 0,211 | 1.05 | ug/L _e | 1 | | | |
| Dibenzo(a,fi)anthrucene | U. | ND | 0.211 | 1.05 | ug/L | Ĭ | | | |
| Huoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Huoreoc | v | 1.26 | 0.211 | 1.05 | ug/L | 1 | | | |
| ndeno(1,2,3-cd)pyrene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| saphthalene | U | 13:3 | 0.316 | 1.05 | ug/L | 1 | | | |
| henauthrene | | 1.43 | 0.211 | 1.05 | ag/L | , 1 | | | |
| yrene | U | ND | 0.316 | 1.05 | ag/L | 1 | | | |
| /olatile Organics Feder | | ħ.₹ ₩ ₽ | Ville | 1.12.3 | | * | | | |
| 030B/8260B BTEX in L | | Received" | | | | | | | |
| Senzene | 1 | 0.452 | 0.300 | 1.00 | ug/L | L-A0 | CJ 03/20/09 | 2117 852950 | 2 |
| Sthylbenzene | د | 1.73 | 0.250 | 1.00 | ug/L | I | | | - |
| Folüene | ti | ND | 0.250 | 1.00 | ug/L | 1 | | | |
| Sylenes (tôtal) | ζ3 | 1.54 | 0.600 | 1,00 | ug/L | 1 | | | |
| rnu a datta adar a Daras X.C. | at a lla subara marta. | mad | | | | | | | |
| The following Prep Me Method | Description | HICU | na ay an ang ana ang ang ang ang ang ang ang | Analyst | Date | Time | Prep Batch | | |
| proversion of the second s | | and the second second | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | 99 99.99 available 19 99 availa | . Services services |
| SW846 3510C | JOHA BNAL | ig. rrep-s. | 2 AJ Anatysis Peu | LAAZ | Q3011099 | ñi 6a - 2° 64 | 091270 | | |
| The following Analytic | within the desired of a second | performe | (1) | | Anna tana Anna | ····· | | is a management of the state | |
| Method | Description | | a La menazia de la contrata de la contrata | New and a state states of the | Analyst Comm | ents | 1 | New Ellipson and a second second second | |
| - | SW846 8270C | | | | | | | | |
| 2 | SW846 8260B | | | | | | | | |
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Certificate of Analysis

Company : SAIC Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Ms. Marie Simpson Project: SWMU 27F/Bldg 1290 Ft. Stewart, GA (06-6199-34-5831-400)

SAIC10600 Client Sample ID: 7)4476 Project: Client ID: SAIC106 Sample 1D: 226139004 Parameter Qualifier Result DL. RL Units DF AnalystDate Time Batch Method Recoverv% Acceptable Limits Test Surrogate/Tracer recovery Result Nominal 52.6 (39%-100%) 2-Fluorobiphenyl 3510/8270 PAH Extend list Liquid "As 38.5 ug/L 73 Received" 3510/8270 PAH Extend list Liquid "As 42.1 ug/L 52.6 80 (47%-107%) Nitrobenzene-d5 Received" 3510/8270 PAH Extend list Liquid "As 45.6 ug/L 52.6 87 (43%-123%) p-Terphenyl-d14 Received" 1.2-Dichloroethane-d4 5030B/8260B BTEX in Liquid Federal "As 52.8 ug/L 50.0 106 (67%-126%) Received" 5030B/8260B BTEX in Liquid Federal "As 53.8 ug/L 50.0 108 (76%-121%) aofluorobenzene Received" (77%-128%) 5030B/8260B BTEX in Liquid Federal "As 46.8 ug/L 50.0 04 Tolucne-d8 Received"

Notes:

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- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure

N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).

Quantitation is based on nearest internal standard response factor

N/A RPD or %Recovery limits do not apply.

- ND Analyte concentration is not detected above the detection limit
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P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%

- R Sample results are rejected
- Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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Report Date: April 14, 2009

Page 2 of 3

Certificate of Analysis

| Company : SAIC Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Report Date: April 14, 2009 Contact: Ms. Marie Simpson Project: SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- 6199-34-5831-400) Page 3 of 3 Client Sample ID: 7J4476 226139004 Project: SAIC10600 | Parameter | | Qualifier Re | sult | DL | RL | Unit | s DF | AnalystDate | Time | Batch | Method |
|---|------------------------------------|--|---------------------|---|----------------------------|-------------------------------|-----------------|---|--|------------------|-------|---------|
| Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Ms. Marie Simpson Project: SWMU 27F/Bldg 1290 Ft, Stewart, GA (06- 6199-34-5831-400) | and makes were an owned have we | haan a falay ka fay at Managa adalahana ama f | | | chemical comme i Manor Ind | MARGAMET OF STATISTICS | | | | turna Luciète I. | | |
| Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Contact: Ms. Marie Simpson Project: SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- Page 3 of 3 | na se en a secon des maintalacaims | 1. /au to, 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. | | an ale an | #_1 | na ay tay a ta a sa a sa a sa | 1.2 1 1. | 2 gen anno 1966 anns 1976 - an anns 1989 | ety can be deep to the second or second on the second of the | | | |
| Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 Report Date: April 14, 2009 | | Project: | |) Ft. Stewart, GA (06- | | | | | Pa | ige 3 | of | 3 |
| Address : 151 Lafayette Drive Oak Ridge, Tennessee 37831 | | Contact: | Ms. Marie Simpson | | | | | | akana sanana safi | | · H / | |
| | | • • | 151 Lafayette Drive | 37831 | | | | R | eport Date: Ar | rii 14. 20 | 109 | |

Y QC Samples were not spiked with this compound

A RPD of sample and duplicate evaluated using +/-R1.. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was 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 gualified on the Certificate of Analysis.

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

aui

Reviewed by

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Certificate of Analysis

| Company | | | | | | | | |
|-------------------------------|---|---------------------|---|--|--|---|--|--|
| Address | | | | | | | | |
| | Oak Ridge, Tenne | ssec 37831 | | | | Rep | on Date: April 14, 2009 | |
| Contact: | Ms. Marie Simpso | a | | | | • | • • • • | |
| Project. | SWMU 27F/Bldg 6199-34-5831-400 | | ewart, GA (06- | | | | Page 1 of | 3 |
| | Client Sample II Sample ID: Matrix: Collect Date: Receive Date: Collector: | 22 W 11 13 | 4576 6139007 ater -MAR-09 12:20 -MAR-09 ient | a a deservición de la constante | | | AIC10600 AIC106 | alendergeberen och |
| arameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate Time Bate | h Metho |
| emi-volatile Mass sp | ec Organics Federal | | ang kaominina mpikana ny kaodim-pokana amin'ny kaodim-pokana amin'ny fisiana mpikalikan' amin | | | | | |
| | d list Liquid "As Receiv | red" | | | | | | |
| Chloronaphthalene | Ŭ | ND | 0.368 | 1.05 | ug/L | 1 J) | MB3 03/18/09 1418 85127 | 8 1 |
| -MethyInaphthalene | Ŭ | ND | 0.316 | 1.05 | ug/L | 1 | | |
| cenaphthene | Ū | ND | 0.326 | 1.05 | ug/L | 1 | | |
| cenaphthylene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | |
| icene | Ū | ND | 0.211 | 1.05 | ug/L | 1 | | |
| (a)anthracene | Ŭ | ND | 0.214 | 1.05 | .ug/L | 1 | | |
| enzo(a)pyrene | Ū | ND | 0.211 | 1.05 | ug/L | I | | |
| enzo(b)fluoranthene | Ū | ND | 0.211 | 1.05 | ug/L | i | * | |
| enzo(ghi)perylene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | |
| lenzo(k)fluorauthene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | |
| hbenzo(a,h)anthracen | | ND | 0.211 | 1.05 | ug/L | 1 | | |
| luoranthene | U U | ND | 0.211 | 1.05 | ug/L | i | | |
| luorene | U | ND | 0.211 | 1.05 | ug/L | í | | |
| | | ND | 0.211 | 1.05 | ug/L | | | |
| ndeno(1,2,3-cd)pyren | ະ ບ ບ | ND | 0.316 | 1.05 | ug/L | i | | |
| laphthalene | | ND ND | 0.211 | 1.05 | ug/L | , | | |
| henanthrene | U | ND | 0.316 | 1.05 | ug/L | 1 | | |
| yrene | U | ND | 010 | 1,00 | 08.12 | , | | |
| olatile Organics Fee | | . 644 | | | | | | |
| | n Lìquíd Federal "As Re | | A 864 | | | · · | CT 02/20/00 2228 86286 | 0 0 |
| Senzene | Ŭ | ND | 0.300 | 1.00 | ug/L | | CJ 03/20/09 2238 85295 | 0 2 |
| Ithylbenzene | U | ND | 0.250 | 1.00 | ug/L | 1 | | |
| Toluene | U | ND | 0.250 | 1.00 | ug/Li | 1 | | |
| (ylenes (total) | U | ND | 0.600 | 1:00 | ug/L |] | | |
| The following Prep | Methods were perform | ned | | | 1 | | n - Strand Balance - State | Alv 14600 \$21000.41740- |
| Method | Description | | | Analyst | Date | Time | Prep Batch | |
| SW846 3510C | 3510C BNA Lic | p. Prep-8270 | Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | |
| | | | | | | | | |
| The following Analy Method | tical Methods were p Description | ertoraped | | . 195 2. 195 2 | Analyst Con | nnents | алаан алаан балжаа Андерия (боос — жалаан да байна В. Уускар байна ал байууна түр байна ал б | naan waxaa ka maa ka mada ka |
| | SW846 8270C | | nan 1 , menderske entredae biskelet de | and manufacture an objective to a constraint of the second s | an an ang ang ang ang ang ang ang ang an | аў Ла начана, ат с аў таў наў на с алана ат ст. с | 1.1 - 1.1 - HERRICH AND | e - Jaho e Britel - providencia de la constanción de |
| 1 2 | SW846 8260B | | | | : | | | |
| ¢- | J 11 040 02000 | | | | | | | |
| | | | | | | | covery% Acceptable | . |

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Certificate of Analysis

| | Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennes | | | | | Ĭ | Report Date. A | pril 14, 2009 |
|---------------|--------------------------------------|--|------------------------|-----------|---|------|------------------------|----------------------|---------------------|
| | Contact: | Ms. Marie Simpson | 1 | | | | | | |
| | Project | SWMU 27F/Bldg 6199-34-5831-400 | 1290 Ft. Stewart, GA | (06- | | | | ·I | age 2 of 3 |
| | i, ang migor penggada penghada kitik | Client Sample II Sample ID: |); 7J4576 226139007 | 14 | a tha ann ann ann an ann an ann ann ann ann | | Project: Client ID: | SAIC10600 SAIC106 | |
| Parameter | and serve a state of the server of | Qualifier | Result | D1. | RL | Un | its DF | AnalystDat | e Time Batch Method |
| Surrogate/I | racer recov | ery Test | | | Result | | Nominal | Recovery % | Acceptable Limits |
| 2-Fluorobipl | hényl | 3510/8270 F Received" | AH Extend list Liquid | l "As | 39.9 | ug/L | 52.6 | 76 | (39%-100%) |
| Nitrobenzen | c∙d5 | 3510/8270 F Received" | AH Extend list Liquic | l "As | 44,5 | ug/L | 52.6 | 85 | (47%-107%) |
| p-Terphenyl | -d14 | 3510/8270 F Received" | AH Extend fist Liquic | i "As | 45.4 | ug/L | 52:6 | 86 | (43%-123%) |
| 1,2 Dictiford | oethane-d4 | 5030B/8260 Received" | B BTEX in Liquid Fe | deral "As | 54.1 | ug/L | 50.0 | 108 | (67%-126%) |
| Bromalluore | obenzené | 5030B/8260 Received" | B BTEX in Liquid Fe | deral "As | 55.2 | ug/L | 50.0 | 110 | (76%-121%) |
| Toluene-d8 | | 5030B/8260 Received" | B BTEX in Liquid Fe | deral "As | 47.4 | ug/L | 50.0 | 95 | (77%-128%) |

Notes:

The Qualifiers in this report are defined as follows :

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product

B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.

- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure

N Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also

<70%

- R Sample results are rejected.
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LQD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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Certificate of Analysis

| Company : | SAIC | | | | | | | |
|--|--|--|---|--|-----------------------|---------------|--|--|
| Address : | 151 Lafayette Drive | | ú | | | | | |
| | Oak Ridge, Tennessee 37 | 831 | | | | | | |
| | | | R | eport Date: | April I4 | 4, 200 | 19 | |
| Contact: | Ms. Marie Simpson | | | | | | | |
| Project: | SWMU 271//Bldg 1290 F | t. Stewart, GA (06- | | | Page | 3 | ot | 3 |
| | 6199-34-5831-400) | · • | | | | | | |
| Alexandro - securidas a elistente por constante da la comune a | hada waa ka k | авадуала с ополно извелищата с с селонарована с 16 окт. О на . Минфолдовани с имака селоналост | болы поличители поличители на полически полически как и как поличи на поличители на поличители на поличители на | and a state of the | . Noiself rearing and | | | n faathant oo darmat wat oo shiriing g |
| | Client Sample ID: | 714576 | Project: | SAIC1060 | 0 | | | |
| | Sample ID: | 226139007 | Client ID: | SAIC106 | | | | |
| | and the second sec | and the set of the set | | | si-mine | · minte and a | and the second states of the s | |

Units

DF

AnalystDate

Time Batch Method

Y QC Samples were not spiked with this compound

A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.</p>

DL

RL

h Preparation or preservation holding time was exceeded

Qualifier

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.

s data report has been prepared and reviewed in accordance with GEL Laboratories LLC: standa/d operating-procedures. Please direct any questions to your Project Manager, Valerie Davis.

Result

0

Reviewed by

Parameter

2

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Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Dri | ve | | | | | | | |
|--|--|--------------------|--|--|---|---|--|--|-----------------------------|
| | Oak Ridge, Tenno | essee 378. | 31 | | | Dana | rt Date: April | 14 2006 | |
| Contact: | Ms. Marie Simpso | 5n | | | | Kepo | n Dae: Abû | 1 14, 2009 | |
| Project: | | g 1290 Ft. | Stewart, GA (06- | | | | Fag | 2 I 0Í | 3 |
| | Client Sample I Sample ID: Mätrix: Collect Date: Receive Date: Collector: | D: | 7J4676 226139003 Water 10-MAR-09 11:35 13-MAR-09 Client | чт. постатурни т. т. странци на пределати на преде Пределати на пределати br/>на пределати на преде | Proi | | A1C10600 A1C106 | | - , |
| Parameter | Qualifier | Result | DL | RL | Units | DF A | nalystDate | Time Batch | Method |
| Semi-volatile Mass spec | Organics Federal | | NAN KANANA MP | | 1999, a 1997, a 1998, a 1998, a 1998, a 1999, a 1997, a | Mandalah (K. P. Pittakata) (K. Sana (K. S | and get to the solution | | pression in antimerica in a |
| 3510/8270 PAH Extend li | | | | | | | | | |
| 2-Chloropaphthalene | U | ND | 0.368 | 1.05 | ug/L | I IN | 1B3 03/18/09 | 1255 851278 | i |
| 2-Methylnaphthalene | Ŭ | ND | 0.316 | 1.05 | ug/L. | 1 | | | |
| Acenaphthene | Ũ | ND | 0.326 | 1.05 | ug/L- | 1 | | | |
| Acenaphthylene | Ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Anthracene | U | ND | 0,211 | 1.05 | ug/L | 1 | | | |
| Benzo(a)anthracene | U | ND | 0.211 | 1:05 | ug/L | 1 | | | |
| Benzo(a)pyrcne | U | NĎ | 0.211 | 1.05 | ug/L_ | t | | | |
| Benzo(b)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | l | | | |
| Benzo(ghi)perylene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(k)fluoramhene | U | ND | 0.211 | 1.05 | ug/L | l | | | |
| Dibenzo(a,h)anthracene | U | ND | .0.211 | 1.05 | ug/L | 1 | | | |
| Fluoranthene | U | ND | 0.211 | 1,05 | ug/L | 1 | | | |
| Fluorence | U, | ND | 0.21 F 0.21 I | 1.05 1.05 | ug/L ug/L | 1 | | | |
| Indéno(1,2,3-cd)pyrene | U 1 | ND 10.756 | 0.316 | 1.05 | ug/L | 1 | | | |
| Naphthalene | U | 0.7.0 ND | 0.310 | 1.05 | ug/L | í | | | |
| Phenantligene Pyrene | U | ND | 0.316 | 1.05 | ug/L | 1 | | | |
| Volatile Organics Feder | | nų. | (), | 4 | 45.0 | * | | | |
| | | 1 m m m 2 m m 27** | | | | | | | |
| \$030 <i>B/8260B BTEX in L</i> i | | | 0.300 | 1.00 | ug/L | 1 54 | CF 03/20/09 | 2050 852950 | 2 |
| Benzene | U U | ND ND | 0.300 | 1.00 | uga. uga. | 1 | na na tanàna amin'ny kaodim-paositra dia mandri amin'ny fisiana amin'ny fanisa dia mandri amin'ny fisiana amin' Ny INSEE dia mampika amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fis | | - |
| Ethylbenzene Toluene | U U | ND | 0.250 | 1.00 | ugas ug/L | .1 | | | |
| Xylenes (total) | ŭ | ND ND | 0.600 | 1.00 | ug/L | d. | | | |
| The following Prep Me | thads were perfor | med | | | | | | | |
| Method | Description | | a agus anna an ann an ann an ann an ann an ann ann ann ann an a | Analyst | Date | Time | Prep Batch | kendestersendens i johrteide | |
| SW8463510C | 3510C BNA Li | q. Prep-8. | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | անիսը ֆոլուսեցի՝ Դասոցյան առաջ է սենի հատե | |
| The following Analytic | al Mathedensies | webrene | i | | | | | | |
| Method | Description | | • | | Analyst Comn | nents | na terray de la distancia de l | 2000 0000000 0000000 00000000000000000 | |
| anananan ing kanalari di sa sa katalari sa | SW846 8270C | | a second and a second a | | | | | | |
| 2 | SW846-8260B | | | | | | | | |
| | 5 | | | . | . · · · · · · · · · · · · · · · · · · · | utust Dis- | ····· | Acceptable L | imits |
| Surrogate/Tracer recov | very Test | | s and the second s | Result | NOI | ninal Rec | covery % | an waa paratata da | ···· |

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Certificate of Analysis

| Company : | SAIC | | | | | | | |
|-----------|--|--|--|--------------|---------|-------|-------|---|
| Address : | 151 Lafayette Drive | | | | | | | |
| | Oak Ridge, Tennessee | 37831 | | | | | | |
| | | | \$ | Report Date: | April 1 | 4, 20 | 09 | |
| Contact: | Ms. Marie Simpson | | 2 | | | | | |
| Project: | SWMU 27F/Bldg 1290 | Ft. Stewart, GA (06- | | | Page | 2 | of | 3 |
| - | 6199-34-5831-400) | | | | | | | |
| | n 1999 - Afrika Paulon kang kanananan kananan kanana kanana kanana kanana kanana kanana kanana kanana kanana k | ay menoranya yang yang yang kang kang kang kang kang kang kang k | W. M. L. L. M. Mellow and M. M. Market and M. M. M. Market and M. /li> | n | | No 1 | 1.0.1 | |
| | Climat Comple ID: | 7J4676 | Project: | SAIC106 | 00 | | | |
| | Client Sample ID: Sample ID: | 226139003 | | : SAIC106 | | | | |
| | JUHHHC IL. | 1 | | | | | | |

| Parameter | Qualifier | Result | DL | RL. | Unit | s DF | ' AnalystDate | Time Batch Method |
|---------------------------|------------------------|----------------------------|--|-----------|------|---------|---------------|-------------------|
| Surrogate/Tracer recovery | Test | 4 | | Result | | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | Received" | PAH Extend list Liquid "As | | 37.9 ug/l | L | 52.6 | 72 | (39%-100%) |
| Nitrobenzene-d5 | | PAH Extend list Liquid "As | an a | 43.1 ug/ | Ĺ | 52.6 | 82 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 Received" | PAH Extend list Liquid "As | | 42.0 ug/ | L. | 52.6 | 80 | (43%-123%) |
| 1.2-Dichloroethane-d4 | 5030B/820 Received" | 0B BTEX in Liquid Federal | "As | 53.3 ug/l | L | 50.0 | 107 | (67%-126%) |
| b. anofluorobenzene | 5030B/826 Received" | OB BTEX in Liquid Federal | "As | 54.8 ug/ | L | 50.0 | 110 | (76%-121%) |
| Tolucne-d8 | 5030B/826 Received" | OB BTEX in Liquid Federal | "As | 47.0 ug/ | L | 50.0 | 94 | (77%-128%) |

Notes:

The Qualifiers in this report are defined as follows :

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
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- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Organics-Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure.
- N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).
- Quantitation is based on nearest internal standard response factor
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics-- The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%
- R Sample results are rejected
- Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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| Parameter | a | Qualifier Ri | esult | DÍ. | RI. | Units DF | AnalystDate | Time | Batch | Method |
|-----------------------------|------------------------|--|--|------------------------------|--------|------------------------|---|---|--------------------------|--|
| | | Client Sample ID: Sample ID: | 7J4676 226139003 | | | Project: Client ID: | SAIC10600 SAIC106 | ar, pagente april 2000 ar 100 ar 100 ar | Nagang ti ngan banganart | ang song over statistic statistics and |
| men baran an an an an an an | | | n san nasang menang menang menang ang sang sang sang sang berter b | et montostante e canta e con | anan w | موطيقة ما الموجوع من ا | nghanan a sa s | ····· | 1.10 | 1 A |
| | Project: | SWMU 27F/Bldg 129 6199-34-5831-400) | 0 Ft. Stewart, GA (0 | 6- | | | Ра | ge 3 | of | 3 |
| | Contact: | Ms. Marie Simpson | | | | ł | teport Date: Ap | ni 14, 20 | 09 | |
| | | Oak Ridge, Tennessee | 37831 | | | | | di ta ba | 00 | |
| | Compány : Address : | SAIC 151 Lafayette Drive | | | | | | | | |
| | | 24 . A.24 | | | | | | | | |

Y QC Samples were not spiked with this compound

- A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was 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 GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

leven ami

Reviewed by

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Certificate of Analysis

| Company : | SAIC 151 Lafayette Dr | | | | | | | | |
|---|--|---|---|--|---|------------------------------|--|---|--|
| Address : | Oak Ridge, Tenn | | 51 | | | | | | |
| | C., | | | | | Re | port Date: Apr | il 14, 2009 | |
| Contact: | Ms. Marie Simps | ton | | | | | | | |
| Project: | | | Stewart, GA (06- | | | | Pa | ge 1 of | 3 |
| | 6199-34-5831-40 |)0) | | | ** | | | | |
| ung i Landin anda da ka u | Client Sample Sample ID: Matrix: | ID: | 7J4776 226139010 Water | ner i na dranan i | | | SAIC10600 SAIC106 | nte a destruction de la construction | n yn reardau i ar faland y fal ar falan yw |
| | Collect Date: Receive Date: Collector: | | 10-MAR-09 13:20 13-MAR-09 Client | | | | | | |
| Parameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate | Time Batch | . Metho |
| emi-volatile Mass spec | Organics Federal | | | anderster i sufficienza en en | nan an | | 1997 - Carl Society of Society Street Stre | ang pang bahar ng manang mana kara sa | |
| | | | | | | | | | |
| Chloronaphthalene | U | ND | 0.368 | 1.05 | ug/L | I. | IMB3 03/18/09 | 1520 851278 | 1 |
| -Methylnaphthalene | | 1.34 | 0.316 | 1.05 | ug/L | 1 | | | |
| Acenaphthene | U | ND | 0.326 | 1.05 | ug/L | 1 | | | |
| genaphthylene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| icene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(a)pyrene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(b)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(ghi)perylene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(k)fluoranthene | U | ND | 0.211 | 1.05 | ug/L. | l , | | | |
| bibenzo(a,h)anthracene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| luoranthene | U | ND | 0.211 | 1.05 1.05 | ug/L | 1 | | | |
| luorene | U | ND | 0.211 0.211 | 1.05 | ug/L ug/L | 1 | | | |
| ndeno(1,2,3-cd)pyrene | U | ND 2.50 | 0.316 | 1.05 | ug/L | 1 1 | | | |
| laphthalene | U | 2:50 ND | 0.211 | 1.05 | ug/L | 1 | | | |
| henanthrene | U U | ND | 0.316 | 1.05 | սց/Լ | 1 | | | |
| yrene Johntilo Organica Padar | * | ND | 0.010 | 1.05 | 21,30 | • | | | |
| olatile Organics Feder | | to material ¹⁴ | | | į | | | | |
| 030B/8260B BTEX in L | iquia reaerai 455 i | | 0.300 | 1.00 | ug/L | 1 | ACJ 03/20/09 | 2359 852950 | 2 |
| Senzene | | 14.4 | 0.300 | 1.00 | ug/L ug/L | 1 | erna 0.4 20103 | فالاربر مقانيات المرادي ورسو | ÷ |
| Sthylbeazene Foluene | | 1.67 2.28 | 0.250 | 1.00 | ug/L | 1 | | | |
| Yoluche Xylenes (total) | | 2.20 3.16 | 0.600 | 1.00 | ug/L ug/L | 1 | | | |
| The following Prep Me | thods were perfo | rmed | analysis and the second se | ana kutoka ang katalan da sa | 10 (2010) | - 1 | | s i s de Merculet d'est | - 1653a-1 ⁻ 155369-113-60 |
| Method | Description | | | Analyst | Date | Time | Prep Batc | 1 | a ng pangangangan sa kara ila. |
| SW846 3510C | 3510C BNA L | iq. Prep-8. | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | | |
| The following Analytic | al Methods were | performed | | | | 1 Want datains to bhilter A. | · · · · · · · · · · · · · · · · · · · | page ppermapsing on the second s | a guqudamanang |
| Method | Description | | | AND AND AN ADDRESS OF A DECISION | Analyst Com | ments | o z Anna zama ya Mangan ku ili na ku ili manga ku | nongourned a subject to the state of the | taan he ala' dar daa kabadan da |
| n ar sean an a | SW846 8270C | - 2008-1-2 ⁴ -000-1-27-10-20-00-000-00-00-00-00-00-00-00-00-00-0 | na mang na pang kanang na pang kanan Na pang kanang na pang | | | | | | |
| 2 | SW846 8260B | | | | | | | | |
| | | | | T3 | N 22 | minal R | ecovery % | Acceptable L | imits |
| ogate/Tracer recov | ery Test | neuropationes contrapols o book | North Constant and the constant of the constant | Result | 191 | | 1 | - Sector | 2 manual manufactures |

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| Contact: Project: | IST Lafayette Drive Oak Ridge, Tennessee 3 Ms. Marie Simpson SWMU 27F/Bldg 1290 | | | | Report Date: A | pril 14, 2009 Page 2 of 3 |
|-------------------------|--|--------------------------|-----------------------------|------------------------|----------------------|------------------------------|
| | 6199-34-5831-400) Client Sample 1D: Sample ID: | 7J4776 226139010 | na na sina ang siyana na sa | Project: Client ID: | SAIC10600 SAIC106 | annananna e v |
| Parameter | Qualifier Res | ult DL | RI, | Units DI | * AnalystDate | Time Batch Method |
| Surrogate/Tracer recove | ry Test | | Result | Nominal | Recovery% | Acceptable Limits |
| 2-Elucrobiphenyl | 3510/8270 PAH E Received" | Extend list Liquid "As | 34.8 uj | y/L 52,6 | 66 | (39%-100%) |
| Nitrobenzone-d5 | 3510/8270 PAH H Received" | Extend list Liquid "As | 38.8 uj | g/L 52.6 | 74 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 PAH I Received | Extend list Liquid "As | 41.7 uį | g/L 52.6 | 79 | (43%-123%) |
| 1,2-Dichloroethane-d4 | 5030B/8260B BT Received" | EX in Liquid Federal "As | 52.0 u | g/L 50.0 | 104 | (67%-126%) |
| Bromotluorobenzene | 5030B/S260B BT Received | EX in Liquid Federal "As | 54.5 nj | g/f. 50.0 | 109 | (76%-121%) |
| Tolucne-d8 | 5030B/8260B BT Received" | ÉX in Liquid Federal "As | 46.4 u | y/L 50.0 | 93 | (77年-128%) |

Notes.

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound

Company · SAIC

- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product

B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.

- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E. Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M Matrix Related Failure

N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC).

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%

- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- X Consult Case Narrative. Data Summary package, or Project Manager concerning this qualifier

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| arameter | museus a destriction of the second states of the second states of the second states of the second states of the | Qualifier Resul | i energenere en | DL | RL. | Units | DF | AnalystDate | e Tim | e Bat | ch Method | |
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| | | Client Sample ID: Sample ID: | 7J4776 226139010 | | | Proie Clier | ect: nt ID: | SAIC10600 SAIC106 | | | | |
| un un verseunse tregte tett | Project: | SWMU 27F/Bldg 1290 F 6199-34-5831-400) | t. Stewart, GA (06 | • | Sangers, a | j j r | x 31554034000 x 10-400-40000000 | | ?age | lo (| 3 | |
| | Contact: | Ms. Marie Simpson | | | | | ĸ | cport Date: A | pru 14, 1 | 2009 | | |
| | | Oak Ridge, Tennessee 37 | 831 | | | | | | | | | |
| | Address : | 151 Lafayette Drive | | | | | | | | | | |
| | Company : | SAIC | | | | | | | | | | |

QC Samples were not spiked with this compound Y

A. RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

Preparation or preservation holding time was exceeded h

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.

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

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| Company : Address : | 151 Lafayette D | | | | | | | | |
|--|--|--|--|---------------------------------|----------------|----------------------------|---|--|--|
| | Oak Ridge, Ten | nessee 378 | 31 | | | Repor | t Date: April | 114, 2009 | |
| Contact: | Ms. Marie Simp | son | | | | × | • | | |
| Project | SWMU 27F/BI 6199-34-5831-4 | | Stewart, GA (06- | | | | Page | e 1 of | 3 |
| | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | | 7J4976 226139015 Water 12-MAR-09 09:15 13-MAR-09 Client | | Proie Clien | t ID: SA | NC10600 NC106 | | |
| arameter | Qualifier | Result | DL | RL | Units | DF A | nalystDate | Time Batch | Method |
| emi-volatile Mass spec | Organics Federa | ıl | anna ana daonann connarann ann Allaich fa Gudd - 27 19 19 20 20 20 20 an agus ann an A | anna na Stra Istrastation | e | | | | |
| | | | | | | | | | |
| Chloronaphthalene | U U | ND | 0.368 | 1.05 | ug/L | 1 JM | B3 03/18/09 | 1705 851278 | 1 |
| Methylnaphthalene | 4,5 | 5:66 | 0.316 | 1.05 | ug/L | 1 | | | |
| scenaphthene | U | ND | 0.326 | 1.05 | ug/L | 1 | | | |
| Acchaphthylene | Ŭ | NÐ | 0.211 | 1.05 | ug/L | I | | | |
| Anthracene | Ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Serizo(a)anthracèrie | ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| lenzo(a)pyrene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Senzo(b)fluoranthene | Ū | ND | 0.211 | 1.05 | ug/1_ | 1 | | | |
| Benzo(ghi)perylene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(k)fluoranthene | U | ND | 0.211 | 1.05 | ug/I_ | -1 | | | |
| Dibenzo(a.h)anthracene | Ú | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| luoranthene | U | NĎ | 0.211 | 1.05 | ug/L | 1 | | | |
| luorene | J | 0.709 | 0.211 | 1.05 | ug/L | 1 | | | |
| ndeno(1.2.3-cd)pyrene | ピ | ND | 0.211 | 1.05 | ug/L | ſ | | | |
| Vaphthalene | | 13.4 | 0.316 | 1.05 | ng/L | ľ | | | |
| henanthrene | j | 0.445 | 0.211 | 1.05 | ug/L | 1 | | | |
| угоре | U | ND | 0.316 | 1.05 | ug/L | 1 | | | |
| Volatile Organics Feder | al | | | | | | | | |
| 030B/8260B DTEX in L | iquid Federal "As | Received" | | | | | | | |
| Benzene | | 12.5 | 0.300 | 1.00 | ug/L | I AC | CJ 03/21/09 | 0215 852950 | 2 |
| Ethylbenzene | J | 0.705 | 0.250 | L.00 | ug/i. | 1 | | | |
| Foluene | Ū. | ND | 0.250 | 1.00 | ug/L | 1 | | | |
| Xylenes (total) | J | 0.914 | 0.600 | 1.00 | ug/L | I | | | |
| The following Prep Me | thods were perfe | ormed | | | | | The second data is written to the second second | adar Andrew K. and a Later State and Antonia | e en ser en gant en ser en ser se |
| Method | Description | | akang dapan (Analaman kakara | Analyst | Date | Time | Prep Batch | i | |
| SW846 3510C | 3510C BNA | Liq. Prep-8 | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | and the second | |
| The following Analytic | al Methods were | e performe | d. | | | | | | |
| Method | Description | | ······································ | | Analyst Comm | ents | | anna an | ng, garagens, felte |
| urtan 4483724 27 million oli antoni attendari attendari urtan 1990 - 1990 - 1990 1 | SW846 82700 | na an a | an analas a sa sa sa sa sa sa | enante e como entre entre de de | ne ti trandr | en - en an 200 a an 1000 a | | gallifferender State of St | a a agente targe |
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| Compan Address | | iare | | | | | | |
|---|--|---|---|--|----------------------------|------------------------|----------------------|--|
| Address | Oak Ridge, Tenno | | | | | | n | |
| Contact: | Ms. Marie Simps | on | | | | ſ | Report Dâte: Aj | 5m 14, 2009 |
| Project: | SWMU 27F/Bld 6199-34-5831-40 | g 1290 Ft. Stewart 0) | , GA (06- | | | | P | age 2 of 3 |
| | Client Sample I Sample ID: | ID: 7,14976 226139 | 015 | 10000000000000000000000000000000000000 | nde New mat 1996 au - 1996 | Project: Client ID: | SAIC10600 SAIC106 | |
| Parameter | Qualifier | Result | DL. | RL | Un | its DF | ' AnalystDate | Time Batch Method |
| Surrogate/Tracer ree | covery Test | | n-134 (a vide Mandalannania maanaa maanaa m | Result | | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | 3510/8270 Received" | PAH Extend list L | iquíð "As | 35.7 | ug/L | 52.6 | 68 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 Received" | PAH Extend list L | iquid "As | 40.0 | ug/L | 52.6 | 76 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 Received" | PAH Extend list L | iquid "Ás | 46.4 | ug/L | 52.6 | 88 | (43%-123%) |
| 1,2-Dichloroethane-d | 4 5030B/826 Received" | 60B BTÉX in Liqui | d Federal "As | 51.2 | ug/L | 50.0 | 102 | (67%-126%) |
| .ofluorobenzene | 5030B/820 Received* | 60B BTEX in Liqui | d Federal "As | 54.2 | ug/L | 50.0 | 108 | (76%-121%) |
| Toluene-d8 | 5030B/826 Received" | i0B BTEX in Liqui | d Federal "As | 46.7 | ug/L | 50.0 | 93 | (77%-128%) |
| ** Analyte is a st Result is less t Result is greated A The TIC is a s B For General C C Analyte has be D Results are rep E OrganicsCor F Estimated Valie H Analytical hold J Value is estimated M Matrix Related N OrganicsPre Quantitation is basis N/A RPD or %Red ND Analyte condored NI Consult Case | ding time was excee tted d Failure sumptive evidence b ed on nearest interna covery limits do not centration is not deter Narrative. Data Sum | d ensation product c analysis the targ Z/MS analysis l aliquot of the san get analyte exceed ded assed on mass spe l standard respon apply. cted above the de mary package, of | nple is the instrument etral library sear se factor tection limit Project Manage | t calibration ch to make : er concerning | range i tental | tive identific | ation of the and | dyte (TIC). PLC, difference is also |
| <70% R Sample results Analyte was a | are rejected nalvzed for, but not | detected above th | e MDL, MDA, o | ar LOD. | | | | |
| Consult Case | Narrative, Data Sum | anary package, or | raoject manage | i voncennit | ; uns q | juannei | | |

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| Parameter | na (gyang canadiggan). Angka sayang sa sa | Qualifier Resu | I | DL | RL. | | DF Analyst | Date T | íme Bato | ch Method |
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| | and the second | Client Sample ID: Sample ID: | 7J4976 226139015 | | | Project: Client I | | | n nata da na managa | n waannaa qaana ay waxaa ay waxaa ay ay ay |
| tobe the sol | | Mup the Part Art Management And Annual State (1997) | | | | No. 1941 Australia Hangada | n yaya maya ya Mariaka ku 👔 | , - To construction to Martin | | the second second second |
| | Project | SWMU 27F/Bldg 1290 6199-34-5831-400) | ∛t. Stewart, GA (06 | - | | | | Page | 3 of | 3 |
| | Contact: | Ms. Marie Simpson | | | | | Report Date. | April I | 4, 2009 | |
| | Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennessee 3 | 7831 | | - | | | | | |

Y QC Samples were not spiked with this compound

* RPD of sample and duplicate evaluated using +/ RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

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| rie Simp | nessee 378 son dg 1290 Ft. 00) ID: Result | 31 Stewart, GA (06- 7J4A76 226139006 Water 11-MAR-09 10:30 13-MAR-09 Client DL 0.368 0.316 0.326 | RL 1.05 1.05 | Units ug/L | Diect: ient ID: DF | port Date: A F SAIC10600 SAIC106 AnalystDate | ninge 1 | of | 3 h Metho |
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| | 2.54 | 0.250 | 1.00 | ug/L | 1 | | | | |
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| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennessee 37831 | | | | | | | |
|--|--|--|---|--------------------------------------|---------------------|---------------------|--|--|
| Contact | Ms. Marie Simpson | | | | Report Date: Ar | ord 14, 2009 | | |
| Project: | SWMU 27F/Bldg 1290 Ft. Stews 6199-34-5831-400) | | | 1 - - - | Page 2 of 3 | | | |
| | Client Sample ID: 7J4A Sample ID: 2261 | 76 | an na mu Maria an Inna an Inna Maria 1946 - 1947 - Maria Inna an Inn | Project: Client ID | | | | |
| Parameter | | DI. | | Units I |)F AnalystDate | Time Batch Method | | |
| Surrogate/Tracer recove | | , a por fa portante delsa ante adjette anna a secondari | Result | Nominal | Recovery% | Acceptable Limits | | |
| 2-Fluorobiphenyl | 3510/8270 PAH Extend lis Received | | | 52.0 | 5 67 | (39%-100%) | | |
| Sutrobenzerie-d5 | 3510/8270 PAH Extend lis Received" | Liquid "As | 40.1 ug/ | L 52.0 | ò 76 | (47%-107%) | | |
| o-Terphenyl-d14 | 3510/8270 PAH Extend lis Received" | t Liquid "A's | 41.4 ug/ | L 52.0 | 5 79 | (43%-123%) | | |
| 2-Dichloroethane-d4 | 5030B/8260B BTEX in Lin Received | juid Federal "As | 51.2 ug/ | L 50.(|) 102 | (67%-126%) | | |
| Bromofluorobenzene | 5030B/8260B BTEX in Lie Received" | quid Pederal "As | 54.9 ug/ | L 50.(|) 110 | (76%-121%) | | |
| Foluene-d8 | 5030B/8260B BTEX in LR Received" | und Federal "As | 46.2 ug/ | L ⁵ 50.(| 92 | (77%-128%) | | |
| Analyte is a surrel Result is less than Result is greater t A The TIC is a susp B For General Cher C Analyte has been D Results are report E OrganicsConcer F Estimated Value H Analytical holdin J. Value is estimated Matrix Related F N OrganicsPresur Quantitation is based on N/A RPD or %Recom ND Analyte concent | value reported han value reported heeted aldol-condensation produ- nistry and Organic analysis the to confirmed by GC/MS analysis led from a diluted aliquot of the uration of the target analyte exc g time was exceeded | arget inalyte was de sample eeds the instrument pectral library searc onse factor detection limit , or Project Manager | calibration ran h to make a ter r concerning th | ge natíve identif is qualifier | fication of the and | | | |

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| arameter | 9499-1 | Qualifier R | esult | DL | Rİ, | Units | DF | AnalystDate | Time | Batch | Method |
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| | Project: | SWMU 27F/Bldg 129 6199-34-5831-400) | | Page 3 of 3 | | | | | | | |
| (| Contact: | Ms. Marie Simpson | | | | | R | eport Date: Apr | il 14, 20 | 109 | |
| | Address : | 151 Lafayette Drive Oak Ridge, Tennessee | 37831 | | | | | | | | |
| (| Company : | SAIC | | | | Į. | | | | | |

Y QC Samples were not spiked with this compound-

RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

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| Company : | SAIC | | | | | | | | | | | |
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| Address : | 151 Lafayette Dri | | | | | | | | | | | |
| | Oak Ridge, Tenno | essee 378 | 31 | | | is cristic | | 00 | | | | |
| Contact: | Ms. Marie Simps | бu | | | Report Date: April 14, 2009 | | | | | | | |
| Project: | • | | Stammet CA (86 | | | | Page 1 | of | 3 | | | |
| rroject. | SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- 6199-34-5831-400) | | | | - Pharmachana | | rage r (* 3 | | | | | |
| Marine and an and an and an and an an an an an an an an an an an an an | Client Sample 1 | | 7J4D76 | | Proje | ct: SAIC106 | 300 | See Au | | | | |
| | Sample ID: Matrix: Collect Date: Receive Date: | , . . | 226139002 Water 10-MAR-09 15:45 | | | in ID: SAIC100 | ý l | | | | | |
| | Collector: | | 13-MAR-09 Client | | - UKAP ANAMAR P. J | | | | | | | |
| ?arameter | Qualifier | Result | DL | ŔĿ | Units | DF AnalystI | Date Time | Batch | Method | | | |
| emi-volatile Mass spec | Organics Federal | Annual (1994) 1994 1994 1994 1994 | an na anana wannoon che an onenna i cui don a zi eura an en wann onto tha Arbeit. "A | angene internetional approvem | | | | | | | | |
| 1510/8370 PAH Extend li | 4 | | | | | | | | | | | |
| Chloronaphthalene | U | ND | 0.389 | 1.11 | ug/L | T JMB3 03/ | (18/09 1153 8 | 51278 | 1 | | | |
| 2-Methylpaphthalene | ŭ | ND | 0.333 | 1.11 | üg/L | 1 | | | | | | |
| Accnaphthene | ũ | ND | 0.344 | 1.11 | ug/L | 1 | | | | | | |
| Aconaphthylene | Ũ | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| Anthracene | υ | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| Senzo(a)anthracene | U | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| Senzo(a)pyrene | IJ | ND | 0.222 |].]] | ug/L | 1 | | | | | | |
| Benzo(b)Huoranthene | U | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| Benzo(ghi)perylene | U | ND | 0.222 | 1.11 | ug/L | J | | | | | | |
| Benzo(k)fluoranthene | U | ND | 0.222 | 1.14 | ug/L |) | | | | | | |
| Dibenzo(a,h)anthratene | U | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| luoranthene | 11 | ND | 0.222 | 1.11 | ug/L | l. | | | | | | |
| luorene | υ | ND | 0.222 | 1.11 | ug/L | | | | | | | |
| ndeno(1,2,3-cd)pyrene | υ | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| Saphthalene | U | ND | 0.333 | 1_11 | ug/L | 1 | | | | | | |
| henanthrene | U | ND | 0.222 | 1.11 | ug/L | 1 | | | | | | |
| yrene | U U | ND | 0.333 | 1.11 | ug/L | Į | | | | | | |
| olatile Organics Feder | | | | | , | | | | | | | |
| 5030B/8260B BTEX in Li | iquid Federal "As I | | | | | | | | ~ | | | |
| Benzene | U | ND | 0.300 | 1.00 | ug/L | | /20/09 2023 8 | 52950 | 2 | | | |
| Ethylbenzene | U | ND | 0.250 | 1.00 | ug/L | 1 | | | | | | |
| Tolücne | U | ND. | 0.250 | 1.00 | ug/L | 1 | | | | | | |
| Xylenes (total) | U | ND | 0.600 | 1.00 | ug/L | 1 | | | | | | |
| The following Prep Me | Contraction and a second second second | med | an water and a second second second second second second second second second second second second second second | | name and the second second | Cognetisettischer antissationers er deuts ersach Stationers | an Manager S. 105,200,400,400,400 / August Jan 1997 | t toget me | | | | |
| Method | Description | Martin Martin La . | ende and in Waterman in 12 states | Analyst | Date | Time Prep | Batch | | | | | |
| SW846 3510C | 3510C BNA L | iq. Prep-8 | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 8512 | 276 | | | | | |
| The following Analytic | al Methods were | performe | d | enan e oder | ى ئىرىمىيىتى بىرىمىيى | unite en processo a un successo a commitar a sia mai un di un di del di side | geflend at which determine the | V - nor with | and the second second second | | | |
| Method | Description | | | 1 | Analyst Comm | ents | la la su compression en publicita a su compressione | ul es + - 14 14' - 38 | | | | |
| and provide a sub-theorem and a second secon | SW\$46 8270C | e en conerco | y Lynne yn yn yn yn yn yn yn yn yn yn yn yn yn | | | | | - | | | | |
| 2 | SW846 8260B | | | | 4 | | | | | | | |
| Summer of Canada | Tact | | | Dami). | Non | ninal Recovery® | z Accept | able Li | mits | | | |
| Surrogate/Tracer recov | ery Test | a san shisan | ngarintata an | Result | Non | inal Recovery? | e accen | ане Ц | .au 13 | | | |
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Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennessee 37831 | ļ | |
|------------------------|---|--------|----------------------|
| Contact: | Ms. Marie Simpson | Report | Date: April 14, 2009 |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- 6199-34-5831-400). | ž | Page 2 of 3 |

| | Client Sample Sample ID: | ID: | 7J4D76 226139002 | | | | | ject: ent ID: | SAIC10600 SAIC106 | |
|--|---|---|---|---------------------------------------|---|------------------------|--------|------------------|----------------------|--|
| Parameter | Qualifier | Result | | DL | RL | Un | nits | DI | AnalystDate | Time Batch Method |
| Surrogate/Tracer recover | y Test | | uuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu | | Result | ويورونه والمرور والرور | Nor | ninal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | 3510/827(Received" | | end list Liquid "As | | 35.0 1 | ıg/L | s. | 55.6 | 63 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 Received" | | end list Liquid "As | • | 38.4 1 | ng∕l. | | 55.6 | 69 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 Received* | | end list Liquid "As | | 43.9 (| ng/L. | | 55.6 | 79 | (43%-123%) |
| 1,2-Dichloroethane-d4 | 5030B/82 Received | | in Liquid Federal | "As | 52.3 (| 1g/L. | | 50.0 | 105 | (67‰-126%) |
| bofluorobenzene | 5030B/82 Received | | t in Liquid Federal | *As | 54.0 1 | 18/L | | 50.0 | 108 | (76%-121%) |
| Toluene-d8 | 5030B/82 Received | | k in Liquid Federal | ″As | 46.6 (| ig/L | / | 50.0 | 93 | (77%-128%) |
| ** Analyte is a surrog Result is less than to Result is less than to Result is greater that A The TIC is a suspective of the test of the test of the test of the test of the test of the test of the test of | value reported an value reported an value reporte cted aldol-cond istry and Organ onfirmed by Ge d from a diluted ration of the tar time was exceed ilure prive evidence h a nearest interne- try limits do not ation is not dete ative, Data Sun centrations betw | ensation ic analysi C/MS ana I aliquot of get analy eded based on the al standar t apply, reted above pinary pa | s the target analy lysis of the sample te exceeds the ins nass spectral libra d response factor re the detection li- ckage, or Project | trument iry searc mit Manage | calibration r th to make a r concerning | ange tenta | líve f | dentific | ation of the ana | llyte (TIÇ). LC, difference is also |
| Analyte was analy Consult Case Narr | zed for, but not | detected imary pac | above the MDL, kage, or Project l | MDA, o Managei | r LOD. r concerning | this c | jualif | ier | | |

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| | Address | 151 Lafayette Dri | | | | | | | | | | | |
| | | Oak Ridge, Tenno | ssee 378 | 331 | | | ţ | | | | | | |
| | | | | | | | ł | R | eport Date: | Арні І | 4, 20 | <u>0</u> 9 | |
| | Contact: | Ms. Marie Simps |)n | | | | | | | | | | |
| | Project: | SWMU 27F/Bid | r 1290 Fu | : Stewart, GA (|)6- | | | | | Page | 3 | of | 3 |
| | | 6199-34-5831-40 | | | | | | | | | | | |
| u u uranyy anaatoo butat | and the second second second | Numbershops Numbershops | was write all sole to t | 1000 V | | 1 | , u hau winks (4 ist. | | a anterante e acore | cana 🛩 🗠 st See a | | | * |
| | | Client Sample I | D. | 7J4D76 | | | Proie | et: | SAIC106 | 00 | | | |
| | | Sample ID: | | 226139002 | | | Clice | n ID: | SAIC106 | | ab-e-23 | | |
| Parameter | | Oualifier | Result | t | DL | RL | Units | DF | AnalystD | ate T | lime | Batch | Method |

Y QC Samples were not spiked with this compound

* RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was 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 GEL Laboratories LLC₁ standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

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| Company : | | × . | | | , | | | | |
|--|--|-------------------------------------|--|--|-------------------|-----------------------------|--|--|-------------------|
| Address : | 151 Lafayette Dr Oak Ridge, Tenn | | | | | | | | |
| | Sur Meger Louis | | | | | Repor | t Date: April 1 | 4, 2009 | |
| Contact: | Ms. Marie Simps | on | | | | | | | |
| Project: | SWMU 27F/Bld 6199-34-5831-40 | •/ | lewart, GA (06- | | - 100 AAC + | | Page | 1 of | 3 |
| | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | 2: W 10 | 14E76 26139009 /ater 0-MAR-09 10:30 3-MAR-09 lient | | Proic | | JC10600 JC106 | | narodu zarodnosta |
| Parameter | Qualifier | Result | DL | RĹ | Units | DF A | nalystDate I | 'ime Batch | Method |
| Semi-volatile Mass spec | Organics Federal | - 2019-000 (00-01-000)-000 (00-000) | aga ang pagawan, pawan kanang tiya sana a da kana a kana ang tina. | denn mofe belärridensk | | | | | |
| 3510/8270 PAH Extend It | | | | | | | | | |
| 2-Chloronaphthalene | U | ND 1 | 0.368 | 1.05 | ug/L | I JM | B3 03/18/09 1: | 500 851278 | 1 |
| 2-Methylnaphthalonc | ~* | 2.11 | 0.316 | 1.05 | ug/L | 1 | | | |
| Acenaphthene | | 1.06 | 0.326 | 1.05 | ug/L | 1 | | | |
| Accuaphthylene | U | ND | 0,211 | 1.05 | ng/L ¹ | 1 | | | |
| icene | ū | ND | 0.211 | 1.05 | ug/L | L | | | |
| L J(a)anthracene | Ū | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(a)pyrene | Ŭ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(b)fluoranthene | Ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(ghi)perylenc | ū | ND | 0.211 | 1.05 | ug/L | . 1 | | | |
| Benzo(k)fluoranthene | Ũ | ND | 0.211 | 1.05 | ug/L | t | | | |
| Dibenzo(a,h)anthracene | ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Fluoranthene | Ũ | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Fluorenc | <u> </u> | 1.99 | 0.211 | 1.05 | ug/L | 1 | | | |
| Indeno(1,2,3-cd)pyrene | U | ND | 0.211 | 1.05 | ug/1. | 1 | | | |
| Naphthalene | U | 26.2 | 0.316 | 1.05 | ug/L[| 1 | | | |
| Phenanthrene | | 2.03 | 0.211 | 1.05 | ug/L | 1 | | | |
| Pyrene | υ | ND | 0.316 | 1.05 | ug/L | 1 | | | |
| T . | | 4414 | | | | | | | |
| Volatile Organics Feder | | n 5. <i>18</i> | | | | | | | |
| 5030B/8260B BTEX in L | iquid Federal As i | | 6 B 6 | | | 1. 10 | n <u>navona n</u> | 332 852950 | 2 |
| Benzene | | 44,8 | 0.300 | 1.00 | ug/L | 1 AC | .1 03/20/09 2 | 276 026270 | 2 |
| Ethylbenzene | J | 0.719 | 0.250 | 1.00 | ug/L | 1 | | | |
| Toluene | υ | ND | 0.250 | 1.00 | ug/L. | 1 | | | |
| Xylenes (total) | | 6.29 | 0.600 | 1.00 | og/L | ł | | | |
| The following Prep M | shods were perfo | rmed | | | | Anaparan and a feature of a | na 1. e. programma deservations | er i verstavallind etter | years and the |
| Method | Description | Mindowski | | Analyst | Date | Time | Prep Batch | - 2 (Management of 2 a) | |
| SW846 3510C | 3510C BNA L | ia. Prep-8276 |) Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | ann an ann an Stadaithe 11a | |
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| Method | Description | | ana na sa Ganada na antana ang sa sa sa sa sa sa sa sa sa sa sa sa sa | an an talaan amaa daalahaa ah ah ah ah ah ah ah ah ah ah ah ah | Analyst Comm | ents | eneral to see the state over at the second second second second second second second second second second second | 1941 - 1955 - 1967 - 1984 (M 1987 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 | · |
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| 2 | SW846 8260B | | | | | | | | |
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| ogate/Tracer recov | ery Test | | | Result | Non | iinal Reco | wery% A | cceptaine Li | 111113 |

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| | Company : Address : | SAIC 151 Lafayette Driv Oak Ridge, Tennes | | | | • | Report Date: Aj | nii 14, 2009 |
|---|--|---|--|----------------|---|------------------------|-----------------|--|
| | Contact: Project: | Ms. Marie Simpson SWMU 27F/Bldg 6199-34-5831-400 | 1290 Ft. Stewart, GA (06 | | | Alexan | • | age 2 of 3 |
| nan in annan sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah sarah s | with primer to think | Cliem Sample II Sample ID; | | | алананды. — Рассельна наражуу и неге чина | Project: Client ID: | | samaan maraa in aa saa gaan daga ta dagada misan ay in bagada tata |
| Parameter | | Qualifier | | DŁ | | its D | F AnalystĎate | Time Batch Method |
| Surrogate/Tr | actr recove | ry Test | | | Result | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphe | | and the second second second second second second second second second second second second second second second | AH Extend list Liquid "As | | 35.3 ug/L | 52.6 | .67 | (39%-100%) |
| Nitrobénzene | -d5 | 3510/8270 F Received" | AH Extend list Liquid "As | | 38.5 ug/l. | 52-6 | 73 | .(47%-107%) |
| -Terphenyl-o | 114 | 3510/8270 f Received | AH Extend list Liquid "At | | 41.5 ug/L | 52:6 | 79 | (43%-123%) |
| .2-Dichioroc | thane-d4 | | B BTEX in Liquid Federal | "As | 51.4 ug/L | 50.0 | 103 | (67%-126%) |
| Bromofluoro | ocnzene | | B BTEX in Liquid Federal | "As | 53.9 ag/L | 50.0 | 108 | (76%-121%) |
| foluene-d8 | | | B BTEX in Liquid Federal | "As | 46.5 ug/L | i 50.0 | 93 | (77晚-128%) |
| *** Analyt < Result > Result A The Tl B For Ge C Analyt D Result E Organi | te is a surro is less than is greater the IC is a susp meral Cher is has been s are report | confirmed by GCi ed from a diluted. | isation product analysis the target analysis. | | | | ık. | |
| J Value i M Matrix N Organ Quantitatio N/A RPD ND Anal- NJ Const P Organi <70% R Sampl | s estimated x Related F icsPresun n is based (or %Recov yte concent it Case National icsThe co e results ar | ailure ptive evidence ba on nearest internal very limits do not a ration is not detec rrative, Data Summ ncentrations betwe | sed on mass spectral lib standard response factor | ímit Mánago | er concerning this | qualifier | | |

Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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|--|--|--|--|--|--------------|----------------|----------------------|---------------------------|------------|
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| Address | 151 Lafayette Dri | | | | | | | | |
| | Oak Ridge, Tenne | essee 37831 | | | í | n | anact Dutas Ana | a 14 3000 | |
| Contact: | Ms. Marie Simpso | 313 | | | ŀ | ĸ | eport Date: Apr | A 14, 2009 | |
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| 4 | 6199-34-5831-40 | 5 | | | | | | | |
| | Client Sample I Sample ID: | D: 7J4E76 226139009 | ман от та на налаблитет т | una de la constante de la constante de la constante de la constante de la constante de la constante de la const La constante de la constante de | Proi Clie | ect: 1t ID: | SAIC10600 SAIC106 | nite – et alleksige kunst | |
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| The above sample is Where the analytical requirements of the l | method has been j NELAC standard u been prepared and | performed under NE mless qualified on th reviewed in accorda | e Certificate on the certificate of the certificate | of Analysis. Laboratori | es LLC | | the | | |
| standard operating-p | \ . | brect any questions | to your Projec | t Manager, | valene Dav | 15. | | | |
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| Address : | 151 Lafayette Drive Oak Ridge, Tennes: | | | | | | | | |
| | Alak Kuge, Tennes: | SCC 37031 | | | | Rep | on Date: Apri | 114, 2009 | |
| Contact: | Ms. Marie Simpson | 1 | | | | , | | | |
| Project: | SWMU 27F/Bldg | 1290 Ft. Ste | wart, GA (06- | | | | Pag | e t of | 3 |
| - | 6199-34-5831-400) | | | | atorta | | | | |
| | Client Sample ID Sample ID: Matrix: Collect Date: | 22 W | 4F46 6139017 ater -MAR-09 10:40 | ang nagana , na da Tanatan ang nagana | | | 5AIC10600 5AIC106 | | ****** |
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| arameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate | Time Batcl | 1 Metho |
| emi-volatile Mass spec | Organics Federal | contrat anticonter contration | a an an an an an an an an an an an an an | 1997-1997 - Brits I. Brits and Andrew Construction of Construc | | and a second as a linear second second second second second second second second second second second second s | | | |
| 510/8270 PAH Extend li | | ed" | | | | | | | |
| Chlorouaphthalene | U | ND | 0.350 | 1.00 | ug/L | 1 1 | MB3 03/18/09 | 1746 851278 | 1 |
| Methylnaphthalene | U | ND | 0.300 | 1.00 | ug/L | 1 | | | |
| cenaphthene | ú | ND | 0.310 | 1.00 | ug/L | 1 | | | |
| conophthylene | Ù | ND | 0.200 | 1.00 | ug/L | 1 | | | |
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| cnzo(ghi)perylene | Ũ | ND | 0.200 | 1.00 | ug/L | 1 | | | |
| enzo(k)fluoranthene | Ŭ | ND | 0.200 | 1.00 | ng/L | 1 | | | |
| ibenzo(a,h)authracene | ŭ | ND | 0.200 | 1.00 | ug/L | -1 | | | |
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| luorene | ŭ | ND | 0.200 | 1.00 | ug/L | ł | | | |
| ideno(1,2,3-cd)pyrene | Ũ | ND | 0,200 | 1.00 | ug/L | 1 | | | |
| laphthalene | ũ | ND | 0.300 | 1.00 | ug/L | ł | | | |
| henanthrene | Ŭ | ND | 0.200 | 1.00 | ug/L | 1 | | | |
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| olatile Organics Feder | P = | | | | ~ | | | | |
| 030B/8260B BTEX in Li | | ceived" | | | į | | | | |
| enzene | U | ND | 0.300 | 1.00 | ug/L | 1. | ACJ 03/21/09 | 0309 852950 |) 2 |
| thylbenzene | ũ | ND | 0.250 | £.00 | ug/L | .1 | | | |
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| The following Prep Ma | thods were perforn | ned | | | • | energia de la consider | ana palakanan 10 - 10 (1980) | unternant it Senkart | . starter |
| Method | Description | . ₁ | ann - a' anns a' sum a' | Analyst | Date | Time | Prep Batcl |) | x |
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| The following Analytic | al Mathade mars a | erformed | | | ţ | | | | |
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| Surrogate/Tracer recov | erv Test | | | Result | N | iominal R | ecovery% | - A CONTRACTOR | |

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| Company : | SAIC |
|-----------|--|
| Address : | 151 Lafayette Drive |
| | Oak Ridge, Tennessee 37831 |
| Contact: | Ms. Marie Simpson |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart, GA (06- 6199-34-5831-400) |

Report Date: April 14, 2009

Page

2 of 3

SAIC10600 7J4F46 Project: Client Sample ID: Client ID: SAIC106 226139017 Sample ID: Parameter Qualifier Result DL RL. Units DE AnalystDate Time Batch Method Acceptable Limits Nominal Recovery% Test Result Surrogate/Tracer recovery 50.0 (39%-100%) 37.5 ug/L 75 2-Fluorobiphenyl 3510/8270 PAH Extend list Liquid "As Received" 3510/8270 PAH Extend list Liquid "As 50.0 83 (47%-107%) 41.6 ug/L Nitrobenzene-d5 Received' 3510/8270 PAH Extend list Liquid "As 46.7 ug/L 50.0 93 (43%-123%) p-Terphenyl-d14 Received' (67%-126%) 50.0 103 1.2-Dichloroethane-d4 5030B/8260B BTEX in Liquid Federal "As 51.7 ug/L Received" 50.0 109 (76%-121%) 5030B/8260B BTEX in Liquid Federal "As 54.6 ug/L .iofluorobenzene Received" 50.0 :92 (77%-128%) 5030B/8260B BTEX in Liquid Federal "As 46.2 ug/L Toluene-d8 Received" Notes: The Qualifiers in this report are defined as follows : Analyte is a surrogate compound 青海 Result is less than value reported < Result is greater than value reported > The TIC is a suspected aldol-condensation product A For General Chemistry and Organic analysis the target analyte was detected in the associated blank. B Ĉ Analyte has been confirmed by GC/MS analysis D Results are reported from a diluted aliquot of the sample E Organics--Concentration of the target analyte exceeds the instrument calibration range F Estimated Value Н Analytical holding time was exceeded Value is estimated Т Matrix Related Failure М Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). N Quantitation is based on nearest internal standard response factor N/A RPD or %Recovery limits do not apply. Analyte concentration is not detected above the detection limit ND Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier NJ Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also Ţ2 <70% Sample results are rejected R Analyte was analyzed for, but not detected above the MDL, MDA, or LOD. Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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| nn y rogel david fridan i S | a seno occa (space acenter) | Client Sample ID: Sample ID: | 7J4F46 226139017 | | | | Project: Slient ID: | SAIC10600 SAIC106 | | |
| Parameter | and the second states of the second sec | and reconnection on a backward print, in the connection of | sult | DL. | RĹ | Units | | AnalystDate | Time | Method |

Y QC Samples were not spiked with this compound

A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.</p>

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h Preparation or preservation holding time was 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 GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

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| Company : Address : | SAIC 151 Lafayette Dri Oak Ridge, Tenne | | 31 | | | R | port D | ate: Apri | 114, 20 | 09 | |
|---|--|---|---|--|--|----------------|-----------------------|---|--|---------------------------------------|---------------------------|
| Contact: | Ms. Marie Simps | on | | | - the second sec | | • | • | | | |
| Project: | SWMU 27F/Bld 6199-34-5831-40 | | . Stewart, GA (06- | | | | | Pag | e í | of | 3 |
| | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | (D): | 7J4F76 226139016 Water 12-MAR-09 10:05 13-MAR-09 Client | | Proi | ect: nt ID: | SAIC SAIC | 10600 106 | and a second second second second second second second second second second second second second second second s | | |
| Parameter | Qualifier | Result | DL | RL | Units | DF | Anal | ystDäte | Time | Batch | Method |
| Semi-volatile Mass spec | Organics Federal | | Weinselfering with the second s | ann an Ganara (1999) - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | an an an an an an an an an an an an an a | | | | | | |
| 3510/8270 PAH Extend li | | | | | | | | | | | |
| 2-Chloronaphthalene | υ | NĎ | 0.368 | 1.05 | ug/L | 1 | JMB3 | 03/18/09 | 1726-8 | 51278 | 1 |
| 2-Methylnaphthalene | U | ND | 0.316 | 1.05 | ug/L | 1 | | | | | |
| Acenaphthene | U | ND | 0.326 | 1.05 | ug/L | 1 | | | | | |
| Acenaphthylene | U | ND | 0.211 | 1.05 | ug/L | l | | | | | |
| ₹ ncene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | | |
| (a)anthracene | U | ND | 0.211 | 1.05 | ug/L_ | 1 | | | | | |
| Benzo(a)pyrene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | | |
| Benzo(b)fluoranthene | υ | ND | 0.211 | 1.05 1.05 | ug/L | 1 | | | | | |
| Benzo(ghi)perylene | U | ND | 0.211 0.211 | 1.05 | ug/L | 1 | | | | | |
| Benzo(k)fluoranthene | U | ND | | 1.05 | ug/L. ug/L | 10 1 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 0.211 | 1.05 | | 1 | | | | | |
| Fluoranthene | U | ND | 0.211 0.211 | 1.05 | ug/L ug/L | 1 | | | | | |
| Fluorene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | | | |
| Indeno(1,2,3-cd)pyrene | U | ND- 0.316 | 0.211 | 1.05 | ug/L | 1 | | | | | |
| Naphthalène | L L | 0.310 ND | 0.211 | 1.05 | ug/L | 1 | | | | | |
| Phenanthrene | U | ND | 0.316 | 1.05 | uy/L | | | | | | |
| Pyrene Volotilo Ordonice Feder | | ND | 0.010 | 1.02 | | • | | | | | |
| Volatile Organics Feder | | N | | | | | | | | | |
| 5030B/8260B BTEX in Li | | | 0.300 | 1.00 | ug/L | 1 | ACJ | 03/21/09 | 0242.3 | 152050 | 2 |
| Benzene | U | ND | 0.300 | 1.00 | ug/L | 1 | AC3 | 0,121107 | 0272 (| , , , , , , , , , , , , , , , , , , , | * |
| Ethylbenzene | บ บ | ND ND | 0.250 | 1.00 | ug/L | í | | | | | |
| Toluene Vedenes (total) | U U | ND | 0.600 | 1.00 | ug/L | 1 | | | | | |
| Xylenes (total) | U | 5.47% | 0.000 | 1.00 | | | | | | | |
| The following Prep Me | thods were perfor | med | | * | | | Manager and South and | To all sometimes represent the commentation | nin dan serifi terdi vi di | | |
| Method | Description | Contraction (Contraction) | ang na shi tanan na sang ta sa shirtin sa | Analysi | Date | Tim | e P | rep Batch | | | |
| SW846 3510C | 3510C BNA L | ia. Pren-8 | 270 Analysis Fed | TXA2 | 03/17/09 | 225 | 2 8 | 51276 | 4188/2000 ADAMA ADAMA | 99,, 1., e , 911 - 2 - 2 | |
| 011040 00100 | 55100 Brara | | | | | | | | | | |
| The following Analytic | al Methods were | performe | d | | | | | | | A | ter an anna chuite an amb |
| Method | Description | and a second process | | | Analyst Comm | nents | | | | | |
| The answer and the second second second second second second second second second second second second second s | SW846 8270C | n ya an an an an an an an an an an an an an | a bar ayang menang menangkan sebada ang menangkan kanangkan kanangkan kanangkan kanangkan kanangkan kanangkan k | naardenooden aan amalaka Britsan (j. 1977) maa | nananginanananganyangi sayan anang | | v̗,4%67337**** | n le kultur i strater et skrader | | | |
| n | SW846 8260B | | | | | | | | | | |
| 2. | 3 W 040 0200B | | | | | | | | | | |
| ogate/Tracer recov | ery Test | | | Result | Non | ninal I | Recove | ry% | Accept | able L | imits |
| | · consistence of the second | | ан ан ан ал ан ал ан ан ан ан ан ан ан ан ан ан ан ан ан | | | | | na an ann an Aonaichte an Ann an Aonaichte | | ger wird dat dig (, 111, 119, 119, | |
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| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennessee 3 | 7831 | | | | Report Date: Ap | nit 14, 2009 |
|--|---|--|----------------------------------|---------------------|-----------------------|----------------------|---|
| Contact: | Ms. Marie Simpson | | | | | | |
| Project | SWMU 27F/Bldg 1290 6199-34-5831-400) | | | | | Pa | ge 2 of 3 |
| | Client Sample ID: Sample ID: | 714F76 226139016 | , tas circles , sectored address | | roiect: 'lient ID: | SAIC10600 SAIC106 | natuda Yuu 1951 in 1957 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 in 1958 |
| Parameter | Qualifier Rest | ilt Ď | L Rl, | Units | DF | AnalystDate | Time Batch Method |
| Surrogate/Tracer recov | ery Test | an nagagyyys yw angol chwy y thu ywan y yw y | Result | <u> </u> | lominal | Recovery% | Acceptable Limits |
| 2-Fluorobiplieny] | | xtend list Liquid "As | 40-8 u | уL. | \$2.6 | 78 | (39%-100%) |
| vitrobenzene-d5 | 3510/8270 PAH E Received" | xtend list Liquid "As | 44.9 uj | y/L | 52.6 | 85 | (47%-107%) |
| >-Terphenyl-d14 | 3510/8270 PAH E Received" | stend list Liquid "As | 46.6 u; | j/1. | 52.6 | 89 | (43%-123%) |
| ,2 Dichloroethane-d4 | 5030B/8260B BT Received | EX in Liquid Federal "As | s 51.1 u | уЛ. į | 50.0 | 102 | (67%-126%) |
| Bromolluorobenzene | 5030B/8260B BT Received" | EX in Liquid Federal "As | s 55.7 u, | g/L ' | 50.0 | 110 | (76% 121%) |
| Toluene-d8 | \$030B/8260B BT Received" | EX in Liquid Pederal "As | s 46.4 u | g/L. | 50.0 | 95 | (77%-128%) |
| Notes: The Qualifiers in th ** Analyte is a surr | is report are defined as fo | bllows : | | ar norm | | | |
| < Result is less that > Result is greater? | | a modust | | | | | |
| B For General CheC Analyte has been | mistry and Organic analy confirmed by GC/MS a red from a diluted alique | vsis the target analyte v nalysis | was detected in the | associ | ated blanl | κ. | |
| | entration of the target and | | ment calibration re | inge | | | |
| H Analytical holdin J Value is estimate M Matrix Related 1 | | | | | | | |
| N OrganicsPresu Quantitation is based | mptive evidence based o on nearest internal stand | and response factor | search to make a t | entativ | e identifi | cation of the ana | ilyte (TIĊ). |
| ND Analyte concer NJ Consult Case N P OrganicsThe co | wery limits do not apply itration is not detected al arrative, Data Summary oncentrations between th | nove the detection limit package, or Project Ma | mager concerning | this qu ectors i | alifier s >40% d | ifferent. For HI | LC, difference is also |
| <70% R Sample results a U Analyte was and | re rejected Ilyzed for, but not detect | ed above the MDL. MI | DA, or LOD. | | | | |
| X Consult Case N: | arrative, Data Summary | oackage, or Project Ma | nager concerning | his qu | alifier | | |

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| | Address | 151 Lafayette Driv | | | | | | | | | | |
| | | Oak Ridge, Tenne | ssec 378 | 331 | | | | | | | 0000 | |
| | Contact: | Ms. Marle Simpso | 'n | | | | | i h | eport Date: | April 14, 1 | 2009 | |
| | Project: | SWMU 27F/Bldg 6199-34-5831-400 | | . Stewart, GA (06 | ≁ | | | | | Page 1 | 3 of | 3 |
| nusha Sausan Sano Minator at AtaaM | santana Antonio a seriar aprilio bilantico de s | Client Sample II Sample ID: | D: | 7J4F76 226139016 | 1994 - Alexandro Carlon - Conseguing the service of the Service Territory of the service of the | nenna - el malanen en anter en anter en anter | ny handadaraa (n | Project: Client ID: | SAIC1060 SAIC106 | | nguarg gauge and segment to gauge | destructure of an AMAge |
| Parameter | | Qualifier | Result | ter an angas, a sa a a adaptember an ananga | DL | RL | Uni | ts DF | AnalystDa | te Tim | e Batch | Method |
| | | | | | | | | | | | | |
| ^ RPD c | of sample an | not spiked with t d duplicate evalua servation holding | ated usir | ig +/-RL. Conce | ntrations a | re <5X the | eRL. (| Qualifier No | t Applicable | for Radi | ochemis | try. |
| | | eported on an "as nethod has been p | | | • certificati | on, the an | alysis b | as met all ol | the | | | |

requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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

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| Company : | SAIC | | | | : | | | | |
|--|--|------------------------------------|--|---|----------------|-------------|---|--|--------------------|
| Address : | 151 Lafayette Dri Oak Ridge, Tenne | | | | A NUMBER | | | | |
| | | | | | | Repo | n Date: Apri | il 14, 2009 | |
| Contact | Ms. Marie Simpso |)f) | | | | | | | |
| Project: | SWMU 27F/Bldg | 1290 Ft. S | ewart, GA (06- | | | | Pag | e I of | 3 |
| | 6199-34-5831-40 | 9) | | | | | | | |
| ausstanum it an Lannungenauss i ayyekan | Client Sample I Sample ID: Matrix: | 2: W | 14G76 26139014 Zater | nin tan'n Maar yn 'n 1997 | Proie Clien | | AIC10600 AIC106 | an an an an an an an an an an an an an a | |
| | Collect Date: Receive Date: Collector: | 1 | I-MAR-09 13:50 3-MAR-09 lient | ant closes and memory over the test of test | - | | | and and a series of the | 4 |
| rameter | Qualifier | Result | DL | RL. | Units | DF A | nalystDate | Time Batch | Method |
| mi-volatile Mass spec | Organics Federal | 2000 C | | | | | | | |
| 10/8270 PAH Extend II. | st Liquid "As Recei | ved" | | | - | | | | |
| hloronaphthalene | U | ND | 0.340 | 0.971 | ug/L | i JM | 1B3-03/18/09 | 1644 851278 | 1 |
| Methylnaphtbalene. | U | ND | 0.291 | 0.971 | ug/L | 1 | | | |
| enaphthene | U | ND | 0.301 | 0.971 | ug/L | 1 | | | |
| enaphthylene | U | ND | D.194 | 0.971 | ug/L | 1 | | | |
| thracene | Ų | ND | 0.194 | 0.971 | ug/L | 1 | | | |
| nzo(a)anthracene | U | ND | 0.194 | 0.971 | ug/L | 1 | | | |
| nzo(a)pyrene | U | ND | 0.194 | 0.971 | .ug/L | 1 | | | |
| nzo(b)fluoranthene | U | ND | 0.194 | 0.971 | og/L | 1 | | | |
| nzo(ghi)perylene | L) | ND | 0.194 | 0.971 | ug/L | | | | |
| nzo(k)fluoranthene | U | ND | 0.194 | 0.971 | ug/L | 1 | | | |
| benzo(a,h)anthracene | U | ND | 0.194 | 0.971 | ug/L | 1 | | | |
| ioranthene | U | ND | 0.194 | 0.971 | ng/L-(| 1 | | | |
| iorene | U | ND | 0.194 0.194 | 0.971 0.971 | ug/L | 4 | | | |
| leno(1,2.3-cd)pyrene | U | ND. | 0.291 | 0.971 | ug/L ug/L | 1 | | | |
| phthalene | U | ND ND | 0.194 | 0.971 | ug/L | 1 | | | |
| enanthrene | U | ND | 0.194 | 0.971 | ug/L | 1 | | | |
| rené A dia Osiana Isa Badan | U | ND | 0.271 | 14.75.5 | 4512 | * | | | |
| latile Organics Feder | | La si be | | | ż | | | | |
| 30B/8260B_BTEX in Li | | | A 560 | 1.00 | | F 3.3 | en | 0148 852950 | 2 |
| nzene | 1. | ND | 0.300 | 1.00 | ug/L | 1 A | Ca 03620109 | 0140 072300 | * |
| hylbenzóne | U | ND ŇD | 0.250 | 1.00 | ug/L ug/L | 1 | | | |
| duene denes (total) | U U | ND ND | 0.600 | 1.00 | ug/L | 1 | | | |
| he following Prep Me | thods were perfor | med | | | 50 | | | | |
| lethod | Description | | Construction and a star of startistic | Analyst | Date | Time | Prep Batcl | | a nanazad olimi ta |
| W846 3510C | 3510C BNA LI | q. Prep-827 |) Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | nan a manandar na '' andartanna Ana- | |
| | * * * * a1 * | | | | į | | | | |
| he following Analytic fethod | Description | | anan dipata y ya ang ka dinanangatangan pina di | | Analyst Comm | ents | | | |
| na thankar in an | SW846 8270C | . <u>a produkti (</u> ter produkti | n genere synthes is a superior to Spring to Spring Stational Official Control of | | | - | | | |
| | SW846 8260B | | | | | | | | |
| | ~ | | | w | | inal Rec | Manager II. | Acceptable L | inits |
| arrogate/Tracer recov | ery Test | e an a sa pang tana | | Result | INOE | 111741 INCA | an an an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna a An an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an Anna an An | | |

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| | Company : Address : Contact: | 15) Lafayette Drive Oak Ridge, Tennessee Ms. Marie Simpson | | | | | ł | Report Date: | Aptil 14, 2009 |
|--|---|--|--|--|--|-----------------------------|--|-----------------------------------|---|
| Ne and annual states of the second | Project: | SWMU 27F/Bldg 12 6199-34-5831-400) | 90 Ft. Stewart, GA | (96- | . 1 466.51 | | | малалыкаланттердері і і і, қалады | Page 2 of 3 |
| annonen maanaa | 1445-1110 - LINE 1110-1110 - LINE 1110-1110 | Client Sample ID: Sample ID: | 7J4G76 226139014 | · · · · · · · · · · · · · · · · · · · | er Mallen van Malanda I. Stationen och de stationen van de se | | Project: Client ID: | SAIC1060 SAIC106 | 0 |
| Parame | ler | Qualifier R | esult | DL | RL | Uni | its DF | AnalystDa | te Time Batch Method |
| Surroga | ite/Tracer recove | ery Test | ликолимација, на се с | | Result | | Nominal | Recovery% | Acceptable Limits |
| 2-Fluoro | obiphenyl | 3510/8270 PAI Received" | H Extend list Liquid | "Às | 37.0 | ug/L | 48.5 | 76 | (39%-100%) |
| Nitrober | nzene-d5 | and the second second second second second second second second second second second second second second second | I Extend list Liquid | As | 41.5 | ug/L | 48.5 | 86 | (47%-107%) |
| p-Terph | enyl-d14 | 3510/8270 PÅJ Received* | HExtend list Liquid | "As | 42.3 | ug/L | 48.5 | 87 | (43%-123%) |
| 1,2-Die) | hloroethane-d4 | 5030B/8260B Received" | BTEX in Liquid Fede | rəl *As | 50.8 | ug/L | 50.0 | 102 | (67%-126%) |
| hor. J | luorobenzene | 5030B/8260B 1 Received" | BTEX in Liquid Fede | eral "As | 54,3 | ug/L | 50.0 | 109 | (76%-121%) |
| Toluene | -d8 | 5030B/8260B 1 Received" | BTEX in Liquid Fede | eral "As | 45.5 | ug/L | 50.0 | 91 | (77%-128%) |
| ** A < Ra > Ra A T B Fa D R E O F Es H A D N O Quanti N/A 1 ND A O <70% R Sa A | Qualifiers in this nalyte is a surro csult is less than esult is greater the he TIC is a susp or General Chen nalyte has been esults are report rganicsConcer stimated Value malytical holdin flue is estimated fatrix Related F organicsPresum itation is based of RPD or %Recov Analyte concent consult Case Nai rganicsThe con- ample results are | value reported han value reported ected aldol-condensa nistry and Organic an confirmed by GC/M3 ed from a diluted alic niration of the target a g time was exceeded allure optive evidence based on nearest internal sta ery limits do not app ration is not detected rative, Data Summar neentrations between | tion product alysis the target an 5 analysis juot of the sample inalyte exceeds the holard response fac ly. above the detectio y package, or Proju- the primary and co cted above the MD | instrumen ibrary sea tor n limit ect Manag onfirmatio PL, MDA, | nt calibration i arch to make a ger concerning n columns/det or LOD. | tentati this q ectors | ive identific ualifier is >40% dif | ation of the a | nalyte (TIC). IPLC, difference is also |
| | | | | | | | 1 | | |

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| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennessee 37831 | | | ì | eport Date: April | 14 3003 | |
|--|---|----|---|------------------------|----------------------|--|--|
| Contact: | Ms. Marie Simpson | | | K | when is not a firm | 3 T # # 977 2 | |
| Project: | SWMU 27F/Bldg 1290 Ft. Stewart, G/ 6199-34-5831-400) | | | | Page | 3 of 2 | } |
| and a consideration of the second second second second second second second second second second second second | Client Sample ID: 7J4G76 Sample ID: 226139014 | | and and the subject from the sub-sub-sub-sub-sub-sub-sub-sub-sub-sub- | Proiect: Client ID: | SAIC10600 SAIC106 | 61 - 62 - 50 - 1 - Tanana Mili Manaka at | 1. TRANS 2004 - 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. |
| Parameter | Qualifier Result | DL | RL | Units DF | AnalystDate | | Method |
| | | | | | | | |

Y QC Samples were not spiked with this compound

RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.</p>

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h Preparation or preservation holding time was 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 GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

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| Company : Address : | SAIC 151 Lafayette Driv | rc | | | | | | | |
|-------------------------|---|------------|--|--|--|----------|---------------------------------------|--|---|
| | Oak Ridge, Tenne: | | 31 | | | Repr | ort Date: Apr | il 14, 2009 | |
| Contact: | Ms. Marie Simpso | 1) | | | · · · · · · | | | | |
| Project: | SWMU 27F/Bldg 6199-34-5831-400 | | Stewart, GA (06- | | | | Pag | (c l o | (3 |
| | Client Sample II Sample ID: Matrix: Collect Date: Receive Date: Collector: | D: | 7J4H76 226139013 Water 11-MAR-09 11:40 13-MAR-09 Client | | Proi Clie | | AIC10600 AIC106 | nanonania mananala ser a ar e | na na se se se se |
| Parameter | Qualifier | Result | DL | RL | Units | DF . | AnalystDate | Time Ba | tch Methr |
| Semi-volatile Mass spec | | | | | 19 22 | | | | |
| 3510/8270 PAH Extend I. | | | ····· | | - 1 | , | 100 00000 | | 70 ' |
| 2-Chloronaphthalene | U | ND | 0.368 | 1.05 | ng/L | i Ji | MB3 03/18/09 | 1623 8512 | .78 1 |
| 2-Methylnaphthalene | U | ND | 0.316 | 1.05 | ug/L | 1 | | | |
| Acenaphthene | U | ND | 0.326 | 1.05 | ug/L | l | | | |
| Acenaphthylene | U | ND | 0.211 | 1.05 | ug/L | * | | | |
| ncene | U | ND | 0.211 | 1.05 | ag/L | 1 | | | |
| (a)anthracene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Senzo(a)pyrene | 0 | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| 3enzo(h)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(ghi)perylene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Benzo(k)fluoranthene | U | ND | 0.211 | 1.05 | ug/L | | | | |
| Dibenzo(a,h)anthracene | U | ND | 0.211 | 1.05 | ug/L | l | | | |
| luoranthene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Pluorene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| ndeno(1,2,3-cd)pyrene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| Saphthalene | U | ND | 0.316 | 1.05 | ug/L | 1 | | | |
| Phenanthrene | U | ND | 0.211 | 1.05 | ug/L | 1 | | | |
| yrene | U | ND | 0.316 | 1.05 | ug/L | I | | | |
| Volatile Organics Feder | | | | | | | | | |
| 5030B/8260B BTEX in L | iquid Federal "As Ri | | | | | | | | |
| Benzenc | U | ND | 0.300 | 1.00 | ug/L | I A | CJ 03/21/09 | 0121 8529 | 50 2 |
| Sthylbenzene | U | ND | 0.250 | 1.00 | ug/L | 1 | | | |
| Toluene | U | ND | 0.250 | 1.00 | ug/L | l i | | | |
| Xylenes (total) | U | ND | 0.600 | 1.00 | ug/L | L | | | |
| The following Prep Me | thods were perform | ned | n glaan commension of color to generative other sources for | 2. Section approximation and | ale - Sperige en Trago grupos soure i Songo Alexangun, ann | | 1 Double from the form | and the second second second second second second second second second second second second second second second | creacion ana antinento a condribiti di a |
| Method | Description | | | Analyst | Date | Time | Prep Batcl |) | |
| SW846 3510C | 3510C BNA Lic | J. Prep-8. | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | | |
| The following Analytic | al Methods were n | erforme | 1 | | ļ | | سور ، درور . را بروز . مور ، در معامل | | |
| Method | Description | | | | Analyst Com | nents | | an in the second second | and a second second second second second second second second second second second second second second second |
| y | SW846 8270C | | na na manana ana ana ana ana ana ana ana | naan in or or developmentalisters from | al an internet in the second sec | | . , a capagaango , asaray | ana ang di ng Program ing P Program ing Program ing | |
| 2 | SW846 8260B | | | | | | | | |
| 14 | | | | u | | ninal Re | | Acceptable | • 1 invits |
| ogate/Tracer recov | erv Test | | | Result | പറ | ninat Ke | COVPEN %C | | C ALBORIDE TO THE STATE OF THE |

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Certificate of Analysis

Company : SAIC 151 Lafayette Drive Address : Oak Ridge, Tennessee 37831 Report Date: April 14, 2009 Contact: Ms. Marie Simpson Page 2 Project SWMU 27F/Bldg 1290 Ft. Stewart, 'GA (06-6199-34-5831-400) SAIC10600 Client Sample ID: 7J4H76 Project: Client ID: SAIC106 226139013 Sample ID: Parameter Qualifier AnalystDate Time Batch Method Result RL Units DF DL.

| Surrogate/Tracer recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|-----------|-------------------|-----------|-------------------|
| 2-Fluorobiphenyl | 3510/8270 PAH Extend list Liquid "As Received" | 37.2 ug/L | 52.6 | 71 | (39%-100%) |
| vitrobenzene-d5 | 3510/8270 PAH Extend list Liquid "As Received" | 41.0 ug/L | 52.6 | 78 | (47%-107%) |
| -Terphenyl-d14 | 3510/8270 PAH Extend list Liquid "As Received" | 43.5 og/L | ¹ 52.6 | 83 | (43%-123条) |
| 2-Dichloroethane-04 | 5030B/8260B BTEX in Liquid Federal "As Received" | 52.1 ug/L | 50.0 | 104 | (67%-126%) |
| Bromofjuorobenzene | 5030B/8260B BTEX in Liquid Federal "As Received" | 55.2 ug/L | 50.0 | 110 | (76%-121%) |
| Foluene-d8 | 5030B/8260B BTEX in Liquid Federal "As Received" | 46.6 ug/L | 50.0 | 93 | (77%-128%) |

Notes:

The Qualifiers in this report are defined as follows :

- * * Analyte is a surrogate compound
- Result is less than value reported. <
- Result is greater than value reported >
- The TIC is a suspected aldol-condensation product A

For General Chemistry and Organic analysis the target analyte was detected in the associated blank. В

- Analyte has been confirmed by GC/MS analysis С
- Results are reported from a diluted aliquot of the sample D
- Organics-Concentration of the target analyte exceeds the instrument calibration range E
- F Estimated Value
- Н Analytical holding time was exceeded
- ï Value is estimated
- M Matrix Related Failure

Organics -- Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). N

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- Analyte concentration is not detected above the detection limit ND

Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier NJ

Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also \mathbf{p} <70%

- Sample results are rejected R
- Analyte was analyzed for, but not detected above the MDL, MDA, of LOD. U
- Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier Х

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| Compa Addres | | | | | | P | eport Date: Apr | 9 14 20 | 100 | |
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| Contac Project | SWMU 27F/Bldg | 1290 FL Stewart, GA | , (06- | | | Ň | Paj | | of | 3 |
| 1977 - 21 June - Jane - Jane - 1980 - | 6199-34-5831-400) Client Sample ID Sample ID: | ananana ara-ara-ara-ara-ara-ara-ara-ara-ara-ar | | ••• = = = = = = = = = = = = = = = = = = | Proi Clie | ect: nt ID: | SAIC10600 SAIC106 | na saadad | na veneda deter | 990-1-1-1 |
| Parameter | Qualifier | Result | DL | RL | Units | DF | AnalystDate | Time | Batch | Method |
| RPD of samp h Preparation of The above sampl Where the analyt requirements of t standard operation | were not spiked with the e and duplicate evaluat r preservation holding to e is reported on an "as r ical method has been pe he NELAC standard un has been prepared and re gprocedures. Please di harmon | ed using +/-RL. Co ime was exceeded received" basis, erformed under NEI less qualified on the eviewed in accordar | AP certificate Certificate of Certificate of Certif | tion, the and of Analysis. Laboratori | alysis has m | et all of | | Radioo | hemist | (ry. |
| | | | | | - | | | | | |

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| Company : | SAIC | | | | f | | | | |
|--|--|--|--|---|----------------------------|-------------------------|---|--|--|
| Address : | 151 Lafayette Di | | | | ļ | | | | |
| | Oak Ridge, Tenr | nessee 378 | 31 | | | | | | |
| ~ | | | | | | Reps | pri Date: Apri | 1 14, 2009 | |
| Confact: | Ms. Marie Simp | son | | | | | | | _ |
| Project: | SWMU 27P/Blo 6199-34-5831-4 | | . Stewart, GA (06- | | | | Pag | ë i of | 3 |
| анан имицион и улаар и тал со стати и тал тал тал тал тал тал тал тал тал тал | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | | 7J4J76 226139012 Water 11-MAR-09 09:50 13-MAR-09 Client | | | | AIC10600 AIC106 | | A second de la construcción de la constru De la construcción de la construcc |
| arameter | Qualifier | Result | D | L RL | Units | DP . | AnalystDate | Time Batch | Metho |
| mi-volatile Mass spec | Organics Federa | 1 | and a second second second second second second second second second second second second second second second | in a geographic approximation of the first state of the second state of the second state of the second state of | anaangaan oo ah kanaa sa | compared for a standard | and defining the difficury of the second second | angen en | an 2 de al met Nord-Incord |
| 10/8270 PAH Estend h | | | | | 1 | | | | |
| Chloronaphthalene | U | ND | 0.368 | 1.05 | ug/L ¹ | 1 | MB3 03/18/09 | 1602 851278 | l |
| Methylnaphthalenc | U | 9.86 | 0.316 | | ug/L | 1 | i v verski i vræft († 545,505) | | |
| ÷ , | ¥.3 | 9.60 ND | 0.326 | | ug/L | 1 | | | |
| cemphthene | U | | 0.320 | | ug/L | 1 | | | |
| cenaphthylene | L) | ND | 0.211 | | og/L | 1 | | | |
| ithracène | U | ND | 0.211 | | | 1 | | | |
| enzo(a)anthracene | Û | ND | | | ug/L) | 1 | | | |
| enzo(a)pyrene | U | ND | 0.211 | | ug/L | 1 | | | |
| enzo(b)fluoranthene | U | ND | 0,211 | | ug/L | 1 | | | |
| :nzo(ghi)perylene | U | ND | 0.211 | | ug/L | 1 | | | |
| enzo(k)fluorantbene | U | ND | 0.211 | | ug/L | 1 | | | |
| ibenzo(a,h)anthracene | u | ND | 0.21 | | ug/L | ļ | | | |
| uoranthene | U | ND | 0.21 | | ug/L) | 1 | | | |
| uorene | ļ | 0.78? | 0.21 | | ug/L | 1 | | | |
| deno(1,2,3-cd)pyrene | U | ND | 0.21 | | ug/L | 1 | | | |
| aphthalene | | 6.46 | 0.310 | | ug/L | 1 | | | |
| reganthrenc | 3 | 0.832 | 0.21 | 1 1.05 | ug/L | 1 | | | |
| reno | U | ND | 0,31 | 5 1.05 | ug/L | Ł | | | |
| olatile Organics Feder | ral | | | | , | | | | |
| 30B/8260B BTEX in L | iouid Federal "Às | Received" | | | | | | | |
| CHICAC | U | ND | 0.30 | 0.1 0 | ug/L | 1 A | CI 03/21/09 | 0054 852950 | 2 |
| ihylbenzene | Ŭ | ND | 0.25 | | ug/L. | 1 | | | |
| oluene | Ŭ | ND | 0.25 | | | 1 | | | |
| (ylenes (total) | ū | ND | 0.60 | | | 1 | | | |
| nn chun cui in chui | a than dia any san ara-A- | | | | ۶. | | | | |
| The following Prep Me | | ntued | and the second second second second second second second second second second second second second second second | Anabiet | Date | Time | Prep Bate | | |
| Vlethod | | •••••••••••••••••••••••••••••••••••••• | | | ····· | • | | n maranania an in terretari in terretari | abaran an an a |
| W8463510C | 3510C BNA I | _iq. Prep-S | 270 Analysis Fed | TXA2 | 03/17/09 | 2252 | 851276 | | |
| The following Analytic | cal Methods were | performe | đ | | | | nation faithful to an an an | uranda ar | - provide a service |
| Viethod | Description | | | | Analyst Com | | | | |
| Conference constants of a set share and the set of th | SW846 82700 | مىيەركە مەرىمىيە مىرىمى مەر | e Tanan managa na kanaganan mangka a sebahara | han yana bada daga da Matajit | , som man och som aformand | ngat setuan Arristi | allan an | nanan ing sa sa sa sa sa sa sa sa sa sa sa sa sa | anana shudara |
| 2 | SW846 8260B | | | | | | | | |
| | | | | | | minal Re | | Acceptable Li | · . • • . |
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Certificate of Analysis

| Company : Address : | SAIC 151 Lafayette Drive Oak Ridge, Tennesse | e 37831 | | | | , | Report Date: Ap | nri) 14-2009 |
|---|--|---|---|---|-------------------|------------------------|----------------------|--|
| Contact: Project: | Ms. Marie Simpson SWMU 27F/Bldg 12 6199-34-5831-400) | 90 Ft. Stewart, GA | (06- | | | | | age 2 of 3 |
| anna a chuireann ann 2014 an ann an 1860 ann 1870 | Client Sample ID: Sample ID: | 7J4J76 226139012 | ng mpera . | , or a second second second second second second second second second second second second second second second | | Project: Client ID: | SAIC10600 SAIC106 | v = v, visit due units and provide a set of the set o |
| Parameter | Qualifier 1 | | DL | RL. | Units | DF | AnalystDate | Time Batch Method |
| Surrogate/Tracer recov | ery Test | | | Result | 1 | Nominal | Recovery% | Acceptable Limits |
| 2-Fluorobiphenyl | | H Extend list Liquid | | 41.0 4 | ug/L | 52.6 | 78 | (39%-100%) |
| Nitrobenzene-d5 | 3510/8270 PA Received" | H Extend list Liquid | "As | 46.2 1 | ug/L | 52.6 | 88 | (47%-107%) |
| p-Terphenyl-d14 | 3510/8270 PA Received" | H Extend list Liquid | "As | .43.7 (| ug/L | 52.6 | 83 | (43%-123%) |
| 1.2-Dichloroethanc-d4 | 5030B/8260B Received" | BTEX in Liquid Fee | ieral "As | 50.6 \ | ug/L | 50.0 | 101 | (67%-126%) |
| L | 5030B/8260B Received" | BTEX in Liquid Fee | ieral "As | 53.0 (| ug/L | 50.0 | 106 | (76%-121%) |
| Toluene-d8 | 5030B/8260B Received ^{**} | BTEX in Liquid Fee | leral-"As | 45.7 1 | ug/L | 50.0 | 91 | (77%-128%) |
| ** Analyte is a surr Result is less tha Result is greater A The TIC is a sus B For General Che C Analyte has beer D Results are repoile CorganicsConce F Estimated Value H Analytical holdi J Value is estimate M Matrix Related N OrganicsPresu Quantitation is based N/A RPD or %Record ND Analyte concerd | than value reported pected aldol-condens mistry and Organic a n confirmed by GC/M rted from a diluted ali entration of the target ng time was exceeded d Failure on nearest internal st overy limits do not ap ntration is not detected arrative. Data Summi | ation product nalysis the target a S analysis quot of the sample analyte exceeds th d on mass spectral andard response fa ply. I above the detection ry package, or Pro- | e instrument library sean etor on limit ject Manage | t calibration t ch to make a er concerning | range tentatis | e identific alifier | ation of the and | ilyte (TIC). LC, difference is also |
| <70% R Sample results a | | | | | | | | |

Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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| Parameter | ang dianggagi si anaratanga 1100 Disamatanga | Qualifier | Result | , madedade an an an an | DL | RL. | Units | DF | AnalystDate | | | Method |
|---|--|----------------------------------|--------|------------------------|---------------------------------|---|-------------------------------|---------------------------------|----------------------|-----------|---------------------|----------------------|
| v Maria Hanki v - Sal I Friginga ang Salagkang Makad | · | Client Sample I Sample ID: | D: | 7J4J76 226139012 | nune vansten och mennen dom och | fordettember a job 10 a construction of the first | Proi Clic | nt ID: | SAIC10600 SAIC106 | Vicent | un constante de sou | NoVanisti NV 11 - 11 |
| Water for the same of t | Project: | SWMU 27F/Bldg 6199-34-5831-40 | | |) 6- | anglat, star | 2 2 1 x and 14 Marcines | an di segmenti kan pantata di s | Ра | ge 3 | of | 3 |
| | Contact: | Ms. Marie Simps | 511 | | | | | R | eport Date: Ap | al 14, 20 | 09 | |
| | Address - | Oak Ridge, Tenne | | 31 | | | | | | | | |
| | Company : Address : | SAIC 151 Lafayette Dri | ve | | | | 2 | | | | | |

Y QC Samples were not spiked with this compound

A RPD of sample and duplicate evaluated using +1-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was 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 GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

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Certificate of Analysis

| | Company : Address : | SAIC 151 Lafayette Dr Oak Ridge, Tenn | | 31 | | | ł | Report Date: A | sril 14, 2009 |
|--|--|--|---|--|---------------------|---|--|---|---|
| | Contact: | Ms. Marie Simps | son | | | | | | |
| | Project: | SWMU 27F/Bld 6199-34-5831-40 | | . Stewart, GA (06- | | L | | Þ. | age 1 of 2 |
| | | Client Sample Sample ID: Matrix: Collect Date: Receive Date: Collector: | ID: | TB0610 226139001 Water 10-MAR-09 07:00 13-MAR-09 Client | | | oject: ient ID: | SAIC10600 SAIC106 | |
| Parameter | | Qualifier | Result | DL | RL | Units | DF | AnalystDate | Time Batch Method |
| Volatile Or | ganics Feder | al | | an an an an an an an an an an an an an a | | anteriano neres anterios de seconos an an an an an an an an an an an an an a | | n, etterne etter erannan etterten ander erannen etterteksette etter etter etter etter etter eranden erande ande |
| 5030B/8260 | B BTEX in Li | guid Federal "As F | Received" | | | | | | |
| Benzene | | U | ND | 0.300 | 1.00 | ug/L | 1 | ACJ 03/20/0 | 9 1956 852950 1 |
| Ethylbenzer | ne | U | ND | 0.250 | 1.00 1.00 | ug/L | i | | |
| Toluene Xadenes (to | tal) | U U | ND ND | 0.250 0.600 | 1.00 | ug/L ug/L | 1 | | |
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| Method | ving Analytic | al Methods were J Description | performed | 3 - Mersham Anthrony Anthrony and Anthropy anthropy anthropy anthropy anthropy anthropy anthropy | | nalyst Com | | allan dilakana di kana dalam kana da kana kana kana kana kana | a a la comune de anno ala de como de como de coloridade e de constituídade en el de fonciente en entre |
| Michou | . as al /P and the life of the second linear | SW846 8260B | | grage-system (1997) | ••• •••• •••• | | | · · · · · · · · · · · · · · · · · · · | مار دو دو رو دو |
| I. | | 3 W 840 8200B | | | | \$ | | | |
| Surrogate/ | Tracer recov | ery Test | -10-00-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0- | 1995-1994 (1995-1995-1995-1995-1995-1995-1995-1995 | Result | No | minal | Recovery% | Acceptable Limits |
| 1,2-Dichlor | oethane-d4 | 5030B/82 Received | | in Liquid Federal "As | 54.9 | ug/L | 50.0 | 110 | (67%-126%) |
| Bromofluo | obenzene | 5030B/82 Received | | in Liquid Federal "As | 54.0 | ug/L | 50.0 | 108 | (76%-121%) |
| Toluene-d8 | | 5030B/82 Received" | | in Liquid Federal "As | 46.5 | ug/L | 50:0 | 93 | (77%-128%) |
| Notes: The Qua | alifiers in this | s report are defin | ed as foll | owš t | | | | | |
| < Resu > Resu A The B For C C Anal D Resu E Orga F Estin H Anal J Value | It is less than It is greater ti TIC is a susp General Cher yte has been its are report nitesConcer nated Value ytical holdin is estimated rix Related F | confirmed by G0 ed from a diluted stration of the tar g time was excet | lensation ic analysi C/MS ana d aliquot o get analy eded | s the target analyte was d lysis of the sample te exceeds the instrument | t calibration | range | | · | |

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| Parameter | | Qualifier | Result | DI | RL. | Units | DF | AnalystDate | Time | Batch | Method |
|--|---|-----------------------------------|--|----------------------------------|-----------------------------------|-------|------------------------|--|--------|-------|---|
| unous fundação de la compañsión de la compañsión de la compañsión de la compañsión de la compañsión de la comp | | Client Sample II Sample ID: |): TB0610 226139001 | ոջուս ւսպեփծեսքել հա | utoutes plantan in a subscription | | Project: Tlient ID: | SAIC10600 SAIC106 | 1 | | n Naya Mada a sa sa sa Marji a da sa managa sag |
| · | n a nama mata tanan ataun da papagai nama m | ayan arayan baran a | and a second second second second second second second second second second second second second second second | , g. dadaatayaa ah ahattarayat y | | . 5 | ······ | an an an an an an an an an an an an an a | · | | |
| | Project: | SWMU 27F/Bldg 6199-34-5831-400 | 1290 Ft. Stewart, GA) | (06- | | | | Pa | ge 2 | ot | k |
| | Contact: | Ms. Marie Simpson | 1 | | | | | | | | ~ |
| | | 1 | | | | | R | epon Date: Api | 114,20 | 09 | |
| | | Oak Ridge, Tennies | see 37831 | | | | | | | | |
| | Address : | 151 Lafayette Driv | e | | | : | | | | | |
| | Company : | SAIC | | | | : | | | | | |

Quantitation is based on nearest internal standard response factor

- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%

- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- A RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.</p>
- h Preparation or preservation holding time was 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 GEL Laboratories LLC

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

| | 5 | | | | | | yr ." | | To | 501 | 7950 10F C | \sim | | | ¢ |
|-------------------------------------|---|-----------------|-----------------|-----------------|----------------------------|---|--|--|---|--------------|--|--|----------|--|--|
| " | An Employee Draced Company & Corronation Tonnassee 37830 (865) 4814 | 4600 | સં | 0 | HAIN | OF CI | JSTO | CHAIN OF CUSTODY RECORD | CORI | | | | | COC NO.: 27 F031209 | -031209 |
| PROJECT NAME: Fort Stewart SWMU-27F | SWMU-27F | | | 226 | \sim \vdash | 39% | REQUE | REQUESTED PARAMETERS | I I | ERS | | | <u> </u> | LABORATORY NAME: General Engineering Laboratory | oratory |
| PROJECT NUMBER: 06-6199-04-5831-400 | 4-5831-400 4 | | | | | | | | | | | | | LABORATORY ADDRESS | ŝ |
| PROJECT MANAGER: Jeff Longaker | gaker | | | | | | | | : | | · · · · · · · · · · · · · · · · · · · | | :sjej, | 2040 Savage Road Charleston, SC 29417 | |
| Sampler (Signatype) | (Printed Name) | ame) | | | | | | | | | | | V \teal | PHONE NO: (843) 556-8171 | 171 |
| Wan H. Hen | NA YNE K | H. PAL | RER | | | | | | | | | | 08 10 | ļ | OBSERVATIONS, COMMENTS, |
| Sample ID Date C | Date Collected Time | Time Collected | Matrix | ate IA9 | | | | | | | | | 'ON | SCREENING SPE(| CIAL INSTRUCTIONS |
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| 774676 031 | 10/09/11 | 1 | WATER | 2 2 | | | 2)¥ | | <u> </u> | | 28 72500 7252 | | -t | | |
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| Fb 031 | | | WATER | N | | | | | | | | ्र २ २ | Z | | |
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| 4776 03, | 109 | | WATE 2 | 2 | <u></u> | | | şı çi | | y | ar e Çışar | \$.5 | 4 | | |
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