PROPOSED PLAN
LEONA HEIGHTS RIFLE RANGE (CAHQ-013-R-01)
MUNITIONS RESPONSE SITE
ALAMEDA COUNTY, CALIFORNIA
JANUARY 2018

INTRODUCTION

This ***Proposed Plan*** presents the Army National Guard's (ARNG) and the United States Army Corps of Engineers' (USACE) preferred remedial (cleanup) alternative for the ***Non-Department of Defense, Non-Operational Defense Sites*** (NDNODS) Leona Heights Rifle Range ***Munitions Response Area*** (MRA), formally known as the Leona Heights Rifle Range ***Munitions Response Site*** (MRS) for ***Army Environmental Database-Restoration*** *[AEDB-R]* Module Site Number CAHQ-013-R-01. The area of contamination is described in the 2017 Final ***Remedial Investigation*** (RI) Report (Weston Solutions, Inc., 2017a). ***Land use controls*** (LUCs) and focused surface and subsurface (24-inches below ground surface [bgs]) clearance is the preferred remedial alternative for the NDNODS Leona Heights Rifle Range – Leona Canyon Regional Open Space Preserve (ROSP) MRS and no further action (NFA) is the preferred alternative for the NDNODS Leona Heights Rifle Range – Developed Areas MRS. The preferred remedial alternatives presented in this Proposed Plan are designed to protect people from coming into contact with munitions at the MRA.

The Department of Defense's Military Munitions Response Program (MMRP), which began in 2001, addresses the potential explosives safety, health, and environmental issues resulting from past munitions use at current and former military training lands. In fulfilling its obligations under MMRP, the ARNG's first priority is the protection of human health, safety, and the environment.

The MMRP follows the requirements of the ***National Oil and Hazardous Substances Pollution Contingency Plan*** (NCP) and the ***Comprehensive Environmental Response, Compensation, and Liability Act*** (CERCLA) of 1980 and its amendments of 1986. The Proposed Plan is issued as part of the Army's public participation responsibilities under Section 117(a) of CERCLA, 42 United States Code (USC) 9617 (a) and Section 300.430(f)(3) and f(2) of the NCP.

DATES TO REMEMBER

PUBLIC COMMENT PERIOD:

The Army National Guard invites you to participate during the public comment period by submitting comments on the Leona Heights Rifle Range MRS Proposed Plan. The Army National Guard will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by 9 February 2018 and should be submitted to the Public Affairs Officer:

LTC James Crowley
Cleanup Branch Chief (ARNG-IED)
111 South George Mason Drive
Arlington, VA 22204-1373

PUBLIC MEETING:

The Army National Guard will hold a public meeting to explain the Proposed Plan and the results presented in the Remedial Investigation for the Leona Heights Rifle Range MRS. Oral and written comments will be accepted at the meeting. The meeting will be held on 10 January 2018 at 6:30 pm at Skyline Pizza, 4400 Keller Ave #300, Oakland, CA 94605. Details of the meeting time and location will also be published in the Oakland Tribune on 5 January 2018. After the public comment period is over, the Army National Guard will review and respond to the comments received before selecting the final remedy.

PROJECT INFORMATION REPOSITORY:

The documents contained in the Project Information Repository for the Leona Heights Rifle Range MRS are available for public viewing at the library location referenced below. This repository contains technical reports and community outreach material prepared for the MRS.

Eastmont Library Branch
7200 Bancroft, Suite 211
Oakland, CA 94605

Hours: Monday: 11:30 am – 7 pm; Tuesday – Thursday: 10 am – 5:30 pm; Friday: 12 pm – 5:30 pm; Saturday and Sunday - Closed

ARNG is the lead agency providing funding for response actions through the NDNODS at the MRA. USACE is the lead support agency providing technical oversight and project management for response actions requested through the NDNODS at the MRA with regulatory support provided by the California Department of Toxic Substances Control (DTSC).

This Proposed Plan summarizes information that is detailed in the RI (Weston Solutions, Inc. 2017a) and the ***Feasibility Study*** (FS) (Weston Solutions, Inc. 2017b) for the Leona Heights Rifle Range MRS, and other documents contained in the ***Information Repository*** for this site. ARNG, California Army National Guard (CAARNG), USACE, and DTSC encourage the public to review these documents to gain a more comprehensive understanding of the site. The Information Repository is located at the Eastmont Branch of the Oakland Public Library (see box on first page). After the close of the ***public comment period***, and review and evaluation of comments from all stakeholders, ARNG and USACE will issue a ***Record of Decision*** announcing its selection of the final remedy for the Leona Heights Rifle Range MRS. The public's comments will be considered in the final selection process and discussed in the Responsiveness Summary of the Record of Decision.

Acronyms used in this Proposed Plan are defined on the page where they first occur. A glossary is provided at the end of this document for all bolded italicized text for reference purposes.

SITE DESCRIPTION

The original Leona Heights Rifle Range MRS was comprised of 81.33 acres. The MRS was subsequently converted to a MRA during the RI/FS phase as described in those sections (see below).

The MRA is partially located on public land owned by the East Bay Regional Parks District Leona Canyon ROSP (33.04 acres of the 290-acre ROSP) and on two residential areas consisting of condominium and townhouse complexes and single family residences. The MRS is located along Keller Avenue and Campus Drive in Sequoyah, approximately seven miles southeast of downtown Oakland, California.

There are no known threatened or endangered species present on the MRS and no known federally-designated critical habitats within this MRS. There is no Designated Priority Habitat or Designated Habitat for Rare Species specifically within the MRS boundary or Areas of Critical Environmental Concern.

There are no historic properties listed on the National Register of Historic Places, no National Historic Landmarks, and no National Historic Sites within the MRS boundaries.

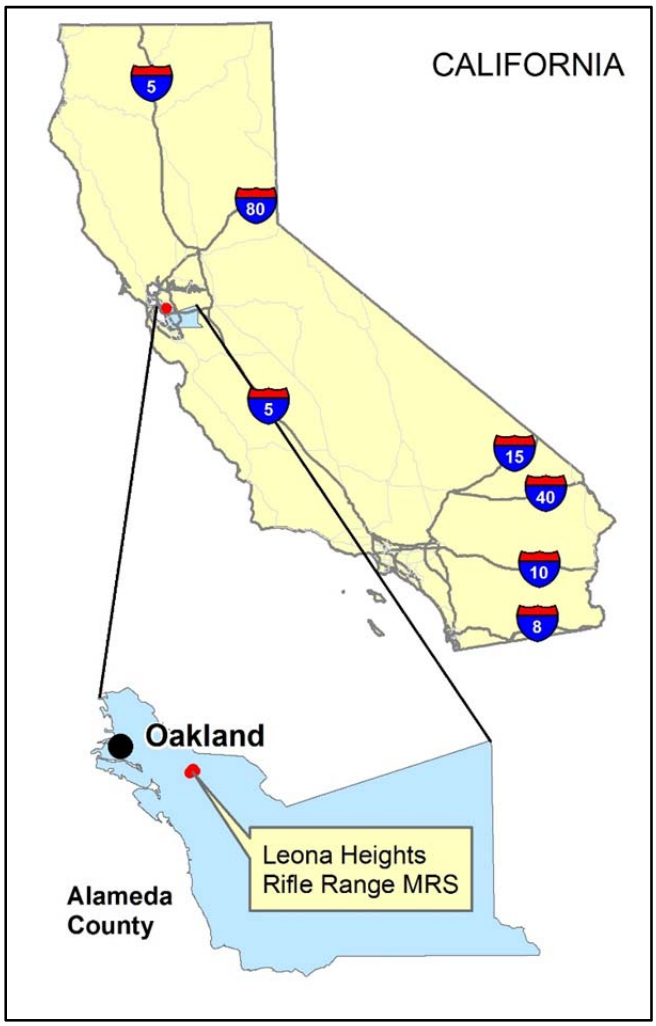

Figure 1. Location of Leona Heights Rifle Range MRS

SITE HISTORY AND BACKGROUND

The Leona Heights Rifle Range MRS is located in Alameda County, California as shown on **Figure 1**. Alameda County is situated along the west coast of California near the north-central part of the state. The Leona Heights Rifle Range MRS was used for artillery and mortar practice, and small arms training by multiple CAARNG units from 1913 until the mid to late 1930s. Beginning in 1913, the range was first used for artillery practice, with the small arms range being constructed in 1920. The range consisted of as many as five target berms at varying distances extending out to 1,000 yards.

Preliminary Assessment/Site Inspection

An Inventory Report (CERCLA equivalent of a ***Preliminary Assessment*** [PA]) for the state of California was completed in 2009 (EA Engineering, Science, and Technology, Inc., 2009). The PA presented the results of an inventory evaluation to establish a comprehensive list of MRSs and to understand the potential liability associated with MRSs in the state of California by identifying defense sites that may require cleanup for ***munitions and***

explosives of concern (MEC) and/or ***munitions constituents*** (MC).

A ***Site Inspection*** (SI) to determine the presence or absence of MEC and MC contamination in soil at the MRSs in California was completed in 2012 (Weston Solutions, Inc., 2012). The SI included a Historical Records Review (Weston Solutions, Inc., 2011), a site visit, data analysis, conclusions, and recommendations.

During the SI, magnetometer assisted visual surveys were conducted. A small arms impact area was identified towards the top of the steep hillside adjacent to the northeastern most target area. Small arms debris consisting of .30 caliber projectiles was identified. A 3-inch Stokes Mortar was discovered as well. The mortar was identified as MEC by the field team and was transported and disposed of by the Alameda County Sheriff's Office (ACSO) Explosive Ordnance Disposal (EOD) Squad. Although the field team identified the mortar as MEC, the responding ACSO EOD officer, following inspection, determined that it did not pose an explosive hazard. Subsurface anomalies were detected a short distance below the mortar that were consistent with that type of munitions.

Nine surface soil samples and one duplicate were collected at the MRS during the SI. Samples were analyzed for metals (antimony, copper, lead, and zinc) and explosives. All analytical results were below United States Environmental Protection Agency and California screening levels.

Based on the results of the SI, it was recommended to proceed to the RI/FS phase for the Leona Heights Rifle Range MRS for MEC for all 81.33 acres. NFA was recommended for MC.

Remedial Investigation

A CERCLA RI was conducted in 2016 to characterize the nature and extent of MEC remaining on the Leona Heights Rifle Range MRS using an analog geophysical survey (***mag and dig***) (Weston Solutions, Inc. 2016; 2017a). The nature of munitions items found consisted of one ***munitions debris*** (MD) item, three material potentially presenting an explosive hazard (MPPEH) items, and 245 small arms items (**Figure 2**). The three MPPEH items were disposed of by detonation on 17 June 2016. Detonation determined that all three items contained no high explosives with no high order detonation and were therefore classified as vented MD.

The four MD items were recovered from 2- to 24-inches bgs. Small arms items were recovered from 1- to 6-inches bgs. Distribution of MD, based upon

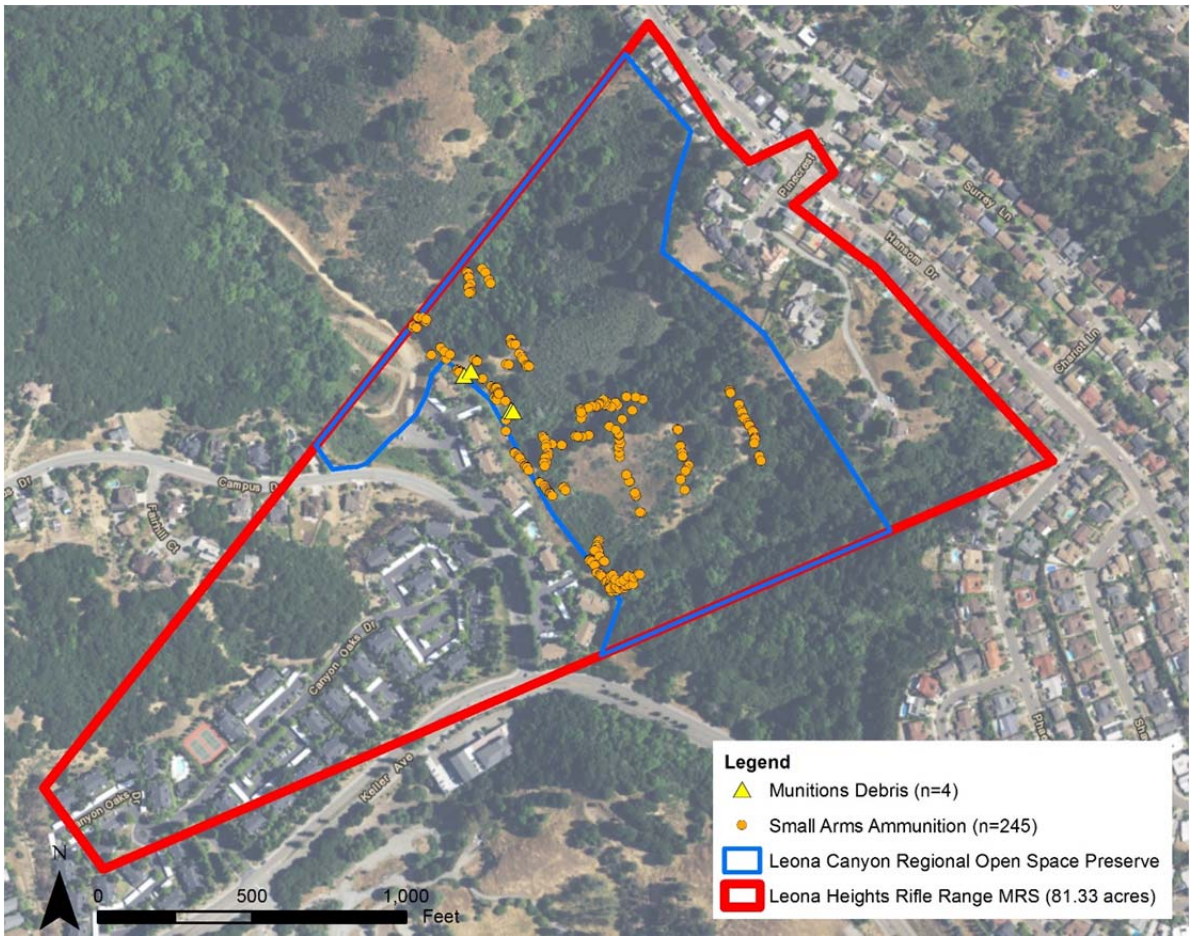

Figure 2. Leona Heights Rifle Range MRS RI Results Map

anomaly investigations and surface detections indicate the presence of small arms ammunition throughout the northern half of the MRS and MD in the southwest portion of the Leona Canyon ROSP (**Figure 2**).

The RI Work Plan (WESTON, 2016) indicated that soil samples were only to be collected during the RI if certain criteria were met, such as the locations where individual damaged, corroded, or potentially leaking MEC or MD items were observed; where concentrations of MD were located; or at pre- and post- blow-in-place (BIP) locations. During field activities, no damaged, corroded or potentially leaking MEC/MD items were observed; therefore no soil samples were collected for that criterion. As no areas of concentrated munitions was encountered (a target area), no incremental samples were collected. Since one BIP occurred, both pre- and post-BIP samples were collected and analyzed for explosives (nitroaromatics and nitroamines). No explosives were detected in the samples.

Based on the results of the RI, although no MEC was encountered, utilizing the most conservative assumptions, there is a potentially complete pathway for human receptors to come in contact with MEC via intrusive and non-intrusive activities within the southwest portion of the Leona Canyon ROSP, within the MRS. Human receptors include site workers, landowners/residents (adult/child), and recreational users/site visitors/trespassers (adult/child). The RI recommended that the MRS be converted to an MRA and divided into two MRSs: the Leona Heights Rifle Range – Leona Canyon ROSP MRS (AEDB-R CAHQ-013-R-01) consisting of 31.73 acres and the Leona Heights Rifle Range – Developed Area MRS (AEDB-R CAHQ-013-R-02), consisting of 49.60 acres. The Leona Heights Rifle Range – Leona Canyon ROSP MRS, referred to throughout the rest of the document as the Leona Canyon ROSP MRS, was recommended for futher action for MEC and NFA for MC. The Developed Area MRS was recommended for NFA for both MEC and MC and was therefore not addresed in an FS as there was no need to evaluate potential alternatives. It is not discussed further in this Proposed Plan.

Feasibility Study

A FS was completed in 2017 to evaluate potential remedial alternatives for the Leona Canyon ROSP MRS (Weston Solutions, Inc., 2017b). Four ***Remedial Alternatives*** were identified as "reasonable measures" for protecting the public and the environment from potential exposure to MEC. They are described in the following sections.

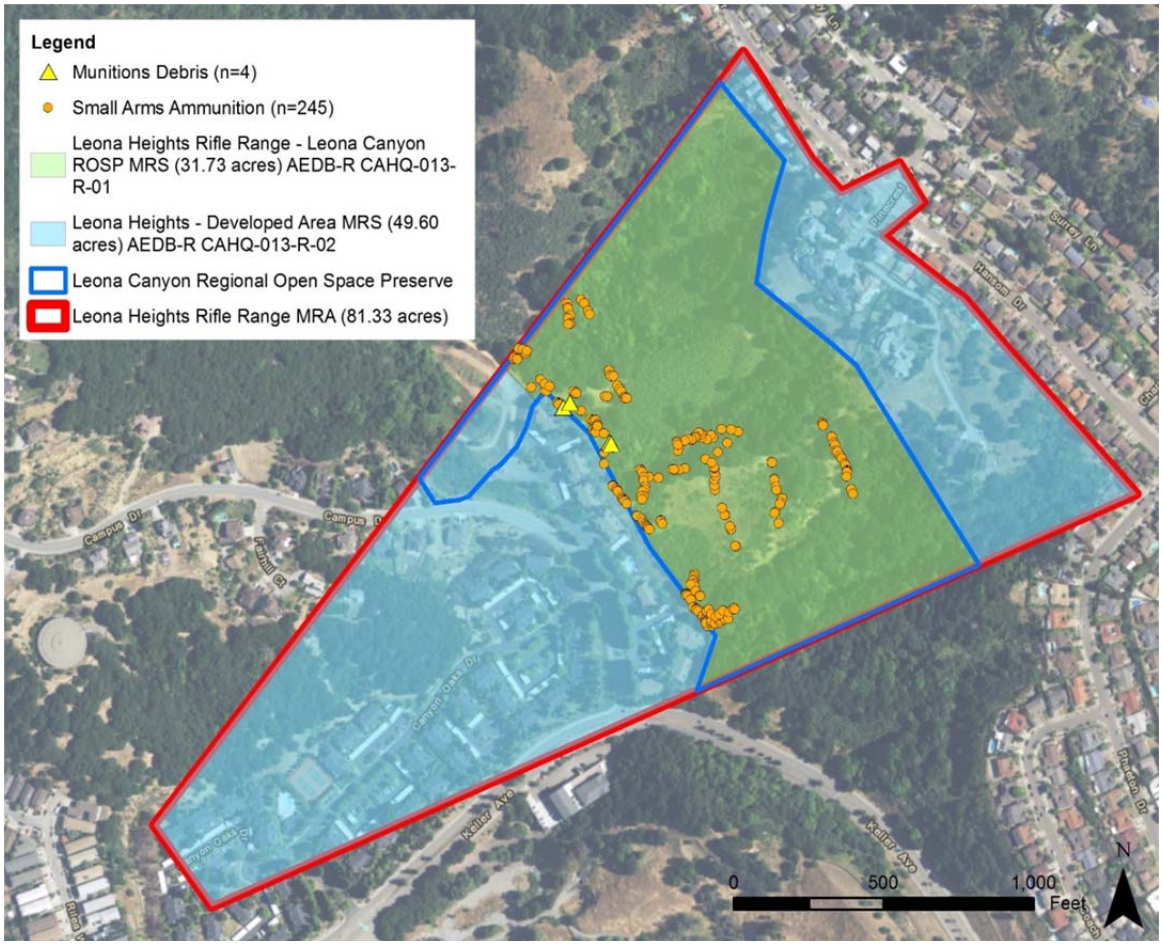

Figure 3. Leona Heights Rifle Range Revised MRS and MRA Boundaries

SCOPE AND ROLE OF RESPONSE ACTION

This Proposed Plan addresses the preferred remedial alternative selected by ARNG, USACE, CAARNG, and DTSC to manage the MEC risks that have been identified specifically at the Leona Canyon ROSP MRS.

SUMMARY OF MRS RISKS

CERCLA requires that both a human health and ecological risk assessment be evaluated to quantify the risk associated with contamination identified at the MRS. The sections below discuss the human and ecological risks for the Leona Canyon ROSP MRS.

Human Health Risks

As described below, a ***Human Health Risk Assessment*** was not necessary for the Leona Canyon ROSP MRS.

MEC:

During the RI characterization, 351 anomalies were intrusively investigated; no MEC items were found; however, 4 MD items and 245 small arms ammunition items were recovered. An explosive hazard may exist within the Leona Canyon ROSP MRS based on the MEC Hazard Assessment which has a score of 870, putting it in the Hazard Level Category 1 (or highest category level). Potentially complete MEC exposure pathways were identified for surface and subsurface soils for all receptors having access to the MRS. An explosive hazard is not anticipated to exist outside the Leona Canyon ROSP MRS.

MC:

No samples collected during the RI detected explosives or metals above human health risk-based screening levels. Therefore, a site-specific risk assessment was not performed for the Leona Canyon ROSP as there is no potential risk to human health from MC at the MRS.

Ecological Risks

As described below, a ***Screening Level Ecological Risk Assessment*** (SLERA) was not necessary for the Leona Canyon ROSP MRS.

MEC:

There are no known sensitive species or habitats within the Leona Canyon ROSP MRS that would be affected by MEC; therefore, the exposure pathway is incomplete.

MC:

No critical or endangered species are known to be present at the Leona Canyon ROSP and no sensitive ecological habitat was observed during the SI and/or RI activities. Therefore, potential ecological exposure pathways are incomplete and a SLERA was not required.

REMEDIAL ACTION OBJECTIVE

Remedial Action Objectives (RAOs) are site-specific goals that are developed to protect human health and the environment against which remedial alternatives are screened. The RAO established for the Leona Canyon ROSP MRS is as follows:

- Minimize human exposure to potential surface and subsurface MEC to 24-inches bgs using geophysical methods while maintaining the current land use.

During RAO development, potential ***applicable or relevant and appropriate requirements*** (ARARs) and to-be-considered (TBC) criteria were considered. One ARAR was identified as appropriate for response actions that entail clearance of remaining munitions at the MRS. This ARAR is provided in **Table 1**.

SUMMARY OF REMEDIAL ALTERNATIVES

ARNG and USACE considered four different remedial alternatives for the Leona Canyon ROSP MRS. The remedial alternatives were evaluated against seven of the nine criteria required by CERCLA and the NCP (see criteria explanation in **Table 2**). Criteria 8 and 9 will be considered after the public comment period.

It is ARNG's judgment that the preferred remedial alternative (Alternative 3, below) identified in this Proposed Plan is necessary to protect human health and the environment from potential future risks posed by MEC at the Leona Canyon ROSP MRS.

The evaluated Response Action Alternatives in the FS are as follows:

- Alternative 1: No Action;
- Alternative 2: LUCs;
- Alternative 3: LUCs and focused surface and subsurface (24-inches bgs) clearance;
- Alternative 4: LUCs and complete surface and subsurface (24-inches bgs) clearance.

An Unlimited Use and Unrestricted Exposure alternative was not evaluated due to the impracticality presented by the steep topography. Approved methods would not result in successful clearance throughout the ROSP required to meet the Unlimited Use and Unrestricted Exposure scenario.

A Five-Year Review is required under the NCP to evaluate the effectiveness and protectiveness of the selected alternative so long as future uses remain

restricted. This document looks at Five-Year Reviews, including costs, for thirty years.

Table 3 provides a brief description of the remedial alternatives, and their associated costs.

Table 1: ARARs and TBC Criteria

ARAR/TBC	Citation/Description	Applicability or Relevance
Chemical Specific ARAR: None		
Location Specific ARAR: None		
Action Specific ARAR		
Resource Conservation and Recovery Act (RCRA) 40 Code of Federal Regulations (CFR) Part 264 Subpart X	Relevant parts relate to the management of MEC that is recovered, including characterization as hazardous waste and requirements for treatment, storage, and transportation. Establishes actions required for the disposal of waste explosives by open burning or open detonation.	May be applicable if storage and transportation of recovered military munitions is performed during ***remedial actions***. May also be applicable if disposal of explosives is performed during remedial actions.
TBC		
None		

Table 2: Evaluation Criteria

Threshold Criteria – requirements that an alternative must meet or specifically waive for selection eligibility
Overall Protection to Human Health and the Environment – addresses how well an alternative protects people and the environment. This standard can be met by reducing or removing contamination or by reducing exposure to it.
Compliance with ARARs or Other Requirements – ensures that options comply with federal, state, and local laws.
Balancing Criteria – basis for comparing and contrasting alternatives that meet Threshold Criteria
Long-term Effectiveness and Permanence – evaluates how well an option will work over the long term, including how remaining contamination can be safely managed.
Reduction of Toxicity, Mobility, or Volume through Treatment – addresses how well an alternative reduces the danger, movement, and amount of contamination.
Short-term Effectiveness – compares how quickly an option could achieve cleanup goals and how much risk there would be to workers and members of the public while the alternative is being implemented.
Implementability – evaluates how feasible an alternative is to implement and whether materials and services are available in the area.
Cost – includes not only capital costs (for example, equipment, materials, and labor), but also the costs of maintaining the option for the life of the cleanup.
Modifying Criteria – additional factors that can influence acceptability of the alternative
State Acceptance – judges how well the state environmental agency accepts the alternative. This will be evaluated after receiving public comments.
Community Acceptance – judges how well the nearby residents and other members of the community accept the selected alternative. This will be evaluated after receiving public comments.

Table 3: Remedial Alternative Summary

Alternative 1: No Action	
Estimated Present Value Cost	$0
Alternative Description: • CERCLA requires that a "No Action" alternative be evaluated for the purpose of comparison to the other proposed alternatives. • For the No Action alternative, it is assumed that no change to the current land use of the MRS would occur.	
Alternative 2 –LUCs	
Estimated Present Value Cost	$652,000
Alternative Description: • This alternative includes engineering controls in the form of signage and fencing. Signs would be installed at access points to the Leona Canyon ROSP MRS and along the MRS boundaries at approximately 300 foot intervals (20 signs). Signs would provide information to assist with recognition of potential munitions, and instructions to retreat and report any discoveries to proper authorities (i.e., the 3R's: Recognize, Retreat, Report). Fencing would also be placed along the southwestern border between the Leona Canyon ROSP and adjacent residential areas. The steep topography at the northeastern portion of the Leona Canyon ROSP provides a natural barrier limiting access. Signs and fencing would be inspected and replaced (as necessary) during annual inspections of the MRS and Five-Year Reviews. • More specific information would be provided to property owners, within and near the MRS, and the public, including recreational users, through education controls such as public notices, community awareness meetings, letter notifications, information pamphlets, fact sheets, and/or a website. Information would be provided regarding the nature and extent of munitions on the MRS, and include instructions on following the 3Rs when munitions are encountered in the future. • Alternative 2 would provide protectiveness by controlling exposure to possible receptors through engineering and education controls. • Alternative 2 would be protective of the environment because no clearing, grubbing, or excavation would be required. Minor disturbances to the soil would be needed where signs are placed.	
Alternative 3 – LUCs and focused surface and subsurface (24-inches bgs) clearance	
Estimated Present Value Cost	$1,081,000
Alternative Description: • LUCs would be implemented as described in Alternative 2. • Alternative 3 involves surface and subsurface removal of MEC to 24-inches bgs on a 100-foot buffer zone along the western boundary of the Leona Canyon ROSP (3.13 acres) using analog geophysical methods. • Alternative 3 would be protective of human health by partially eliminating, and/or reducing threats to human health in the form of MEC on the ground surface and subsurface in a focused area, coupled with LUC components. • Vegetation thinning, removal of grasses, shrubs and lifting of low lying tree branches, may be required for the surface and subsurface clearance in the 3.13 acres.	
Alternative 4 – LUCs and complete surface and subsurface (24-inches bgs) clearance	
Estimated Present Value Cost	$1,868,000
Alternative Description: • LUCs would be implemented as described in Alternative 2 with the exception of fencing; no fencing would be constructed for Alternative 4. • Alternative 4 involves surface and subsurface removal of MEC to 24-inches bgs across the entire Leona Canyon ROSP MRS (31.73 acres) using analog geophysical methods. • A full clearance (surface and subsurface removal) within the MRS would provide protectiveness of human health by eliminating, reducing, and controlling threats to human health to the maximum extent possible. • Vegetation thinning, removal of grasses, shrubs and lifting of low lying tree branches, would be required for the clearance.	

EVALUATION OF REMEDIAL ALTERNATIVES

Nine criteria are used to evaluate the different remedial alternatives individually and against each other to select a remedy.

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long Term Effectiveness
4. Reduction of Toxicity, Mobility, or Volume through Treatment
5. Short Term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

This section profiles the relative performance of each remedial alternative against the nine criteria, noting how it compares to the other options under consideration.

The final remedy is selected based on weighing the trade-offs identified during analysis of the criteria, and any comments received after the Proposed Plan has been issued. **Table 2** presents the specific components of each of the nine criteria. The alternatives are summarized in **Table 3**. The evaluations of each of the remedial alternatives against the nine evaluation criteria are provided in the following paragraphs and summarized in **Table 4**. Additional detailed analysis of each remedial alternative can be found in the FS.

1. Overall Protectiveness of Human Health and the Environment

Alternative 1 would not eliminate, reduce, or control the human exposure to surface and subsurface munitions and potential exists for munitions to be handled by unqualified/untrained personnel and disposed of improperly. Alternative 2 would be protective since it controls exposure through LUCs. Alternatives 3 and 4 are most protective of human health because munitions on the ground surface and in subsurface would be removed. Alternative 4 would be more protective than Alternative 3 as 31.73 acres is cleared as compared to 3.13 acres.

Alternative 1 would not cause damage to the environment because no clearing, grubbing, or excavation would be required. Alternative 2 might cause damage to the environment in the areas where signs and fencing are installed. Alternatives 3 and 4 might cause damage to the environment, based on the density and depth of items that would require excavation or the thickness of vegetation that would need to be cleared. A larger area 31.73 acres would need to be cleared for Alternative 4 than for Alternative 3 (3.13 acres).

2. Compliance with ARARs

There are no ARARs associated with Alternative 1. Alternatives 2, 3, and 4 would be implemented and performed to comply with all ARARs. Alternative 2 would require less coordination and planning to avoid potential environmental impacts than Alternatives 3 and 4 since there are no associated clearances with Alternative 2. Alternative 4 would require more coordination than Alternative 3 since a larger area needs to be cleared. Alternatives 3 and 4 would be the most intrusive in nature. If MPPEH or confirmed MEC items are identified requiring on-site disposal operations, then 40 CFR Part 264, Subpart X would be an ARAR if a consolidated shot approach is employed in lieu of a BIP technology.

3. Long-Term Effectiveness and Permanence

Within the Leona Canyon ROSP MRS Alternative 1 is not effective or permanent. Alternative 2 is more effective and permanent than Alternative 1, assuming the cooperation and active participation of the existing powers and authorities of government agencies. LUCs would provide additional long-term effectiveness and permanence by assisting in managing risk before, during, and after site activities. Surface and subsurface clearance under Alternatives 3 and 4 would be the most effective and permanent alternatives over the long-term as both surface and subsurface clearance would be conducted and munitions items would be permanently removed from the MRS and LUCs would be implemented. Alternative 4 would be more effective and permanent than Alternative 3 as a larger area would be cleared.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Alternative 1 would not reduce the Toxicity, Mobility, or Volume of munitions at the Leona Canyon ROSP MRS. Alternative 2 would be somewhat effective in the reduction of mobility for munitions remaining at the MRS by modifying human behavior through LUCs to reduce the probability of handling munitions when encountered by MRS users. Alternatives 3 and 4 would be most effective in reducing the Toxicity, Mobility, or Volume of munitions because detectable surface and subsurface munitions would be removed. Alternatives 3, and 4 satisfy the statutory preference for treatment as a principal element of the remedy because munitions would be removed, certified as material documented as safe (MDAS), and disposed off-site via recycling. Alternative 4 would be more effective than Alternative 3 at reducing the mobility for munitions as a larger area will be cleared.

5. Short-Term Effectiveness

Because no construction activities are associated with Alternative 1, it would not present significant additional risk to the public or workers at the Leona

Canyon ROSP MRS. Alternative 2 would present a slightly higher risk to the public or workers for the signs and fencing that need to be installed within the MRS. Alternatives 3 and 4 would increase risk to the public and workers during clearance of munitions and in cases where MPPEH or suspect MEC is encountered requiring treatment on-site to render the item MDAS. The time durations required to complete Alternatives 2 and 3 is around one month. Alternative 4 would require the most time to perform surface and subsurface clearance over the entire MRS at around two months.

6. Implementability

Within the Leona Canyon ROSP MRS, Alternative 1 would be easily implemented if approved by all stakeholders because it requires no action. The LUCs recommended as Alternative 2 could also be readily implemented because these activities pose no technical difficulties and the materials and services needed are readily available. Clearance of munitions to various depths, similar to the actions proposed in Alternatives 3 and 4 were implemented effectively at the MRS during the RI; however, these alternatives are more difficult to implement than Alternative 2. Additionally, it is unknown if private landowners on and around the MRS would be amenable to evacuating during a removal action. Also, it is unclear if there would be any opposition from nearby land owners to vegetation clearance of the MRS for Alternatives 3 and 4 in order to conduct analog geophysical surveys. Specific activities, including awareness training for workers and use of protection procedures/mitigation techniques would be performed to preserve environmental resources during any of the clearance alternatives.

7. Cost

Costs for the alternatives were estimated for present value over a 30-year period. **Table 3** provides estimated costs for implementation of the four remedial alternatives. Alternative 4 would cost the most, followed by Alternative 3 and Alternative 2. Alternative 1 has no costs associated with it.

8. State Acceptance

This criterion will be evaluated after receiving state regulatory agency comments.

9. Community Acceptance

This criterion will be evaluated after receiving public comments.

PREFERRED REMEDIAL ALTERNATIVE

Alternative 3, LUCs and Focused Surface and Subsurface (24-inches bgs) Clearance, is the preferred remedial alternative (**Figure 4**). Alternative 3 is recommended because it is protective of human health and the environment through LUCS (signage identifying the MEC hazards, fencing, and education controls) in addition to plans to manage the potential MEC through focused surface and subsurface clearance on the 100-ft buffer zone. This buffer zone is the area most likely to contain potential MEC and the area most likely for human exposure. The remaining portion of the MRS contains very difficult terrain that people are unlikely to traverse. Through long-term management, land use would be monitored, protecting human health. Based on information currently available, ARNG and USACE believe the preferred remedial alternative meets the threshold criteria and provides the best balance of tradeoffs among other alternatives with respect to the balancing and modifying criteria. ARNG and USACE expect the preferred remedial alternative to satisfy the following statutory requirements of CERCLA 121(b): (1) be protective of human health and 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) satisfy the preference for treatment as a principal element, or explain why the preference will not be met.

COMMUNITY PARTICIPATION

The public is encouraged to participate in the decision-making process for the Leona Canyon ROSP MRS. ARNG, CAARNG, USACE, and DTSC have provided information on the investigation activities at the MRS to the public through public meetings, in documents submitted to the Information Repository, and in announcements published in *The Spectrum.* ARNG, CAARNG, USACE, and DTSC encourage the public to gain a more comprehensive understanding of the site.

The public comment period for this Proposed Plan is 2 January 2018 through 22 February 2018. A public meeting will be held to discuss the MRS (see box on first page).

ARNG maintains the Information Repository for the Leona Heights Rifle Range MRS at the Eastmont Library Branch of the Oakland Public Library, Oakland, California.

For further information on the Leona Heights Rifle Range MRS, please contact:

LTC James Crowley
Cleanup Branch Chief (ARNG-IED)
111 South George Mason Drive
Arlington, VA 22204-1373
Phone: (703) 601-7785
E-mail: james.c.crowley.mil@mail.mil

Table 4: Evaluation of Remedial Alternatives for the Leona Heights ROSP MRS

Detailed Criteria		Alternative 1	Alternative 2	Alternative 3	Alternative 4
		No Action	**LUCs**	**LUCs and Focused Surface and Subsurface (24-inches bgs) Clearance**	**LUCs and Complete Surface and Subsurface (24-inches bgs) Clearance**
Description		Per the NCP, the No Action Alternative is included for baseline comparison	Protecting receptors by limiting access to MEC using LUCs	Protecting receptors by removing potential MEC in focused areas and using LUCs	Protecting receptors by removing the potential MEC hazard across the MRS to 24-inches and implementing LUCs
Threshold	Overall Protectiveness of Human Health and the Environment	○	◘	●	●
	Compliance with ARARs	○	●	●	●
Balancing	Long-Term Effectiveness and Permanence	○	◘	●	●
	Reduction of Toxicity, Mobility, or Volume through Treatment	○	○	◘	●
	Short-Term Effectiveness	●	●	◘	◘
	Implementability	●	●	●	●
	Cost (Total Present Value)	$0	$652,000	$1,081,000	$1,868,000
Modifying	State Acceptance	TBD	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD	TBD

● Favorable (Yes for threshold criteria) ◘ Moderately Favorable ○ Not Favorable (No for threshold criteria) TBD – to-be-determined

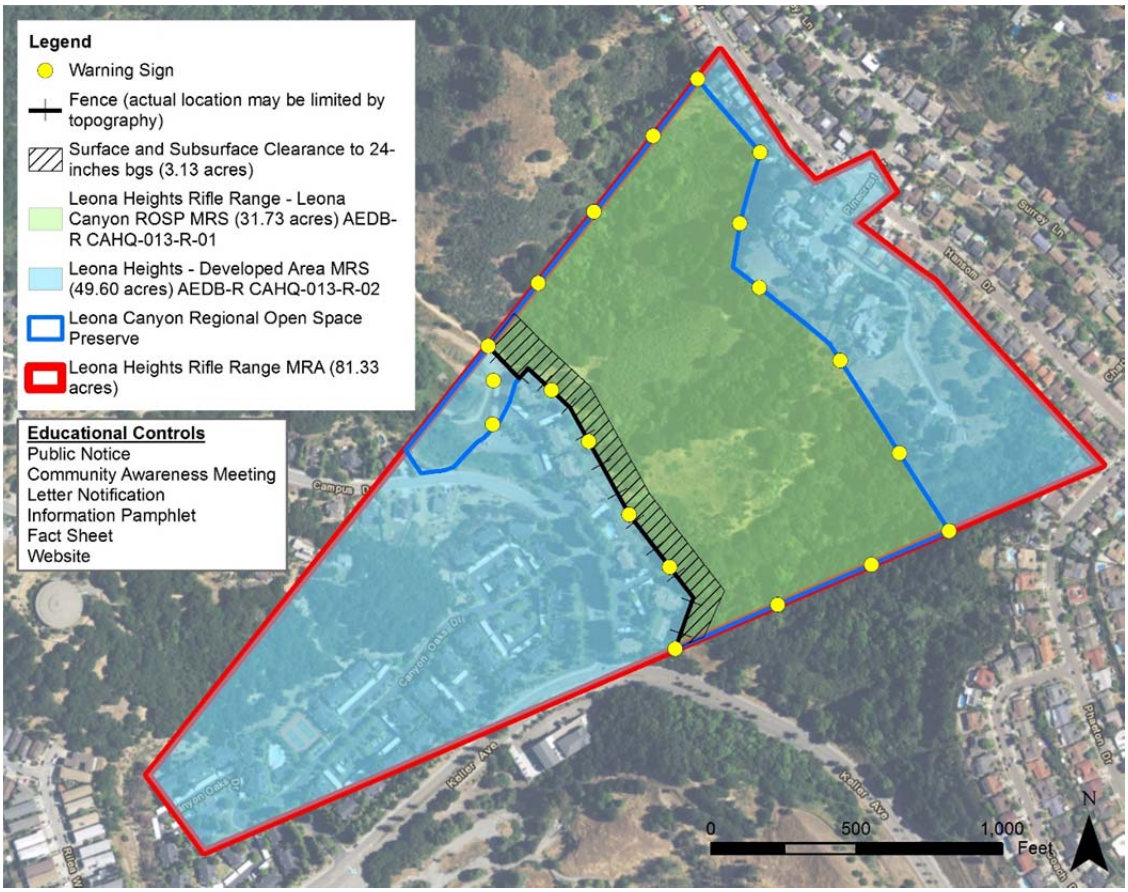

Figure 4. Preferred Remedial Alternative: LUCS and Focused Surface and Subsurface Clearance (24-Inches bgs)

GLOSSARY OF TERMS

Applicable or Relevant and Appropriate Requirements (ARARs): 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 (40 CFR 300.5).

Army Environmental Database-Restoration (AEDB-R): A secure, real-time Web-based application that supports the collection, accessibility, and management of the Army's Defense Environmental Restoration Program reinstallation, range, and site information.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA): The law that established a program to identify hazardous waste sites and procedures for cleaning up these sites to be protective of human health and the environment, and to evaluate damages to natural resources.

Digital Geophysical Mapping (DGM): A method used to acquire geophysical data using self-recording instruments. The data acquired are post-processed to identify geophysical anomalies for further investigation.

Record of Decision: A legal document that describes the remedial actions selected for a CERCLA site. A Record of Decision includes reasons why certain actions were selected, how much they will cost, how the public responded to the Proposed Plan, and how the public's comments were incorporated into the final decision.

Feasibility Study (FS): An investigation stage in the CERCLA cleanup process that identifies alternatives available to address contamination at a site, including an analysis of cost and how each alternative would protect human health and the environment.

Human Health Risk Assessment: An evaluation of the carcinogenic and non-carcinogenic risks presented by contaminants at a site for current and potential future property uses.

Information Repository: A record or file that contains all information used to make a decision on the selection of a response action under CERCLA.

Land Use Controls (LUCs): Restrictions such as zoning, fencing, and signage that prevent specific activities from occurring in specified areas to reduce or eliminate the potential for exposure.

Mag and Dig: The method of using handheld metal detectors and shovels to investigate subsurface anomalies. It is used as an alternative to ***digital geophysical mapping*** (DGM) when DGM equipment cannot access an area. It involves ***unexploded ordnance*** (UXO) Technicians walking a grid or transect swinging magnetometers or metal detectors back and forth. When the metal detector indicates it has sensed a metal item it makes a noise. The location is flagged and then investigated by digging using handheld tools such as shovels and picks.

Munitions Constituents (MC): Any materials originating from UXO, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris (MD): Remnants of munitions remaining after munitions use, demilitarization, or disposal.

Munitions and Explosives of Concern (MEC): Specific categories of military munitions that may pose unique explosive safety risks, such as UXO, discarded military munitions, or MC that are present in high enough concentrations to pose an explosive hazard.

GLOSSARY OF TERMS (continued)

Munitions Response Area (MRA): Any area on a defense site that is known or suspected to contain UXO, discarded military munitions, or MC.

Munitions Response Site (MRS): A discrete location within an MRA that is known to require a munitions response.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): Also referred to as the National Contingency Plan, it is a plan required by CERCLA and codified at 40 CFR Section 300 that provides a framework for responding to releases or threats of release of hazardous substances.

Non-Department of Defense, Non-Operational Defense Sites (NDNODS): Defense sites that were exclusively used by the Army National Guard and were never owned, leased, or otherwise possessed or used by the U.S. Army or other Department of Defense component.

Preliminary Assessment (PA)/Site Inspection (SI): A PA is a limited-scope investigation that collects readily available information about a project and its surrounding area. An SI is then performed if the PA results warrant further investigation. An SI includes activities implemented to determine whether there is a release or potential release and the nature of associated threats at a site.

Proposed Plan: A public participation requirement of CERCLA Section 117 in which the lead federal agency summarizes the preferred cleanup strategy, the rationale for the preference, the alternatives evaluated in the RI/FS, and any ARAR waivers proposed for site cleanup. The Proposed Plan is issued to the public to solicit public review and comment on all alternatives under consideration.

Public Comment Period: A prescribed period during which the public may comment on various documents and actions taken by the government and regulatory agencies.

Remedial Action: The means selected to achieve objectives developed for future protection of environmental resources; also, the construction or implementation phase that follows the remedial design of the selected cleanup alternative at a National Priorities List site.

Remedial Action Objective (RAO): A site-specific objective developed based on evaluation of potential risks to human health and the environment for future protection of environmental resources.

Remedial Alternative: A technology or process option that represents a viable approach to remedial action for a site that has been evaluated in a screening stage.

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a CERCLA site for the purpose of developing and evaluating effective remedial alternatives.

Screening Level Ecological Risk Assessment (SLERA): A simplified ecological risk assessment used to provide an evaluation of the potential risks to ecological receptors posed by constituents of potential ecological concern. This assessment is used when there is limited site-specific information and, as a result, values are biased in the direction of overestimating risk. The need for conservatism is to provide a defensible conclusion that negligible ecological risk exists or that certain contaminants and exposure pathways can be eliminated from consideration.

Unexploded Ordnance (UXO): Military ammunition or explosive that has failed to explode as intended.

Unlimited Use and Unrestricted Exposure: Generally refers to a remedy where there are no exposure or use limitations required at a site to be protective.

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An UXO Technician thinning vegetation along a transect during the RI at the Leona Heights Rifle Range MRS.

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