# Final

# Site Investigation Report
# Stump Dump, Parcel 82(7)

# Fort McClellan
# Calhoun County, Alabama

**Prepared for:**

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

**October 2006**

**Revision 0**

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# Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK05, Shaw Environmental, Inc. (Shaw) completed a site investigation (SI) at the Stump Dump, Parcel 82(7), at Fort McClellan in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site and, if present, whether the concentrations pose an unacceptable risk to human health or the environment. The SI consisted of the collection and analysis of eight surface soil samples, six depositional soil samples, eight subsurface soil samples, eight groundwater samples, five surface water samples, and five sediment samples. Eight monitoring wells were installed at the site to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information. In addition, three soil borings were installed into the fill material and two fill material soil samples were collected. Furthermore, a landfill gas investigation and a wetland determination were performed at the fill area.

Chemical analysis of samples collected at the site indicates that metals, volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and pesticides were detected in site media. To evaluate whether the detected constituents pose an unacceptable risk to human health or the environment, the analytical results were compared to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. In addition, site metals data were evaluated using statistical and geochemical methods to determine if the metals detected in site media were naturally occurring.

The results of the landfill gas investigation indicated that the Stump Dump is producing only trace concentrations of landfill gases. Because the fill area has been inactive for approximately 15 years and is producing insignificant emissions, further landfill gas monitoring is not warranted.

The wetland study determined that no wetlands exist within the Parcel 82(7) boundary. However, jurisdictional waters of the U.S. were identified approximately 200 feet southwest of the fill area.

Various metals (aluminum, arsenic, barium, chromium iron, manganese, and thallium) were detected in site media at concentrations exceeding SSSLs and background and, thus, were selected as chemicals of potential concern (COPC). The statistical and geochemical evaluations

determined that the metals detected in site media were all naturally occurring except for beryllium in one depositional soil sample. The beryllium result, however, was below its SSSL indicating that it does not pose a threat to human health. In addition to the metals COPCs, the polynuclear aromatic hydrocarbon (PAH) compound benzo(a)pyrene was also identified as a COPC in subsurface soil because it was detected in one sample at an estimated concentration exceeding its SSSL. Benzo(a)pyrene was not detected in any other soil samples, except for a below-SSSL detection in one surface soil sample. Given its limited spatial distribution in soil and the relatively small amount by which it exceeded its SSSL, it is concluded that benzo(a)pyrene does not pose a threat to human health. This conclusion is consistent with the findings of a streamlined human health risk assessment previously completed as part of an engineering evaluation/cost analysis for this site.

Various metals were detected in site media at concentrations exceeding ESVs and background and, thus, were selected as constituents of potential ecological concern (COPEC). The statistical and geochemical evaluations determined that the metals detected in site media were all naturally occurring except for beryllium in one depositional soil sample. The beryllium result exceeded its ESV. Two pesticides, six PAH compounds, and one VOC were also identified as COPECs in sediment. The pesticide and PAH concentrations marginally exceeded their ESVs at only one sample location. These pesticides and PAHs were not detected in any other sediment samples. The VOC trichlorofluoromethane was detected at low estimated concentrations marginally exceeding its ESV in four samples. Based on the relatively small amounts by which these COPECs exceeded their respective ESVs, their limited distribution in site media, and the very low quality habitat present at the site, it is concluded that the aforementioned COPECs do not pose an unacceptable threat to ecological receptors at this site. This conclusion is consistent with the findings of a screening-level ecological risk assessment previously completed as part of an engineering evaluation/cost analysis for this site.

Based on the results of the SI, past operations at the Stump Dump, Parcel 82(7) have not adversely impacted the environment. The metals and chemical compounds detected in site media do not pose an unacceptable risk to human health and the environment. Therefore, additional investigation or remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) are not required at this site. However, Shaw recommends performing certain non-CERCLA actions to promote reuse of the property and minimize safety concerns. These actions will be in accordance with the proposed future land use and may include, but are not limited to, the following: notice of landfill and covenant placed in

the transfer documentation for the site; installation of concrete monuments to delineate site boundaries; and decommissioning of monitoring wells in accordance with Alabama Department of Environmental Management requirements.

# 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 Shaw Environmental, Inc. (Shaw) (formerly IT Corporation [IT]) to perform the site investigation (SI) at the Stump Dump, Parcel 82(7), under Contract Number DACA21-96-D-0018, Task Order CK05.

This SI report presents specific information and results compiled from the SI conducted at the Stump Dump, Parcel 82(7), including field sampling and analysis, monitoring well installation, fill area definition activities, landfill gas investigation, and wetland determination.

Furthermore, this SI report is a consolidation of data previously presented in multiple documents associated with Parcel 82(7). Decisions regarding this site made at BRAC Cleanup Team (BCT) meetings are an integral component to the conclusions and recommendations presented herein.

## 1.1 Project Description

The Stump Dump was identified as an area to be investigated prior to property transfer. The site was classified as a Category 7 parcel in the *Final Environmental Baseline Survey, Fort McClellan, Alabama* (EBS) (Environmental Science and Engineering, Inc. [ESE], 1998). Category 7 parcels are areas that are not evaluated and/or that require further evaluation.

A site-specific work plan, comprised of a field sampling plan (SFSP) and a safety and health plan, was finalized in October 1998 (IT, 1998a). The work plan was prepared to provide technical guidance for SI field activities at the Stump Dump, Parcel 82(7). The site-specific work plan was used as an attachment to the installation-wide work plan (IT, 1998b) and the installation-wide sampling and analysis plan (SAP) (IT, 1998c). The SAP includes the installation-wide safety and health plan and quality assurance plan.

SI field activities included the collection and analysis of 8 surface soil samples, 6 depositional soil samples, 8 subsurface soil samples, 8 groundwater samples, 5 surface water samples, and 5 sediment samples. Eight groundwater monitoring wells were also installed at the site. In addition, 3 soil borings were installed in the fill material and 2 fill material soil samples were collected. Landfill gas monitoring and a wetland determination were also performed at the Stump Dump. The SI was conducted to determine whether potential site-specific chemicals are present at concentrations that pose an unacceptable risk to human health or the environment.

The Site Investigation and Fill Area Definition Report documented the initial investigative activities conducted at the Stump Dump in 1988 (IT, 2002a). This was followed by an Engineering Evaluation/Cost Analysis (EE/CA) that summarized the site characterization and provided a streamlined risk assessment (SRA) for human health and a screening-level ecological risk assessment (SLERA) in accordance with CERCLA criteria (IT, 2002b).

The streamlined (limited or qualitative) risk assessment described in EPA guidance for landfills is not identical to the SRA method using site-specific screening levels (SSSL) generally performed for FTMC sites. However, the SRA method lends itself very well to the types of risk assessments prescribed in the landfill guidance. The SRA performed as part of the EE/CA concluded that the surface soil, surface water, sediment, and groundwater at the Stump Dump did not pose a threat to the resident or the recreational site-user. Should reuse change at any time in the future (thereby changing the potential receptor scenarios), it may become necessary to evaluate the other media for other potential receptors such as the construction worker (IT, 2002b).

Additionally, the EE/CA presented the results of the SLERA. The SLERA evaluated surface soil, surface water, and sediment at the Stump Dump and indicated no significant ecological risk. It was concluded that low levels of constituents of potential ecological concern (COPEC) exceeding ecological screening values (ESV) in surface water and sediment would not present significant ecological risk to the aquatic ecosystems at the Stump Dump. This conclusion was primarily based on the low quality aquatic habitat provided in the man-made detention ponds and riprap-lined drainage ditches that are frequently dry during extended portions of the year (IT, 2002b).

## 1.2 Purpose and Objectives

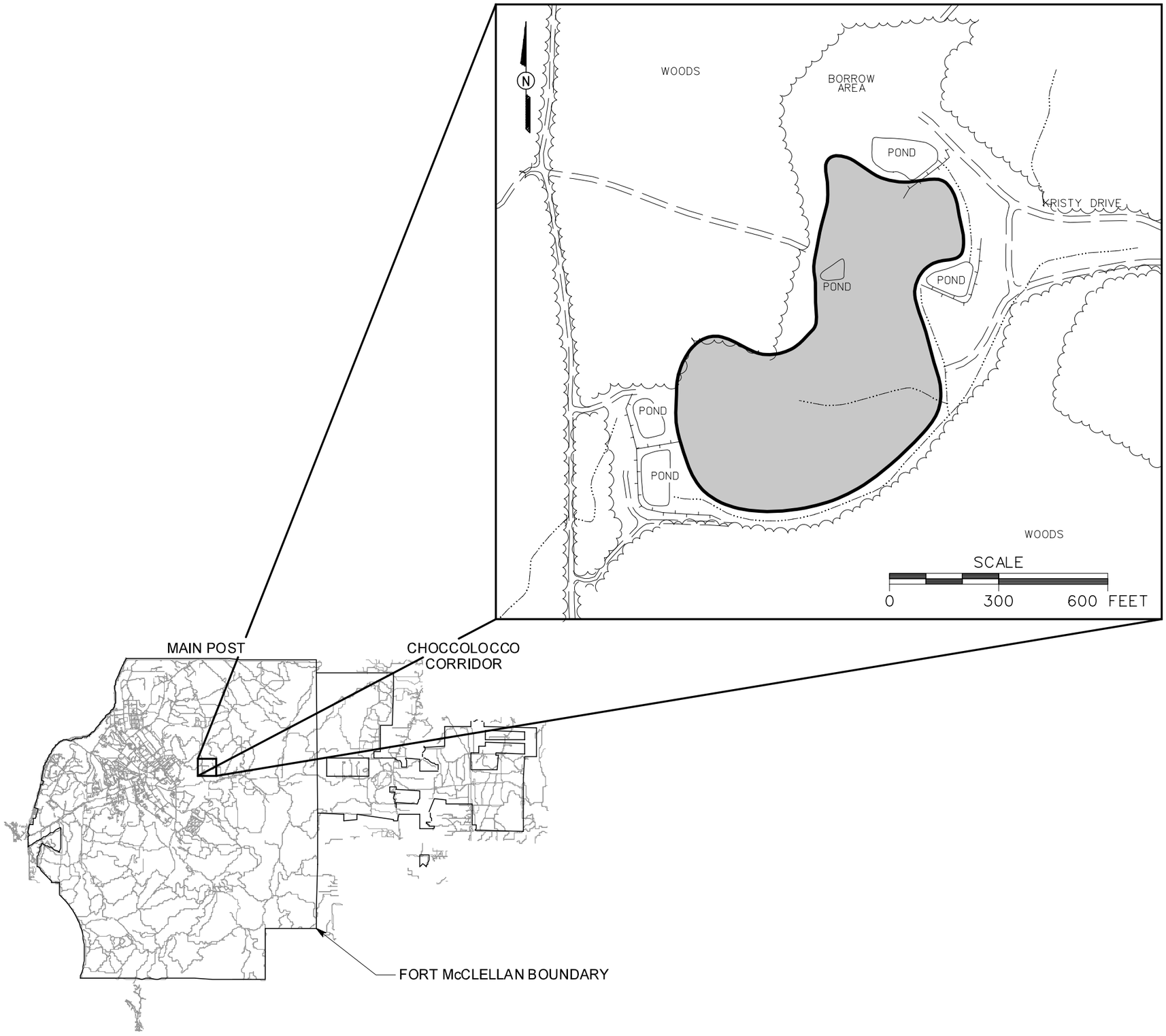
The SI program was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical constituents are present at the Stump Dump, Parcel 82(7), at concentrations that pose an unacceptable risk to human health or the environment. The SI analytical results were compared to SSSLs, ESVs, and background screening values for metals and polynuclear aromatic hydrocarbons (PAH). The SSSLs, ESVs, and PAH background screening values are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000a). Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (Science Applications International Corporation [SAIC], 1998). In addition, site metals data were further evaluated using statistical and geochemical methods to determine if the metals were site related.

Based on the conclusions presented in this SI report, the BCT will select one of the following courses of action for the site: no further action, additional work, or land use restrictions.

## 1.3 Site Description and History

The Stump Dump is located in the central part of the FTMC Main Post (Figure 1-1). Parcel 82(7) is an irregularly shaped 10-acre area measuring approximately 1,000 feet long by 300-to-700 feet wide. The Stump Dump is a cleared area covered with soil and vegetation (grass, shrubs, and some small volunteer Longleaf Pine trees). An unimproved road (Kristy Drive) provides access to the parcel from the east, although site access is restricted by a locked gate. The Stump Dump was used as a disposal area from sometime before 1985 until approximately 1988. Waste contents are primarily vegetation debris (e.g., tree limbs, stumps, storm debris, and yard waste) and some construction debris (e.g., scrap metal, sheet rock, and concrete). Although a limited amount of unauthorized dumping occurred at one time (including items such as tires, paint cans, batteries, and appliances), most, if not all, of these items have been removed. After its closure in 1988 or 1989, the Stump Dump was covered with soil, and vegetation and detention ponds were installed (ESE, 1998).

The area around the site is mostly undeveloped and wooded. Site elevation ranges from approximately 910 to 1,055 feet above sea level. There are no streams on or near the site, although several borrow pits and five man-made drainage control ponds exist on and around the site. The ponds have mud bottoms, are completely devoid of aquatic vegetation, and have no submerged structure. There is no native vegetation along the shoreline of any of the ponds. A




## LEGEND

- UNIMPROVED ROADS AND PARKING
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- BERM

FIGURE 1-1
SITE LOCATION MAP
STUMP DUMP
PARCEL 82(7)

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

Shaw Environmental, Inc.

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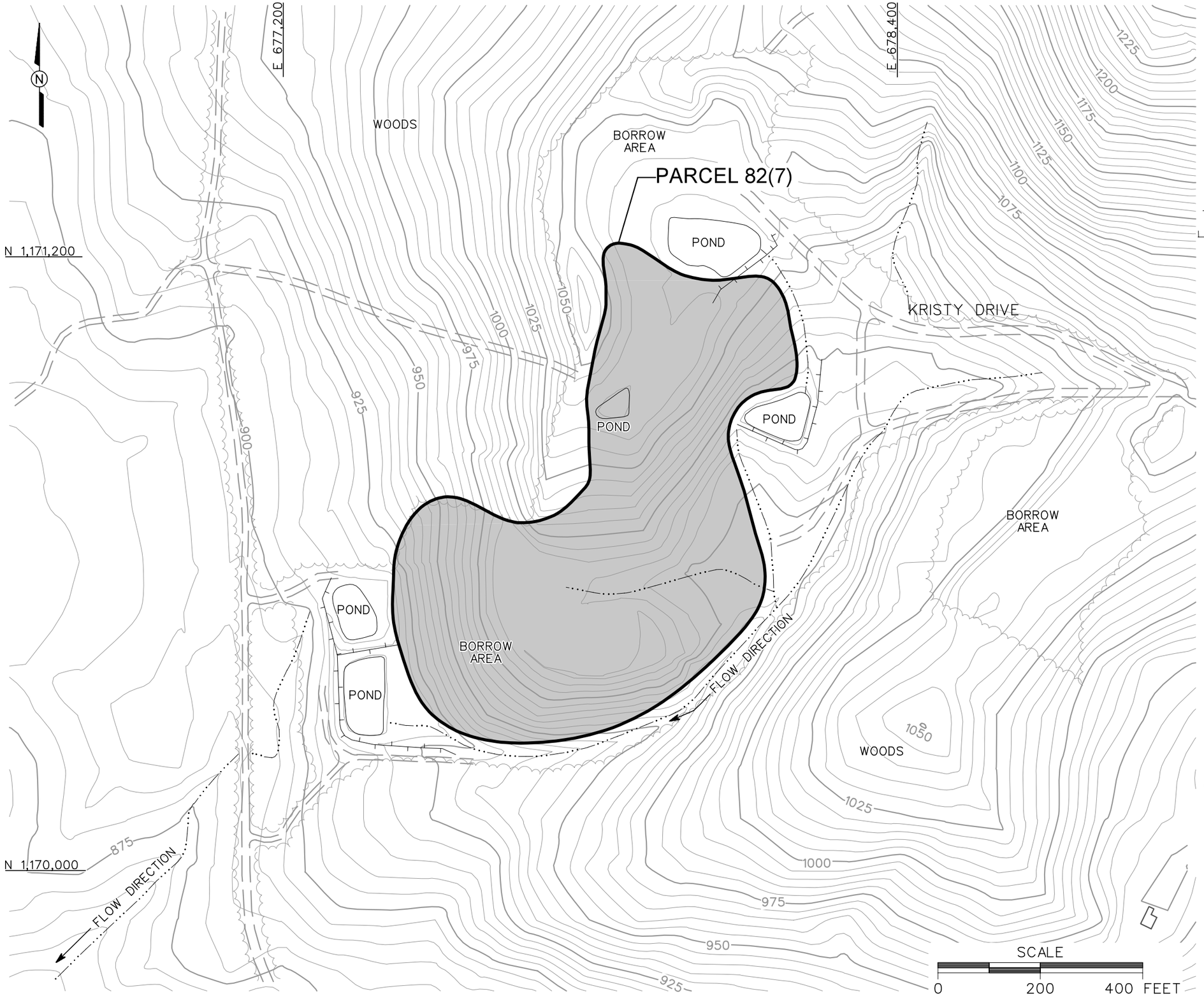
rip-rap lined drainage ditch connects three of the ponds and provides a spillway for overflow for the uppermost ponds. This drainage ditch provides no significant aquatic habitat, because it does not hold water for any extended period of time. Figure 1-2 is a site map that shows topography, site features, and site boundaries.




## LEGEND

- UNIMPROVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- BERM

FIGURE 1-2
SITE MAP
STUMP DUMP
PARCEL 82(7)

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

Shaw™ Shaw Environmental, Inc.

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# 2.0 Previous Investigations

An EBS was conducted by ESE to document the current environmental condition 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 protocols of the Community Environmental Response Facilitation Act (CERFA) (Public Law 102-426) 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 4, and Calhoun County, as well as a database search of substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act, petroleum products, and facilities regulated under the Resource Conservation and Recovery Act. Available historical maps and aerial photographs were reviewed to document historical 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 Stump Dump, Parcel 82(7), was classified as a CERFA Category 7 parcel in the EBS. Category 7 parcels are areas that have not been evaluated or that require additional evaluation.

# 3.0 Current Site Investigation Activities

This chapter summarizes SI activities conducted by Shaw at the Stump Dump, Parcel 82(7), including unexploded ordnance (UXO) avoidance, environmental sampling and analysis, and groundwater monitoring well installation activities.

## 3.1 Unexploded Ordnance Avoidance

UXO avoidance was performed at the Stump Dump, Parcel 82(7), following methodology outlined in the SAP. Shaw UXO personnel used a low-sensitivity magnetometer to perform a surface sweep of the parcel prior to site access. After the parcel was cleared for access, sample locations were monitored following procedures outlined in the SAP.

## 3.2 Environmental Sampling

The environmental sampling performed during the SI at the Stump Dump, Parcel 82(7), included the collection of surface and depositional soil samples, subsurface soil samples, fill material soil samples, groundwater samples, surface water samples, and sediment samples for chemical analysis. The sample locations were determined by observing site physical characteristics during site reconnaissance and by reviewing historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 3-1. Sampling locations are shown on Figure 3-1. Samples were submitted for laboratory analysis of site-related parameters listed in Section 3.4.

### 3.2.1 Surface and Depositional Soil Sampling

Eight surface soil samples and six depositional soil samples were collected at the Stump Dump, Parcel 82(7), as shown on Figure 3-1. Soil sampling locations and rationale are presented in Table 3-1. Sample designations and analytical parameters are listed in Table 3-2. Soil boring locations were determined in the field by the on-site geologist based on the sampling rationale, presence of surface structures, and site topography.

***Sample Collection.*** Surface and depositional soil samples were collected from the uppermost foot of soil using a stainless-steel hand auger following methodology specified in the SAP. Surface and depositional soil samples were collected by first removing surface material (e.g., rocks, vegetation) from the immediate sample area. The soil was then collected with the sampling device and screened with a photoionization detector (PID) in accordance with procedures outlined in the SAP. The soil fraction for volatile organic compound (VOC) analysis

# Table 3-1

## Sampling Locations and Rationale
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama



| Sample Location | Sample Medium | Sample Location Rationale |
|---|---|---|
| FTA-82-MW01 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected west (downgradient) of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW02 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected near the southwestern portion (downgradient) of the Stump Dump, downslope of the borrow area, to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW03 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected just east (upgradient) of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW04 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected near the northeastern area of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW05 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected near the northwestern area of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW06 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected just west (upgradient) of the northern portion of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW07 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected just west of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-MW08 | Surface Soil, Subsurface Soil, Groundwater | Surface soil, subsurface soil, and groundwater samples were collected approximately 600 feet west (downgradient) of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FA-82-SB02 | Fill Material Soil | A fill material sample was collected from a soil boring placed in a large depression in the east-central area of the Stump Dump to determine the vertical extent of fill within this area of the Stump Dump and to provide fill material characterization information. |
| FA-82-SB03 | Fill Material Soil | A fill material sample was collected from a soil boring placed in the northern area of the Stump Dump to determine the vertical extent of fill within this area of the Stump Dump and to provide fill material characterization information. |
| FTA-82-SW/SD01 | Surface Water Sediment | Surface water and sediment samples were collected from the northernmost detention pond near the southwestern portion of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-SW/SD02 | Surface Water Sediment | Surface water and sediment samples were collected from the southernmost detention pond near the southwestern portion of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-SW/SD03 | Surface Water Sediment | Surface water and sediment samples were collected from the detention pond on the eastern side of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |

# Table 3-1

## Sampling Locations and Rationale
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama



| Sample Location | Sample Medium | Sample Location Rationale |
|---|---|---|
| FTA-82-SW/SD04 | Surface Water Sediment | Surface water and sediment samples were collected from the detention pond on the northern side of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-SW/SD06 | Surface Water Sediment | Surface water and sediment samples were collected from the pond in the north-central section of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP01 | Depositional Soil | A depositional soil sample was collected from the embankment of the northernmost detention pond near the southwestern portion of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP02 | Depositional Soil | A depositional soil sample was collected from the drainage ditch on the southern edge of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP03 | Depositional Soil | A depositional soil sample was collected from the drainage ditch along the eastern edge of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP04 | Depositional Soil | A depositional soil sample was collected just east of the northern portion of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP05 | Depositional Soil | A depositional soil sample was collected from the large depression in the east-central area of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |
| FTA-82-DEP06 | Depositional Soil | A depositional soil sample was collected from the large depression in the east-central area of the Stump Dump to determine if potential site-specific chemicals have impacted the environment. |

## Table 3-2

## Soil Sample Designations and Analytical Parameters
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Sample Location | Sample Designation | Sample Depth (ft. bgs) | QA/QC Samples | | | Analytical Parameters |
|---|---|---|---|---|---|---|
| | | | Field Duplicates | Field Splits | MS/MSD | |
| FTA-82-MW01 | FTA-82-MW01-SS-FX0001-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW01-DS-FX0002-REG | 45-47 | | | | |
| FTA-82-MW02 | FTA-82-MW02-SS-FX0003-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW02-DS-FX0004-REG | 52-54 | | | | |
| FTA-82-MW03 | FTA-82-MW03-SS-FX0005-REG | 0-1 | FTA-82-MW03-SS-FX0006-FD | FTA-82-MW03-SS-FX0007-FS | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW03-DS-FX0008-REG | 7-9 | | | | |
| FTA-82-MW04 | FTA-82-MW04-SS-FX0009-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW04-DS-FX0010-REG | 15-17 | | | | |
| FTA-82-MW05 | FTA-82-MW05-SS-FX0011-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW05-DS-FX0012-REG | 50-52 | | | | |
| FTA-82-MW06 | FTA-82-MW06-SS-FX0013-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW06-DS-FX0014-REG | 7-9 | | | FTA-82-MW06-DS-FX0014-MS/MSD | |
| FTA-82-MW07 | FTA-82-MW07-SS-FX0015-REG | 0-1 | FTA-82-MW07-SS-FX0016-FD | FTA-82-MW07-SS-FX0017-FS | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW07-DS-FX0018-REG | 9-11 | | | | |
| FTA-82-MW08 | FTA-82-MW08-SS-FX0019-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| | FTA-82-MW08-DS-FX0020-REG | 11-13 | | | | |
| FA-82-SB02 | FA-82-SB02-DS-DD0025-REG | 2-3 | | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, PCBs, and Explosives |
| FA-82-SB03 | FA-82-SB03-DS-DD0026-REG | 6-7.5 | | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, PCBs, and Explosives |
| FTA-82-DEP01 | FTA-82-DEP01-DEP-FX0021-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-DEP02 | FTA-82-DEP02-DEP-FX0022-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-DEP03 | FTA-82-DEP03-DEP-FX0023-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-DEP04 | FTA-82-DEP04-DEP-FX0024-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-DEP05 | FTA-82-DEP05-DEP-FX0025-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-DEP06 | FTA-82-DEP06-DEP-FX0026-REG | 0-1 | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |

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 - Regular field sample.
SVOC - Semivolatile organic compound.
VOC - Volatile organic compound.

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E 677,200
E 678,400
N 1,171,200
N 1,170,000

WOODS
BORROW AREA
PARCEL 82(7)
POND
KRISTY DRIVE
FLOW DIRECTION

FTA-82-MW01
FTA-82-MW02
FTA-82-MW03
FTA-82-MW04
FTA-82-MW05
FTA-82-MW06
FTA-82-MW07
FTA-82-MW08
FTA-82-SW/SD01
FTA-82-SW/SD02
FTA-82-SW/SD03
FTA-82-SW/SD04
FTA-82-SW/SD06
FTA-82-DEP01
FTA-82-DEP02
FTA-82-DEP03
FTA-82-DEP04
FTA-82-DEP05
FTA-82-DEP06
FA-82-SB01
FA-82-SB02
FA-82-SB03

## LEGEND

- UNIMPROVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- BERM
- MONITORING WELL / SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
- SURFACE WATER/SEDIMENT SAMPLE LOCATION
- DEPOSITIONAL SOIL SAMPLE LOCATION
- FILL MATERIAL BORING LOCATION

SCALE
0 200 400 FEET

## NOTE:

1. SOIL SAMPLE WAS NOT COLLECTED FROM FA-82-SB01.

# FIGURE 3-1
SAMPLE LOCATION MAP
STUMP DUMP
PARCEL 82(7)

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

Shaw™ Shaw Environmental, Inc.

was collected directly from the sample device using three EnCore® samplers. The remaining soil was then 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 A.

### 3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected from 8 soil borings at the Stump Dump, Parcel 82(7), as shown on Figure 3-1. Subsurface soil sampling locations and rationale are presented in Table 3-1. Subsurface soil sample designations, depths, and analytical parameters are listed in Table 3-2. Soil boring locations were determined in the field by the on-site geologist based on the sampling rationale, presence of surface structures, and site topography.

***Sample Collection.*** Subsurface soil samples were collected from soil borings at depths greater than 1 foot bgs in the unsaturated zone. The soil borings were advanced and soil samples collected using the direct-push technology (DPT) sampling procedures specified in the SAP. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4.

Subsurface soil samples were collected continuously to 12 feet bgs or until DPT sampler refusal was encountered. Samples were field screened using a PID to measure volatile organic vapors. The soil sample displaying the highest reading was selected and sent to the laboratory for analysis; however, at those locations where PID readings were below background, the deepest soil sample interval above the saturated zone was submitted for analysis. The soil fraction for VOC analysis was collected directly from the sample device using three EnCore samplers. The remaining sample was then transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Samples submitted for laboratory analysis are summarized in Table 3-2. The on-site geologist constructed a detailed boring log for each soil boring. The boring logs are included in Appendix B. At the completion of soil sampling, boreholes were abandoned with hydrated bentonite pellets following borehole abandonment procedures summarized in the SAP.

### 3.2.3 Monitoring Well Installation

Eight permanent residuum monitoring wells were installed at the Stump Dump, Parcel 82(7), to collect groundwater samples for laboratory analysis. The well/groundwater sample locations are shown on Figure 3-1. Table 3-3 summarizes construction details of the monitoring wells installed at the site. The well construction logs are included in Appendix B.

## Table 3-3

## Monitoring Well Construction Summary
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Well Location | Northing | Easting | Ground Elevation (ft amsl) | TOC Elevation (ft amsl) | Well Depth (ft bgs) | Screen Length (ft) | Screen Interval (ft bgs) | Well Material |
|---|---|---|---|---|---|---|---|---|
| FTA-82-MW01 | 1170705.27 | 677170.47 | 907.26 | 909.76 | 54.5 | 10 | 44.5 - 54.5 | 4" ID Sch. 80 PVC |
| FTA-82-MW02 | 1170193.68 | 677552.22 | 932.10 | 934.59 | 67 | 10 | 51 - 61 | 4" ID Sch. 80 PVC |
| FTA-82-MW03 | 1170575.25 | 678209.94 | 973.66 | 976.23 | 52 | 15 | 34 - 49 | 4" ID Sch. 80 PVC |
| FTA-82-MW04 | 1171081.09 | 678253.20 | 1012.80 | 1015.38 | 129 | 20 | 106 - 126 | 4" ID Sch. 80 PVC |
| FTA-82-MW05 | 1171236.50 | 677806.44 | 1049.14 | 1051.46 | 80.5 | 10 | 70.5 - 80.5 | 4" ID Sch. 80 PVC |
| FTA-82-MW06 | 1171087.92 | 677795.62 | 1064.19 | 1067.13 | 166 | 20 | 141 - 161 | 4" ID Sch. 80 PVC |
| FTA-82-MW07 | 1170850.96 | 677755.90 | 1035.73 | 1038.51 | 113 | 15 | 95 - 110 | 4" ID Sch. 80 PVC |
| FTA-82-MW08 | 1170891.42 | 677221.99 | 914.48 | 915.86 | 46 | 10 | 33 - 43 | 4" ID Sch. 80 PVC |

Permanent residuum wells installed using a hollow-stem auger and/or air-rotary drilling.

Horizontal coordinates referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum of 1983.
Elevations referenced to the North American Vertical Datum of 1988.
4" ID Sch. 80 PVC - 4-inch inside diameter, Schedule 80, polyvinyl chloride.
bgs - Below ground surface.
ft - Feet
amsl - Above mean sea level.
TOC - Top of casing.

Shaw contracted Miller Drilling Company to install the wells at DPT soil boring locations FTA-82-MW01 through FTA-82-MW08 using a combination of hollow-stem auger and air-rotary drilling methods, following procedures outlined in the SAP. An air-rotary drill rig was used in situations where hollow-stem auger refusal was encountered in residuum prior to reaching groundwater.

The borehole for each well was advanced with a 4¼-inch inside diameter (ID) hollow-stem auger from ground surface to the first water-bearing zone in residuum at the well location. If hollow-stem auger refusal was encountered prior to reaching groundwater or bedrock, air-rotary drilling was used to continue advancement of the borehole. The borehole was augered to the completion depth of the DPT soil boring, and soil samples were collected from that depth 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 at the site continued the detailed 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. Air-rotary drill cuttings were described in detail when an air rig was used due to hollow-stem auger refusal. The split-spoon samples and drill cuttings were logged to determine lithologic changes and to approximate the depth at which groundwater was encountered during drilling. This information was used to determine the optimal placement of the monitoring well screen interval and to provide site-specific geologic and hydrogeologic information. Soil characteristics were described using the "Burmeister Identification System" described in Hunt (1986) and the Unified Soil Classification System as outlined in American Society for Testing and Materials (ASTM) Method D2488 (ASTM, 2000). The lithological logs are included in Appendix B.

Upon reaching the target depth in each borehole, a 10- to 20-foot length of 4-inch ID, 0.010-inch continuous slot, Schedule 80 PVC screen with a PVC end cap (or approximately 3-foot sump) was placed through the auger to the bottom of the borehole. The screen and end cap (or sump) were attached to 4-inch ID, flush-threaded Schedule 80 PVC riser. A sand pack consisting of Number 1 filter sand (environmentally safe, clean fine sand, sieve size 20 to 40) was tremied around the well screen to approximately 5 feet above the top of the well screen as the augers were removed. The wells were surged using a solid PVC surge block for approximately 10 minutes or until no more settling of the filer sand occurred. A bentonite seal, consisting of

approximately 5 feet of bentonite pellets, was placed immediately on top of the sand pack and hydrated with potable water. If the bentonite seal was installed below the water table surface, the bentonite pellets were allowed to hydrate in the groundwater. Bentonite seal placement and hydration followed procedures outlined in the SAP. Bentonite-cement grout was tremied into the remaining annular space of the well from the top of the bentonite seal to ground surface. A well cap was placed on the PVC riser. A locking protective steel casing was placed around the top of the PVC well casing and a cement pad was constructed around the wellhead.

The wells were developed by surging and pumping with a submersible pump in accordance with methodology outlined in the SAP. The submersible pump used for well development was moved in an up-and-down fashion to encourage any residual well installation materials to enter the well. These materials were then pumped out of the well to re-establish the natural hydraulic flow conditions. Development continued until the water turbidity was less than 20 nephelometric turbidity units, until the well was repeatedly pumped dry, or for a maximum of 8 hours. The well development logs are included in Appendix C.

### *3.2.4 Water Level Measurements*

The depth to groundwater was measured in wells at the Stump Dump, Parcel 82(7), on January 8, 2002, following procedures outlined in the SAP. Depth to groundwater was measured with an electronic water-level meter. The meter probe and cable were cleaned before use at each well, following decontamination methodology presented the SAP. Measurements were referenced to the top of the PVC well casing. A summary of groundwater level measurements is presented in Table 3-4.

### *3.2.5 Groundwater Sampling*

Groundwater samples were collected from each of the eight monitoring wells installed at the Stump Dump, Parcel 82(7). The well/groundwater sampling locations are shown on Figure 3-1. The groundwater sampling locations and rationale are listed in Table 3-1. Groundwater sample designations and analytical parameters are listed in Table 3-5.

***Sample Collection.*** The groundwater samples were collected using either a peristaltic pump or a submersible pump equipped with Teflon™ tubing following procedures outlined in the SAP. Samples for VOC analysis collected using a peristaltic pump were collected via the "tube evacuation" method. Groundwater was sampled after purging a minimum of three well volumes and after field parameters (temperature, pH, specific conductivity, oxidation-reduction potential, and turbidity) stabilized. Groundwater field parameters were measured using a calibrated water-

## Table 3-4

## Groundwater Elevations
## Stump Dump, Parcel 82(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-82-MW01 | 8-Jan-02 | 44.96 | 909.76 | 907.26 | 864.80 |
| FTA-82-MW02 | 8-Jan-02 | 49.89 | 934.59 | 932.10 | 884.70 |
| FTA-82-MW03 | 8-Jan-02 | 39.63 | 976.23 | 973.66 | 936.60 |
| FTA-82-MW04 | 8-Jan-02 | 94.61 | 1015.38 | 1012.81 | 920.77 |
| FTA-82-MW05 | 8-Jan-02 | 74.06 | 1051.46 | 1049.14 | 977.40 |
| FTA-82-MW06 | 8-Jan-02 | 92.02 | 1067.13 | 1064.19 | 975.11 |
| FTA-82-MW07 | 8-Jan-02 | 71.47 | 1038.51 | 1035.73 | 967.04 |
| FTA-82-MW08 | 8-Jan-02 | 32.66 | 915.86 | 914.48 | 883.20 |

Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

BTOC - Below top of casing
ft - Feet
msl - Mean sea level.

## Table 3-5

## Groundwater Sample Designations and Analytical Parameters
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Sample Location | Sample Designation | QA/QC Samples | | | Analytical Parameters |
|---|---|---|---|---|---|
| | | Field Duplicates | Field Splits | MS/MSD | |
| FTA-82-MW01 | FTA-82-MW01-GW-FX3001-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW02 | FTA-82-MW02-GW-FX3002-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW03 | FTA-82-MW03-GW-FX3003-REG | FTA-82-MW03-GW-FX3004-FD | FTA-82-MW03-GW-FX3005-FS | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW04 | FTA-82-MW04-GW-FX3006-REG | | | FTA-82-MW04-GW-FX3006-MS/MSD | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW05 | FTA-82-MW05-GW-FX3007-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW06 | FTA-82-MW06-GW-FX3008-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW07 | FTA-82-MW07-GW-FX3009-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |
| FTA-82-MW08 | FTA-82-MW08-GW-FX3010-REG | | | | Metals, VOCs, SVOCs, Pesticides, and Herbicides |

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Regular field sample.
SVOC - Semivolatile organic compound.
VOC - Volatile organic compound.

quality meter, as summarized in Table 3-6. Sample collection logs are included in Appendix A. 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

Five surface water samples were collected at the Stump Dump, Parcel 82(7), at the locations shown on Figure 3-1. The surface water sampling locations and rationale are listed in Table 3-1. Surface water sample designations and analytical parameters are listed in Table 3-7. The sampling locations were determined in the field, based on drainage pathways and field observations.

***Sample Collection.*** Surface water samples were collected in accordance with procedures specified the SAP. The samples were collected by dipping a stainless-steel pitcher in the water and pouring the water into the sample containers or by dipping the sample containers in the water and allowing the water to fill the containers. Surface water samples were collected after field parameters had been measured using a calibrated water quality meter. Surface water field parameters are listed in Table 3-6. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

### 3.2.7 Sediment Sampling

Five sediment samples were collected at the same locations as the surface water samples, as shown on Figure 3-1. Sediment sampling locations and rationale are presented in Table 3-1. The sediment sample designations and analytical parameters are listed in Table 3-7. The actual sediment sampling locations were determined in the field, based on drainage pathways and field observations.

***Sample Collection.*** Sediment samples were collected in accordance with the procedures specified in the SAP. Sediments were collected with a stainless-steel hand auger 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 A. The sediment samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

## Table 3-6

## Groundwater and Surface Water Field Parameters
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Sample Location | Date | Medium | Specific Conductivity (mS/cm) | Dissolved Oxygen (mg/L) | ORP (mv) | Temperature (°C) | Turbidity (NTU) | pH (SU) |
|---|---|---|---|---|---|---|---|---|
| FTA-82-MW01 | 5-Jan-99 | GW | 0.014 | 4.80 | 313 | 15.2 | 16.5 | 4.37 |
| FTA-82-MW02 | 6-Jan-99 | GW | 0.016 | 6.43 | 292 | 15.1 | 20.8 | 5.33 |
| FTA-82-MW03 | 6-Jan-99 | GW | 0.060 | 0.42 | 192 | 15.8 | 5.8 | 5.07 |
| FTA-82-MW04 | 8-Jan-99 | GW | 0.022 | 7.76 | 309 | 14.4 | 0 | 5.34 |
| FTA-82-MW05 | 11-Jan-98 | GW | 0.048 | 5.19 | -59 | 16.5 | 160 | 6.21 |
| FTA-82-MW06 | 11-Jan-99 | GW | 0.016 | 8.77 | 142 | 16.9 | 0 | 4.87 |
| FTA-82-MW07 | 12-Jan-99 | GW | 0.014 | 8.02 | 313 | 16.4 | 13.9 | 4.82 |
| FTA-82-MW08 | 6-Jan-99 | GW | 0.018 | 7.81 | 257 | 14.4 | 130 | 5.44 |
| FTA-82-SW/SD01 | 28-Jan-99 | SW | 0.317 | 9.14 | NR | 12.2 | 298 | 7.44 |
| FTA-82-SW/SD02 | 27-Jan-99 | SW | 0.069 | 8.26 | NR | 12.0 | 235 | 6.10 |
| FTA-82-SW/SD03 | 28-Jan-99 | SW | 0.190 | 8.92 | NR | 13.5 | 82 | 7.28 |
| FTA-82-SW/SD04 | 28-Jan-99 | SW | 0.022 | 9.65 | NR | 13.4 | 196 | 6.12 |
| FTA-82-SW/SD06 | 28-Jan-99 | SW | 0.143 | 8.04 | NR | 14.1 | 24.5 | 7.36 |

°C - Degrees Celsius.
GW - Groundwater.
mg/L - Milligram per liter.
mS/cm - Millisiemen per centimeter.
mV - Millivolt.
NR - Not recorded.
NTU - Nephelometric turbidity unit.
ORP - Oxidation-reduction potential.
SU - Standard unit.
SW - Surface water.

## Table 3-7

## Surface Water and Sediment Sample Designations and Analytical Parameters
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Sample Location | Sample Designation | Sample Medium | QA/QC Samples | | Analytical Parameters |
|---|---|---|---|---|---|
| | | | Field Duplicates | Field Splits | |
| FTA-82-SW/SD01 | FTA-82-SW/SD01-SW-FX2001-REG | SW | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, TOC[a], and Grain Size[a] |
| | FTA-82-SW/SD01-SD-FX1001-REG | SED | FTA-82-SW/SD01-SD-FX1002-FD | FTA-82-SW/SD01-SD-FX1003-FS | |
| FTA-82-SW/SD02 | FTA-82-SW/SD02-SW-FX2002-REG | SW | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, TOC[a], and Grain Size[a] |
| | FTA-82-SW/SD02-SD-FX1004-REG | SED | | | |
| FTA-82-SW/SD03 | FTA-82-SW/SD03-SW-FX2003-REG | SW | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, TOC[a], and Grain Size[a] |
| | FTA-82-SW/SD03-SD-FX1005-REG | SED | | | |
| FTA-82-SW/SD04 | FTA-82-SW/SD04-SW-FX2004-REG | SW | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, TOC[a], and Grain Size[a] |
| | FTA-82-SW/SD04-SD-FX1006-REG | SED | | | |
| FTA-82-SW/SD06 | FTA-82-SW/SD06-SW-FX2006-REG | SW | | | Metals, VOCs, SVOCs, Pesticides, Herbicides, and TOC[a] |
| | FTA-82-SW/SD06-SD-FX1008-REG | SED | | | |

[a] Sediment sample only.

FD - Field duplicate.
FS - Field split.
QA/QC - Quality assurance/quality control.
REG - Regular field sample.
SED - Sediment.
SVOC - Semivolatile organic compound.
SW - Surface water.
TOC - Total organic carbon.
VOC - Volatile organic compound.

### 3.2.8 Fill Area Definition Activities

Shaw collected fill material soil samples in March 2000 to determine the vertical extent of the waste fill and to characterize fill materials. The fill material boring locations are shown on Figure 3-1. The lateral extent of the fill area was defined by an existing soil cover and engineered features; therefore, excavation of trenches was not necessary to determine the lateral fill area boundary (IT, 2002a).

***Fill Material Borings.*** Three soil borings (FA-82-SB01, FA-82-SB02, and FA-82-SB03) were advanced using DPT at the Stump Dump to determine the vertical extent of fill material. The average depth of fill material at the Stump Dump was estimated to be approximately 8 feet bgs (IT, 2002a).

***Sample Collection.*** Soil samples were collected from two of the borings for laboratory analysis. A sample was not collected from boring FA-82-SB01 because fill material was not encountered. The fill material soil samples were collected from the borings at depths ranging from 2 to 7.5 feet bgs in the unsaturated zone. The borings were advanced and soil samples collected using the DPT sampling procedures specified in the SAP. Sample collection logs are included in Appendix A and the boring 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.

## 3.3 Surveying of Sample Locations

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

## 3.4 Analytical Program

Samples collected during the SI were analyzed for various chemical and physical parameters based on the potential site-specific chemicals and EPA, ADEM, FTMC, and USACE requirements. The samples were analyzed for the following parameters using EPA SW-846 methods, including Update III methods where applicable:

- Target compound list (TCL) VOCs – EPA Method 8260B
- TCL semivolatile organic compounds (SVOC) – EPA Method 8270C
- Target analyte list metals – EPA Method 6010B/7470A/7471A

- Chlorinated pesticides – EPA Method 8081A
- Organophosphorus pesticides – EPA Method 8141A
- Chlorinated herbicides – EPA Method 8151A
- Total organic carbon (TOC) – EPA Method 9060 (sediment only)
- Grain size – ASTM Method D422 (sediment only).

The fill material soil samples were analyzed for the following additional parameters:

- Nitroaromatic/nitramine explosives – EPA Method 8330
- Polychlorinated biphenyls (PCB) – EPA Method 8082.

### *3.5 Sample Preservation, Packaging, and Shipping*

Sample preservation, packaging, and shipping followed requirements specified in the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SI are listed in the SAP. Sample documentation and chain of custody records were completed as specified in the SAP.

Completed analysis request and chain-of-custody records (Appendix A) were included with each shipment of sample coolers to the analytical laboratory. Samples were shipped to Quanterra Environmental Services in Knoxville, Tennessee. Split samples were shipped to the 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 the SAP. The IDW generated during the SI at the Stump Dump, Parcel 82(7), was segregated as follows:

- Drill cuttings
- Purge water from well development, sampling activities, and decontamination fluids
- Spent well materials and personal protective equipment.

Solid IDW was stored inside the fenced area surrounding Buildings 335 and 336 in lined roll-off bins prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure analyses. Based on the results, solid IDW generated during the SI was disposed as nonhazardous waste at the Industrial Waste Landfill on the Main Post of FTMC.

Liquid IDW was contained in the 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 nonhazardous waste to the FTMC wastewater treatment plant on the Main Post.

## 3.7 Variances/Nonconformances

Three variances to the SFSP were recorded during completion of the SI at the Stump Dump, Parcel 82(7). The variances did not alter the intent of the investigation or the sampling rationale presented in the SFSP. The variances are summarized in Table 3-8 and the variance reports are included in Appendix E.

No nonconformances to the SFSP were recorded during completion of the SI.

## 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 work plans, the FTMC SAP and quality assurance plan, and standard, accepted methods and procedures. Data were reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah Level B criteria (USACE, 2001) and the stipulated requirements for the generation of definitive data presented in the SAP. Chemical data were reported via hard-copy data packages by the laboratory using Contract Laboratory Program-like forms.

***Data Validation.*** The reported analytical data were validated in accordance with EPA National Functional Guidelines by Level III criteria. The data validation summary reports are included in Appendix G. 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 Shaw Environmental Management System™ database for tracking and reporting. The qualified data were used in the comparisons to the SSSLs and ESVs. Rejected data (assigned an "R" qualifier) were not used in the comparisons to the SSSLs and ESVs. The data presented in this report, except where qualified, meet the principle data quality objective for this SI.

## Table 3-8

## Variances to the Site-Specific Field Sampling Plan
## Stump Dump, Parcel 82(7)
## Fort McClellan, Calhoun County, Alabama

| Variance to the SFSP | Justification for Variance | Impact to Site Investigation |
|---|---|---|
| A subsurface soil sample was not collected at FA-82-SB01. | Fill material was not present at the proposed location during hollow-stem auger drilling and split-spoon sampling. The proposed location was relocated several times. Both auger and spoon refusal occurred at depths ranging from 1 ft bls to 4.5 ft bls; fill material was not present. | None. The intent of the soil boring was to determine the presence or absence of fill material, to determine the vertical extent of fill, and to characterize the fill material -- not to determine the presence or absence of contamination. |
| Surface water and sediment samples were not collected at location FTA-82-SW\SD05. | Surface water and sediment were not present in the surface depression area at the time of sample collection. | None. A depositional soil sample FTA-82-DEP06 was collected at this location to determine the presence or absence of contamination. |
| Sediment sample collected from location FTA-82-SW/SD06 was not analyzed for grain size. | The sample fraction for grain size analysis was collected but was not analyzed because the sample was inadvertently lost during transport to the laboratory. | None. The grain size results from the other four sediment samples would provide adequate data, if needed. |