

Final

**Site Investigation Report
Former Motor Pool Area 1300, 4th Avenue
Parcels 148(7) and 16(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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**Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645**

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Revision 0

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Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK05, IT Corporation (IT) completed a site investigation (SI) at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at Fort McClellan in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7) and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), consisted of a geophysical survey and the sampling and analyses of 12 surface soil samples, 10 subsurface soil samples, 8 groundwater samples, 1 depositional soil sample, 2 surface water samples and 2 sediment samples. In addition, 8 temporary groundwater monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

The geophysical survey results indicate that three anomalies exist at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). According to the criteria established in the site-specific field sampling plan, the anomalies represent underground storage tanks (UST). The anomalies were investigated in July 2000 as part of a UST investigation performed by IT. Based on exploratory trenching and excavation, IT determined that there were not any USTs at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

The potential impact to human receptors is expected to be minimal. With the exception of barium (one groundwater sample), chromium (one surface soil sample), and iron (one subsurface soil sample and two groundwater samples), the metals that exceeded residential human health SSSLs, were within background concentrations or the range of background values, and thus, do not pose an unacceptable risk to future human receptors. The metals results that exceeded SSSLs and the range of background values are isolated “hot spots” and represent a small percentage of the samples collected at the site. When averaged across the site, the concentrations of these metals are within background concentrations and/or below SSSLs. Five SVOCs (PAH compounds), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene, were detected in one surface soil sample at concentrations exceeding residential human health SSSLs and PAH background screening values for soils beneath asphalt. However, the elevated PAHs are believed to be the result of anthropogenic activities (i.e., asphalt pavement) and not related to operations

conducted at the site. The SVOC bis(2-ethylhexyl)phthalate was detected in two groundwater samples at concentrations exceeding the SSSL. However, bis(2-ethylhexyl)phthalate is a common laboratory contaminant and is probably not related to site activities. Although the site is projected for commercial/office use, screening against the more conservative residential human health SSSLs indicates the potential threat to human health to be very low in the residential scenario, as well, should the land use change. In the commercial/office land use scenario, the potential threat to human health is reasonably expected to be negligible.

Several metals were detected in surface and depositional soils at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of nine SVOCs exceeded ESVs in surface and depositional soils. However, the potential impact to ecological receptors is expected to be minimal based on the existing viable habitat and site conditions. The site is located within a well-developed area of the Main Post and is surrounded by buildings and paved roads with limited grass areas. In addition, the northern portion of the parcel is covered with asphalt pavement. Viable ecological habitat is presently limited and is not expected to increase in the future land use scenario. Consequently, the threat to potential ecological receptors is expected to be low.

Based on the results of the SI, past operations at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT Corporation recommends “No Further Action” and unrestricted land reuse at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

1.0 Introduction

The U.S. Army has selected Fort McClellan (FTMC) located in Calhoun County, Alabama, for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. The 1990 Base Closure Act, Public Law 101-510, established the process by which U.S. Department of Defense (DOD) installations would be closed or realigned. The BRAC environmental restoration program requires investigation and cleanup of federal properties prior to transfer to the public domain. The U.S. Army is conducting environmental studies of the impact of suspected contaminants at parcels at FTMC under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted with IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), under Contract Number DACA21-96-D-0018, Task Order CK05.

This SI report presents specific information and results compiled from the SI, including geophysical survey, field sampling and analysis, and monitoring well installation activities conducted at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

1.1 Project Description

The Former Motor Pool Area 1300, 4th Avenue, was identified as an area to be investigated prior to property transfer. The site was classified as a Category 7 site in the environmental baseline study (EBS) (Environmental Science and Engineering, Inc. [ESE], 1998). Category 7 sites are areas that are not evaluated and/or that require further evaluation.

A site-specific field sampling plan (SFSP) attachment and a site-specific safety and health plan (SSHP) attachment were finalized in October 1998. The SFSP and SSHP were prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The SFSP was used in conjunction with the SSHP as attachments to the installation-wide work plan (WP) (IT, 1998a), and the installation-wide sampling and analysis plan (SAP) (IT, 2000a). The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP).

The SI included a geophysical survey and field work to collect 12 surface soil samples, 10 subsurface soil samples, 2 surface water samples, 2 sediment samples, 8 groundwater samples, and 1 depositional soil sample to determine if potential site-specific chemicals are present at the

Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), and to provide data useful for supporting any future corrective measures and closure activities.

1.2 Purpose and Objectives

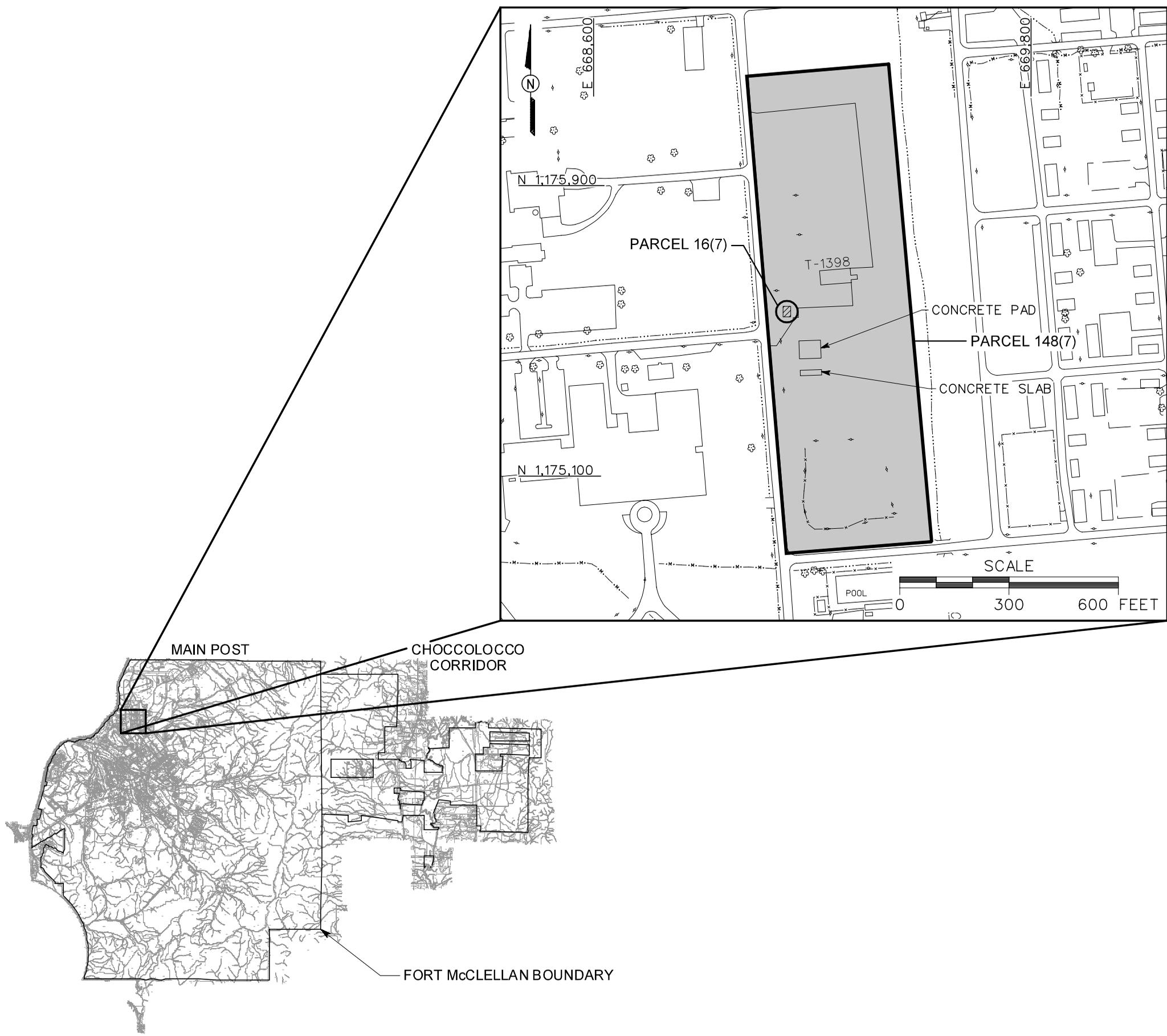
The SI program was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical constituents are present at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at concentrations that would present an unacceptable risk to human health or the environment. The conclusions of the SI in Chapter 6.0 are based on the comparison of the analytical results to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. The SSSLs and ESVs were developed by IT as part of the human health and ecological risk evaluations associated with site investigations being performed under the BRAC environmental restoration program at FTMC. The SSSLs, ESVs, and polynuclear aromatic hydrocarbon (PAH) background screening values are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000b). The PAH background screening values were developed by IT at the direction of the BRAC Cleanup Team to address the occurrence of PAH compounds in surface soils as a result of anthropogenic activities at FTMC. Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (Science Applications International Corporation [SAIC], 1998).

Based on these conclusions, the BRAC Cleanup Team will make a decision to either propose “No Further Action” at this site or to conduct additional work at the site.

1.3 Site Description and History

The Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), is located in the northwest portion of the Main Post of FTMC (Figure 1-1). This area is a rectangular plot bounded by 4th Street on the north, 3rd Avenue on the east, 9th Street on the south, and 4th Avenue on the west (Figure 1-2). This area was historically identified as a Motor Park (FTMC General Layout Map, 1964). Light vehicle maintenance may have been performed at this site; however, the motor pool was primarily used for vehicle storage. A washrack and an oil/water separator (OWS) were reportedly located at this site. However, evidence of the washrack or the OWS was not observed during an IT site visit on April 21, 1998. Building T-1398 is the only structure still standing. A small concrete pad is located approximately at the center of the west boundary. To the southeast of that pad is a larger concrete pad, and a few feet farther south, is

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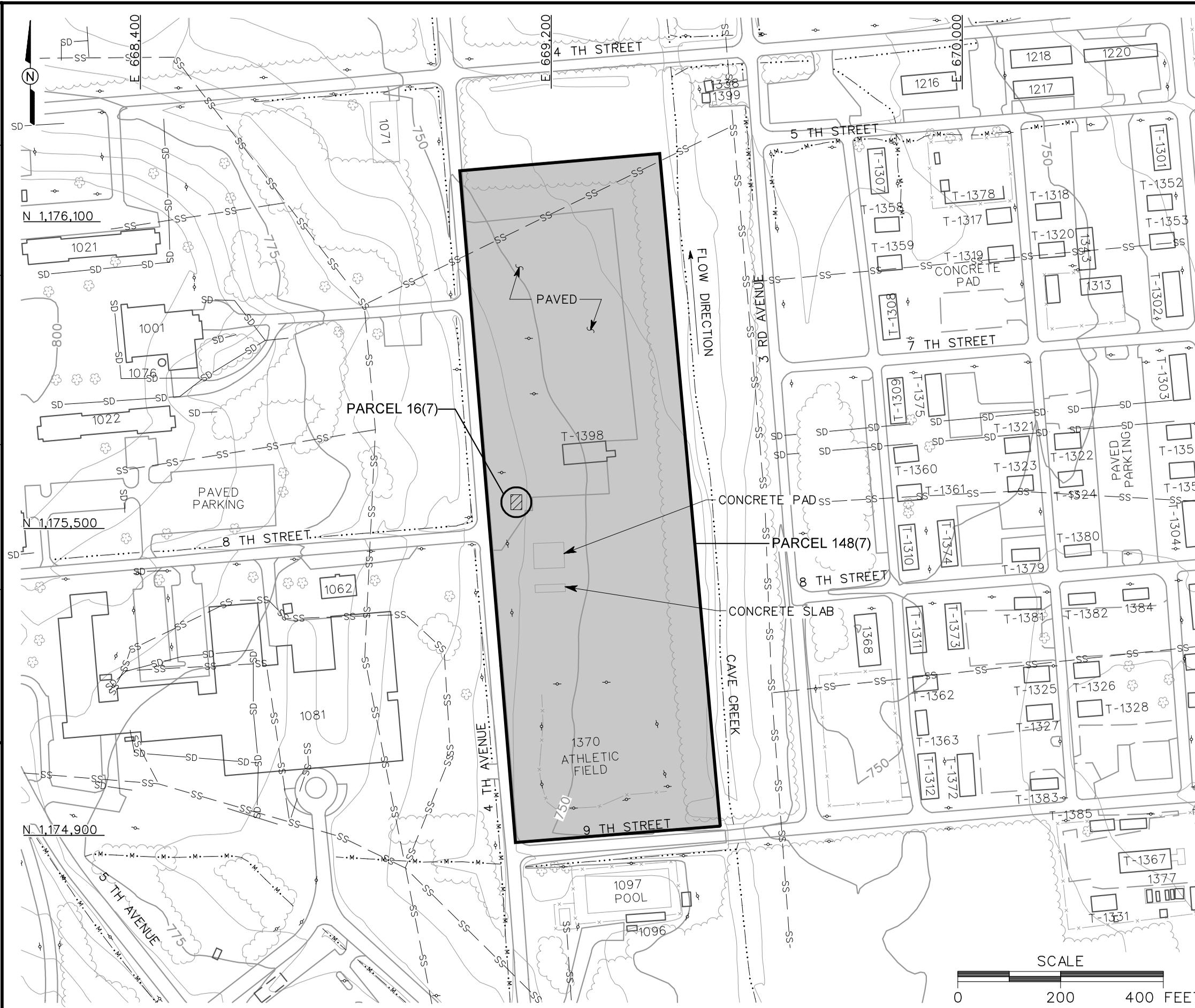
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- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- UTILITY POLE

FIGURE 1-1
SITE LOCATION MAP
 FORMER MOTOR POOL AREA 1300,
 4th AVENUE
 PARCELS 148(7) AND 16(7)

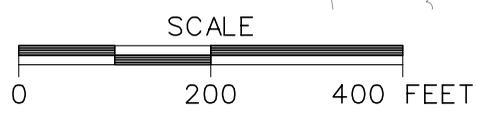
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 - TREES / TREELINE
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - UTILITY POLE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
FORMER MOTOR POOL AREA 1300,
4th AVENUE
PARCELS 148(7) AND 16(7)
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an oblong concrete slab. The area adjacent to and behind (east of) these structures is marshy and covered with large grasses. The north end of the parcel is paved and bounded by trees to the north. The paved area extends approximately 40 feet beyond (to the south of) Building T-1398. The south end of the parcel is grassy and has been used as a softball/baseball field. Cave Creek flows north along the eastern boundary of the parcel. The elevation of the site is approximately 750 feet above mean sea level. The land surface slopes to the east and south.

A potential underground storage tank (UST) location was noted in the EBS (ESE, 1998) as Parcel 16(7). This potential UST is approximately at the center of the west boundary near 4th Avenue and the small concrete pad. The small concrete pad is evidence of a former gas station constructed in 1941. The building was a 9- by 21-foot cement foundation with corrugated steel walls. The original plans called for two 10,000-gallon tanks (ESE, 1998). None of these buildings currently exist and the status of the USTs has not been thoroughly evaluated. The USTs were reported to be located in front of the building. Two 5,000-gallon tanks were reportedly removed in 1991 but closure reports are not on file at FTMC or the Alabama Department of Environmental Management (ADEM). It is unknown if two 5,000-gallon tanks were installed rather than two 10,000-gallon tanks. Therefore, it is unknown if two 10,000-gallon tanks remain at the site. Physical evidence of the tanks was not observed during the SI.

2.0 Previous Investigations

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with DOD guidance for fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
2. Areas where only release or disposal of petroleum products has occurred.
3. Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.
4. Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken.
5. Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken.
6. Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented.
7. Areas that are not evaluated or require additional evaluation.

The EBS was conducted in accordance with CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, the U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military

personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), was classified as a CERFA Category 7 site: areas that are not evaluated or require additional evaluation. Previous studies to document site environmental conditions have not been conducted.

3.0 Current Site Investigation Activities

This chapter summarizes SI activities conducted by IT at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), including geophysical survey, environmental sampling and analysis, and monitoring well installation activities.

3.1 Geophysical Survey Activities

A geophysical survey was conducted at the Former Motor Pool 1300, 4th Avenue, Parcels 148(7) and 16(7), to identify buried metal potentially representing USTs. The area surveyed was approximately 78,000 square feet (1.8 acres), as shown on the site location map (Figure 3-1). A detailed discussion of the geophysical investigation, including theory of operation of the instruments, field procedures, data processing, and interpreted results of the investigation are presented as Appendix A.

The survey was conducted using magnetic, electromagnetic (EM), and ground-penetrating radar (GPR) techniques. Initially, a survey grid was established at the site to encompass suspect tank locations. Survey control was accomplished using a survey-grade total station global positioning system (GPS). The GPS survey data were referenced to the U.S. State Plane Coordinate System (Alabama East Zone, North American Datum 1983).

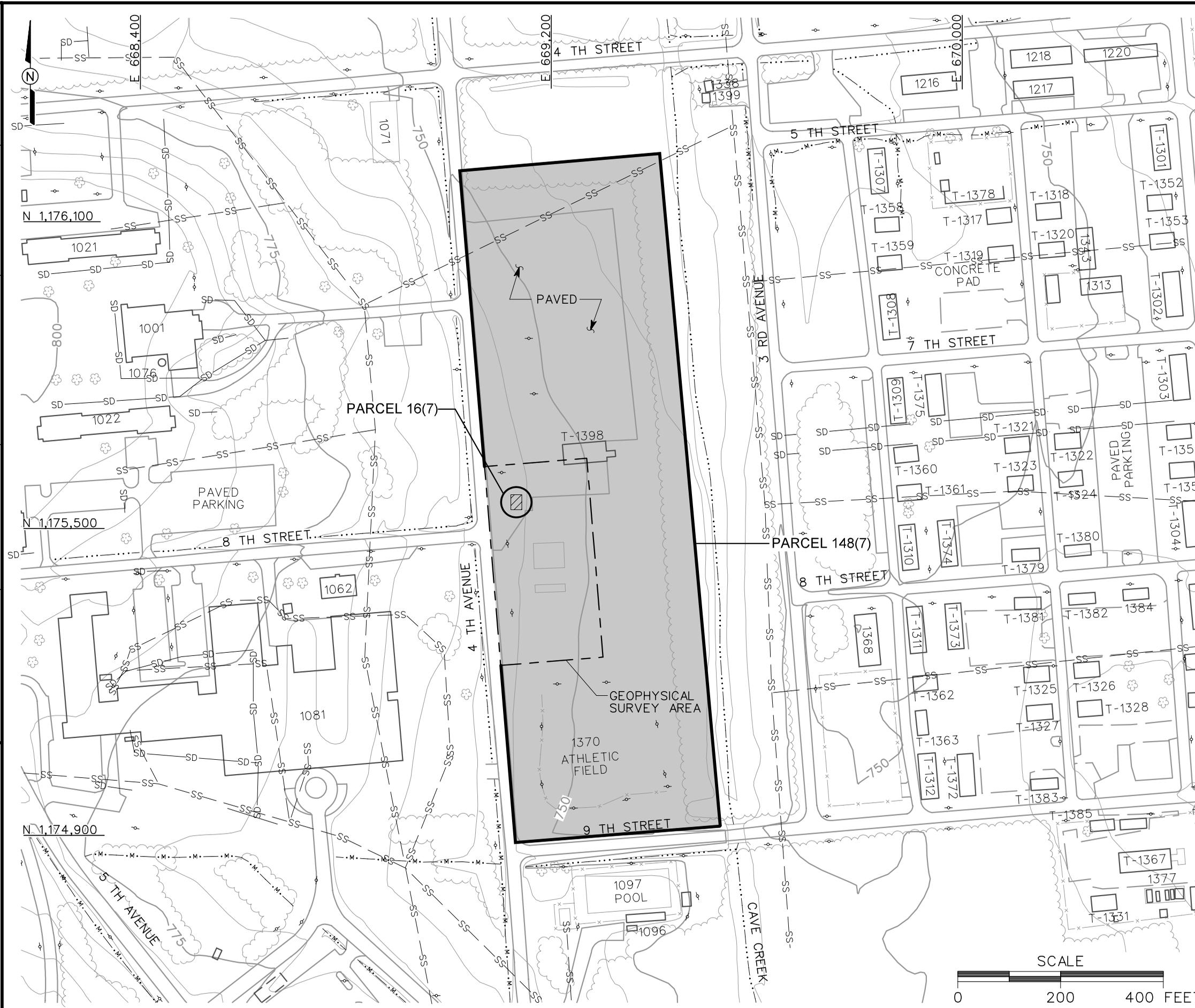
A detailed, hand-sketched site map was drawn in the field. The map included any surface cultural features within the survey area, or near its perimeter, that could potentially affect the geophysical data (e.g. vehicles, overhead utilities, manhole covers).

Magnetic and EM data were initially acquired to provide site-screening for large, buried metal objects the size of a UST. Preliminary color contour maps of the data were analyzed and compared with the site sketch to differentiate between anomalies caused by surface and subsurface source materials. The locations of magnetic and EM anomalies caused by subsurface features the size of a UST were marked in the field for further characterization with the GPR.

GPR radar was used to discriminate between EM and magnetic anomalies potentially caused by USTs and those caused by significant buried metallic debris, metal reinforced utility vaults and junction boxes, and localized concentrations of metal along or very near utilities. Linear EM anomalies thought to be caused by underground utilities, were verified with an EM utility locator and the locations placed on the field maps.

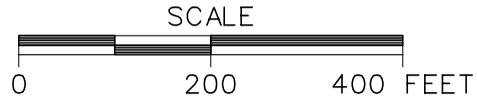
Based on the criteria established in the SFSP for UST identification, anomalies that are typical

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- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - EXTENT OF GEOPHYSICAL SURVEY
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - UTILITY POLE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 3-1
SITE MAP
EXTENT OF GEOPHYSICAL SURVEY
AREA
FORMER MOTOR POOL AREA 1300,
4th AVENUE
PARCELS 148(7) AND 16(7)
 U. S. ARMY CORPS OF ENGINEERS
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size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) are identified and labeled as USTs. Anomalies that are either a typical size or in a logical location for a UST are labeled as potential USTs. The results of the geophysical survey are summarized in Section 4.1.

3.2 Environmental Sampling

The environmental sampling performed during the SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), included the collection of surface and depositional soil samples, subsurface soil samples, surface water samples, sediment samples, and groundwater samples for chemical analysis. The sample locations were determined by observing site physical characteristics noted during a site walkover, by reviewing historical documents pertaining to activities conducted at the site and based on geophysical survey activities. The sample locations, media, and rationale are summarized in Table 3-1. Sampling locations are shown on Figure 3-2. Samples were submitted for laboratory analyses of site-related parameters listed in Section 3.4.

3.2.1 Surface and Depositional Soil Sampling

Surface soil samples were collected from 12 locations and a depositional soil sample was collected from 1 location at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Soil sampling locations and rationale are presented in Table 3-1. Sampling locations are shown on Figure 3-2. Sample designations and quality assurance/quality control (QA/QC) samples are listed in Table 3-2. Soil sampling locations were determined in the field by the on-site geologist based on the geophysical survey, sampling rationale, presence of surface structures, site topography, and buried utilities.

Sample Collection. Surface and depositional soil samples were collected from the upper 1 foot of soil with a 3-inch diameter stainless-steel hand auger using the methodology specified in Section 4.9 of the SAP (IT, 2000a). Surface and depositional soil samples were collected by first removing surface debris, such as rocks and vegetation, from the immediate sample area. The soil was collected with the sampling device and screened with a photoionization detector (PID) in accordance with Section 4.7.1.1 of the SAP (IT, 2000a). Samples for volatile organic compound (VOC) analysis were collected directly from the sampler with three EnCore® samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4. Sample collection logs are included in Appendix B.

Table 3-1

**Sampling Locations and Rationale
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Sample Location	Sample Media	Sample Location Rationale
FTA-148-GP01	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected northwest (upgradient) of site.
FTA-148-GP02	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected from eastern side (downgradient).
FTA-148-GP03	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected northeast (downgradient) of site.
FTA-148-GP04	Surface Soil	A surface soil sample was collected east of Building T-1398.
FTA-148-GP05	Surface Soil	A surface soil sample was collected north (downgradient) of Building T-1398.
FTA-148-GP06	Surface Soil	A surface soil sample was collected west of Building T-1398.
FTA-148-GP07	Surface Soil	A surface soil sample was collected south (upgradient) of Building T-1398.
FTA-148-GP08	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected upgradient and west of potential former underground storage tank (UST) location (Parcel 16[7]).
FTA-148-GP09	Subsurface Soil	A subsurface soil sample was collected at a depth immediately below the potential UST (north) location.
FTA-148-GP10	Subsurface Soil	A subsurface soil sample was collected at a depth immediately below the potential UST location (south).
FTA-148-GP11(SS) FTA-148-GP11(W)	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected at this location for coverage in the south-central portion of the site.
FTA-148-GP12	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected at this location for coverage in the southwest corner of the site.
FTA-148-GP13	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected from the south-central portion of the site.

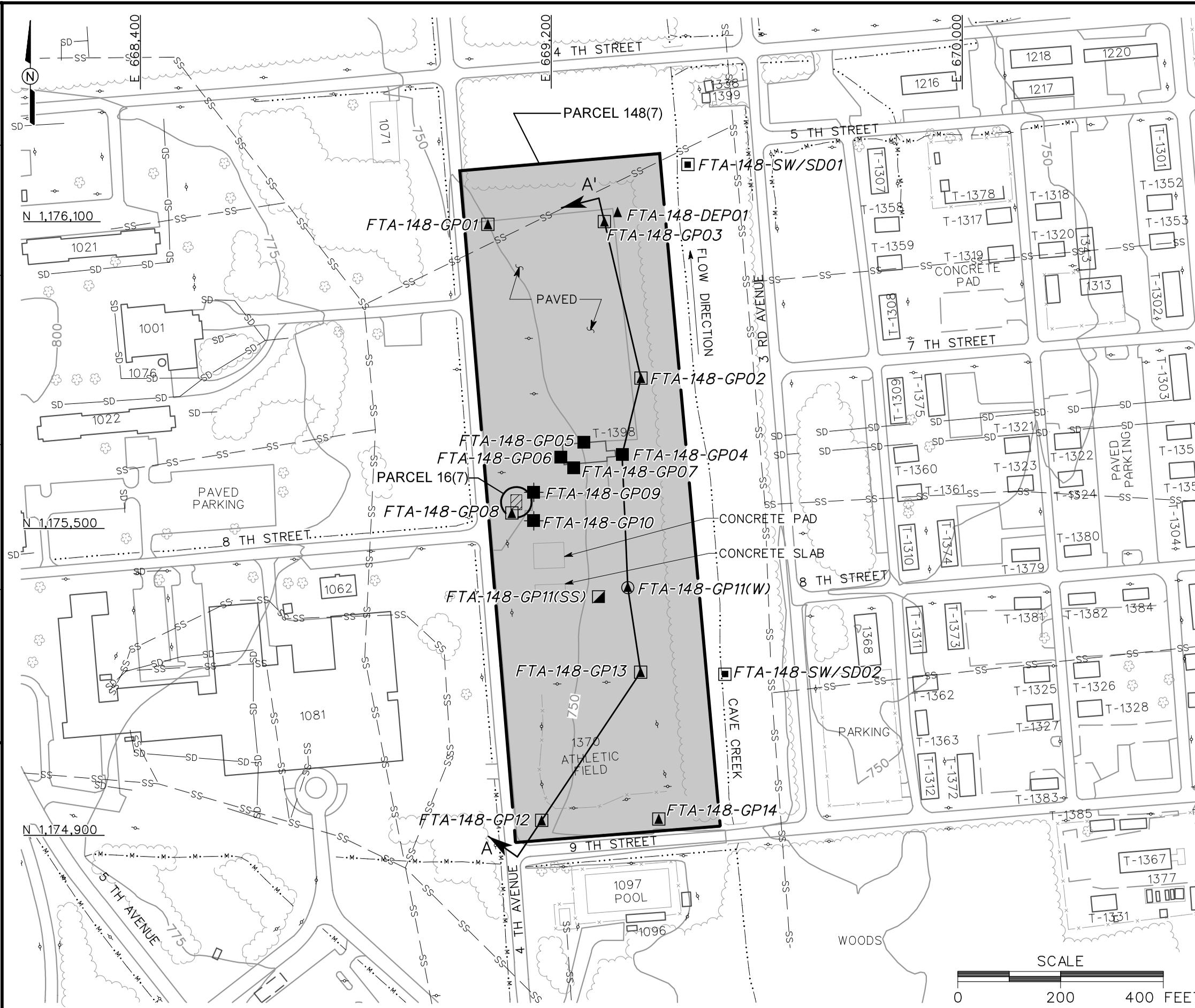
Table 3-1

**Sampling Locations and Rationale
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Sample Location	Sample Media	Sample Location Rationale
FTA-148-GP14	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil and groundwater samples were collected at this location for coverage in the southeastern corner of the site.
FTA-148-SW/SD01	Surface Water, Sediment	Surface water and sediment samples were collected from Cave Creek, downgradient (north) at north end of Parcel 148(7). Sample location is a downgradient sink for the site.
FTA-148-SW/SD02	Surface Water, Sediment	Surface water and sediment samples were collected from Cave Creek, upgradient (south) at south end of Parcel 148(7).
FTA-148-DEP01	Depositional Soil	A depositional soil sample was collected at the most likely point of exit from the site for surface water runoff. This site is located near the northeast corner at the parcel boundary.

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- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 25 FOOT)
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - UTILITY POLE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - SURFACE WATER/SEDIMENT SAMPLE LOCATION
 - GROUNDWATER SAMPLE LOCATION
 - SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
 - SURFACE SOIL SAMPLE LOCATION
 - SUBSURFACE SOIL SAMPLE LOCATION
 - GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
 - DEPOSITIONAL SOIL SAMPLE LOCATION
 - CROSS SECTION LOCATION

FIGURE 3-2
SAMPLE LOCATION MAP
FORMER MOTOR POOL AREA 1300,
4th AVENUE
PARCELS 148(7) AND 16(7)
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

Table 3-2

**Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Samples
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-148-GP01	FTA-148-GP01-SS-DB0001-REG FTA-148-GP01-DS-DB0002-REG	0-1 4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP02	FTA-148-GP02-SS-DB0003-REG FTA-148-GP02-DS-DB0004-REG	0-1 8-12				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP03	FTA-148-GP03-SS-DB0005-REG FTA-148-GP03-DS-DB0006-REG	0-1 8-10				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP04	FTA-148-GP04-SS-DB0007-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP05	FTA-148-GP05-SS-DB0008-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP06	FTA-148-GP06-SS-DB0009-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP07	FTA-148-GP07-SS-DB0010-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP08	FTA-148-GP08-SS-DB0011-REG FTA-148-GP08-DS-DB0012-REG	0-1 4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP09	FTA-148-GP09-DS-DB0013-REG	4-7			FTA-148-GP09-DS-DB0013-MS FTA-148-GP09-DS-DB0013-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP10	FTA-148-GP10-DS-DB0014-REG	4-8	FTA-148-GP10-DS-DB0015-FD			TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP11(SS)	FTA-148-GP11-SS-DB0017-REG FTA-148-GP11-DS-DB0020-REG	0-1 8-10	FTA-148-GP11-SS-DB0018-FD			TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP12	FTA-148-GP12-SS-DB0021-REG FTA-148-GP12-DS-DB0022-REG	0-1 4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP13	FTA-148-GP13-SS-DB0023-REG FTA-148-GP13-DS-DB0024-REG	0-1 8-12				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP14	FTA-148-GP14-SS-DB0025-REG FTA-148-GP14-DS-DB0026-REG	0-1 8-11				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-DEP01	FTA-148-DEP01-DEP-DB0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals

FD - Field duplicate.

FS - Field split.

ft. bgs - feet below ground surface.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon.

VOC - Volatile organic compound.

3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected from 10 soil borings at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), as shown on Figure 3-2. Subsurface soil sampling locations and rationale are presented in Table 3-1. Subsurface soil sample designations, depths, and QA/QC samples are listed in Table 3-2. Soil boring sampling locations were determined in the field by the on-site geologist based on the geophysical survey, sampling rationale, presence of surface structures, site topography, and buried and overhead utilities. IT contracted TEG, Inc., a direct-push technology subcontractor, to assist in subsurface soil sample collection.

Sample Collection. Subsurface soil samples were collected from soil borings at depths greater than 1 foot below ground surface (bgs) in the unsaturated zone. The soil borings were advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4.

Soil samples were collected continuously to 12 feet bgs or until direct-push sampler refusal was encountered. Subsurface soil samples were field screened using a PID in accordance with Section 4.7.1.1 of the SAP (IT, 2000a) to measure for volatile organic vapors. The sample displaying the highest reading was selected and sent to the laboratory for analysis; however, at those locations where the PID readings were not greater than background, the deepest sample interval above the saturated zone was submitted for analyses. Samples to be analyzed for VOCs were collected directly from the sampler with three EnCore® samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Samples submitted for laboratory analyses are summarized in Table 3-2. The on-site geologist completed a detailed boring log for each soil boring. The lithological log for each borehole is included in Appendix C.

At the completion of soil sampling, boreholes were abandoned with hydrated bentonite chips following borehole abandonment procedures summarized in Appendix B of the SAP (IT, 2000a).

3.2.3 Well Installation

Eight temporary wells were installed in the residuum groundwater zone at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), to collect groundwater samples for laboratory analyses. The well/groundwater sample locations are shown on Figure 3-2. Table 3-3 summarizes construction details of the wells installed at the Former Motor Pool Area 1300, 4th

Avenue, Parcels 148(7) and 16(7). The temporary well construction logs are included in Appendix C.

Two of the temporary wells (FTA-148-GP03 and FTA-148-GP14) were installed by TEG using direct-push technology. The direct-push temporary wells were installed by advancing a 2-inch outside diameter direct-push sampler to 12 feet bgs or until direct-push sampler refusal was encountered. The direct-push sampler was removed from the borehole and a 5-foot length of 1-inch inside diameter (ID), 0.010-inch, factory-slotted Schedule 40 polyvinyl chloride (PVC) screen was placed at the bottom of the borehole and attached to 1-inch ID, flush-threaded Schedule 40 PVC riser. A number 1 filter sand (environmentally safe, clean fine sand, sieve size 20 to 40) was placed in the annular space of the borehole around the screen from the bottom of the borehole to approximately 1 foot above the top of the screen. A bentonite seal, consisting of bentonite chips, was placed immediately on top of the sand pack and hydrated with potable water. Following groundwater sampling, the direct-push temporary wells were abandoned by removing the PVC riser and screen from the borehole and adding hydrated bentonite chips to ground surface. Well abandonment procedures followed guidelines outlined in Appendix C of the SAP (IT, 2000a).

IT contracted Miller Drilling, Inc., to install the remaining six temporary wells with a hollow-stem auger rig at the locations shown on Figure 3-2. IT attempted to install the temporary wells at the locations where direct-push soil samples were collected. However, this was not possible at one location (FTA-148-GP11) because competent bedrock was encountered and groundwater was not present. At this location the temporary well was offset approximately 50 feet east of the soil boring location. The soil sampling location was identified with “(SS)” and the associated temporary well location was identified with “(W)”. The wells were installed following procedures outlined in Section 4.7 and Appendix C of the SAP (IT, 2000a). The boreholes at these locations were advanced with a 4.25-inch ID hollow-stem auger from ground surface to the first water-bearing zone in residuum at the well location. The borehole was augered to the depth of direct-push sampler refusal and samples were collected at the depth of direct-push refusal to the bottom of the borehole. A 2-foot long, 2-inch ID carbon steel split-spoon sampler was driven at 5-foot intervals to collect residuum for observing and describing lithology. Where split-spoon refusal was encountered, the auger was advanced until the first water-bearing zone was encountered. The on-site geologist logging the auger boreholes continued the lithological log for each borehole from the depth of split-spoon refusal to the bottom of the auger borehole, by logging the auger drill cuttings. The drill cuttings were logged to determine lithologic changes and the approximate depth of groundwater encountered during drilling. This information was used to determine the optimal placement of the monitoring well screen interval and to provide

Table 3-3

Temporary Well Construction Summary
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

Temporary Well	Northing	Easting	Ground Elevation (ft msl)	TOC Elevation (ft msl)	Well Depth (ft bgs)	Screen Length	Screen Interval (ft bgs)	Well Material
FTA-148-GP01	1176091.79	669079.94	754.93	756.15	13.5	10	3.25 - 13.25	2" ID Sch. 40 PVC
FTA-148-GP02	1175791.03	669377.70	750.51	751.31	19.0	10	8.75 - 18.75	2" ID Sch. 40 PVC
FTA-148-GP03*	1176097.04	669306.60	749.04	754.25	10.0	5	5.00 - 10.00	1" ID Sch. 40 PVC
FTA-148-GP08	1175527.13	669126.44	760.09	761.21	18.0	10	7.75 - 17.75	2" ID Sch. 40 PVC
FTA-148-GP11(W)	1175381.22	669352.20	752.06	753.91	14.0	10	3.75 - 13.75	2" ID Sch. 40 PVC
FTA-148-GP12	1174926.00	669184.43	755.39	757.55	28.0	15	12.75 - 27.75	2" ID Sch. 40 PVC
FTA-148-GP13	1175216.03	669377.12	751.59	753.05	19.0	15	3.75 - 18.75	2" ID Sch. 40 PVC
FTA-148-GP14*	1174928.77	669412.37	751.99	752.86	10.0	5	5.00 - 10.00	1" ID Sch. 40 PVC

Temporary wells installed with an auger drill rig using a 4.25-inch inside diameter hollow-stem auger, except as noted by *.

*Temporary well installed with a direct-push rig.

Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983. Elevations were referenced to the North American Vertical Datum of 1988.

1" ID Sch. 40 PVC - 1-inch inside diameter, Schedule 40, polyvinyl chloride.

2" ID Sch. 40 PVC - 2-inch inside diameter, Schedule 40, polyvinyl chloride.

bgs - Below ground surface.

msl - Mean sea level.

TOC - Top of casing.

site-specific geologic and hydrogeologic information. The lithological log for each borehole is included in Appendix C.

Upon reaching the target depth, a 10- or 15-foot length of 2-inch ID, 0.010-inch factory slotted, Schedule 40 PVC screen with a 3-inch PVC end cap was placed through the auger to the bottom of the borehole. The screen and end cap were attached to 2-inch ID, flush-threaded Schedule 40 PVC riser. A number 1 filter sand was tremied around the well screen to approximately 2 feet above the top of the well screen as the augers were removed. The wells were surged approximately 10 minutes using a solid PVC surge block, or until no more settling of the filter sand occurred inside the borehole. A bentonite seal, consisting of approximately 2 feet of bentonite chips, was placed immediately on top of the filter sand and hydrated with potable water. If the bentonite seal was installed below the water table surface, the bentonite chips were allowed to hydrate in the groundwater. The bentonite seal placement and hydration followed procedures in Appendix C of the SAP (IT, 2000a). A locking well cap was placed on the PVC well casing. The temporary well surface completion included attaching plastic sheeting around the PVC riser using duct tape. Additionally, sand bags were used to secure the sheeting to the ground surface around the temporary well.

The temporary wells were developed by surging and pumping with a 2-inch diameter submersible pump, in accordance with methodology outlined in Section 4.8 and Appendix C of the SAP (IT, 2000a). The submersible pump being used for well development is moved in an up-and-down fashion to encourage any residual well installation materials to enter the well. These materials are then pumped out of the well in order to re-establish the natural hydraulic flow conditions. Development was performed until the water turbidity was less than or equal to 20 nephelometric turbidity units (NTU) or for a maximum of 4 hours. The well development logs are included in Appendix D.

3.2.4 Water Level Measurements

The depth to groundwater was measured in all temporary, permanent, and existing monitoring wells installed at FTMC on March 13 and 14, 2000, following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Depth to groundwater was measured with electronic water level meters. Each meter probe and cable were cleaned between use at each well following decontamination methodology presented in Section 4.10 of the SAP (IT, 2000a). Measurements were referenced to the top of each well casing. A summary of groundwater level measurements for the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), is presented in Table 3-4.

3.2.5 Groundwater Sampling

Groundwater was sampled from the eight temporary wells at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Well/groundwater sampling locations are shown on Figure 3-2. The groundwater sampling locations and rationale are listed in Table 3-1. The groundwater sample designations and QA/QC samples are listed in Table 3-5.

Sample Collection. Groundwater sampling was completed at the direct-push temporary well locations (FTA-148-GP03 and FTA-148-GP14) following methodology outlined in Section 4.7 of the SAP (IT, 2000a). At these locations, groundwater was sampled using a peristaltic pump equipped with 0.25-inch ID Teflon™ tubing. Groundwater sampling was performed at the remaining temporary well locations following procedures outlined in Section 4.9.1.4 of the SAP (IT, 2000a). Groundwater was sampled after purging a minimum of three well volumes and after field parameters (i.e., temperature, pH, specific conductivity, oxidation-reduction potential, and turbidity) stabilized. Purging and sampling were performed with either a submersible pump or a peristaltic pump equipped with 0.25-inch ID Teflon tubing. Field parameters were measured using a calibrated water quality meter. Field parameter readings are summarized in Table 3-6. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-5 using methods outlined in Section 3.4.

3.2.6 Surface Water Sampling

Two surface water samples were collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at the locations shown on Figure 3-2. The surface water sampling locations and rationale are listed in Table 3-1. The surface water sample designations are listed in Table 3-7. The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. The surface water samples were collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 2000a). The surface water samples were collected by dipping a stainless-steel pitcher in the water and pouring the water into the appropriate sample containers. The samples were collected after the field parameters described in Section 3.2.5 had been measured using a calibrated water quality meter. The field parameter readings are presented in Table 3-6. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

3.2.7 Sediment Sampling

Table 3-4

**Groundwater Elevations
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Well Location	Date	Depth to Water (ft BTOC)	Top of Casing Elevation (ft msl)	Ground Elevation (ft msl)	Groundwater Elevation (ft msl)
FTA-148-GP01	14-Mar-00	4.18	756.15	754.93	751.97
FTA-148-GP02	14-Mar-00	7.13	751.31	750.51	744.18
FTA-148-GP08	14-Mar-00	4.37	761.21	760.09	756.84
FTA-148-GP11(W)	14-Mar-00	3.75	753.91	752.06	750.16
FTA-148-GP12	14-Mar-00	2.11	757.55	755.39	755.44
FTA-148-GP13	14-Mar-00	2.62	753.05	751.59	750.43

Elevations referenced to the North American Vertical Datum of 1988.

BTOC - Below top of casing.

ft - Feet.

msl - Mean sea level.

Table 3-5

**Groundwater Sample Designations and QA/QC Samples
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-148-GP01	FTA-148-GP01-GW-DB3001-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP02	FTA-148-GP02-GW-DB3002-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP03	FTA-148-GP03-GW-DB3003-REG			FTA-148-GP08-GW-DB3003-MS FTA-148-GP08-GW-DB3003-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP08	FTA-148-GP08-GW-DB3004-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP11(W)	FTA-148-GP11-GW-DB3005-REG	FTA-148-GP11-GW-DB3006-FD	FTA-148-GP11-GW-DB3007-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP12	FTA-148-GP12-GW-DB3008-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP13	FTA-148-GP13-GW-DB3009-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP14	FTA-148-GP14-GW-DB3010-REG				TCL VOCs, TCL SVOCs, TAL Metals

Groundwater samples were collected from the approximate midpoint of the saturated screened interval of the monitoring well.

FD - Field duplicate.

FS - Field split.

ft. bgs - feet below ground surface.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 3-6

**Groundwater and Surface Water Field Parameters
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Date	Media	Specific Conductivity (mS/cm) ^a	Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	pH (SU)
FTA-148-GP01	27-JAN-99	GW	0.414	1.82	69	19.09	NR	5.74
FTA-148-GP02	27-JAN-99	GW	0.537	0.78	36	18.17	12.4	6.38
FTA-148-GP03	28-OCT-98	GW	0.851	1.26	-69	26.15	9.6	6.36
FTA-148-GP11(W)	28-JAN-99	GW	0.888	0.35	-65	15.51	NR	6.72
FTA-148-GP12	28-JAN-99	GW	0.989	0.06	33	18.75	NR	6.57
FTA-148-GP13	28-JAN-99	GW	0.628	0.45	-51	15.97	NR	6.64
FTA-148-GP14	03-NOV-98	GW	0.559	1.41	-56	20.78	34.2	6.40
FTA-148-SW/SD01	27-JAN-99	SW	0.068	11.20	NR	12.88	5.4	6.75
FTA-148-SW/SD02	27-JAN-99	SW	0.071	11.21	0	13.78	6.3	6.68

^aSpecific conductivity values standardized to millisiemens per centimeter.

°C - Degrees Celsius.

GW - Groundwater.

mg/L - Milligrams per liter.

mS/cm - Millisiemens per centimeter.

mV - Millivolts.

NR - Reading not recorded.

NTUs - Nephelometric turbidity units.

ORP - Oxidation-reduction potential.

SU - Standard units.

SW - Surface water.

W - Temporary well location offset from soil sampling location.

Table 3-7

**Surface Water and Sediment Sample Designations and QA/QC Samples
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-148-SW/SD01	FTA-148-SW/SD01-SW-DB2001-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	FTA-148-SW/SD01-SD-DB1001-REG	0-0.5	FTA-148-SW/SD01-SD-DB1002-FD	FTA-148-SW/SD01-SD-DB1003-FS		
FTA-148-SW/SD02	FTA-148-SW/SD02-SW-DB2002-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	FTA-148-SW/SD02-SD-DB1004-REG	0-0.5				

FD - Field duplicate.
 FS - Field split.
 ft - Feet.
 MS/MSD - Matrix spike/matrix spike duplicate.
 NA - Not applicable.
 QA/QC - Quality assurance/quality control.
 REG - Field sample.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 TOC - Total organic carbon.
 VOC - Volatile organic compound.

Two sediment samples were collected at the same locations as the surface water samples presented in Section 3.2.6 (Figure 3-2). The sediment sampling locations and rationale are listed in Table 3-1. The sediment sample designations and QA/QC samples are listed in Table 3-7. The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. Sediment samples were collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP (IT, 2000a). Sediments were collected with a stainless-steel spoon from the upper 0.5-foot of sediment and placed in a clean stainless-steel bowl. Samples for VOC analysis were then immediately collected from the stainless-steel bowl with three Encore[®] samplers. The remaining portion of the sample was homogenized and placed in the appropriate sample containers. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

3.3 Surveying of Sample Locations

Sample locations were surveyed using GPS survey techniques described in Section 4.3 of the SAP (IT, 2000a), and conventional civil survey techniques described in Section 4.19 of the SAP (IT, 2000a). Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983. Elevations were referenced to the North American Vertical Datum of 1988. Horizontal coordinates and elevations are included in Appendix E.

3.4 Analytical Program

Samples collected during the SI were analyzed for various physical and chemical parameters. The specific suite of analyses performed was based on the potential site-specific chemicals historically at the site and EPA, ADEM, FTMC, and USACE requirements. Samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), were analyzed for the following parameters:

- X Target Compound List VOCs - EPA Method 5035/8260B

- X Target Compound List Semivolatile Organic Compounds (SVOC) - EPA Method 8270C

- X Target Analyte List Metals - EPA Method 6010B/7000

- X Total Organic Carbon (TOC) – EPA Method 9060 (sediment only)

- X Grain size – American Society for Testing and Materials D421/D422 (sediment only).

The samples were analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 6-1 in Appendix B of the SAP (IT, 2000a). Data were reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of Appendix B of the SAP [IT, 2000a]). Chemical data were reported via hard copy data packages by the laboratory using Contract Laboratory Program-like forms. These packages were validated in accordance with EPA National Functional Guidelines by Level III criteria. A summary of validated data is included in Appendix F. The Data Validation Summary Report is included as Appendix G.

3.5 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping followed requirements specified in Section 4.13.2 of the SAP (IT, 2000a). Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SI are listed in Section 5.0, Table 5-1, of Appendix B of the SAP (IT, 2000a). Sample documentation and chain of custody were recorded as specified in Section 4.13 of the SAP (IT, 2000a).

Completed analysis request and chain of custody records (Appendix B) were secured and included with each shipment of sample coolers to Quanterra Environmental Services in Knoxville, Tennessee. Split samples were shipped to USACE South Atlantic Division Laboratory in Marietta, Georgia.

3.6 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) was managed and disposed as outlined in Appendix D of the SAP (IT, 2000a). The IDW generated during the SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), was segregated as follows:

- X Drill cuttings

- X Purge water from well development and sampling activities, and decontamination fluids

- X Personal protective equipment.

Solid IDW was stored inside the fenced area surrounding Buildings 335 and 336 in lined rolloff bins prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure analyses. Based on the results, drill cuttings and personal protective equipment generated during the SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), were disposed as nonregulated waste at the Industrial Waste Landfill on the Main Post of FTMC.

Liquid IDW was contained in the existing 20,000-gallon sump associated with the Building T-338 vehicle washrack. Liquid IDW was characterized by VOC, SVOC, and metals analyses. Based on the analyses, liquid IDW was discharged as nonregulated waste to the FTMC wastewater treatment plant on the Main Post.

3.7 Variances/Nonconformances

Three variances to the SFSP were recorded during the completion of the SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The variances did not alter the intent of the investigation or the sampling rationale presented in Table 4-2 of the SFSP (IT, 1998b). The variances to the SFSP are summarized in Table 3-8 and included in Appendix H. There were not any nonconformances to the SFSP recorded during the completion of the SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

3.8 Data Quality

The field sample analytical data are presented in tabular form in Appendix F. The field samples were collected, documented, handled, analyzed, and reported in a manner consistent with the SI WP; the FTMC SAP and QAP; and standard, accepted methods and procedures. Sample collection logs pertaining to the collection of these samples were reviewed and organized for this report and are included in Appendix B. As discussed in Section 3.7, three variances to the SFSP were recorded. However, the variances did not impact the usability of the data.

Data Validation. A complete (100 percent) Level III data validation effort was performed on the reported analytical data. Appendix G consists of a data validation summary report that was prepared to discuss the results of the validation. Selected results were rejected or otherwise qualified based on the implementation of accepted data validation procedures and practices. These qualified parameters are highlighted in the report. The validation-assigned qualifiers were added to the FTMC IT Environmental Management System™ database for tracking and reporting. The qualified data were used in the comparison to the SSSLs and ESVs. Rejected data (assigned an “R” qualifier) were not used in the comparison to the SSSLs and ESVs.

Table 3-8

**Variations to the Site-Specific Field Sampling Plan
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Variance to the SFSP	Justification for Variance	Impact to Site Investigation
Groundwater samples not collected in direct-push wells FTA-148-GP02 and FTA-148-GP13. Temporary wells were installed with a hollow-stem auger rig to allow for groundwater sampling.	Groundwater was not present in sufficient volume to purge the wells effectively.	None. Drilling with hollow-stem auger rig allowed well completion with sufficient water for development and sampling.
Temporary well FTA-148-GP11 was relocated approximately 50 feet east of direct-push soil boring.	Competent bedrock was encountered at 13 feet below land surface and groundwater was not present.	Relocation of FTA-148-GP11 allowed well completion with sufficient water for development and sampling.
Direct-push temporary wells not installed at FTA-148-GP01, FTA-148-GP08, FTA-148-GP11, FTA-148-GP12. Temporary wells were installed with a hollow-stem auger rig to allow for groundwater sampling.	Groundwater was not encountered during direct-push drilling.	None. Drilling with hollow-stem augers produced enough groundwater to accomplish development and sampling of the wells.

The data presented in this report, except where qualified, meet the principle data quality objective for this SI.

4.0 Site Characterization

IT utilized the results of the geophysical survey to aid in the placement of soil and groundwater sampling locations. Subsurface investigations performed at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), provided soil, geologic, and groundwater data used to characterize the geology and hydrogeology of the site.

4.1 Results of Geophysical Survey

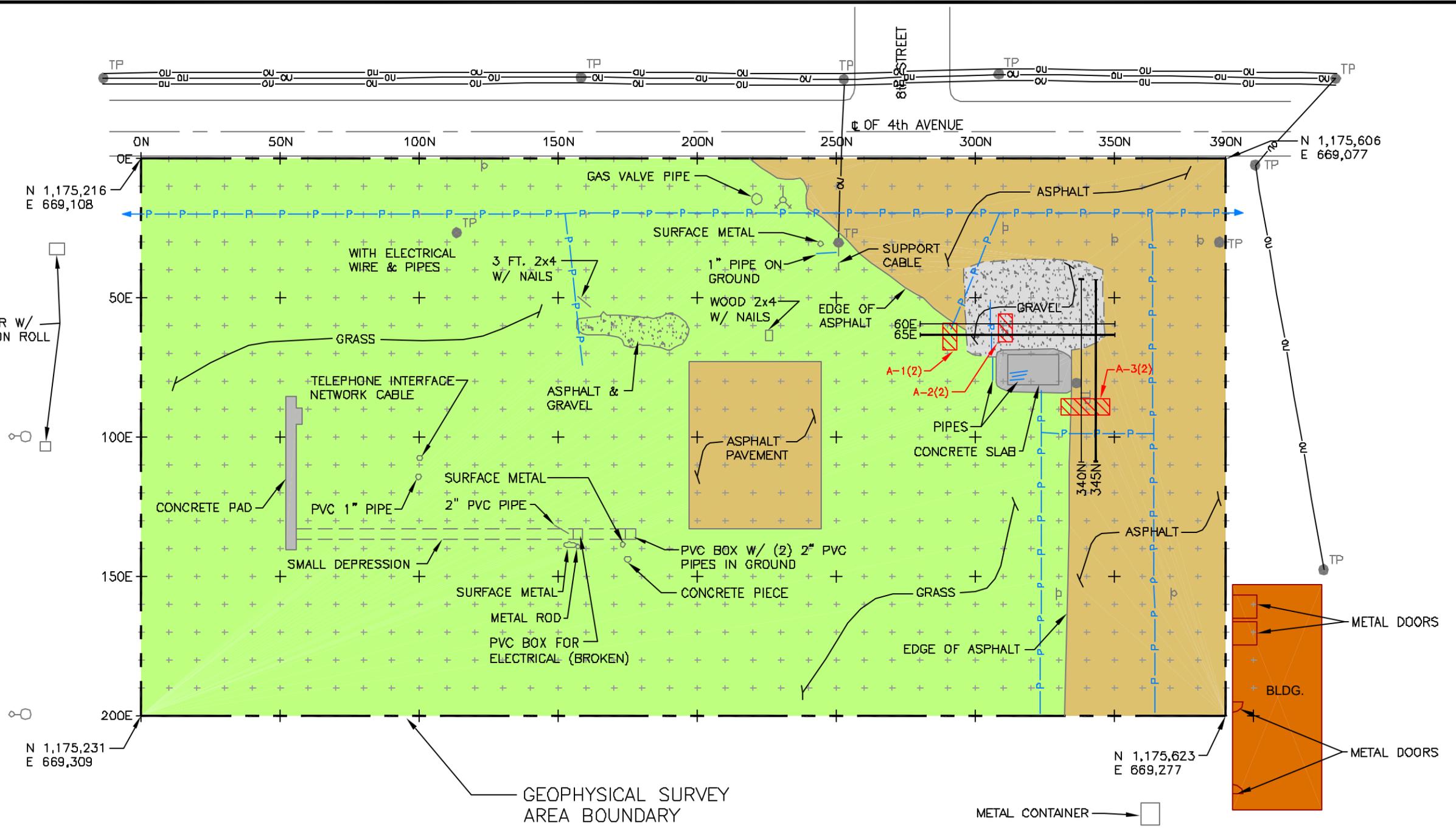
The geophysical survey results indicate that three anomalies exist at the Former Motor Pool 1300, Parcels 148(7) and 16(7), that may be caused by USTs. A geophysical interpretation map of the site (Figure 4-1) shows the anomaly locations and contains detailed information on permanent site reference features as well as GPS coordinates to aid in relocating the anomalies. The anomalies shown on Figure 4-1 correspond to those shown in the magnetic and EM data contour maps, and/or GPR data profiles presented in the geophysics report (Appendix A). Each anomaly potentially caused by a UST is indicated by red cross-hatching and designated by an alphanumeric symbol with a number in parenthesis.

The number shown in parenthesis on Figure 4-1 (rank) indicates the anomaly type and potential for the source object to be a UST. Geophysical anomalies most likely to be caused by USTs are designated with a (1) in parenthesis. Geophysical anomalies with a ranking of (2) are more uncertain, and those with a ranking of (3) are highly uncertain and generally interpreted to be caused by a metallic source object other than a UST. A detailed discussion of the qualitative numeric ranking system is included in the interpretation chapter of the geophysics report (Chapter A.4.0, Appendix A).

Three rank (2) anomalies were identified in the geophysical data. According to the criteria established in the SFSP, these anomalies represent USTs.

The anomalies were investigated in July 2000 as part of a UST investigation performed by IT. Based on exploratory trenching and excavation, IT determined that there were not any USTs at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The closure reports for the UST investigation conducted at Parcels 148(7) and 16(7) are included in Appendix I.

DRAWING NUMBER 9849 - 12.DWG
 CHECKED BY JH
 APPROVED BY JH
 MSN 11/17/98
 DRAWN BY



LEGEND

- GEOPHYSICAL ANOMALY DISCUSSED IN TEXT, NUMBER SHOWN IN PARENTHESIS INDICATES ANOMALY TYPE FOR POTENTIAL UST
 - TELEPHONE POLE
 - LIGHT POLE
 - METAL SIGN POST
 - FIRE HYDRANT
 - OVERHEAD UTILITIES
 - LOCATION OF BURIED PIPE OR UTILITY
 - GPR PROFILES PRESENTED
 - N 1,175,216 E 669,108 ALABAMA EAST STATE PLANE COORDINATES (NAD83)
- NOTES: 1) LOCATIONS OF FEATURES OUTSIDE SURVEY AREA ARE APPROXIMATE

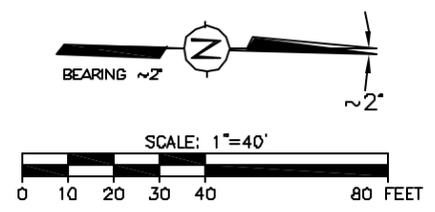


FIGURE 4-1
FORMER MOTOR POOL 1300
SITE MAP WITH GEOPHYSICAL INTERPRETATION
PARCELS 148(7), AND 16(7)

U.S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



4.2 Regional and Site Geology

4.2.1 Regional Geology

Calhoun County includes parts of two physiographic provinces, the Piedmont Upland Province and the Valley and Ridge Province. The Piedmont Upland Province occupies the extreme eastern and southeastern portions of the county and is characterized by metamorphosed sedimentary rocks. The generally accepted range in age of these metamorphics is Cambrian to Devonian.

The majority of Calhoun County, including the Main Post of FTMC, lies within the Appalachian fold and thrust structural belt (Valley and Ridge Province) where southeastward-dipping thrust faults with associated minor folding are the predominant structural features. The fold and thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted with major structures and faults striking in a northeast-southwest direction.

Northwestward transport of the Paleozoic rock sequence along the thrust faults has resulted in the imbricate stacking of large slabs of rock referred to as thrust sheets. Within an individual thrust sheet, smaller faults may splay off the larger thrust fault, resulting in imbricate stacking of rock units within an individual thrust sheet (Osborne and Szabo, 1984). Geologic contacts in this region generally strike parallel to the faults and repetition of lithologic units is common in vertical sequences. Geologic formations within the Valley and Ridge Province portion of Calhoun County have been mapped by Warman and Causey (1962), Osborne and Szabo (1984), and Moser and DeJarnette (1992), and vary in age from Lower Cambrian to Pennsylvanian.

The basal unit of the sedimentary sequence in Calhoun County is the Cambrian Chilhowee Group. The Chilhowee Group is comprised of the Cochran, Nichols, Wilson Ridge, and Weisner Formations (Osborne and Szabo, 1984), but in Calhoun County is either undifferentiated or divided into the Cochran and Nichols Formations and an upper undifferentiated Wilson Ridge and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish-gray siltstone and mudstone. Massive to laminated, greenish-gray and black mudstone makes up the Nichols Formation with thin interbeds of siltstone and very fine-grained sandstone (Szabo et al., 1988). These two formations are mapped only in the eastern part of the county.

The Wilson Ridge and Weisner Formations are undifferentiated in Calhoun County and consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appear to dominate the unit and consists primarily of coarse-grained, vitreous quartzite, and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained

facies consists of sandy and micaceous shale and silty, micaceous mudstone which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

The Cambrian Shady Dolomite overlies the Weisner Formation northeast, east and southwest of the Main Post and consists of interlayered bluish-gray or pale yellowish-gray sandy dolomitic limestone and siliceous dolomite with coarsely crystalline porous chert (Osborne et al., 1989). A variegated shale and clayey silt have been included within the lower part of the Shady Dolomite (Cloud, 1966). Material similar to this lower shale unit was noted in core holes drilled by the Alabama Geologic Survey on FTMC (Osborne and Szabo, 1984). The character of the Shady Dolomite in the FTMC vicinity and the true assignment of the shale at this stratigraphic interval are still uncertain (Osborne, 1999).

The Rome Formation overlies the Shady Dolomite and locally occurs to the northwest and southeast of the Main Post as mapped by Warman and Causey (1962) and Osborne and Szabo (1984), and immediately to the west of Reilly Airfield (Osborne and Szabo, 1984). The Rome Formation consists of variegated thinly interbedded grayish-red-purple mudstone, shale, siltstone, and greenish-red and light gray sandstone, with locally occurring limestone and dolomite. The Conasauga Formation overlies the Rome Formation and occurs along anticlinal axes in the northeastern portion of Pelham Range (Warman and Causey, 1962), (Osborne and Szabo, 1984) and the northern portion of the Main Post (Osborne et al., 1997). The Conasauga Formation is composed of dark-gray, finely to coarsely crystalline medium- to thick-bedded dolomite with minor shale and chert (Osborne et al., 1989).

Overlying the Conasauga Formation is the Knox Group, which is composed of the Copper Ridge and Chepultepec dolomites of Cambro-Ordovician age. The Knox Group is undifferentiated in Calhoun County and consists of light medium gray, fine to medium crystalline, variably bedded to laminated, siliceous dolomite and dolomitic limestone that weathers to a chert residuum (Osborne and Szabo, 1984). The Knox Group underlies a large portion of the Pelham Range area.

The Ordovician Newala and Little Oak Limestones overlie the Knox Group. The Newala Limestone consists of light to dark gray, micritic, thick-bedded limestone with minor dolomite. The Little Oak Limestone is comprised of dark gray, medium- to thick-bedded, fossiliferous,

argillaceous to silty limestone with chert nodules. These limestone units are mapped together as undifferentiated at FTMC and other parts of Calhoun County. The Athens Shale overlies the Ordovician limestone units. The Athens Shale consists of dark-gray to black shale and graptolitic shale with localized interbedded dark gray limestone (Osborne et al., 1989). These units occur within an eroded "window" in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

Other Ordovician-aged bedrock units mapped in Calhoun County include the Greensport Formation, Colvin Mountain Sandstone, and Sequatchie Formation. These units consist of various siltstones, sandstones, shales, dolomites and limestones, and are mapped as one, undifferentiated unit in some areas of Calhoun County. The only Silurian-age sedimentary formation mapped in Calhoun County is the Red Mountain Formation. This unit consists of interbedded red sandstone, siltstone, and shale with greenish-gray to red silty and sandy limestone.

The Devonian Frog Mountain Sandstone consists of sandstone and quartzitic sandstone with shale interbeds, dolomudstone, and glauconitic limestone (Szabo et al., 1988). This unit locally occurs in the western portion of Pelham Range.

The Mississippian Fort Payne Chert and the Maury Formation overlie the Frog Mountain Sandstone and are composed of dark- to light-gray limestone with abundant chert nodules and greenish-gray to grayish-red phosphatic shale with increasing amounts of calcareous chert toward the upper portion of the formation (Osborne and Szabo, 1984). These units occur in the northwestern portion of Pelham Range. Overlying the Fort Payne Chert is the Floyd Shale, also of Mississippian age, which consists of thin-bedded, fissile brown to black shale with thin intercalated limestone layers and interbedded sandstone. Osborne and Szabo (1984) reassigned the Floyd Shale, which was mapped by Warman and Causey (1962) on the Main Post of Fort McClellan, to the Ordovician Athens Shale on the basis of fossil data.

The Jacksonville Thrust Fault is the most significant structural geologic feature in the vicinity of FTMC, both for its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. The trace of the fault extends northeastward for approximately 39 miles between Bynum, Alabama and Piedmont, Alabama. The fault is interpreted as a major splay of the Pell City Fault (Osborne and Szabo, 1984). The Ordovician sequence comprising the Eden thrust sheet is exposed at FTMC through an eroded "window" or

"fenster" in the overlying thrust sheet. Rocks within the window display complex folding with the folds being overturned, and tight to isoclinal. The carbonates and shales locally exhibit well-developed cleavage (Osborne and Szabo, 1984). The FTMC window is framed on the northwest by the Rome Formation, north by the Conasauga Formation, northeast, east, and southwest by the Shady Dolomite, and southeast and southwest by the Chilhowee Group (Osborne et al., 1997).

4.2.2 Site Geology

The specific soil category for the eastern one-third of Parcels 148(7) and 16(7) is Pope fine sandy loam, 0 to 2 percent slopes (PoA). These soils are deep, well drained, strongly to very strongly acid soils on first bottoms. They generally develop in general alluvium that has washed from soils underlain by sandstone and shale. The surface layer ranges from very dark grayish brown to dark brown. The subsoil ranges from yellowish brown to dark brown and from fine sandy loam to light silty clay loam in texture. Small mica flakes are noticeable in some areas. Thickness ranges from 34 inches to 10 or 12 feet. Runoff is slow, permeability is moderate, and infiltration is medium to high (U.S. Department of Agriculture, 1961). The capacity for holding available moisture is high, but flooding is a hazard.

The specific soil category for the western two-thirds of Parcels 148(7) and 16(7) is Rarden silty clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3). This type of Rarden soil consists of moderately well drained, strongly acid to very strongly acid soils. These soils generally develop from the residuum of shale and fine-grained, platy sandstone or limestone on wide ridges. These soils have mild slopes, high erosion, and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0 to 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Infiltration is medium, permeability is slow and capacity for available moisture is low (U.S. Department of Agriculture, 1961).

The Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), is situated in the northern portion of the Ordovician window in the uppermost thrust sheet, approximately 800 feet southeast of the Pell City Fault. Bedrock beneath the site is mapped as Mississippian/Ordovician Floyd and Athens Shale undifferentiated.

A geologic cross section was constructed with boring log data from Parcels 148(7) and 16(7) and is presented on Figure 4-2. The geologic cross section location is shown on Figure 3-2.

Based on direct-push and hollow-stem auger boring data collected during the SI, residuum beneath the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), consists of predominantly silty and sandy clay and sand or clayey sand overlying weathered shale. Direct-push refusal was encountered at depths ranging from 7 to 10 feet bgs. The weathered shale was encountered at depths ranging from 10 to 15 feet bgs at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The contact between the residuum and the weathered shale is generally gradual except where the shale was overlain by sand in borings FTA-148-GP02 and FTA-148-GP13. Hard, competent bedrock was found at depths of 13.5 and 19 feet in temporary wells FTA-148-GP11(W) and FTA-148-GP02, respectively.

4.3 Site Hydrology

4.3.1 Surface Hydrology

Precipitation in the form of rainfall averages about 54 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates. The major surface water features at the Main Post of FTMC include Remount Creek, Cane Creek, and Cave Creek. These waterways flow in a general northwest to westerly direction towards the Coosa River on the western boundary of Calhoun County.

Cave Creek flows to the north along the eastern boundary of the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The land surface of the site slopes to the east toward Cave Creek. Surface runoff in the vicinity of the site is directed to Cave Creek by surface grading and storm drains.

4.3.2 Hydrogeology

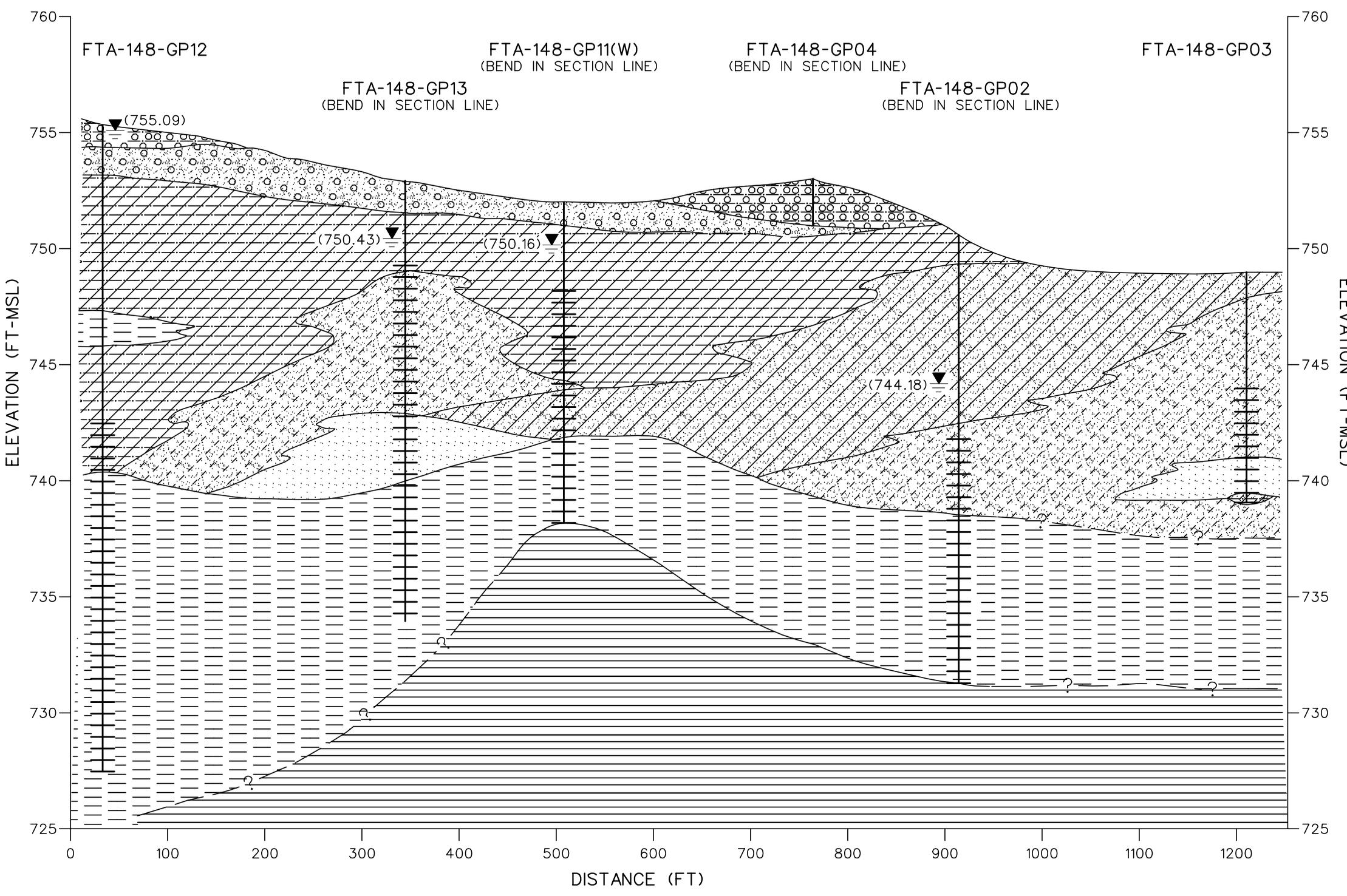
During boring and well installation activities, groundwater was generally encountered in fracture zones within the weathered shale at depths ranging from 10 to 20 feet bgs.

Static groundwater levels were measured in temporary wells installed at the site on March 14, 2000 as summarized in Table 3-4. A groundwater elevation map was constructed from the March 2000 data, as shown on Figure 4-3. This figure shows the potentiometric surface generally mimicking the land surface. Groundwater flow at the site is to the east with a hydraulic gradient across the site of approximately 0.04 feet/foot.

Static groundwater levels summarized in Table 3-4 are 5 to 18 feet above the depth to water data from the boring logs (Appendix C). This indicates that the groundwater has an upward vertical hydraulic head and is under confined conditions.

DWG. NO.: ... \774645es.403
 PROJ. NO.: 774645
 INITIATOR: J. JENKINS
 PROJ. MGR.: J. YACOUB
 DRAFT. CHK. BY: J. JENKINS
 ENGR. CHK. BY: J. JENKINS
 STARTING DATE: 11/03/99
 DATE LAST REV.:
 DRAWN BY: D. BILLINGSLEY
 07/20/00
 09:04:12
 c:\cadd\design\774645es.403

A SOUTH A' NORTH



LEGEND

- SCREEN INTERVAL
- WATER TABLE (3/14/00)
- 750.43 GROUNDWATER ELEVATION (FT MSL)
- SILT, SOME GRAVEL
- SAND, SOME GRAVEL
- CLAY, SOME SILT
- CLAY, SOME SAND
- SAND, SOME CLAY
- SAND
- COMPETENT SHALE
- WEATHERED SHALE

NOTE:

1. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
2. SEE FIGURE 3-2 FOR CROSS SECTION LOCATION.

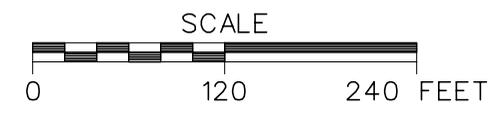
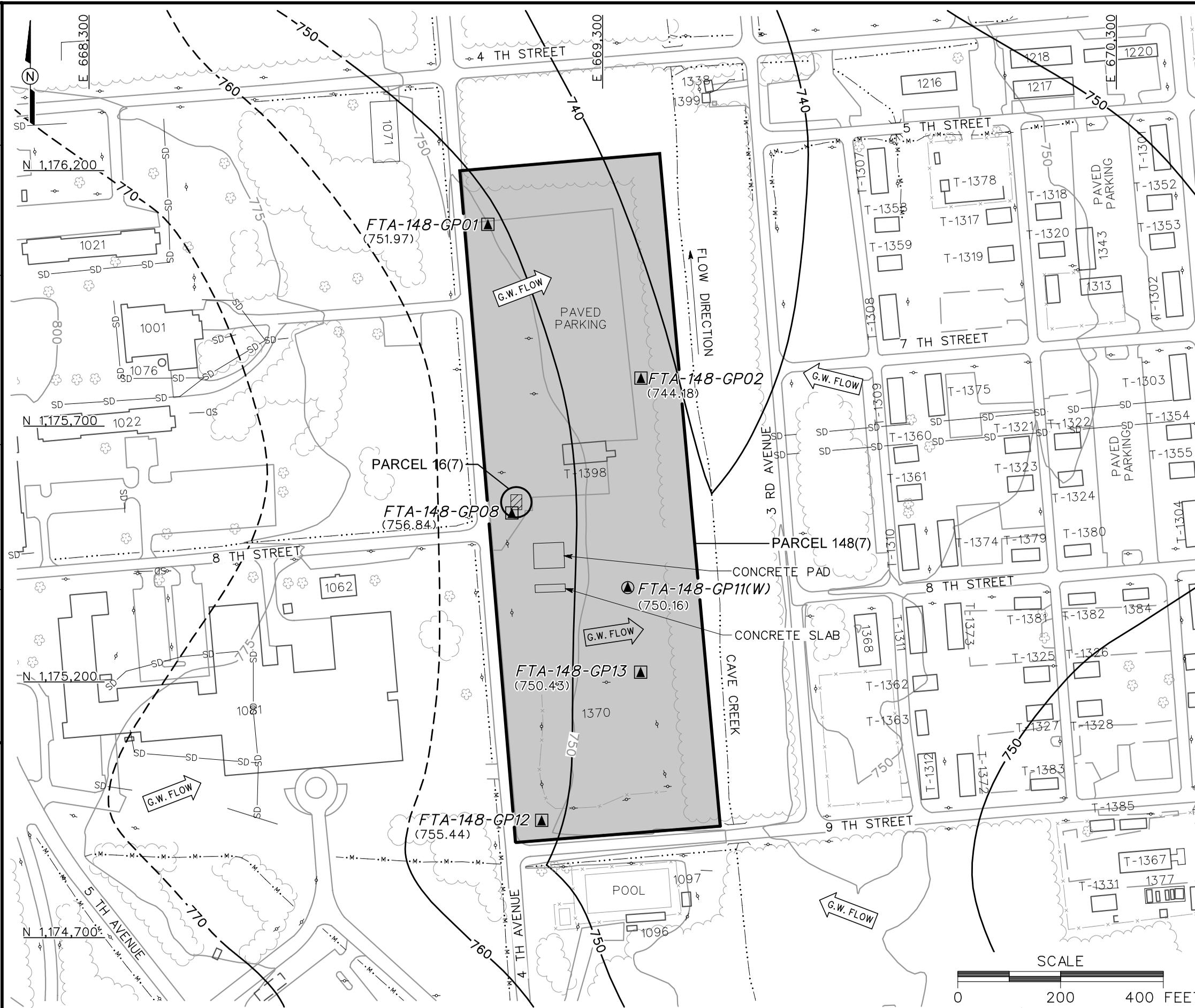


FIGURE 4-2
GEOLOGIC CROSS SECTION A-A'
 FORMER MOTOR POOL AREA 1300,
 4th AVENUE
 PARCELS 148(7) AND 16(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



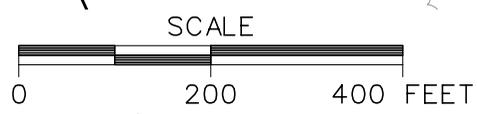
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 PROJ. NO.: 774645
 INITIATOR: C. SHORT
 PROJ. MGR.: J. YACOUB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: J. JENKINS
 STARTING DATE: 07/08/99
 DATE LAST REV.:
 DRAWN BY: D. BILLINGSLEY
 03/02/01
 09:56:51 AM
 DBILLING
 c:\cadd\design\774645es.300



- ### LEGEND
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 25 FOOT)
 - GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
 - (750.16) GROUNDWATER ELEVATION (FT MSL) (MARCH 14, 2000)
 - G.W. FLOW GROUNDWATER FLOW DIRECTION
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - UTILITY POLE
 - SS -- SANITARY SEWER LINE
 - SD -- STORM DRAINAGE LINE
 - GROUNDWATER SAMPLE LOCATION
 - GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

FIGURE 4-3
GROUNDWATER ELEVATION MAP
FORMER MOTOR POOL AREA 1300,
4th AVENUE
PARCELS 148(7) AND 16(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



5.0 Summary of Analytical Results

The results of the chemical analyses of samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), indicate that metals, VOCs, and SVOCs have been detected in the various site media. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the human health SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC environmental restoration program at FTMC.

Metal concentrations exceeding SSSLs and ESVs were subsequently compared to background metals screening values (SAIC, 1998) to determine if the metals concentrations are within natural background concentrations. Summary statistics for background metals samples collected at FTMC (SAIC, 1998) are included in Appendix J. Additionally, SVOC concentrations in surface and depositional soils that exceeded the SSSLs and ESVs were compared to PAH background screening values, where available. The PAH background screening values were derived from PAH analytical data from 18 parcels at FTMC that were determined to represent anthropogenic activity (IT, 2000b). PAH background screening values were developed for 2 categories of surface soils: beneath asphalt and adjacent to asphalt. The PAH background screening values for soils adjacent to asphalt are the more conservative (i.e., lower) of the PAH background values and are the values used herein for comparison.

Six compounds were quantified by both SW-846 Method 8260B (as VOC) and Method 8270C (as SVOC), including 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 1,3-dichlorobenzene, 1,2-dichlorobenzene, hexachlorobutadiene, and naphthalene. Method 8260B yields a reporting limit of 0.005 milligrams per kilogram (mg/kg), while Method 8270C has a reporting limit of 0.330 mg/kg, which is typical for a soil matrix sample. Due to the direct nature of the Method 8260B analysis and its resulting lower reporting limit, this method should be considered superior to Method 8270C when quantifying low levels (0.005 to 0.330 mg/kg) of these compounds. Method 8270C and its associated methylene chloride extraction step is superior, however when dealing with samples that contain higher concentrations (greater than 0.330 mg/kg) of these compounds. Therefore all data were considered and none were categorically excluded. Data validation qualifiers were helpful in evaluating the usability of data, especially if calibration, blank contamination, precision, or accuracy indicator anomalies were encountered. The validation qualifiers and concentrations reported (e.g., whether concentrations were less than or

greater than 0.330 mg/kg) were used to determine which analytical method was likely to return the more accurate result.

The following sections and Tables 5-1 through 5-5 summarize the results of the comparison of detected constituents to the SSSLs, ESVs, and background screening values. Complete analytical results are presented in Appendix F.

5.1 Surface and Depositional Soil Analytical Results

Twelve surface soil samples and one depositional soil sample were collected for chemical analyses at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Surface and depositional soil samples were collected from the upper 1-foot of soil at the locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs, ESVs, and background screening values, as presented in Table 5-1.

Metals. Nineteen metals were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Aluminum, calcium, chromium, iron, lead, manganese, and zinc were present in each of the samples. Ten of the zinc results were flagged with a "B" data qualifier signifying that this metal was also detected in an associated laboratory or field blank sample.

The concentrations of aluminum (FTA-148-GP05 and FTA-148-GP08), arsenic (eleven locations), chromium (FTA-148-GP03, FTA-148-GP04, and FTA-148-GP08), iron (twelve locations), and manganese (FTA-148-DEP01, FTA-148-GP04, and FTA-148-GP11) exceeded residential human health SSSLs. With the exception of arsenic (one location), chromium (two locations), and iron (one location), the metals concentrations were within background concentrations. The arsenic, iron, and one of the chromium results were within the range of background values determined by SAIC (1998) (Appendix J). The chromium concentration (147 mg/kg) at sample location FTA-148-GP03 exceeded the range of background values (37 mg/kg to 134 mg/kg).

Aluminum (13 locations), arsenic (FTA-148-GP04), barium (FTA-148-GP04), beryllium (FTA-148-GP08), cadmium (FTA-148-DEP01 and FTA-148-GP04), chromium (13 locations), copper (FTA-148-DEP01 and FTA-148-GP08), iron (13 locations), lead (3 locations), manganese (6 locations), mercury (FTA-148-DEP01 and FTA-148-GP04), nickel (FTA-148-GP03), selenium (4 locations), vanadium (9 locations), and zinc (4 locations) concentrations exceeded ESVs.

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

(Page 1 of 10)

Parameter	Units	FTA-148		FTA-148-DEP01		FTA-148		FTA-148-GP01		FTA-148-GP02		
		BKG ^a	SSSL ^b	ESV ^c	Result	>BKG	>SSSL	>ESV	Result	>BKG	>SSSL	>ESV
METALS												
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	5.31E+03		YES	6.77E+03			7.02E+03	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	9.70E+00		YES	2.40E+00		YES	4.60E+00	YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	5.89E+01			4.62E+01			4.89E+01	
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND			ND			7.30E+01	
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	3.80E+00		YES	ND			ND	ND
Calcium	mg/kg	1.72E+03	NA	NA	5.48E+04 J		YES	3.32E+03		YES	6.95E+03	YES
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	2.09E+01		YES	1.67E+01			1.27E+01	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND			ND			ND	YES
Copper	mg/kg	1.27E+01	3.13E+02	4.00E-01	4.99E+01		YES	9.60E+00			9.80E+00	YES
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.62E+04		YES	1.96E+04		YES	9.47E+03	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E-01	1.30E+02		YES	7.10E+00			5.37E+01	YES
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	3.03E+04		YES	2.17E+03			1.92E+03	YES
Manganese	mg/kg	1.56E+03	3.63E+02	1.00E+02	5.79E+02		YES	3.35E+01			1.74E+02	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	1.50E-01		YES	ND			ND	YES
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E-01	2.28E+01		YES	6.70E+00			5.30E+00	YES
Potassium	mg/kg	8.00E+02	NA	NA	ND			ND			ND	YES
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.30E+00		YES	9.10E-01		YES	ND	YES
Vanadium	mg/kg	5.88E-01	5.31E+01	2.00E+00	4.67E+01		YES	8.10E+00			1.18E+01	YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	5.18E+02		YES	1.31E+01 B			5.77E+01 B	YES
VOLATILE ORGANIC COMPOUNDS												
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND			ND			ND	ND
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND			ND			ND	ND
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND			ND			ND	ND
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	3.40E+02 J			ND			ND	ND
4-Methyl-2-pentanone	mg/kg	NA	6.21E+02	4.43E+02	1.40E+02 J			ND			ND	ND
Acetone	mg/kg	NA	7.76E+02	2.50E+00	2.90E+01 J			1.20E+02 B			6.30E-02 B	ND
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND			ND			ND	ND
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	9.80E+03 B			9.60E-03 B			9.30E-03 B	ND
Naphthalene	mg/kg	NA	1.55E+02	1.00E-01	ND			ND			ND	ND
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND			ND			ND	ND
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND			ND			ND	ND

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148		FTA-148-DEP01		FTA-148		FTA-148-GP01		FTA-148-GP02			
		BKG ^a	SSSL ^b	ESV ^c	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL
SEMIVOLATILE ORGANIC COMPOUNDS													
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND						ND		
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	ND						5.50E-02 J		
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND						8.70E-02 J		
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	4.50E-01 J		YES				2.40E-01 J		YES
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	4.10E-01 J						1.60E+00	YES	YES
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	1.10E+00 J		YES				1.90E+00	YES	YES
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	1.20E+00 J		YES				2.80E+00	YES	YES
Benzo(g,h)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	5.50E-01 J						4.40E-01		
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	9.50E-01 J						2.60E+00 J	YES	
Butyl benzyl phthalate	mg/kg	NA	1.56E+03	2.40E-01	3.80E-01 J		YES				ND		
Carbazole	mg/kg	NA	3.11E+01	NA	6.10E-01 J						2.30E-01 J		
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	2.40E+00 J	YES					2.10E+00	YES	
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	ND						ND		
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	7.09E+02	3.00E-01 J						ND		
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND						2.40E-01 J		YES
Dibenzofuran	mg/kg	NA	3.09E+01	NA	ND						ND		
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	1.40E+00 J		YES				3.40E+00	YES	YES
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	ND						6.60E-02 J		
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	4.90E-01 J						5.10E-01		
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND						ND		
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	4.30E-01 J		YES				1.30E+00	YES	YES
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	1.20E+00 J		YES				2.80E+00	YES	YES
Diis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	3.00E+00 J		YES				6.00E-02 J		

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148 FTA-148-GP03 DB0005 21-Oct-98 0-1		FTA-148 FTA-148-GP04 DB0007 22-Oct-98 0-1		FTA-148 FTA-148-GP05 DB0008 22-Oct-98 0-1	
		Result	Qual	Result	Qual	Result	Qual
METALS							
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E-01	2.03E+03	5.46E+03	8.61E+03
Arsenic	mg/kg	1.37E+01	4.20E-01	1.00E+01	2.00E+00	1.38E+01	1.30E+00
Barium	mg/kg	1.24E+02	5.47E+02	1.65E-02	ND	2.55E+02	5.29E+01
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND	9.70E-01	ND
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E-00	ND	2.00E+00	ND
Calcium	mg/kg	1.72E+03	NA	NA	1.95E+04	8.58E+03	3.73E+03
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.47E+02	5.55E+01	1.59E+01
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND	5.70E+00	6.20E+00
Copper	mg/kg	1.27E+01	3.13E+02	4.00E-01	6.20E+00	2.02E+01	1.82E+01
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	6.46E+03	2.97E+04	1.74E+04
Lead	mg/kg	4.01E+01	4.00E+02	5.00E-01	4.50E+00	3.55E+02	9.00E+00
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.13E+04	1.32E+03	4.85E+03
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	7.03E+01	8.40E+02	9.32E+01
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND	1.10E-01	ND
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	6.49E+01	9.30E+00	2.03E+01
Potassium	mg/kg	8.00E+02	NA	NA	ND	ND	ND
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND	8.60E-01	ND
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.21E+01	2.66E+01	ND
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E-01	4.40E+00	1.59E+02	4.73E+01
VOLATILE ORGANIC COMPOUNDS							
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	2.30E+03	ND	ND
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND	ND	ND
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND	ND	ND
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND	7.10E+03	ND
4-Methyl-2-pentanone	mg/kg	NA	6.21E+02	4.43E+02	ND	ND	ND
Acetone	mg/kg	NA	7.76E+02	2.50E+00	8.50E+02	1.10E+01	3.90E+02
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	1.90E+03	2.10E+03	ND
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	5.50E+03	1.00E+02	9.90E+03
Naphthalene	mg/kg	NA	1.55E+02	1.00E-01	ND	ND	ND
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND	ND	ND
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND	ND	ND

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units		BKG ^a	SSSL ^b	ESV ^c	FTA-148 FTA-148-GP03 DB0005 21-Oct-98 0-1			FTA-148 FTA-148-GP04 DB0007 22-Oct-98 0-1			FTA-148 FTA-148-GP05 DB0008 22-Oct-98 0-1			
	Result	Qual				>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual
SEMIVOLATILE ORGANIC COMPOUNDS															
2-Methylnaphthalene	mg/kg		NA	1.55E+02	NA	ND					ND				
Acenaphthene	mg/kg		7.02E-01	4.63E+02	2.00E+01	ND					7.70E-02	J			
Acenaphthylene	mg/kg		8.91E-01	4.63E+02	6.82E+02	ND					8.30E-02	J			
Anthracene	mg/kg		9.35E-01	2.33E+03	1.00E-01	3.90E-02	J				6.90E-02	J			YES
Benzo(a)anthracene	mg/kg		1.19E+00	8.51E-01	5.21E+00	9.40E-02	J				1.50E-01	J			
Benzo(a)pyrene	mg/kg		1.42E+00	8.51E-02	1.00E-01	1.20E-01	J		YES	YES	1.90E-01	J		YES	YES
Benzo(b)fluoranthene	mg/kg		1.66E+00	8.51E-01	5.98E+01	1.40E-01	J				2.80E-01	J			
Benzo(g,h)perylene	mg/kg		9.55E-01	2.32E+02	1.19E+02	ND					1.20E-01	J			
Benzo(k)fluoranthene	mg/kg		1.45E+00	8.51E+00	1.48E+02	1.90E-01	J				2.00E-01	J			
Butyl benzyl phthalate	mg/kg		NA	1.56E+03	2.40E-01	ND					ND				
Carbazole	mg/kg		NA	3.11E+01	NA	ND					ND				
Chrysene	mg/kg		1.40E+00	8.61E+01	4.73E+00	1.20E-01	J				2.10E-01	J			
Di-n-butyl phthalate	mg/kg		NA	7.80E+02	2.00E+02	ND					5.30E-02	J			
Di-n-octyl phthalate	mg/kg		NA	1.56E+02	7.09E+02	ND					ND				
Dibenz(a,h)anthracene	mg/kg		7.20E-01	8.61E-02	1.84E+01	ND					6.20E-02	J			
Dibenzofuran	mg/kg		NA	3.09E+01	NA	ND					ND				
Fluoranthene	mg/kg		2.03E+00	3.09E+02	1.00E-01	1.70E-01	J		YES	YES	2.70E-01	J		YES	YES
Fluorene	mg/kg		6.67E-01	3.09E+02	1.22E+02	ND					ND				
Indeno(1,2,3-cd)pyrene	mg/kg		9.37E-01	8.51E-01	1.09E+02	3.60E-02	J				1.20E-01	J			
Naphthalene	mg/kg		3.30E-02	1.55E+02	1.00E-01	ND					ND				
Phenanthrene	mg/kg		1.08E+00	2.32E+03	1.00E-01	8.40E-02	J				7.10E-02	J			YES
Pyrene	mg/kg		1.63E+00	2.33E+02	1.00E-01	1.30E-01	J		YES	YES	2.10E-01	J		YES	YES
bis(2-Ethylhexyl)phthalate	mg/kg		NA	4.52E+01	9.30E-01	4.80E-02	J				5.60E-02	J			

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148 DB0009 22-Oct-98 0-1			FTA-148 GP07 DB0010 22-Oct-98 0-1			FTA-148 GP08 DB0011 23-Oct-98 0-1						
		Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL
METALS														
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	2.29E+03	ND	3.10E+03	ND	1.42E+04	YES	4.90E+00	ND	YES	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E-01	ND	ND	ND	ND	8.22E+01	ND	8.22E+01	ND	ND	YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	ND	ND	ND	ND	1.10E+00	ND	1.10E+00	ND	ND	YES
Beryllium	mg/kg	8.00E-01	9.80E+00	1.10E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	YES
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND	ND	ND	ND	1.00E+04	YES	1.82E+03	ND	YES	YES
Calcium	mg/kg	1.72E+03	NA	NA	1.50E+04	ND	1.06E+01	ND	2.70E+01	YES	2.70E+01	ND	YES	YES
Chromium	mg/kg	3.70E+01	2.32E-01	4.00E-01	1.00E+01	ND	ND	ND	ND	ND	ND	ND	ND	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E-01	ND	ND	7.90E+00	ND	4.24E+01	ND	4.24E+01	ND	YES	YES
Copper	mg/kg	1.27E-01	3.13E+02	4.00E-01	ND	ND	5.69E+03	YES	4.48E+04	YES	4.48E+04	YES	YES	YES
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.62E+03	ND	2.03E+01	ND	1.55E+01	ND	1.55E+01	ND	YES	YES
Lead	mg/kg	4.01E-01	4.00E-02	5.00E-01	2.80E+00	ND	5.93E+03	YES	2.41E+03	ND	2.41E+03	ND	YES	YES
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	7.57E+03	ND	2.49E+01	ND	4.29E+01	ND	4.29E+01	ND	ND	YES
Manganese	mg/kg	1.56E+03	3.63E+02	1.00E+02	3.11E+01	ND	6.10E+00	ND	1.17E+01	ND	1.17E+01	ND	YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND	ND	ND	ND	7.77E+02	ND	7.77E+02	ND	YES	YES
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E-01	ND	ND	ND	ND	1.20E+00	ND	1.20E+00	ND	YES	YES
Potassium	mg/kg	8.00E+02	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	YES
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND	ND	7.90E+00	YES	5.52E+01	ND	5.52E+01	ND	YES	YES
Selenium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.25E+01	ND	1.69E+01	ND	1.69E+01	ND	1.69E+01	ND	YES	YES
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.25E+01	ND	1.69E+01	ND	1.69E+01	ND	1.69E+01	ND	YES	YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	3.60E+00	ND	3.60E+00	ND	5.52E+01	ND	5.52E+01	ND	YES	YES
VOLATILE ORGANIC COMPOUNDS														
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	7.40E-03	ND	7.40E-03	ND	ND	ND	ND	ND	ND	ND
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	3.80E-03	ND	3.80E-03	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	2.70E-03	ND	2.70E-03	ND	ND	ND	ND	ND	ND	ND
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND	ND	4.50E-03	J	ND	ND	4.50E-03	J	ND	ND
4-Methyl-2-pentanone	mg/kg	NA	6.21E+02	4.43E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	mg/kg	NA	7.76E+02	2.50E+00	7.40E-02	ND	7.40E-02	J	5.30E-01	ND	5.30E-01	J	1.70E-02	B
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	1.30E-02	ND	1.30E-02	ND	4.10E-03	ND	4.10E-03	J	ND	ND
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	9.90E-03	B	9.90E-03	B	1.10E-02	B	1.10E-02	B	8.60E-03	B
Naphthalene	mg/kg	NA	1.55E+02	1.00E-01	1.80E-01	J	1.80E-01	J	1.40E-02	J	1.40E-02	J	ND	ND
Toluene	mg/kg	NA	1.55E+03	5.00E-02	3.10E-03	J	3.10E-03	J	ND	ND	ND	ND	ND	ND
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	6.80E-03	ND	6.80E-03	ND	ND	ND	ND	ND	ND	ND

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148 FTA-148-GP06 DB0009 22-Oct-98 0-1				FTA-148 FTA-148-GP07 DB0010 22-Oct-98 0-1				FTA-148 FTA-148-GP08 DB0011 23-Oct-98 0-1									
		BKG ¹	SSSL ⁹	ESV ⁸	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
SEMIVOLATILE ORGANIC COMPOUNDS																			
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	2.40E+00 J				ND					ND					
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	3.30E+00 J	YES			ND					ND					
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	3.70E+00	YES			1.20E-01 J					4.20E-02 J					
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	9.30E+00	YES		YES	1.00E-01 J					4.70E-02 J					
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	1.10E+01	YES	YES	YES	2.80E-01 J					4.90E-02 J					
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	1.10E+01	YES	YES	YES	2.50E-01 J					1.00E-01 J				YES	YES
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	1.10E+01	YES	YES	YES	3.20E-01 J					1.10E-01 J					
Benzo(g,h)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	4.50E+00	YES			1.60E-01 J					4.30E-02 J					
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	8.30E+00	YES			2.20E-01 J					8.50E-02 J					
Butyl benzyl phthalate	mg/kg	NA	1.56E+03	2.40E-01	ND				ND					ND					
Carbazole	mg/kg	NA	3.11E+01	NA	2.30E+00 J				4.40E-02 J					ND					
Chrysene	mg/kg	1.40E+00	6.61E+01	4.73E+00	1.00E+01	YES		YES	2.00E-01 J					5.60E-02 J					
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	ND				ND					2.20E-01 B					
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	7.09E+02	ND				ND					ND					
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	2.60E+00 J	YES	YES	YES	8.80E-02 J					ND					
Dibenzofuran	mg/kg	NA	3.09E+01	NA	3.50E+00 J				ND					ND					
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	2.80E+01	YES		YES	3.60E-01 J					9.50E-02 J					
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	8.90E+00	YES			ND					ND					
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	4.70E+00	YES	YES	YES	1.70E-01 J					4.90E-02 J					
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	1.90E+00 J	YES		YES	ND					ND					
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	2.60E+01	YES		YES	6.20E-02 J					5.10E-02 J					
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	2.00E+01	YES		YES	4.80E-01					6.80E-02 J				YES	
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	ND				1.50E-01 J					7.50E-02 B					

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	BKG ^a		SSSL ^b		ESV ^c		FTA-148 FTA-148-GP11 DB0017 23-Oct-98 0-1		FTA-148 FTA-148-GP12 DB0021 22-Oct-98 0-1		FTA-148 FTA-148-GP13 DB0023 21-Oct-98 0-1		
		Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL
METALS														
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	5.34E+03	5.34E+03	YES	5.69E+03	5.10E+00	5.10E+00	YES	2.67E+03	4.90E+00	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	5.40E+00	5.40E+00	YES	3.32E+01	ND	ND	YES	ND	ND	YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	4.19E+01	4.19E+01		ND	ND	ND		ND	ND	
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND	ND		ND	ND	ND		ND	ND	
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND	ND		1.57E+03	9.90E+02	9.90E+02	YES	9.90E+02	9.90E+02	YES
Calcium	mg/kg	1.72E+03	NA	NA	8.04E+02	8.04E+02		8.50E+00	4.50E+00	4.50E+00	YES	4.50E+00	4.50E+00	YES
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E+01	7.90E+00	7.90E+00		ND	ND	ND		ND	ND	
Cobalt	mg/kg	1.52E+01	4.88E+02	2.00E+01	ND	ND		4.70E+00	3.40E+00	3.40E+00		3.40E+00	3.40E+00	
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.30E+00	7.30E+00		8.28E+03	4.27E+03	4.27E+03	YES	4.27E+03	4.27E+03	YES
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	9.24E+03	9.24E+03	YES	8.40E+00	8.40E+00	8.40E+00		8.40E+00	8.40E+00	
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.39E+01	1.39E+01		1.01E+03	1.01E+03	1.01E+03		1.01E+03	1.01E+03	
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	8.72E+02	8.72E+02	YES	1.71E+02	8.01E+01	8.01E+01	YES	8.01E+01	8.01E+01	YES
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	5.48E+02	5.48E+02		ND	ND	ND		ND	ND	
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND	ND		ND	ND	ND		ND	ND	
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	4.90E+00	4.90E+00		ND	ND	ND		ND	ND	
Potassium	mg/kg	8.00E+02	NA	NA	ND	ND		ND	ND	ND		ND	ND	
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND	ND		ND	ND	ND		ND	ND	
Sodium	mg/kg	5.88E+01	5.31E+01	2.00E+00	7.70E+00	7.70E+00	YES	9.50E+00	9.50E+00	9.50E+00	YES	9.50E+00	9.50E+00	YES
Vanadium	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.60E+01	2.60E+01		1.29E+01	1.29E+01	1.29E+01		1.29E+01	1.29E+01	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.60E+01	2.60E+01		1.29E+01	1.29E+01	1.29E+01		1.29E+01	1.29E+01	
VOLATILE ORGANIC COMPOUNDS														
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND	ND		ND	ND	ND		ND	ND	
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND	ND		ND	ND	ND		ND	ND	
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND	ND		ND	ND	ND		ND	ND	
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	3.70E-03	3.70E-03	J	4.40E-03	4.40E-03	4.40E-03	J	4.40E-03	4.40E-03	J
4-Methyl-2-pentanone	mg/kg	NA	6.21E+02	4.45E+02	ND	ND		1.00E-01	1.00E-01	1.00E-01	J	1.00E-01	1.00E-01	J
Acetone	mg/kg	NA	7.76E+02	2.50E+00	5.10E-02	5.10E-02	B	ND	ND	ND		2.50E-02	2.50E-02	B
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND	ND		ND	ND	ND		ND	ND	
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	9.30E-03	9.30E-03	B	1.10E-02	1.10E-02	1.10E-02	B	1.10E-02	1.10E-02	B
Naphthalene	mg/kg	NA	1.55E+02	1.00E-01	ND	ND		3.10E-03	3.10E-03	3.10E-03	J	3.10E-03	3.10E-03	J
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND	ND		ND	ND	ND		ND	ND	
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND	ND		ND	ND	ND		ND	ND	

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148			FTA-148			FTA-148		
		Qual	>BKG	>SSSL	Qual	>BKG	>SSSL	Qual	>BKG	>SSSL
SEMIVOLATILE ORGANIC COMPOUNDS										
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND	ND	ND	ND	ND	ND
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	ND	ND	ND	ND	ND	ND
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND	ND	ND	ND	ND	ND
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	ND	ND	ND	ND	ND	ND
Benzo(g)hijperylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	mg/kg	NA	1.56E+03	2.40E-01	ND	ND	ND	ND	ND	ND
Carbazole	mg/kg	NA	3.11E+01	NA	ND	ND	ND	ND	ND	ND
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	2.50E-01 B	ND	ND	ND	ND	ND
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	7.09E+02	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND	ND	ND	ND	ND	ND
Dibenzofuran	mg/kg	NA	3.09E+01	NA	ND	ND	ND	ND	ND	ND
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	ND	ND	4.00E-02 J	ND	ND	ND
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	ND	ND	ND	ND	ND	ND
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND	ND	ND	ND	ND	ND
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND	ND	ND	ND	ND	ND
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	ND	ND	2.90E-02 J	ND	ND	ND
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	8.30E-02 B	ND	5.50E-02 J	ND	ND	ND

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parcel		FTA-148 FTA-148-GP14 DB0025 22-Oct-98 0-1								
Sample Location Sample Number Sample Date Sample Depth (Feet)		Units	BKG ^a	SSSL ^b	ESV ^c	Result	Qual	>BKG	>SSSL	>ESV
METALS										
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	3.04E+03					YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	7.60E+00				YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	ND					
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND					
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					
Calcium	mg/kg	1.72E+03	NA	NA	1.14E+03					YES
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	5.60E+00					
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	5.90E+00					
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	6.37E+03			YES		YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.04E+01					
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	6.36E+02					YES
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.27E+02					
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	5.10E+00					
Potassium	mg/kg	8.00E+02	NA	NA	ND					
Selenium	mg/kg	4.80E-01	3.91E+01	8.70E-01	ND					
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	ND					
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.04E+01 B					
VOLATILE ORGANIC COMPOUNDS										
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					
4-Methyl-2-pentanone	mg/kg	NA	6.21E+02	4.43E+02	ND					
Acetone	mg/kg	NA	7.76E+02	2.50E+00	6.00E-02 J					
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND					
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	1.20E-02 B					
Naphthalene	mg/kg	NA	1.55E+02	1.00E-01	ND					
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					

Table 5-1
Surface and Depositional Soil Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama

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Parameter	Units	BKG*	SSSL*	ESV ^b	FTA-148		
					Qual	>BKG	>SSSL
SEMIVOLATILE ORGANIC COMPOUNDS							
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND		
Acenaphthalene	mg/kg	7.02E-01	4.63E+02	2.00E+01	ND		
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	4.00E-02 J		
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND		
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	7.60E-02 J		
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	1.00E-01 J	YES	YES
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	1.00E-01 J		
Benzo(g)h)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	5.80E-02 J		
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	1.50E-01 J		
Butyl benzyl phthalate	mg/kg	NA	1.56E+03	2.40E-01	ND		
Carbazole	mg/kg	NA	3.11E+01	NA	ND		
Chrysene	mg/kg	1.40E+00	8.61E-01	4.73E+00	9.80E-02 J		
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	ND		
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	7.09E+02	ND		
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND		
Dibenzofuran	mg/kg	NA	3.09E+01	NA	ND		
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	8.40E-02 J		
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	ND		
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	6.10E-02 J		
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND		
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND		
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	6.20E-02 J		
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	7.20E-02 J		

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

- * Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.
- For SVOCs, value listed is the background screening criterion for soils adjacent to asphalt as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.
- ^b Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.
- B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).
- J - Result is greater than method detection limit but less than or equal to reporting limit.
- mg/kg - Milligrams per kilogram.
- NA - Not available.
- ND - Not detected.
- Qual - Data validation qualifier.

Table 5-2

**Subsurface Soil Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Parameter	Units	FTA-148 FTA-148-GP01 DB0002 21-Oct-98 4 - 8		FTA-148 FTA-148-GP02 DB0004 21-Oct-98 8 - 12		FTA-148 FTA-148-GP03 DB0006 21-Oct-98 8 - 10		FTA-148 FTA-148-GP08 DB0012 23-Oct-98 4 - 8		FTA-148 FTA-148-GP09 DB0013 23-Oct-98 4 - 7		
		Result	>BKG	>SSSL	Result	>BKG	>SSSL	Result	>BKG	>SSSL	Result	>BKG
METALS												
Aluminum	mg/kg	1.36E+04	7.80E+03	1.79E+04	7.01E+03	9.97E+03	1.77E+04	9.97E+03	1.77E+04	1.93E+04	3.70E+04	YES
Arsenic	mg/kg	1.89E+01	4.28E-01	3.30E+00	1.40E+00	3.90E+00	3.80E+00	3.90E+00	3.80E+00	3.70E+00	1.43E-02	YES
Barium	mg/kg	2.34E+02	5.47E+02	1.63E+02	4.00E+01	7.72E+01	8.43E+01	7.72E+01	8.43E+01	1.43E-02	1.43E-02	YES
Beryllium	mg/kg	8.60E-01	9.60E+00	1.90E+00	6.10E-01	7.80E-01	1.80E+00	7.80E-01	1.80E+00	5.90E-01	5.90E-01	YES
Cadmium	mg/kg	2.20E-01	6.25E+00	ND	ND	ND	ND	ND	ND	1.08E-03	1.08E-03	YES
Calcium	mg/kg	6.37E+02	NA	1.03E+03	1.31E+01	6.88E+02	1.55E+01	6.88E+02	1.55E+01	2.35E+01	2.35E+01	YES
Chromium	mg/kg	3.83E+01	2.32E+01	2.61E+01	1.31E+01	1.55E+01	1.19E+01	1.55E+01	1.19E+01	2.28E+01	2.28E+01	YES
Cobalt	mg/kg	1.79E+01	4.68E+02	2.32E+01	1.16E+01	1.31E+01	1.90E+01	1.31E+01	1.90E+01	5.01E+01	5.01E+01	YES
Copper	mg/kg	1.94E+01	3.13E+02	4.91E+01	1.16E+01	2.09E+04	1.90E+01	2.09E+04	1.90E+01	4.34E+04	4.34E+04	YES
Iron	mg/kg	4.48E+04	2.34E+03	3.97E+04	7.80E+00	1.08E+01	1.83E+01	1.08E+01	1.83E+01	1.82E+01	1.82E+01	YES
Lead	mg/kg	3.85E+01	4.00E+02	1.72E+01	1.91E+03	3.57E+03	2.79E+03	3.57E+03	2.79E+03	9.92E+03	9.92E+03	YES
Magnesium	mg/kg	7.66E+02	NA	8.27E+03	2.20E+01	9.59E+01	7.57E+01	9.59E+01	7.57E+01	5.21E+02	5.21E+02	YES
Manganese	mg/kg	1.36E+03	3.63E+02	2.20E+02	ND	ND	ND	ND	ND	ND	ND	YES
Mercury	mg/kg	7.00E-02	2.32E+00	ND	1.12E+01	2.08E+01	2.37E+01	2.08E+01	2.37E+01	5.41E+01	5.41E+01	YES
Nickel	mg/kg	1.29E+01	1.54E+02	6.91E+01	ND	ND	1.10E+03	ND	1.10E+03	6.19E-02	6.19E-02	YES
Potassium	mg/kg	7.11E+02	NA	ND	ND	ND	7.70E-01	ND	7.70E-01	5.90E-01	5.90E-01	YES
Selenium	mg/kg	4.70E-01	3.91E+01	6.40E-01	7.10E+00	7.10E+00	ND	7.10E+00	ND	ND	ND	YES
Sodium	mg/kg	6.49E+01	5.31E+01	6.10E+00	2.94E+01 B	5.95E+01 B	8.23E+01	5.95E+01 B	8.23E+01	1.45E+02	1.45E+02	YES
Zinc	mg/kg	3.49E+01	2.34E+03	1.30E+02 B	2.94E+01 B	5.95E+01 B	8.23E+01	5.95E+01 B	8.23E+01	1.45E+02	1.45E+02	YES
VOLATILE ORGANIC COMPOUNDS												
2-Butanone	mg/kg	NA	4.66E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	mg/kg	NA	7.76E+02	6.10E-03 B	2.10E-02 B	3.20E-02 B	3.30E-02 B	3.20E-02 B	3.30E-02 B	1.10E-02 B	1.10E-02 B	ND
Methylene chloride	mg/kg	NA	8.41E+01	1.00E-02 B	8.90E-03 B	7.90E-03 B	1.70E-02 B	7.90E-03 B	1.70E-02 B	8.70E-03 B	8.70E-03 B	ND
Toluene	mg/kg	NA	1.55E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethane	mg/kg	NA	2.33E+03	ND	ND	ND	ND	ND	ND	3.60E-03 J	3.60E-03 J	ND
SEMIVOLATILE ORGANIC COMPOUNDS												
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	ND	ND	ND	4.00E-01 B	4.00E-01 B	4.00E-01 B	1.80E-01 B	1.80E-01 B	ND
Di-(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND	ND	4.80E-02 J	1.50E-01 B	4.80E-02 J	1.50E-01 B	5.30E-02 B	5.30E-02 B	ND

Table 5-2

**Subsurface Soil Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

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Parameter	Units	FTA-148 FTA-148-GP10		FTA-148 FTA-148-GP11		FTA-148 FTA-148-GP12		FTA-148 FTA-148-GP13		FTA-148 FTA-148-GP14						
		Qual	>BKG	SSSL*	Result	Qual	>BKG	SSSL	Result	Qual	>BKG	SSSL	Result	Qual	>BKG	SSSL
METALS																
Aluminum	mg/kg	1.36E+04	7.80E+03	1.74E+04	YES	1.76E+04	YES	1.04E+04	YES	3.79E+03	YES	1.18E+04				YES
Arsenic	mg/kg	1.83E+01	4.26E+01	4.90E+00	YES	7.30E+00	YES	5.80E+00	YES	ND	YES	2.50E+00				YES
Barium	mg/kg	2.34E+02	5.47E+02	8.16E+01		3.43E+02	YES	7.67E+01		3.22E+01		4.96E+01				
Beryllium	mg/kg	8.60E-01	9.60E+00	1.80E+00	YES	2.20E+00	YES	1.40E+00	YES	ND		9.70E-01				YES
Cadmium	mg/kg	2.20E-01	6.25E+00	ND		1.50E+00	YES	ND	YES	ND		ND				
Calcium	mg/kg	6.37E+02	NA	ND		7.52E+03	YES	1.01E+03	YES	ND		9.08E+02				YES
Chromium	mg/kg	3.85E+01	2.32E+01	2.74E+01	YES	2.84E+01	YES	2.78E+01	YES	6.30E+00	YES	1.95E+01				
Cobalt	mg/kg	1.75E+01	4.68E+02	2.11E+01	YES	2.25E+01	YES	1.53E+01	YES	ND		1.60E+01				
Copper	mg/kg	1.94E+01	3.13E+02	4.50E+01	YES	2.96E+01	YES	2.16E+01	YES	5.30E+00	YES	2.93E+01				YES
Iron	mg/kg	4.48E+04	2.34E+03	4.38E+04	YES	5.54E+04	YES	4.18E+04	YES	5.34E+03	YES	2.42E+04				
Lead	mg/kg	3.85E+01	4.00E+02	2.11E+01	YES	2.80E+01	YES	2.41E+01	YES	4.30E+00		1.39E+01				YES
Magnesium	mg/kg	7.66E+02	NA	3.18E+03	YES	2.27E+03	YES	2.60E+03	YES	6.66E+02		5.60E+03				
Manganese	mg/kg	1.36E+03	3.63E+02	2.17E+02	YES	1.83E+03	YES	2.89E+02	YES	3.46E+01		7.71E+01				
Mercury	mg/kg	7.00E-02	2.33E+00	4.50E-02	YES	9.10E-02	YES	ND	YES	ND		ND				
Nickel	mg/kg	1.29E+01	1.54E+02	2.96E+01	YES	3.89E+01	YES	2.06E+01	YES	5.30E+00		3.54E+01				YES
Potassium	mg/kg	7.11E+02	NA	1.08E+03	YES	ND	YES	ND	YES	ND		ND				
Selenium	mg/kg	4.70E-01	3.91E+01	ND		9.90E-00	YES	9.30E-01	YES	ND		ND				
Vanadium	mg/kg	6.49E+01	5.31E+01	ND		ND	YES	ND	YES	6.80E+00		ND				
Zinc	mg/kg	3.49E+01	2.34E+03	9.71E+01	YES	1.10E+02	YES	5.42E+01	YES	1.31E+01	YES	8.12E+01	B			YES
VOLATILE ORGANIC COMPOUNDS																
2-Butanone	mg/kg	NA	4.86E+03	ND		ND		ND		ND		4.40E+03	J			
Acetone	mg/kg	NA	7.76E+02	2.10E-02	B	3.30E-02	B	1.20E-02	B	3.10E-02	B	5.90E-02	J			
Methylene chloride	mg/kg	NA	8.41E+01	7.80E-03	B	1.00E-02	B	8.50E-03	B	1.30E-02	B	1.70E-02	B			
Toluene	mg/kg	NA	1.55E+03	ND		ND		ND		2.60E-02	J	1.30E-02	J			
Trichloroethane	mg/kg	NA	2.33E+03	ND		ND		ND		ND		5.30E-03	J			
SEMIVOLATILE ORGANIC COMPOUNDS																
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	1.10E-01	B	4.00E-01	B	ND		ND		ND				
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	5.80E-02	B	1.30E-01	B	4.80E-02	J	ND		ND				

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

* Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.

† Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-3

Groundwater Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148 FTA-148-GP01 DB3001 27-Jan-99			FTA-148 FTA-148-GP02 DB3002 27-Jan-99			FTA-148 FTA-148-GP03 DB3003 28-Oct-98			FTA-148 FTA-148-GP08 DB3004 27-Jan-99			
		BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG
METALS														
Aluminum	mg/L	2.34E+00	1.56E+00	5.28E-01		1.06E+00		1.72E+00	J		1.96E+00			YES
Barium	mg/L	1.27E-01	1.10E-01	4.16E-02	J	1.92E-01		3.22E-01		YES	1.15E-01	J		YES
Calcium	mg/L	5.65E+01	NA	1.24E+01		4.98E+01		7.23E+01		YES	1.00E+02		YES	
Chromium	mg/L	NA	4.69E-03	ND		ND		ND			4.40E-03	J		
Copper	mg/L	2.55E-02	6.26E-02	ND		2.62E-02		ND			ND			
Iron	mg/L	7.04E+00	4.69E-01	2.51E+00		2.53E+00		3.18E+01		YES	2.40E+01		YES	YES
Lead	mg/L	7.99E-03	1.50E-02	ND		2.70E-03	J	3.00E-03			1.70E-03	J		
Magnesium	mg/L	2.13E+01	NA	2.69E+01	YES	2.57E+01		4.85E+01		YES	1.00E+02		YES	
Manganese	mg/L	5.81E-01	7.35E-02	3.54E-01	YES	4.75E-01		8.56E-01		YES	2.57E+00		YES	YES
Potassium	mg/L	7.20E+00	NA	4.18E+00	J	3.94E+00	J	ND			4.10E+00	J		
Sodium	mg/L	1.48E+01	NA	3.06E+01	YES	4.24E+01		4.50E+01		YES	2.87E+01		YES	
Zinc	mg/L	2.20E-01	4.69E-01	ND		ND		ND			ND			
VOLATILE ORGANIC COMPOUNDS														
1,2,4-Trimethylbenzene	mg/L	NA	6.00E-03	ND		ND		1.40E-04	J		ND			
Acetone	mg/L	NA	1.56E-01	ND		ND		7.30E-03	B		ND			
Benzene	mg/L	NA	1.40E-03	ND		ND		2.00E-04	J		ND			
Ethylbenzene	mg/L	NA	1.40E-01	ND		ND		1.10E-04	J		ND			
Toluene	mg/L	NA	2.59E-01	5.60E-04	J	3.80E-04	J	1.10E-04	J		ND			
m,p-Xylenes	mg/L	NA	2.80E+00	ND		ND		3.30E-04	J		ND			
SEMIVOLATILE ORGANIC COMPOUNDS														
Phenol	mg/L	NA	9.31E-01	ND		ND		4.20E-03	B		ND			
bis(2-Ethylhexyl)phthalate	mg/L	NA	4.30E-03	ND		ND		9.20E-03	J		ND			YES

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama

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Parameter	Units	FTA-148 FTA-148-GP11 DB3005 28-Jan-99			FTA-148 FTA-148-GP12 DB3008 28-Jan-99			FTA-148 FTA-148-GP13 DB3009 28-Jan-99			FTA-148 FTA-148-GP14 DB3010 3-Nov-98			
		BKG*	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG
METALS														
Aluminum	mg/L	2.34E+00	1.56E+00	5.10E-01 J		ND		1.16E+00				4.98E+00 J	YES	YES
Barium	mg/L	1.27E-01	1.10E-01	4.43E-01	YES	2.90E-02 J		1.23E-01 J		YES		2.38E-01	YES	YES
Calcium	mg/L	5.65E+01	NA	9.87E+01	YES	9.16E+01	YES	6.18E+01	YES			3.49E+01		
Chromium	mg/L	NA	4.69E-03	ND		ND		ND				ND		
Copper	mg/L	2.55E-02	6.26E-02	ND		ND		ND				ND		
Iron	mg/L	7.04E+00	4.69E-01	2.40E+01	YES	3.81E-01		1.01E+01	YES	YES		5.15E+01	YES	YES
Lead	mg/L	7.99E-03	1.50E-02	ND		ND		ND				4.40E-03		
Magnesium	mg/L	2.13E+01	NA	3.19E+01	YES	5.33E+01	YES	3.62E+01	YES			1.96E+01		
Manganese	mg/L	5.81E-01	7.35E-02	3.53E+00	YES	2.97E-01	YES	2.03E+00	YES	YES		1.97E+00	YES	YES
Potassium	mg/L	7.20E+00	NA	3.35E+00 J		2.53E+00 J		2.80E+00 J				ND		
Sodium	mg/L	1.48E+01	NA	2.54E+01	YES	4.71E+01	YES	2.34E+01	YES			1.56E+01		YES
Zinc	mg/L	2.20E-01	4.69E-01	ND		ND		ND				2.06E-02		
VOLATILE ORGANIC COMPOUNDS														
1,2,4-Trimethylbenzene	mg/L	NA	6.00E-03	ND		ND		ND				ND		
Acetone	mg/L	NA	1.56E-01	ND		ND		ND				3.20E-03 B		
Benzene	mg/L	NA	1.40E-03	ND		ND		ND				ND		
Ethylbenzene	mg/L	NA	1.40E-01	ND		ND		ND				ND		
Toluene	mg/L	NA	2.59E-01	ND		ND		ND				ND		
m,p-Xylenes	mg/L	NA	2.80E+00	ND		ND		ND				ND		
SEMIVOLATILE ORGANIC COMPOUNDS														
Phenol	mg/L	NA	9.31E-01	ND		ND		ND				5.20E-03 B		
bis(2-Ethylhexyl)phthalate	mg/L	NA	4.30E-03	ND		1.80E-02 B	YES	ND				ND		

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

* Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.

^b Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero). J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-4

**Surface Water Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

Parameter		Units	BKG ^a	SSSL ^b	ESV ^b	FTA-148 FTA-148-SW/SD01 DB2001 27-Jan-99			FTA-148 FTA-148-SW/SD02 DB2002 27-Jan-99				
Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	>ESV
METALS													
Aluminum	mg/L	5.26E+00	1.53E+01	8.70E-02	2.36E-01				1.68E-01	J			YES
Barium	mg/L	7.53E-02	1.10E+00	3.90E-03	1.73E-02	J			1.74E-02	J			YES
Calcium	mg/L	2.52E+01	NA	1.16E+02	6.34E+00				6.48E+00				
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	2.13E-01				1.42E-01				
Magnesium	mg/L	1.10E+01	NA	8.20E+01	3.00E+00	J			3.07E+00	J			
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	1.07E-02	J			1.10E-02	J			
Potassium	mg/L	2.56E+00	NA	5.30E+01	9.04E-01	J			8.61E-01	J			
Sodium	mg/L	3.44E+00	NA	6.80E+02	1.72E+00	B			1.72E+00	B			

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.

^b Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-5

Sediment Analytical Results
 Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
 Fort McClellan, Calhoun County, Alabama

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Parameter	Units	Parcel		Sample Location		Sample Number		Sample Date		Sample Depth (Feet)		FTA-148		FTA-148-SW/SD01		FTA-148-SW/SD02			
		BKG*	SSSL*	ESV*	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	8.59E+03	1.15E+06	NA	2.97E+03		2.97E+03		3.63E+03					3.63E+03					
Arsenic	mg/kg	1.13E+01	5.58E+01	7.24E+00	2.60E+00		2.60E+00		3.20E+00					3.20E+00					
Barium	mg/kg	9.89E+01	8.36E+04	NA	1.56E+01	J	1.56E+01	J	1.91E+01	J				1.91E+01	J				
Beryllium	mg/kg	9.70E-01	1.50E+02	NA	3.50E-01	J	3.50E-01	J	4.50E-01	J				4.50E-01	J				
Calcium	mg/kg	1.11E+03	NA	NA	4.62E+02	J	4.62E+02	J	9.84E+02	J				9.84E+02	J				
Chromium	mg/kg	3.12E+01	2.79E+03	5.23E+01	6.00E+00		6.00E+00		7.70E+00					7.70E+00					
Cobalt	mg/kg	1.10E+01	6.72E+04	5.00E+01	4.20E+00	J	4.20E+00	J	3.90E+00	J				3.90E+00	J				
Copper	mg/kg	1.71E+01	4.74E+04	1.87E+01	7.40E+00		7.40E+00		8.90E+00					8.90E+00					
Iron	mg/kg	3.53E+04	3.59E+05	NA	1.11E+04		1.11E+04		1.31E+04					1.31E+04					
Lead	mg/kg	3.78E+01	4.00E+02	3.02E+01	6.00E+00		6.00E+00		7.70E+00					7.70E+00					
Magnesium	mg/kg	9.06E+02	NA	NA	1.16E+03		1.16E+03	YES	1.44E+03					1.44E+03					YES
Manganese	mg/kg	7.12E+02	4.38E+04	NA	1.27E+02		1.27E+02		1.44E+02					1.44E+02					
Mercury	mg/kg	1.10E-01	2.99E+02	1.30E-01	2.10E-02	J	2.10E-02	J	2.40E-02	J				2.40E-02	J				
Nickel	mg/kg	1.30E+01	1.76E+04	1.59E+01	8.70E+00		8.70E+00		8.20E+00					8.20E+00					
Potassium	mg/kg	1.01E+03	NA	NA	1.68E+02	J	1.68E+02	J	2.00E+02	J				2.00E+02	J				
Selenium	mg/kg	7.20E-01	5.96E+03	NA	8.20E-01	B	8.20E-01	B	8.80E-01	B				8.80E-01	B				YES
Sodium	mg/kg	6.92E+02	NA	NA	7.20E+01	B	7.20E+01	B	6.86E+01	B				6.86E+01	B				
Vanadium	mg/kg	4.09E+01	4.83E+03	NA	8.20E+00		8.20E+00		1.07E+01					1.07E+01					
Zinc	mg/kg	5.27E+01	3.44E+05	1.24E+02	4.74E+01		4.74E+01		5.46E+01					5.46E+01					YES
VOLATILE ORGANIC COMPOUNDS																			
Acetone	mg/kg	NA	1.03E+05	4.53E-01	ND		ND		1.10E-02	J				1.10E-02	J				
Methylene chloride	mg/kg	NA	9.84E+03	1.26E+00	3.60E-03	B	3.60E-03	B	3.20E-03	B				3.20E-03	B				
SEMIVOLATILE ORGANIC COMPOUNDS																			
Benzo(a)anthracene	mg/kg	NA	8.93E+01	3.30E-01	4.00E-02	J	4.00E-02	J	4.30E-02	J				4.30E-02	J				
Benzo(a)pyrene	mg/kg	NA	8.93E+00	3.30E-01	3.20E-02	J	3.20E-02	J	4.40E-02	J				4.40E-02	J				
Benzo(b)fluoranthene	mg/kg	NA	8.93E+01	6.55E-01	ND		ND		4.30E-02	J				4.30E-02	J				
Benzo(k)fluoranthene	mg/kg	NA	8.93E+02	6.55E-01	ND		ND		5.40E-02	J				5.40E-02	J				
Chrysene	mg/kg	NA	9.79E+03	3.30E-01	5.00E-02	J	5.00E-02	J	4.60E-02	J				4.60E-02	J				
Fluoranthene	mg/kg	NA	3.73E+04	3.30E-01	6.90E-02	J	6.90E-02	J	6.90E-02	J				6.90E-02	J				
Pyrene	mg/kg	NA	3.06E+04	3.30E-01	7.40E-02	J	7.40E-02	J	5.70E-02	J				5.70E-02	J				

Table 5-5

**Sediment Analytical Results
Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7)
Fort McClellan, Calhoun County, Alabama**

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Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^b Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero);

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

With the exceptions of cadmium (2 locations), chromium (1 location), copper (2 locations), lead (2 locations), and zinc (1 location), the concentrations of these metals were below their respective background concentration or within the range of background values (Appendix J).

Volatile Organic Compounds. Eleven VOCs were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The methylene chloride results and seven of the acetone results were flagged with a "B" data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. Sample location FTA-148-GP06 contained nine of the eleven detected VOCs. However, the VOC concentrations were below residential human health SSSLs. The naphthalene concentration exceeded the ESV at one sample location (FTA-148-GP06).

Semivolatile Organic Compounds. Twenty-three SVOCs, including sixteen PAH compounds and seven non-PAH compounds, were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). SVOCs were not detected in the soils collected from sample location FTA-148-GP13 and only two SVOCs were detected in the sample collected from FTA-148-GP11. Sample location FTA-148-GP06 contained nineteen of the twenty-three detected SVOCs and sample location FTA-148-GP05 contained eighteen of the twenty-three detected SVOCs.

The concentrations of five SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) exceeded SSSLs and PAH background screening values at sample location FTA-148-GP06. Additionally three of these SVOCs (benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene) exceeded SSSLs and PAH background screening values at sample location FTA-148-GP02. Because these samples were collected from beneath asphalt, the SVOC results exceeding SSSLs and PAH background screening values for soils adjacent to asphalt were subsequently compared to the PAH background values for soils beneath asphalt. The three PAH results at sample location FTA-148-GP02 were below PAH background values for soils beneath asphalt. The five PAH results at sample location FTA-148-GP06 exceeded PAH background for soils beneath asphalt. The concentrations of the SVOCs exceeding SSSLs and PAH background values at sample location FTA-148-GP06 ranged from 2.6 mg/kg to 11 mg/kg.

The concentrations of anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, naphthalene, phenanthrene, and pyrene exceeded ESVs and PAH background screening values at sample location FTA-148-GP06. The concentrations of benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene exceeded ESVs and PAH background screening values at sample location FTA-148-GP02. However, because these samples were collected from beneath asphalt, these concentrations were also compared to PAH background screening values for soils beneath asphalt. Most of the concentrations were below the screening values for soils beneath asphalt.

5.2 Subsurface Soil Analytical Results

Ten subsurface soil samples were collected for chemical analyses at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Subsurface soil samples were collected at depths greater than 1-foot bgs at the locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-2.

Metals. Nineteen metals were detected in subsurface soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The concentrations of five metals (aluminum, arsenic, chromium, iron, and manganese) exceeded residential human health SSSLs. However, with the exceptions of aluminum (five locations), iron (one location), and manganese (one location), the concentrations of these metals were below their respective background concentrations. The aluminum and manganese concentrations were within the range of background values (Appendix J). The iron concentration (55,400 mg/kg) at FTA-148-GP11 exceeded the range of background values (44,800 mg/kg to 48,000 mg/kg).

Volatile Organic Compounds. Five VOCs, including 2-butanone, acetone, methylene chloride, toluene, and trichlorofluoromethane, were detected in subsurface soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The methylene chloride analytical results and all but one of the acetone results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. In addition, acetone and methylene chloride were the only detected VOCs at six of the ten sample locations. Sample location FTA-148-GP14 contained each of the detected VOCs.

The VOC concentrations were below residential human health SSSLs.

Semivolatile Organic Compounds. The SVOCs di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in subsurface soil samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). SVOCs were not detected at four sample locations (FTA-148-GP01, FTA-148-GP02, FTA-148-GP13, and FTA-148-GP14). The di-n-butylphthalate analytical results and four of the six bis(2-ethylhexyl)phthalate analytical results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample.

The di-n-butylphthalate and bis(2-ethylhexyl)phthalate concentrations were below residential human health SSSLs.

5.3 Groundwater Analytical Results

Eight temporary monitoring wells were sampled at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at the sample locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-3.

Metals. Twelve metals, including aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, potassium, sodium, and zinc were detected in groundwater samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Sample locations FTA-148-GP02 and FTA-148-GP08 each contained ten of the twelve detected metals.

The concentrations of four metals (aluminum, barium, iron, and manganese) exceeded residential human health SSSLs in the groundwater samples. However, with the exceptions of barium (FTA-148-GP11) and iron (FTA-148-GP03 and FTA-148-GP14), the concentrations of these metals were within the background concentrations or the range of background values (Appendix J).

Volatile Organic Compounds. Six VOCs (acetone, benzene, ethyl benzene, toluene, m,p-xylenes, and 1,2,4-trimethylbenzene) were detected in groundwater samples. The acetone results were flagged with a “B” data qualifier signifying that acetone was also detected in an associated laboratory or field blank sample. Each of the detected VOCs was present in the sample collected at FTA-148-GP03; none of the remaining sample locations contained more than one of the detected VOCs. VOC concentrations were below residential human health SSSLs.

Semivolatile Organic Compounds. bis(2-Ethylhexyl)phthalate and phenol were detected in three of the groundwater samples. The phenol results and one of the bis(2-ethylhexyl)phthalate results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample.

The bis(2-ethylhexyl)phthalate concentrations exceeded the residential human health SSSL at two sample locations (FTA-148-GP03 and FTA-148-GP12).

5.4 Surface Water Analytical Results

Two surface water samples were collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at the sample locations shown on Figure 3-2. Analytical results were compared to recreational site-user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-4.

Metals. Eight metals were detected in surface water samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

None of the detected metals concentrations exceeded SSSLs. Aluminum and barium concentrations exceeded ESVs at both locations, but were within background concentrations.

Volatile Organic Compounds. VOCs were not detected in the surface water samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

Semivolatile Organic Compounds. SVOCs were not detected in the surface water samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

5.5 Sediment Analytical Results

Two sediment samples were collected for chemical and physical analyses at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at the locations shown on Figure 3-2. Analytical results were compared to recreational site-user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-5.

Metals. Nineteen metals were detected in each of the sediment samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The selenium and sodium results were flagged with a "B" data qualifier signifying that these metals were also detected in an

associated laboratory or field blank sample. The metals concentrations were below SSSLs and ESVs.

Volatile Organic Compounds. Acetone and methylene chloride were detected in sediment samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). The methylene chloride analytical results were flagged with a “B” data qualifier signifying that this compound was also detected in an associated laboratory or field blank sample. The acetone and methylene chloride concentrations were below SSSLs and ESVs.

Semivolatile Organic Compounds. Seven SVOCs (PAH compounds), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene, were detected in sediment samples collected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). Sample location FTA-148-SW/SD02 contained each of the detected SVOCs. The SVOC concentrations were below SSSLs and ESVs.

Total Organic Carbon. TOC was detected in each of the sediment samples. TOC concentrations ranged from 553 mg/kg to 1,450 mg/kg. The TOC results are summarized in Appendix F.

Grain Size. The results of grain size analysis for sediment samples are included in Appendix F.

5.6 Evaluation of Analytical Results

Based on the screening of site analytical data against residential human health SSSLs, two metals (chromium and iron), and several PAH compounds were identified as exceeding SSSLs and background screening values (where available) in surface and subsurface soils.

Chromium concentrations exceeded the respective SSSL and range of background values in only one of thirteen surface and depositional soil samples. The average chromium concentration in surface and depositional soils across the site was 25.9 mg/kg, which is below the SSSL and background concentrations. Iron concentrations exceeded the SSSL and range of background values in one of ten subsurface soil samples. The average iron concentration in subsurface soils was 32,324 mg/kg, which is within background concentrations. The metals results that exceeded SSSLs and background concentrations are isolated “hot spots” and represent a small percentage

of the samples collected at the site. When averaged across the site, the concentrations of these metals are within background concentrations and/or below SSSLs.

The PAH compounds that exceeded SSSLs and PAH background values were in samples collected in asphalt areas. Given the low levels (less than 100 ppm) and distribution at the site, the PAH compounds detected in surface soils do not appear to be related to site operations. These PAH compounds are most likely the result of anthropogenic activities (e.g., asphalt pavement) conducted at the site. Since the samples with the elevated PAH results were collected beneath asphalt pavement, asphalt is the most probable source of the PAHs detected at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

6.0 Summary and Conclusions and Recommendations

IT, under contract with USACE, completed an SI at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), at FTMC in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI consisted of a geophysical survey and the sampling and analyses of 12 surface soil samples, 10 subsurface soil samples, 8 groundwater samples, 1 depositional soil sample, 2 surface water samples, and 2 sediment samples. In addition, 8 temporary monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

The geophysical survey results indicate that three anomalies exist at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7). According to the criteria established in the SFSP, the anomalies represent USTs. The anomalies were investigated in July 2000 as part of a UST investigation performed by IT. Based on exploratory trenching and excavation, IT determined that there were not any USTs at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

The analytical results indicate that metals, VOCs, and SVOCs were detected in the environmental media sampled. Analytical results were compared to the human health SSSLs and ESVs. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing site investigations being performed under the BRAC environmental restoration program at FTMC. Additionally, metals results exceeding the SSSLs and ESVs were compared to media-specific background concentrations (SAIC, 1998), and SVOC concentrations exceeding SSSLs and ESVs in surface and depositional soils were compared to PAH background screening values (IT, 2000b).

The potential impact to human receptors is expected to be minimal. With the exception of barium (one groundwater sample), chromium (one surface soil sample), and iron (one subsurface soil sample and two groundwater samples), the metals that exceeded residential human health SSSLs, were within background concentrations or the range of background values, and thus, do not pose an unacceptable risk to future human receptors. The metals results that exceeded SSSLs and the range of background values are isolated “hot spots” and represent a small percentage of the samples collected at the site. When averaged across the site, the

concentrations of these metals are within background concentrations and/or below SSSLs. Five SVOC (PAH compounds), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene, were detected in one surface soil sample at concentrations exceeding residential human health SSSLs and PAH background screening values for soils beneath asphalt. However, the elevated PAHs are believed to be the result of anthropogenic activities (i.e., asphalt pavement) and not related to operations conducted at the site. The SVOC bis(2-ethylhexyl)phthalate was detected in two groundwater samples at concentrations exceeding the SSSL. However, bis(2-ethylhexyl)phthalate is a common laboratory contaminant and is probably not related to site activities. Although the site is projected for commercial/office use, screening against the more conservative residential human health SSSLs indicates the potential threat to human health to be very low in the residential scenario, as well, should the land use change. In the commercial/office land use scenario, the potential threat to human health is reasonably expected to be negligible.

Several metals were detected in surface and depositional soils at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of nine SVOCs exceeded ESVs in surface and depositional soils. However, the potential impact to ecological receptors is expected to be minimal based on the existing viable habitat and site conditions. The site is located within a well-developed area of the Main Post and is surrounded by buildings and paved roads with limited grass areas. In addition, the northern portion of the parcel is covered with asphalt pavement. The site is projected for commercial/office use. Viable ecological habitat is presently limited and is not expected to increase in the future land use scenario. Consequently, the threat to potential ecological receptors is expected to be low.

Based on the results of the SI, past operations at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7), do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT Corporation recommends “No Further Action” and unrestricted land reuse at the Former Motor Pool Area 1300, 4th Avenue, Parcels 148(7) and 16(7).

7.0 References

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