Site Investigation

Final
Site-Specific Field Sampling Plan Attachment for the Former Choccolocco Corridor Smoke Area, Parcel 107(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Table of Contents

Page

List of Tables iii
List of Figures iii
List of Acronyms iv
Executive Summary ES-1
1.0 Project Description 1-1
1.1 Introduction 1-1
1.2 Site Description 1-1
1.3 Scope of Work 1-2
2.0 Summary of Existing Environmental Studies 2-1
3.0 Site-Specific Data Quality Objectives 3-1
3.1 Overview 3-1
3.2 Data Users and Available Data 3-1
3.3 Conceptual Site Exposure Model 3-2
3.4 Decision-Making Process, Data Uses, and Needs 3-3
3.4.1 Risk Evaluation 3-3
3.4.2 Data Types and Quality 3-3
3.4.3 Precision, Accuracy, and Completeness 3-4
4.0 Field Activities 4-1
4.1 Utility Clearances 4-1
4.2 Environmental Sampling 4-1
4.2.1 Surface Soil Sampling 4-1
4.2.1.1 Sample Locations and Rationale 4-1
4.2.1.2 Sample Collection Procedures 4-1
4.2.2 Subsurface Soil Sampling 4-2
4.2.2.1 Sample Locations and Rationale 4-2
4.2.2.2 Sample Collection Procedures 4-2
4.2.3 Surface Water Sampling 4-3
4.2.3.1 Sample Locations and Rationale 4-3
4.2.3.2 Sample Collection Procedures 4-3
4.2.4 Sediment Sampling 4-3
4.2.4.1 Sample Locations and Rationale 4-3

Table of Contents (Continued)

Page

4.2.4.2 Sample Collection Procedures 4-3
4.2.5 Depositional Soil Sampling 4-4
4.2.5.1 Sample Locations and Rationale 4-4
4.2.5.2 Sample Collection Procedures 4-4
4.3 Decontamination Requirements 4-4
4.4 Surveying of Sample Locations 4-4
4.5 Analytical Program 4-5
4.6 Sample Preservation, Packaging, and Shipping 4-5
4.7 Investigation-Derived Waste Management 4-6
4.8 Site-Specific Safety and Health 4-6
5.0 Project Schedule 5-1
6.0 References 6-1

List of Tables

Number	Title	Follows Page
3-1	Summary of Data Quality Objectives	3-1
4-1	Site Sampling Rationale	4-1
4-2	Soil Sample Designations and QA/QC Sample Quantities	4-1
4-3	Surface Water and Sediment Sample Designations and QA/QC Sample Quantities	4-3
4-4	Analytical Samples	4-5

List of Figures

Number	Title	Follows Page
1-1	Site Location Map, Former Choccolocco Corridor Smoke Area	1-1
1-2	Site Map, Former Choccolocco Corridor Smoke Area	1-1
3-1	Human Health Conceptual Site Exposure Model for Former Choccolocco Corridor Smoke Area, Parcel 107(7)	3-3
4-1	Proposed Sampling Locations, Former Choccolocco Corridor Smoke Area	4-1

List of Acronyms

ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COC	chain of custody
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NAD83	1983 North American Datum
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

This site-specific field sampling plan attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for the Former Choccolocco Corridor Smoke Area at Fort McClellan, Calhoun County, Alabama, will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and installation-wide quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Former Choccolocco Corridor Smoke Area is located along the southern boundary of the Choccolocco Corridor. The site covers 7 acres. The site is approximately 200 feet wide on the average and 350 feet in length. Although not confirmed, the approximate dates the site was used were 1961 to 1972.

Specifically, IT will collect four surface soil samples, four subsurface soil samples, three surface water samples, three sediment samples and two depositional soil samples at this site. Potential contaminant sources at the Former Choccolocco Corridor Smoke Area, include petroleum products (e.g., gasoline, diesel, heating oil, waste oil, and lubricants), solvents, and metals. Chemical analyses of the samples collected during the field program will include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and metals. Additionally, sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

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)-Savannah District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Choccolocco Corridor Smoke Area, Parcel 107(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for FTMC, Calhoun County, Alabama has been prepared to provide technical guidance and rationale for sample collection and analysis at the Former Choccolocco Corridor Smoke Area (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Choccolocco Corridor Smoke Area, the installation-wide work plan (WP) (IT, 1998b), the habitat-specific ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP), and waste management plan.

1.2 Site Description

The Former Choccolocco Corridor Smoke Area is located along the southern boundary of the Choccolocco Corridor (Figure 1-1). The site covers approximately 7 acres. The site and the area around the site is mostly undeveloped and wooded. There is one small tributary approximately 500 feet north of the site that drains east into Choccolocco Creek. Directly to the south, the site is bounded by a dirt road and an east-flowing drainage ditch. The site is located on a gentle, east-facing slope of Morrison Hill. Although the site location and boundaries are not well defined, the site appears to be approximately 200 feet wide (north to south, average) and 350 feet in length (west to east). Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 750 to 780 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map that shows topographic features and site boundaries.

The soil types at the Former Choccolocco Corridor Smoke Area are the Anniston Series and the Jefferson Series. The Anniston soil at the site is a strongly acid, well-drained stony loam. Sandstone and quartzite gravel and pebbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The Jefferson Series consists of well-drained, strongly acid soils that

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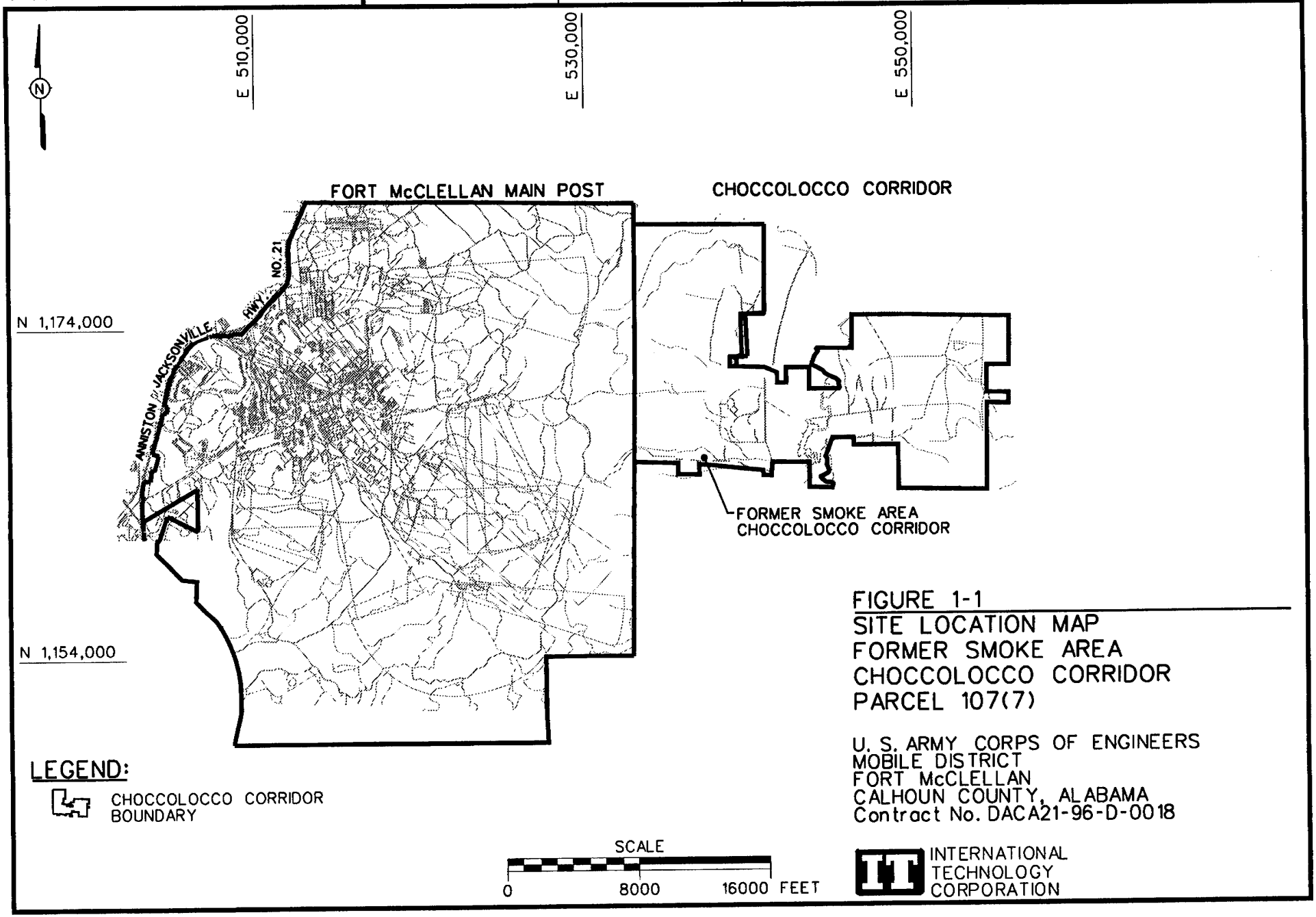
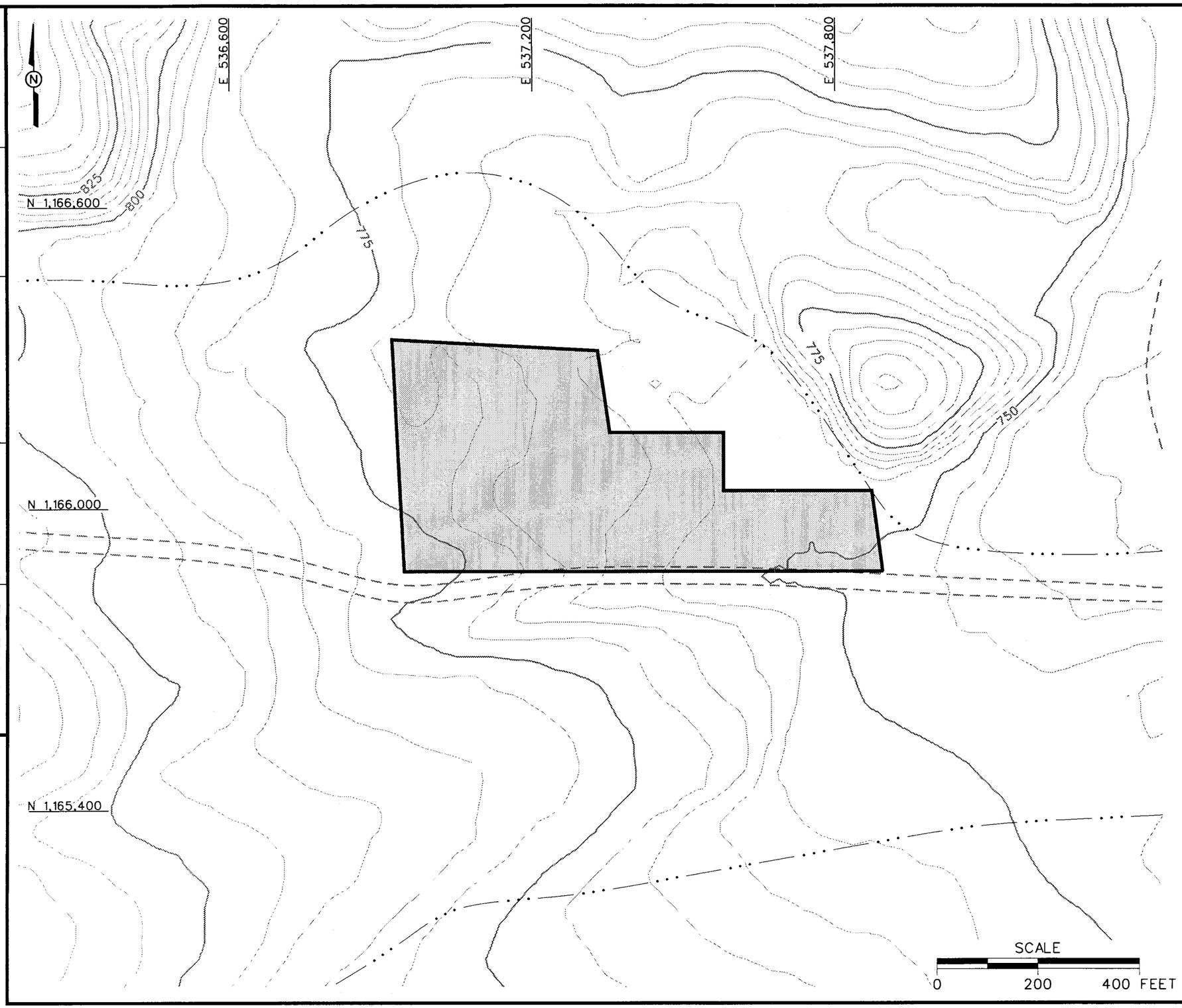


FIGURE 1-1
SITE LOCATION MAP
FORMER SMOKE AREA
CHOCCOLOCCO CORRIDOR
PARCEL 107(7)

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



LEGEND

- UNIMPROVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK

FIGURE 1-2
SITE MAP
FORMER SMOKE AREA
CHOCCOLOCCO CORRIDOR
PARCEL 107(7)

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

INTERNATIONAL TECHNOLOGY CORPORATION

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occur on fans and foot slope areas (such as this site) in the Choccolocco, Colvin, and Coldwater Mountains. Jefferson soils developed from old alluvium sloughed from ridges of sandstone, shale, and Weisner quartzite. The surface soil is a fine sandy loam, while the subsoil is fine sandy clay. Fragments of sandstone and quartzite, as much as 8 inches in diameter, are on the surface and throughout the profile (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former Choccolocco Corridor Smoke Area as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect four surface soil, four subsurface soil, three surface water, three sediment, and two depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Former Choccolocco Corridor Smoke Area and to provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release or disposal (including migration) has occurred.
2. Areas where only storage 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 Community Environmental Response Facilitation Act (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 Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Former Choccolocco Corridor Smoke Area consists of one site only. The site was identified as a CERFA site, where petroleum products were stored, released, or disposed, and/or migration of hazardous substances is suspected, but the sites are either not evaluated, or require additional evaluation to determine the environmental condition of the site.

The Former Choccolocco Corridor Smoke Area is located along the southern boundary of the Choccolocco Corridor, on the east side of Morrison Hill. Training at the site used smoke generators and fog oil. Surface soil and subsurface soil are the areas of potential contamination within the site boundary, but the slope below the site and the nearby tributary also constitute potential contaminated areas and would justify surface water, sediment, and depositional soil sampling. The dates of use at the Former Choccolocco Corridor Smoke Area could not be determined exactly, but the site was used periodically from 1961 until approximately 1972.

There have not been any investigations identified for the Former Choccolocco Corridor Smoke Area. The site is classified as a Category 7 CERFA site: areas that are evaluated or requires further evaluation. The Former Choccolocco Corridor Smoke Area site lacks adequate documentation and therefore requires evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Former Choccolocco Corridor Smoke Area. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Choccolocco Corridor Smoke Area is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI, and to establish a basis for future action at this site.

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 (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Choccolocco Corridor Smoke Area are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the 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 defensible information required to confirm or deny the existence and nature of residual chemical contamination in site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting all possible pathways by which a potential receptor may be exposed, including all sources, release and

Table 3-1

Summary of Data Quality Objectives
Former Choccolocco Corridor Smoke Area, Parcel 107(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Fuels and fuel components Waste oils, Metals <u>Migration Pathways</u> Infiltration and leaching to subsurface soil and groundwater. Erosion and runoff to surface water, sediment, and depositional soils. Dust emission and volatilization from soil and groundwater. Venison ingestion. <u>Potential Receptors</u> Groundskeeper (future) Resident (future) Recreational site user (current and future) Construction worker (future) Venison and fish consumers (current and future) <u>PSSC</u> Fuels Fuel components Waste oils Organics Metals	Surface Soil Subsurface Soil Surface water Sediment Depositional Soils	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: • Implementing an immediate response. • No further action. • Proceeding with an RI.	<u>Surface Soil</u> TCL-VOCs TCL-SVOCs TAL-Metals	Definitive data in CESAS Level B data packages	4 direct-push + QC
					<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs TAL-Metals	Definitive data in CESAS Level B data packages	4 direct-push + QC
					<u>Surface Water</u> TCL VOCs TCL SVOCs TAL-Metals	Definitive data in CESAS Level B data packages	3 samples + QC
					<u>Sediments</u> TCL VOCs TCL SVOCs TAL-Metals TOC Grain Size ASTM D421/D422	Definitive data in CESAS Level B data packages	3 samples + QC
					<u>Depositional Soils</u> TCL -VOCs TCL -SVOCs TAL-Metals	Definitive data in CESAS Level B data packages	2 samples + QC

ADEM - Alabama Department of Environmental Management.
ASTM - American Society for Testing and Materials.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
PSSC - Potential site-specific chemical.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at the Former Choccolocco Corridor Smoke Area is due to the use of smoke-generating equipment and fog oil. Petroleum products were stored, released, and disposed of at this site. Primary contaminant release was probably to surface soil and via smoke, to the air. Airborne contaminants from smoke would have dispersed long ago and are not considered further. Potentially significant transport pathways include infiltration to subsurface soil and groundwater erosion and runoff to surface water, sediments, and depositional soils, and dust emissions and volatilization from soils and groundwater.

The Former Choccolocco Corridor Smoke Area is undeveloped and mostly wooded. Current site use is best described as unrestricted open space. The area is a habitat for wildlife and could harbor deer, which may be hunted in season. Current plausible receptor scenarios include the recreational site user and venison consumption. Other potential receptors considered but not included under current site use are:

- Resident: The site is currently not used for residential purposes.
- Groundskeeper: The site is inactive and workers do not maintain the site.
- Construction worker: The site is currently undeveloped with no excavation or building occurring.

A review of the FTMC comprehensive reuse plan showed no specific information about future site use (FTMC, 1997). The site is bordered on the south by a dirt road, which provides ready access to the site. The terrain is able to support commercial or residential use. Therefore, the resident, groundskeeper, recreational site user, construction worker, fish and venison consumer plausible future receptor scenarios.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Choccolocco Corridor Smoke Area. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Former Choccolocco Corridor Smoke Area will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

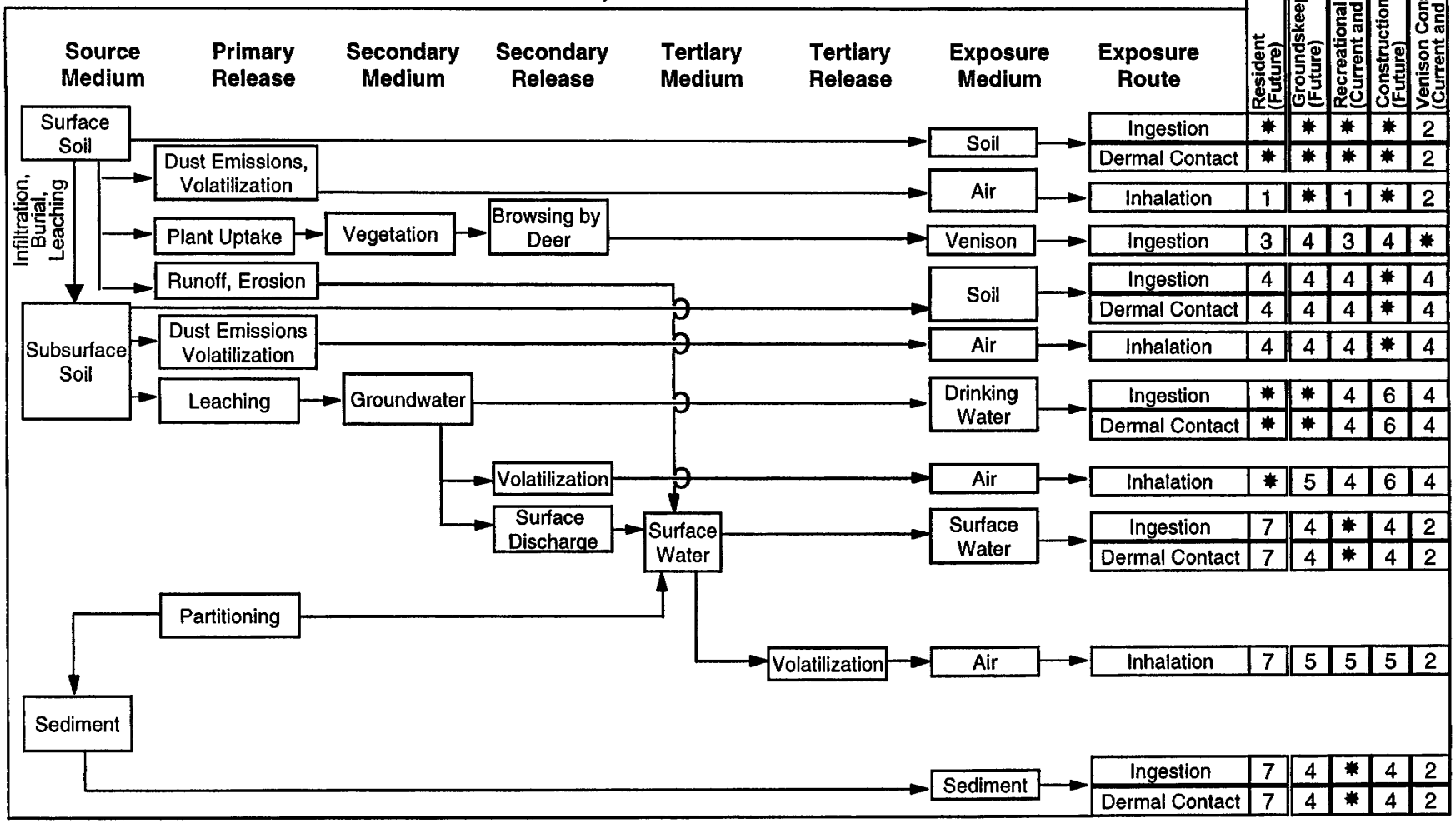
3.4.2 Data Types and Quality

To meet the objectives of the SI at the Former Choccolocco Corridor Smoke Area, it will be necessary to sample and analyze surface and subsurface soils, surface water, sediments, and depositional soils. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

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

Figure 3-1
Human Health Conceptual Site Exposure Model for the Former Choccolocco Corridor Smoke Area, Parcel 107(7) Fort McClellan, Alabama



Receptor Scenarios	Resident (Future)	Groundskeeper (Future)	Recreational Site User (Current and Future)	Construction Worker (Future)	Venison Consumption (Current and Future)
Ingestion	✱	✱	✱	✱	2
Dermal Contact	✱	✱	✱	✱	2
Inhalation	1	✱	1	✱	2
Ingestion	3	4	3	4	✱
Ingestion	4	4	4	✱	4
Dermal Contact	4	4	4	✱	4
Inhalation	4	4	4	✱	4
Ingestion	✱	✱	4	6	4
Dermal Contact	✱	✱	4	6	4
Inhalation	✱	5	4	6	4
Ingestion	7	4	✱	4	2
Dermal Contact	7	4	✱	4	2
Inhalation	7	5	5	5	2
Ingestion	7	4	✱	4	2
Dermal Contact	7	4	✱	4	2

✱ = Complete exposure pathway quantified in SSSL development.
1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.
2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.
3 = Evaluated under venison and fish consumption scenario.
4 = Incomplete exposure pathway.
5 = Although theoretically complete, this pathway is judged to be insignificant.
6 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.
7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

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4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Former Choccolocco Corridor Smoke Area includes the collection of four surface soil samples, four subsurface soil samples, three surface water samples, three sediment samples, and two depositional soil samples for chemical analysis. The samples will be collected and analyzed to provide data for characterizing the site in order to determine the environmental condition of the site and any further action to be conducted.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from four soil borings installed at the Former Choccolocco Corridor Smoke Area.

4.2.1.1 Sample Locations and Rationale

Surface soil samples will be collected near the former location of smoke generators and locations representing likely areas for collection and infiltration of runoff exiting the site. The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

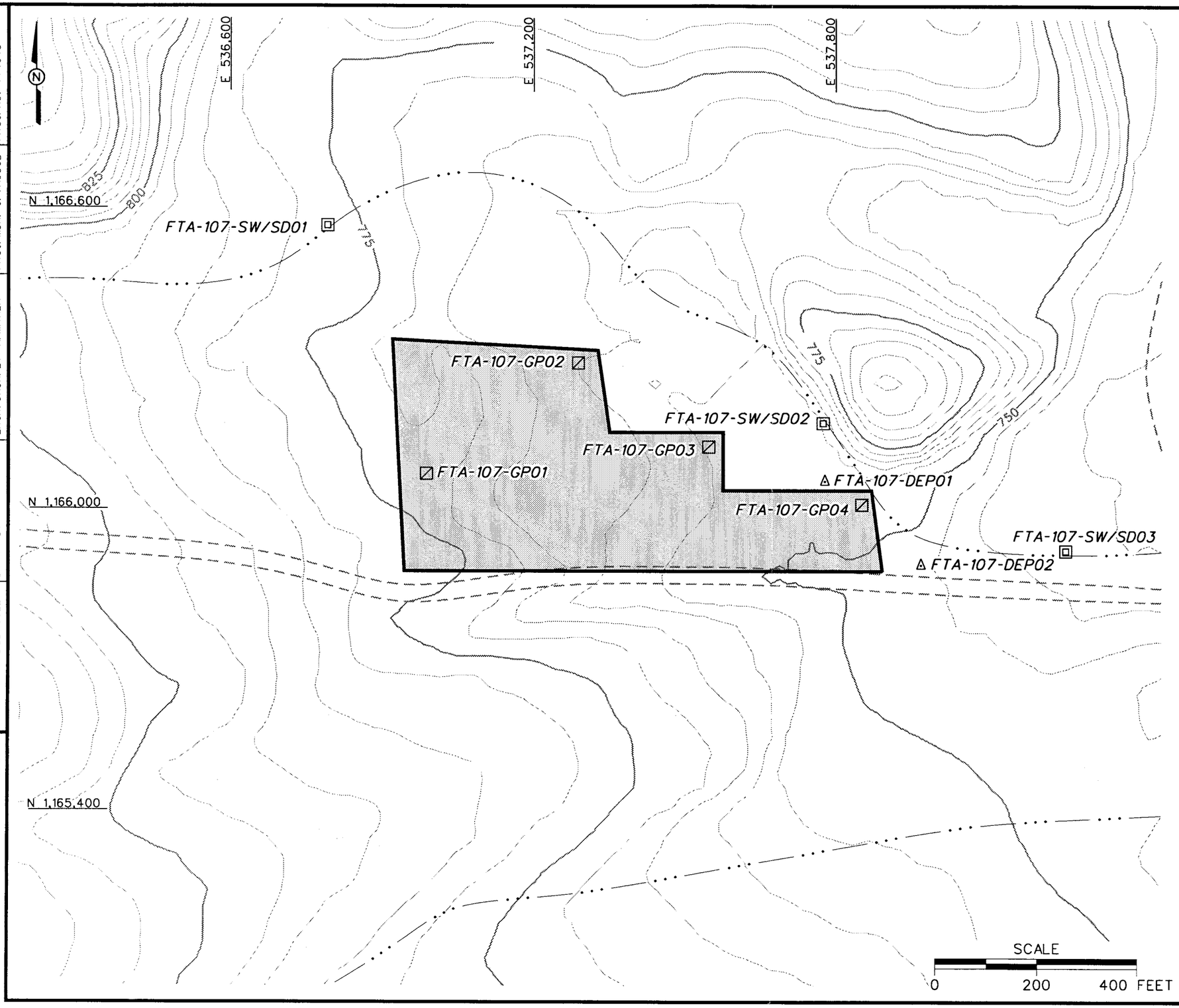
4.2.1.2 Sample Collection Procedures

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened with the PID for information only; not to select samples to submit for analysis. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP.

Table 4-1

Site Sampling Rationale
Former Choccolocco Corridor Smoke Area, Parcel 107(7)
Fort McClellan, Calhoun County, Alabama

Sample Designation	Media Sampled	Sampling Location Rationale
FTA-107-GP01	Surface Soil Subsurface Soil	Direct-push samples will be collected at the highest elevation within the study parcel. This sampling location represents a potential location for smoke generators.
FTA-107-GP02	Surface Soil Subsurface Soil	Direct-push samples will be collected at the northeast corner of the study parcel. This sampling location represents a likely point for the collection and infiltration of runoff exiting the site.
FTA-107-GP03	Surface Soil Subsurface Soil	Direct-push samples will be collected at a point midway along the irregular northeastern boundary of the study parcel. This sampling location represents the most hydrologically upgradient position in the vicinity.
FTA-107-GP04	Surface Soil Subsurface Soil	Direct-push samples will be collected at the lowest elevation within the study parcel, where runoff may collect before traveling to surface water streams, or lakes. This sampling location represents the most hydrologically upgradient position in the vicinity.
FTA-107 SW01/SD01	Sediment Surface Water	Samples will be collected from the unnamed tributary of Choccolocco Creek, which lies immediately north of the site. This sampling location represents the most hydrologically upgradient position in the vicinity.
FTA-107 SW02/SD02	Sediment Surface Water	Samples will be collected from the unnamed tributary of Choccolocco Creek, which lies immediately north of the site. This sampling location represents a point of entry of runoff into the surface stream.
FTA-107 SW03/SD03	Sediment Surface Water	Samples will be collected from the unnamed tributary of Choccolocco Creek, which lies immediately north of the site. The sampling location represents the most hydrologically downgradient position in the vicinity.
FTA-107 DEP01	Depositional Soils	Samples will be collected from the toe of the slope near the northeast corner of the site. This sampling location represents a likely point of collection for depositional soils sloughing off the study parcel towards the unnamed tributary of Choccolocco Creek.
FTA-107 DEP02	Depositional Soils	Samples will be retrieved from the toe of the slope near the southeast corner of the site. This sampling location represents a likely point of collection for depositional soils that have sloughed directly downslope from the study parcel.



LEGEND

- UNIMPROVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER SMOKE AREA
CHOCCOLOCCO CORRIDOR
PARCEL 107(7)

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

INTERNATIONAL TECHNOLOGY CORPORATION

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Table 4-2

Soil Sample Designations and QA/QC Sample Quantities
Former Choccolocco Corridor Smoke Area, Parcel 107(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-107-GP01	FTA-107-GP01-SS-FZ0001-REG FTA-107-GP01-DS-FZ0002-REG	0-1.0 a			FTA-107-GP01-SS-FZ0001-MS FTA-107-GP01-SS-FZ0001-MSD	TCL VOCs, TCL SVOCs, TAL metals
FTA-107-GP02	FTA-107-GP02-SS-FZ0003-REG FTA-107-GP02-DS-FZ0004-REG	0-1.0 a				TCL VOCs, TCL SVOCs, TAL metals
FTA-107-GP03	FTA-107-GP03-SS-FZ0005-REG FTA-107-GP03-DS-FZ0006-REG	0-1.0 a				TCL VOCs, TCL SVOCs, TAL metals
FTA-107-GP04	FTA-107-GP04-SS-FZ0007-REG FTA-107-GP04-DS-FZ0010-REG	0-1.0 a	FTA-107-GP04-SS-FZ0008-FD	FTA-107-GP04-SS-FZ0009-FS		TCL VOCs, TCL SVOCs, TAL metals
FTA-107-DEP01	FTA-107-DEP01-DEP-FZ0011-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL metals
FTA-107-DEP01	FTA-107-DEP01-DEP-FZ0012-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL metals

[a]Actual sample depth selected for analysis will be at the discretion fo the on-site geologist and will be based on field observation.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the soil borings at the Former Choccolocco Corridor Smoke Area described in Section 4.2.1.1.

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 presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations.

4.2.2.2 Sample Collection Procedures

Subsurface soil samples will be collected from soil borings at a depth greater than 1-foot bgs in the unsaturated zone. The soil borings will be advanced and soils samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP.

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 photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the subsurface soil sample showing the highest readings above background using the PID will be sampled and submitted to the laboratory for analysis. If none of the sample intervals collected indicate elevated readings on the PID, the deepest interval collected will be submitted for laboratory analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC 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 PSSC and/or additional sample data would provide insight to the existence of any PSSC.

Sample documentation and COC 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 Chapter 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 Surface Water Sampling

Three surface water samples will be collected from an unnamed tributary of Choccolocco Creek located north of the Former Choccolocco Corridor Smoke Area.

4.2.3.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-3. The exact sampling locations will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

4.2.3.2 Sample Collection Procedures

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC 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 Chapter 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.2.4 Sediment Sampling

Three sediment samples will be collected from the same locations as the surface water samples described in Section 4.2.3.

4.2.4.1 Sample Locations and Rationale

The tentative locations for the two sediment samples are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-2. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

4.2.4.2 Sample Collection Procedures

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5.

Table 4-3

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Former Choccolocco Corridor Smoke Area, Parcel 107(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-107-SW/SD01	FTA-107-SW/SD01-SW-FZ2001-REG	NA	FTA-107-SW/SD01-SW-FZ2002-FD	FTA-107-SW/SD01-SW-FZ2003-FS		TCL VOCs, TCL SVOCs, TAL metals
	FTA-107-SW/SD01-SD-FZ1001-REG	0 - 0.5				TCL VOCs, TCL SVOCs, TAL metals TOC, grain size
FTA-107-SW/SD02	FTA-107-SW/SD02-SW-FZ2004-REG	NA			FTA-107-SW/SD02-SW-FZ2004-MS	TCL VOCs, TCL SVOCs, TAL metals
	FTA-107-SW/SD02-SD-FZ1002-REG	0 - 0.5			FTA-107-SW/SD02-SW-FZ2004-MSD	TCL VOCs, TCL SVOCs, TAL metals TOC, grain size
FTA-107-SW/SD03	FTA-107-SW/SD03-SW-FZ2005-REG	NA				TCL VOCs, TCL SVOCs, TAL metals
	FTA-107-SW/SD03-SD-FZ1003-REG	0 - 0.5				TCL VOCs, TCL SVOCs, TAL metals TOC, grain size

MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
VOC - Volatile organic compound.

4.2.5 Depositional Soil Sampling

Two depositional soil samples will be collected at the Former Choccolocco Smoke Corridor Area site.

4.2.5.1 Sample Locations and Rationale

The depositional soil samples will be collected from the toe of the slope near the northeast and southeast corner of the site. These sampling locations represent likely collection points for depositional soils sloughed off the site. The sampling rationale is listed in Table 4-1 and the proposed sampling location is shown on Figure 4-1. The depositional soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

4.2.5.2 Sample Collection Procedures

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and COC 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 Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging, and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in Chapter 4.0 of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as the EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Choccolocco Corridor Smoke Area site consist of the following list of analytical suites:

- Target compound list (TCL) volatile organic compounds - Method 5035/8260B
- TCL semivolatile organic compounds - Method 8270C
- Target analyte list (TAL) metals – Method 6010B/7000.

In addition, the sediment samples will be analyzed for the following list of parameters:

- Total Organic Carbon – Method 9060
- Grain Size – American Society for Testing and Materials D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with 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 CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to the following subcontract laboratory:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Table 4-4

Analytical Samples
Former Choccolocco Corridor Smoke Area, Parcel 107(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples: No. of Sample Points	Field Samples: No. of Events	Field Samples: No. of Field Samples	QA/QC Samples[a]: Field Dups (10%)	QA/QC Samples[a]: Splits w/ QA Lab (5%)	QA/QC Samples[a]: MS/MSD (5%)	QA/QC Samples[a]: Trip Blank (1/ship)	QA/QC Samples[a]: Eq. Rinse (1/wk/matrix)	Quanterra Total No. Analysis	QA Lab Total No. Analysis
Former Choccolocco Corridor Smoke Area - Parcel 107(7): 3 surface water, 13 soil matrix; 4 surface, 4 subsurface, 3 sediment, and 2 depositional soils													
TCL VOCs	8260B	water	normal	3	1	3	1	1	1	1	1	8	1
TCL SVOCs	8270C	water	normal	3	1	3	1	1	1		1	7	1
Tot TAL Metals	6010B/7000	water	normal	3	1	3	1	1	1		1	7	1
TCL VOCs	8260B	soil	normal	13	1	13	1	1	1		1	17	1
TCL SVOCs	8270C	soil	normal	13	1	13	1	1	1		1	17	1
TAL Metals	6010B/7000	soil	normal	13	1	13	1	1	1		1	17	1
					Former Smoke Area S Total:	48	6	6	6	1	6	73	6

[a] Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than one week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
VOC - Volatile organic compound.
TOC - Total organic carbon.

Split samples collected for the USACE Laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Former Choccolocco Corridor Smoke Area site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for the Former Choccolocco Corridor Smoke Area, Parcel 107(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the BRAC Closure Team on a monthly basis.

6.0 References

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

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

U.S. Army Corps of Engineers (USACE), 1998, ***Statement of Work for Task Order CK005, Site Investigations, Fort McClellan, Alabama, Scope of Work***, January.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plans,*** Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, ***Data Quality Objectives Process for Superfund, Interim Final Guidance***, EPA 540-R-93-071, September.