

**FINAL
PROPOSED PLAN**

**FORMER SPENCER ARTILLERY RANGE
SPENCER/VAN BUREN COUNTY, TENNESSEE**

FUDS Project No. G04TN017801

Prepared for:

U.S. Army Engineering and Support Center, Huntsville

and

U.S. Army Corps of Engineers Mobile District



Contract No. W912DY-10-D-0023

Delivery Order 0028

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CHAPTER 1 INTRODUCTION

The primary purpose of the Proposed Plan is to inform and solicit the views of citizens on the Preferred Alternatives identified in Table 6.

This **Proposed Plan (PP)*** is presented by the United States Army Corps of Engineers (USACE)[†] to facilitate public involvement in the remedy selection process at the Former Spencer Artillery Range—a **formerly used defense site (FUDS)** located in Van Buren, Warren, Sequatchie, and Bledsoe Counties, Tennessee (Figure 1). USACE is the lead agency for performing this response action in accordance with the [Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (**CERCLA**)] statute [42 USC 9601 et seq.] and the [National Oil and Hazardous Substances Pollution Contingency Plan (**NCP**)] implementing regulations. USACE is responsible for investigating, evaluating the remedial alternatives, involving the public, and selecting the remedial action to be taken place at the Spencer Artillery Range. During this CERCLA process, USACE has worked closely with the Tennessee Department of Environment and Conservation (TDEC). This PP presents USACE's preliminary recommendations concerning how best to address **munitions and explosives of concern (MEC)** at the site. The various alternatives that were evaluated and the reasons USACE recommends the stated preferred alternatives are included within this PP. USACE must comply with the Defense Environment Restoration Program (**DERP**) statute [10 USC 2701 et seq.] and the FUDS Environmental Regulation (ER 200-3-1) in the execution of this MMRP project.

USACE completed a **Remedial Investigation (RI)** in 2011 that analyzed information collected during prior field investigations and assessed potential MEC hazards. Based on the RI results, the former Spencer Artillery Range was divided into 16 **Munitions Response Sites (MRSs)** (identified as MRS-01 through MRS-16). The MRS boundaries are based on MEC hazards and land use. After submittal of the 2011 **Feasibility Study (FS)**, USACE developed a technical memo that regrouped the 16 MRSs into 9 **Military Munitions Response Program (MMRP)** Project Areas (Project Area 01 through Project Area 09) (USACE, 2014). These Project Areas are considered unique under the MMRP; nine MRSs correspond to nine Project Areas. Table 1 of this PP presents the corresponding RI recommended MRSs and associated acreage for each Project Area. These Project Areas will allow the proposed response actions to be prioritized and funded appropriately according to identified hazards and predicted costs.

Due to potentially complete MEC exposure pathways, the RI Report (Parsons, 2011a) recommended an FS for Project Area 01 through Project Area 08 (MRS-01 through MRS-15). The FS was performed to identify and evaluate remedial alternatives for managing risk associated with human interaction with MEC. An explosive safety hazard is not anticipated within Project Area 09 (MRS-16); therefore, Project Area 09 was not included within the FS. It is included in this PP for completeness.

* The bolded terms found throughout this Proposed Plan are defined in the Glossary found at the back of this document.

† A list of acronyms and abbreviations used in this document is presented following the Glossary at the back of this document.

PUBLIC COMMENT PERIOD:

August 3, 2020 to September 3, 2020

PUBLIC MEETING:

A virtual public meeting will be held on August 18, 2020 at 7:00pm Central Time. The WEBEX information will be posted to

<https://www.sas.usace.army.mil/About/Divisions-and-Offices/Planning-Division/Plans-and-Reports>.) prior to the meeting.

For more information, see the Administrative Record at the following locations:

Burritt Memorial Library
427 College Street
Spencer, TN 38585

U.S. Army Corps of Engineers, Mobile District Office

After issuance of the 2011 FS, it was determined that financial settlement agreements had been reached between the government and two property owners within the historic boundaries of Spencer Artillery Range. On January 22, 1965, the Court of Claims recommended that Congress award the Rock River Company and Macy Land Corporation the amount of \$88,729.60 for diminution of 3,059 acres (USACE, 1985). The properties that accepted settlement agreements (Project Area 02) are not eligible for remedial action under the FUDS MMRP. Project Area 02 is included in this PP for completeness.

Table 1
Summary of Project Areas and Munitions Response Sites

FS Project Area	Classification	RI recommended MRSs	Area (acres)
Project Area 01	RI LTM Areas	MRS-01 (partial), 02, 11, 12, 14, 15 (partial)	4,120
Project Area 02 ⁽¹⁾	Settlement Agreement Area	MRS-01, 04, 05, 06, 07, 08, 15, 16 (partial), MRS-09, 10	3,059
Project Area 03	Covenant Farms- 5 Acre Lots	MRS-03	262
Project Area 04	Covenant Farms- Large Lots	MRS-04	60
Project Area 05	Recreation/ Cabins	MRS-05	646
Project Area 06	Sequoia Subdivision	MRS-06	241
Project Area 07	Indian Trails Development	MRS-07 (partial), 08 (partial)	352
Project Area 08	Rocky River Road-Residential	MRS-13	260
Project Area 09	Remaining Lands	MRS-16 ⁽²⁾	9,561
TOTAL			18,561

⁽¹⁾ Due to settlement agreements, Project Area 02 was not evaluated in the FS (Chapter 1). It is included on Table 1 for completeness.
⁽²⁾ Due to a low probability for explosive hazard, the RI did not recommend an FS for Project Area 09 (MRS-16). It is included on Table 1 for completeness.
 LTM = long term monitoring

A Draft Final FS Report Addendum was prepared in March 2018 (USACE, 2018) in accordance with the approved Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS) Revised Inventory Project Report (INPR) memorandum (USACE, 2014). The Draft Final FS Report Addendum (USACE, 2018) was developed with the following objectives:

- Document and remove settlement agreement areas from consideration.
- Restructure MRS boundaries to include Project Areas established by USACE.
- Incorporate advanced geophysical classification (AGC) as part of one of the response alternatives.

This PP highlights key information contained in the RI Report (Parsons, 2011a), FS Report (Parsons, 2011b), and Draft Final FS Addendum (USACE, 2018). 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. The location of the administrative record is noted on Chapter 10.

This PP is part of USACE’s community relations program, which is a component of the requirements of Section 117(a) of CERCLA and follows the requirements from *Engineer Regulation*

TENNESSEE

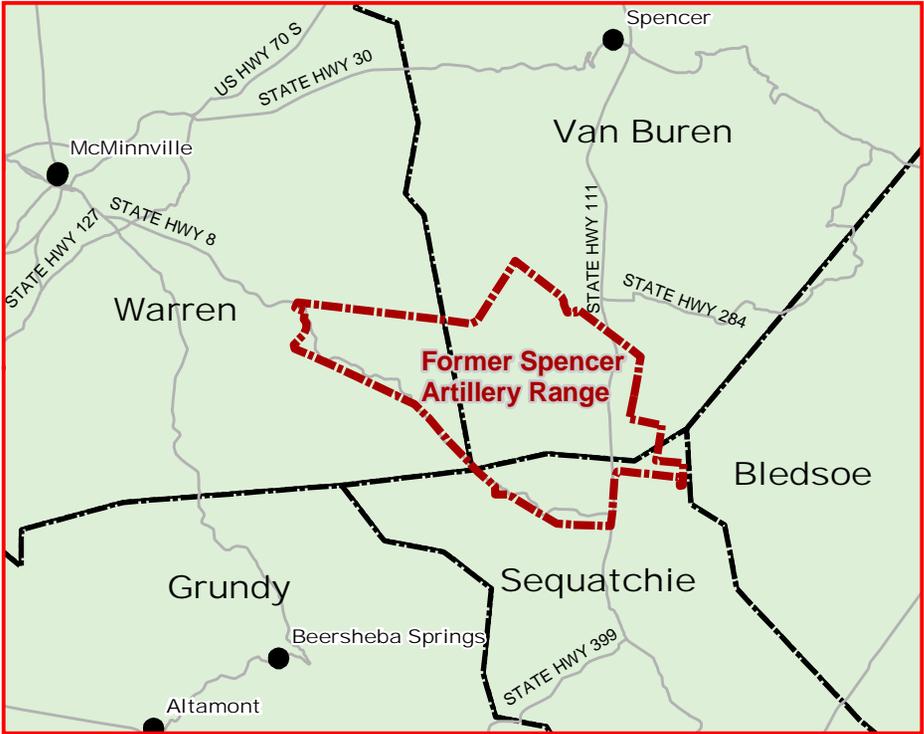
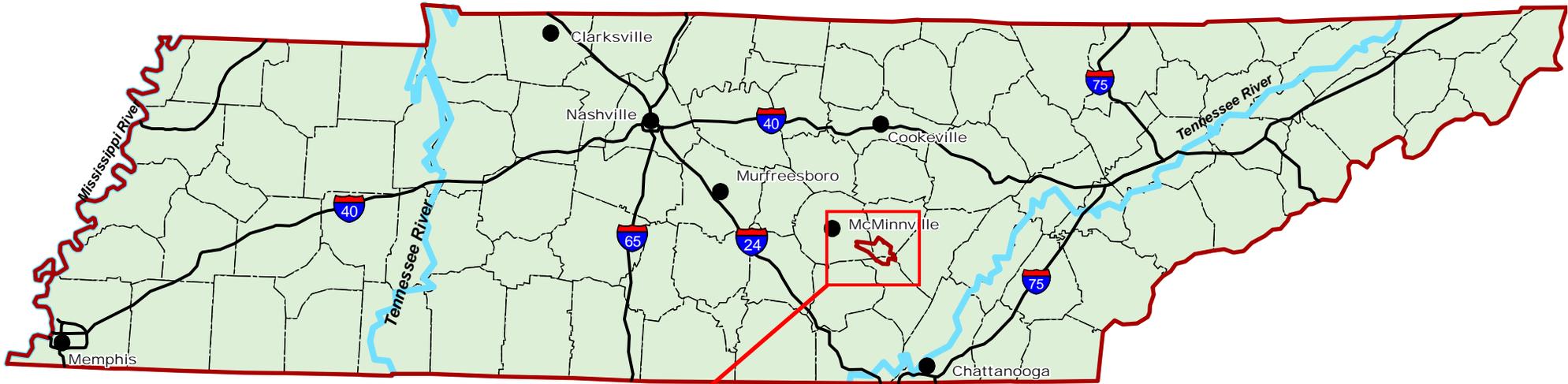


FIGURE 1
SITE LOCATION
SPENCER ARTILLERY RANGE

200-3-1, *Formerly Used Defense Site (FUDS) Program Policy* (USACE, 2004) and the United States Environmental Protection Agency (USEPA) guidance provided in *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, EPA 540-R-98-031 (USEPA, 1999).

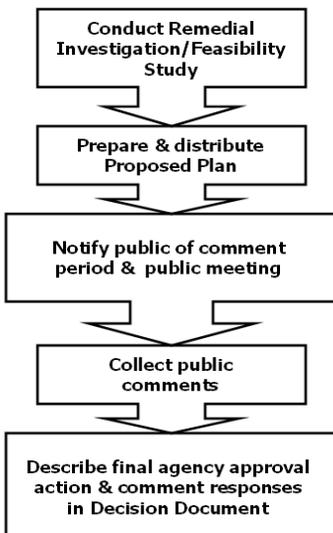
This PP presents the **preferred alternatives** at each Project Area to the general public and solicits comments on the recommendations. The public is encouraged to review all alternatives for each Project Area; USACE may change the preferred alternative based on public or regulator comments. Upon review of the PP, separate **Decision Documents (DD)** will be prepared to formally document the final USACE decisions. One Decision Document will formally document the no further action alternative (Alternative 1) and the second will formally document alternatives that include further action (Alternatives 2-4).

Public Involvement Process

Local community members, land owners, and other interested parties are encouraged to review this PP and submit comments. Comments from the public will be considered before the final selection and approval of any action. Information on how to comment on this document is provided in Chapter 10 of this PP.

Public comments on the PP will be accepted during a public review and comment period (August 3, 2020 – September 3, 2020). In addition, a virtual public meeting will be held in the middle of the public review and comment period, August 18, 2020, to explain this PP. A record of the public meeting will be available in the administrative record. USACE 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 PP will be contained in the “Responsiveness Summary” section of the Decision Documents.

The flow chart shown in Figure 2 summarizes the various steps in the development and approval process of the project Decision Document. The FUDS Charter designated USACE as the Executive Agent on behalf of the Department of Defense (DoD) charged with meeting applicable environmental restoration requirements at FUDS, regardless of which DoD component previously owned or used the property. The Secretary of the Army further delegated to USACE the program management and execution responsibility for FUDS. USACE has identified the preferred alternative of no further action at Project Area 09. This investigation area will have its own DD developed. Preferred alternatives for the remainder of the Project Areas will be included in a second DD. Land use controls (e.g. educational awareness) is considered to be a remedial action and subject to five-year reviews if the site condition does not achieve unlimited use and unrestricted exposure (UU/UE).



**Figure 2
Decision Document Process**

CHAPTER 2

SITE BACKGROUND

Site History

Since the 1950s, numerous tracks of land have been sold and/or subdivided within the site resulting in several hundred property owners.

In 1941, construction began on the 30,618-acre Spencer Artillery Range and documentation identifies establishment of two impact areas: Jakes Mountain (5,060 acres) and Bald Knob (2,090 acres). Troop training took place until September 1944, by which time Army ground forces had either departed or were under orders to depart. Subsequent arrangements were made for Dyersburg Army Air Field to use the Spencer Artillery Range as an air-to-ground gunnery range. The land reverted

back to the original 25 leaseholders in the summer of 1946. Several surface decontamination sweeps were completed on portions of the former range in the 1950s. Since then, numerous tracts of land have been sold and/or subdivided, significantly increasing the number of property owners from the original 25 to several hundred landowners today. The Project Areas, corresponding RI recommended MRSs, and associated acreages are presented in Table 1.

Various site investigations, including a historical records search, analysis of historic air photographs, an Engineering Evaluation/Cost Analysis (EE/CA), and RI have been completed at former Spencer Artillery Range to determine the presence of MEC and **munitions constituents (MC)**.

During the EE/CA and RI, geophysical investigations were conducted to assess the presence of subsurface MEC at the site. The geophysical investigation was conducted using instruments that detect metallic items beneath the ground. These instruments detect "**anomalies**" within the soil that could be similar in size to a munition. Anomalies of varying magnitudes were investigated. The selected anomaly locations were excavated to determine its source and confirm whether or not the anomaly was MEC. Not all areas of the site were included in the geophysical investigation and not all anomalies were intrusively investigated. The data gathered during the EE/CA and RI was sufficient to characterize the site for the presence of MEC and MC. Areas of high anomaly density represent the areas with the greatest potential of concentrated munitions use.

MEC has been found on the surface and in subsurface soil within certain areas of the former Spencer Artillery Range. MEC, where present, is a safety hazard that can constitute an imminent and substantial danger to the public. Table 2 presents summary information for each Project Area including land use, anomaly density, and MEC and **munitions debris (MD)** identified during previous investigations. Figure 3 presents the locations and boundaries for the Project Areas in conjunction with the anomaly density (using both EE/CA and RI digital geophysical mapping data).

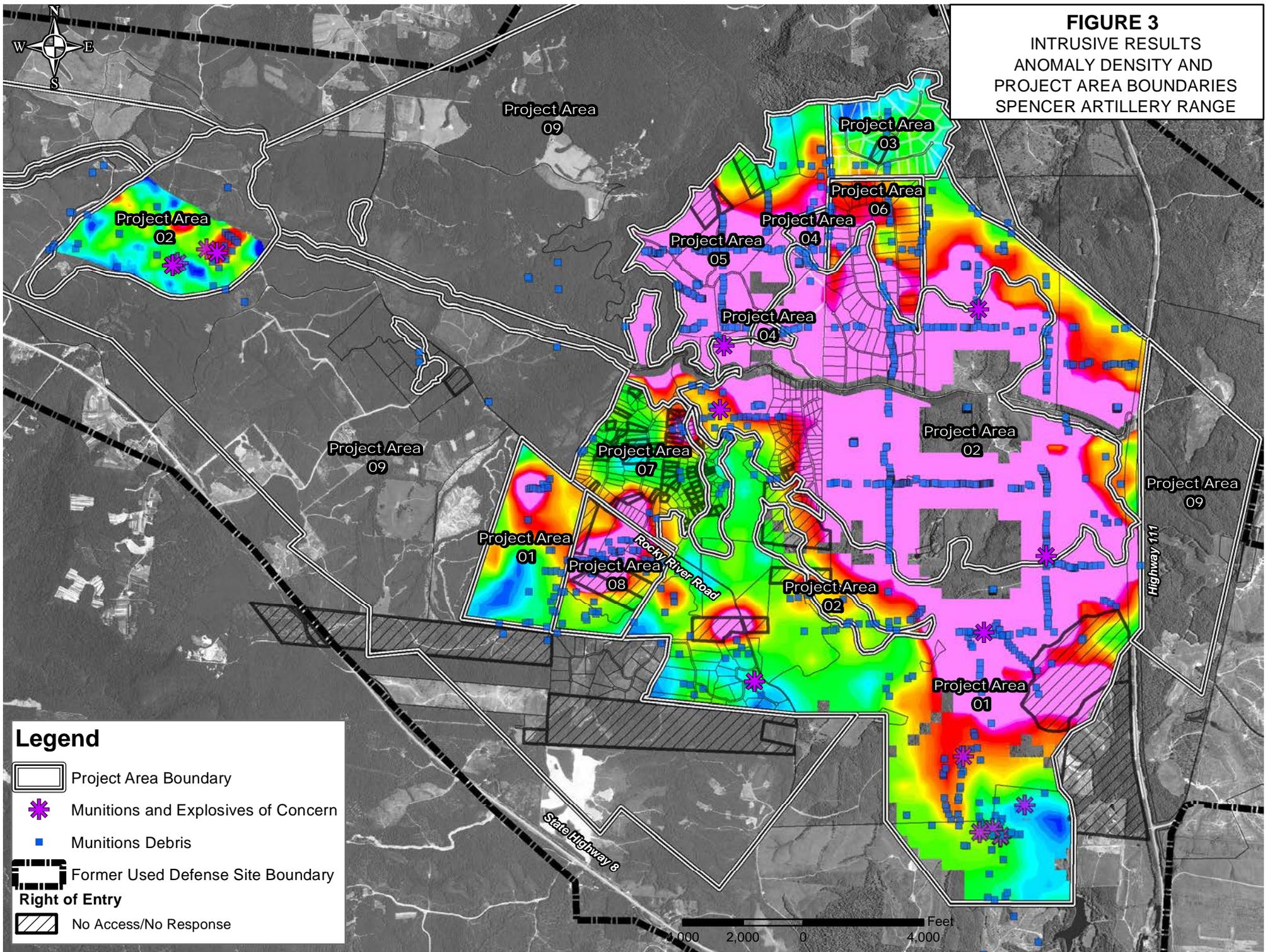
MEC has been found on the surface and in the subsurface in certain areas.

Table 2
Summary of Findings, Land Use, Receptors and Remedial Action Objective for FS Project Areas

FS Project Areas (Acres)	Current/Future Land Use	Contaminant	Rationale for Project Area Delineation	Remediation Action Objectives*
Project Area 01 (4,120)	Private Property, Commercial, Whispering Pines, Mason Property, Road/Trail of Tears	Projectiles (20mm, 37mm, 75mm, 105mm, and 155mm) Armor Piercing Projectiles (37mm and 76mm) High Velocity Projectiles (37mm)	MEC found, former impact area, high anomaly density, primarily undeveloped with sparse residential , National Parks Service recognizes the Trail of Tears as a National Historic Trail.	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 02⁽¹⁾ (3,059)	Settlement Agreement Area	N/A – Not eligible for evaluation	N/A	N/A
Project Area 03 (262)	Development/Residential (Covenant Farms – 5-acre lots)	Armor Piercing Projectiles (37mm)	Residential area, proximity to known impact area, MD found	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 04 (60)	Development/ Residential (Covenant Farms – large lots)	Projectiles (155mm)	Residential development, known impact area, high anomaly density	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 05 (646)	Recreation/Cabins Private Property	Projectiles (37mm, 105mm, and 155mm)	MEC found, former impact area, high anomaly density, camping and recreational land use	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 06 (241)	Undeveloped Subdivision (Sequoia Subdivision)	Projectiles (37mm and 155mm)	Future residential development, former impact area, high anomaly density	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 07 (352)	Undeveloped Subdivision (Indian Trails Phase I, II, and III)	Projectiles (, 75mm Armor Piercing Projectiles (37mm and 76mm)	Future residential development, former impact area, high anomaly density	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 08 (260)	Development/ Residential	Armor Piercing Projectiles (37mm and 76mm)	Residential development, high anomaly density	Reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported.
Project Area 09 (9,561)	Wooded/Hunting/Logging (Remaining Lands)	N/A – uncontaminated by MEC	No anticipated explosive safety hazard	No remedial action required.

⁽¹⁾ Due to settlement agreements, Project Area 02 was not evaluated in the FS. It is included on Table 2 for completeness.

FIGURE 3
INTRUSIVE RESULTS
ANOMALY DENSITY AND
PROJECT AREA BOUNDARIES
SPENCER ARTILLERY RANGE



Legend

-  Project Area Boundary
-  Munitions and Explosives of Concern
-  Munitions Debris
-  Former Used Defense Site Boundary
-  Right of Entry
No Access/No Response

CHAPTER 3**SITE CHARACTERISTICS****PHYSICAL CHARACTERISTICS AND LAND USE**

The former Spencer Artillery Range is privately owned. Portions of the site have been heavily subdivided for residential development; however, several of the developments have not been constructed. Most of the land is undeveloped, wooded land. The Rocky River traverses the site and several tributaries and wetlands are present. The topography across the former Spencer Artillery Range is characterized as relatively flat with numerous depressions formed by streams running across and off the plateau.

40 Code of Federal Regulations (CFR) 264.601 (Subpart X) was retained in the FS and is the only **applicable or relevant and appropriate requirement (ARAR)** applicable to select remedies at former Spencer Artillery Range. 40 CFR 264.601 (Subpart X) regulates open detonation of consolidated MEC. This ARAR is applicable to Alternative 3 and 4, detailed in Chapter 7.

NATURE AND EXTENT OF CONTAMINATION**Munitions and Explosive of Concern**

MEC found within the former Spencer Artillery Range are associated with the impact areas and the air-to-ground gunnery range. Figure 3 shows the distribution of MEC and MD. Table 2 defines each Project Area in terms of types of munitions found during the EE/CA and RI.

Munitions Constituents

MC sampling conducted during the EE/CA and RI did not identify MC concentrations at an unacceptable risk at the site.

Sampling did not identify unacceptable MC concentrations at the site.

CHAPTER 4**SCOPE AND ROLE OF RESPONSE ACTION**

The overall remedial strategy for the project site reflects the public/stakeholder interest to manage risk and protect the public from residual MEC hazards.

CHAPTER 5**SUMMARY OF SITE RISKS**

Site risks were evaluated in terms of an exposure model that consists of a source of contamination, a receptor, and interaction at the exposure point. Within this model, the sources would consist of MEC in the environment. The receptors would be people of all ages including adults and children. The pathway would be a means of interaction between the source and receptor such as a person directly contacting a munition at the surface or workers encountering MEC while excavating.

During the RI, a qualitative MEC Hazard Assessment (HA) was conducted using information from investigations completed at the site to provide a baseline assessment of response alternatives. Guidance for MMRP Project Area boundary realignment was provided by USACE after completion on the FS report. Based on MEC HA scores obtained from the RI, representative scores were created for Project

In areas of high anomaly density, a receptor (human) may have a greater chance of encountering MEC.

Areas based on MRSs that are located within Project Area boundaries. The MEC HA considers the following factors:

- Presence and nature of MEC sources,
- Site characteristics that affect potential pathways between the MEC source and human receptors, and
- Types of activities that may result in exposure.

Results of the MEC HA are discussed in detail in the RI Report (Parsons 2011a), FS Report (Parsons, 2011b), and FS Report Addendum (USACE, 2018), which are in the administrative record.

Anomaly density was also used to assess response alternatives. Areas of high anomaly density are presented in Figure 3; in these areas a receptor (human) may have a greater chance of encountering MEC.

POTENTIALLY EXPOSED POPULATION

Human

The potentially exposed population (human receptors) associated with the former Spencer Artillery Range includes the residents living within the borders of the site, workers associated with construction, ranchers, recreational users (hunters, hikers, etc.), and visitors.

Ecological

In addition to human receptors, ecological receptors (e.g., birds, reptiles, mammals) live in the many wetlands and forested areas throughout the site. One state-listed endangered species (white fringeless orchid) and one species deemed in need of management (barking tree frog), have been documented within the FUDS area. However, neither species was encountered during the RI.

POTENTIAL MEC EXPOSURE PATHWAYS

MEC was found on the ground surface and in the subsurface during the EE/CA and RI. Recreational users (e.g., hunters) could interact with surface MEC whereas MEC in the subsurface is more likely to be encountered by residents and workers performing intrusive activities (e.g., digging foundations, planting trees, clearing land, etc). Receptors will carry the potential of being exposed to MEC according to the nature of their work/activity, ranging from contact with surface MEC, to those in contact with MEC in the subsurface.

There is one state-listed endangered species and one species deemed in need of management within the area; neither was encountered during the field work.

MEC has been found on the surface and in the subsurface during prior investigations.

CHAPTER 6

REMEDIAL ACTION OBJECTIVES

The RAO at the former Spencer Artillery Range is to reduce risk of exposure to explosive hazards for land users such that a determination of negligible risk can be supported. The RAO created for the FS Project Areas are described in Table 2. The RAO defines the measures for success of the adopted remedial actions. The means for how the actions are implemented will be established during the future remedial design phase.

CHAPTER 7**SUMMARY OF REMEDIAL ALTERNATIVES**

A description of each of the five alternatives developed for consideration is presented below. The preferred alternative for each Project Area is shaded in Table 6.

Alternative 1: No Action Alternative

The no action alternative is required to be evaluated by the **National Oil and Hazardous Substance Pollution Contingency Plan (NCP)** and provides a baseline for comparison with the other alternatives. No costs are associated with this alternative, since there would be no action. In the unlikely event that MEC is discovered within a Project Area where Alternative 1 is proposed (e.g., Project 09), it would prompt additional assessment of the area by USACE to determine if the selected remedy is no longer protective.

Alternative 2: Educational Awareness

The educational awareness program would include the development of educational fact sheets aimed at increasing public awareness to reduce the risk of exposure. The fact sheets would be sent to landowners of parcels in areas identified during the RI as containing MEC hazards. Direct mailing of fact sheets to property owners, and distribution of fact sheets in public locations (e.g., libraries, stores, etc.) is considered as part of the alternative. The fact sheet would encourage property owners to learn the history of their land as well as how to respond to and report a suspected MEC item if discovered. A website containing educational information would also be maintained.

Although warning signs may be considered appropriate in many cases to inform visitors of site risks, signs previously posted in the area were destroyed due to vandalism on multiple occasions. Therefore, warning signs were only considered for the Trail of Tears located within Project Area 01. Future development of the Trail of Tears may include designated trailhead parking areas.

An assessment of the land use would be conducted in conjunction with contact with the following local individuals and organizations:

- Director of Van Buren County 911 (931-946-4000)
- Chairman on the Planning Commission (931-432-4111)
- Van Buren County Mayor (931-946-2314)
- Van Buren County Chamber of Commerce (931-946-7033)

These individuals and organizations will be contacted during a five-year review to ensure land use has not changed significantly. Unanticipated land use changes (e.g., residential development in an area anticipated to be used for logging/hunting), may adversely impact the effectiveness of the selected remedy. The information obtained from the assessments will be used to evaluate the remedy effectiveness. Additionally, as part of the five-year review, fact sheets will be mailed, signage will be inspected, and the website will be reviewed and updated for accuracy. Alternative 2 was considered for initial screening at each Project Area. This alternative relies on interaction with the public in terms of threat awareness. This alternative has no source reduction of potential MEC. Estimated capital, annual operation and maintenance (O&M), and present worth costs are presented in Table 7.

The costs were developed assuming Alternative 2 would be implemented for each Project Area separately because the timing of implementation for each Project Area is unknown. However, the overall cost could be reduced substantially if Alternative 2 was implemented for multiple Project Areas concurrently.

Alternative 3: Surface Removal with Educational Awareness

A surface removal would be performed by conducting a visual surface inspection for potential MEC only in remedial action areas of selected Project Areas where surface MEC is expected to be encountered. Personnel would traverse the Project Area, and MEC that is identified or suspected would be removed and disposed of using approved/safe procedures. Care will be taken to avoid disturbance of sensitive environments (e.g., state-listed endangered species, wetlands or National Trail System). Accessibility to areas within each Project Area will be dependent upon vegetation/terrain, land owner cooperation and granting of right of entry (ROE).

Upon completion of the surface removal, an educational awareness program, would be implemented as described in Alternative 2. Alternative 3 is not considered appropriate in Project Areas where no MEC items have been found on the ground surface, therefore, this alternative will not be evaluated for Project Area 03, Project Area 04, or Project Area 07. Estimated capital, annual O&M, and present worth costs are presented in Table 7.

Alternative 4: Geophysical Investigation and MEC Removal with Educational Awareness

MEC removal would be conducted to identify and remove MEC on the ground surface and in the subsurface. Geophysical data would be collected over the entire accessible area, and selected anomalies would be identified within the data for intrusive excavation. This alternative includes the use of AGC. Advanced geophysical sensors can differentiate between MEC and other nonhazardous metallic debris. Removal efforts would be focused on items that are suspected to be an explosive hazard (other metallic debris is left in the ground). Suspect anomalies would be investigated to the depth of detection, and if MEC is encountered, the munition(s) would be destroyed using approved/safe procedures. MEC removal would not be conducted under existing roads, streams, and structures. Accessibility to areas within each Project Area will be dependent upon vegetation/terrain, land owner cooperation and granting of ROE.

Completion of the MEC removal would significantly reduce MEC hazards; however, due to limitations at this site (e.g. roads, buildings, and trees), it is possible that some munitions may be missed. To reduce risk associated with missed munitions, an educational awareness program would be implemented as described in Alternative 2. The need for educational awareness will be further evaluated following the removal action and will be documented in the remedial action completion report.

This alternative will be retained for evaluation for each Project Area based on the high level of overall effectiveness of human health and the environment. Estimated capital, annual O&M, and present worth costs are presented in Table 7.

Alternative 5: Excavation and Sifting

USACE guidance identifies inclusion of at least one alternative that can provide unlimited use/unrestricted exposure upon completion of the remedial action. Although UU/UE would result through implementation of the excavation and sifting alternative, this alternative is screened out due to implementability and cost. Excavation and sifting is not considered cost effective for the former Spencer

MEC removal would reduce MEC hazards, but some munitions may be missed.

Artillery Range. As noted in USEPA guidance, an alternative that eliminates the need for long-term management may not be reasonable given site conditions, the limitations of technologies, and extreme costs that may be involved (USEPA, 1999). The costs for excavation and sifting at the former Spencer Artillery Range would be extreme and unreasonable. Excavation and sifting may have adverse impacts to the Trail of Tears. In addition, implementation would result in ecological destruction and likely would not be acceptable to private land owners.

No educational awareness would be needed for this alternative due to the removal of subsurface MEC.

Five-Year Reviews

While not a specific component of the remedy, five-year reviews would also be required for any alternative under which hazardous substances, pollutants or contaminants remain at a Project Area above levels that allow unlimited use and unrestricted exposure following remedy implementation. These reviews, as outlined in Section 121(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), and Section 300.430(f)(4)(ii) of the NCP, are conducted to determine if the response action continues to minimize explosive hazard risks and continues to be protective of human health, safety and the environment. The five-year review process will follow applicable DoD, USACE, and EPA guidance. Reviews will be conducted every five years or less. For cost estimating, six five-year reviews for each Project Area, covering a period of 30 years, are included. Five-year reviews will continue beyond 30 years or until the Project Area reaches UU/UE status. Five-year reviews would be required for Alternatives 2 through 4.

CHAPTER 8

EVALUATION OF ALTERNATIVES

The rationale for selecting Preferred Alternatives was based on nine criteria used to compare them to one another in a detailed analysis (USEPA, 1999). The nine criteria are presented in Table 3 and 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.
- Modifying criteria may be considered to the extent that information is available, but can only be fully considered after public comment is received on this PP. In the final balancing of trade-offs among alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

An evaluation of the threshold criteria is presented in Table 4, and primary balancing criteria in Table 5.

**Table 3
EVALUATION CRITERIA FOR SUPERFUND REMEDIAL
ALTERNATIVES**

Criteria	Threshold	1. Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, excavation or treatment.
		2. Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the remediation or hazardous substances involved, or whether a waiver is justified.
	Primary Balancing	3. Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
		4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
		5. Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
		6. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
		7. Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
	Modifying	8. State/Support Agency Acceptance considers whether the State agrees with the analyses and recommendations, as described in the FS and PP.
		9. Community Acceptance considers whether the local community agrees with the analyses and preferred alternative. Comments received on the PP are an important indicator of community acceptance.

Table 4 - Evaluation of Alternatives Using Threshold Criteria

	Criteria	No Further Action Alternative Alternative 1	Educational Awareness Alternative 2	Surface Removal with Educational Awareness Alternative 3	Geophysical Survey/MEC Removal with Educational Awareness Alternative 4	Excavation and Sifting Alternative 5
Threshold Criteria	1. Protectiveness	Does not provide overall protection of human health and the environment.	Does provide overall protection of human health and the environment.	Does provide overall protection of human health and the environment.	Does provide overall protection of human health and the environment.	Does provide overall protection of human health and the environment.
	2. ARARs Compliance	ARARs do not apply to this alternative.	No ARARs associated with the alternative.	Will comply with 40 CFR 264.601 (Subpart X).	Will comply with 40 CFR 264.601 (Subpart X).	Will comply with 40 CFR 264.601 (Subpart X).

Table 5 - Evaluation of Alternatives Using Primary Balancing Criteria

	Criteria	No Further Action Alternative 1	Educational Awareness Alternative 2	Surface Removal with Educational Awareness Alternative 3	Geophysical Survey/MEC Removal with Educational Awareness Alternative 4	Excavation and Sifting Alternative 5
Primary Balancing Criteria	3. Long Term Effectiveness & Permanence	No MEC-related risk reduction and no long-term effectiveness. Least effective.	Although no reduction of MEC hazards, can be effective at increasing awareness and appropriate response. Requires self-implementation by USACE and public. Fact sheets and website may not be effective for all persons.	Effective if surface MEC is present at the Project Area but does not reduce subsurface MEC. Does not provide protection to residential receptors performing intrusive activities in the subsurface. Provides protectiveness for surface activities.	Effective at removing identified unexploded ordnance (UXO) located within the Project Area (surface and subsurface).	Effective at removing identified UXO located within the Project Area (surface and subsurface). Most effective.
	4. Reduction of Toxicity	No reduction of source.	No reduction of source.	Significant reduction in source. Identified surface MEC hazards are removed from the site.	Reduction of toxicity for identified MEC within Project Area. Possible MEC left behind.	Significant reduction in source. Reduction of toxicity for identified MEC within Project Area. Low probability of MEC left behind.
	5. Short-Term Effectiveness	No short-term impacts on workers or community. Provides no protection.	No short-term impacts on workers or community. Provides short term protection due to increased awareness.	Risk associated with possible interaction with MEC. Durations range from 5 months – 7 years to meet RAOs.	Risk associated with possible interaction with MEC, but with limited duration of field activities due to advanced classification. Durations range from 5 months – 13 years to meet RAOs.	Risk associated with possible interaction with MEC. Long term duration to achieve RAOs.
	6. Implementability	Readily implemented. No action required.	Information readily available and easily developed. Requires public involvement.	Requires qualified technicians with specialized (but readily available) equipment. Requires work plan.	Requires qualified technicians with specialized (but available) equipment. Requires work plan.	Requires qualified technicians with specialized equipment. Requires work plan.
	7. Cost	\$0	Same for all Project Areas except Project Area 01 (additional sign cost for trailhead) See Table 7 for costs.	Cost dependent on removal action at Project remedial action area. See Table 7 for individual Project costs.	Cost dependent on removal action within Project area. See Table 7 for Project costs.	Cost dependent on removal action within Project area.

A discussion of the **Modifying criteria** is presented below:

8. State Acceptance

State acceptance of the alternatives will be evaluated after the public comment period ends and will be described in the decision document for the site.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the decision document for the site.

CHAPTER 9

PREFERRED ALTERNATIVES

The preferred alternative for each Project Area is shaded in Table 6 and presented in Figure 4. Each Project Area is described in further detail below.

Project Area 01 (4,120 Acres)

Alternative 2 (Educational Awareness) is recommended for Project Area 01 based on the land use, which is primarily undeveloped with sparse residential. Also, the costs to implement Alternative 3 or 4 within this large Project Area would be excessive. Alternative 2 will inform current landowners and the public of possible dangers associated with the area, which will make them more likely to respond appropriately if a suspected MEC item is found. Alternative 2 provides overall effectiveness of human health and the environment. Although warning signs may be considered appropriate in many cases to inform potential visitors of site risks, signs previously posted in the area were destroyed due to vandalism on multiple occasions. Therefore, warning signs are only considered for the Trail of Tears located within Project Area 01. Future development of the Trail of Tears may include designated trailhead parking areas.

Project Area 03 (262 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 03 because of potential future residential land use. Currently the site is zoned for residential use and development. Home construction at Project Area 03 could result in soil disturbance to depths of 5 feet or more (e.g., site grading, foundations, gardening, fence installation, etc). Alternative 4 provides overall protection of human health and the environment and is effective at removing identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. The cost to implement Alternative 4 is higher than the other presented alternatives, however due to the residential land use and ordnance items collected during previous investigations, Project Area 03 will greatly benefit from a more thorough remedial action to be protective of current and future residential development.

Project Area 04 (60 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 04 because of current and potential future residential land use. Currently the site is zoned for large residential parcels and residents currently occupy the Project Area. Home construction at Project 04 could result in soil disturbance to depths of 5 feet or more. Alternative 4 provides overall protection of human health and the environment and is effective at removing

identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. Alternative 4 would be protective of residential development.

Project Area 05 (646 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 05 because the land use is primarily recreational. Activities currently at the site, as well as future activities, include hiking and camping which could involve subsurface soil disturbance up to two feet. Alternative 4 provides overall protection of human health and the environment and is effective at removing identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. Alternative 4 would be protective of recreational users.

Project Area 06 (241 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 06 based on potential future residential land use. Currently the site is owned by one land owner and is heavily wooded; however, the land has been zoned into parcels for future development. The subdivided land is currently referred to as the Sequoia subdivision. Future home construction at Project Area 06 could result in soil disturbance to depths of 5 feet or more. Alternative 4 provides overall protection of human health and the environment and is effective at removing identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. Alternative 4 would be protective of future residential development.

Project Area 07 (352 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 07 because of possible future residential land use. In anticipation of development, gravel roads have been installed throughout the Project Area (with no reports of MEC) but no construction has begun on the zoned residential parcels. The subdivided land is currently referred to as Indian Trails Phase I, II, and III. Future home construction at Project Area 07 could result in soil disturbance to depths of 5 feet or more. Alternative 4 provides overall protection of human health and the environment and is effective at removing identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. Alternative 4 would be protective of future residential development.

Project Area 08 (260 Acres)

Alternative 4 (Geophysical Investigation and MEC Removal with Educational Awareness) is recommended for Project Area 08 because of current and future residential land use. Currently the site is zoned for the development residential parcels. Future home construction at Project Area 08 could result in soil disturbance to depths of 5 feet or more. Alternative 4 provides overall protection of human health and the environment and is effective at removing identified UXO located on the surface and subsurface. Due to Alternative 4 including a removal, a reduction of toxicity for identified MEC will be observed. Alternative 4 would be protective of future residential development.

Project Area 09 (9,561 Acres)

Alternative 1 (No Further Action) is recommended for Project Area 09. There has been no MEC recovered or any indicators that MEC would be found at the site and the probability of encountering an explosive hazard is very low.

Summary Statement

Based on the information currently available, USACE believes that the alternatives presented above are protective of human health and the environment and satisfy the statutory requirements of CERCLA §121(b): *(1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met. State acceptance of the alternatives will be evaluated after the public comment period ends and will be described in the decision document for the site.*

While every effort will be made to gather ROE access from property owners across Spencer Artillery Range, ROE refusals are anticipated to exist. Parcels where ROE is not granted will likely be scattered intermittently across the Project Areas; therefore, these parcels will be combined as one additional Project Area and alternative 2 will be implemented. ROE for the remedial action will be evaluated during the development of the remedial action work plan.

The preferred alternatives presented above are based on current information and could change in response to public comment or new information. Preferred alternatives for each Project Area are presented in Figure 4.

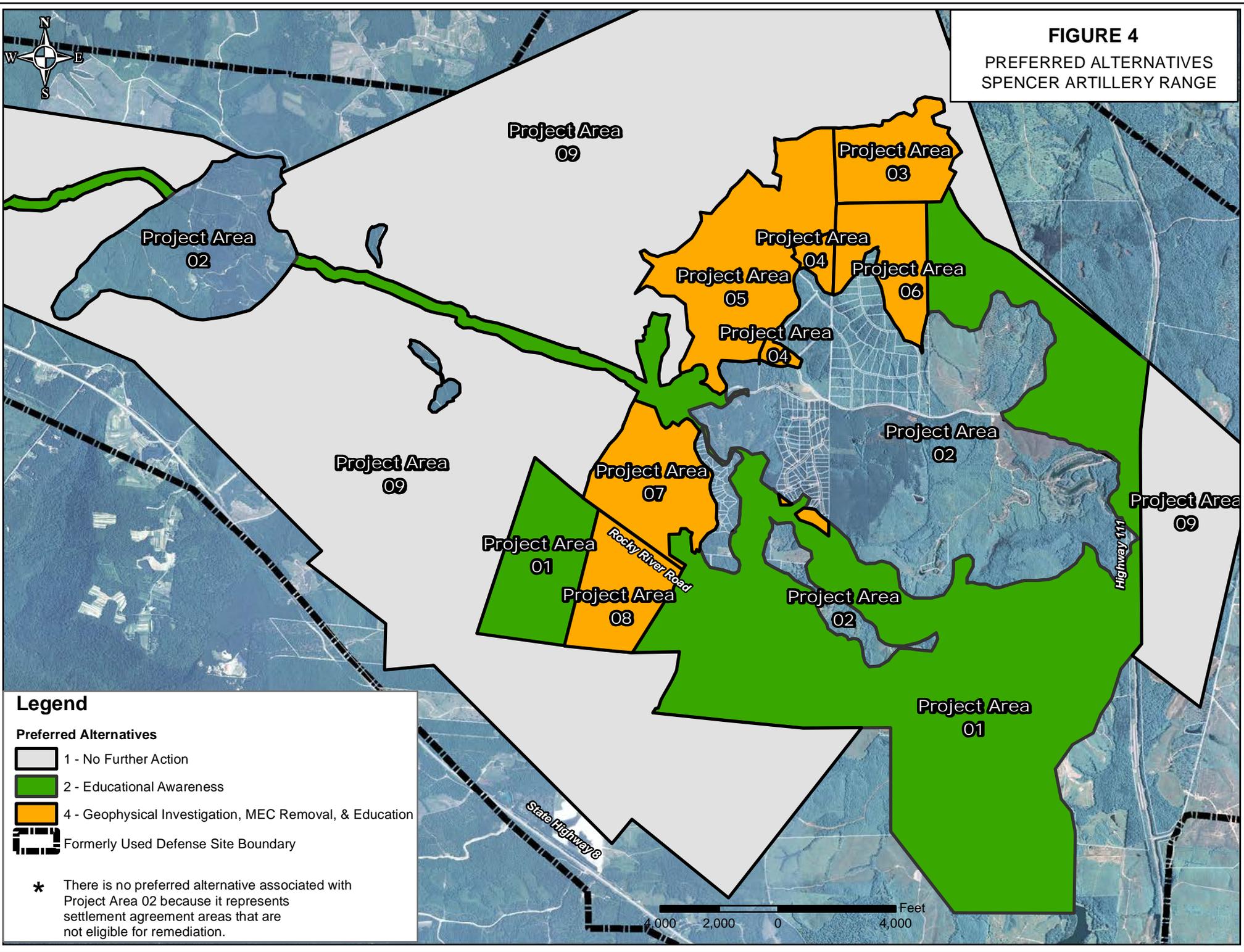
TABLE 6
Overview of Evaluated Alternatives
Spencer Artillery Range, Van Buren County, Tennessee

Project Area (acres)	Land Use	Evaluated Alternatives	Total Cost	Rationale
Project Area 01 (4120)	Wooded/ Hunting/ Logging/ Commercial/ Ranching/ Trail of Tears/ Undeveloped Sub-division	1- No Action	\$0	No reduction of Risk
		2 -Educational Awareness	\$643,368	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Removal with Educational Awareness	\$20,009,472	Reduce risk for potential receptors coming in contact of surface MEC/MD.
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$55,784,785	Limited intrusive activity anticipated since land use is primarily undeveloped with sparse residential. Excessive cost.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 02 (3,059)	Settlement Agreement Area	1- No Further Action	\$0	Not considered due to prior settlement agreement.
		2 -Education	--	Not considered due to prior settlement agreement.
		3- Surface Clearance	--	Not considered due to prior settlement agreement.
		4- Geophysical Investigation and MEC Removal with Educational Awareness	--	Not considered due to prior settlement agreement.
		5- Excavation and Sifting	--	Not considered due to prior settlement agreement.
Project Area 03 (262)	Active Development/ Residential	1- No Action	\$0	No reduction of Risk
		2 -Educational Awareness	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	--	Not considered based on lack of MEC/MD found on surface during EE/CA and RI activities.
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$4,361,093	High level of effectiveness for current/future residential development.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 04 (62)	Active Development/ Residential	1- No Action	\$0	No reduction of Risk
		2 - Educational Awareness	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	--	Not considered based on lack of MEC/MD found on surface during EE/CA and RI activities.
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$1,990,872	High level of effectiveness for current/future residential development.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project 05 (646)	Recreation/Cabins	1- No Action	\$0	No reduction of Risk
		2 - Educational Awareness Education	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	\$4,609,910	Recreational users may still encounter subsurface MEC while conducting intrusive activities (i.e., digging holes, staking down tents).
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$13,045,666	High level of effectiveness for recreational users.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 06 (241)	Undeveloped Subdivision	1- No Action	\$0	No reduction of Risk
		2 - Educational Awareness	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	\$2,318,481	Future construction workers / property owners may still encounter subsurface MEC while conducting intrusive activities (i.e., gardening, fence installation).
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$8,456,656	High level of effectiveness for future residential development.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 07 (352)	Undeveloped Subdivision	1- No Action	\$0	No reduction of Risk
		2- Educational Awareness	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	--	Not considered based on lack of MEC/MD found on surface during EE/CA and RI activities.
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$6,644,187	High level of effectiveness for future residential development.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 08 (260)	Active Development/ Residential	1- No Action	\$0	No reduction of Risk
		2- Educational Awareness	\$480,968	Reduce risk by providing information to the owners/public. Fact sheets and website will provide hazard recognition to reduce chances of exposure.
		3- Surface Clearance	\$1,337,333	Reduce risk for onsite construction that may occur for residential development. Property owners may still encounter MEC while conducting intrusive activities (i.e, gardening, fence installation).
		4- Geophysical Investigation and MEC Removal with Educational Awareness	\$5,263,405	High level of effectiveness for current/future residential development.
		5- Excavation and Sifting	--	Not considered due to long-term management, limitation of technology, extreme cost, and potential for ecological destruction.
Project Area 09 (9,561)	Wooded/Hunting/ Logging (Remaining Lands)	1- No Further Action	\$0	No concentrated munitions use and very low probability of explosive hazard.
		2- Educational Awareness	--	Not considered based on low probability of explosive hazard
		3- Surface Clearance	--	Not considered based on low probability of explosive hazard
		4- Geophysical Investigation and MEC Removal with Educational Awareness	--	Not considered based on low probability of explosive hazard
		5- Excavation and Sifting	--	Not considered based on low probability of explosive hazard

Note: The preferred alternative for each Project Area is shaded.

FIGURE 4

**PREFERRED ALTERNATIVES
SPENCER ARTILLERY RANGE**



Legend

Preferred Alternatives

-  1 - No Further Action
-  2 - Educational Awareness
-  4 - Geophysical Investigation, MEC Removal, & Education
-  Formerly Used Defense Site Boundary

* There is no preferred alternative associated with Project Area 02 because it represents settlement agreement areas that are not eligible for remediation.

CHAPTER 10 COMMUNITY PARTICIPATION

In an effort to keep the public informed, a public meeting relating to RI activities within the former Spencer Artillery Range was held on February 9, 2010. Approximately 25 landowners and community members attended the meeting. Throughout the presentation audience members were encouraged to ask questions. Most of the questions related to land use and public safety.

In April 2010 the final RI Report was placed in the Administrative Record. This RI Report provides a comprehensive report that describes the history of the site, the details of the RI, the associated risk assessments, and their conclusions. The FS Report, FS Report Addendum, and other information about this site are available for review in the administrative record locations:

Information Repository/Administrative Record

Burritt Memorial Library
427 College Street
Spencer, TN 38585

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

USACE is soliciting public comments on the preferred alternatives recommended for this site. Public comments will be considered before any action is selected and approved. The entire proposed plan can be viewed at (<https://www.sas.usace.army.mil/About/Divisions-and-Offices/Planning-Division/Plans-and-Reports>) A virtual public meeting will be held on August 18, 2020 at 7:00pm Central time. The WEBEX information will be posted to the same location as the Proposed Plan prior to the meeting.

The public is encouraged to comment on this Proposed Plan.

Written comments will be accepted throughout a public comment period from August 3, 2020 – September 3, 2020. Please submit written comments to Carl Dokter (information provided below). For further information on the project site, please contact the following representatives.

INFORMATION ACCESS

USACE Representatives

Carl H. Dokter
Project Manager
U.S. Army Engineering & Support Center, Savannah District
100 W. Oglethorpe Avenue
Savannah, GA 31401
Email: Carl.H.Dokter@usace.army.mil

Regulatory Representatives

John Hoffelt
Tennessee Department of Environment and Conservation
Nashville Environmental Field Office – Tennessee Division of Remediation
711 R.S. Gass Boulevard
Nashville, TN 37243
Phone: (615) 687-7067
Email: John.Hoffelt@state.tn.us

REFERENCES

- Parsons 2011a. Final Remedial Investigation Report, Former Spencer Artillery Range, Spencer/Van Buren County, Tennessee. Prepared for the U.S. Army Engineering and Support Center, Huntsville and USACE, Mobile District. March 24, 2011.
- Parsons 2011b. Final Feasibility Study Report, Former Spencer Artillery Range, Spencer/Van Buren County, Tennessee. Prepared for the U.S. Army Engineering and Support Center, Huntsville and USACE, Mobile District. October 25, 2011.
- USACE 1985. Inventory Project Report: Spencer Artillery Range, Van Buren, Warren, Sequatchie, & Bledsoe Counties, Tennessee.
- USACE 2001. Archives Search Report (ASR) Findings: Spencer Artillery Range, Van Buren, Warren, Sequatchie, & Bledsoe Counties, Tennessee. November 2011.
- USACE 2004. U.S. Army Corps of Engineers Engineer Regulation 200-3-1, Formerly Used Defense Site (FUDS) Program Policy.
- USACE 2014. Spencer AR Approval of Defense Environmental Restoration Program-(DERP-FUDS) Revised INPR. Department of the Army, U.S. Army Corps of Engineers, Atlanta, Georgia. 30303-8801. June 3
- USACE 2017. Draft Feasibility Study Report Addendum, Former Spencer Artillery Range, Spencer/Van Buren County, Tennessee. Prepared for the U.S. Army Engineering and Support Center, Huntsville and USACE, Mobile District. April 17, 2017.
- USACE 2018. Draft Final Feasibility Study Report Addendum Revision 1, Former Spencer Artillery Range, Spencer/Van Buren County, Tennessee. Prepared for the U.S. Army Engineering and Support Center, Huntsville and USACE, Mobile District. March 2018.
- USEPA 1999. A Guide to Preparing Superfund PPs, Records of Decision, and Other Remedy Selection Decision Documents. USEPA Office of Solid Waste and Emergency Response. EPA 540-R-98-031. July 1999.

GLOSSARY OF TERMS

Administrative Record – The documents that form the basis for the selection of a response action compiled and maintained by the lead agency. 40 CFR 300

Anomaly – Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity will deviate from the expected subsurface ferrous and non-ferrous material at a site (e.g., pipes, power lines). IGD 14-01, EM 200-1-15

Applicable or Relevant and Appropriate Requirements (ARARs)

Applicable requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

Relevant and appropriate requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not “applicable” to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate. 40 CFR 300

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986. 40 CFR 300

Decision Document – The USACE uses the term “Decision Document” for the final remedial action decision at FUDS properties. Same as Record of Decision as listed in the NCP.

Defense Environment Restoration Program (DERP) – This congressionally directed effort (PL 88-212) provides for expanded work in environmental restoration. It emphasizes the identification, investigation, and prompt cleanup of hazardous waste; unexploded ordnance, and unsafe and unsightly buildings, structures and debris at facilities currently or formerly used by the Department of Defense.

Feasibility Study (FS) – A study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study. 40 CFR 300

Formerly Used Defense Site (FUDS) – Facility or site which was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances, for which the Secretary of Defense shall carry out all response actions with respect to releases of hazardous substance from that facility or site. 10 USC 2701

Military Munitions Response Program (MMRP) – Program that addresses the potential explosives safety, health, and environmental issues caused by past Department of Defense (DoD) munitions related activities.

Munitions Constituents (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. 10 U.S.C. 2710(e)(3)

Munitions Debris (MD) – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal. Department of the Army Office of the Assistant Secretary Installations and Environment. Memorandum for the Assistant Chief of Staff For Installation Management, Subject: Munitions Response Terminology, 21 April 2005.

Munitions and Explosives of Concern (MEC) – Specific categories of military munitions that may pose unique explosives safety risks, specifically composed of (a) unexploded ordnance, (b) discarded military munitions, or (c) munitions constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard. IGD 14-01, EM 200-1-15

Munitions Response Site (MRS) – A discrete location within a MRA that is known to require a munitions response. IGD 14-01, EM 200-1-15

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) – The plan revised pursuant to 42 USC 9605 and found at 40 CFR 300 that sets out the plan for hazardous substance remediation under CERCLA. 40 CFR 300

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 a site.

Proposed Plan (PP) – A plan that identifies the preferred remedial alternative for a site, and is made available to the public for comment.

Remedial Investigation (RI) – A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives. 40 CFR 300

Unexploded Ordnance (UXO) – Military munitions that: (a) have been primed, fuzed, armed, or otherwise prepared for action; (b) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (c) remain unexploded either by malfunction, design, or any other cause. 10 U.S.C. 101(e)(5)

ACRONYMS AND ABBREVIATIONS

AGC	advanced geophysical classification
ARAR	Applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DoD	Department of Defense
EE/CA	Engineering evaluation / cost analysis
FS	feasibility study
FUDS	formerly used defense site
HA	Hazard Assessment
LTM	long term monitoring
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MRS	munitions response site
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
O&M	operation and maintenance
PP	Proposed Plan
RAO	Remedial Action Objective
RI	remedial investigation
ROE	right of entry
SARA	Superfund Amendments and Reauthorization Act
TDEC	Tennessee Department of Environment and Conservation
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UU/UE	unlimited use/unrestricted exposure
UXO	unexploded ordnance



Remember to practice the “Three Rs” of UXO Safety:

Recognize – suspicious objects found in area should not be touched.

Retreat – carefully leave the area.

Report – immediately call police or sheriff – report what was found and its location.

For more information, visit <http://www.denix.osd.mil/portal/page/portal/UXOSafety>