DECISION DOCUMENT

FORMER CAMP BLANDING

AG-1, ANTI-TANK ROCKET AND RIFLE GRENADE RANGE MRS

Clay County, Florida

FORMERLY USED DEFENSE SITE PROPERTY NUMBER: I04FL0015

U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, Florida 32207

FINAL

September 30, 2016

EXECUTIVE SUMMARY

This Decision Document is being presented by the United States Army Corps of Engineers (USACE) to describe the Department of Defense (DoD) selected remedy for the munitions response site (MRS) AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS within the former Camp Blanding Formerly Used Defense Site (FUDS), Property Number I04FL0015 located in Clay County, Florida (see Attachment).

The Secretary of Defense designated the Army as the Executive Agent for FUDS, regardless of which DoD component previously owned or used the property. The Secretary of the Army further delegated the program management and execution responsibility for FUDS to the USACE. The USACE is the lead agency for investigating, reporting, evaluating, and implementing remedial actions at the former Camp Blanding.

A high explosive safety hazard is anticipated at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. There is currently no evidence of a release of munitions constituents to the soil due to the previous munitions activities at this MRS. However, Munitions and Explosives of Concern (MEC) hazards were identified, and Alternative 4: Subsurface MEC Removal to 2 feet (ft.), is the appropriate selected remedy.

The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S. Code § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, and, the National Oil and Hazardous Substances Pollution Contingency Plan , 40 Code of Federal Regulations Part 300 et seq., as amended.

Representatives of the Florida Department of Environmental Protection support the selected remedy.

Based on information currently available, the selected remedy is protective of human health and the environment and satisfies the statutory requirements of CERCLA §121(b).

The estimated present worth capital cost for the selected remedy is $1,551,970.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2

PART 1: DECLARATION 6

- **1. SITE NAME AND LOCATION 6**
- **2. STATEMENT OF BASIS AND PURPOSE 6**
- **3. ASSESSMENT OF PROJECT SITE 6**
- **4. DESCRIPTION OF SELECTED REMEDY 6**
- **5. STATUTORY DETERMINATIONS 6**
- **6. DATA CERTIFICATION CHECKLIST 7**
- **7. AUTHORIZING SIGNATURES 7**

PART 2: DECISION SUMMARY 8

- **1. PROJECT NAME, LOCATION, AND BRIEF DESCRIPTION 8**
- **2. PROJECT HISTORY AND ENFORCEMENT ACTIVITIES 8**
  - 2.1 PROJECT HISTORY 8
  - 2.2 PREVIOUS INVESTIGATIONS 9
  - 2.3 ENFORCEMENT ACTIVITIES 9
- **3. COMMUNITY PARTICIPATION 10**
- **4. SCOPE AND ROLE OF RESPONSE ACTION 10**
- **5. PROJECT MRS CHARACTERISTICS 10**
  - 5.1 SITE FEATURES 10
  - 5.2 SAMPLING STRATEGY 11
  - 5.3 CONSTITUENTS OF CONCERN 11
  - 5.4 MEC CONTAMINATION 11
- **6. CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES 11**
  - 6.1 LAND USES 11
  - 6.2 GROUNDWATER AND SURFACE WATER USE 12
- **7. SUMMARY OF SITE RISKS 12**
- **8. REMEDIAL ACTION OBJECTIVES 12**
- **9. DESCRIPTION OF ALTERNATIVES 13**
  - 9.1 DESCRIPTION OF REMEDY COMPONENTS 13
    - Alternative 1: No Further Action 13
    - Alternative 2: Land Use Controls and Education 13
    - Alternative 3: Surface MEC Removal and Education 13
    - Alternative 4: Subsurface MEC Removal to 2 ft 13
  - 9.2 COMMON ELEMENTS AND DISTINGUISHING FEATURES OF EACH ALTERNATIVE 14
  - 9.3 EXPECTED OUTCOMES OF EACH ALTERNATIVE 15
- **10. COMPARATIVE ANALYSIS OF ALTERNATIVES 16**
    - Alternative 1: No Further Action 16
    - Alternative 2: Land Use Controls and Education 16
    - Alternative 3: Surface MEC Removal and Education 16
    - Alternative 4: Subsurface MEC Removal to 2 ft 16
- **11. PRINCIPAL MEC/MC ISSUES 18**
  - 11.1 MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) 18
  - 11.2 MUNITIONS CONSTITUENTS (MC) 18

12. SELECTED REMEDY 18
12.1 SUMMARY AND DESCRIPTION 18
12.2 COST ESTIMATE 18
12.3 ESTIMATED OUTCOMES 18
13. STATUTORY DETERMINATIONS 19
14. DOCUMENTATION OF SIGNIFICANT CHANGES 19
PART 3: RESPONSIVENESS SUMMARY 20
1. STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES 20
1.1 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS 20
1.2 PUBLIC COMMENTS 20
2. TECHNICAL AND LEGAL ISSUES 20

ATTACHMENT. LOCATION MAP

LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirements
ASR	Archives Search Report
BIP	Blow-in-Place
CBJTC	Camp Blanding Joint Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESAJ	Corps of Engineers, Jacksonville District
COPC	Chemical of Potential Concern
CRP	Community Relations Plan
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DoD	Department of Defense
DQO	Data Quality Objective
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FS	Feasibility Study
ft.	foot, feet
FUDS	Formerly Used Defense Site
HA	Hazard Assessment
HTRW	Hazardous, Toxic, and Radioactive Waste
INPR	Inventory Project Report
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OEW	Ordnance and Explosive Waste
QR	Quantitative Reconnaissance
RAC	Risk Assessment Code
RAO	Remedial Action Objective
RI	Remedial Investigation
SARA	Superfund Amendment and Reauthorization Act
SI	Site Inspection
TBC	To Be Considered
TNT	trinitrotoluene
TPP	Technical Project Planning
USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance
WMA	Wildlife Management Area
WWII	World War II

PART 1: DECLARATION

1. SITE NAME AND LOCATION

Site Name: Former Camp Blanding Munitions Response Site AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS

Formerly Used Defense Site Property Number: I04FL0015

The AG-1, Anti-Tank Rocket and Rifle Grenade Range is a 53-acre area within the Camp Blanding Joint Training Center (CBJTC), Clay and Bradford Counties, Florida. This area is bounded to the north by Woodbury Road, to the south by State Road 16, Giddens Road to the west, and Barker Road to the east. It was used during the period from 1941-1947 to train soldiers in the use of shoulder-fired rockets (aka bazookas) and rifle grenades. Munitions used in the area included live and practice 2.36 inch anti-tank rockets and rifle grenades. Munitions and munitions debris (MD) indicative of this prior use have been confirmed during previous investigations and the Remedial Investigation (RI).

2. STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the Selected Remedy for AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. The Selected Remedy was chosen in accordance with the CERCLA, as amended by the Superfund Amendment and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The Florida Department of Environmental Protection (FDEP) concurs with the Selected Remedy.

3. ASSESSMENT OF PROJECT SITE

An evaluation of site data indicates a potential for human receptors to come in contact with munitions and explosives of concern (MEC) at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. The most likely MEC exposure scenario in the MRS is associated with human receptors (workers, transiting soldiers, and hunters) interacting with MEC on the surface or in the subsurface during intrusive activities. If sufficient activation energy is applied, MEC could be a safety hazard and could constitute an imminent and substantial endangerment to on-site personnel. Therefore, response actions, such as those selected in this Decision Document, could better protect the public health and welfare and the environment from the actual and threatened hazards of MEC.

4. DESCRIPTION OF SELECTED REMEDY

There is high risk anticipated for explosives safety hazards at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. There is no evidence of a release of munitions constituents (MC) to the soil due to the past munitions activities at this MRS. However, since MEC hazards were identified, the Alternative 4 – Subsurface MEC Removal to 2 ft. is the appropriate remedy for the Former Camp Blanding AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS.

5. STATUTORY DETERMINATIONS

Based on the information currently available, the selected remedy for AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS is protective of human health and the environment and satisfies the statutory requirements of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121(b). In addition, the remedy is cost effective and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. There is also a statutory preference for treatment as a

principal element of the remedy, and this remedy removes the potential hazards to human health, welfare, and the environment.

6. DATA CERTIFICATION CHECKLIST

The following information is included or otherwise addressed in the Decision Summary section of this Decision Document. Additional information can be found in the Administrative Record file for this site.

- Information on MEC and MD encountered at the project site.
- Hazard assessment of MEC.
- A summary of the MC risk.
- How source materials constituting principal threats will be addressed.
- Current and reasonably anticipated future land use assumptions for the project site.
- Key factors that led to selecting the remedies for the AG-1, Anti-Tank Rocket and Grenade Range MRS.
- Estimated cost related to the Selected Remedy.

7. AUTHORIZING SIGNATURES

This Decision Document presents the Subsurface MEC Removal to 2 ft. recommendation for this AG-1, Anti-Tank Rocket and Grenade Range MRS. The U.S. Army Corps of Engineers (USACE), Jacksonville District, is the lead agency under the Defense Environmental Restoration Program (DERP) at the Formerly Used Defense Site (FUDS) and developed this Decision Document consistent with CERCLA, as amended by SARA, and the NCP. This Decision Document will be incorporated into the existing Administrative Record File, which is available for public review at the Middleburg-Clay Hill Branch Library, 2245 Aster Avenue, Middleburg, FL 32068.

The addition of this Decision Document completes the Administrative Record File and becomes the Administrative Record for the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. The Administrative Record is protected from additional documents being added. This document, presenting the Subsurface MEC Removal to 2 ft. recommendation, is approved by the undersigned pursuant to Memorandum, DAIM-ZA, September 9, 2003, Subject: Policies for Staffing and Approving Decision Documents, and to Engineer Regulation 200-3-1, *Formerly Used Defense Sites Program Policy*.

APPROVED:

MCCALLISTER.LARRY.DWAYNE.1144889661 Digitally signed by MCCALLISTER.LARRY.DWAYNE.1144889661 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MCCALLISTER.LARRY.DWAYNE.1144889661 Date: 2016.09.01 11:37:00 -04'00'

1 Sep 16

LARRY D. McCALLISTER, Ph.D., PE, PMP, SES **Date**

Director of Regional Business, Military, IIS, and

Environmental Programs

PART 2: DECISION SUMMARY

1. PROJECT NAME, LOCATION, AND BRIEF DESCRIPTION

The AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS is a 53-acre area located within the CBJTC in Clay and Bradford Counties, Florida, approximately 10 miles east of Starke, Florida. Former Camp Blanding was over 160,000 acres of land used by the U.S. Army between 1941 and 1947 as an Infantry Replacement-Training Center. Beginning in 1949, land was transferred to the State of Florida Armory Board and private individuals. Approximately 73,000 acres of the site are presently under the control of the State of Florida Armory Board for use by the Florida National Guard and the Camp Blanding Wildlife Management Area (WMA). The remaining land was sold to private individuals.

The CBJTC has 11 MRSs. This Decision Document focuses on only one of the 11 MRSs, AG-1, Anti-Tank Rocket and Rifle Grande range MRS. This MRS is on land owned by the State of Florida Armory Board. It is located in the southern portion of the North Range Area and is bounded to the north by Woodbury Road, to the south by State Road 16, to the west by Giddens Road, and by Barker Road to the east. The map in the Attachment shows the location of MRS.

The USACE, Jacksonville District, is the lead agency under the DERP for this FUDS (Site Property Number: I04FL0015). The FDEP supports this Decision Document and concurs with the Selected Remedy.

2. PROJECT HISTORY AND ENFORCEMENT ACTIVITIES

2.1 Project History

The former Camp Blanding was located in Clay County, southwest of Jacksonville. The Army began constructing the military reservation in 1939 as a division-sized training camp and reception area, but it grew in size and significance during World War II (WWII). The Army constructed a complete infantry replacement training facility with more than 800 buildings including a large hospital and a prisoner-of-war camp along with other improvements such as roads and electrical, water and sewer systems. The site encompassed more than 160,000 acres, the equivalent of the fourth largest city in Florida at the time. Seven infantry divisions and three field artillery brigades received extended field training, and an additional two infantry divisions received their basic training at the post. It provided an opportunity for infantry divisions to train an entire unit prior to actual combat. Troops were trained in infantry tactics, offensive and defensive combat, and battlefield situations. Training also included firing pistols, rifles, machine guns and anti-tank weapons using practice and live, high explosive rounds on small arms, artillery, grenade and mortar ranges in addition to bombing targets.

Following the end of WWII, the Army no longer needed the large training area, so it was deactivated in 1947. In 1955, the land was deeded to the Armory Board of the State of Florida for the Florida National Guard's use. Currently, the Florida National Guard is using about 73,000 acres of the original reservation for the CBJTC. The Camp Blanding WMA is within the National Guard property.

All of the areas that were used for munitions training during WWII are within the Joint Training Center. The areas outside of the current Camp Blanding were used as maneuver areas. The purpose of the maneuver area was to allow for large-scale troop movement. There is no evidence that live munitions were used in the maneuver area.

Because the National Guard has used or is currently using many of the former WWII ranges, the Corps is focusing its efforts in those areas that are not being used for munitions training. Troops trained on the AG-1, Anti-Tank Rocket and Rifle Grenade Range using shoulder-fired rockets and rifle grenades MRS.

A number of investigations have been conducted at the former Camp Blanding over the years and are summarized below.

2.2 Previous Investigations

Inventory Project Report (INPR)

An INPR for the Former Camp Blanding was completed by the Corps of Engineers, Jacksonville District (CESAJ) in February 1998. The INPR established the site as a FUDS. The site was assigned FUDS Project No. I04FL001502. Hazardous, Toxic, and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) were discovered. The HTRW was addressed under a separate FUDS project number. In the INPR, the CESAJ established an overall Risk Assessment Code (RAC) of 2 for the site.

Archives Search Report (ASR) Supplement

A 2004 ASR Supplement identified 11 MRS sites located in the north and south areas of Camp Blanding. Seven of these are Range Complexes composed of 2 to 23 sub ranges. The report summarized information for each range relating to: the dates of DoD range use, current range use, site ownership, types of munitions used, documented range incidents, site physical conditions, current access, and range center coordinates. Information from this report was used in preparation of the Site Inspection (SI) Report and the Conceptual Site Model (CSM). The ASR Supplement established a RAC score of 2 for the AG-1, Anti-Tank Rocket and Grenade Range MRS.

Site Inspection (SI)

A 2007 SI performed at Camp Blanding evaluated site-specific conditions that could impact the potential for completed exposure pathways to human and ecological receptors. The project was planned and performed with the goal of satisfying the Data Quality Objectives (DQOs) set for the project: 1) to evaluate potential presence of MEC; 2) to evaluate potential presence of MC; 3) to collect data needed to complete Munitions Response Site Prioritization Protocol (MRSPP) scoring sheets; and 4) to collect information for HRS scoring. Thirty-five MRSs were identified and evaluated to determine their potential to cause significant contamination to the environment or to adversely affect human and ecological receptors. The evaluation included the collection of surface soil, and surface water samples. Quantitative Reconnaissance (QR) within MRSs selected by the Technical Project Planning (TPP) Team to be representative of the different types of ranges was implemented. During the course of the SI effort 12 MRSs were sampled and QR was performed in 26 MRSs. The report summarizes results for each MRS at the former Camp Blanding, including the AG-1, Anti-Tank Rocket and Grenade Range MRS. The report recommended that a Remedial Investigation/Feasibility Study (RI/FS) be performed for the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS.

Remedial Investigation (RI)

A 2013 RI was conducted to characterize the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS with regard to location, concentration, and nature of MEC, and possible MC. A baseline MC risk assessment was conducted with the data collected during the RI. Given the results of these investigations and laboratory analysis, the risk assessment concluded that no unacceptable human health or ecological risk due to MC remains at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. A qualitative MEC Hazard Assessment (HA) was conducted to assess potential explosive hazards to human receptors associated with complete exposure pathways within this area. MEC was confirmed to be present during the RI. The explosive hazards presented by the munitions potentially remaining are associated with their explosives fillers and fuzes. Based on available information, The MRS has a total MEC HA score of 810, corresponding to Hazard Level 2: ***High potential explosive hazard conditions.***

2.3 Enforcement Activities

There have been no CERCLA enforcement activities at MRS.

3. COMMUNITY PARTICIPATION

In accordance with CERCLA, DoD, and U.S. Army regulations, the USACE Jacksonville District has involved the public. A public meeting took place on July 9, 2015 to present the public with the Proposed Plan for the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. A notice was placed in the local newspaper to invite the public to this meeting. At this meeting, USACE Jacksonville District representatives answered questions related to the proposed remedy. Attendees included representatives from USACE, contractors, and two members of the public. The meeting was also followed by a public comment period that began on July 9, 2015 and ended on August 9, 2015.

The Proposed Plan was made available to the public prior to the public meeting and during the comment period through the Administrative Record filed at the Middleburg-Clay Hill Branch Library, 2245 Aster Avenue, Middleburg, FL. The public was advised that comments on the Proposed Plan could be submitted in writing or submitted through the FUDS Hotline number. Forms for submitting written comments were provided at the public meeting and the FUDS Hotline number was provided.

No written comments or calls to the FUDS Hotline were received.

4. SCOPE AND ROLE OF RESPONSE ACTION

There is high risk anticipated for explosives safety hazards at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. There is currently no evidence of a release of MC to the soil due to past munitions activities at this MRS. However, since MEC hazards were identified, the Subsurface MEC Removal to 2 ft is the appropriate selected remedy.

5. PROJECT MRS CHARACTERISTICS

Based on results of previous investigations and the 2013 RI, MEC is present within the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS. Due to the presence of MEC and presence of receptors, the MEC exposure pathways are potentially complete.

Sampling for MC was conducted during the RI. A Human Health risk assessment was completed and determined that there is no risk to human health due to MC present at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS.

Several constituents (chromium, copper, and zinc) were identified in soil as potential risks to wildlife. However, because these constituents were determined not to be associated with the MEC that was confirmed to exist within the MRS, response actions to address these constituents are not eligible under the FUDS Program. No risks are posed by constituents reported in sediments, surface water, or groundwater.

5.1 SITE FEATURES

Camp Blanding is characterized by low rolling topography ranging from flat to gentle slopes, with ridges oriented in a north/south direction. The topography across the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS site is relatively flat. Vegetation ranges from medium grassy to heavy underbrush and pine forests.

The soils consist of beds of sandy and clayey materials. Soils are nearly level to gently sloping, and range from very poorly drained to moderately well drained. The majority of the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS is covered by upper subsoil, comprised of black, fine sand, to a depth of 22 inches. This is underlain by dark brown fine sand lower subsoil which reaches a depth of 27 ft.

Surface water bodies are sparse. Groundwater beneath the site is not used as a potable water source and there are no wells other than shallow monitoring wells installed during the RI.

5.2 SAMPLING STRATEGY

The strategy to characterize MEC included mapping the 53-acre MRS using digital geophysical mapping (DGM) techniques to locate subsurface metallic items, followed by investigation of the items to determine if they were MEC or MD. Approximately 6 acres of the 53-acre site, or 11 percent of the area was mapped using transects evenly distributed across the entire site. Based on the results of the mapping showing the locations of subsurface metallic objects, grids were placed in areas that showed higher concentrations of metallic objects. These areas were re-mapped using the same DGM approach, followed by digging the metallic items to identify them as MEC, MD, or other scrap metal.

The strategy to characterize MC included the collection and analysis of soil, surface water, sediment, and groundwater for metals and explosives. Soil samples were collected in areas that indicated the presence of MD. Additional soil samples were collected in areas absent of MD to provide a background for comparison. All 28 soil samples consisting of surface and subsurface samples were collected. Surface water/sediment samples were planned for collection if any surface water was identified at the site. Surface water was identified and eight samples were collected. Six sediment samples associated with the surface water were also collected. Groundwater monitoring wells were used to determine if MC was present in groundwater and to develop information on groundwater movement beneath the site. Four groundwater samples were collected.

Analytical results for the samples were compared to FDEP and Environmental Protection Agency (EPA) criteria to determine if the concentrations exceeded acceptable concentrations with respect to human health and ecological concerns. For any constituent that exceeded the lower of FDEP and EPA criteria, a risk assessment was completed to determine if the constituent posed a human health or ecological threat.

5.3 CONSTITUENTS OF CONCERN

Two explosive compounds (TNT and nitroglycerin) and two metals (copper and iron) were identified as chemicals of potential concern (COPC) in the surface soils. Iron was identified as the only COPC for surface water and groundwater. However, a Human Health risk assessment determined that the constituents did not pose a health risk to receptors at the MRS.

Several metals were determined to pose a potential risk to wildlife, however, as mentioned earlier in this section, response actions to address this potential risk are not eligible under the FUDS Program.

5.4 MEC CONTAMINATION

MEC contamination was confirmed during the RI. Two MEC items were recovered: 1 - 2.36-inch anti-tank rocket at 6 inches below the surface and 1 - rifle grenade at 8 inches below the surface. In all, 1,532 metallic objects were recovered during the RI, of which 1420 were munitions debris, consisting primarily of parts from 2.36 inch rockets and rifle grenades. The remainder consisted of miscellaneous metallic scrap (nails, wire, pipes, etc.).

6. CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

6.1 LAND USES

The land is undeveloped forest. During military training exercises, troops have access to the area for maneuvers and bivouacking; however, live ammunition is not currently fired within the MRS. The area is open to hunters by permit. Periodic fire break maintenance is required and involves intrusion below the surface by disking blades up to approximately 12 inches. No changes in land use are planned for the area, other than potential pine harvesting, which is limited to the ground surface and does not involve cutting into the ground or excavations.

6.2 GROUNDWATER AND SURFACE WATER USE

Two wells are located near the MRS. The closest well is located approximately 550 ft. south of the MRS. No wells other than the monitoring wells installed during the RI are located within the MRS. The groundwater beneath the MRS is not a source of potable drinking water and based on data collected during the RI, groundwater movement is to the east-northeast, away from existing water wells south of the MRS.

Most of the MRS drains into an unnamed, intermittent creek that runs along the north section of the MRS and into the North Fork Black Creek to the east. The southeast section of the MRS drains into a small channel that joins the State Road 16 drainage system south of the MRS. Surface water was identified on the site during the RI but it was thought to be standing water only, resulting from groundwater seepage, and not moving streams that could result in erosion along its banks and transport of MEC or MC.

7. SUMMARY OF SITE RISKS

Receptor exposure pathways are potentially complete for MEC. Residual MEC is suspected to be present and the MRS is open to permitted hunters, military trainees passing through the MRS, and forestry workers performing periodic firebreak maintenance. The potential for contact with surface MEC by hunters or military trainees passing through the area or contact with subsurface MEC during fire break maintenance involving disking is present. A MEC HA completed for the MRS scored the site a 2, which equates to a Hazard Level of 2 or “high potential explosive hazard conditions.” Implementation of the selected remedy Subsurface MEC Removal to 2 ft. results in a MEC HA score of 4, which equates to “low potential explosive hazard conditions.”

There is no human health risk due to MC at the site. Several constituents (chromium, copper, and zinc) were identified in soil as potential risks to wildlife. However, the USACE determined that these constituents were not considered to be associated with the MEC that was confirmed to exist within the MRS, and therefore, response actions to address these constituents were not eligible under the FUDS Program.

8. REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) address the goals for reducing the MEC hazards and/or MC risks to ensure protection of human health, safety, and the environment. The RAOs are intended to be as specific as possible but not so specific that the range of alternatives that can be developed is unduly limited. The RAO for MEC at the MRS is to remove MEC confirmed to be present (i.e., 2.36 inch anti-tank rockets and rifle grenades) within the MRS such that the future exposure of receptors (i.e., foresters, workers, hunters, and transiting military trainees) to MEC is determined to be negligible.

The RAO was selected after consideration of the current and future land use and the potential for human receptors to come into contact with MEC. Military trainees and hunters pass through the area and, while there is no overnight camping allowed, the potential of contacting MEC on the surface exists. In addition periodic fire break maintenance activities results in disking to approximately 12 inches and thus presents the risk of forestry workers contacting subsurface MEC during these activities.

The proposed remedy of Subsurface MEC Removal to 2 ft. will satisfy the RAO by removing MEC that could be encountered on the surface or subsurface by hunters, military trainees, and forestry workers conducting fire break maintenance.

Based on an analysis of the soil, surface water, sediment and groundwater, there is no unacceptable human health or ecological risk due to MC.

9. DESCRIPTION OF ALTERNATIVES

Four remedial alternatives were evaluated during the FS and major components of each alternative are summarized below.

9.1 DESCRIPTION OF REMEDY COMPONENTS

Alternative 1: No Further Action

This alternative requires no response action at the MRS and therefore has no components for its implementation.

Alternative 2: Land Use Controls and Education

This alternative is administrative and does not include any treatment of MEC. It includes the placement of warning signs along the boundaries of the MRS to warn of potential hazards. The signs should warn site workers, soldiers, and permitted hunters of the potential to contact Unexploded Ordnance (UXO) on the surface; prohibit excavation; and provide the appropriate response and contact information in the event that suspect munitions are encountered.

The education component also includes expansion of the existing program at CBJTC to include brochures/fact sheets for distribution to all visitors to the range, including workers, soldiers, and hunters. In addition, the existing Community Relations Plan (CRP) would be updated. Furthermore, CBJTC requires and provides UXO awareness training for all those entering range areas, including the MRS.

Alternative 3: Surface MEC Removal and Education

This alternative uses a combination of activities to achieve a reduction in the MEC hazards and also minimizes receptor interaction with MEC on the surface of the MRS. The activities consist of magnetometer surveys with MEC and MD removal. The area would be prepared for the removal by clearing understory vegetation and brush to allow access for the surface MEC removal teams. Brush clearing may use mechanical brush clearing machines, bush hog, and hand clearing tools (cutters, chainsaws, mowers, etc.).

The surface MEC removal would be conducted by trained UXO technicians. The objective of the surface MEC removal is to identify and remove MEC on the ground surface that is located using analog detection instruments. Depth of removal is surface-only, regardless of the maximum depth of known receptor pathways or the maximum depth of the UXO and MD found during the previous investigation.

Engineering controls may be needed when working close to State Road 16 just south of the MRS. If UXO is encountered, it is anticipated that the item would be destroyed using Blow-in-Place (BIP) procedures. Munitions that are acceptable to move could be moved to a nearby designated area for demolition. All MD would be inspected, certified as safe, containerized, and shipped to an off-site smelter for destruction.

Educational awareness, as described under Alternative 2, would provide additional protection by providing information to the public concerning MEC hazards at the site.

The CRP would also be updated. The CRP provides the framework for public outreach activities that the USACE will use to communicate with the community and address their concerns and expectations. Updating the CRP will include revising the project summary, updating fact sheets and brochures, and updating stakeholder lists, media contacts, and information on the community.

Alternative 4: Subsurface MEC Removal to 2 ft.

This alternative uses a combination of activities to achieve a reduction in the MEC hazards and also minimizes receptor interaction with MEC. The activities include geophysical surveys, analog detection, and MEC removal and disposal. The area is prepared by clearing understory vegetation and brush to allow access for the DGM and MEC removal teams. Brush clearing may use mechanical brush clearing machines, bush hog, and hand clearing tools (cutters, chainsaws, mowers, etc.).

DGM surveys are completed across the entire site to identify the locations of subsurface metallic anomalies (potential MEC). The collected geophysical data is processed and anomalies selected for investigation. These anomalies are then investigated (excavated) by MEC removal teams to identify them. If UXO is encountered, it is anticipated that the item would be destroyed using BIP procedures. Munitions that are acceptable to move could be moved to a nearby designated area for demolition. All MD would be inspected, certified as safe, containerized, and shipped to an off-site smelter for destruction.

Engineering controls may be needed when working close to State Road 16 just south of the MRS. If UXO is encountered, it is anticipated that the item would be destroyed using BIP procedures. Munitions that are acceptable to move could be moved to a nearby designated area within the area of contamination for demolition. All MD would be inspected, certified as safe, containerized, and shipped to an off-site smelter for destruction.

9.2 COMMON ELEMENTS AND DISTINGUISHING FEATURES OF EACH ALTERNATIVE

Applicable or Relevant and Appropriate Requirements

There are no applicable or relevant and appropriate requirements (ARARs) or CERCLA to be considered (TBC) information that had an effect on the remedy selection process.

Long-term Reliability

Alternative 4 is expected to provide the best long-term effectiveness based on the ability to remove the potential hazards due to MEC. Alternative 3 is less effective as it only addresses surface MEC exposures. Alternative 2 can deter inappropriate interaction with MEC, but it cannot prevent it. All alternatives except Alternative 1 and 4 require five-year reviews to verify that the remedies remain effective.

Quantity of Untreated MEC/MD

Both Alternative 3 and Alternative 4 will treat all MEC. MEC encountered will be destroyed onsite using BIP procedures. It is not anticipated that MEC will be disposed off-site or managed on-site in a containment system. All MD recovered will be properly inspected to ensure it is safe (free of explosives residues) and will be shipped offsite for final disposal. No untreated MEC or MD that has been recovered at the MRS will remain at the MRS following implementation. Alternative 2 does not include a treatment component, and thus any MEC or MD present at the MRS will remain.

Time Required for Implementation

The time required to implement Alternative 2 would be minimal compared with Alternatives 3 and 4, both of which would require time to coordinate with the landowner (National Guard Bureau). In addition Alternatives 3 and 4 would require extensive planning and work plans would be required prior to implementation of the work. Work plan development and approval is estimated to take approximately one year to complete. Once preplanning is complete, execution of the field work for Alternative 3 would require approximately 1 to 2 months to complete (depending on the number of technicians), while Alternative 4 would require 2 to 4 months to complete.

Cost

Estimated capital cost (present worth) to implement each alternative is summarized in Table 1 below.

Table 1: Initial Screening of Alternatives

Alternative	Screening Criteria		
	Effective	**Implementable**	**Cost (Present Worth)**
Alternative 1: No Further Action	No	Yes	$0
Alternative 2: Land Use Controls and Education	Yes	Yes	$318,000
Alternative 3: Surface MEC Removal and Education	Yes	Yes	$1,405,000

Alternative 4: Subsurface MEC Removal to 2 ft.	Yes	Yes	$1,551,970

9.3 EXPECTED OUTCOMES OF EACH ALTERNATIVE

Alternative 1: No Further Action

This alternative does not reduce potential current and future MEC exposure hazards, if present. The NCP requires the No Further Action alternative to be evaluated and it means simply that a remedial action will not be implemented. No restrictions or limitations would be placed on land use and no costs are associated with this alternative, since there would be no action.

Alternative 2: Land Use Controls and Education

This alternative includes the placement of warning signs along the boundaries of the MRS to warn of potential hazards. The signs would warn site workers, soldiers, and permitted hunters of the potential to contact UXO on the surface; prohibit excavation in the MRS; and provide the appropriate response and contact information in the event that suspect MEC items are observed.

The CBJTC requires and provides UXO awareness training for all those entering range areas, including the MRS. The education program would be expanded to include brochures/fact sheets for distribution to all visitors to the range, including workers, soldiers, and hunters.

The existing CRP would also be updated. The Plan provides the framework for public outreach activities that the Corps will use to communicate with the community and address their concerns and expectations. Updating the Plan will include revising the project summary, updating fact sheets, and updating stakeholder lists, media contacts, and information on the community.

This alternative does not fully meet the RAO; however, it would serve to alter the behavior of persons visiting the site and by doing so, significantly reduce the potential for them to come into contact with MEC. Long-term effectiveness of this alternative would be monitored through five-year reviews to ensure its continued effectiveness.

Alternative 3: Surface MEC Removal and Education

This alternative includes a surface MEC removal across the entire MRS, posting UXO hazard warning signs, and an educational awareness program. The surface removal would be effective in reducing the safety hazards posed by the presence of MEC on the surface.

The signs would warn site workers, soldiers, and permitted hunters of the potential to contact UXO on the surface; prohibit excavation in the MRS; and provide the appropriate response and contact information in the event that suspect MEC items are observed.

The educational awareness program would focus on making soldiers, permitted-hunters, workers, and any other visitors to the MRS aware of the potential hazards associated with MEC and the appropriate response should suspect MEC be encountered. The educational program would be accomplished through dissemination of brochures and UXO awareness briefings provided by CBJTC.

This alternative does not fully meet the RAO since it only addresses MEC discovered on the surface and does nothing to prevent interaction with subsurface MEC, if present. However the education component would serve to alter the behavior of persons visiting the site and by doing so, significantly reduce the potential for them to come into contact with surface or subsurface MEC. Long-term effectiveness of this alternative would be monitored through five-year reviews to ensure its continued effectiveness.

Alternative 4: Subsurface MEC Removal to 2 ft.

This alternative includes both a surface and subsurface MEC removal across the entire MRS, eliminating the safety hazards posed by the presence of MEC at the MRS. This alternative achieves UU/UE and by doing so, does not require an educational component such as that required for Alternative 2 and Alternative 3. The recommended removal depth is based on current and future land use activities and the maximum

depth of excavation below the surface. Table 2 summarizes the maximum anticipated depths and the recommended removal depth.

This alternative meets the RAO since it addresses both surface and subsurface MEC.

Table 2: Recommended Depth of MEC Removal Based On Land Use

MRS	Land Use Activities and Associated Maximum Depths (ft.)	Recommended Depth of MEC Removal
AG-1, Anti-Tank Rocket and Rifle Grenade Range, MRS	Current: Firebreak maintenance (disking) - 12 Inches Future: Firebreak maintenance (disking) - 12 Inches	2.0 ft.*
*Clearance of anomalies will continue until the signal attenuates or the MEC is found.		

10. COMPARATIVE ANALYSIS OF ALTERNATIVES

Table 3 summarizes the comparison analysis for the four alternatives. The following conclusions were derived:

Alternative 1: No Further Action

This alternative is ineffective in reducing risk to human health and the environment and has no long-term permanence. This alternative has no cost.

Alternative 2: Land Use Controls and Education

This alternative will reduce the risk by informing site workers, soldiers, and permitted hunters of the hazards associated with the potential presence of MEC. However, it does not reduce the MEC HA score of 2. Discounting Alternative 1, which has no cost, Alternative 2 is the least costly of the alternatives evaluated.

Alternative 3: Surface MEC Removal and Education

This alternative will reduce the risk of exposure to surface MEC within the entire MRS; this alternative would further reduce the risk by informing site workers, soldiers, and permitted-hunters of the hazards associated with the potential presence of MEC. This alternative reduces the MEC HA score from 2 to 3.

Alternative 4: Subsurface MEC Removal to 2 ft.

This alternative will reduce the volume of MEC and therefore the residual risk. In addition, it would increase long-term protection required to conduct intrusive activities associated with the fire break maintenance and should achieve unlimited use/unrestricted exposure. This alternative reduces the MEC HA score from 2 to 4. This alternative is more costly than Alternative 3.

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Table 3: Munitions and Explosives of Concern – Comparative Analysis of Alternatives

Criteria		Alternative 1 No Further Action	Alternative 2 Land Use Controls and Education	Alternative 3 Surface MEC Removal and Education	Alternative 4 Subsurface MEC Removal to 2 ft
Threshold Factors	Protectiveness	Not Protective	Protective by modifying behavior	Protective by removing surface MEC across the entire MRS, and by modifying behavior.	Protective by removing subsurface MEC
	Compliance with ARARs	Not Applicable	Not Applicable	No potential ARARs are applicable.	No potential ARARs are applicable.
Balancing Factors	Reduction of Toxicity, Mobility, and Volume through Treatment	No Reduction	No Reduction	Provides moderate reduction in volume since only surface removal is implemented.	Provides the highest reduction in volume since both surface and subsurface MEC are removed
	Short-Term Effectiveness	No impact	No impact	Explosives safety hazards to workers during MEC removal.	Explosives safety hazards to workers during MEC removal
	Long-Term Effectiveness and Permanence	Not Effective	Effective	Effective	Effective
	Implement-ability	Requires no implementation	Implementable	Implementable	Implementable
	Cost	$0	$318,000	$1,405,000	$1,551,970
Modifying Considera-tions	Community Acceptance	Not likely to be accepted- risk of exposure is not reduced.	Likely to be accepted-risk of exposure is reduced by placement of warning signs and education.	Likely to be more acceptable than Alternative 2 but less acceptable than Alternative 4- provides a greater reduction in risk of human exposure to MEC than Alternative 2 but less than Alternative 4.	Likely to be more acceptable than Alternative 2 and Alternative 3 -provides the greatest reduction in risk of human exposure to MEC
	State Acceptance	Not likely to be accepted-not protective of human health.	Likely to be accepted – provides protection of human health.	Likely to be more acceptable than Alternative 2 but less acceptable than Alternative 4- provides greater protection of human health than Alternative 2 but less than Alternative 4	Likely to be more acceptable than Alternative 2 and Alternative 3- provides the greatest protection of human health

11. PRINCIPAL MEC/MC ISSUES

11.1 MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)

MEC was confirmed present at the site during the RI that included an anti-tank rocket and a rifle grenade resulting from weapons training during World War II. Because the RI was limited to only a sampling of the 53-acre area, it is likely that residual MEC remains. Effective response actions are needed to ensure the safety of current and future visitors to the site by reducing or preventing a complete pathway between residual MEC and receptors.

Alternative 2: Land Use Controls and Education relies on behavior modification to reduce the risk of receptor exposure; however, it does not remove residual MEC, thus leaving the possibility of a complete pathway. Alternative 3: Surface MEC Removal and Education relies on a combination of education and removal of residual MEC from the surface, however, it does not address any subsurface MEC, and therefore leaves the possibility of a complete pathway. Alternative 4: Subsurface MEC Removal to 2 ft. addresses the removal of both surface and subsurface MEC. As a result, Alternative 4 provides the greatest potential to prevent a complete pathway for receptors in the future.

11.2 MUNITIONS CONSTITUENTS (MC)

Response actions to address MC are not included. It was indicated earlier in Section 5.0 that although several constituents were identified in soil as potential risks to wildlife, the constituents were determined not to be associated with the MEC that was confirmed to exist within the MRS and response actions to address these constituents are not eligible under the FUDS Program.

12. SELECTED REMEDY

12.1 SUMMARY AND DESCRIPTION

An RI completed in 2013 at the AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS confirmed that MEC (1 - 2.36-inch 1 - rocket, rifle grenade) was present. Because only a portion of the MRS was sampled during the RI, the probability is high that MEC is still present, posing a safety risk to humans visiting the site. Response alternatives to reduce or eliminate the risk were developed, evaluated, and compared with each other. The following alternatives were considered:

- Alternative 1: No Further Action
- Alternative 2: Land Use Controls and Education
- Alternative 3: Surface MEC Removal and Education
- Alternative 4: Subsurface MEC Removal to 2 ft.

Of the four alternatives, Alternative 4 was determined to provide the greatest potential to prevent a complete pathway for human receptors in the future.

12.2 COST ESTIMATE

The total present worth cost of the remedy is estimated to be $1,551,970, which includes planning and implementation.

12.3 ESTIMATED OUTCOMES

With the implementation of the Selected Remedy – Subsurface MEC Removal to 2 ft., the expected outcomes are anticipated to include the following.

- Land use will remain unchanged.
- No restriction will be placed on current or future land use.
- No limitations will be placed on groundwater or surface water use.
- MEC will be removed.

13. STATUTORY DETERMINATIONS

Based on the information currently available, the selected remedy for AG-1, Anti-Tank Rocket and Rifle Grenade Range MRS is protective of human health and the environment and satisfies the statutory requirements of CERCLA §121(b). Subsurface MEC Removal to 2 ft. will protect human health and the environment by removing residual MEC.

The Selected Remedy is protective of human health and the environment. In addition, the remedy is cost-effective and utilizes permanent treatment technologies to the maximum extent practicable.

14. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan was released for public comment on July 9, 2015. The Proposed Plan identified Subsurface MEC Removal to 2 ft. as the selected remedy. The comments received from the public did not warrant any significant changes to the Proposed Plan.

PART 3: RESPONSIVENESS SUMMARY

This Responsiveness Summary summarizes all comments for the Proposed Plan received from the public and the FDEP regarding the preferred remedy and general concerns related to the Site.

1. STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

A 30-day comment period started on July 9, 2015. The USACE Jacksonville District provided information to the local community on the preferred remedy through a public meeting held on July 9, 2015, allowing the public an opportunity to convey any questions and/or concerns about the Site to the regulatory authority for consideration in the remedial selection process.

1.1 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS

No FDEP comments were provided during the July 9, 2015 public meeting or during the public comment period.

1.2 PUBLIC COMMENTS

No written comments or calls to the FUDS Hotline were received.

2. TECHNICAL AND LEGAL ISSUES

None.

ATTACHMENT

LOCATION MAP

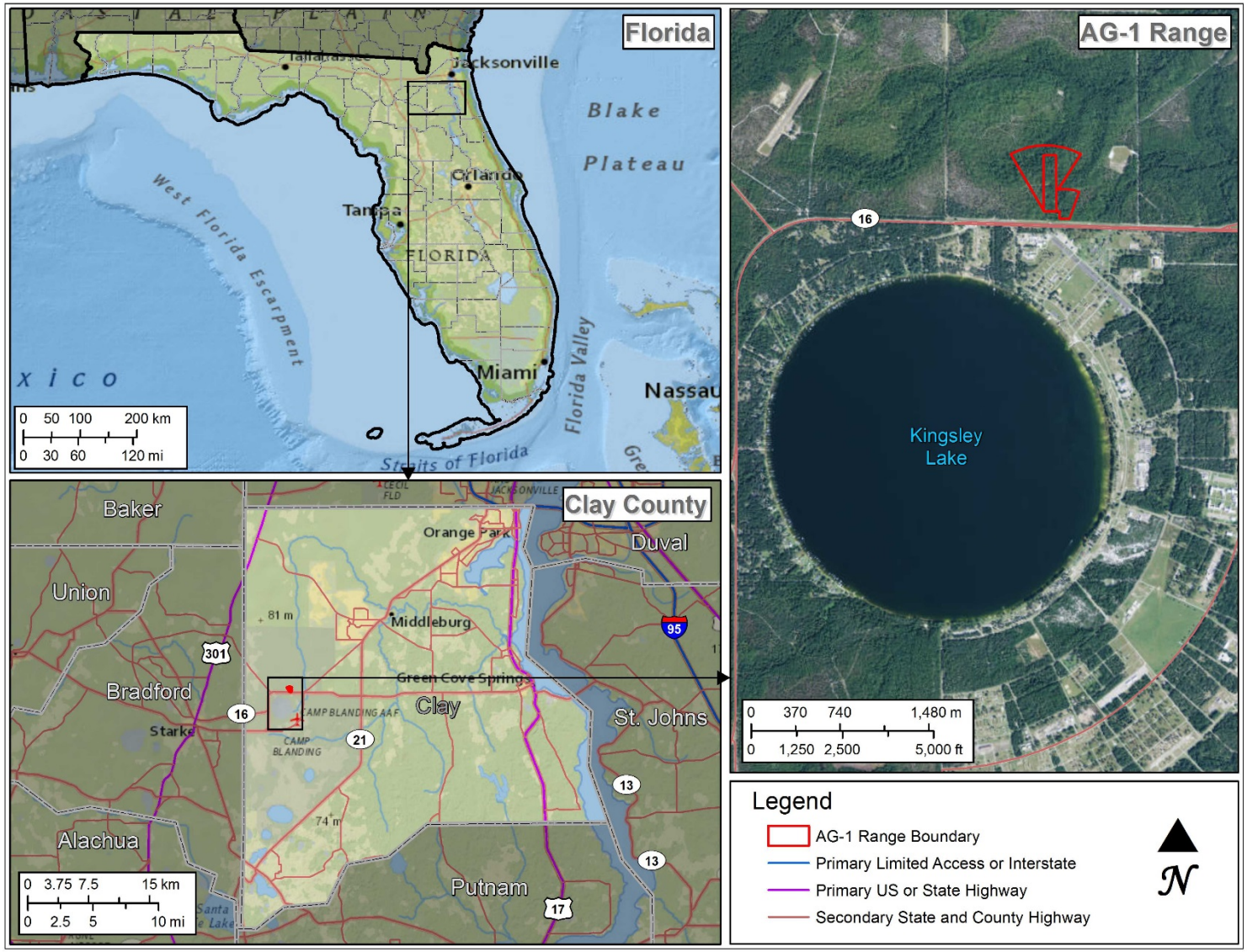

Figure 0-1 Location of Camp Blanding and AG-1 Anti-Tank Rocket and Grenade Range MRS