United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mountain Longleaf NWR

407 Bains Gap Road

Anniston, Alabama 36201

09/03/2019

Dear Owen Nuttall,

The United States Fish and Wildlife Service, Mountain Longleaf National Wildlife Refuge (NWR) concurs with the Land Use Control Implementation Plans (LUCIPs) for the three designated lead remediation areas, 81mm Mortar Range, Bains Gap Road Ranges and T24A. The restriction of no residential building on the sites outlined within the LUCIPs provides no restrictions with the Refuge's current capabilities and management plans to allow the public to enjoy normal outdoor recreational activities throughout these areas of Mountain Longleaf NWR.

Thank you

Richard P. Ingram
Project Leader
Wheeler NWR Complex
256-353-7243 ext 23

Signature: Richard P. Ingram

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

May 24, 2019

Mr. Owen Nuttall
Site Manager
US Army Transition
681 Castle Avenue
Anniston, Alabama 36205

RE: ADEM Review and Comment: *Final Land Use Control Implementation Plan for Ranges Near Training Area T-24A;* dated April 9, 2019
Fort McClellan, Calhoun County, Alabama
Facility I.D. No. AL5 000 053 611

Dear Mr. Nuttall:

The Alabama Department of Environmental Management (ADEM or the Department) has completed its review of Fort McClellan's *Final Land Use Control Implementation Plan (LUCIP) for Ranges Near Training Area T-24A*, received April 12, 2019. The subject document included the Army's responses to ADEM's comments dated December 12, 2018. The Final LUCIP incorporates the responses to Comments 2 and 3, and the Department considers those to be resolved. The Department's Comment 1 states that the Department cannot concur with the LUCIP until a Notice of Environmental Use Restriction (NEUR) is included with the document for review. In response, the Army agreed that land use controls (LUCs) are necessary, but recordation of LUCs is pending a template with language that is mutually acceptable to the parties involved. Consequently, a NEUR was not provided to the Department with the Final LUCIP.

Please note that in accordance with ADEM Admin. Code r. 335-5, a site or property undergoing a response action that does not return the property to unrestricted use requires an environmental covenant. Additionally, ADEM Admin. Code r. 335-5-1-.02 states, "In lieu of an environmental covenant, a Notice of Environmental Use Restriction for properties or sites owned by the federal government shall be submitted to ADEM for approval that gives notice of the current and future use of the federal property." As was stated in the Department's May 8, 2017 letter regarding the *Final Remedial Action Completion Report (RACR) for Ranges Near Training Area T-24A* and the Department's December 12, 2018 letter regarding the *Revised Draft Land Use Control Implementation Plan for Ranges Near Training Area T-24A*, the Department cannot provide concurrence with either the RACR or the LUCIP for the Ranges near Training Area T-24A until a NEUR has been submitted for review and approval.

Responses addressing ADEM's comment should be submitted within forty-five (45) days of receipt of this letter. Army's responses may be submitted in the form of a revised document or

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110 Vulcan Road
Birmingham, AL 35209-4702
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(251) 304-1189 (FAX)

appropriate revised pages, tables, and figures to be inserted in the original submission. If the Army chooses to submit revised pages, please date or code each page and figure. For example, **15(r-6/15/19)** would be page 15 revised June 15, 2019.

To facilitate the Department's review, please return a copy of the Department's comments with annotations in the left or right margin, which identify the LUCIP's revised pages, figures, tables, etc. where the Army's response to each comment item is recorded. In addition, please provide a redline strikeout version of the revised document. Within the transmittal letter of the revised plan, there should be a statement certifying that all changes to the revised plan are shown in the redline strikeout version.

If you have any questions or concerns regarding this matter, please contact Mrs. Heather Guerrero at 334-271-7738 or via email at heather.guerrero@adem.alabama.gov.

Sincerely,

Jason Wilson, Chief
Governmental Hazardous Waste Branch
Land Division

JJW/ATM/HLG/tlp

cc: Ms. Melissa Shirley/USACE, Mobile District
Ms. Leigh Lattimore/EPA Region 4
Mrs. Ashley Mastin/ADEM
Ms. Lisa Holstein/Army
Mrs. Brandi Little/ADEM

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON DC 20310-2400

REPLY TO
ATTENTION OF

April 9, 2019

Base Realignment and Closure Division

Mrs. Brandi Little
Alabama Department of Environmental Management (ADEM)
Engineering Services Section
Governmental Hazardous Waste, Land Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059

Dear Mrs. Little:

Please find the attached *Final Land Use Control Implementation Plan, Ranges Near Training Area T-24A, Fort McClellan, Anniston, Alabama,* April 2019, and responses to your comments dated December 12, 2018 on the draft document for your review.

Copies of this correspondence were provided to Mrs. Melissa Shirley, U.S. Army Corps of Engineers, Mobile District, and Mr. Keith Westlake, U.S. Fish and Wildlife Service.

If you have questions regarding this submittal or require additional information, please contact me at 404-469-3399 or by email at owen.m.nuttall.civ@mail.mil.

Sincerely,

Owen Nuttall
Site Manager

Attachment

Response to Comments
Revised DRAFT Land Use Control Implementation Plan for Ranges Near Training Area T-24A
Environmental Remediation Services at Four Sites, Fort McClellan, Anniston, Alabama

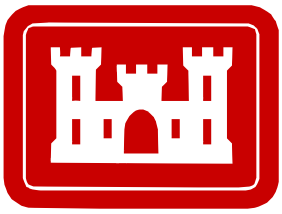
Comment #	Reviewer	Page	Paragraph/ Section	Comment	Response
1.	ADEM	NA	General	The Department's February 14, 2018 letter regarding the *Final Remedial Action Report (RACR) for the [Ranges Near Training Area T-24A]* states that the Army was currently in the process of revising a LUCIP containing a Notice of Environmental Use Restriction (NEUR), which would be provided for ADEM review. However, it should be noted that a NEUR was not included in the October 18, 2018 Revised Draft LUCIP. Therefore, the Department cannot concur on the Revised Draft LUCIP until a NEUR is included with the document for ADEM review. Please address in the revised report.	The Army and ADEM agreed in the December 2000 Land Use Control Assurance Plan that LUCs will be necessary. However, recordation of the LUCs is pending a template with language that is mutually acceptable to the parties involved. At this time, the DOD template and the AL UECA differ significantly in that the State creates an enforceable property right interest. The instrument the Army will record will only be a pure notice.
2.	ADEM	NA	6.0	This section states that Land Use Controls (LUCs) shall remain in effect until changes in applicable Federal and State risk-based cleanup standards indicate that site contaminants no longer pose an unacceptable risk or until a reduction in site contaminant concentrations to below Federal and State residential risk-based cleanup standards occurs. However, the LUCs should remain in place until a request to remove or reduce the LUCs has been approved by the Department. Please revise the plan as necessary to incorporate this information.	Information in Section 6.0 was updated to reflect the information requested.
3.	ADEM	NA	5.0	Please revise this section to clarify how the Army intends to implement the monitoring, maintenance, and enforcement of the LUCs. Please see the Department's Comment 1.	The Army will not monitor, maintain, or enforce the LUCs on the property. As stated in the LUCIP, the landowner (in this case, USFWS) is responsible for those actions. The USFWS will report LUC violations to the Army and ADEM. Information in Section 5.0 was updated to reflect this. In addition, the third sentence of Section 5.0 "The USFWS and the Army will meet to discuss and enter agreement, per the Letter of Transfer/Memorandum of Agreement between the agencies, regarding the enforcement of the LUCs and the division of LUC responsibilities" was deleted, as the LUCIP is said agreement.

FINAL

LAND USE CONTROL IMPLEMENTATION PLAN
FOR
RANGES NEAR TRAINING AREA T-24A

FORT MCCLELLAN, ANNISTON, ALABAMA

Prepared for:



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

Contract No. W912DY-10-D-0023
Task Order No: CK01

Prepared by:

HydroGeoLogic, Inc.
85 NE Loop 410, Suite 605
San Antonio, Texas 78216

April 2019

Land Use Control Implementation Plan
Ranges Near Training Area T-24A

Fort McClellan
Calhoun County, Alabama

Prepared for:

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

Prepared By:

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April 2019

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List of Figures

List of Acronyms

ADEM	Alabama Department of Environmental Management
ASR	Archives Search Report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CNB	solution of chloroacetophenone, benzene, and carbon tetrachloride
CNS	solution of chloroacetophenone, chloropicrin, and chloroform
COC	chemicals of concern
CT	carbon tetrachloride
CWM	chemical warfare materiel
EBS	Environmental Baseline Survey
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FFE	field flame expedient
FFS	focused feasibility study
FTMC	Fort McClellan
LUC	land use control
LUCIP	land use control implementation plan
MINICAMS	miniature continuous air monitoring system
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
OWS	oil/water separator
Parsons	Parsons Engineering Science, Inc.
RI	remedial investigation
ROD	Record of Decision
SAIC	Science Applications International Corporation
Shaw	Shaw Environmental, Inc.
SI	site investigation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
XRF	X-ray fluorescence

1.0 Introduction

The Army completed an environmental response action at the former Fort McClellan under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA 42 U.S.C. 9601 et. seq.). Land Use Controls (LUC) were a component of the selected remedy. This Land Use Control Implementation Plan (LUCIP) applies to the Ranges Near Training Area T-24A that are located on U.S. Fish and Wildlife Service (USFWS) property at the former Fort McClellan (FTMC) in Calhoun County, Alabama. The Department of the Army transferred the property to the USFWS in 2003 and the site is now part of the *Mountain Longleaf National Wildlife Refuge* (hereafter referred to as the Refuge). This LUCIP complies with requirements set forth in the Land Use Control Assurance Plan (December 2000) signed by the Army, the U.S. Environmental Protection Agency (EPA), the Alabama Department of Environmental Management (ADEM), and the Calhoun County McClellan Development Authority, successor to the Anniston-Calhoun County Fort McClellan Development Joint Powers Authority.

A Record of Decision (ROD) for the Ranges Near Training Area T-24A was finalized in May 2014 (Shaw Environmental, Inc. [Shaw], 2014a). The final ROD was signed by the Army on July 22, 2014. The ROD summarizes the results of a site investigation (SI), remedial investigation (RI), focused feasibility study (FFS), and proposed plan for the Ranges Near Training Area T-24A and documents the Selected Remedies to address soil and groundwater contamination at the ranges. Soil at the T-24A Ranges is contaminated with chemicals of concern (COC), primarily lead (but also antimony, copper, and zinc), at concentrations exceeding cleanup levels established for the T-24A Ranges. The ROD addressed the major components of the Selected Remedy for soil [Alternative S3b from the FFS (Shaw, 2014b)] which include the following:

- ***Excavation of Soil.*** The Selected Remedy involves the excavation of soil from areas where the concentrations of lead and the other COCs (antimony, copper, and zinc) exceed the cleanup levels selected for protection of industrial/recreational site users and ecological receptors.
- ***On-Site stabilization.*** The excavated soil will be treated onsite using a reagent-based stabilization technology, referred to as stabilization.
- ***Off-site disposal.*** The treated soil would be considered nonhazardous special waste rather than a hazardous waste for disposal purposes. Therefore, the stabilized material will be disposed of off-site as nonhazardous special waste at a permitted Subtitle D disposal facility.
- ***Land Use controls.*** Because the Selected Remedy will not achieve cleanup to a concentration that will allow unrestricted reuse, LUC that prohibit unrestricted use will

be required for portions of the site where lead or the other metals COCs in soil remain at concentrations above unrestricted use cleanup levels.

The Selected Remedy for site groundwater [Alternative GW2 from the FFS (Shaw, 2014b)] is monitored natural attenuation (MNA) and LUCs to address concentrations of COCs above the cleanup levels (i.e., EPA drinking water standards). The groundwater COCs are antimony and the organic compounds benzene and carbon tetrachloride (CT). The major components of this alternative are:

- ***Monitored Natural Attenuation***. MNA is a passive remedial approach that depends on natural processes to degrade and dissipate organic constituents in the groundwater. MNA would involve periodic monitoring of groundwater to quantify the effectiveness of the natural attenuation processes and monitor progress towards achieving the groundwater cleanup levels.
- ***Land use controls***. LUCs will be required under this alternative to prevent exposures to contaminated groundwater until the cleanup levels for groundwater are attained.

No remedy selection was determined to be warranted for any other media (i.e., sediment or surface water) at the T-24A Ranges. The Selected Remedies for soil and groundwater were implemented in 2015 as detailed in Section 2.8 below.

The cleanup was based on protection of ecological receptors and industrial/recreational site users, consistent with the current and expected future land use of the property. Because the remedial action did not achieve cleanup to unrestricted (residential) use standards, the final ROD specified that the Army would implement LUCs to prohibit unrestricted use of the site and conduct five-year reviews to ensure that the remedy is protective of human health and the environment. This document specifies the LUC objectives; describes the actual LUCs; provides the LUC monitoring, maintenance, and enforcement requirements; and identifies the conditions under which the LUCs may be reduced or removed at the T-24A Ranges.

2.0 Site Description and History

The former FTMC is located in the foothills of the Appalachian Mountains of northeastern Alabama near the cities of Anniston and Weaver in Calhoun County. FTMC consisted of three main areas: Main Post, Pelham Range, and Choccolocco Corridor, a 4,488-acre tract of land that was leased from the State of Alabama until May 1998. The Main Post, which occupied 18,929 acres, is bounded on the east by the Choccolocco Corridor, which previously connected the Main Post with the Talladega National Forest. Pelham Range, which occupies 22,245 acres, is located approximately 5 miles due west of the former Main Post and adjoins the Anniston Army Depot to the south. The refuge is located in the eastern portion of the former Fort McClellan's Main

Post. The property encompasses approximately 9,000 acres and contains large stands of mountain longleaf pine. The military used this area in various types of training from 1912 (and possibly as early as 1898) to 1999.

The T-24A Ranges are located in the southeastern portion of the former FTMC Main Post (Figure 1). The T-24A Ranges consist of the following parcels:

- Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)
- Range 24A, Former Multi-Purpose Range, Parcel 108(7)/82Q-X
- Range 24A, Fog Oil Drum Storage, Parcel 88(6)
- Former Machine Gun Range, Parcel 112Q
- Former Demolition Area, Parcel 113Q-X
- Former Bandholtz Machine Gun Qualification Range, Parcel 213Q
- Former Bandholtz Field Firing Range No. 2, Parcel 214Q.

An environmental baseline survey (EBS) was conducted in 1998 to document the environmental condition of all FTMC properties (Environmental Science and Engineering, Inc. [ESE], 1998). The EBS described several parcels (Figure 2) that constitute the approximately 90-acre area of investigation for the T-24A Ranges as summarized below.

2.1 Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)

The Former Chemical Munitions Disposal Area is an approximately 1.8-acre area located near the center of several overlapping ranges. The chemical munitions disposal training site was used from an unknown date in the 1960s until 1973 (ESE, 1998). Training activities reportedly included disposal of chemical munitions filled with phosgene, 3-quinuclidinyl benzilate, sarin, and distilled mustard.

The decontaminants reportedly used at this site included supertropical bleach and Decontamination Solution Number 2. Based on chemicals detected in site groundwater during recent environmental investigations, it is possible that the tear agents CNB (solution of chloroacetophenone, benzene, and CT) and CNS (solution of chloroacetophenone, chloropicrin, and chloroform) were used or disposed at the site.

Training sites within the parcel included two burn pits used in chemical munitions disposal. The depth of the pits ranged from 6 to 15 feet below ground surface (Shaw, 2005). Within the pits, military personnel reportedly burned dunnage and then used a shaped charge to expel chemical agent from the munition into the fire for incineration. Sarin was reportedly the chemical agent used during these exercises. After each training exercise, the area was sprayed with supertropical bleach (ESE, 1998). Each pit was backfilled with soil at closure in 1973.

2.2 Range 24A, Former Multi-Purpose Range, Parcel 108(7)/82Q-X

The Range 24A Former Multi-Purpose Range is an approximately 55-acre area used for smoke, demolition, and field flame expedient (FFE) training. Materials for FFE (e.g., diesel, gasoline) were historically stored in 55-gallon drums and used at this range. Tracer (white phosphorus) or sulfur materials may have also been used (ESE, 1998). FTMC Range Control records indicate that ordnance used at this range included C4, trinitrotoluene, M4 bursters, blasting caps, simulators, trip flares, detonation cords, and smoke-producing munitions and equipment. Range 24A had two range operations buildings, a fog oil drum storage site (Parcel 88[6]), a smoke generator and maintenance line, a former chemical munitions disposal area (Parcel 187[7]), and several ranges that were once included within or were a part of Range 24A.

A smoke-generator training and maintenance line (consisting of a sloped concrete pad with a small berm) was located in the southwestern portion of the site. The smoke generators were placed on wooden tables at the concrete pad for operation and maintenance. The military has used standard grade fuels, diesel fuel, jet fuel, and kerosene to produce the fog oil that was stored in drums at the site.

An inoperative oil/water separator (OWS) was located at the eastern end (downslope) of the concrete pad. No records are available on the period of operation for the OWS; however, operation of the unit is suspected to have ceased prior to 1988, because the discharge from the OWS was not included on the 1988 National Pollutant Discharge Elimination System permit. The residual liquid and sludge was sampled, characterized, and then vacuumed out of the OWS and transported to an appropriate offsite disposal facility prior to the removal of the OWS in 2010.

Long-time FTMC personnel report that a submachine gun range was located in this area in the early 1960s. The oldest annotation of this range is on a 1956 Army map which identifies Range 24A as a rifle range. A 1959 Army map identifies the firing points for a machine gun range and an explosive ordnance disposal area within the current boundary of Range 24A (ESE, 1998).

According to the Archives Search Report (ASR), Range 24A (originally called Range 24) was built sometime after World War II and first appears as a rifle range on a 1949 aerial map. It appears again on the 1958 Range Map as “Range 20, Submachine Gun Range.” On the 1967 Range Map, the range is listed as “Demolition Area, Range 24.” By 1974, the name was changed to Range 24A. In 1990, the range was designated “Multi-Purpose (Smoke, Demo, & Flame Field).” Range 24 was inspected by U.S. Army Corps of Engineers (USACE) personnel in 1996;

no evidence of a demolition area was found. The area of the former sub-machine gun range was also inspected, and no evidence of ordnance was found (USACE, 2001).

2.3 Range 24A, Fog Oil Drum Storage, Parcel 88(6)

The Range 24A Fog Oil Drum Storage area covers less than 1 acre and is located at the western end of the T-24A Ranges. The storage area consisted of a bermed concrete pad (about 60 by 60 feet) that sloped to floor drains connected to an OWS and a former underground storage tank that collected spilled oil and runoff (the tank has since been removed). A 5-foot-high concrete wall surrounded most of the drum storage area. This facility had a storage capacity of approximately 300 55-gallon drums, which were stacked on their sides in rows. Oily stains were noted on soil outside the drum storage area. A large volume of fog oil was reportedly released over the years at training and storage areas within Range 24A (ESE, 1998).

2.4 Former Machine Gun Range, Parcel 112Q

The Former Machine Gun Range is located in the western portion of the area of investigation. The range appears on a 1959 Army map, but the dates of use and types of ordnance fired at this range are unknown (ESE, 1998). The direction of fire was to the south. The area investigated during the RI was limited to the probable firing line and the probable impact area. A linear mound parallel to the access road is assumed to be the target area (or a portion of the target area) for this range.

2.5 Former Demolition Area, Parcel 113Q-X

The Former Demolition Area is an approximately 3-acre area located in the eastern-central portion of Range 24A. Parcel 113Q-X overlaps nearly all of the Training Area T-24A area (Parcel 187[7]). This area was identified as a demolition area on a 1959 Army map, but the dates of use and types of activities that occurred at this site are unknown. Definitive information regarding the historical activities at Parcel 113Q-X was not available (ESE, 1998).

2.6 Former Bandholtz Machine Gun Qualification Range, Parcel 213Q

The Former Bandholtz Machine Gun Qualification Range was identified in the area of Range 24A on an Army map entitled "Ranges, 1948." The area investigated during the RI was limited to the firing line and probable impact area. Evidence of the firing line for Parcel 213Q appears as a level area in the western portion of the study area. The impact area for this range appears to be in the eastern portion of the T-24A Ranges, approximately 1,500 to 2,400 feet due east of the firing line. The suspected impact area is characterized by conical mounds and circular surface

depressions interconnected by shallow trenches. Small-caliber weapons are assumed to have been fired at this range. No other information was available for Parcel 213Q (ESE, 1998).

2.7 Former Bandholtz Field Firing Range No. 2, Parcel 214Q

The Former Bandholtz Field Firing Range No. 2 was identified in the area of Range 24A on an Army map entitled "Ranges, 1948." The area investigated during the RI was limited to the firing line and probable impact area. The firing line appears as a level area near the northwestern corner of the T-24A Ranges. The target/impact area was not identified but is expected to be along the hillside located approximately 600 feet north of the firing line. The direction of fire was to the north-northeast, and small-caliber weapons are assumed to have been fired at this range. No other information was available for the Former Bandholtz Field Firing Range No. 2 (ESE, 1998).

Following the EBS and ASR, SI/RI activities were conducted at the ranges and documented in the Final RI Report (Shaw, 2011). These investigations included sampling of all potentially affected environmental media at the site, including surface and subsurface soil, sediment and surface water, and groundwater. The RI determined the nature and extent of environmental contamination resulting from historical military activities and waste disposal activities at the site. Other site activities have included an engineering study to address the potential for chemical warfare materiel (CWM) at the Former Chemical Munitions Disposal Area (Parsons Engineering Science, Inc, [Parsons], 2002) and a 3X scrap material removal project (Shaw, 2005). The results of these investigations and removal projects are discussed in greater detail in the following sections.

Today, the former ranges are located within the *Mountain Longleaf National Wildlife Refuge*, which is managed by the USFWS.

2.8 Previous Investigations and Removal Actions

Several environmental assessments/investigations and one removal action have been conducted at the T-24A Ranges to date. These include the following:

- ***Environmental Baseline Survey (EBS)***. The EBS classified Parcels 187(7) and 108(7) as Community Environmental Response Facilitation Act (CERFA) Category 7 parcels. Category 7 parcels are areas that had not been evaluated or that required further evaluation to determine their environmental condition. Parcel 88(6) was categorized as a CERFA Category 6 parcel in the EBS. Category 6 parcels are areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented. Parcels 82Q-X, 112Q, 113Q-X, 213Q, and 214Q were

categorized as CERFA Category 1 Qualified parcels in the EBS. Category 1 parcels are areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). These parcels, however, were qualified because chemicals of potential concern may be present as a result of historical range activities. Parcels 82Q-X and 113Q-X were also assigned an "X" designation for potential unexploded ordnance.

- ***Site Investigation.*** In 1991 and 1992, Science Applications International Corporation (SAIC) conducted an SI at the Former Chemical Munitions Disposal Area, Parcel 187(7) to determine the presence or absence of potential environmental contamination resulting from previous military training activities. The SI included a geophysical survey and collection of soil, surface water, and sediment samples. A reconnaissance electromagnetic survey was conducted over two areas within the fenced area where the burn pits were believed to be located. The electromagnetic survey identified an anomalous area that was associated with a piece of buried metal debris. Four shallow soil samples were collected from the two locations (T24A-S01 and T24A-S02) within the fenced enclosure. The soil samples were field screened for the presence of chemical agents (distilled mustard, sarin, nerve agent) using a miniature continuous air monitoring system (MINICAMS). Chemical agents were not detected in the samples. A surface water/sediment sample (T24A-W01/D01) was also collected from a tributary to South Branch of Cane Creek, downstream of the fenced area. Agent breakdown products were not detected in the samples (SAIC, 2000).

- ***Site Investigation/Remedial Investigation (RI)***. SAIC conducted RI field activities in 1994 and early 1995 within the Former Chemical Munitions Disposal Area, Parcel 187(7), and downgradient of the site (SAIC, 2000). Field activities included MINICAMS screening for CWM, environmental sampling and analysis, trenching, geophysical surveying, and monitoring well installation. Based on the RI analytical results and risk assessments, SAIC recommended additional soil and groundwater sampling for non-CWM constituents to further evaluate potential human health and ecological risks.

Additional SI/RI field activities were performed at the T-24A Ranges between 1998 and 2004 to determine the presence or absence of contamination and then define the vertical and horizontal extent of contamination in all site media (Shaw, 2011). A total of 110 surface and depositional soil samples, 65 subsurface soil samples, 181 groundwater samples, 11 surface water samples, and 11 sediment samples were collected for chemical analysis during the investigations. The samples were analyzed for a variety of chemical parameters, including metals, volatile organic compounds, semivolatile organic compounds, pesticides, herbicides, polychlorinated biphenyls, dioxins, and chemical agent breakdown products, although not all samples were analyzed for all parameters. Shaw also installed 58 permanent monitoring wells at T-24A Ranges, including 31 residuum wells and 27 bedrock wells, to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological data. Four existing site wells were also sampled during the investigation. Other SI/RI field activities included x-ray fluorescence (XRF) soil screening, borehole geophysical logging, and slug testing. The RI report also included data from two rounds of groundwater samples collected from select site wells in 2009 and 2010. The RI identified antimony, copper, and lead to be COCs for soil; and antimony, benzene, and CT to be COCs for groundwater.

- ***CWM Engineering Evaluation/Cost Analysis.*** In 2001, an engineering evaluation/cost analysis (EE/CA) was performed to address the presence or absence of CWM or other subsurface disposal inside the fenced area of the Former Chemical Munitions Disposal Area, Parcel 187(7) (Parsons, 2002). Field activities included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, and collection of soil samples for distilled mustard, sarin, and breakdown products analysis. The geophysical surveys occurred in two separate areas: a 100-foot by 100-foot grid located over the possible burial pit northwest of the fenced area and the entire area within the fenced area. A total of 33 anomalies were identified and selected for further investigation. Backhoe and hand excavation was used to evaluate 31 of the 33 anomalies (2 anomalies were previously investigated by the U.S. Army Technical Escort Unit in 1993). Six anomalies contained 22 items suspected to be CWM scrap, including ordnance items; however, none of the items contained chemical agent or were explosively configured. All suspect items recovered during the EE/CA were treated and disposed as "3X" scrap. 3X scrap items are defined as materials that may have been in contact with or contained chemical agent and have been surface decontaminated by locally approved procedures and verified (using air monitoring) that concentrations of agent are at an acceptable level prior to disposal in pits. Eight soil samples were collected as part of the intrusive investigations performed during the EE/CA. Edgewood Chemical and Biological Center screened the samples for phosgene, sarin, and mustard prior to shipment to their analytical laboratory. The laboratory analytical results did not indicate any residual agents or degradation products (Parsons, 2002).

  Although CWM-related items were excavated and disposed during the EE/CA, no evidence of chemical agent contamination was found. The EE/CA concluded that any remaining scrap could be considered 3X, ordnance and explosives, or other scrap and poses only a remote risk with respect to CWM. Therefore, Parsons recommended "No Further Action" as the CWM response alternative for implementation at Training Area T-24A (Parsons, 2002).

- ***3X Scrap Removal.*** In 2003 and 2004, Shaw investigated and removed 3X scrap materials from Training Area T-24A, Former Chemical Munitions Disposal Area (Shaw, 2005). The 3X items consisted of munitions and explosives of concern, munitions debris, scrap metal, and chemical agent containers (bottles and glassware) buried at four of the six anomalies identified during the CWM EE/CA. No 3X scrap items were recovered at the remaining two of the six excavated anomalies.

  A total of 2,184 cubic yards of soil were excavated and screened. Shaw certified and packaged 31 special containers weighing over 22,500 pounds representing hundreds of recovered 3X scrap items. The containers were transported to an off-site disposal facility for incineration. After treatment, the 3X material was certified as "5X" material indicating the items are safe and may be circulated into the metal scrap market.

- ***Remedial Action at Selected Sites within the Charlie Area at Fort McClellan.*** Tetra Tech performed munitions response activities at 66.9 acres at the Range in 2009 as part of a larger effort across the Fort McClellan ranges. The area was geophysically mapped and approximately 54.35 acres cleared of munitions potentially presenting an explosive hazard to the depth of detection and another 12.55 acres were surface cleared (TetraTech, 2011).

- ***Remedial Action (2015).*** In 2015, HydroGeoLogic, Inc. (HGL) implemented the Selected Remedies at the former T-24A Ranges to address the soil and groundwater contamination at the site. The Selected Remedy for soil removed contaminated soil with concentrations of lead and the other COCs (antimony, copper, and zinc) above the cleanup levels presented in the Final ROD. The cleanup levels for the soil COCs were as follows:
    - Antimony – 12.4 milligrams per kilogram (mg/kg)
    - Copper – 334 mg/kg
    - Lead – 500 mg/kg
    - Zinc – 100 mg/kg.

  The remedial action successfully removed the COCs to concentrations below the cleanup levels as documented in the Remedial Action Completion Report (HGL, 2017). A total of approximately 29,900 tons of contaminated soil were excavated, treated onsite using a reagent-based stabilization process as necessary, and transported and disposed as nonhazardous special waste at an offsite permitted Subtitle D disposal facility. Because the remedial action did not achieve cleanup to a concentration that would allow for unrestricted future site use, LUCs will be required for the site.

  The Selected Remedy for groundwater consisted of MNA through sampling and analysis of existing site monitoring wells and new monitoring wells installed as part of the MNA implementation. MNA will continue until such time as concentrations of the groundwater COCs (antimony, benzene, and CT) are reduced to concentrations below the cleanup goals (i.e., EPA drinking water standards).

The LUCs for the T-24A Ranges are briefly discussed in the following sections.

3.0 Land Use Control Objectives

Because the Selected Remedy for soil (Alternative S3b – excavation of soil, LUCs, on-site stabilization, and off-site disposal) did not achieve cleanup to a concentration that would allow unrestricted reuse, LUCs as described in Section 4.0 are required for portions of the site where COCs in soil remain above unrestricted use (e.g., residential) cleanup levels. Additionally, LUCs are required for site groundwater until the selected groundwater remedy (GW2- MNA and LUCs) achieves cleanup levels because COC concentrations exceed unrestricted use concentrations (i.e., EPA drinking water standards). The LUC areas for soil were determined based on surface lead concentrations above 400 mg/kg, including results from the removal action and previous studies that used XRF surveys. All subsurface results at the site were below 800 mg/kg and do not impact the LUC area. The LUC area for groundwater was selected to encompass the area of the site where COC concentrations (carbon tetrachloride and benzene) remain above maximum contaminant levels, as measured during the February 2018 sampling event. The concentration trends for both carbon tetrachloride and benzene plumes have been

downward since 2001 as the site has naturally attenuated and the affected area is anticipated to remain within the LUC boundary points. To the extent practicable the areas were selected to maximize land use but be as contiguous as possible to minimize inspection burden in the future.

The overall objective for the LUCs described in this LUCIP is to prevent unacceptable risk to human health and the environment and to promote human safety by minimizing the potential for exposure to any substances that may present an unacceptable risk. The purpose of the LUCs is to prohibit residential use of the areas at the T-24A Ranges where COC concentrations in soil exceed unrestricted use (e.g., residential) cleanup levels, and to prohibit groundwater use except for environmental monitoring and testing. The areas where LUCs will be implemented encompass approximately 6.72 acres for soil and 4.5 acres for groundwater. The soil excavation boundaries are shown on Figure 3, and the soil and groundwater LUC areas are shown on Figure 4.

4.0 Description of Land Use Controls

The following LUCs have been implemented to meet the objectives in Section 3.0.

4.1 Land Use Restrictions

Residential use is prohibited. Under EPA guidance and the Alabama Risk-Based Corrective Action Guidance, "unrestricted use" refers to "residential use" and includes, but is not limited to, schools, dwellings, homes, hospitals, child-care centers, nursing homes, playgrounds, recreation centers, and any other areas/structures with sensitive human activity (ADEM, 2017). Also, use of groundwater for any purpose other than monitoring is prohibited.

4.2 Land Use Control Mechanisms

- The USFWS or its successor will conduct annual inspections and reviews of these LUCs to verify that the LUCs have not been violated.

4.3 Legal Description of Land Use Control Boundary

For soil restrictions, 3 parcels of land (collectively 6.72 acres, more or less) situated in Section 36, lying in Township 15 South, Range 8 East, Huntsville Meridian, Calhoun County, Alabama, and being more particularly described as follows:

POINT OF BEGINNING for LUC Area 1 being an unmarked point (Point 1 on Figure 4) having Alabama State Plane, East Zone Coordinates of North 1158709.0262 and East 679763.5247, runs thence as follows:

South 22 degrees 4 minutes 12 seconds East, 237 feet;
South 34 degrees 30 minutes 36 seconds West, 114 feet;
North 65 degrees 18 minutes 36 seconds West, 174 feet;
North 12 degrees 2 minutes 48 seconds West, 204 feet;
North 76 degrees 42 minutes 0 seconds East, 181 feet to the point of beginning.

POINT OF BEGINNING for LUC Area 2 being an unmarked point (Point 6 on Figure 4) having Alabama State Plane, East Zone Coordinates of North 1158394.5634 and East 679533.5202, runs thence as follows:

North 90 degrees 0 minutes 0 seconds East, 39 feet;
South 0 degrees 0 minutes 0 seconds West, 30 feet;
South 90 degrees 0 minutes 0 seconds West, 39 feet;
North 0 degrees 0 minutes 0 seconds East, 30 feet to the point of beginning.

POINT OF BEGINNING for LUC Area 3 being an unmarked point (Point 10 on Figure 4) having Alabama State Plane, East Zone Coordinates of North 1158142.0268 and East 679292.0474, runs thence as follows:

North 3 degrees 47 minutes 24 seconds East, 102 feet;
North 81 degrees 42 minutes 36 seconds East, 138 feet;
South 87 degrees 0 minutes 0 seconds East, 390 feet;
South 61 degrees 24 minutes 0 seconds East, 453 feet;
North 35 degrees 33 minutes 0 seconds East, 267 feet;
South 61 degrees 51 minutes 0 second East, 87 feet;
South 0 degrees 0 minutes 0 seconds East, 357 feet;
North 75 degrees 35 minutes 24 seconds West, 1,203 feet to the point of beginning.

For groundwater restrictions, a parcel of land (4.5 acres, more or less) situated in Section 36, lying in Township 15 South, Range 8 East, Huntsville Meridian, Calhoun County, Alabama, and being more particularly described as follows:

POINT OF BEGINNING being a known point (monitoring well R24A-187-MW44 on Figure 4) having Alabama State Plane, East Zone Coordinates of North 1158938.4500 and East 679128.7100, runs thence as follows:

North 80 degrees 38 minutes 01 seconds East, 235.0 feet to well R24A-187-MW10;
South 53 degrees 31 minutes 51 seconds East, 376.0 feet to well R24A-187-MW48;
South 22 degrees 11 minutes 52 seconds West, 224.6 feet to well R24A-187-MW49;
North 89 degrees 3 minutes 5 seconds West, 361.0 feet to well R24A-187-MW51;
North 42 degrees 8 minutes 42 seconds West, 322.4 feet to well R24A-187-MW43;
North 40 degrees 47 minutes 28 seconds East, 195.8 feet to the point of beginning (well R24A-187-MW44).

5.0 Monitoring, Maintaining, and Enforcing Land Use Controls

The USFWS is responsible for monitoring, maintaining, and enforcing the LUCs specified in Section 4.0. The USFWS shall report any observed LUC violations to the Army and ADEM and take other appropriate preventive action if danger to human health and the environment is indicated.

Should a third party violate the terms and intent of these LUCs, the USFWS will attempt to resolve the violation with the offender and if not corrected within 30 days, the USFWS will consider use of all options (e.g., civil action, criminal prosecution) available to correct the violation.

6.0 Reducing or Removing Land Use Controls

The LUCs are required because the COC concentrations are above those allowed for residential use and shall remain in effect until:

a. Changes in applicable Federal and State risk-based cleanup standards indicate that site contaminants no longer pose an unacceptable risk; or

b. There is a reduction in site contaminant concentrations to below Federal and State residential risk-based cleanup standards.

and

c. Until a request to remove or reduce the LUCs has been approved by ADEM.

7.0 Points of Contact

Fort McClellan Site Manager
U.S. Army Transition Force

681 Castle Avenue
Anniston, Alabama 36205

Refuge Manager
407 Baby Bains Gap Road
Anniston, Alabama 36205

Chief, Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2059

8.0 Administrative Record

Pertinent LUC records and other documents in the Administrative Record for the T-24A Ranges can be found at the information repositories maintained at the following locations:

McClellan Center Library
100A Gamecock Drive (Room 1153)
Anniston, Alabama 36205
Telephone: (256) 238-9352

9.0 References

ADEM, 2017, ***Alabama Risk-Based Corrective Action Guidance Manual***, Alabama Department of Environmental Management, Revision 3.0, February.

Army, 2000, ***Memorandum of Agreement Among U.S. Environmental Protection Agency, Alabama Department of Environmental Management, U.S. Department of the Army Fort McClellan, and Anniston-Calhoun County Fort McClellan Development Joint Powers Authority***, 12 December 2000.

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

HydroGeoLogic, Inc. (HGL), 2017, ***Remedial Action Completion Report for the T-24A Ranges***, Fort McClellan, Anniston, Alabama, Final, February.

Parsons Engineering Science, Inc. (Parsons), 2002***, Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA), Fort McClellan, Alabama,*** Final, June.

Science Applications International Corporation (SAIC), 2000, ***Remedial Investigation/Baseline Risk Assessment Report, Fort McClellan, Alabama,*** Final, July.

Shaw Environmental, Inc. (Shaw) (A CB&I Company), 2014a, ***Record of Decision, Ranges Near Training Area T-24A, Fort McClellan, Calhoun County, Alabama,*** Final, May.

Shaw Environmental, Inc. (Shaw) (A CB&I Company), 2014b, ***Focused Feasibility Study, Ranges Near Training Area T-24A, Fort McClellan, Calhoun County, Alabama***, Final, January.

Shaw Environmental, Inc. (Shaw), 2011, ***Remedial Investigation Report, Ranges Near Training Area T-24A, Fort McClellan, Calhoun County, Alabama***, Final, August.

Shaw Environmental, Inc. (Shaw), 2005, ***Closure Report, 3X Scrap Removal, Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6); Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7), Fort McClellan, Calhoun County, Alabama***, Final, June.

TetraTech, 2011, ***Site Specific Final Report, Remedial Action at Selected Sites within the Charlie Area at Fort McClellan, Alabama***, Final, March.

U.S. Army Corps of Engineers, St. Louis District, 2001, ***Archives Search Report, Fort McClellan, Anniston, Alabama,*** Revision 1, September.

FIGURES

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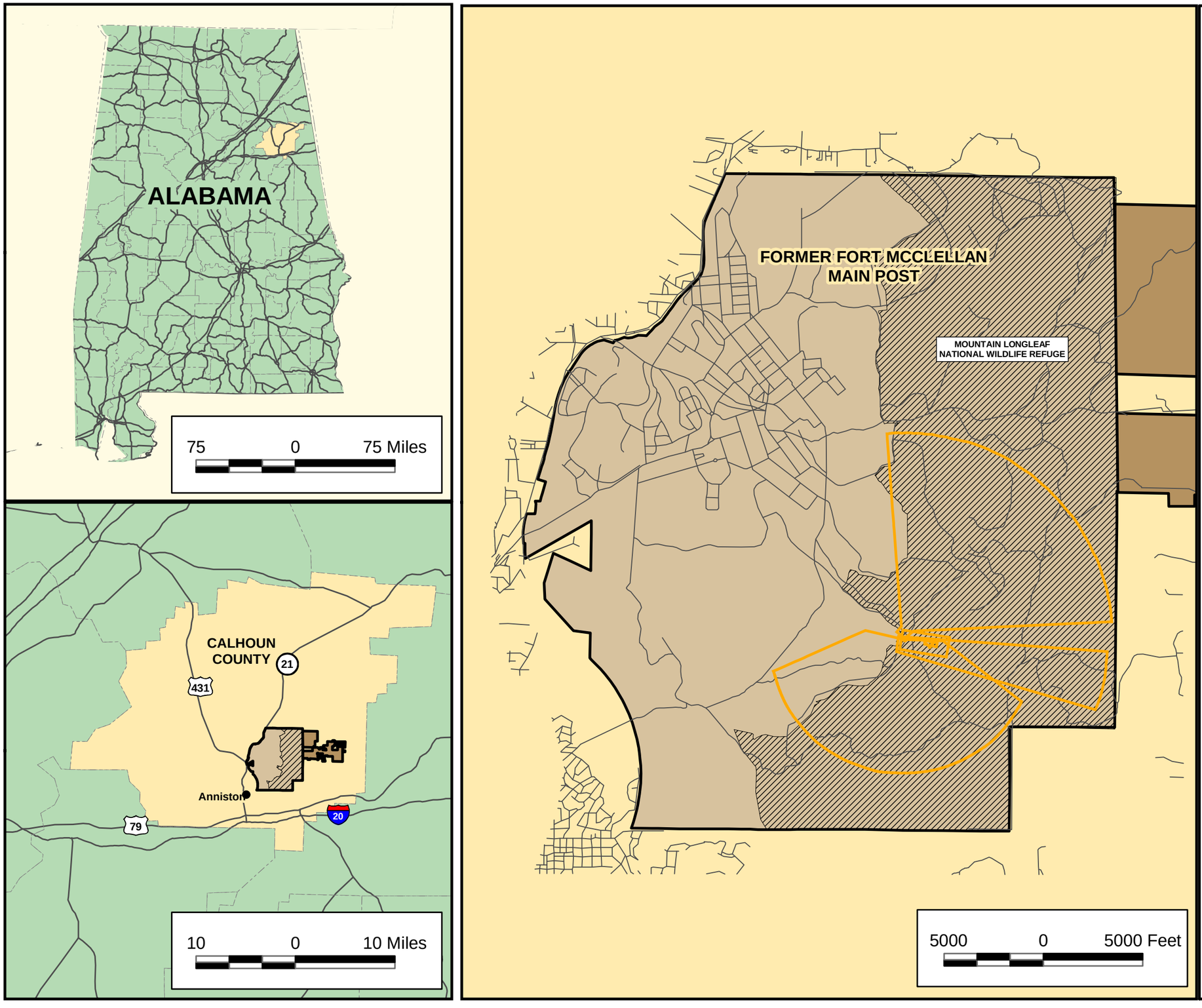
Figure 1

Site Location Map

Ranges Near Training Area T-24A
Fort McClellan
Calhoun County, Alabama



- Parcel Boundary/Range Safety Fan
- U.S. Fish and Wildlife Service (USFWS) Property Boundary
- Former Choccolocco Corridor
- Former Fort McClellan Main Post
- County Boundary
- Road

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Figure 2

Site Map

Ranges Near Training Area T-24A
Fort McClellan
Calhoun County, Alabama

FORMER MACHINE GUN RANGE, PARCEL 112Q

FORMER BANDHOLTZ FIELD FIRING RANGE NO. 2, PARCEL 214Q

KELLOG DRIVE

RANGE 24A, FOG OIL DRUM STORAGE AREA, PARCEL 88(6)

FORMER DEMOLITION AREA, PARCEL 113Q-X

TRAINING AREA T-24A, FORMER CHEMICAL MUNITIONS DISPOSAL AREA, PARCEL 187(7)

RANGE 24A, MULTI-PURPOSE RANGE, PARCEL 108(7)/82Q-X

FORMER BANDHOLTZ MACHINE GUN QUALIFICATION RANGE, PARCEL 213Q

- Parcel Boundary/Range Safety Fan
- Fish and Wildlife Service Environmentally Sensitive Area (No Soil/Sediment Remediation)
- Surface Drainage Feature (dashed where intermittent)
- Topographic Contour (25-foot interval)
- Road
- Vegetated Area
- Clear Area

300 0 300 Feet

NAD83 State Plane Coordinates

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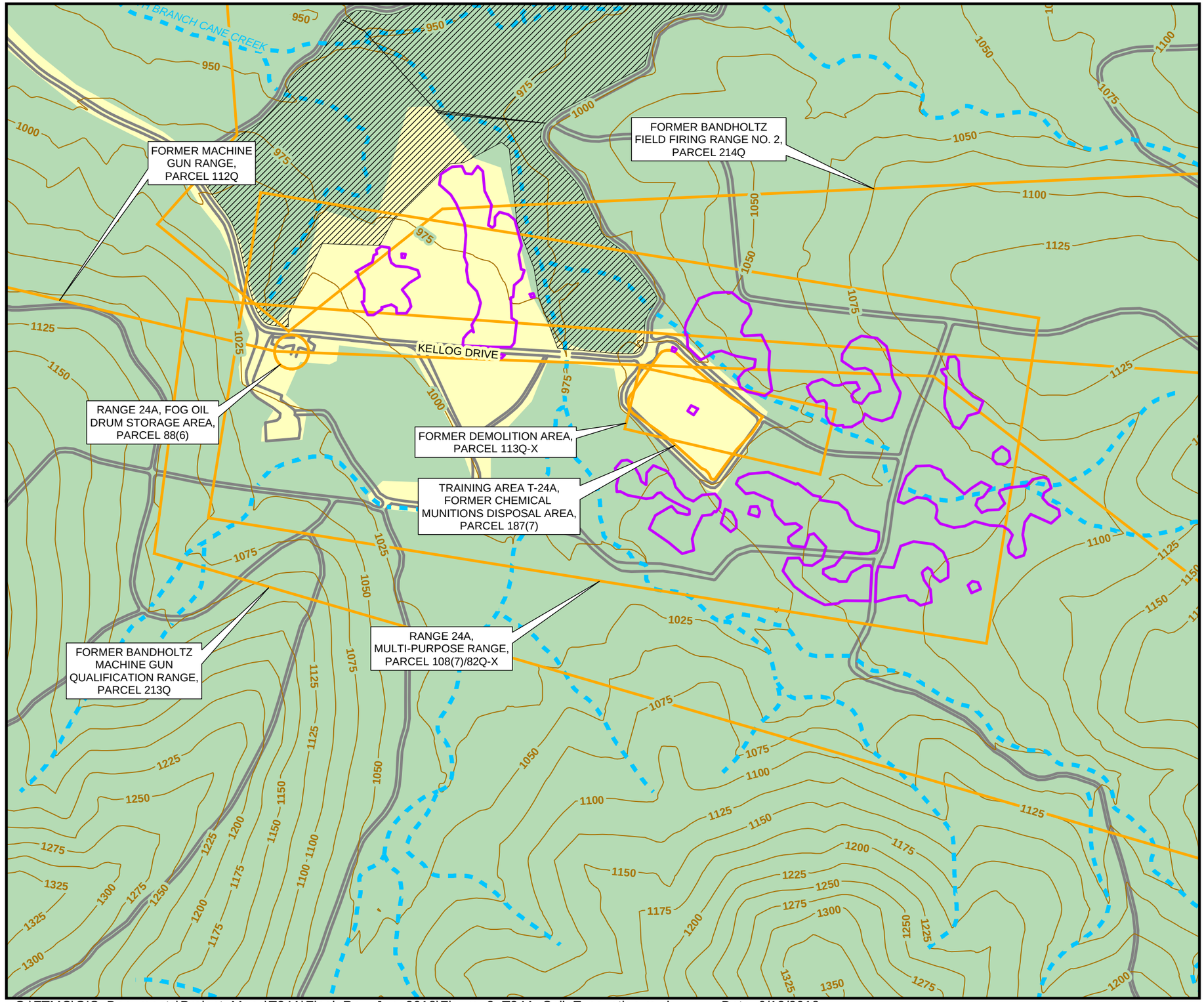

Figure 3

Areal Extent of Soil Excavation

Ranges Near Training Area T-24A
Fort McClellan
Calhoun County, Alabama

- Surveyed Excavation Boundary
- Parcel Boundary/Range Safety Fan
- Fish and Wildlife Service Environmentally Sensitive Area (No Soil/Sediment Remediation)
- Surface Drainage Feature (dashed where intermittent)
- Topographic Contour (25-foot interval)
- Road
- Vegetated Area
- Clear Area

300 0 300 Feet

NAD83 State Plane Coordinates

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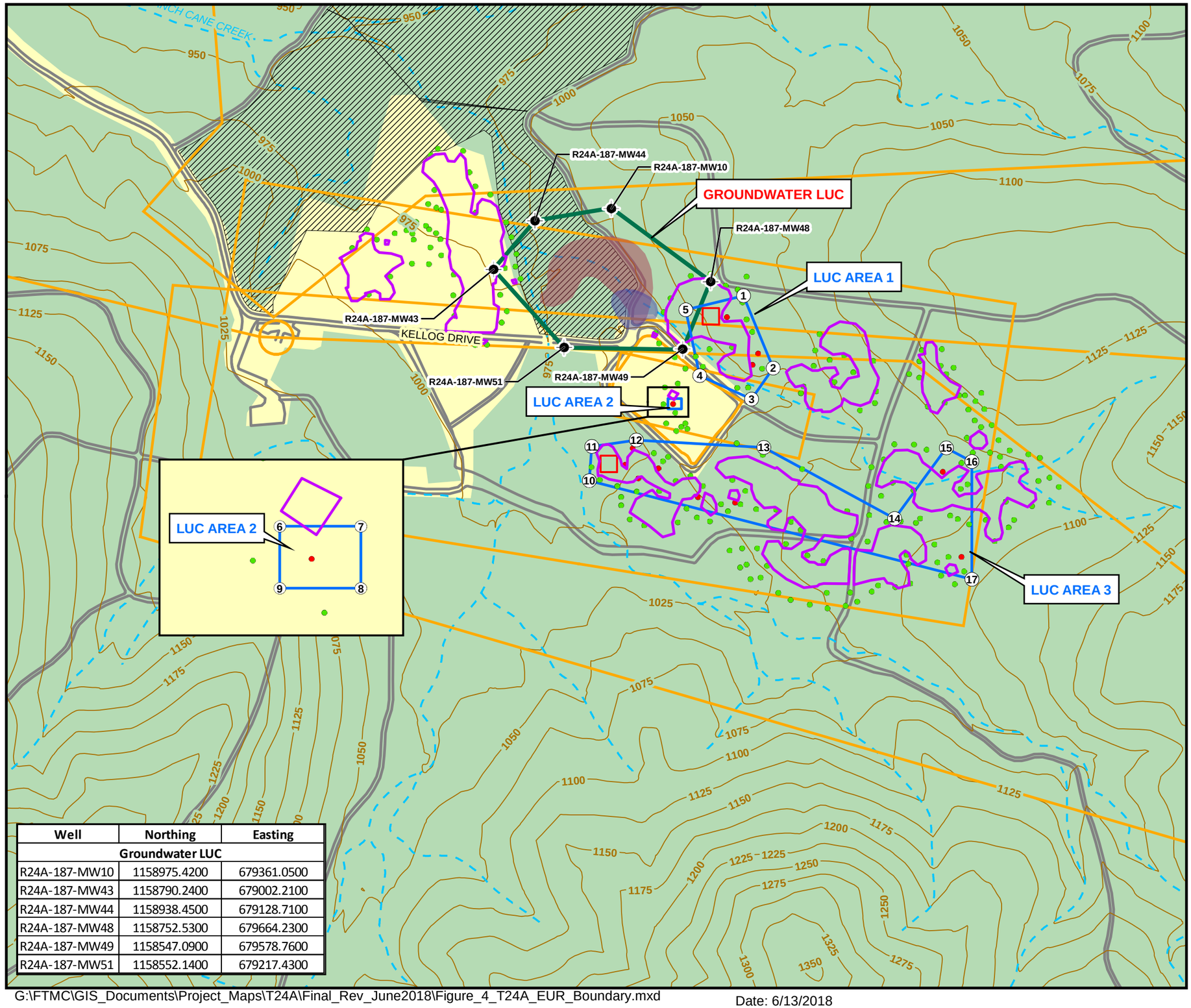
Figure 4
Land Use Control Boundary

Ranges Near Training Area T-24A
Fort McClellan
Calhoun County, Alabama



Well	Northing	Easting
Groundwater LUC		
R24A-187-MW10	1158975.4200	679361.0500
R24A-187-MW43	1158790.2400	679002.2100
R24A-187-MW44	1158938.4500	679128.7100
R24A-187-MW48	1158752.5300	679664.2300
R24A-187-MW49	1158547.0900	679578.7600
R24A-187-MW51	1158552.1400	679217.4300

- Bedrock Monitoring Well
- Surveyed Excavation Boundary
- 2015 XRF Location with Lead Results (for Areas Outside the Excavation Boundary)
  - <= 400 mg/kg
  - > 400 mg/kg but < 500 mg/kg
- (1) Land Use Control Boundary Corner Point
- Sampling Grid with Final Lead Results (subsurface) above 400 mg/kg
- Land Use Control Boundary (6.72 acres)
- Groundwater Land Use Control Boundary (4.5 acres)
- Feb 2018 Carbon Tetrachloride Plume
- Feb 2018 Benzene Plume
- Parcel Boundary/Range Safety Fan
- Fish and Wildlife Service Environmentally Sensitive Area (No Soil/Sediment Remediation)
- Surface Drainage Feature (dashed where intermittent)
- Topographic Contour (25-foot interval)
- Road
- Vegetated Area
- Clear Area

300 0 300 Feet

NAD83 State Plane Coordinates

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Date: 6/13/2018