



# PROPOSED PLAN for the Former Camp Croft Military Munitions Response Program FUDS Project I04SC001603

U.S. Army Corps of Engineers – Savannah District

April 2016

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**PUBLIC MEETING**  
March 24, 2016  
6:30pm to 8:30pm

**Location:**  
Spartanburg Marriott  
299 North Church Street  
Spartanburg, SC 29306

**Public Comment Period:**  
March 25 to June 6, 2016

**For More Information Visit:**  
U.S. Army Corps of Engineers

**Administrative Record**  
151 South Church Street  
Spartanburg, SC 29306

## Introduction

This **Proposed Plan**<sup>1</sup> is presented by the U.S. Army Corps of Engineers (USACE)<sup>2</sup> to facilitate public involvement to review and comment in the remedy selection process for the former Camp Croft - a **Formerly Used Defense Site (FUDS)** located in Spartanburg County, South Carolina (Figure 1). USACE is the lead agency for investigating, reporting, making decisions, and taking remedial actions at the former Camp Croft. This Proposed Plan presents preliminary recommendations concerning how to best address **munitions and explosives of concern (MEC)** at this site. Included in this Proposed Plan are the various alternatives that were evaluated along with the preferred alternative recommended by USACE.

USACE requests comments from the public on this Proposed Plan. USACE may consult with the State of South Carolina Department of Health and Environmental Control (DHEC) and landowners to modify any of the alternatives, including the preferred alternative, based on public comments. After public comments have been considered, **Decision Documents** will present the final decision for the former Camp Croft. A summary describing how public comments were addressed will be included in the Decision Documents.

In 2012 and 2013, USACE conducted field work to support a **Remedial Investigation (RI)** (ZAPATA, 2014) at the former Camp Croft to determine the nature and extent of MEC and **munitions constituents (MC)** contamination in

<sup>1</sup> The bolded terms found throughout this Proposed Plan are defined in the Glossary found at the back of this document.

<sup>2</sup> A list of acronyms and abbreviations used in this Proposed Plan is presented following the Glossary at the back of this document.

MRS 1 and AoPIs 5, 8, 9E, and 9G did not have evidence of past military use and are not addressed in the FS or the Proposed Plan.

order to adequately characterize the area for the purpose of developing and evaluating effective remedial alternatives. The former Camp Croft is divided into three **Munitions Response Sites (MRSs)** and 10 Areas of Potential Interest (AoPI). The MRSs are the Gas Chamber (MRS 1), the Grenade Court (MRS 2), and the Land Range Complex (MRS 3). The AoPIs (3, 5, 8, 9E, 9G, 10A, 10B, 11B, 11C, and 11D) correspond with areas addressed in previous investigations and MEC clearance actions.

The RI report recommended a **Feasibility Study (FS)** be performed for MRS 3 and 6 of the 10 AoPIs due to potentially complete MEC exposure pathways (ZAPATA, 2014). MRS 2 was not investigated during the RI due to lack of Rights-of-Entry (ROE) and is not addressed in the FS or Proposed Plan. Based on the RI results, it was recommended that MRS 3 be subdivided into seven areas (six areas where MEC was observed and the Remaining Lands). Refer to Table 1 and Figure 1.

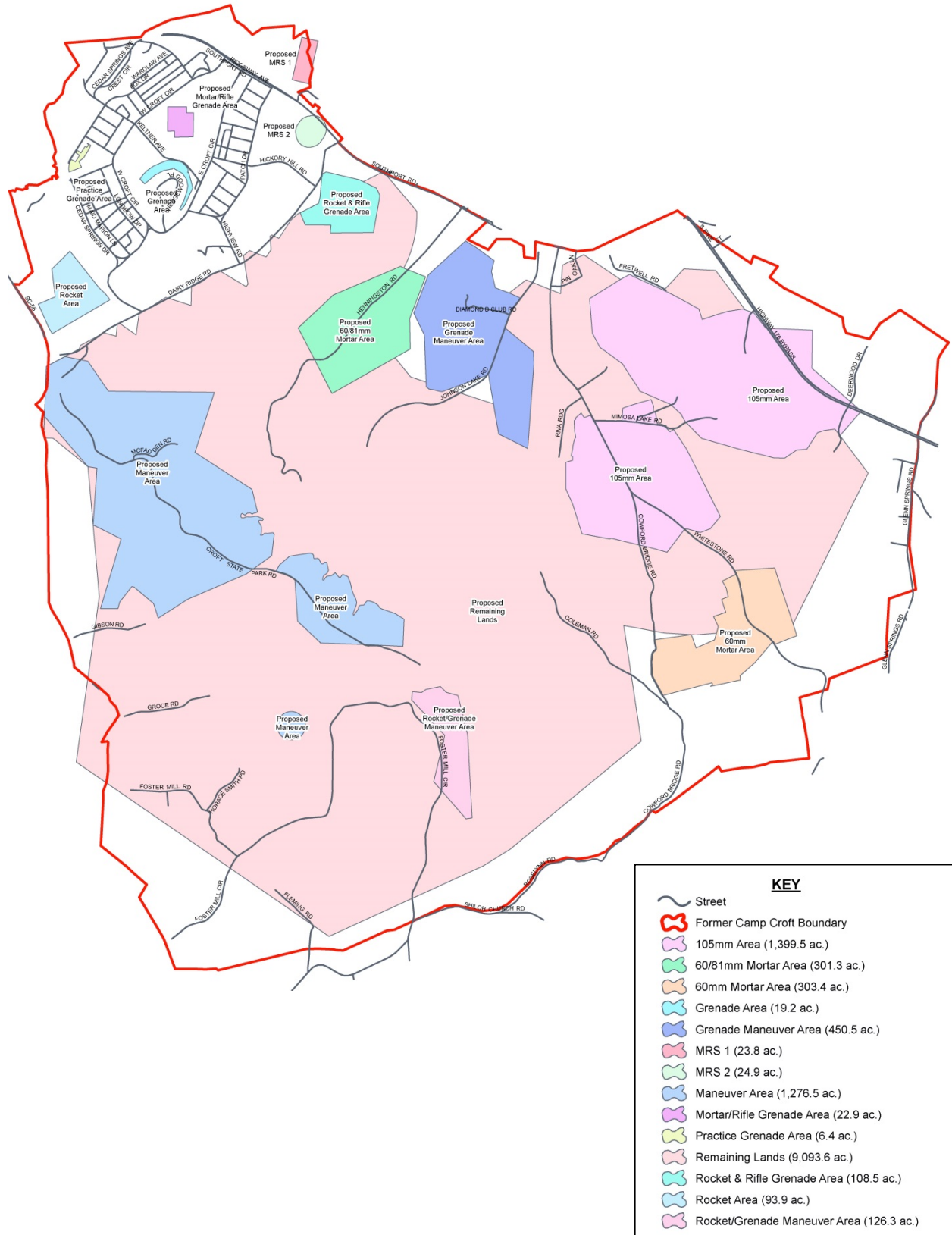
**Table 1 MRS and AoPI Designation**

MRS 3 was divided into seven areas, each with a corresponding remedial alternative.

Pre-RI Designation	Revised Designation
MRS 3 (Land)	105mm Area Maneuver Area 60mm Mortar Area 60/81mm Mortar Area Rocket & Rifle Grenade Area Rocket/Grenade Maneuver Area Remaining Lands (Land and Water)
AoPI 3	Grenade Area
AoPI 10A	Rocket Area
AoPI 10B	Grenade Maneuver Area
AoPI 11B	
AoPI 11C	Practice Grenade Area
AoPI 11D	Mortar/Rifle Grenade Area

The purpose of the FS is to provide the project decision makers with the necessary data to develop, screen, and evaluate a range of potential remedial alternatives, and select a remedy to manage the MEC hazard risks to human health and the environment.

Figure 1 Site Location



The Public is encouraged to comment on this Proposed Plan.

This Proposed Plan addresses the seven areas that comprise MRS 3 and six of the 10 AoPIs.

This Proposed Plan highlights key information contained in the RI Report and the FS Report. Both the RI and FS Reports are part of the Administrative Record and the reader should refer to the **Administrative Record** for more information regarding the **Preferred Alternatives**.

This Proposed Plan is part of United State Army Corps of Engineers (USACE) Community Relations Program. The Proposed Plan (PP) is a requirement of Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, and 300.430(f)(2) of the National Contingency Plan (NCP) and follows the requirements from Engineer Regulation 200-3-1, FUDS Program Policy (USACE, 2004) and the United States Environmental Protection Agency (USEPA) guidance *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, EPA 540-R-98-031 (USEPA, 1999).

### Public Involvement

Public comments on the Proposed Plan will be accepted during a public review and comment period from March 25, 2016, through June 6, 2016. In addition, a public meeting will be held at the beginning of the public review and comment period on March 24, 2016 to present this Proposed Plan. The USACE, in coordination with DHEC, will consider public comments received during the public meeting and comment period and will make a final decision concerning future action to be taken at the project site. USACE responses to public comments on this Proposed Plan will be contained in the “Responsiveness Summary” section of the Decision Document. The current schedule calls for completion of the Decision Document by the end of 2016.

### Overall Goal

Manage MEC risk through a combination of clearance / remediation, administrative controls, and public education; thereby rendering the sites as safe as reasonably possible to humans and the environment and conducive to the anticipated future land use.

## Project Site Background

Camp Croft Infantry Replacement Training Center (IRTC) was officially activated on January 10, 1941 and consisted of two general areas: a series of firing ranges and a troop housing area with attached administrative headquarters, with housing for 20,000 trainees and support personnel. Camp Croft IRTC served as one of the Army's principal IRTCs; approximately 250,000 soldiers were trained at the facility. Camp Croft was also a prisoner-of-war camp during World War II. Camp Croft had at least 12 live ammunition training ranges used for small arms ammunition, anti-tank rockets, anti-aircraft artillery, 60-millimeter (mm) infantry mortars, and 81mm infantry mortars. The training range impact areas comprised 16,929 acres; a 175-acre grenade court was also located at the camp. The entire installation (just over 19,000 acres) was declared surplus in November 1946 and excessed to the War Assets Administration in 1947. Over the next three years, the land was either sold or transferred by quitclaim to organizations, business interests, or private interests.

MEC items recovered at the former Camp Croft during the RI included: grenades, landmines, mortars, projectiles, and rockets.

## Previous Public Involvement

In an effort to keep the public informed, 12 Restoration Advisory Board (RAB) meetings and site visits relating to RI activities and Feasibility Study for the former Camp Croft have been conducted. RAB meetings and site visits were announced through notices in the local newspaper. Information was conveyed to the public via presentations, a project web site, and the information repositories. Public input was obtained through RAB meetings that included community involvement and requests for public comments.

## Project Site Characteristics

The majority of the Camp Croft area is accessible to the public. Croft State Natural Area occupies 7,054 acres of the 19,044-acre FUDS property. The primary activities conducted at the park include hiking, mountain biking, camping, fishing, boating, and horseback riding. A golf course, private residences, light industry and commercial

entities are also situated within and adjacent to the FUDS boundary. It is likely those types of land use will continue in the future.

## Nature and Extent of Contamination

### Munitions and Explosives of Concern

Since the early 1990s, numerous investigations and MEC clearance actions have been conducted at various locations within the former Camp Croft property, including Time Critical Removal Actions and Engineering Evaluations/Cost Analyses. The most recent activities include the RI and Interim Removal Action (IRA).

Areas where MEC or high concentrations of MD were observed during the RI are:

- 105mm Area
- 60mm Mortar Area
- 60/81mm Mortar Area
- Grenade Maneuver Area
- Maneuver Area
- Rocket/Grenade Maneuver Area
- Rocket & Rifle Grenade Area

During the RI (2012 - 2013), MEC and munitions debris (MD) were recovered from the former Camp Croft (ZAPATA, 2014). MEC were classified into one of the following five categories; grenade, landmine, mortar, projectile, or rocket. Specific MEC items included Mk I and Mk II hand grenades, M15 hand grenades and M19 rifle grenades, M1 anti-tank mine, 60mm and 81mm mortars, 37mm, 57mm, 105mm illumination projectiles, and 2.36-inch rockets.

Based on the substantial MEC and MD findings during the RI investigation, the expansion area to the east of AoPI 9G and a portion of MRS 3 were recommended for an IRA, which was conducted between May and July 2013. During the IRA, approximately 50 acres were cleared of MEC and MD to a depth of six inches below the ground surface; 100% of the area was inspected. During the IRA, 173 MEC items were discovered and destroyed. Approximately 1,200 MD items were deemed to be intact versions of grenades and rockets, but were not MEC; those items were detonated along with the MEC items.

### Munitions Constituents

To complete the characterization of MC at the former Camp Croft, discrete soil samples were collected 0 - 2 inches below ground surface from areas with a high density of anomalies. Composite soil samples were collected from post-blow-in-place locations where munition items were



intentionally detonated. Samples were analyzed for explosives and selected metals; antimony, copper, lead, and zinc.

No explosives were detected above the laboratory minimum detection limit. Lead was the only metal identified in exceedance of the Regional Screening Level (RSL). All but three discrete soil samples exhibited concentrations of lead below the RSL. Additional soil samples were collected from the areas exhibiting elevated lead levels. The results of subsequent samples field screening indicated that the lead contamination is localized.

A Response Action is to limit the potential for receptors to encounter or interact with potential MEC.

### Scope and Role of Response Action

A response action is used to prevent or minimize the potential interaction with MEC so that it does not cause substantial danger to present or future public health and welfare. The response action manages risk from potential residual MEC hazards and incorporates input from the landowner and other interested community members. Surface and subsurface MEC Clearance is the proposed response action for in high MEC-risk areas. **Land Use Controls (LUCs)** are proposed for lower risk areas. LUCs include educational materials and physical, legal, or administrative mechanism that restrict the use of, or limits access to, contaminated property to prevent or reduce risks to human health by means of behavior modification.

Selection of a response action takes into consideration the MEC risk to public health and welfare as well as current and anticipated future land use.

### Summary of Project Site Risks

#### Human Health Risk Assessment

- The MEC hazard assessment addressed the likelihood of human exposure to MEC and the MC risk assessment addressed the likelihood of exposure to explosives, antimony, copper, lead, and zinc from soil, sediment, and surface water.
- Current and projected land use includes residences, recreational use, commercial and light industry; groundwater is not currently used for potable water.

A qualitative MEC HA was conducted for areas that contained MEC to evaluate explosive hazard level conditions.

In general, MEC must be disturbed to present an explosive hazard.

- The potentially-exposed population (human receptors) associated with the former Camp Croft includes construction personnel, residents, and recreational users (e.g., hiking, horseback riding, golf).
- The exposure pathway for MEC is complete through surface use and intrusive activities, if MEC is present.
- The exposure pathway (terrestrial, aquatic, and via groundwater) for explosives is complete; however, upon evaluation, potential risks associated with localized lead are considered negligible.

### Ecological Risk Assessment

No further action is proposed for MC.

- Although ecological receptors are present in the area, the focus for possible MEC exposure is on human receptors; ecological receptors are not considered at risk for MEC exposure.
- The exposure pathway (terrestrial, aquatic, and via groundwater) for MC is complete; however, these small affected areas comprise only a tiny fraction of the overall habitat and exposure to metal fragments that are not readily bioavailable suggests an overestimation of potential risks.
- Based on the results of MC sampling, it is not anticipated that significant adverse risks would occur to local populations of wildlife. No further action is recommended with respect to MC.

MEC was identified during the investigation. Therefore, procedures are required to ensure the public is informed of the risk and is knowledgeable of response procedures, and that a mechanism is in place to evaluate remedy adequacy.

Considering the current site conditions as the baseline, the MEC HA results for the seven sites where MEC was observed indicate the potential for explosive hazard conditions is considered “highest” at four areas, “high” at two areas, and “moderate” at one area. Results of the MEC HA are discussed in detail within the RI Report (ZAPATA, 2014), which is available on the project website at [www.campcroft.net](http://www.campcroft.net), and in the Administrative Record. Previously recovered MEC locations, MD density and future



land-use activities were also used to assess response alternatives.

During the RI, a risk assessment was conducted to determine the human health and ecological risks associated with potential MC exposure at each of the MRSs. Based on the MC analytical results, the risk assessments concluded that the potential for adverse risks to human health or ecological receptors from exposure to MC is negligible at the former Camp Croft. No further action is proposed for MC within the defined areas.

### **Concluding Statement**

It is the current judgment of the lead agency, USACE, that the Preferred Alternatives identified herein are necessary to protect public health and welfare from actual or potential explosive hazards present in the environment.

### **Remedial Action Objectives**

The **Remedial Action Objectives (RAOs)** are cleanup criteria by which aspects of a cleanup under CERCLA are measured. Remedial alternatives to achieve the RAOs to manage MEC risk at Camp Croft include a combination of clearance/remediation, administrative controls, and public education; rendering the sites as safe as reasonably possible to humans and the environment and conducive to the anticipated future land use. For each area, MEC penetration depths and the potential intrusive depth based on land use (i.e., residential, industrial, recreational) were evaluated. In areas where MEC was confirmed, an additional one-foot depth was added to the RAO as a safety factor.

*(continued on next page)*

**Table 2 Remedial Action Objectives**

Area	MEC Depth (bgs)^	Land Use/Depth (bgs)	RAO Depth (bgs)
105 mm	2 ft	Resident/2 ft	3 ft
60mm Mortar	6 in.	Resident/2 ft	3 ft
60/81mm Mortar	15 in.	Resident/2 ft	3 ft
Grenade	2 ft	Resident/2 ft	3 ft
Grenade Maneuver	6 in.	Resident/2 ft	3 ft
Maneuver	8 in.	Recreate/1 ft	2 ft
Mortar/Rifle Grenade	-	Recreate/1 ft	1 ft
Practice Grenade	-	Resident/2 ft	2 ft
Remaining Lands	-	Resident/2 ft	2 ft
Rocket	-	Resident/2 ft	2 ft
Rocket/Grenade Maneuver	4 in.	Resident/2 ft	3 ft
Rocket & Rifle Grenade	10 in.	Resident/2 ft	3 ft

^ Where no MEC has been confirmed, no depth is provided.

All remedial alternatives include periodic monitoring to ensure effectiveness.

### Summary of Remedial Alternatives

Ten alternatives were developed by compiling numerous general response actions. A description of each of the four alternatives that were retained during the FS, following the screening process, is presented below. The preferred alternative for the 12 MRSs are presented in Section 9.0, herein.

Common Elements: Four munitions response alternatives were evaluated to identify the most appropriate response alternatives for each of the MRS areas and AoPIs. Many of the alternatives include the following common components:

- All alternatives, except the “No Action” alternative, limit the inadvertent exposure to MEC potentially remaining through either clearance of potential MEC or educational awareness on the appropriate response if suspected MEC is encountered; and
- All alternatives, except the “No Action” alternative are expected to attain the RAO in the areas exhibiting evidence of former military use.

Alternative 1 - No Action: No further action is conducted under this alternative. Evaluation of this alternative is required and used as a baseline for comparison with the

Five-year reviews will be conducted for alternatives that do not achieve UU/UE to ensure response action remains protective in accordance with current and future land use.

other alternatives. No cost is associated with this alternative, since there would be no action.

Alternative 2 - Land Use Controls: LUCs are physical, legal, or administrative mechanisms that restrict the use or limits access to real property to prevent or reduce risks to human health, safety and the environment. This alternative includes limited LUC measures such as, access restrictions or physical barriers (e.g., fencing), site controls (e.g., signage), and educational materials developed to enhance the community's general understanding of site conditions. This alternative has no source reduction of potential MEC. Educational awareness can be effective at modifying people's behavior to reduce interaction with potential MEC.

Alternative 3 – Analog Surface and Subsurface MEC Clearance and LUCs: This alternative involves the clearance of MEC that are present on the ground surface and in the subsurface using analog geophysical instrumentation. Brush clearance would be required in many areas prior to the clearance. MEC and potential MEC would be removed and disposed of using approved/safe procedures. Accessibility to areas within each MRS will be dependent upon vegetation/terrain, landowner cooperation, and granting of right-of-entry. The MEC clearance would not be conducted under any existing paved surfaces, streams, and structures. Alternative 3 is considered appropriate in areas where MEC items are present on the surface and subsurface. However, due to limitations of the technology, it is possible that some munitions items may not be detected. To reduce risk associated with potential residual munitions, LUCs would be implemented as described in Alternative 2.

Alternative 4 – Digital Advanced Classification Surface and Subsurface MEC Clearance to Support Unlimited Use/Unrestricted Exposure: This alternative uses digital geophysical instrumentation in a specialized configuration for data collection such that data can be digitally compared to an established database, and anomalies can be discriminated. These advanced classification methods are

cutting-edge and allow experienced geophysicist to classify anomalies as MEC, separate from other non-MEC anomalies. Anomalies identified as MEC would be excavated and disposed of using approved/safe procedures. Extensive brush clearance would likely be required in many areas prior to the clearance action. The MEC clearance would not be conducted under any existing paved surfaces, streams, and structures. Accessibility to areas within the MRS will be dependent upon vegetation/terrain, landowner cooperation, and granting of right-of-entry.

With this advanced technology, it is anticipated that the completion of the MEC clearance would reduce the MEC hazard to a level to support unlimited use/unrestricted exposure (UU/UE). As such, LUCS and long-term monitoring would not be required. Alternative 4 is considered appropriate in areas where MEC items are present on the surface and in the subsurface.

Nine criteria are used to evaluate response alternatives in order to select a remedy.

## Evaluation of Alternatives

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) defines nine criteria for evaluation of alternatives for each MRS. The nine criteria are used to evaluate the different munitions response alternatives individually and against each other in order to select a remedy.

This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The detailed screening of alternatives can be found in the FS Report. A description and purpose of the three groups follow:

The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria.

- Threshold Criteria are requirements that each alternative must meet in order to be eligible for selection;
- Primary Balancing Criteria are used to weigh major trade-offs among alternatives; and

- Modifying Criteria are considered to the extent that information is available, but cannot be fully evaluated until after public comment is received on this Proposed Plan. In the final balancing of tradeoffs among proposed alternatives, modifying criteria are of equal importance as the balancing criteria.

## Threshold Criteria

### 1. Overall Protection to Human Health and the Environment

This evaluation criterion assesses the protectiveness of an alternative and its ability to meet the RAOs. It assesses if an alternative reduces the public's potential exposure to MEC, thereby reducing potential injury or death, and protects the environment. When evaluating this criterion, the presence of MEC at the site, and current and anticipated future land uses is taken into consideration. Each alternative was also evaluated in terms of whether it would reduce the amount of MEC within the MRS. Alternative 1 does not offer protection to human health or the environment since no action is associated with this alternative. Alternative 2 is protective and relies on behavior modification of individuals when accessing the MRS area or AoPI as to the appropriate action in the event that MEC is encountered (i.e., do not handle suspected item and contact authorities). Alternative 3 provides protection by removing surface and subsurface MEC. Alternative 4 provides protection by removing surface and subsurface MEC using advanced technology.

### 2. Compliance with Applicable or Relevant and Appropriate Requirements (ARAR)

An ARAR is a promulgated standard that pertains to contaminants at a site or action that needs to be taken at the site, such as cleanup standards. Administrative requirements such as consultation and permitting are not ARARs. This evaluation criterion serves to assess whether each alternative meets all the potential federal and state ARARs as identified in the RI process. ARARs may be refined through the remainder of the CERCLA process until

a decision document is finalized, at which point those ARARs are incorporated into the remedial action decision. No chemical-, location-, or action-specific ARARs have been identified at the former Camp Croft.

## **Primary Balancing Criteria**

### **3. Long-Term Effectiveness and Permanence**

This evaluation criterion addresses the effectiveness of an alternative in terms of the risk remaining at the site after the response objectives have been met. Long-term management should be implemented post-remedial action to ensure effectiveness, especially with respect to any changes in land use. Alternative 4 was determined to provide the best long-term effectiveness and permanence based on the ability to significantly reduce the risk due to possible MEC on the surface and in the subsurface. Alternative 3 removes MEC from the surface and subsurface but based on the technology, requires LUCs for long-term effectiveness to manage potential subsurface encounters with an explosive hazard. Although Alternative 2 can deter inappropriate interaction with MEC, it cannot prevent it.

### **4. Reduction of toxicity, Mobility, or Volume**

Alternatives 1 and 2 offer no reduction in toxicity, mobility, or volume of contaminants and are assigned the lowest ranking. However, implementation of Alternative 2 is assumed to reduce receptor exposure by encouraging individuals to spend less time within the MRSs through education. Alternative 3 provides some reduction of risk to MEC remaining on the surface and subsurface. Alternative 4 provides the greatest reduction of toxicity, mobility, or volume as a result of subsurface MEC clearance using advanced technologies. Implementation of Alternative 4 would remove the source (MEC) to the depth compatible with land use.

Alternative 4 (and to a lesser extent Alternative 3) rely upon clearance actions to decrease the MEC source hazard



and reduce the likelihood of interaction. Alternatives 1 and 2 provide no reduction of MEC source.

### **5. Short-Term Effectiveness**

Alternatives 3 and 4 are determined to have the greatest risk and least short-term effectiveness due to the risk to workers conducting the clearance. Due to the increased likelihood of MEC detonation during implementation of Alternatives 3 and 4, qualified unexploded ordnance (UXO) technicians must perform the work. Alternatives 1 and 2 present no short-term impacts or adverse impacts on workers and the community.

### **6. Implementability**

Alternative 1 and Alternative 2 were determined to be the easiest to implement. Alternative 1 is both technically and administratively feasible, and no services or materials are necessary for implementation. Alternative 2 is also both technically and administratively feasible, with fact sheets and website readily available. Alternative 3 removes MEC from the surface and subsurface, and relies on educational awareness for long-term effectiveness. Alternatives 3 and 4 are both technically and administratively feasible but require specialized personnel and equipment to implement. Alternatives 3 and 4 also require the development of detailed work plans.

### **7. Cost**

The cost criterion evaluates the financial cost to implement the alternative. The cost criterion includes direct, indirect, and long-term operation and maintenance costs. Direct costs are those costs associated with the implementation of the alternative. Indirect costs are those costs associated with administration, oversight, and contingencies. These costs were adapted from costs associated with similar activities conducted at former Camp Croft and cost estimates prepared for other sites. The actual costs will depend on true labor rates, actual site conditions, final project scope, and other variable factors. The alternative with the lowest cost to implement would be Alternative 1, which requires no action; therefore, no costs are incurred.

Alternative 2 requires relatively low costs compared to Alternatives 3 and 4, which are the most costly to implement.

## **Modifying Criteria**

### **8. State Acceptance**

This evaluation criterion considers whether the State agrees with the analyses and recommendations, as described in the FS and PP. State acceptance is evaluated after the public comment period.

### **9. Community Acceptance**

The community acceptance of the preferred alternative will be evaluated and assessed after the public comment period ends and will be described in the decision document for each MRS area and AoPI.

## **Evaluation Summary**

Each alternative was evaluated against the nine criteria and then evaluated against each other. Table 3 presents a comparative analysis of the alternatives. The following conclusions were derived from the comparative analysis:

- Alternative 1 is recommended to be ruled out for all MRSs, and is not considered protective of human health and the environment. Alternative 1 is ineffective in reducing risk to human health and the environment and has no long-term permanence.
- Alternative 2 achieves the threshold criteria of overall protectiveness to human health and the environment, complies with ARARs, and achieves the balancing factors of long-term effectiveness, permanence, short-term effectiveness, implementability and cost. This alternative provides no reduction in toxicity, mobility, or volume of MEC, if MEC is present.
- Alternative 3 would provide an added level of protection but would not eliminate the potential that MEC remains enough to not require LUCs.
- Alternative 4 would provide a level of protection to support UU/UE.

**Table 3 Comparative Analysis of Alternatives**

<b>EPA's Nine CERCLA Evaluation Criteria</b>	<b>Alternative 1  No Action (Baseline Condition)</b>	<b>Alternative 2  Land Use Controls and Long-Term Management (LTM)</b>	<b>Alternative 3  Analog Surface &amp; Subsurface MEC Clearance, LUCs and LTM</b>	<b>Alternative 4  Digital Advanced Classification Surface &amp; Subsurface MEC Clearance to Support UU/UE</b>
Overall Protectiveness of Human Health and the Environment	Not protective	Protective	Protective	Protective
Compliance with ARARs	N/A	N/A	N/A	N/A
Long-Term Effectiveness and Permanence	○	○/●	●/●	●
Reduction of Toxicity, Mobility, or Volume through Treatment	○	○	●	●
Short-Term Effectiveness	○	○	●/●	●
Implementability	○	●	○	●/●
Cost	N/A	\$	\$\$/\$\$\$	\$\$
State Acceptance	No	To Be Determined	To Be Determined	To Be Determined
Community Acceptance	No	To Be Determined	To Be Determined	To Be Determined

Symbols: ● – Relatively High; ● – Relatively Moderate; ○ – Relatively Low to none  
Cost: \$ – Low or minimal costs; \$\$ – Moderate costs; \$\$\$ – High costs

***Preferred Alternatives***

Table 4 presents the preferred alternative for each area recommended for a remedial action, along with an estimated cost. The preferred alternative takes into account overall protectiveness based on the potential for residual MEC, current and future land use, and cost.

*(continued on next page)*

**Table 4 Preferred Alternatives**

MRS	Acres	Preferred Alternative		Estimated Cost
		Alternative #2	Alternative #4	
105mm Area	1,399.5		✓	\$9,325,693
60mm Mortar Area	303.4		✓	\$2,021,444
60/81mm Mortar Area	301.3		✓	\$2,007,453
Grenade Area	19.2	✓		\$34,822
Grenade Maneuver Area	450.5		✓	\$3,001,518
Maneuver Area	1,276.5		✓	\$8,504,856
Mortar/Rifle Grenade Area	22.9	✓		\$41,533
Practice Grenade Area	6.4	✓		\$11,607
Remaining Lands	9,093.6	✓		\$16,492,307
Rocket Area	93.9	✓		\$170,302
Rocket/Grenade Maneuver Area	126.3	✓		\$458,130
Rocket & Rifle Grenade Area	108.5		✓	\$722,896

Land Use Controls will be implemented broadly across the former Camp Croft, and specifically at designated MRSs.

Alternative 2 includes limited LUC measures such as, access restrictions or physical barriers (e.g., fencing), site controls (e.g., signage), and educational materials developed to enhance the communities general understanding of site conditions. These LUCs will specify designated MRS but, will be more broadly implemented site-wide, to inform the public and site visitors about potential hazards (MEC) and will identify appropriate response procedures in the event that MEC is found. Five-year reviews will be conducted to re-evaluate site conditions to ensure the LUCs remain effective in controlling potential explosive hazards.

Alternative 4 uses advanced classification to identify MEC-like items for excavation and disposal. The alternative includes surface and subsurface MEC clearance to support unlimited use/unrestricted exposure within the cleared areas.

**Summary Statement**

Based on information currently available, the USACE believes the Preferred Alternatives meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The USACE expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): 1) be protective of human health and

A public meeting will be held during the public review and comment period on 24 March 2016 to explain this Proposed Plan.

Written comments will be accepted from 25 March through 6 June 2016.

For more information about the Former Camp Croft please contact:

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or visit the website:

<http://www.campcroft.net>



the environment; 2) comply with ARARs; 3) be cost-effective; 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and 5) consider the preference for treatment as a principal element during Alternative analysis.

Five-year reviews will also be conducted at areas that have LUCs as their remedial alternative to re-evaluate if the response action continues to minimize explosives safety risks and continue to be protective of human health, safety, and the environment. More frequent formal reviews (more often than five years) may be needed if substantial land use changes are identified or RAOs are not being met.

The preferred alternatives presented above are based on current information and could change in response to public comment or new information.

## **Community Participation**

USACE provided information and solicited public input to the investigation and remediation of the MRS areas and AoPIs at the former Camp Croft through stakeholder and public meetings. Project related documents, such as the Remedial Investigation and Feasibility Study reports, are available digitally on the project website and bound copies placed in the Information Repository:

### **Information Repository/Administrative Record:**

Spartanburg County Public Library  
151 South Church Street  
Spartanburg, SC 29306  
Telephone: (864) 596-3500

The USACE is soliciting public review and comment on all the alternatives identified for the MRSs. Public comments are considered before any action is selected and approved. A public meeting will take place at 6:30pm on 24 March 2016, at the Spartanburg Marriott, 299 N. Church Street, Spartanburg, SC 29306. Representatives from the USACE and the South Carolina DHEC will be present at the meeting



**RECOGNIZE**  
Military Items can be  
DANGEROUS.

**RETREAT**  
DO NOT TOUCH IT!  
Move away from the area.

**REPORT**  
CALL 911

to explain this Proposed Plan, listen to concerns raised, answer questions, and accept public comments.

Written comments will be accepted throughout the public comment period from 24 March 2016 through 6 June 2016. Please submit written comments directly to the USACE using the contact information provided below.

Raymond Livermore  
U.S. Army Corps of Engineers  
69 Darlington Avenue  
Wilmington, NC 28403  
(910) 251-4702

[raymond.r.livermore@usace.army.mil](mailto:raymond.r.livermore@usace.army.mil)



## References

- Zapata Incorporated. 2014, Final Remedial Investigation Report, Revision 1, Former Camp Croft, Spartanburg, South Carolina. Prepared for the U.S. Army Engineering and Support Center, Huntsville, USACE, Charleston District.
- Zapata Incorporated. 2015, Final Feasibility Study Report for the Former Camp Croft, Spartanburg, South Carolina. Prepared for the U.S. Army Engineering and Support Center, Huntsville, USACE, Charleston District.

## GLOSSARY OF TERMS

**Administrative Record** – A compilation of all documents relied upon to select a remedial action pertaining to the investigation and remediation of the project site.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** – Congress enacted CERCLA (42 USC § 9620 et seq.), commonly known as Superfund, on 11 December 1980. This law addresses the funding for, and remediation of abandoned or uncontrolled hazardous waste sites. This law also establishes criteria for the creation of key documents such as the Remedial Investigation, Feasibility Study, Proposed Plan, and Decision Document.

**Decision Document** – A document that is used to record the remedial response decisions after the lead agency has considered all comments from both the support agency and the public.

**Feasibility Study (FS)** – The study evaluates possible remedial alternatives using the information generated from the Remedial Investigation. The FS becomes the basis for selection of a remedy that effectively mitigates the threat posed by contaminants at the site.

**Formerly Used Defense Site (FUDS)** – Real property that was owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the Secretary (including governmental entities that are the legal predecessors of DoD or its Components) that were transferred from DoD control prior to 17 October 1986. The term does not include any operational range, operating storage or manufacturing facility, or facility that was used for or was permitted for the treatment or disposal of military munitions.

**Land Use Controls (LUCs)** – Physical, legal, or administrative mechanisms that restrict the use or limit access to contaminated property to reduce risk to human health and the environment. Institutional controls are a subset of LUCs and may include education and outreach to minimize the impact if MEC is encountered.

**Munitions Constituent (MC)** – Any materials originating from unexploded

ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

extent of contamination, assess human health and environmental risks posed by the contaminants, and provide a basis for the development of response action alternatives.

**Munitions and Explosives of Concern**

**(MEC)** – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means: (a) unexploded ordnance (UXO); (b) discarded military munitions (DMM); or (c) munitions constituents (MC) (explosives such as TNT, RDX present in high enough concentrations to pose an explosive hazard).

**Munitions Response Site (MRS)**

– A discrete location within a defense site that is known to require a munitions response (e.g., investigation and/or remedial action).

**Preferred Alternative**

– The alternative that, when compared to other potential alternatives, was determined to best meet the CERCLA evaluation criteria and is proposed for implementation at the site.

**Proposed Plan**

– The plan that identifies the preferred remedial alternative for a site, and is made available to the public for comment.

**Remedial Action Objective (RAO)**

– specify contaminants and media of concern, potential exposure pathways, and remediation goals.

**Remedial Investigation (RI)**

– An investigation to determine the nature and

## ACRONYM LIST

AoPI	Area of Potential Interest
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DHEC	Department of Health and Environmental Control
DoD	Department of Defense
FS	Feasibility Study
ft	Feet
FUDS	Formerly Used Defense Site
In	Inch
IRA	Interim Removal Action
ITRC	Infantry Replacement Training Center
LTM	Long Term Monitoring
LUC	Land Use Control
MC	Munitions Constituent
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
mm	millimeter
MRS	Munitions Response Site
NCP	National Contingency Plan
PP	Proposed Plan
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RI	Remedial Investigation
ROE	Rights-of-Entry
RSL	Regional Screening Level
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance

