

**Final
Site-Specific Field Sampling Plan,
Site-Specific Safety and Health Plan, and Site-Specific
Unexploded Ordnance Safety Plan Attachments, Forestry
Compound – Pelham Range, Parcel 84(7)**

**Fort McClellan
Calhoun County, Alabama**

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

February 2001

Revision 1

**Final
Site-Specific Field Sampling Plan,
Site-Specific Safety and Health Plan, and Site-Specific
Unexploded Ordnance Safety Plan Attachments, Forestry
Compound – Pelham Range, Parcel 84(7)
Fort McClellan
Calhoun County, Alabama**

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms.

Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Delivery Order CK05, IT Corporation will conduct site investigation activities at the Forestry Compound – Pelham Range, Parcel 84(7), at Fort McClellan, Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals at this site. The purpose of this site-specific field sampling plan is to provide technical guidance for sampling activities at these parcels.

The Forestry Compound, Parcel 84(7), is located on Gate 5 Road in the northeast quadrant of Pelham Range. The compound was used primarily to store herbicides, fungicides, and pesticides, and currently consists of five buildings (Building 8504, Building 8519, Building 8520, Building 8521, and Building 8522) and a gravel parking lot. The site is surrounded by a chain-link fence. Building 8504 was used for office space where there was not any recorded hazardous substances stored. Buildings 8519 and 8520, wooden structures adjacent to one another, were used to store and mix herbicides and fungicides. Pesticides were also stored in the southeast end of Building 8519 prior to constructing the pesticide storage area in the northeast end of Building 8521. Pesticide mixing would likely have occurred on bare ground at the water source. Building 8521 is a metal structure used for pesticide mixing and storage. The Forestry Compound is not equipped with a mixing pad. Building 8522 contains an earthen floor and was used for parking vehicles. Building 8521 was reported to contain a foaming agent and Velpar L herbicide during a visit in 1999. Building 8522 contained a 55-gallon drum with a spigot containing motor oil. Improper mixing has been observed outside of Building 8521. Building 8519 was deficient as a proper storage and mixing facility, but was improved with an epoxy-sealed cement floor in the southwestern half of the floor in 1990, which has since been reported as cracked, but repaired.

Since 1992, the Forestry Compound has only been used to store Granular 2-4D Arsenical/Diquat, when pesticide mixing operations were discontinued. Seed and fertilizer are also stored in Building 8521.

Pesticides were applied in the past by forestry technicians uncertified in pesticide application; however, they are currently U.S. Department of Defense-certified in pesticide application. Releases have not been reported at the Forestry Compound.

1 Specifically, IT will collect eight surface soil samples, eight subsurface soil samples, and four
2 depositional soil samples at the Forestry Compound, Parcel 84(7), to meet the objectives of the
3 site investigation. Potential contaminant sources at include pesticides, fungicides, herbicides
4 and, oil and other petroleum products (gasoline, diesel, oils, and lubricants). Chemical analyses
5 of the samples collected during the field program will include volatile organic compounds,
6 semivolatile organic compounds, chlorinated pesticides, orthophosphorus pesticides, chlorinated
7 herbicides, and metals. Results from these analyses will be compared with site-specific
8 screening levels developed in the IT Corporation July 2000, *Final Human Health and Ecological*
9 *Screening Values and PAH Background Summary Report*, and regulatory agency guidelines.

10

11 This site-specific field sampling plan attachment to the installation-wide sampling and analysis
12 plan (SAP) for the Forestry Compound will be used in conjunction with the site-specific safety
13 and health plan, site-specific unexploded ordnance safety plan, the installation-wide work plan,
14 and the SAP. The SAP includes the installation-wide safety and health plan, waste management
15 plan, ordnance and explosives management plan, and quality assurance plan. Site-specific
16 hazard analyses are included in the site-specific safety and health plan and site-specific
17 unexploded ordnance safety plan.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Forestry Compound, Parcel 84(7), under Delivery Order CK05, Contract Number DACA21-96-D-0018.

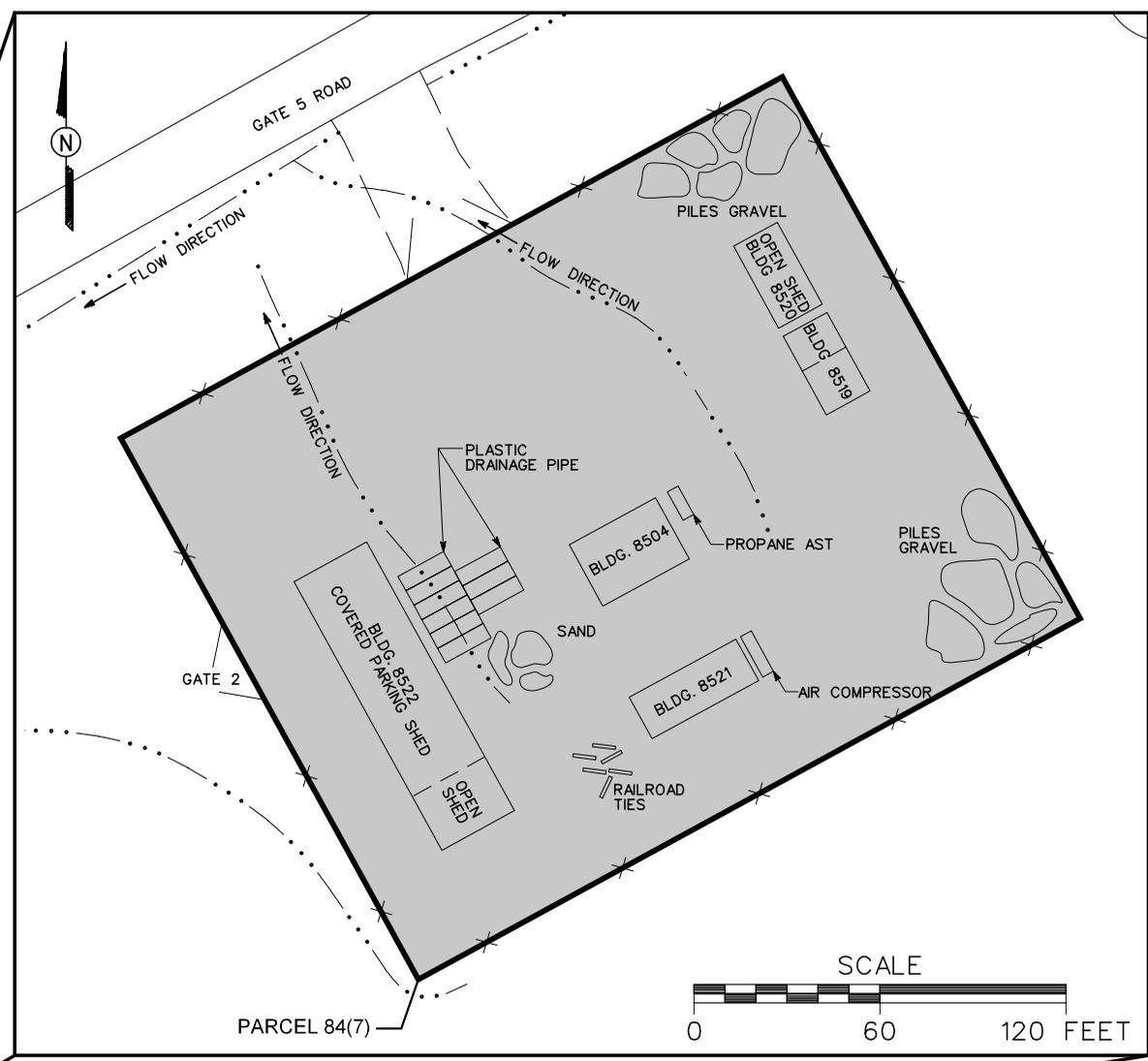
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 2000) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Forestry Compound. This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) and site-specific unexploded ordnance (UXO) safety plan developed for the Forestry Compound, and the installation-wide work plan (WP) (IT, 1998) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, ordnance and explosives management plan, and quality assurance plan (QAP). Site-specific hazard analyses are included in the SSHP and site-specific UXO safety plan.

1.2 Site Description

The Forestry Compound, Parcel 84(7), is located on Gate 5 Road in the northeast quadrant of Pelham Range (Figures 1-1 and 1-2). The compound was used primarily to store herbicides, fungicides, and pesticides, and currently consists of five buildings (Building 8504, Building 8519, Building 8520, Building 8521, and Building 8522) and a gravel parking lot. The site is surrounded by a chain-link fence. The Forestry Compound, Parcel 84(7), is approximately 250 feet long (east to west) by 200 feet wide (north to south), and covers approximately 1.15 acres.

Building 8504 was used for office space where there were not any recorded hazardous substances stored. Buildings 8519 and 8520, wooden structures adjacent to one another, were used to store and mix herbicides and fungicides (U.S. Army Center for Health Promotion and Preventive Maintenance, 1999). Pesticides were also stored in the southeast end of Building 8519 prior to constructing the pesticide storage area in the northeast end of Building 8521. Pesticide mixing would likely have occurred on bare ground at the water source (Environmental Science and Engineering [ESE], 1998). Building 8521 is a metal structure used for pesticide mixing and storage. The Forestry Compound is not equipped with a mixing pad. Building 8522

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 INITIATOR: J. BROWN
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 DATE LAST REV.:
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 STARTING DATE: 12/04/00
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE
 - FENCE

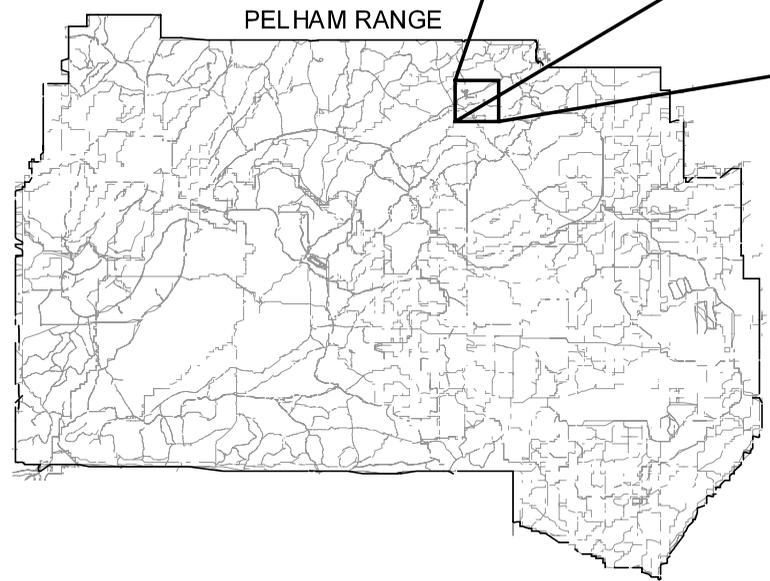
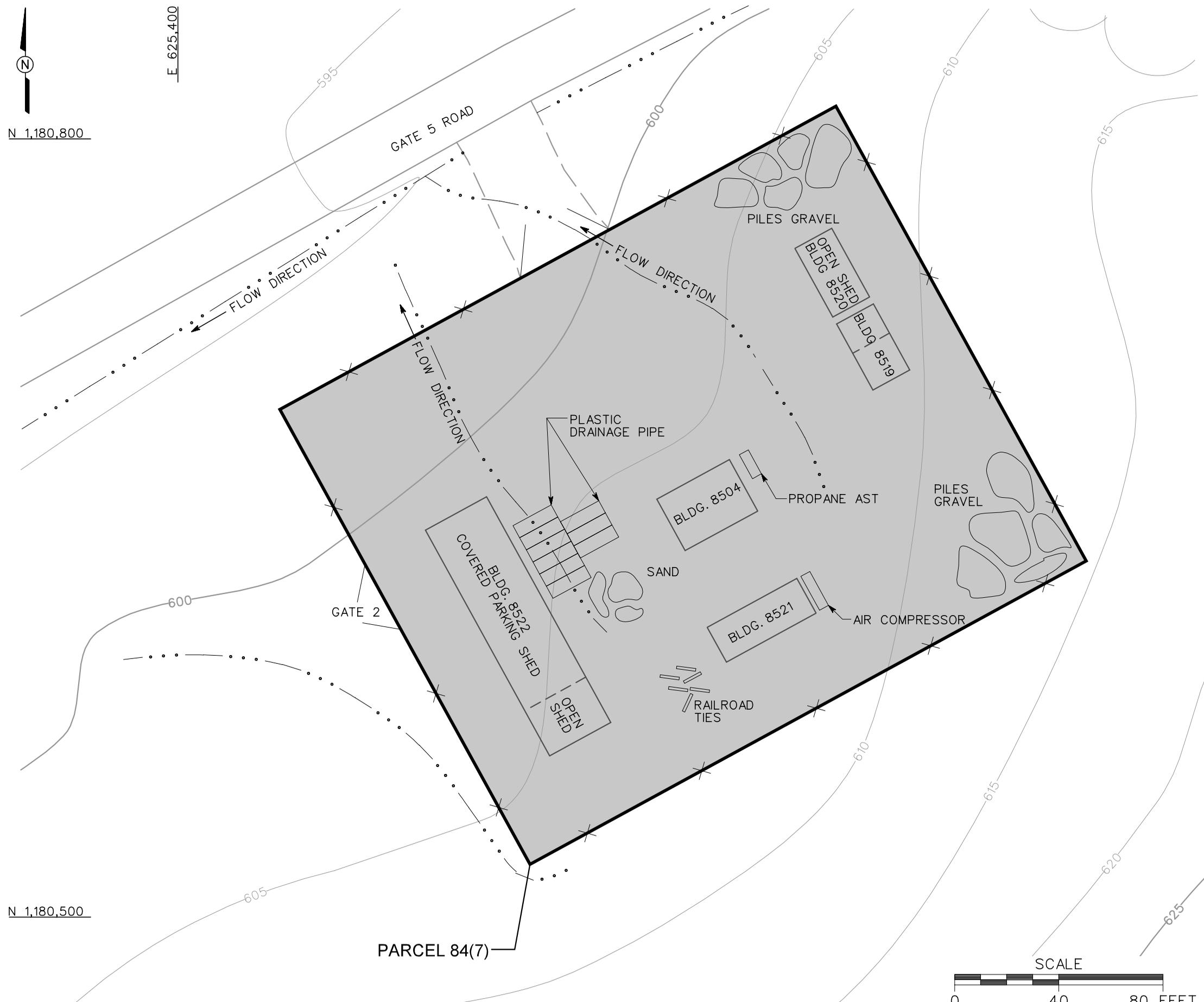


FIGURE 1-1
SITE LOCATION MAP
FORESTRY COMPOUND
PARCEL 84(7)

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



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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE
 - FENCE

FIGURE 1-2
SITE MAP
FORESTRY COMPOUND
PARCEL 84(7)
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



1 contains an earthen floor and was used for parking vehicles. Buildings 8521 was reported to
2 contain a foaming agent and Velpar L herbicide during a site visit in 1999. Building 8522
3 contained a 55-gallon drum with a spigot containing motor oil. Improper mixing has been
4 observed outside of Building 8521. Building 8519 was deficient as a proper storage and mixing
5 facility, but was improved with an epoxy-sealed cement floor in the southwestern half of the
6 floor in 1990, which has since been reported as cracked, but repaired (U.S. Army Center for
7 Health Promotion and Preventive Maintenance, 1999).

8
9 Since 1992, the Forestry Compound has only been used to store Granular 2-4D
10 Arsenical/Diquat, when pesticide mixing operations were discontinued. Seed and fertilizer are
11 also stored in Building 8521 (ESE, 1998).

12
13 Pesticides were applied in the past by forestry technicians uncertified in pesticide application;
14 however, they are currently U.S. Department of Defense (DOD)-certified in pesticide
15 application. Releases have not been reported at the Forestry Compound (ESE, 1998).

16
17 The Forestry Compound is currently in use as a storage area for road-building materials as
18 noticed during the site walkover completed by IT personnel in November 2000. Road-building
19 materials include large piping approximately 3 feet in diameter and 30 feet long, piles of gravel,
20 and some railroad ties.

21
22 The elevation of the Forestry Compound varies from 600 feet to 615 feet (National Geodetic
23 Vertical Datum of 1929). Surface water appears to drain to the northwest. Local shallow
24 groundwater direction at the site is probably controlled by topography; therefore, groundwater
25 direction in the residuum is likely to the northwest.

26
27 Soils at the Forestry Compound consist of the Decatur and Cumberland clay loams, 6 to 10
28 percent slopes, severely eroded (DcC3), and Cumberland gravelly clay loam, ten to 25 percent
29 slopes severely eroded (CrD3) soils (U.S. Department of Agriculture, 1961).

30
31 The Decatur series consists of strongly acidic, well-drained soils that have developed on uplands
32 from limestone residuum and old valley fill of similar origin. The surface soil is generally dark
33 reddish-brown loam and the subsoil a dark-red, silty clay. The Decatur soils are associated with
34 the Dewey, Fullerton, and Clarksville soils. The Decatur is well drained and has limestone
35 residuum on uplands. The typical soil description is 3 to 20 feet of well-drained loams to silty
36 clays, developed in old alluvium that washed from soils developed from limestone, chert, and

1 shale. Depth to bedrock is anywhere between 3 to 20 feet, with the depth of water expected at
2 greater than 20 feet.

3
4 The Cumberland series consists of a deep, well-drained gravelly loam and gravelly silty clay
5 soils on stream terraces. The alluvium is 2 to 15 feet thick, and is underlain in places by beds of
6 gravel or sand. A large acreage of the Cumberland soils contains a noticeable amount of fine
7 sand, especially in the surface soil and upper part of the subsoil. Depth to bedrock is anywhere
8 between 4 to 20 feet with water expected at greater than 20 feet.

9 10 **1.3 Scope of Work**

11 The scope of work for activities associated with the SI at the Forestry Compound as specified by
12 the statement of work (USACE, 2000), includes the following tasks:

- 13
14 • Develop the SFSP attachment.
- 15
16 • Develop the SSHP attachment.
- 17
18 • Develop the site specific UXO safety plan attachment.
- 19
20 • Conduct a surface and near-surface UXO survey over all areas to be included in this
21 sampling effort.
- 22
23 • Provide downhole UXO support for all intrusive drilling to determine buried
24 downhole hazards.
- 25
26 • Collect eight surface soil samples, eight subsurface soil samples, and four
27 depositional soil samples to determine whether potential site-specific chemicals
28 (PSSC) are present at the Forestry Compound and to provide data useful for
29 supporting any future planned corrective measures and closure activities.
- 30

31 Pelham Range is an active range currently used by the Alabama National Guard and the
32 Anniston Army Depot for military training and testing. Therefore, UXO surface sweeps and
33 downhole surveys of soil borings will be required to support field activities at this site. The
34 surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes
35 of UXO avoidance. The site-specific UXO safety plan attachment addresses the manner which
36 the avoidance will be conducted.

37
38 At completion of the field activities and sample analyses (as listed in Section 4.5), draft and final
39 SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site,
40 and to recommend further actions, if appropriate. The SI summary report will be prepared in

- 1 accordance with current U.S. Environmental Protection Agency (EPA), Region IV and Alabama
- 2 Department of Environmental Management (ADEM) guidelines.

2.0 Summary of Existing Environmental Studies

An environmental baseline survey 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 environmental baseline survey 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 (including migration) has occurred
2. Areas where only release or disposal of petroleum products has occurred
3. Areas of contamination below action levels
4. Areas where all necessary remedial actions have been taken
5. Areas of known contamination with removal and/or remedial action underway
6. Areas of known contamination where required response actions have not been taken
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the 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, EPA Region IV, and Calhoun County, as well as a database search of CERCLA-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 Forestry Compound was identified as a CERFA Category 7 site. CERFA Category 7 sites are parcels where site-specific chemicals were stored, and possibly released onto the site or to the environment, and/or were disposed of on site property. CERFA Category 7 sites are areas that lack adequate documentation and, therefore, require additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for Forestry Compound. This section incorporates the components of the DQO process described in the publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Forestry Compound is described in more detail in Section 4.3 of the WP.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program-like forms, along with electronic copies. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE-supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media and will be reported in draft and final SI reports at the completion of field activities and sample analyses.

3.3 Data Types and Quality

Surface soil, subsurface soil, and depositional soil will be sampled and analyzed to meet the objectives of the SI at the Forestry Compound (Table 3-1). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 Methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages.

Table 3-1

**Summary of Data Quality Objectives
Forestry Compound - Pelham Range, Parcel 84(7)
Site Investigation
Fort McClellan, Calhoun County, Alabama**

Users	Available Data	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other contractors, and possible future land users	None	<u>Surface soil</u>	SI to confirm the presence or absence of contamination in the site media	<u>Surface soil</u> TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals	Definitive data in CESAS Level B data packages	8 direct-push soil samples + QC
		<u>Subsurface Soil</u>		<u>Subsurface Soil</u> TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals		
		<u>Depositional Soil</u>	Definitive quality data for future decision- making	<u>Depositional Soil</u> TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals	Definitive data in CESAS Level B data packages	4 depositional soil samples + QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 FTMC - Fort McClellan.
 USACE - U.S. Army Corps of Engineers.
 SI - Site investigation.

QC - Quality control.
 VOC - Volatile organic compound.
 SVOC - Semivolatile organic compound.
 TCL - Target compound list.
 TAL - Target analyte list.
 CI - Chlorinated.
 OP - Organophosphorus.

1 In addition to meeting the quality needs of this SI, data analyzed at this level of quality are
2 appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3

4 **3.4 Precision, Accuracy, and Completeness**

5 Laboratory requirements of precision, accuracy, and completeness for this SI are provided in
6 Section 9.0 of the QAP.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

Pelham Range is an active range used by both the Alabama National Guard and the Anniston Army Depot for training and weapons testing. Use of the area prior to storage of herbicides, fungicides, and pesticides is unknown. Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings. The site-specific UXO safety plan provides technical guidance for ordnance and explosives avoidance for sample collection activities at the Forestry Compound – Pelham Range. The site-specific UXO safety plan attachment has been written in conjunction with Appendix E of the SAP (IT, 2000).

4.1.1 Surface UXO Survey

A UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Hand-held, low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for each avoidance. Subsurface metallic anomalies will not be disturbed, and will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Chapter 4.0 and Appendix E of the approved SAP (IT, 2000). Additionally, the site-specific UXO safety plan attachment has been written in conjunction with Appendix E, Installation-Wide Ordnance and Explosives Management Plan for Support of Hazardous, Toxic, Radiological Waste Activities and Construction Activities (IT, 2000) as a necessary measure for UXO avoidance. The site-specific UXO safety plan attachment is necessary due to the extreme UXO hazards observed at the Forestry Compound.

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, downhole UXO surveys will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 2000), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet below ground surface, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at locations where soil and groundwater

1 samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 2000).
2 The site manager will mark the proposed locations with stakes, coordinate with the local utility
3 companies to clear the proposed locations for utilities, and obtain digging permits. Once the
4 locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes
5 will be labeled as cleared.
6

7 **4.2 Environmental Sampling**

8 The environmental sampling program at the Forestry Compound includes the collection of
9 surface and subsurface soil samples for chemical analyses. These samples will be collected and
10 analyzed to provide data for characterizing the site to determine the environmental condition of
11 the site and any further action to be conducted at the site. Additionally, samples will be
12 collected from environmental media in locations that will assist in the assessment of potential
13 ecological impacts resulting from activities at the site.
14

15 **4.2.1 Surface Soil Sampling**

16 Surface soil samples will be collected from eight soil locations at the Forestry Compound.
17

18 **4.2.1.1 Sample Locations and Rationale**

19 The surface soil sampling rationale is listed in Table 4-1. Proposed sampling locations are
20 shown in Figure 4-1. Surface soil sample designations and required QA/QC sample require-
21 ments are summarized in Table 4-2. The final soil boring sampling locations will be determined
22 in the field by the on-site geologist, based on actual field conditions.
23

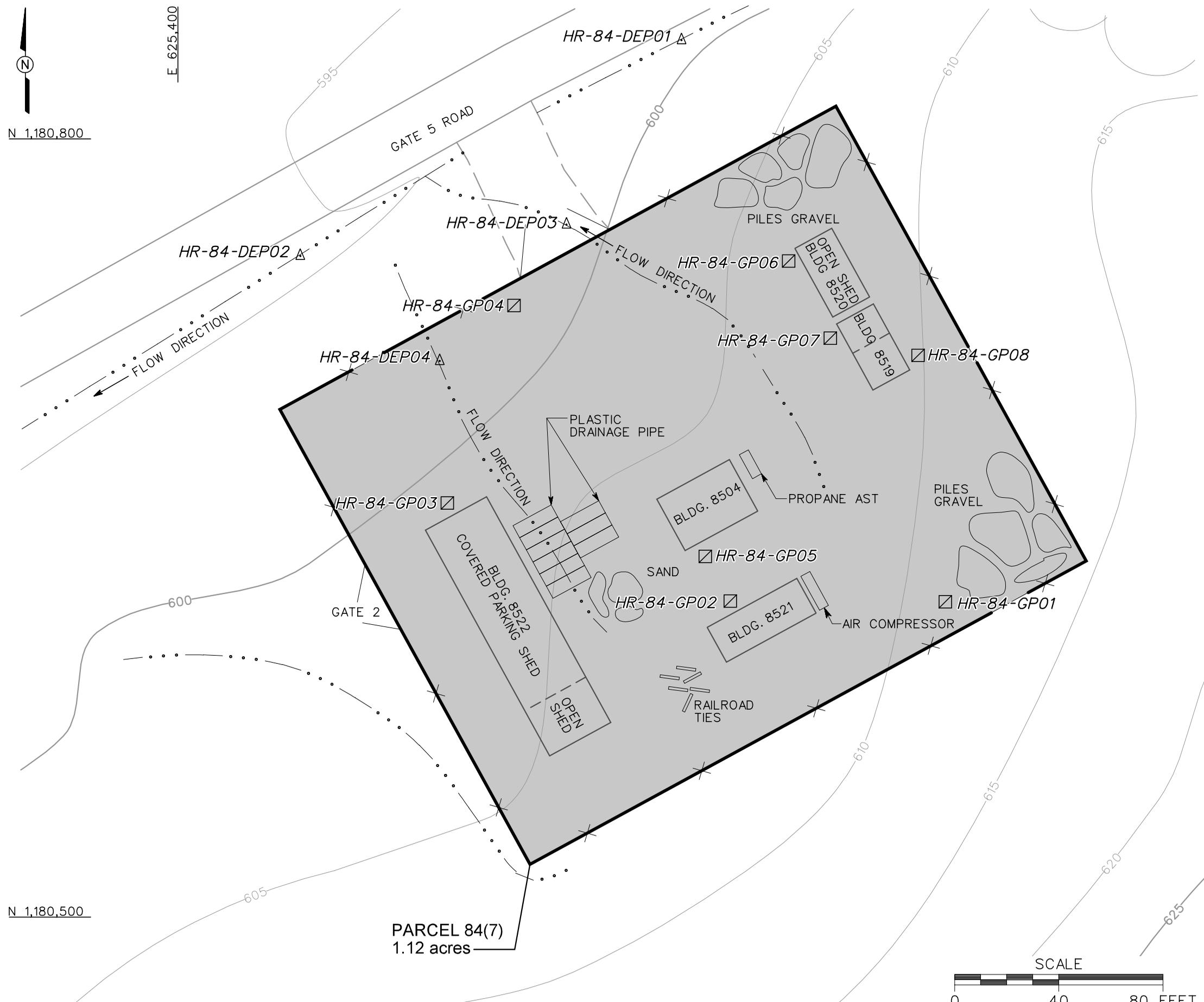
24 **4.2.1.2 Sample Collection**

25 Surface soil samples will be collected from the upper 1 foot of soil by direct-push methodology
26 as specified in Section 4.7.1.1 of the SAP (IT, 2000). Collected soil samples will be screened
27 using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil
28 samples will be screened for information purposes only, and not to select samples for analysis.
29 Sample containers, sample volumes, preservatives, and holding times for the analyses required in
30 this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-
31 custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed
32 for the parameters listed in Section 4.5 of this SFSP.
33

34 **4.2.2 Subsurface Soil Sampling**

35 Subsurface soil samples will be collected from the eight soil borings installed at the Forestry
36 Compound, Parcel 84(7).

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 STARTING DATE: 12/07/00
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LEGEND	
	UNIMPROVED ROADS AND PARKING
	PAVED ROADS AND PARKING
	BUILDING
	TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
	TREES / TREELINE
	PARCEL BOUNDARY
	SURFACE DRAINAGE
	FENCE
	PROPOSED DEPOSITIONAL SOIL SAMPLE LOCATION
	PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
SITE INVESTIGATION AT
FORESTRY COMPOUND
PARCEL 84(7)

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

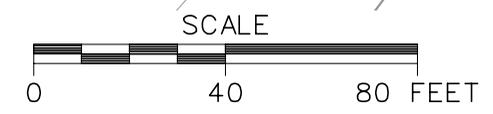


Table 4-2

**Surface Soil and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Forestry Compound - Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
HR-84-GP01	HR-84-GP01-SS-HT0001-REG HR-84-GP01-DS-HT0002-REG	0-1 a			HR-84-GP01-SS-HT0001-MS/MSD	TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP02	HR-84-GP02-SS-HT0003-REG HR-84-GP02-DS-HT0006-REG	0-1 a	HR-84-GP02-SS-HT0004-FD	HR-84-GP02-SS-HT0005-FS		TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP03	HR-84-GP03-SS-HT0007-REG HR-84-GP03-DS-HT0008-REG	0-1 a				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP04	HR-84-GP04-SS-HT0009-REG HR-84-GP04-DS-HT0010-REG	0-1 a				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP05	HR-84-GP05-SS-HT0011-REG HR-84-GP05-DS-HT0012-REG	0-1 a				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP06	HR-84-GP06-SS-HT0013-REG HR-84-GP06-DS-HT0015-REG	0-1 a	HR-84-GP06-SS-HT0014-FD			TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP07	HR-84-GP07-SS-HT0016-REG HR-84-GP07-DS-HT0017-REG	0-1 a				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-GP08	HR-84-GP08-SS-HT0018-REG HR-84-GP08-DS-HT0019-REG	0-1 a				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-DEP01	HR-84-DEP01-SS-HT0020-REG	0-1				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-DEP02	HR-84-DEP02-DS-HT0021-REG	0-1				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-DEP03	HR-84-DEP03-SS-HT0022-REG	0-1				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals
HR-84-DEP04	HR-84-DEP04-DS-HT0023-REG	0-1				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, and TAL Metals

^a Sample depth will depend on where sufficient first water is encountered to collect a water sample.

CI - Chlorinated.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

VOC - Volatile organic compound.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

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4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is listed in Table 4-1. Subsurface soil samples to be collected are listed in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field observations and utility clearance results.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from eight soil borings at a depth greater than 1 foot below ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 2000).

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background (readings in ambient air). Typically, the subsurface soil sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples indicate readings exceeding background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and chain-of-custodies will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Depositional Sampling

Four depositional samples will be collected from Forestry Compound, Parcel 84(7).

1 **4.2.3.1 Sample Locations and Rationale**

2 The proposed locations for the depositional samples are shown in Figure 4-1. Depositional
3 sampling rationale is presented in Table 4-1. The depositional sample designation and required
4 QA/QC sample requirements are listed in Table 4-2. The actual depositional sample points will
5 be at the discretion of the ecological sampler, based on the drainage pathways and actual field
6 observations.

7
8 **4.2.3.2 Sample Collection**

9 The depositional samples will be collected in accordance with the procedures for sediment
10 sampling as specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-
11 custody will be recorded as specified in Section 4.13 of the SAP. The depositional samples
12 will be analyzed for the parameters listed in Section 4.5 of this SFSP.

13
14 **4.3 Decontamination Requirements**

15 Decontamination will be performed on sampling and nonsampling equipment to prevent cross
16 contamination between sampling locations. Decontamination of sampling equipment will be
17 performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP (IT,
18 2000). Decontamination of nonsampling equipment will be performed in accordance with the
19 requirements presented in Section 4.10.1.2 of the SAP.

20
21 **4.4 Surveying of Sample Locations**

22 Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed
23 using either global positioning system (GPS) or conventional civil survey techniques, as
24 necessary, to obtain the required level of accuracy. Horizontal coordinates will be referenced to
25 the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983.
26 Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North
27 American Vertical Datum of 1988 (soon to be established on site).

28
29 Horizontal coordinates for soil sample locations will be recorded using a GPS to provide
30 accuracy within 1 meter. Procedures to be used for GPS surveying are described in Section 4.3
31 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.
32 All areas at this site must be cleared for UXO avoidance before any surveying activities will
33 commence.

1 **4.5 Analytical Program**

2 Samples collected at locations specified in this chapter of this SFSP will be analyzed for the
3 specific suites of chemicals and elements based on the history of site usage, as well as EPA,
4 ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the
5 Forestry Compound consist of the following list of analytical suites:

- 6
- 7 • Target compound list volatile organic compounds - Method 5035/8260B
 - 8 • Target compound list semivolatile organic compounds - Method 8270C
 - 9 • Target analyte metals - Method 6010B/7000
 - 10 • Chlorinated herbicides - Method 8151A
 - 11 • Chlorinated pesticides - Method 8081A
 - 12 • Organophosphorus pesticides - Method 8141A.
- 13

14 The samples will be analyzed using EPA SW-846 methods, including Update III Methods where
15 applicable, as presented in Table 4-3 in this SFSP and Table 6-1 in the QAP. Data will be
16 reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the
17 stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP).
18 Chemical data will be reported via hard copy data packages by the laboratory using Contract
19 Laboratory Program-like forms along with electronic copies. These packages will be validated
20 in accordance with EPA National Functional Guidelines by Level III criteria.

21

22 **4.6 Sample Preservation, Packaging, and Shipping**

23 Sample preservation, packaging, and shipping will follow the procedures specified in Section
24 4.13.2 of the SAP (IT, 2000). Completed analysis request/chain-of-custody records will be
25 secured and included with each shipment of coolers to:

26

27 Attn: Elizabeth McIntyre
28 EMAX Laboratories, Inc.
29 630 Maple Avenue
30 Torrance, California 90503
31 Telephone: (310) 618-8889.

32

33 QA split samples collected for the USACE laboratory will be shipped to the following address:

34

35 U.S. Army Engineer District, Savannah
36 Environmental & Materials Unit
37 Attn: Sample Receiving
38 200 North Cobb Parkway
39 Building 400, Suite 404
40 Marietta, Georgia 30062

Table 4-3

**Analytical Samples
Forestry Compound - Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama:**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					EMAX	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Forestry Compound - Pelham Range, Parcel 84(7): 20soil matrix samples (8 surface soil samples, 8 subsurface soil samples and 4 depositional soil samples)													
TCL VOCs	8260B	soil	normal	20	1	20	1	1	1		1	24	1
TCL SVOCs	8270C	soil	normal	20	1	20	1	1	1		1	24	1
CI Pesticides	8081A	soil	normal	20	1	20	1	1	1		1	24	1
OP Pesticides	8141A	soil	normal	20	1	20	1	1	1		1	24	1
CI Herbicides	8151A	soil	normal	20	1	20	1	1	1		1	24	1
TAL Metals	6010B/7000	soil	normal	20	1	20	1	1	1		1	24	1
Subtotal:						120	6	6	6		6	144	6

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.

Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip rinsates. Equipment rinsates will be collected once per event whenever sampling equipment is field decontaminated and re-used. Equipment rinsates will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment rinsates.

Ship samples to: EMAX Laboratories, Inc.
630 Maple Avenue
Torrance, California 90503
Attn: Elizabeth McIntyre
Tel: 310-618-8889
Fax: 310-618-0818

USACE Laboratory split samples are shipped to

U.S. Army Engineer District, Savannah
Environmental & Materials District
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30067
Tel: 678-354-0310

CI - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TAT - Turnaround time.

1 Telephone: (678) 354-0310.

2
3 **4.7 Investigation-Derived Waste Management**

4 Management and disposal of the investigation-derived wastes will follow procedures and
5 requirements as described in Appendix D of the SAP (IT, 2000). The investigation-derived
6 wastes expected to be generated at the Forestry Compound will include decontamination fluids,
7 drill cuttings, and disposable personal protective equipment.

8
9 **4.8 Site-Specific Safety and Health**

10 Health and safety requirements for this SI are provided in the SSHP attachment for the Forestry
11 Compound. The SSHP attachment will be used in conjunction with the installation-wide safety
12 and health plan. Additionally, the site-specific UXO safety plan attachment has been prepared as
13 a necessary measure for UXO avoidance.

1 **5.0 Project Schedule**

2

3 The project schedule for the SI activities will be provided by the IT Project Manager to the Base
4 Realignment and Closure Cleanup Team and will be in accordance with the WP.

6.0 References

- 1
2
3 Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline*
4 *Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen
5 Proving Ground, Maryland, January.
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7 IT Corporation (IT), 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort*
8 *McClellan, Calhoun County, Alabama*, March.
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11 *County, Alabama*, August.
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13 U.S. Army Corps of Engineers (USACE), 2000, *Statement of Work for Task Order CK05,*
14 *Modification No. 10, National Guard Memorandum of Agreement Sites, Fuel/Training Areas*
15 *SI, Waste Chemical Storage Area SI, Fire Training Pit SI, Industrial Landfill Remedial*
16 *Design, UST Review, Range J RI, and Partnering Facilities at Fort McClellan, Alabama,*
17 August.
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19 U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling*
20 *and Analysis Plan*, Engineer Manual EM 200-1-3, September 1.
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22 U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, Soil
23 Conservation Service, Series 1958, No. 9, September.
24
25 U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for*
26 *Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

3D	3D International Environmental Group	CLP	Contract Laboratory Program	E-W	east to west
Abs	skin absorption	CN	chloroacetophenone	EZ	exclusion zone
AC	hydrogen cyanide	CNB	chloroacetophenone, benzene, and carbon tetrachloride	FB	field blank
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded	CNS	chloroacetophenone, chloropicrin, and chloroform	FD	field duplicate
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded	COC	chain of custody	FedEx	Federal Express, Inc.
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded	COE	Corps of Engineers	FFE	field flame expedient
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded	Con	skin or eye contact	Fil	filtered
ACGIH	American Conference of Governmental Industrial Hygienists	CRL	certified reporting limit	Flt	filtered
ADEM	Alabama Department of Environmental Management	CRZ	contamination reduction zone	FMP 1300	Former Motor Pool 1300
AEL	airborne exposure limit	CS	ortho-chlorobenzylidene-malononitrile	Foster Wheeler	Foster Wheeler Environmental Corporation
AL	Alabama	CSEM	conceptual site exposure model	Frtn	fraction
amb.	amber	ctr.	container	FS	field split
ANAD	Anniston Army Depot	CWA	chemical warfare agent	ft	feet
APT	armor-piercing tracer	CWM	chemical warfare material; clear, wide mouth	ft/ft	feet per foot
ASP	Ammunition Supply Point	CX	dichloroformoxime	FTA	Fire Training Area
ASR	Archives Search Report	D	duplicate	FTMC	Fort McClellan
AST	aboveground storage tank	DANC	decontamination agent, non-corrosive	g	gram
ASTM	American Society for Testing and Materials	°C	degrees Celsius	G-856	Geometrics, Inc. G-856 magnetometer
B	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)	°F	degrees Fahrenheit	G-858G	Geometrics, Inc. G-858G magnetic gradiometer
BCT	BRAC Cleanup Team	DDT	dichlorodiphenyltrichloroethane	gal	gallon
BFB	bromofluorobenzene	DEH	Directorate of Engineering and Housing	gal/min	gallons per minute
BG	Bacillus globigii	DEP	depositional soil	GB	sarin
bgs	below ground surface	DI	deionized	gc	clay gravels; gravel-sand-clay mixtures
bkg	background	DIMP	di-isopropylmethylphosphonate	GC	gas chromatograph
bls	below land surface	DMMP	dimethylmethylphosphonate	GC/MS	gas chromatograph/mass spectrometer
BOD	biological oxygen demand	DOD	U.S. Department of Defense	GFAA	graphite furnace atomic absorption
BRAC	Base Realignment and Closure	DP	direct-push	gm	silty gravels; gravel-sand-silt mixtures
Braun	Braun Intertec Corporation	DPDO	Defense Property Disposal Office	gp	poorly graded gravels; gravel-sand mixtures
BTEX	benzene, toluene, ethylbenzene, and xylenes	DQO	data quality objective	gpm	gallons per minute
BTOC	below top of casing	DRMO	Defense Reutilization and Marketing Office	GPR	ground-penetrating radar
BW	biological warfare	DRO	diesel range organics	GPS	global positioning system
BZ	breathing zone; 3-quinuclidinyl benzilate	DS	deep (subsurface) soil	GS	ground scar
C	ceiling limit value	DS2	Decontamination Solution Number 2	GSA	General Services Administration
Ca	carcinogen	E&E	Ecology and Environment, Inc.	GSBP	Ground Scar Boiler Plant
CCAL	continuing calibration	EBS	environmental baseline survey	GSSI	Geophysical Survey Systems, Inc.
CCB	continuing calibration blank	Elev.	elevation	GST	ground stain
CD	compact disc	EM	electromagnetic	GW	groundwater
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	EM31	Geonics Limited EM31 Terrain Conductivity Meter	gw	well-graded gravels; gravel-sand mixtures
CERFA	Community Environmental Response Facilitation Act	EM61	Geonics Limited EM61 High-Resolution Metal Detector	HA	hand auger
CESAS	Corps of Engineers South Atlantic Savannah	EOD	explosive and ordnance disposal	HCl	hydrochloric acid
CFC	chlorofluorocarbon	EODT	explosive and ordnance disposal team	HD	distilled mustard
CG	cyanogen chloride	EPA	U.S. Environmental Protection Agency	HDPE	high-density polyethylene
ch	inorganic clays of high plasticity	EPC	exposure point concentration	Herb.	herbicides
CHPPM	U.S. Army Center for Health Promotion and Preventive Maintenance	EPIC	Environmental Photographic Interpretation Center	HNO ₃	nitric acid
CK	carbonyl chloride	ER	equipment rinsate	hr	hour
cl	inorganic clays of low to medium plasticity	ESE	Environmental Science and Engineering, Inc.	H&S	health and safety
Cl.	chlorinated	ESV	ecological screening value	HSA	hollow-stem auger
		Exp.	explosives	HTRW	hazardous, toxic, and radioactive waste

List of Abbreviations and Acronyms (Continued)

I	out of control, data rejected due to low recovery	MOGAS	motor vehicle gasoline	PP	peristaltic pump
ICAL	initial calibration	MPA	methyl phosphonic acid	ppb	parts per billion
ICB	initial calibration blank	MR	molasses residue	PPE	personal protective equipment
ICP	inductively-coupled plasma	MS	matrix spike	ppm	parts per million
ICS	interference check sample	mS/cm	millisiemens per centimeter	PPMP	Print Plant Motor Pool
ID	inside diameter	MSD	matrix spike duplicate	ppt	parts per thousand
IDL	instrument detection limit	msl	mean sea level	PSSC	potential site-specific chemical
IDLH	immediately dangerous to life or health	MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes, severely eroded	pt	peat or other highly organic silts
IDW	investigation-derived waste	mV	millivolts	PVC	polyvinyl chloride
IMPA	isopropylmethyl phosphonic acid	MW	monitoring well	QA	quality assurance
in.	inch	N/A	not applicable; not available	QA/QC	quality assurance/quality control
Ing	ingestion	NAD	North American Datum	QAP	installation-wide quality assurance plan
Inh	inhalation	NAD83	North American Datum of 1983	QC	quality control
IP	ionization potential	NAVD88	North American Vertical Datum of 1988	QST	QST Environmental Inc.
IPS	International Pipe Standard	ND	not detected	qty	quantity
IRDMIS	Installation Restoration Data Management Information System	NE	no evidence	Qual	qualifier
ISCP	Installation Spill Contingency Plan	NFA	No Further Action	R	rejected
IT	IT Corporation	ng/L	nanograms per liter	RCRA	Resource Conservation and Recovery Act
ITEMS	IT Environmental Management System™	NGVD	National Geodetic Vertical Datum	RDX	cyclonite
J	estimated concentration	NIC	notice of intended change	ReB3	Rarden silty clay loams
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded	NIOSH	National Institute for Occupational Safety and Health	REG	field sample
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded	No.	number	REL	recommended exposure limit
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes	NOAA	National Oceanic and Atmospheric Administration	RFA	request for analysis
K	conductivity	NR	not requested	RI	remedial investigation
L	lewisite; liter	ns	nanosecond	RL	reporting limit
LC ₅₀	lethal concentration for 50 percent of population tested	N-S	north to south	RPD	relative percent difference
LD ₅₀	lethal dose for 50 percent of population tested	nT	nanotesla	RRF	relative response factor
l	liter	NTU	nephelometric turbidity unit	RSD	relative standard deviation
LCS	laboratory control sample	O&G	oil and grease	RTK	real-time kinematic
LEL	lower explosive limit	OD	outside diameter	SAD	South Atlantic Division
LT	less than the certified reporting limit	OE	ordnance and explosives	SAE	Society of Automotive Engineers
max	maximum	oh	organic clays of medium to high plasticity	SAIC	Science Applications International Corporation
MDL	method detection limit	ol	organic silts and organic silty clays of low plasticity	SAP	installation-wide sampling and analysis plan
mg/kg	milligrams per kilogram	OP	organophosphorus	sc	clayey sands; sand-clay mixtures
mg/L	milligrams per liter	OSHA	Occupational Safety and Health Administration	Sch.	schedule
mg/m ³	milligrams per cubic meter	OWS	oil/water separator	SD	sediment
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils	oz	ounce	SDG	sample delivery group
MHz	megahertz	PAH	polynuclear aromatic hydrocarbon	SDZ	safe distance zone; surface danger zone
µg/g	micrograms per gram	Pb	lead	SEMS	Southern Environmental Management & Specialties
µg/kg	micrograms per kilogram	PCB	polychlorinated biphenyl	SFSP	site-specific field sampling plan
µg/L	micrograms per liter	PCE	perchloroethene	SGF	standard grade fuels
µmhos/cm	micromhos per centimeter	PDS	Personnel Decontamination Station	SHP	installation-wide safety and health plan
min	minimum	PEL	permissible exposure limit	SI	site investigation
MINICAMS	miniature continuous air sampling system	Pest.	pesticide	SL	standing liquid
ml	inorganic silts and very fine sands	PG	professional geologist	sm	silty sands; sand-silt mixtures
mL	milliliter	PID	photoionization detector	SM	Serratia marcescens
mm	millimeter	PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes	SOP	standard operating procedure
MM	mounded material	POL	petroleum, oils, and lubricants	sp	poorly graded sands; gravelly sands

List of Abbreviations and Acronyms (Continued)

SP	sump pump	VOC	volatile organic compound
Ss	stony rough land, sandstone series	VOH	volatile organic hydrocarbon
SS	surface soil	VQlfr	validation qualifier
SSC	site-specific chemical	VQual	validation qualifier
SSHO	site safety and health officer	VX	nerve agent (O-ethyl-S- [diisopropylaminoethyl]-methylphosphonothiolate)
SSHP	site-specific safety and health plan	Weston	Roy F. Weston, Inc.
SSSL	site-specific screening level	WP	installation-wide work plan
STB	supertropical bleach	WS	watershed
STEL	short-term exposure limit	WSA	Watershed Screening Assessment
STOLS	Surface Towed Ordnance Locator System®	WWI	World War I
Std. units	standard units	WWII	World War II
SU	standard unit	XRF	x-ray fluorescence
SVOC	semivolatile organic compound	yd ³	cubic yards
SW	surface water		
SW-846	U.S. EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods		
SZ	support zone		
TAL	target analyte list		
TAT	turn around time		
TB	trip blank		
TCE	trichloroethene		
TCL	target compound list		
TCLP	toxicity characteristic leaching procedure		
TDGCL	thiodiglycol		
TDGCLA	thiodiglycol chloroacetic acid		
TERC	Total Environmental Restoration Contract		
TIC	tentatively identified compounds		
TLV	threshold limit value		
TN	Tennessee		
TOC	top of casing, total organic carbon		
TPH	total petroleum hydrocarbons		
TRADOC	U.S. Army Training and Doctrine Command		
TRPH	total recoverable petroleum hydrocarbons		
TWA	time weighted average		
UCL	upper confidence limit		
UCR	upper certified range		
UJ	not detected above reporting limit; result should be estimated		
USACE	U.S. Army Corps of Engineers		
USAEC	U.S. Army Environmental Center		
USAEHA	U.S. Army Environmental Hygiene Agency		
USAMCLS	U.S. Army Chemical School		
USATEU	U.S. Army Technical Escort Unit		
USATHAMA	U.S. Army Toxic and Hazardous Material Agency		
USCS	Unified Soil Classification System		
USDA	U.S. Department of Agriculture		
USEPA	U.S. Environmental Protection Agency		
UST	underground storage tank		
UXO	unexploded ordnance		
VOA	volatile organic analyte		

**Final
Site-Specific Safety and Health Plan Attachment
Forestry Compound – Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

**Fort McClellan
Calhoun County, Alabama
EPA ID No. AL7210 020 562**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

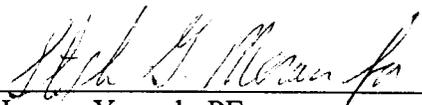
**Delivery Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645**

February 2001

This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

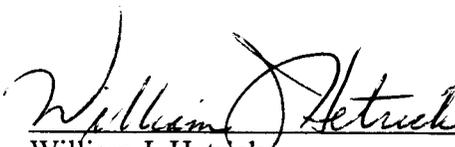
**Site-Specific Safety and Health Plan Attachment Approval
Forestry Compound – Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the Forestry Compound – Pelham Range, Parcel 84(7), at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

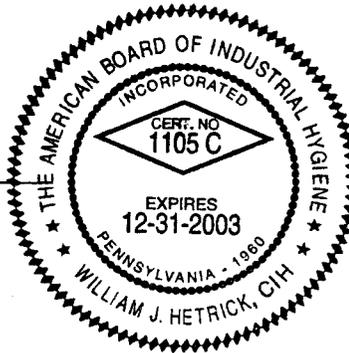


Jeanne Yacoub, PE
Project Manager

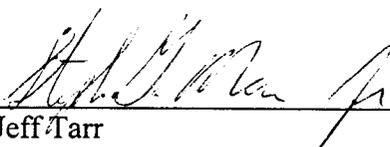
2/12/01
Date



William J. Hetrick
Health & Safety Manager



2/15/01
Date

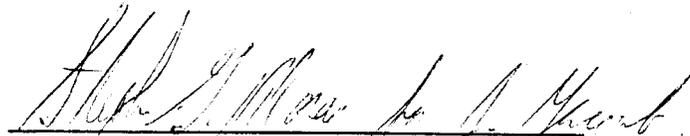


Jeff Tarr
Site Coordinator

2/12/01
Date

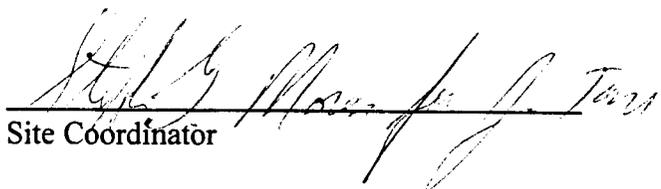
Acknowledgements

The approved version of this site-specific safety and health plan (SSHP) attachment for the Forestry Compound – Pelham Range, Parcel 84(7), at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.


Project Manager


Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.


Site Coordinator


Date

Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.
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Pelham Range Access Requirements

Pelham Range	IT personnel will contact the Range Control Office each day access is required to receive an access permit and available areas of entry. See Attachment 1 for Range Control contact for Pelham Range.
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Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....	(256) 848-6772
Fire Department (on post).....	911
Fire Department (off post)	(256) 237-3541
Ambulance (off post)	911
Regional Medical Center	(256) 235-5121
Military Police (SSG Busch)	(256) 848-5680, 848-4824
DOD Guard Force (Mr. Bolton)	(256) 848-5680, 848-4732
Anniston Police Department.....	(256) 238-1800
Chemical Agent Emergencies.....	(256) 895-1598
(Ken Barnett, CEHNC).....	cell phone (256) 310-0604
UXO Emergencies	(256) 895-1598
(Ken Barnett, CEHNC).....	cell phone (256) 310-0604
UXO Nonemergencies/Reporting Only (Ronald Levy)	(256) 848-3758
Baltzell Gate Guard Shack.....	(256) 848-5693, 848-3821
National Response Center & Terrorist Hotline.....	(800) 424-8802
Poison Control Center.....	(800) 462-0800
EPA Region IV	(404) 562-8725
Ronald Levy, Chief, FTMC Environmental Management	(256) 848-3758
Ellis Pope, U.S. Army Corps of Engineers.....	(334) 690-3077
Jeanne Yacoub, IT Project Manager.....	(770) 663-1429
Bill Hetrick, IT H&S Manager	(865) 690-3211, pager (888) 655-9529
Mike Moore, Fort McClellan Safety Office	(256) 848-5433
Dr. Jerry H. Berke, Health Resources Occupational Physician.....	(800) 350-4511

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Attachment 1 - Pelham Range Emergency Route and Range Control Contact	

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List of Acronyms

See Attachment 1 of Site-Specific Field Sampling Plan for List of Abbreviations and Acronyms.

1.0 Site Work Plan Summary

Project Objective. The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama is to collect and analyze soil samples at the Forestry Compound – Pelham Range, Parcel 84(7).

Project Tasks

- Conduct a surface and near-surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling activity to determine the presence of potential downhole hazards.
- Collect surface, subsurface, and depositional soil samples.

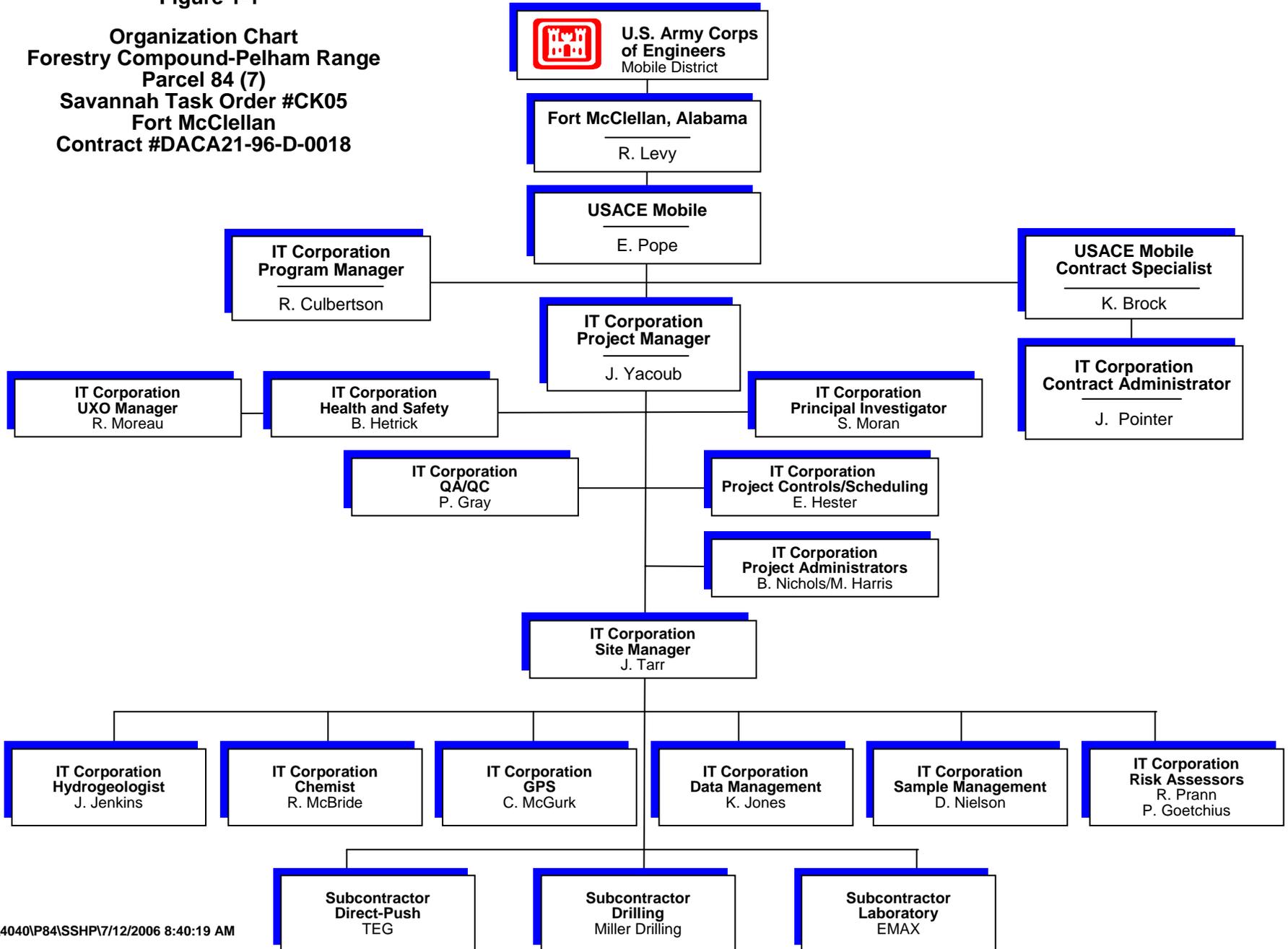
Personnel Requirements. Up to 15 employees. See Figure 1-1 for an organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP.

This site-specific SHP must be used in conjunction with the installation-wide SHP, FTMC, Alabama.

Figure 1-1

Organization Chart
Forestry Compound-Pelham Range
Parcel 84 (7)
Savannah Task Order #CK05
Fort McClellan
Contract #DACA21-96-D-0018



2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). Site control with the use of specific work zones (support zone, contamination reduction zone, and exclusion zone) is addressed in Chapter 7.0 of Appendix A of the IT Corporation March 2000 *Final Installation-Wide Sampling and Analysis Plan*.

The Forestry Compound, Parcel 84(7), was used primarily to store herbicides, fungicides, and pesticides, and currently consists of five buildings (Building 8504, Building 8519, Building 8520, Building 8521, and Building 8522). Additional information on the use of the specific buildings can be found in the executive summary from the work plan.

Granular 2-4D Arsenical/Diquat has been stored in the Forestry Compound, Parcel 84(7), since 1992 when pesticide mixing operations were discontinued. Additionally, seed and fertilizers have been stored in Building 8521.

Table 2-1 contains the toxicological properties of chemicals anticipated or to be used at the Forestry Compound, Parcel 84(7), Fort McClellan, Alabama.

The presence of UXO is suspected at the Forestry Compound, Parcel 84(7). Procedures contained in the site-specific UXO safety plan shall be followed for all site activities associated with this investigation.

2.2 General Site Information

Location of Site. The Forestry Compound, Parcel 84(7), is located on Gate 5 Road in the northeast quadrant of Pelham Range.

Table 2-1

**Toxicological Properties of Chemicals
Forestry Compound-Pelham Range, Parcel 84 (7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 3)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Acetone [67-64-1]	9.7	13B100	Inh Ing Con	Irritated eyes, nose, and throat; headache, dizziness; dermatitis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1000 ppm 500 ppm 250 ppm	750 ppm	PEL TLV REL	2500 ppm (10% of LEL)
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention	100 mg/m3 * 100 mg/m3 ** * Skin ** Kerosene only		PEL TLV REL	
Arsenic (inorganic, as As) [7440-38-2] (metal)	N/A		Ing Inh Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, respiratory irritation, (Potential occupational carcinogen)	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.01 mg/m3 0.01 mg/m3	0.002 mg/m3	PEL TLV REL	5 mg/m3
Arsenic (organic) [7440-38-2] as As elemental			Ing Inh Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, respiratory irritation, (Potential occupational carcinogen)	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m3			

Table 2-1
Toxicological Properties of Chemicals
Forestry Compound-Pelham Range, Parcel 84 (7)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 3)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm	PEL TLV REL	1400 ppm 10% of LEL
n-Hexane [110-54-3]	10.18	65B248	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	500 ppm 50 ppm (skin) 50 ppm		PEL TLV REL	1100 ppm 10% of LEL
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43B200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm	PEL TLV REL	2,000 ppm 10% of LEL
Motor Oil [NA]	?	?	Inh Ing	Irritated eyes, skin, respiratory system; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	
Nitric acid [7697-37-2]	11.95	0.3B1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	25 ppm

Table 2-1
Toxicological Properties of Chemicals
Forestry Compound-Pelham Range, Parcel 84 (7)
Fort McClellan, Calhoun County, Alabama

(Page 3 of 3)

^aIP = Ionization potential (electron volts).

^bRoute = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.

^cTWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.

^dSTEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

^ePEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit valueXTWA.

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

^fIDLH (NIOSH)XImmediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. 1998).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.

Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 6th ed., 1998.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, Supplement IV, CIVO, Netherlands, 1977.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1998, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial ChemicalsXOccupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

1 **Duration of Planned Employee Activity.** Employee activity duration is anticipated to be
2 less than 1 month.

3

4 **Site Topography and Size.** The Forestry Compound, Parcel 84(7), is approximately 250 feet
5 long (east to west) by 200 feet wide and covers approximately 1.15 acres. The elevation varies
6 from 600 feet to 615 feet. Surface water appears to drain to the northwest. Local shallow
7 groundwater direction at the site is probably controlled by topography; therefore, groundwater
8 direction in the residuum is likely to the northwest.

9

10 **Pathways for Hazardous Substance Dispersion.** Possible pathways for hazardous
11 substances in the area are surface and subsurface soils.

1 **3.0 Personal Protective Equipment**

2
3 The work activities will begin in the following levels of protection. Also, a completed descrip-
4 tion of Level D, Modified Level D, and Level C PPE is provided.

5

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D
Surface soil and subsurface soil sampling	Modified Level D*

6 * Initial level will be raised to Level C or higher if air monitoring
7 results in the breathing zone (BZ) are greater than action
8 levels.
9

10 **Level D.** The minimal level of protection that will be required of IT Corporation personnel at
11 the site will be Level D. The following equipment will be used for Level D protection:

- 12
- 13 • Coveralls or work clothing
 - 14 • Leather work gloves (when necessary)
 - 15 • Steel-toed safety boots
 - 16 • Safety glasses
 - 17 • Hard hat
 - 18 • Hearing protection (when working near/adjacent to operating equipment).
- 19

20 **Modified Level D.** The following equipment will be used for Level D-Modified protection:

- 21
- 22 • Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek where
23 chemical agents are anticipated)
 - 24 • Latex boot covers
 - 25 • Nitrile, heavy work, or latex gloves
 - 26 • Steel-toed safety boots
 - 27 • Safety glasses
 - 28 • Hard hat
 - 29 • Hearing protection (when working near/adjacent to operating equipment)
 - 30 • Escape/egress air supply pack (where chemical agents are suspected).
- 31
32
33
34
35
36
37

1 Note: In addition to modifying Level D PPE, the operator of high-pressure water jetting
2 equipment shall wear metatarsal guards for the legs and feet and a face shield.

3
4 **Level C.** Level C protection will not be used unless air-monitoring data indicate the need for
5 upgrade; however, the equipment shall be readily available on site. The following equipment
6 will be used for Level C protection:

- 7
8 • National Institute of Occupational Safety and Health/Mine Safety and Health
9 Administration-approved full-face, air-purifying respirators equipped with organic
10 vapor/acid gas cartridge in combination with high-efficiency particulate air filter
11
- 12 • Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
13
- 14 • Nitrile gloves (outer)
15
- 16 • Latex or lightweight nitrile gloves (inner)
17
- 18 • Neoprene steel-toed boots or polyvinyl chloride overboots/steel-toed safety
19 boots
20
- 21 • Hard hat
22
- 23 • Hearing protection (when working near/adjacent to operating equipment)
24
- 25 • Escape/egress air supply pack (where chemical agents are suspected).
26

27 Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall
28 wear metatarsal guards for the legs and feet and a face shield.

4.0 Site Monitoring

The environmental contaminants of concern resulting from activities at the Forestry Compound, Parcel 84(7), may include metals, pesticides, fungicides, herbicides and oil and other petroleum products. Table 4-1 contains action levels for site monitoring at the site.

Chemical. Air monitoring shall be performed by the site safety and health officer during the performance of ground intrusive operations. A calibrated flame ionization detector (i.e., OVA 128 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of the protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Table 4-2 contains the air monitoring frequency and location for site monitoring at the Forestry Compound.

Unexploded Ordnance. UXO support for sampling activities are specified in the site-specific UXO safety plan developed for the Forestry Compound, Parcel 84(7). The UXO specialists will perform UXO avoidance sweeps prior to moving the heavy equipment onto the site. During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Additionally, downhole magnetometer surveys will be performed to detect metal objects in the path of the boring apparatus. The boring location will be moved to avoid subsurface metal objects.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

Table 4-1

**Action Levels
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level	Required Action ^a
Volatile organic compound (VOCs)	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B; Notify CIH
Oxygen	≥ 20%, ≤23% < 20%, >23%	Normal operations. Stop work, evacuate work area; Notify CIH
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs: Notify CIH

When in Level D Modified/D PPE

Analyte	Action Level	Required Action ^b
VOCs	≥ 1 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE; Notify CIH
Oxygen	≥ 20%, ≤23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

Table 4-1

**Action Levels
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Support Zone

Analyte	Action Level	Required Action
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

^a Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

^b Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls. This may also trigger additional CWA monitoring by the Huntsville division prior to continuation of investigative operations.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

**Air Monitoring Frequency and Location
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
UXO Sweep and Staging Equipment	OV Monitor	Initially for area	Breathing zone (BZ) of employees
Sampling (surface and subsurface soil)	OV Monitor LEL/O ₂ Monitor	Continuously Initially for area	BZ of employees BZ of employees
Surveying	OV Monitor LEL/O ₂ Monitor	Initially for area Initially for area	BZ of employees BZ of employees

- BZ - Breathing zone.
LEL/O₂ - Lower explosive level/oxygen.
OV - Organic vapor.
UXO - Unexploded ordnance.

1 **5.0 Activity Hazard Analysis**

2
3 The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- 4
5
 - 6 • Initial UXO avoidance sweep and equipment staging
 - 7 • Surface soil, subsurface soil and depositional sampling
 - 8 • Surveying of sample locations.

9 All injuries and illnesses must be immediately reported to the site manager or the site safety and
10 health officer, who will then notify off-site personnel and organizations as necessary.

11
12 If hospital care must be provided, the victim shall be treated at Northeast Regional Medical
13 Center. Directions to the hospital are provided in Figure 5-1.

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 7)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging	Slip, trip, and fall hazards	<ul style="list-style-type: none"> X Determine best access route before transporting equipment. X Practice good housekeeping; keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards. X Look before you step; ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none"> X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none"> X Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> X Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none"> X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times!
	Cuts/bruises	<ul style="list-style-type: none"> X Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> X Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	<ul style="list-style-type: none"> X Wear light colored clothing (can see ticks better). X Mow vegetated and small brush areas. X Wear insect repellent. X Wear long sleeves and long pants. X Visually check oneself promptly and frequently after exiting the work area.
	Fire	<ul style="list-style-type: none"> X Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Hazard communication	<ul style="list-style-type: none"> X Label all containers as to contents and dispose of properly. X Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.
	Noise	<ul style="list-style-type: none"> X Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	<ul style="list-style-type: none"> X Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	<ul style="list-style-type: none"> X Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (EF). X Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. X Remove wet clothing promptly. X Take breaks in warm areas. X Reduce work periods as necessary. X Layer work clothing.
Poison ivy/oak/sumac	<ul style="list-style-type: none"> X Avoid plant areas if possible. X Wear long sleeves and long pants. X Promptly wash clothing that has contacted poisonous plants. X Wash affected areas immediately with soap and water. 	

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 7)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Heat rash	<ul style="list-style-type: none"> X Keep the skin clean and dry. X Change perspiration-soaked clothing, as necessary. X Bathe at end of work shift or day. X Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none"> X Drink plenty of cool fluids even when not thirsty. X Provide cool fluid for work crews. X Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none"> X Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). X Set up work/rest periods. X Use the "buddy system." X Allow workers time to acclimate. X Have ice packs available for use. X Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> X Evaluate possibility of night work. X Perform physiological monitoring on workers during breaks. X Wear body cooling devices.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> X Work area will be barricaded/demarcated. X Equipment will be laid out in an area free of traffic flow. X Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. X Barriers shall be used to protect workers from vehicular traffic. X Barriers shall be used to guard excavations adjacent to streets or roadways. X Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. X Heavy equipment shall have backup alarms.
	Forklift operations	<ul style="list-style-type: none"> X Use qualified and trained forklift operators. X The operator shall not exceed the load capacity rating for the forklift. X The load capacity shall be clearly visible on the forklift. X Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	<ul style="list-style-type: none"> X Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. X Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device. X Electrical tools shall be inspected daily prior to use.

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 7)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Extension cords	<ul style="list-style-type: none"> X Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. X Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. X Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.). X Cords shall be designed for hard duty. X Cords shall be inspected daily.
	Lightning strikes	<ul style="list-style-type: none"> X Whenever possible, halt activities and take cover. X If outdoors, stay low to the ground. X Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). X Seek shelter in a building if possible. X Stay away from windows. X If available, crouch under a group of trees instead of one. X Keep all body parts in contact with the ground as close as possible. X Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). X If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornados	<ul style="list-style-type: none"> X Listen to radio or TV announcements for pending weather information. X Cease field activities during thunderstorm or tornado warnings. X Seek shelter. Do not try to outrun a tornado.
Surveying	Slip, trip, and fall hazards	<ul style="list-style-type: none"> X Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. X Provide adequate lighting in all work areas. X Whenever possible, avoid routing cords and hoses across walking pathways. X Flag or cover inconspicuous holes to protect against falls. X Work areas will be kept clean and orderly. X Garbage and trash will be disposed of daily in approved refuse containers. X Tools and accessories will be properly maintained and stored. X Work areas and floors will be kept free of dirt, grease, and slippery materials.
	Traffic accidents	<ul style="list-style-type: none"> X Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. X If working adjacent to roadways, have workers wear fluorescent orange vests. X Use warning signs or lights to alert oncoming traffic. X Assign flag person(s) if necessary to direct local traffic. X Set up temporary parking locations outside the immediate work area. X Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. X Pedestrians have the right-of-way. X Wear seat belts when vehicles are in motion.

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 7)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Wildlife hazards	X Workers should be cautious when driving through the site in order to avoid encounters with passing animals.
	Biological hazards	X Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	X Wear light colored clothing (can see ticks better). X Mow vegetated and small brush areas. X Wear insect repellent. X Wear long sleeves and long pants. X Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	X Avoid plant areas if possible. X Wear long sleeves and long pants. X Promptly wash clothing that has contacted poisonous plants. X Wash affected areas immediately with soap and water.
	UXO	X UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. X If UXO is encountered, cease all activities, mark the location, and notify the site manager.
Surface/Subsurface Sampling	Cross-contamination and contact with potentially contaminated materials	X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Avoid skin contact with water. X Handle samples with care. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	X Use care when handling glassware. X Wear adequate hand protection.
	Hazard communication	X MSDSs shall be obtained for chemicals brought on site. X Label all containers as to contents.
	Strains/sprains	X Use the proper tool for the job being performed. X Get assistance if needed. X Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	X Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	X Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	X Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 7)

Activity	Potential Hazards	Recommended Controls
Surface/Subsurface Sampling (continued)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> X Stop immediately at any sign of obstruction. X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> X Use care when handling glassware. X Wear adequate hand protection.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> X Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field. X Whenever possible, avoid routing cords and hoses across walking pathways. X Flag or cover inconspicuous holes to protect against falls.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> X Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. X Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> X Avoid plant areas if possible. X Wear long sleeves and long pants. X Promptly wash clothing that has contacted poisonous plants. X Wash affected areas immediately with soap and water.
	Cold stress	<ul style="list-style-type: none"> X Workers should wear insulated clothing when temperatures drop below 40°F. X Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. X Remove wet clothing promptly. X Take breaks in warm areas. X Reduce work periods as necessary. X Layer work clothing.
	Access/egress hazards	<ul style="list-style-type: none"> X Use qualified and trained bushhog operator. X Keep employees out of the bushhog work area. X Utilize good housekeeping practices. X Keep aisleways, pathways, and work areas free of obstruction. X Clean ice or snow off of walkways or work stations. X Use appropriate footwear for the task assigned.
	Heat rash	<ul style="list-style-type: none"> X Keep the skin clean and dry. X Change perspiration-soaked clothing, as necessary. X Bathe at end of work shift or day. X Apply powder to affected area.

Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 7)

Activity	Potential Hazards	Recommended Controls
Surface/Subsurface Sampling (continued)	Heat cramps	<ul style="list-style-type: none"> X Drink plenty of cool fluids even when not thirsty. X Provide cool fluid for work crews. X Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none"> X Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). X Set up work/rest periods. X Use the "buddy system." X Allow workers time to acclimate. X Have ice packs available for use. X Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> X Evaluate possibility of night work. X Perform physiological monitoring on workers during breaks. X Wear body cooling devices.
	Lightning strikes	<ul style="list-style-type: none"> X Whenever possible, halt activities and take cover. X If outdoors, stay low to the ground. X Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than lying on the ground). X Seek shelter in a building if possible. X Stay away from windows. X If available, crouch under a group of trees instead of one single tree. X Keep all body parts in contact with the ground as close as possible. X If in a group, keep 6 feet of distance between people.
	UXO	<ul style="list-style-type: none"> X UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. X If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist.
	Accidental exposure to chemical agents	<ul style="list-style-type: none"> X Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. X Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. X Engineering controls will be used as appropriate. X Personnel will be equipped with an emergency egress air supply pack.
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"> X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	<ul style="list-style-type: none"> X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> X Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> X Label all containers as to contents and associated hazards.
	Heavy lifting	<ul style="list-style-type: none"> X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.

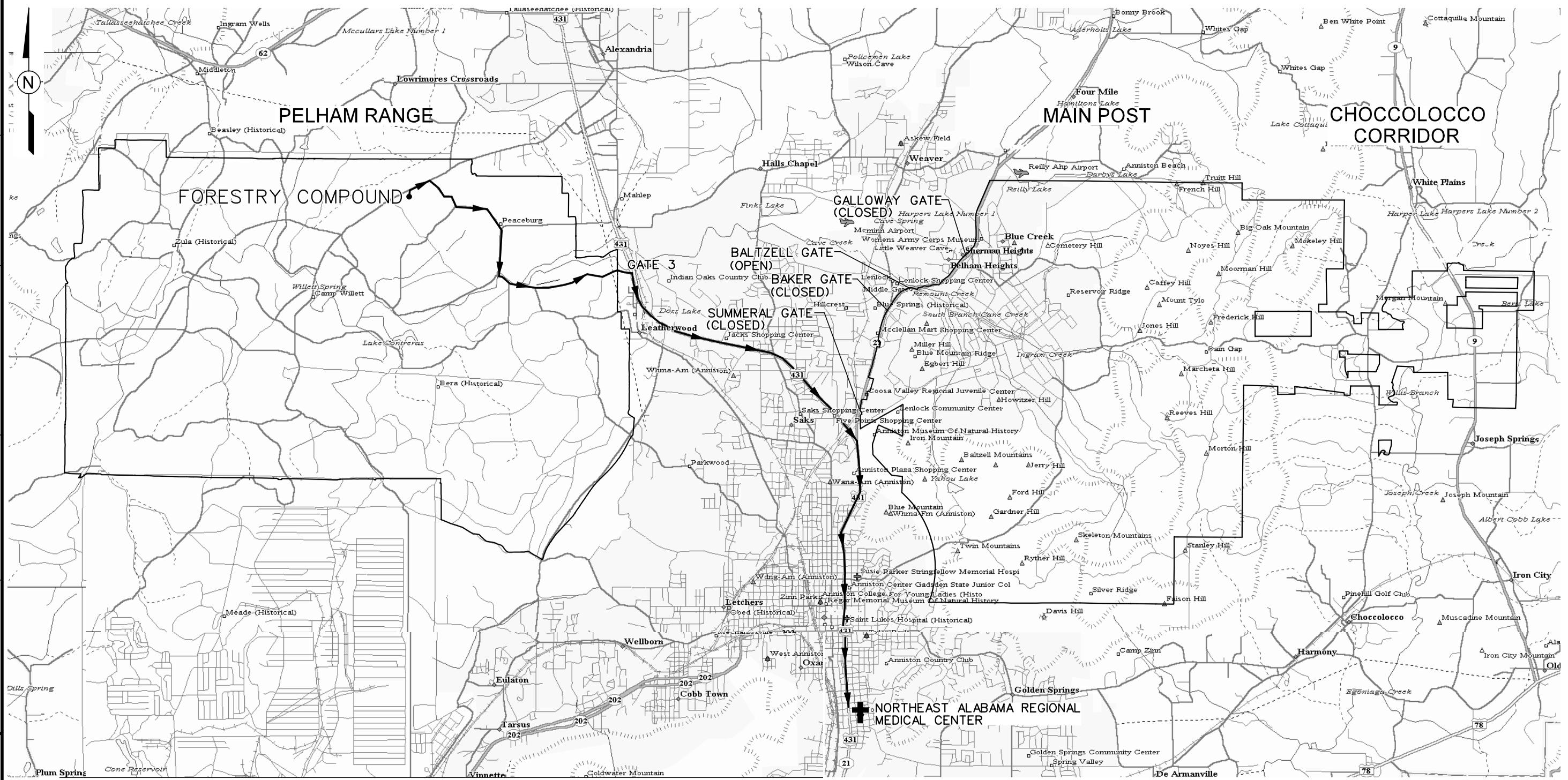
Table 5-1

**Activity Hazard Analysis
Forestry Compound-Pelham Range, Parcel 84(7)
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 7)

Activity	Potential Hazards	Recommended Controls
Material Storage	Flammable and combustible liquids	<ul style="list-style-type: none"> X Store in NO SMOKING AREA. X Fire extinguisher readily available. X Transfer only when properly grounded and bonded.
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> X Use qualified and trained forklift operators. X The operator shall not exceed the load capacity rating for the forklift. X The load capacity shall be clearly visible on the forklift. X Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> X Stop immediately at any sign of obstruction. X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> X Use care when handling glassware. X Wear adequate hand protection.

DWG. NO.: ...774645es.685
 PROJ. NO.: 774645
 INITIATOR: J. BROWN
 PROJ. MGR.: J. YACOB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: S. MORAN
 DATE LAST REV.:
 DRAWN BY: D. BILLINGSLEY
 12/07/00
 11:21:15
 DBILLING
 c:\cadd\design\774645es.685



LEGEND:

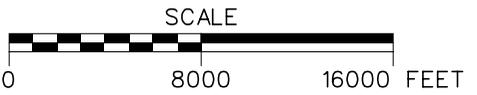
- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITAL
- INVESTIGATION SITES

DRIVING DIRECTIONS FROM PELHAM RANGE GATE 3 TO THE NORTHEAST ALABAMA MEDICAL CENTER

- EXIT PELHAM RANGE AT GATE NO. 3 AND TURN RIGHT ON U.S. HWY 431
- CONTINUE TO WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT
- NORTHEAST ALABAMA REGIONAL MEDICAL CENTER, 400 EAST 10 TH STREET
- PHONE NUMBER : (256) 235-5121

**FIGURE 5-1
HOSPITAL EMERGENCY ROUTE**

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



ATTACHMENT 1

**PELHAM RANGE EMERGENCY ROUTE AND
RANGE CONTROL CONTACT**

FORT MCCLELLAN ALERT AND NOTIFICATION SYSTEM

An outdoor electronic alert and notification system is operational on Fort McClellan and Pelham Range. The purpose of this system is to provide warning(s) of an emergency situation that poses a threat to the safety and health of personnel on Fort McClellan and Pelham Range. The system has the capability of providing digital voice, electronic tone alerts and live voice loudspeaker warnings of emergency situations. The following is a list of the digital voice and associate tone alerts for the various hazards that could threaten personnel on both portions of the installation:

1. **THIS IS A TEST!** This is a test of the Fort McClellan emergency warning system. **THIS IS A TEST AND ONLY A TEST!** **WAIL TONE**

This message is used for the monthly test on the first Tuesday at 1600 hrs.

2. **WARNING! TORNADO WARNING!** A tornado warning has been issued for this area. Seek shelter immediately. Tune to a local radio station. Seek shelter immediately. **TORNADO WARNING!** **SOLID TONE**

3. **WARNING! SEVERE WEATHER WARNING!** A severe weather warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **SEVERE WEATHER WARNING!** **SOLID TONE**

4. **WARNING! THUNDERSTORM WARNING!** A thunderstorm warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **THUNDERSTORM WARNING!** **SOLID TONE**

5. **WARNING! HAZARDOUS MATERIALS ACCIDENT!** There has been a hazardous materials accident. Standby for further instructions. Tune to a local radio station. **HAZARDOUS MATERIALS ACCIDENT!** **HI-LO TONE**

6. **WARNING! Anniston Army Depot has announced a chemical agent release. Standby for further instructions. Tune to FM 100 radio station. CHEMICAL AGENT RELEASE!** **WHOO TONE**

7. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** **NO TONE**

8. **CHEMICAL ALERT!** Initiate evacuation procedures immediately. A chemical agent release has occurred at Anniston Army Depot. **EVACUATE IMMEDIATELY! CHEMICAL ALERT!** **WHOO TONE**

This voice message was specifically designed for Pelham Range.

Sequence of initial alert and notification is:

VOICE MESSAGE--TONE--VOICE MESSAGE--TONE

repeated twice, again as the situation warrants.

Pelham Range Emergency Routes

- Range Control will determine, depending on the wind direction, the best egress route.
- Range Control will advise over the radio which route to take.
- Four routes have been indicated on the enclosed map.

Medical Emergency

- Exit gate Number 3 at Pelham Range
- Turn right onto Route 431
- Turn right onto Highway 21 (Quintard)
- Turn left onto 10th Street
- Hospital is 1-1/2 blocks ahead:

Northeast Alabama Regional Medical Center
400 East 10th Street
Anniston, Alabama.

Range Control- Pelham Range

- Building 1120, Ft McClellan
Phone No. 848-6772
Fax No. 848-4412.

All access permits are issued by range control, daily.

**Final
Site-Specific Unexploded Ordnance Safety Plan Attachment
Forestry Compound – Pelham Range, Parcel 84(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

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

February 2001

Revision 1

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms.

1.0 Introduction

This document defines anomaly avoidance procedures for activities to be performed by IT Corporation (IT) in conjunction with the a fast-track site investigation, at Forestry Compound, Parcel 84(7), at Pelham Range. IT will perform visual surveys and collect surface, subsurface, surface water, and sediment samples for chemical analysis. In performing these activities, IT will require unexploded ordnance (UXO) anomaly avoidance services to avoid any potential surface UXO or subsurface anomalies during sampling activities. Intrusive anomaly investigation is not authorized

The Forestry Compound, Parcel 84(7), is located on Gate 5 Road in the northeast quadrant of Pelham Range. The compound was used primarily to store herbicides, fungicides, and pesticides, and currently consists of five buildings (Building 8504, Building 8519, Building 8520, Building 8521, and Building 8522) and a gravel parking lot, and is surrounded by a chain-link fence. Building 8504 was used for office space with no recorded hazardous substances stored. Buildings 8519 and 8520 are wooden structures adjacent to one another and were used to store and mix herbicides and fungicides (U.S. Army Center for Health Promotion and Preventive Maintenance, 1999). Pesticides were also once stored in the southeast end of Building 8519 prior to constructing the pesticide storage area in the northeast end of Building 8521. Pesticide mixing would likely have occurred on bare ground at the water source (Environmental Science and Engineering, Inc., 1998). Building 8521 is a metal structure used for pesticide mixing and storage. The Forestry Compound is not equipped with a mixing pad. Building 8522 contains an earthen floor and was used for parking vehicles. Buildings 8521 and 8522 were reported as containing foaming agent and Velpar L herbicide, and a 55-gallon drum with a spigot containing motor oil, respectively, during a visit in 1999, but is no longer present. Improper mixing has been observed outside of Building 8521. Building 8519 was deficient in a proper storage and mixing facility, but was improved with an epoxy-sealed cement floor in the southwestern half of the floor in 1990, which has since been reported as cracked, but repaired (U.S. Army Center for Health Promotion and Preventive Maintenance, 1999).

2.0 UXO Team Composition

A UXO team will be on-site during all sampling activities for anomaly avoidance on a site with known or suspected ordnance and explosives (OE).

- 1 a) The UXO team will be composed of two UXO qualified personnel, depending on the
2 tasks to be performed. One UXO team member will be a UXO Technician III and the
3 other will be, as a minimum, a UXO Technician II. Qualifications of these personnel
4 are published in Engineering Pamphlet 1110-1-18 and stated in Section 2.0 of the
5 installation-wide OE management plan (IT, 2000).
6
- 7 b) For the work to be performed in accordance with this work plan, IT will use a
8 Schonstedt GA-72. The Schonstedt GA-230 is the selected instrument for downhole
9 anomaly avoidance.
10
- 11 (1) A geophysical proveout test grid will be established and each geophysical
12 instrument will be checked for operational reliability and calibration against this
13 known response prior to field use each day. If calibration checks indicate that the
14 instrument is not functioning within an acceptable range, and field adjustments do
15 not resolve the performance discrepancy, the instrument will be tagged and
16 removed from service.
17
- 18 (2) Preventive maintenance will be performed on a regularly scheduled basis. If an
19 equipment problem is encountered, maintenance will be performed as soon as
20 possible; records of the unscheduled maintenance and corrective action will be
21 collected and retained for future reference.
22

23 **3.0 Responsibilities**

24
25 The UXO team member(s) will have the following responsibilities for anomaly avoidance
26 procedures at the sites specified in this work plan.
27

- 28 a) Provide the explosive ordnance recognition, location and safety functions for IT
29 employees and any subcontractors during sampling activities. Sampling activities
30 include surface and subsurface soil sampling, drilling and sampling of monitoring
31 wells, survey of sample points, and safe access and egress to the site.
32
- 33 b) Conduct UXO safety briefings for all site personnel and visitors.
34

35 **4.0 Authority**

36
37 For this project, the UXO team will not perform any disposal activities. If the team identifies an
38 OE item, it will clearly mark the item, and direct operations to another location for safe
39 execution of the project. The UXO team will not destroy the item. The UXO team will report
40 the item to the site manager and the Base Transition Force at Fort McClellan for disposition of
41 the item.

1 **5.0 Anomaly Avoidance Procedures for Sampling Activities**_____

2
3 When conducting sampling activities in the areas described in this work plan, consideration must
4 be given for possible OE contamination. Since these areas may contain OE contamination, the
5 UXO team must conduct a surface access survey and a subsurface survey of UXO before any
6 type of activities commence, including foot and vehicular traffic.

7 8 a) Access Surveys.

- 9
10 (1) The UXO team will conduct access surveys of the footpaths and vehicular lanes
11 approaching and leaving each of the fill area work areas. If UXO is found during
12 the access survey, the ordnance will be conspicuously marked and avoided. No
13 personnel will be allowed outside of the surveyed areas.
14
15 (2) The UXO team will locate an access route to and from the proposed investigation
16 site that is free of surface and near-surface UXO using an appropriate geophysical
17 detection instrument as required. The access route should be as wide as the
18 minimum number of feet of the widest vehicle.
19
20 (3) Geophysical instrumentation should be used to locate potential UXO just below
21 the surface that may be encountered through erosion from rain, continual
22 vehicular traffic, or subsurface sampling and drilling activities. If surface UXO
23 or subsurface UXO-related anomalies are encountered, the access route must be
24 diverted to avoid contact.
25
26 (4) The boundary of each access route and investigation site should be marked using
27 white survey flagging and pin flags. Non-UXO qualified personnel will not be
28 allowed outside designated access areas without proper UXO escort. Near-
29 surface anomaly locations will be prominently identified with yellow survey
30 flagging or pin flags. Red flagging will be placed adjacent to any discovered
31 UXO for subsequent visual reference.
32
33 (5) At the actual investigation site, the UXO team must also complete an access
34 survey of an area sufficient to support mechanical excavation equipment
35 maneuverability, parking of support vehicles, and establishment of
36 decontamination stations, as appropriate for site activities. As a minimum, the
37 surveyed area should have a dimension in all directions equal to twice the length
38 of the largest vehicle or piece of equipment to be bought on site. Intrusive
39 activities will not proceed if an anomaly is detected that cannot be positively
40 identified as inert material. In this event, the sampling personnel must select an
41 alternate investigation area or configuration.

1 b) Surface/Near Surface-Sampling. Surface soil samples are normally collected at
2 depths of zero to 12 inches below ground surface. The UXO team will visually
3 survey the surface of the selected surface soil sampling sites for any indication of
4 UXO or UXO-related contamination. In addition, the UXO team will utilize a
5 magnetometer over the site before sampling begins. Any anomalies detected will be
6 prominently marked with a yellow survey flag or pin flag for avoidance during
7 sampling activities. If too many anomalies are found within an area of interest, the
8 sampling personnel will select an alternate sampling location for collection of
9 surface/near surface samples.

10
11 c) Subsurface Soil Sampling and Monitoring Well Installations. Subsurface soil
12 sampling is considered to be the collection of samples below a nominal depth of
13 approximately 12 inches from a split-spoon, Shelby tube, or bucket auger soil
14 sampler using drilling techniques. Drilling techniques are also used to install
15 groundwater monitoring wells for investigative sampling.

16
17 (1) The UXO team must conduct an access survey to locate an access route to the
18 proposed sampling or drilling location as well as an access survey at the proposed
19 drilling site that is large enough to support drill rig maneuverability, parking of
20 support vehicles, and establishment of decontamination stations. As a minimum,
21 the surveyed area should have a minimum dimension in all directions equal to
22 twice the length of the largest vehicle or piece of equipment to be brought on site.
23 The UXO team will clearly mark the boundaries of the cleared soil sampling or
24 well site. Personnel will not go outside the cleared area. If a preselected area
25 indicates magnetic anomalies, a new sampling/drilling site will be chosen.

26
27 (2) The UXO team must complete a subsurface geophysical survey of the proposed
28 drill hole location(s). If the subsurface sampling depth is greater than the
29 geophysical instrumentation detection capabilities below existing ground surface,
30 then the UXO team must incrementally complete the geophysical survey as
31 outlined below.

32
33 (a) Underground Utilities. Utility clearance and/or excavation permits are not
34 required for the areas covered by this document. In the event subsurface
35 utilities are suspected in an excavation area, the UXO team must attempt to
36 verify their location using geophysical instrumentation. Note that only
37 utilities with a ferrous content are detectable with a geophysical instrument.
38 All located utilities should be marked with a series of pin flags to visually
39 delineate their approximate subsurface routing.

40
41 (b) Pilot Hole. An incremental geophysical survey of the drill hole location(s)
42 will be initially accomplished using a hand auger to install a pilot hole. An
43 access survey of the immediate vicinity of the pilot hole location will precede
44 its installation. The UXO team using a manual or mechanical portable auger
45 will install the pilot hole. The augured hole will be inspected for anomalies
46 with a geophysical instrument (configured for downhole utilization) at 2-foot

1 increments as the hole is advanced below ground surface. The pilot hole will
2 also be inspected with the geophysical instrument upon reaching the final
3 depth of the hand auger providing a total clearance depth equal to pilot hole
4 depth plus 2 feet. If the proposed site is still free of magnetic anomalies, the
5 drilling equipment may be brought on site and utilized. Hand augering of a
6 hole will not proceed if an anomaly is detected that cannot be positively
7 identified as inert material. If OE is encountered or an anomaly cannot be
8 positively identified as inert material, the sampling personnel must select a
9 new drill hole location.

10
11 (c) Monitoring of Drilling by Others. Once a drilling site has been surface
12 cleared and a pilot hole installed as described above, the drilling contractor
13 will be notified that the site is available for subsurface sampling or monitoring
14 well installation. The drilling contractor's actual drill hole must be located
15 within a 2-foot radius of the pilot hole installed by the UXO team. The UXO
16 team will continue to complete a subsurface inspection for anomalies with a
17 geophysical instrument configured for downhole utilization at 2-foot
18 increments as the drilling is advanced from the clearance depth of the pilot
19 until achievement of one of the following indicators: the drilling activity is
20 completed; the drilling is extended to depths greater than 30 feet below
21 ground surface; or a qualified geologist determines that virgin soil is found.

22
23 (d) Drilling equipment and/or metallic support materials (e.g., drill rig, augers,
24 drill rods, casings, etc.) may create an interference affecting the operation of
25 the geophysical survey instrumentation during the incremental depth
26 inspection process. In such event, the item(s) creating the interference must
27 be relocated outside the interference range of the geophysical instrument
28 during each incremental depth inspection of the drill hole for the presence of
29 anomalies. Drilling of a hole will not proceed if OE is encountered or if an
30 anomaly is detected that cannot be positively identified as inert material. In
31 this event, the sampling personnel must select a new drill hole location.
32

33 **6.0 UXO/OE Disposition**

34
35 Since the purpose of UXO support during activities is anomaly avoidance, the UXO team is not
36 tasked to perform UXO/OE disposal. The UXO team will notify the site manager and the Fort
37 McClellan Base Transition Force if UXO is encountered that cannot be avoided, or if the item
38 presents an imminent hazard requiring immediate action based on the items fuzing or current
39 condition. The UXO/OE item will be marked and recorded, and all project personnel will
40 evacuate the area.

7.0 Safety

In addition to the requirements of the site-specific safety and health plan, the UXO team will ensure the following:

- a) During the access and subsurface surveys conducted with a geophysical instrument, the UXO team members will not wear safety shoes or other footwear that would cause the instrument to present a false response.
- b) The UXO team will not be required to wear protective helmets unless a head threat is present.

8.0 Quality

A UXO quality control specialist is not required for this work. However, quality control instructions and procedures listed in Section 9.0 of the installation-wide OE management plan (IT, 2000) will be followed, as appropriate to this task.

9.0 References

Environmental Science and Engineering, Inc., 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Center for Health promotion and Preventative Medicine, 1999, *Draft Preliminary Assessment No. 38-EH-1775-99, Fort McClellan Army National Guard Training Center, Fort McClellan, Alabama*, June.