FINAL
RECORD OF DECISION

MMRP Munitions Response Services
National Guard Bureau

Leona Heights Rifle Range Leona Canyon ROSP (CAHQ-013-R-01)
Leona Heights Rifle Range Developed Areas (CAHQ-013-R-02)
Alameda County, California

CONTRACT NO.: W912DR-09-D-0006
DELIVERY ORDER NO. 0011
MODIFICATION #3

Prepared For:

U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California, 95814-2922

Army National Guard Directorate
111 South George Mason Drive
Arlington, Virginia 22204

California Army National Guard
3900 Roseville Road
North Highlands, California 95660

Prepared By:
WESTON SOLUTIONS, INC.
1435 Garrison Street, Suite 100
Lakewood, CO 80215

NOVEMBER 2018

This Page Intentionally Left Blank

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (CONT.)

Section **Page**

TABLE OF CONTENTS (CONT.)

Section **Page**

LIST OF TABLES

Table **Page**

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
%	percent
§	Section
ACSO	Alameda County Sheriff's Office
AEDB-R	Army Environmental Database - Restoration
ARAR	applicable or relevant and appropriate requirement
ARNG	Army National Guard
BEM	Buried Explosion Module
bgs	below ground surface
CAARNG	California Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CRP	Community Relations Plan
CSM	conceptual site model
DDESB	Department of Defense Explosives Safety Board
DMM	discarded military munitions
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
DTSC	Department of Toxic Substances Control
EA	EA Engineering, Science and Technology, Inc.
EBRPD	East Bay Regional Park District
EM	engineering manual
EOD	explosive ordnance disposal
FS	Feasibility Study
GAP	Gap Analysis Program
GIS	geographic information system
GPS	global positioning system
HRR	Historical Records Review
HOA	Homeowner's Association
I&E	Installations & Environment
LTM	long-term monitoring
LUC	land use controls
MC	munitions constituents

LIST OF ACRONYMS AND ABBREVIATIONS (CONT.)

MD	munitions debris
MDAS	material documented as safe
MDEH	material documented as an explosive hazard
MEC	munitions and explosives of concern
MEC HA	Munitions and Explosives of Concern Hazard Assessment
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MRA	Munitions Response Area
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Contingency Plan
NDNODS	Non-Department of Defense, Non-Operational Defense Sites
NFA	No Further Action
NMD	non-munitions debris
NRCS	Natural Resources Conservation Service
O&M	operation and maintenance
PA	Preliminary Assessment
PP	Proposed Plan
PTW	principal threat waste
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROSP	Regional Open Space Preserve
SAA	small arms ammunition
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
SUXOS	Site Unexploded Ordnance Supervisor
TBC	to-be-considered
TWG-HA	Technical Working Group – Hazard Assessment
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

LIST OF ACRONYMS AND ABBREVIATIONS (CONT.)

USGS	United States Geological Survey
UU/UE	unlimited use/unrestricted exposure
UXO	unexploded ordnance
UXOSO	Unexploded Ordnance Safety Officer
UXOQCS	Unexploded Ordnance Quality Control Specialist
WESTON	Weston Solutions, Inc.
WRCC	Western Regional Climate Center

This Page Intentionally Left Blank

1.0 DECLARATION

1.1 SITE NAMES AND LOCATIONS

Site Name: Leona Heights Rifle Range – Leona Canyon Regional Open Space Preserve (ROSP) Munitions Response Site (MRS)

Site Location: Alameda County, California

AEDB-R[1]: CAHQ-013-R-01

Site Name: Leona Heights Rifle Range – Developed Areas MRS

Site Location: Alameda County, California

AEDB-R[1]: CAHQ-013-R-02

Note:

[1]Army Environmental Database - Restoration

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedies for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (AEDB-R: CAHQ-013-R-01) and the Leona Heights Rifle Range – Developed Areas MRS (AEDB-R: CAHQ-013-R-02) located in Alameda County, California. The former Leona Heights Rifle Range MRS has been converted to a Munitions Response Area (MRA) and divided into the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS. The Selected Remedy for each MRS was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP). The decision is based on the Administrative Record for these MRSs.

This document is issued by the Army National Guard (ARNG)as the lead federal agency. As the lead federal agency, ARNG has selected the remedy with support from the California Army National Guard (CAARNG) and the United States (U.S.) Army Corps of Engineers (USACE). The ARNG is managing the investigation of the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS in accordance with CERCLA.

The ARNG coordinates with the California Department of Toxic Substances Control (DTSC) regarding regulatory issues for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS. Additionally, the ARNG coordinated with the East Bay Regional Park District (EBRPD), the entity that manages the ROSP. DTSC reviewed the Administrative Record documentation for the MRSs and concurred with the selected remedies. The ARNG anticipates that this ROD will be the final decision related to the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS.

The Administrative Record for this decision is located at the Military Department, 3900 Roseville Road, North Highlands, California 95660. The Administrative Record includes the following documents: Preliminary Assessment (PA) (EA Engineering, Science, and Technology, Inc. [EA], 2009), Historical Records Review (HRR) (Weston Solutions, Inc. [WESTON], 2011), Site Inspection (SI) (WESTON, 2012), Remedial Investigation (RI) (WESTON, 2017a), Feasibility Study (FS) (WESTON, 2017b), and Proposed Plan (PP) (WESTON, 2018). An information repository was also established at the Oakland Public Library, Eastmont Branch, 7200 Bancroft Avenue, Suite 211, Oakland, California 94605. The information repository includes the following documents: RI, FS, and PP.

1.3 ASSESSMENT OF SITE

The response actions selected in this ROD are necessary to protect the public health or welfare of the environment from actual or threatened releases of Department of Defense (DoD) military munitions that may be present from past munitions-related activities. Prior documents related to the Leona Heights Rifle Range MRA/MRSs referred to DoD military munitions as munitions and explosives of concern (MEC). Such munitions may be determined upon evaluation by DoD Explosive Ordnance Disposal or similarly qualified personnel to be MEC.

1.4 DESCRIPTION OF SELECTED REMEDY

The ARNG, in coordination with DTSC, determined that the Leona Heights Rifle Range – Developed Areas MRS (AEDB-R: CAHQ-013-R-02) requires no further action (NFA).

ARNG, in coordination with DTSC and EBRPD, determined that the Leona Heights Rifle required additional response actions. These include land use controls (LUCs) (warning signs, fencing, community awareness, fact sheets, etc.) and focused surface and subsurface (to 24-inches below ground surface [bgs]) removal of DoD military munitions.

Surface and subsurface removal of DoD military munitions would be implemented within a 100-foot buffer at the toe of slope along the southwest and top of slope along the northeast boundaries of the Leona Canyon ROSP within the MRS where DoD military munitions/munitions debris (MD) have been discovered. An estimated 7.48 acre area within the MRS requires surface and subsurface removal of DoD military munitions. The ARNG estimates implementing this response action will take approximately three months. The anticipated cost for this remedy over 30 years, in 2017 dollars, is $1,081,000.00 (WESTON, 2017b, Alternative 3).

The removal of DoD military munitions within the 7.48-acre focused area will reduce the potential explosive hazards posed by unexploded ordnance (UXO) or discarded military munitions (DMM) that may, upon evaluation, be determined to be MEC. Removing DoD military munitions from the Leona Heights Rifle Range – Leona Canyon ROSP MRS reduces the potential for users of the MRS to come into contact with DoD military munitions in the areas most likely to be used by human receptors.

DoD military munitions recovered during removal actions will be evaluated to determine if they are MEC, with MEC destroyed on site by intentional detonation. MD and range-related material will also be evaluated, with explosive hazards destroyed on site. MD and other material determined that may be released to the public (e.g., recycled, or placed in a landfill) will be managed and processed as material potentially presenting an explosive hazard (MPPEH) per applicable DoD policy to document it's explosives safety status. Material documented as safe (MDAS) may be released to the public for recycling. Material documented as an explosive hazard (MDEH) will be destroyed on site by detonation.

These decisions are based on the results of the Army's inventory of Non-DoD Non-Operational Defense Sites (NDNODS) that met the requirements of a CERCLA PA (EA, 2009), a HRR (WESTON, 2011), a SI (WESTON, 2012), and a RI (WESTON, 2017a). The final remedies were evaluated for effectiveness, implementability, and cost in a FS (WESTON, 2017b), and proposed to the public in a PP (WESTON, 2018).

The 2009 PA indicated that the Leona Heights Rifle Range MRS was a 91.0-acre transferred range used for artillery mortar practice and small arms training by multiple CAARNG units from 1913 until the mid to late 1930s. The 2011 HRR and SI provided supplemental information including an excerpt from a letter dated 22 October 1917, from Brigadier General J.J. Borree that expresses appreciation to the California State Railroad Commission for assisting the National Guard in completing the Leona Heights Rifle Range in 1917. In addition, articles were located that indicated the range was used by high school cadets in 1920 and by the Rifle and Pistol Club of California State Railroad Commission in 1922. Although the MRS boundary was not changed, the original 91.0-acre size of the MRS was revised to 81.33 acres in the HRR based on geographic information system (GIS) measurements.

The ARNG conducted an SI for the Leona Heights Rifle Range MRS in October 2011 and included instrument-aided visual surveys and munitions constituents (MC) sampling. The SI revealed a small arms impact area, the remains of a pop-up targeting system consisting of a rod and wheel mechanism, a dugout trench with a protective berm, small arms debris consisting of .30 caliber projectiles, and a 3-inch Stokes mortar. Ten soil samples were collected. MC concentrations in soil were either non-detect or detected below screening levels. The DTSC concurred with NFA for MC at this stage and further action for DoD military munitions.

The ARNG completed a RI in 2016 using analog geophysical transects to bound the areas (i.e., determine the nature and extent) where DoD military munitions may be present within the Leona Heights Rifle Range MRS. The RI encountered four MD items (3-inch Stokes mortars) and 245 small arms items. The mortars were located near the base of the steep hill, near the southwest Leona Canyon ROSP boundary. All DoD military munitions/MD items were encountered between 2-inches and 24-inches bgs. Three of the mortars were originally considered MPPEH and demolished; however, they were re-classified as vented MD because the results of the demolition determined that the items contained no high explosives with no high order detonation. MC soil samples were collected at the pre- and post-detonation location and analyzed for MC (explosives). Explosives were not detected in the samples.

The RI recommended that the Leona Heights Rifle Range MRS be converted into an MRA and divided into two MRSs: 1) The Leona Heights Rifle Range – Leona Canyon ROSP MRS; and 2) The Leona Heights Rifle Range – Developed Areas MRS. The RI recommended additional munitions response (removal actions) for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (31.73-acres). It also recommended NFA for MC. The RI recommended NFA for the Leona Heights Rifle Range – Developed Areas MRS (49.60-acres) for both DoD military munitions and MC. The RI recommended NFA for this MRS because neither DoD military munitions nor MD were encountered within this MRS.

An FS addressed the alternatives that were considered for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (WESTON, 2017b). The following alternatives were evaluated: 1) No Action; 2) LUCs (engineering controls, educational controls, and long-term monitoring [LTM]); 3) LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions; and 4) LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions. A depth of 24-inches bgs was included in the alternatives because all items recovered during the RI and SI were encountered between zero (0)-inches and 24-inches bgs. This depth requirement also takes into account the detection depth of the proposed technology.

The preferred remedies for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (Alternative 3) and for the Leona Heights Rifle Range – Developed Areas MRS (NFA) were both presented to the public in a PP and advertised in a local newspaper, *The Oakland Tribune*, for a 35-day comment period from 05 January to 09 February 2018. A public meeting was held on 10 January 2018. The ARNG did not receive comments during either the PP or public comment period.

1.5 STATUTORY DETERMINATIONS

This ROD presents the selected remedies under CERCLA for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS. The remedies are (a) protective of human health and the environment, (b) comply with promulgated requirements that are applicable or relevant and appropriate to the remedial action, and (c) are cost effective.

The selected remedies also (a) represent the maximum extent to which permanent solutions can be used in a practicable manner at the Leona Heights Rifle Range – Leona Canyon ROSP MRS and Leona Heights Rifle Range – Developed Areas MRS and (b) satisfy the preference for treatment as a principal element of the remedy (reduces the potential for users of the MRS to encountered DoD military munitions that may be MEC in a focused area). Additionally, the remedies provide the best balance of trade-offs in terms of balancing criteria, while also considering the bias against off-site treatment and disposal and considering state and community acceptance.

The anticipated land use on both the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS is expected to remain the same as today: residential housing and a park (Leona Canyon ROSP).

Munitions response activities for the Leona Heights Rifle Range – Developed Areas MRS are now considered to have reached the response complete stage, pursuant to the DoD Manual (DoDM) 4715.20, Enclosure 3, Section 4b(15), page 40 (DoD, 2012). No other remedial action is necessary to ensure the protection of human health and the environment.

Munitions response activities for the Leona Heights Rifle Range – Leona Canyon ROSP MRS will not result in unlimited use/unrestricted exposure (UU/UE) at the MRS. Therefore, Five-Year Reviews, as required under CERCLA Section (§) 121(c) and NCP, Code of Federal Regulations ([CFR] §300.430(f)(4)(ii)) will be needed upon completion of the final remedy. There are no imposed statutory deadlines associated with a Federal Facilities Agreement or a Resource Conservation and Recovery Act (RCRA) permit.

1.6 DATA CERTIFICATION CHECKLIST

In accordance with the U.S. Environmental Protection Agency's (USEPA's) *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedial Selection Decision Document* (USEPA, 1999), the following information is included in the ROD's Decision Summary (Section 2):

- Current and reasonably anticipated future land use assumptions (Section 2.8);
- Key factors that led to selecting the remedy (i.e., describe how the selected remedy provides the best balance of tradeoffs with respect to the threshold, balancing, and modifying criteria) (Section 2.13);
- Estimated capital, annual Operations and Maintenance (O&M), periodic, and total present value costs for all alternatives considered (Section 2.13.1);
- Potential land use that will be available at the site as a result of the selected remedy (Section 2.13.2); and
- How source materials that may constitute principal threat wastes will be addressed (Section 2.14).

1.7 AUTHORIZING SIGNATURES

This signature sheet documents the ARNG approval with the remedies described in this ROD for both the Leona Heights Rifle Range – Developed Areas MRS and for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. The ARNG agrees that the selected remedial action for the Leona Heights Rifle Range – Leona Canyon ROSP MRS is required to address the potential explosive hazard posed by MEC that may be present. The ARNG also agrees that NFA is required for the Leona Heights Rifle Range – Developed Areas MRS.

_____ _____

WILLIAM M. MYER Date
COL, GS
I&E, Army National Guard

2.0 DECISION SUMMARY

This decision summary provides a description of the characteristics of the Leona Heights Rifle Range MRA, presents the selected remedial alternatives for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS, summarizes the analysis of the alternative options, presents the legal and public involvement concerns, and summarizes risk evaluation results. The proposed final remedy was presented in the *Final Proposed Plan, Leona Heights Rifle Range (CAHQ-013-R-01) Munitions Response Site, Alameda County, California* (WESTON, 2018).

2.1 SITE NAME, LOCATION, AND DESCRIPTION

The Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS combined compose the Leona Heights Rifle Range MRA. The MRA consists of 81.33 acres located along Keller Avenue and Campus Drive in Sequoyah, approximately seven miles southeast of Downtown Oakland, Alameda County, California (**Figure 2-1**). The MRA encompasses a portion (33.04 acres) of the public 290-acre EBRPD Leona Canyon ROSP and two residential areas (48.29 acres) consisting of condominium and townhouse complexes and single family residences. **Figure 2-2** depicts the ownership parcels for the Leona Heights Rifle Range MRA. **Figure 2-3** presents the location of the two MRSs within the Leona Heights Rifle Range MRA.

As part of the DoD Military Munitions Response Program (MMRP), ARNG is statutorily responsible to provide DoD military munitions response services at the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS. As required per Section 117(a) of CERCLA, ARNG is publishing this ROD to document public comment on the selection of NFA for the Leona Heights Rifle Range – Developed Areas MRS and further action for DoD military munitions for the Leona Heights Rifle Range – Leona Canyon ROSP MRS.

As the lead agency for remedial activities, ARNG has conducted environmental investigations at the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS in accordance with CERCLA, which was established by Section 211 of SARA of 1986. As the regulatory review agency, DTSC provides primary oversight of the environmental restoration actions.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Leona Heights Rifle Range MRA 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 from the firing line. EA completed a PA in 2009 that evaluated the MRS and recommended further investigation in an SI. Several investigations for DoD military munitions and MC were

conducted under the Leona Heights Rifle Range MMRP, including a PA, SI, and a RI. Descriptions of the previous investigations conducted at the MRS are provided in **Section 2.6**.

No regulatory enforcement actions have been reported for the Leona Heights Rifle Range MRA. The MRA is not listed on the National Priorities List as maintained by the USEPA. However, the Army has been managing the Environmental Restoration Program at the installation in accordance with CERCLA and Executive Order 12580. By issuing this ROD, the Army is fulfilling requirements of CERCLA §120(e) and NCP §§300.430(f)(2), 300.430(f)(4) and 300.435(c)(2) as outlined in USEPA's *Guide to Preparing Superfund Proposed Plans, Records of Decisions, and Other Remedy Selection Decision Documents* (USEPA, 1999).

2.3 COMMUNITY PARTICIPATION

NCP Section 300.430(f)(3) establishes a number of public participation activities that the lead agency must conduct following preparation of the PP and review by the support agency. ARNG, USACE, CAARNG, DTSC, and EBRPD have kept the community and other interested parties apprised of the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS activities through press releases. A Community Relations Plan (CRP) (WESTON, 2016a) was initiated by ARNG and USACE in 2016. The CRP and MMRP documents relevant to the investigations performed at the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS are included in the Administrative Record maintained at the Military Department, 3900 Roseville Road, North Highlands, California 95660. The information repository is located at the Eastmont Library Branch located at 7200 Bancroft Avenue, Suite 211, Oakland, California 94605. The Administrative Record and information repository were established to make documents and information, such as technical reports, data, and regulatory correspondence, pertaining to the Leona Heights Rifle Range MRA/MRSs accessible to the public. The Administrative Record File Index for the documents used in selecting a remedy for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS is provided as **Appendix A**.

The ARNG published a public notice to announce the availability of the PP for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS in the *Oakland Tribune* on 05 January 2018. In the PP, no further response actions under CERCLA was recommended for the Leona Heights Rifle Range – Developed Areas MRS and further response actions under CERCLA was recommended for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. ARNG held a 35-day public comment period from 05 January to 09 February 2018 to accept comments on the PP and information contained in the Administrative Record. Documentation of the public notice is included as **Appendix B**. In the public notice, ARNG announced a public meeting would be held on 10 January 2018 at 6:30 pm at Skyline Pizza, 4400 Keller Avenue #300, Oakland, California 94605. Additionally, a meeting was held on 10 January 2018 with personnel from the EBRPD to discuss the project and proposed future activities. No comments were received during the public comment period. A summary of the community participation process is provided in the Responsiveness Summary (**Section 3.0**).

2.4 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The NFA decision for the Leona Heights Rifle Range – Developed Areas MRS presented in this ROD is intended to protect public health and welfare, and the environment. No additional response actions will be necessary for the Leona Heights Rifle Range – Developed Areas MRS.

Based on results of investigations, the Leona Heights Rifle Range – Leona Canyon ROSP MRS is recommended to continue the CERCLA process through remedial action. Potential DoD military munitions hazard areas have been identified at the MRS and present a potential explosive hazard. The scope and role of the selected remedy includes LUCs and focused surface and subsurface removal of potential DoD military munitions to be protective of human health and the environment.

2.5 SITE CHARACTERISTICS

The following subsections present the site characteristics of the Leona Heights Rifle Range MRA/MRSs.

2.5.1 Demographics

According to the U.S. Census Bureau, the estimated population of Alameda County in 2016 was 1,647,704 with a density of 2,043.6 persons per square mile. Of the 564,293 households in Alameda County, the average household size is 2.79 persons, and the median household income is $79,831. Approximately 50.9 percent (%) of the Alameda County population is reported to be white, approximately 11.6% of the population is reported to be Black or African American, approximately 30.2% is reported to be Asian, approximately 1.1% is reported to be American Indian and Alaska Native, and approximately 1.0% is reported to be Native Hawaiian and Other Pacific Islander (U.S. Census Bureau, 2018a). The estimated 2016 population for Oakland, California is 420,005 (U.S. Census Bureau, 2018b).

2.5.2 Topography

The Leona Heights Rifle Range MRA topography is primarily rolling to flat in the western half of the MRA where the condominium and townhouse complex is located, while the eastern portion is very steep with sloping hillsides and heavily vegetated gullies. Portions of the hillside in the eastern half of the MRA are impassable due to very dense vegetation and/or steep terrain, especially on the upper slopes of the MRA. The western portion of the MRA consists mostly of a highly developed residential neighborhood; however, an oak-covered hillside is located in the southwest corner of the MRA.

2.5.3 Climate

The warmest month of the year at Oakland International Airport, California, is September with an average maximum temperature of 73.4 degrees Fahrenheit (ºF) and the coldest month of the year is January with an average minimum temperature of 41.9 ºF. In the summer, the temperatures tend

to be in the lower to mid-70s, while in the winter months the temperatures are in the 40s. Annual average precipitation is 18.03 inches with winter being the wettest season with 9.53 inches of precipitation (Western Regional Climate Center [WRCC], 2015).

The average annual wind speed is 8.8 miles per hour and average prevailing wind direction (direction wind blows from) is west at the Oakland International Airport (station ID: KOAK). Wind speed varies by season with average speeds between 6.8 and 8.5 miles per hour occurring from September through February. Average wind speeds between 9.0 and 10.4 miles per hour occur from March through August. Average wind direction is west from February through November and from the southeast in December and January (WRCC, 2017a and 2017b).

2.5.4 Geology and Soil

The Leona Heights Rifle Range MRA contains two underlying geologic formations that divide the MRA to the east and west. The eastern half of the MRA contains cretaceous marine formation while the western half is a tertiary intrusive formation. The cretaceous marine formation contains undivided cretaceous sandstone, shale, and conglomerate; with minor non-marine rocks in Peninsular Ranges from the early to late Cretaceous age. The tertiary intrusive formation is mostly shallow plugs and dikes that include some Mesozoic rocks from the Jurassic age (WESTON, 2012).

Soils types at the Leona Heights Rifle Range MRA can be classified as loam or silt loam. Soil units found within the Leona Heights Rifle Range MRA based on the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey are described in **Table 2-1** (USDA NRCS, 2018).

2.5.5 Hydrology and Hydrogeology

The Leona Heights Rifle Range MRA is located in the California Coastal Basin national aquifer. A well is located 2.9 miles southwest of the MRA and in 1999 had a depth-to water of 40.8 feet bgs. Rifle Range Creek flows from north to south across the MRA and eventually drains to the west.

2.5.6 Vegetation

Vegetation at the Leona Heights Rifle Range MRA consists of barren to low grass, live oak, buckwheat, and blackberry brambles. Based on the Gap Analysis Program (GAP) (U.S. Geological Survey [USGS], 2011) the MRA largely consists of developed land (medium intensity, low intensity, and open space), specifically in the southern half of the MRA and the northern tip of the MRA. Remaining vegetation consists of Southern California Coastal Scrub, California Coastal Live Oak Woodland and Savanna, California Coastal Redwood Forest, and California Central Valley and Southern Coastal Grassland. A description of each of the vegetation types is listed in **Table 2-2**.

Table 2-1
Soil Descriptions

Location	Unit Name	Surface	Subsoil	Substratum	Drainage	Runoff Class	Percent of MRA
Leona Heights Rifle Range MRA	129 – Millsholm silt loam, 50%-75% slopes	Silt loam (0-20 inches)	Unweathered bedrock (20-24 inches)	-	Well drained	Very high	57.4%
	126 – Maymen loam, 30% to 75% slopes	Loam (0-19 inches)	Unweathered bedrock (19-23 inches)	-	Somewhat excessively drained	Very high	13.6%
	128 – Millsholm silt loam, 30% to 50% slopes	Silt loam (0-20 inches)	Unweathered bedrock (20-24 inches)	-	Well drained	Very high	12.8%
	127 – Maymen-Los Gatos complex, 30% to 75% slopes, low precipitation, MLRA 15	Loam (0-9 inches)	Loam (9-19 inches)	Bedrock (19-23 inches)	Somewhat excessively drained	Very high	7.6%
	160 – Xerorthents-Millsholm complex, 50% to 75% slopes	Silt loam (0-20 inches)	Unweathered bedrock (20-24 inches)	-	Well drained	Very high	6.1%
	119 – Los Gatos-Los Osos complex, 50% to 75% slopes	Loam (0-15 inches)	Loam (15-40 inches)	Unweathered bedrock (40-44 inches)	Well drained	High	2.4%
	159 – Xerorthents-Millsholm complex, 30% to 50% slopes	Silt loam (0-60 inches)	-	-	Well drained	High to Very High	0.2%

Note: Table generated from the USDA NRCS, Web Soil Survey Tool, website accessed on 13 February 2018 at https://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx

Table 2-2
Vegetation Type Descriptions

Class	Subclass	Description
Warm Temperate Forest	California Forest and Woodland	**California Coastal Live Oak Woodland and Savanna** – These coast live oak-dominated woodlands occur throughout the Pacific coastal areas from Sonoma County, California south to Baja, California. Cover varies from nearly interlocking canopies with lush understory shrubs such as California blackberry, creeping snowberry, toyon, and poison-oak, to more open conditions with long-lived grasses. More open stands typically occur on south-facing slopes. Denser stands are often in areas with more moisture, such as north facing or at the bottom of a slope. Past land use, such as fire, fire suppression, livestock grazing, herbivory by feral pigs or other wildlife, can also affect stand structure.
Mediterranean Scrub	California Coast Scrub	**Southern California Coastal Scrub**– This mixed coastal shrubland occurs from central California south into Baja Norte, Mexico. It is composed of drought-deciduous shrubs such as California sagebrush, black sage, white sage, purple sage, California brittlebush, and California wild buckwheat. Also present are fire-tolerant evergreen shrubs, laurel sumac, lemonade sumac, and hollyleaf buckthorn. Recent increases in the number of fires have converted many of these shrublands to non-native, annual grasslands. Abundance of fire-tolerant shrubs and coastal prickly-pear have increased in many areas.
Mediterranean Grassland & Forb Meadow	California Annual & Perennial Grassland	**California Central Valley and Southern Coastal Grassland**– This system is found from 10-1,200 meters (30-3,600 feet) elevation; receiving on average 50 centimeters (range 25-100 centimeters) of precipitation per year, mainly as winter rain. It is found with fine-textured soils, moist or even waterlogged in winter, but very dry in summer. Historically, these grasslands were common among oak savanna and woodland and probably experienced similar frequent fire regimes. Characteristic plant species include purple needlegrass, threeawn spp., boreal yarrow, blow-wives, annual goat-chicory, common goldenstar, prettyface, wavyleaf soap-plant, winecup fairyfan, tall mountain shootingstar, blue wild rye, beardless lyme grass, California fescue, California melicgrass, attenuate Indian-paintbrush, and curly bluegrass.
Cool Temperate Forest	Vancouverian Lowland & Montane Rainforest	**California Coastal Redwood Forest**– These are giant conifers forests, found in the coastal fog belt. Among the tallest forests in the world, coast redwood, Port Orford cedar, Douglas fir and western hemlock trees grow over 300 feet tall, sometimes with tanoak and laurel subcanopies over 100 feet tall. They occur on river terraces and coastal slopes. Understory plants are diverse and typical of coastal conifer forests, although usually are composed of evergreen shrubs or perennial wildflowers. These beautiful tall trees are not to be confused with their Sierran foothill cousins, the Sequoia Redwood, which tend to be larger in girth.
Developed & Urban	Developed & Urban	**Developed, Open Space–** Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
Developed & Urban	Developed & Urban	**Developed, Medium Intensity –** Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79% of the total cover. These areas most commonly include single-family housing units.
Developed & Urban	Developed & Urban	**Developed, Low Intensity–** Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49% of total cover. These areas most commonly include single-family housing units.

Note: Data in table is from the USGS (2011).

2.5.7 Wildlife

There are no Federal threatened or endangered species known to exist on the Leona Heights Rifle Range MRA; however, a site specific biologic assessment has not been conducted. The following threatened or endangered species are known to exist within Alameda County, California (U.S. Fish and Wildlife Service [USFWS], 2018):

- Amphibians
  - California tiger Salamander (*Ambystoma californiense*) – Threatened
  - California red-legged frog (*Rana draytonii*) – Threatened
- Birds
  - California least tern (*Sterna antillarum browni*) – Endangered
  - California clapper rail (*Rallus longirostris obsoletus*) – Endangered
  - Yellow-billed Cuckoo (*Coccyzus americanus*) – Threatened
  - Western snowy plover (*Charadrius alexandrines nivosus*) – Threatened
- Flowering Plants
  - Pallid manzanita (*Arctostaphylos pallida*) – Threatened
  - Santa Cruz tarplant (*Holocarpha macradenia*) – Threatened
  - Contra Costa goldfields (*Lasthenia conjugens*) – Endangered
  - Large-flowered fiddleneck (*Amsinckia grandiflora*) – Endangered
  - Presidio clarkia (*Clarkia franciscana*) – Endangered
  - Palmate-bracted bird's beak (*Cordylanthus palmatus*) – Endangered
  - San Mateo thornmint (*Acanthomintha obovate ssp. duttonii*) – Endangered
  - California seablite (*Suaeda californica*) – Endangered
  - Robust spineflower (*Chorizanthe robusta var. robusta*) – Endangered
- Insects
  - Mission blue butterfly (*Icaricia icarioides missionensis*) – Endangered
  - San Bruno elfin butterfly (*Callophrys mossii bayensis*) – Endangered
  - Callippe silverspot butterly (*Speyeria callippe callippe*) – Endangered
  - Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) – Threatened
  - Bay checkerspot butterfly (*Euphydryas editha bayensis*) – Threatened
- Mammals
  - San Joaquin kit fox (*Vulpes macrotis mutica*) – Endangered
  - Salt marsh harvest mouse (*Reithrodontomys raviventris*) – Endangered
- Reptiles

- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) – Endangered
- Alameda whipsnake (=striped racer) (*Masticophis lateralis euryxanthus*) - Threatened
- Giant garter snake (*Thamnophis gigas*) - Threatened

Additionally, four crustacean species and three fish species were listed for Alameda County but are not included above. No crustaceans or fish are of potential concern on the MRA because no surface water is present.

2.6 PREVIOUS INVESTIGATIONS

Previous investigation activities conducted at the Leona Heights Rifle Range MRA/MRSs are summarized in **Table 2-3** and discussed in the following subsections. **Table 2-4** lists the total acreage for the Leona Heights Rifle Range MRA/MRSs through different phases of the CERCLA process.

2.6.1 Preliminary Assessment

EA conducted a Site Inventory (referred to as a PA) in 2009 to determine whether sites in California were eligible for inclusion in the MMRP. According to the California PA Report (EA, 2009), the Leona Heights Rifle Range MRS was used for artillery practice, mortar practice, and small arms training by multiple CAARNG units from 1913 until the mid to late 1930s. During a typical year, as many as 30,000 Guardsmen fired the prescribed course at the range. Leona Heights Rifle Range was once the largest range on the Pacific Coast. Beginning in 1913, the range was first used as a target area for artillery, with the small arms range being constructed in 1920. A historical photograph depicts a unit practicing with 3-inch Stokes mortars at the range during this time. Based on an analysis of historical aerial photographs, the range consisted of as many as five target berms at varying distances extending west to east as far as 1,000 yards from the firing line. Small arms fire was directed toward a natural hillside that served as a backstop to the entire range. In 1942, portions of the range were developed as a hospital, which closed in 1993. Since then, the majority of the former range has been redeveloped into a light- to medium-density residential area. Because of the steep topography, the hillside that served as the backstop to the range remains undeveloped.

Because of the location of the former range in a highly-developed area, a right-of-entry was not obtained for the PA. A modified site visit was conducted in support of the PA on 20 February 2008, at which time global positioning system (GPS) data were collected from Keller Avenue and Campus Drive, which were the closest publicly accessible areas around the site. There is unrestricted public access to the former range area. No range features were identified during the modified site visit and no MD or DoD military munitions were observed. The PA report (EA, 2009) concluded that the 91.0-acre Leona Heights Rifle Range MRS met the MMRP eligibility requirements and recommended that the MRS be further investigation in an SI.

Table 2-3
Study/Investigation Summary

Study/Investigation	Date	Study/Investigation Summary
PA	2009	Review of records to inventory NDNODS sites in California. Identified the Leona Heights Rifle Range MRS and recommended it be investigated in an SI (EA, 2009).
SI Work Plan/HRR	2011	Review of historical records to further document historical and other known information for the MRS and to supplement the information developed during the PA (WESTON, 2011).
SI	2012	The purpose of the SI was to determine the presence or absence of DoD military munitions and MC at the MRS through the use of instrument-aided visual surveys and soil sampling. The SI identified MD at the MRS consisting of small arms debris (.30 caliber projectiles) and a 3-inch Stokes mortar. Additional visual finds included the remains of a pop-up targeting system and berms. No DoD military munitions were identified. Ten soil samples were collected but no MC was detected above screening levels (WESTON, 2012).The SI recommended NFA for MC but further action for DoD military munitions during the RI phase of the CERCLA process.
RI	2016	During the RI, 351 anomalies were investigated. Three MPPEH items (3-inch Stokes mortars) and one MD item (3-inch Stokes mortar) were identified. The three MPPEH items were demolished and determined to have been vented MD. Both pre- and post-detonation soil MC samples were collected and analyzed for explosives. No explosives were detected in the samples. It was recommended that the MRS be converted into an MRA and divided into two MRSs: Leona Heights Rifle Range – Leona Canyon ROSP MRS and Leona Heights Rifle Range – Developed Areas MRS. The RI Report recommended NFA for both DoD military munitions and MC at the Leona Heights Rifle Range – Developed Areas MRS and NFA for MC and further action for DoD military munitions at the Leona Heights Rifle Range – Leona Canyon ROSP MRS (WESTON, 2017a).
FS	2017	A FS was conducted for the Leona Heights Rifle Range – Leona Canyon ROSP MRS to determine a remedial alternative for DoD military munitions. Four alternatives were evaluated: 1) No Action; 2) LUCs; 3) LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions; and 4) LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions. The alternatives were evaluated against the NCP criteria and against each other and the recommended alternative was Alternative 3: LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions (WESTON, 2017b).
PP	2018	The PP presented the preferred remedial alternative to the public during a 35-day comment period from 05 January 2018 to 09 February 2018. The preferred remedial alternative is Alternative 3: LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions. An announcement was placed in the *Oakland Tribune* and a copy of the PP was available at the Eastmont Library Branch in Oakland, California. A public meeting was held on 10 January 2018. No comments were received during the public comment period (WESTON, 2018).

Table 2-4
Acreage Summary

Study Investigation	MRS	Acreage
PA	Leona Heights Rifle Range MRS	91.0 acres
HRR	Leona Heights Rifle Range MRS	81.33 acres
SI	Leona Heights Rifle Range MRS	81.33 acres
RI	Leona Heights Rifle Range MRS	81.33 acres
FS	Leona Heights Rifle Range MRA Leona Heights Rifle Range – Leona Canyon ROSP MRS Leona Heights Rifle Range – Developed Areas MRS	81.33 acres 31.73 acres 49.60 acres
PP	Leona Heights Rifle Range MRA Leona Heights Rifle Range – Leona Canyon ROSP MRS Leona Heights Rifle Range – Developed Areas MRS	81.33 acres 31.73 acres 49.60 acres
ROD	Leona Heights Rifle Range MRA Leona Heights Rifle Range – Leona Canyon ROSP MRS Leona Heights Rifle Range – Developed Areas MRS	81.33 acres 31.73 acres 49.60 acres

2.6.2 Historical Records Review

During the HRR (WESTON, 2011), records searches were performed to supplement information gathered during a survey of closed, transferred, and transferring military ranges, in order to facilitate decision-making processes determining next steps for the SI. The historical records research completed for the Leona Heights Rifle Range MRS included contacting the California State Library in Sacramento, California; California Historical Society in San Francisco, California; the Oakland Public Library; and various Internet Web sites.

An excerpt from a letter dated 22 October 1917, from Brigadier General J.J. Borree is incorporated in the Annual Report by the California Public Utilities Commission from 01 July 1919 to 30 June 1920. The letter expresses appreciation to the California State Railroad Commission for assisting the National Guard in completing the Leona Heights Rifle Range in 1917. This range was to provide the Coast Artillery instruction in rifle practice before the organizations were called to federal service. In addition, articles were located that indicated the use of the Leona Heights Rifle Range by high school cadets in 1920 and by the Rifle and Pistol Club of the California State Railroad Commission in 1922. In addition, the California State Library houses a collection of *California Guardsman* from 1924 to 1940. A June 1925 article describes a weekend camp of the 3rd Battalion 159th Infantry at Leona Heights that includes a photograph of the encampment.

No relevant records associated with any Army National Guard activities were located at the Oakland Public Library or the California Historical Society.

Although the original MRS boundary depicted in the PA was not changed, GIS was used to recalculate the MRS acreage from the PA. Based on this GIS measurement, the original 91.0-acre size of the MRS stated in the PA Report was revised to 81.33 acres. The nature of this discrepancy and the methodology used to calculate the acreage of the MRS in the PA report are unknown (WESTON, 2011).

2.6.3 Site Inspection

The SI was conducted on 3 and 4 October 2011. During the SI, approximately 11 line miles of visual survey transects were conducted within the MRS aided by hand-held metal detectors (**Figure 2-4**). A small arms impact area was identified towards the top of the steep hillside adjacent to the northeastern-most target area. The target area contained the remains of a pop-up targeting system located in a dugout trench with a protective berm area in front of the targets and a natural backstop hillside behind them. Small arms debris consisting of .30 caliber projectiles was identified on the surface of the earthen berm in front of and on the slope behind the target system. A 3-inch Stokes mortar was discovered at the surface on the western side of the Leona Canyon ROSP at the south end of the central gully. The mortar was identified as a DoD military munition 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 a DoD military munition, the responding ACSO EOD officer, following inspection, determined that it did not pose an explosive hazard. The mortar was taken to the ACSO EOD range for final disposition. Subsurface anomalies were detected a short distance below the mortar that were consistent with that type of munition (WESTON, 2012). Based on the SI, the MRS was recommended for further investigation for DoD military munitions.

Nine surface soil samples and one field duplicate were collected at various locations throughout the MRS (**Figure 2-4**). The soil samples were analyzed for explosives via USEPA method 8330A and metals (antimony, copper, lead, and zinc) via USEPA method 6010C and were compared to the USEPA Regional Screening Levels and the California Human Health Screening Levels. All analytical results were below USEPA and California screening levels. Therefore, the Leona Heights Rifle Range MRS was recommended for NFA for MC.

2.6.4 Remedial Investigation

The RI field activities were conducted from 07 June 2016 to 15 June 2016. The goal of the RI was to determine the nature and extent of DoD military munitions and MC and to evaluate the associated hazards and potential risks posed to human health and the environment on the 81.33-acre Leona Heights Rifle Range MRS. The characterization activities were also used to determine whether further action was required under the CERCLA process.

2.6.4.1 Department of Defense Military Munitions Investigation and Results

Characterization of DoD military munitions employed during the RI at the Leona Heights Rifle Range MRS included analog transect surveys (**Figure 2-5**) to detect potential DoD military munitions in the surface and subsurface within accessible areas followed by intrusive investigation

along transects at anomaly locations to determine the nature, type, and distribution of DoD military munitions and MD.

Digital geophysical mapping surveys were not planned to be performed as part of this RI due to the steep topography and dense vegetation. Analog handheld White's MXT all-metal detectors with an effective detection depth of 24-inches were used during the RI transect survey and subsequent intrusive investigation. Each anomaly detected was physically marked (flagged) in the field and the location recorded with GPS for subsequent intrusive investigation. Anomaly locations, features, and other points of interest were recorded with a Trimble Geo 7X GPS.

Using a Geo 7X GPS, qualified UXO personnel navigated to the subsurface anomaly and MD locations identified during the SI to layout two mini-grids (15-feet by 10-feet) at the locations of subsurface anomalies and where MD, Practice 3-inch Stokes mortars, were found. The mini-grids were located in dense vegetation which dictated the layout. Additional transects and mini-grids were added after intrusive investigation along the proposed transects and mini-grids. In accordance with the approved RI Work Plan (WESTON, 2016b), the additional transects and mini-grids were placed in accessible areas to delineate the MD. Transect and mini-grid locations and orientations are shown on **Figure 2-5**.

Qualified UXO personnel used hand tools to excavate and identify the 351 anomalies identified during the geophysical survey. Anomalies were categorized as MD, MPPEH, small arms ammunition (SAA), or non-munitions debris (NMD). Munitions-related anomalies included:

- MD – T02-023, 3-inch Stokes mortar
- MPPEH – T03-016, T03-034, and T03-035, 3-inch Stokes mortars

No munitions related "frag" (MD) was identified and the remaining anomalies were either SAA or NMD. The intrusive results summary is presented in **Table 2-5** and the anomaly types and locations are presented on **Figure 2-5**.

Table 2-5
Leona Heights RI Intrusive Summary

Item	Count	Percent (%)
MD	1	0.3%
MPPEH	3	0.9%
SAA	245	69.8%
NMD	102	29.1%
Total	**351**	**100.0%**

Intentional detonation of MPPEH was performed in accordance with the USACE approved Explosives Site Plan, the Explosives Management Plan, and Demolition Operating Procedures (Section 3 and Appendix H of the RI Work Plan; WESTON, 2016b). The intentional detonations followed the requirements of Engineering Manual (EM) 385-1-97 (USACE, 2013), applicable Bureau of Alcohol, Tobacco, Firearms, and Explosives requirements, and applicable federal, state,

and local regulations. The inspection/certification of MPPEH was conducted in accordance with DoD Instruction (DoDI) 4140.62 (DoD, 2015) and EM 200-1-15 (USACE, 2015).

The three MPPEH 3-inch Stokes mortars found in transect T03 were determined safe to move by the Senior UXO Supervisor (SUXOS) and UXO Safety Officer (UXOSO) and relocated to an area on the western end of transect T02. The MPPEH items were secured in a double locked job box by the SUXOS who controlled access. The items were guarded 24 hours a day (visual surveillance) from the time of discovery to intentional detonation.

WESTON coordinated demolition operations with the USACE Project Manager, USACE Ordnance and Explosives Safety Specialist, ARNG, EBRPD-Police and Fire, and condominium residents beginning on 15 June 2016. Intentional detonation of the three MPPEH 3-inch Stokes Mortars was performed on 17 June 2016 using the Buried Explosion Module (BEM) per DoD Explosives Safety Board (DDESB) Technical Paper 16 Revision 3 (DDESB, 2009). The MPPEH staging and demolitions areas are presented on **Figure 2-5**.

Each MPPEH item was prepped with two perforators and ten feet of detonation cord. Per the BEM requirements, a hole was dug to approximately two feet bgs, the prepped MPPEH item was placed in the hole, the hole was backfilled, and approximately two feet of sandbags were placed on the hole. Each shot was dual primed with two 40-millisecond delay detonators and two lengths of lead line which ran to the firing point. The UXOSO and SUXOS ensured that the area was clear of unauthorized personnel prior to permitting attachment of the lead line to the detonators and prior to detonation. When the exclusion zone was secure, the lead line was initiated with a mushroom-style lead line initiator detonating the MPPEH item. After each detonation, the item was excavated and inspected by the SUXOS and verified by the UXO Quality Control Specialist (UXOQCS) to ensure that no explosive or fire hazards remained. Following excavation and inspection, the process was repeated for the remaining MPPEH items. All three items were classified as vented MD and identified as MD on the dig list because they did not contain high explosives with high order detonation. The demolition area remained secured until the SUXOS, in conjunction with the UXOSO, gave the “all clear”.

The MD was dual-inspected by the SUXOS and UXOQCS, certified as MDAS, and locked in the job box for transportation and processing via smelting.

2.6.4.2 Munitions Constituents Investigation and Results

At the completion of the SI, the Leona Heights Rifle Range MRS was recommended for NFA regarding MC and did not require additional MC sampling. MC samples would have been be collected during the RI if an MC release was suspected due to field observations (e.g. burial sites, low-ordered or damaged DoD military munitions, or MC associated soil staining). MC samples were not collected during the RI based on field observations. However, biased discrete MC samples were collected prior to and following intentional detonation of MPPEH. These discrete samples were collected from locations most likely to be impacted by MC and were used to confirm the presence of MC.

Both the pre- and post-detonation samples were collected from the bottom of the BEM hole prior to and following detonation. The samples were collected, prepared, shipped and analyzed for explosives (nitroaromatics and nitroamines) via USEPA Method 8330B. Analytical results for the samples did not indicate concentrations above the laboratory detection limit (i.e. non-detect) for any of the analytes.

2.6.4.3 RI Summary

Based on the results of the RI field activities, the following conclusions and recommendations were determined for the Leona Heights Rifle Range MRS:

- The Leona Heights Rifle Range MRS should be delineated into a MRA that is divided into two MRSs (**Figure 2-6**). The Leona Heights Rifle Range – Leona Canyon ROSP MRS (AEDB-R: CAHQ-013-R-01) (31.73-acres) covers the portions of the MRA where the 3-inch Stokes mortars were found and is comprised of the majority of the Leona Canyon ROSP that falls within the MRA. The Leona Heights Rifle Range – Developed Areas MRS (AEDB-R: CAHQ-013-R-02) (49.60-acres) covers the remaining portions of the MRA where no DoD military munitions/MD or small arms items were found during the SI or RI.
- Four MD items and 245 small arms items were discovered on the Leona Heights Rifle Range MRS during the RI field activities.
- MC sampling activities indicated that no explosives were detected above screening levels during RI field activities.

The RI recommended that the Leona Heights Rifle Range – Developed Areas MRS go forward as NFA for DoD military munitions and MC as the results of the RI indicated that conditions are considered safe for current and future uses. The RI recommended that the Leona Heights Rifle Range – Leona Canyon ROSP MRS go forward as further action for DoD military munitions in a FS. ARNG, USACE, and CAARNG concurred with the recommendations.

2.6.4.4 Feasibility Study

The purpose of the FS was to identify and evaluate remedial action alternatives for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (WESTON, 2017b). The FS included a detailed and comparative analysis based on criteria outlined in the NCP for the following four alternatives:

- Alternative 1 – No Action;
- Alternative 2 – LUCs;
- Alternative 3 – LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions; and
- Alternative 4 – LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions.

Alternative 3 was presented as the preferred alternative.

2.6.4.5 Proposed Plan

The PP presented the findings of the FS and the preferred alternative for addressing DoD military munitions at the Leona Heights Rifle Range – Leona Canyon ROSP MRS. The preferred alternative is Alternative 3: LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions.

2.7 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was developed for the Leona Heights Rifle Range MRA to depict the potential relationship or exposure pathway between chemical or explosive sources and receptors. Receptors for the MRA are identified as site workers, land owners/residents (adult/child), and recreational users/site visitors/trespassers (adult/child). An exposure pathway describes the means by which a receptor can be exposed to the chemicals and explosive hazards in the environmental media. The DoD military munitions and MC pathways are summarized based upon current and potential future land uses. The DoD military munitions and MC sources and the relevant pathways to receptors are discussed below.

2.7.1 Department of Defense Military Munitions

A pathway for DoD military munitions is considered complete if human receptors can come into physical contact with DoD military munitions. The hazard from DoD military munitions arises from direct contact as a result of human activities and access.

Four MD items were identified during the RI at the Leona Heights Rifle Range – Leona Canyon ROSP MRS. MD items were encountered between two-inches and 24-inches bgs. DoD military munitions are considered to be potentially present in the Leona Heights Rifle Range – Leona Canyon ROSP MRS. Accessibility to the MRS is unimpeded from all directions but access to portions of the MRS is limited due to steep terrain and thick vegetation. Receptors have the potential to come into contact with DoD military munitions. Within the Leona Heights Rifle Range – Leona Canyon ROSP MRS, the DoD military munitions pathway is considered potentially complete for the surface and subsurface based on the results of the RI (**Figure 2-7**). The pathway is considered incomplete for the Leona Heights Rifle Range – Developed Areas MRS because no DoD military munitions or MD has been recovered in this area.

2.7.2 Munitions Constituents

A complete pathway for MC consists of four elements: source of contaminants, transport mechanism of contamination, mechanism for exposure, and current and potential receptors. A pathway for MC is incomplete if one of the above elements is missing and there is no expected change to MRA conditions that would make all four elements available. The risk assessment conducted during the RI concluded that there is no unacceptable risk at the Leona Heights Rifle Range MRA due to MC; therefore all pathways relating to MC are considered incomplete.

2.8 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The Leona Heights Rifle Range –Developed Areas MRS is primarily located on privately-owned land used for residential purposes with a small portion located in the Leona Canyon ROSP and used for recreational purposes (**Figures 2-2 and 2-3**). Future land use is not expected to change.

The Leona Heights Rifle Range – Leona Canyon ROSP MRS is located on land managed by the EBRPD and used for recreational purposes (**Figures 2-2 and 2-3**). Future land use is not expected to change.

2.9 SUMMARY OF SITE RISKS

2.9.1 Human Health and Ecological Risk Assessment

The purpose of a human health risk assessment is to document whether the Leona Heights Rifle Range – Leona Canyon ROSP MRS and Leona Heights Rifle Range – Developed Areas MRS conditions may pose a potential risk to current or future MRS receptors and to identify which, if any, MRS conditions need to be addressed further in the CERCLA process. Both pre- and post-detonation samples were collected from the Leona Heights Rifle Range MRS during the RI and analyzed for explosives. No explosives were detected above the laboratory detection limits. Therefore, a site-specific risk assessment was not required as there is no potential risk to human health from MC at the Leona Heights Rifle Range MRSs.

No critical or endangered species are known to be present at the Leona Heights Rifle Range MRSs (CA.gov, 2015) and no sensitive ecological habitat was observed during the SI and/or RI activities. Therefore, potential ecological exposure pathways are incomplete.

2.9.2 Munitions and Explosives of Concern Hazard Assessment

The purpose of the Munitions and Explosives of Concern Hazard Assessment (MEC HA), as described in the *Interim Munitions and Explosives of Concern Hazard Assessment Methodology*, (Technical Working Group – Hazard Assessment [TWG-HA], 2008), is to support the hazard management decision-making process by analyzing site-specific information to assess existing explosive hazards, evaluate hazard reductions associated with removal and remedial alternatives, and evaluate hazard reductions associated with land use activity decisions. The MEC HA is designed to be used at the end of an RI. The risk of exposure to DoD military munitions at the MRS is based on historical findings from the SI and RI. The following three components are used to evaluate the potential for explosive hazard incidents:

- Severity, which is the potential consequences of the effect on a human receptor should a DoD military munitions item detonate;
- Accessibility, which is the likelihood that a human receptor will be able to come in contact with an DoD military munitions item; and,
- Sensitivity, which is the likelihood that a human receptor will be able to interact with a DoD military munitions item such that it will detonate (TWG-HA, 2008).

A MEC HA score was generated for current use activities and response alternatives using the following input factors:

- Energetic material type;
- Location of additional human receptors;
- Site accessibility;
- Potential contact hours
- Amount of DoD military munitions;
- Minimum DoD military munitions depth relative to maximum intrusive depth;
- Migration potential;
- DoD military munitions classification; and
- DoD military munitions size.

The Leona Heights Rifle Range – Leona Canyon ROSP MRS received a MEC HA score of 870 out of 1,000 points (hazard level category 1) for current land use activities at the MRS.

Scores were also generated for the alternatives screened in the FS for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. Future activities were assumed to be the same as current activities. The score for Alternative 1: No Action is 870 (hazard level category 1). The score for Alternative 2: LUCs is 830 (hazard level category 2). The score for Alternative 3: LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions is 505 (hazard level category 4). The score for Alternative 4: LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions is 475 (hazard level category 4).

2.10 REMEDIAL ACTION OBJECTIVE

The final remedy for the Leona Heights Rifle Range – Leona Canyon ROSP MRS will be designed to achieve the remedial action objective (RAO) described in this section. The RAO, as described in the Final FS for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (WESTON, 2017b), is to:

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

2.11 DESCRIPTION OF ALTERNATIVES

Remedial alternatives were developed in the FS by assembling the evaluated remedial technologies (WESTON, 2017b). Remedial alternatives must meet the RAO in order to ensure that the selected remedy is protective of human health and the environment and complies with applicable regulations. The following technologies were assembled into alternatives in the FS: 1) no action; 2); LUCs (engineering controls, educational controls, and LTM); and 3) DoD military munitions removal. Based on the technology screening in the FS, the following alternatives were assembled:

- Alternative 1 – No Action;

- Alternative 2 – LUCs;
- Alternative 3 – LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions; and
- Alterative 4 – LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions.

The following sections provide a description of each remedial alternative and how each remedial alternative meets the RAO for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. CERCLA and the NCP [CERCLA § 121(c) and NCP § 300.430(f)(4)(ii)] require Five-Year Reviews where UU/UE is not achieved (USEPA, 2001). Recurring reviews determine if a remedial action continues to minimize the hazard, continues to be protective of human health and the environment, and provide an opportunity to assess the applicability of new technology for addressing previous impracticability determinations.

2.11.1 Alternative 1 – No Action

The no action alternative is carried through the analysis to provide a baseline for comparison to the other alternatives. This alternative does not provide mitigation of hazards, contaminant reduction, monitoring, or LUCs and is the least preferred category. This alternative does not meet the RAO but is required by the NCP. Site access is assumed to be unrestricted and there are no limitations on current or future site use or activities.

2.11.2 Alternative 2 – Land Use Controls

Alternative 2 includes LUCs for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and is included to meet the CERCLA/NCP requirement that one remedial alternative be provided that involves little or no treatment. Alternative 2 LUCs include educational controls and engineering controls to achieve the RAO and compliance with applicable or relevant and appropriate requirements (ARARs) identified for the MRS. Contaminant toxicity, mobility, and volume would not be reduced by implementation of Alternative 2; however, protection of human health and the environment and ultimately the RAO would be achieved if implemented.

The principal elements of hazard mitigation in this Alternative are LUCs and LTM. DoD military munitions hazards would be mitigated by LUCs, management plans, and LTM to prevent receptors from coming in contact with DoD military munitions. LUCs would include educational controls such as public notices; a community awareness meeting; letter notifications, informational pamphlets, and fact sheets; and a website. Engineering controls would include fencing along the southwestern border between the Leona Canyon ROSP and adjacent residential areas and warning signs located at access points to the Leona Canyon ROSP and along MRS boundaries at approximately 300-foot intervals to warn potential receptors of the potential DoD military munitions hazards. At least two gates will be placed in the fence for emergency access, fuel reduction work, and firefighting access.

Yearly inspections and replacement of signs are included as part of LTM and would substantiate LUC restrictions. A Five-Year Review is also required for this remedy, as it results in hazards remaining on site above levels that allow for UU/UE (USEPA, 2001). **Figure 2-8** presents the associated LUCs with Alternative 2.

2.11.3 Alternative 3 – Land Use Controls and Focused Surface and Subsurface (24-Inches below Ground Surface) Removal of Department of Defense Military Munitions

Alternative 3 includes DoD military munitions detection, removal, and disposal technologies to mitigate the potential explosive hazards at the Leona Heights Rifle Range – Leona Canyon ROSP MRS by clearing a 100-foot buffer zone along the southwestern (3.13 acres) and northeastern (4.35 acres) boundaries of the MRS to address property owner concerns as these are fuels management areas for the EBRPD (**Figure 2-9**). In addition, LUCs (as presented in Alternative 2) would be implemented for the entire Leona Heights Rifle Range – Leona Canyon ROSP MRS, including educational controls, engineering controls, annual inspections, and Five-Year Reviews.

Prior to surface and subsurface clearance, vegetation thinning would be required across the 100-foot wide buffer zones. **Figure 2-10** shows the location and types of vegetation at the Leona Heights Rifle Range – Leona Canyon ROSP MRS. Vegetation thinning would be required on the areas where trees and shrubs are present to allow qualified UXO personnel to access the ground surface. After vegetation thinning, a full coverage surface and subsurface clearance would be conducted across the 7.48 acres using analog geophysical methods to detect surface and subsurface DoD military munitions and MD and intrusive operations to remove buried DoD military munitions and MD.

2.11.4 Alternative 4 – Land Use Controls and Surface and Subsurface (24-Inches below Ground Surface) Removal of Department of Defense Military Munitions

Alternative 4 includes DoD military munitions detection, removal, and disposal technologies to mitigate the potential explosive hazards across the entire Leona Heights Rifle Range – Leona Canyon ROSP MRS down to 24-inches bgs (**Figure 2-11)**. LUCs (as presented in Alternative 2) would be implemented for the entire Leona Heights Rifle Range – Leona Canyon ROSP MRS including educational controls, engineering controls, annual inspections, and Five-Year Reviews. However, no fencing would be constructed for Alternative 4.

Prior to surface and subsurface clearance, vegetation thinning would be required across the Leona Heights Rifle Range– Leona Canyon ROSP MRS. **Figure 2-10** shows the location and types of vegetation at the MRS. Vegetation thinning would be required in the areas where trees and shrubs are present to allow qualified UXO personnel to access the ground surface. After vegetation thinning, a full coverage surface and subsurface clearance would be conducted across the 31.73 acres using analog geophysical methods to detect surface and subsurface DoD military munitions and MD and intrusive operations to remove buried DoD military munitions and MD. All surface and subsurface anomalies would be investigated.

Alternative 4 does not clear the Leona Heights Rifle Range– Leona Canyon ROSP MRS to UU/UE levels. An alternative that results in UU/UE is required by DoDM 4715.20 (DoD, 2012). However, in order to reach UU/UE, the MRS would need to be cleared of vegetation (not just vegetation thinning as outlined in the description of the alternative above). Without full removal of vegetation, it is uncertain if all DoD military munitions could be removed resulting in the need for LUCs. Full vegetation clearance is not supported by the property owners as the MRS is located on a steep slope and removing vegetation could cause erosion, endangering the residential communities both above and below the MRS. Therefore, a UU/UE alternative is not included in this ROD.

2.12 COMPARATIVE ANALYSIS OF ALTERNATIVES

The detailed individual and comparative analyses of alternatives have been combined to summarize the remedial alternatives available for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. The alternatives were evaluated per the nine criteria in NCP §300.430(e)(9)(iii), which encompasses the CERCLA statutory requirements and technical, cost, and institutional considerations. They are arranged into three categories: threshold criteria, balancing criteria, and modifying criteria. The criteria are presented in **Table 2-6** and comparisons of each of the four alternatives to one another for each criteria are summarized in the sections below.

Table 2-6
Criteria for Detailed Evaluation of the Alternatives

Criterion	How the Criterion is Applied
Threshold Criteria	
Overall protection of human health and the environment	Assesses the ability of an alternative to eliminate, reduce, or control the risks associated with exposure pathways including direct contact, potential migration, and risks to ecosystems.
Compliance with ARARs and TBCs	Evaluates the potential of an alternative to achieve chemical-, location-, and action-specific ARARs and to-be-considered (TBC) guidance.
Balancing Criteria	
Short-term effectiveness	Assesses the capability of an alternative to protect human health and the environment during implementation of the alternative (e.g., the construction, removal, and disposal).
Long-term effectiveness and permanence	Measures the ability of an alternative to permanently protect human health and the environment.
Reduction in toxicity, mobility, or volume of contaminants	Evaluates the ability of an alternative to permanently or significantly reduce the toxicity, mobility, or volume of contaminants particularly through treatment.
Implementability	Evaluates the technical feasibility or difficulty of applying the alternative at the site, the reliability of the technology, the unknowns associated with the alternative, and the need for treatability studies. Assesses regulatory agency concurrence and the need for permits and waivers. Assesses mobilization needs, the accessibility of equipment, and number of trained personnel required to complete the alternative.
Cost	Assesses the capital and O&M costs of each alternative.
Modifying Criteria	
State acceptance	Evaluates the likelihood of approval by the DTSC.
Community acceptance	Assesses the anticipated level of acceptance by the community.

2.12.1 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).

2.12.2 Compliance with Applicable or Relevant and Appropriate Requirements

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 DoD military munitions 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 blow-in-place technology.

2.12.3 Long-Term Effectiveness and Permanence

Within the Leona Heights Rifle Range – 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 large area would be cleared.

2.12.4 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 Heights Rifle Range – 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 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.

2.12.5 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 Heights Rifle Range – 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 DoD military munitions are encountered requiring treatment on-site to render the item MDAS. The time duration 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.

2.12.6 Implementability

Within the Leona Heights Rifle Range – 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.

2.12.7 Cost

Costs for the alternatives were estimated for present value over a 30-year period. **Table 2-7** 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.

2.12.8 State Acceptance

Stakeholders, including the DTSC and EBRPD, are supportive of Alternative 3.

2.12.9 Community Acceptance

No comments were received from the public during the public comment period.

2.12.10 Comparative Analysis of Alternatives

Table 2-7 presents a summary of the comparative analysis of the no action alternative and the three response action alternatives. Each alternative was evaluated against all nine criteria according to the ability of the alternative to achieve the RAO. Evaluation of the modifying criteria (i.e., state and community acceptance) was considered subsequent to the public comment period and rated qualitatively with a "Yes", "No", or "No Response." "No Response" is indicated for all alternatives because no comments were reported during the public comment period. A numerical score is applied for comparative purposes, with zero (0) being the least preferred and three being the most preferred. In some cases, where the relative preference is not significant, more than one alternative is given the same numerical score.

Alternative 3, Focused Surface and Subsurface (to 24-Inches bgs) Removal of DoD Military Munitions, is the preferred remedial alternative. Alternative 3 is recommended because it is protective of human health and the environment through LUCS (signage identifying the DoD military munitions hazards, fencing, and education controls) in addition to plans to manage the potential DoD military munitions through focused surface and subsurface clearance on the 100-feet buffer zone. This buffer zone is the area most likely to contain potential DoD military munitions and the area most likely for human exposure. Through long-term management, land use would be monitored protecting human health. The remaining portion of the MRS contains very difficult terrain that people are unlikely to traverse. Additionally, it would require the removal of vegetation that is unlikely to receive support from the local community due to erosion/landslide concerns. Finally, Alternative 3 is more cost effective than Alternative 4.

Table 2-7
Summary of Comparative Analysis of Alternatives

Detailed Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	No Action	**LUCs**	**LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions**	**LUCs and Complete Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions**
Description	Per the NCP, the no action alternative is included for baseline comparison	Protecting receptors by limiting access to DoD military munitions using LUCs	Protecting receptors by removing potential DoD military munitions in focused areas and using LUCs	Protecting receptors by removing potential DoD military munitions across the MRS and using LUCs
Overall Protectiveness of Human Health and the Environment	0	1	2	2
Compliance with ARARs	0	0	3	3
Long-Term Effectiveness and Permanence	0	1	2	3
Reduction of Toxicity, Mobility, or Volume through Treatment	0	0	2	3
Short-Term Effectiveness	3	2	1	0
Implementability	3	3	2	1
Cost (Total Present Value)	3 $0	2 $652,000	1 $1,081,000	0 $1,868,000
State Acceptance	No	No	Yes	No
Community Acceptance	No Response	No Response	No Response	No Response
Total Score[1]	**9**	**9**	**13**	**12**

[1]Zero (1) represents the least preferred alternative; three (3) represents the most preferred alternative.

2.13 PRINCIPAL THREAT WASTE

DMM or UXO, if any, that remain present at the Leona Heights Rifle Range – Leona Canyon ROSP MRS (AEDB-R: CAHQ-013-R-01) or Leona Heights Rifle Range – Developed Areas MRS (AEDB-R: CAHQ-013-R-02) may constitute a principal threat to human health at the MRSs due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed. If UXO or DMM are later encountered on surfaces in those areas originally addressed by the selected remedy, DoD EOD personnel or similarly qualified personnel will evaluate the material to determine if it poses an explosive hazard. Such material that is determined to pose an explosives hazard (which may also be categorized as MEC) will normally be treated on-site or removed for destruction per applicable DoD explosives safety standards and environmental laws and regulations. The Department of Army will make a determination as to whether the material encountered and determined to pose an explosive hazard should be classified as a principal threat waste (PTW), as defined by CERCLA, the NCP and USEPA guidance. If the material is determined to be a PTW, the Department of Army will take the necessary actions to ensure protectiveness of human health and the environment to address unacceptable risks posed by the material designated as a PTW.

At the Leona Heights Rifle Range – Leona Canyon ROSP MRS, the PTW is the potential explosive hazard from DoD military munitions that may remain at the MRS. The selected remedial action will address that threat through the removal of DoD military munitions along a 100-foot wide buffer (7.48 acres) most frequented by human receptors.

2.14 DESCRIPTION OF SELECTED FINAL REMEDY

The Army, with concurrence from DTSC (**Appendix C**), recommends Alternative 3 – LUCs and Focused Surface and Subsurface (24-inches bgs) Removal of DoD Military Munitions as the preferred alternative for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (**Figure 2-9**). MPPEH and DoD military munitions encountered during implementation of the remedy will be intentionally detonated, re-inspected along with MD encountered, and reclassified as inert MDAS to be sent to a licensed facility for demilitarization. This alternative was selected because it will achieve substantial risk reduction by treating the source materials constituting principal threats at the MRS in the areas most-used by the public. This satisfies the statutory preference for treatment and provides a permanent reduction of risk.

Based on information currently available, the lead agency believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the preferred alternative to satisfy the following 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.

2.14.1 Summary of Estimated Final Remedy Costs

The final remedial costs are broken into three parts: total capital costs, annual O&M costs for 30 years, and periodic costs for 30 years, all of which sum to a total present value cost. The cost breakdowns are as follows:

- Total Capital Costs: $701,000
- Annual O&M Costs for 30 Years: $306,000
- Periodic Costs for 30 Years : $74,000

The present worth cost to implement the selected remedial action over 30 years is equal to $1,081,000. The present worth cost is the estimated total cost to implement the remedial action over time in terms of today's dollar value. The cost estimate is expected to be accurate within a range of plus 50% to minus 30%.

2.14.2 Expected Outcomes of the Selected Final Remedy

The selected remedy at the Leona Heights Rifle Range – Leona Canyon ROSP MRS will include the investigation and removal of DoD military munitions from a 100-foot buffer area (7.48 acres) along the southwestern and northeastern edges of the MRS (**Figure 2-9**). Upon completion of the final remedy, the MRS will continue to be monitored through LUCs, including educational controls, engineering controls, annual inspections, and Five-Year Reviews.

2.15 STATUTORY DETERMINATION SUMMARY

Based on the previous investigations for DoD military munitions and MC completed at the Leona Heights Rifle Range – Developed Areas MRS, ARNG determined that the selected remedy of NFA is protective of human health and the environment. The utilization of alternative treatment technologies or resource recovery technologies is not applicable under the recommended remedy. ARNG also concluded that additional reduction in the volume, toxicity, or mobility of the constituents of concern or off-site disposal of untreated wastes is not necessary.

Munitions response activities for the Leona Heights Rifle Range – Leona Canyon ROSP MRS in Alameda County, California, are now considered to be at the response complete stage. ARNG has documented the determination, and has received regulatory concurrence. Therefore, no additional activity is required or necessary to ensure the protection of human health and the environment.

Implementation of the selected final remedy at the Leona Heights Rifle Range – Leona Canyon ROSP MRS will be protective of human health and the environment, comply with ARARs and TBCs, be cost effective, and provide the utilization of permanent treatment solutions. The

following sections summarize how the selected remedy meets the regulatory requirements of CERCLA §121, as required by NCP §300.430(f)(5)(ii).

2.15.1 Protection of Human Health and the Environment

Implementation of the selected remedy (Alternative 3) will be protective of human health and the environment by permanently removing DoD military munitions at the Leona Heights Rifle Range – Leona Canyon ROSP MRS, therefore eliminating potential explosive hazards in a focused area and providing community munitions recognition outreach and LUCs to warn site visitors of potential DoD military munitions hazards in the area.

2.15.2 Compliance with Applicable or Relevant and Appropriate Requirements

Selected response actions are required, pursuant to NCP §300.430(f)(1)(ii)(B), to attain ARARs to the extent practicable. According to the NCP, ARARs fall into three categories: chemical-, action-, and location-specific. Because ARARs do not exist for every chemical or circumstance, non-promulgated federal or state advisories, criteria, or guidance materials ["TBC" materials] may help determine the levels or goals that are protective for a site and the necessary approach to carry out certain actions or requirements. The NCP does not require agencies to follow TBCs; however, it does suggest that TBCs be used when ARARs do not exist and when ARARs alone would not adequately protect human health and the environment.

Federal and State chemical-, location-, and action-specific ARARs and TBCs, pertinent to the evaluation of response actions for the MRS, are summarized in the following subsections. The selected remedy complies with the ARARs and TBCs described in the following subsections.

2.15.2.1 Chemical-Specific Applicable or Relevant and Appropriate Requirements

No chemical-specific ARARs were identified for the MRS.

2.15.2.2 Chemical-Specific To-Be-Considered Criteria

No chemical-specific TBCs were identified for the MRS.

2.15.2.3 Location-Specific Applicable or Relevant and Appropriate Requirements

No location-specific ARARs were identified for the MRS.

2.15.2.4 Location-Specific To-Be-Considered Criteria

No location-specific TBCs were identified for the MRS.

2.15.2.5 Action-Specific Applicable or Relevant and Appropriate Requirements

No action-specific ARARs were identified for the MRS.

2.15.2.6 Action-Specific To-Be-Considered Criteria

The following action-specific TBC was identified for the MRS:

- **40 CFR 264 Subpart X – Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Miscellaneous Units –** A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Applies to treatment (detonation) of DoD military munitions/MPPEH that requires technologies defined as "miscellaneous units" in Subpart X. Subpart X specifies an environmental performance standard that must be met through conformance with appropriate design, operating, and monitoring requirements.

2.15.3 Cost Effectiveness

The selected remedy should meet the statutory requirement that remedies be cost effective. A cost effective remedy is one whose "costs are proportional to its overall effectiveness" [NCP §300.430(f)(1)(ii)(D)]. The "overall effectiveness" of a remedial alternative is determined by evaluating the following three of the five balancing criteria used in the detailed analysis of alternatives: 1) long-term effectiveness and permanence; 2) reduction in toxicity, mobility, and volume through treatment; and, 3) short-term effectiveness. "Overall effectiveness is then compared to cost" to determine whether a remedy is cost-effective [NCP §300.430(f)(1)(ii)(D)].

Implementation of the selected remedy provides a cost-effective response action according to the criteria established by the NCP. Evaluation of "overall effectiveness" and "cost-effectiveness" concluded that:

- Long-term effectiveness and permanence will be achieved by removing all potential DoD military munitions in a focused area that receives the most use.
- A reduction of toxicity, mobility, and volume will be achieved by removal of DoD military munitions in a focused area.
- The short-term effectiveness, as well as implementability, is considered favorable. Although removal of DoD military munitions has the potential to cause serious injury and death, adherence with USACE EM 385-1-1 (USACE, 2014) and other guidance documents can significantly mitigate these hazards if properly followed.
- Further evaluation with respect to present value cost identifies the selected remedy as being cost-effective based on the location of the MRS, the steepness of the MRS, and the thick vegetation present on the MRS.

The selected final remedy is effective in meeting the RAO, protecting human health and the environment, implementability, having "overall effectiveness", and meeting the criteria for being cost effective.

2.15.4 Utilization of Permanent Solutions and Alternative Treatment Technologies

Implementation of focused removal of DoD military munitions utilizes a permanent solution to eliminate the potential explosive hazard in the most accessible and most used areas at the MRS. Subsequent to the remedial action, the Leona Heights Rifle Range – Leona Canyon ROSP MRS will use LUCs, annual inspections, and Five-Year Reviews to monitor conditions at the MRS. The selected remedy provides the best long-term effectiveness, reduces toxicity, mobility, and volume, is protective of human health and the environment, complies with ARARs, and achieves the RAO.

2.15.5 Preference for Treatment as a Principal Element

The NCP §300.430(a)(1)(iii)(A) establishes the expectation that treatment will be used to address the principal threats at a site where practicable. Focused removal of DoD military munitions provides the best option to mitigate exposure to potential explosive hazards at the Leona Heights Rifle Range – Leona Canyon ROSP MRS.

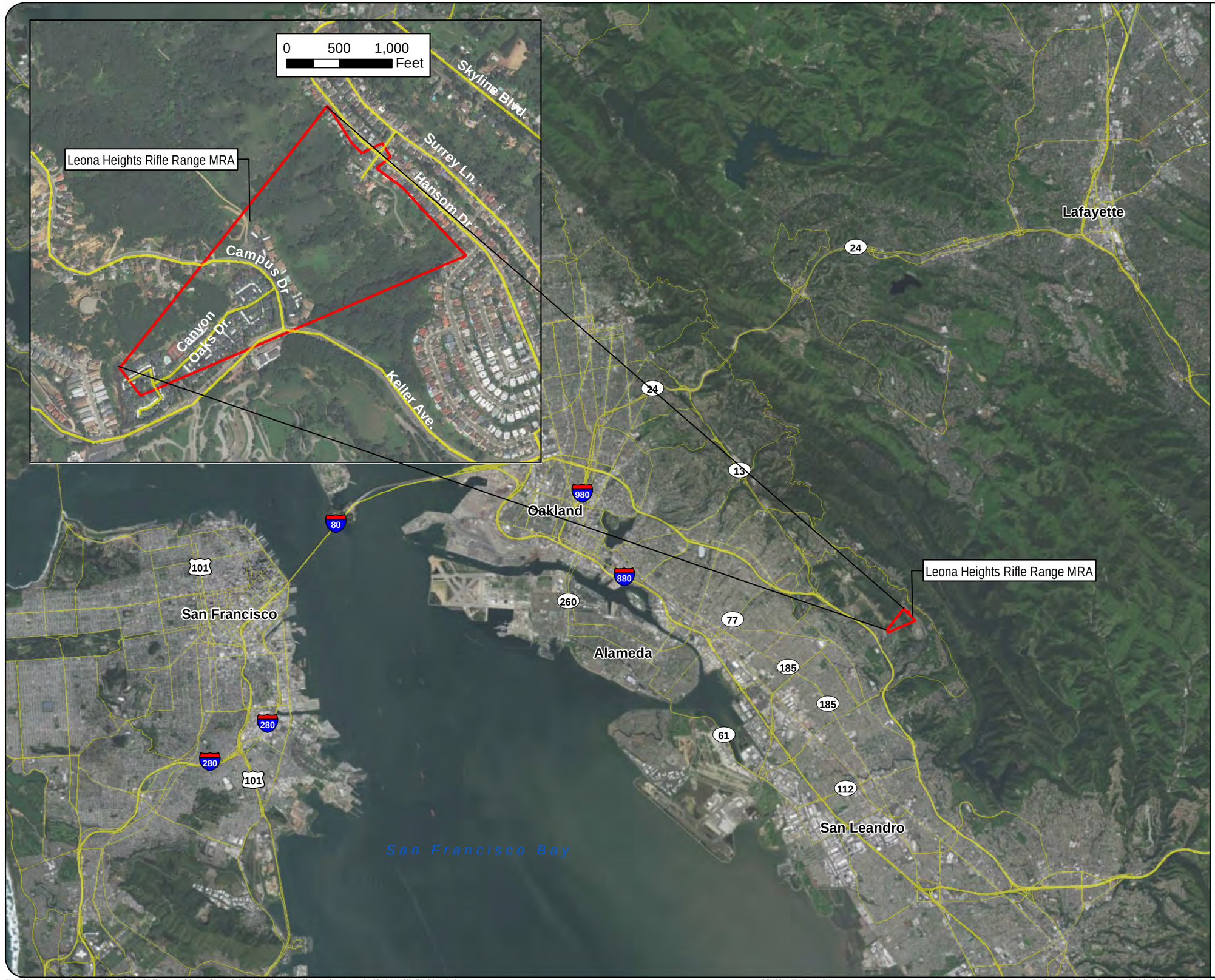
2.15.6 Five-Year Review Requirement

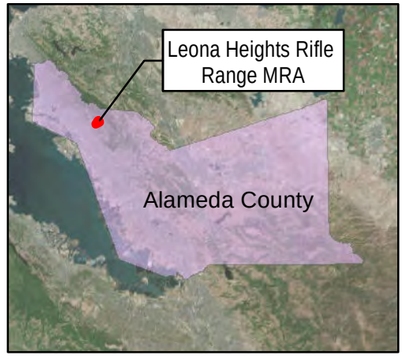
NCP §300.430(f)(4)(ii) requires a Five-Year Review if the remedial action results in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE. After implementation of the selected final remedy, potential explosive hazards will remain at the Leona Heights Rifle Range – Leona Canyon ROSP MRS in areas not cleared due to thick vegetation and steep terrain and the MRS will receive Five-Year Reviews to assess site conditions.

2.16 DOCUMENTATION OF SIGNIFICANT CHANGES

The PP for the Leona Heights Rifle Range – Developed Areas MRS and the Leona Heights Rifle Range – Leona Canyon ROSP MRS was released for public comment on 05 January 2018. The PP identifies NFA as the preferred alternative for the Leona Heights Rifle Range – Developed Areas MRS and LUCs and Focused Surface and Subsurface (24-inches bgs) Removal of DoD Military Munitions as the preferred alternative for the Leona Heights Rifle Range – Leona Canyon ROSP MRS. No comments were received during the public comment period. It was determined that no significant changes to the preferred NFA alternative for the Leona Heights Rifle Range – Developed Areas MRS and LUCs and Focused Surface and Subsurface (24-inches bgs) Removal of DoD Military Munitions alternative for the Leona Heights Rifle Range – Leona Canyon ROSP MRS, as originally identified in the PP, were necessary or appropriate.

This page intentionally left blank.





Legend

- Leona Heights Rifle Range MRA
- Road
- California State Boundary
- Alameda County

Acronyms:
MRA - Munitions Response Area

N
W E
S

0 1 2 Miles

1 inch = 2 miles

Site Location Map

Leona Heights Rifle Range MRS
Record of Decision

Figure 2-1

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

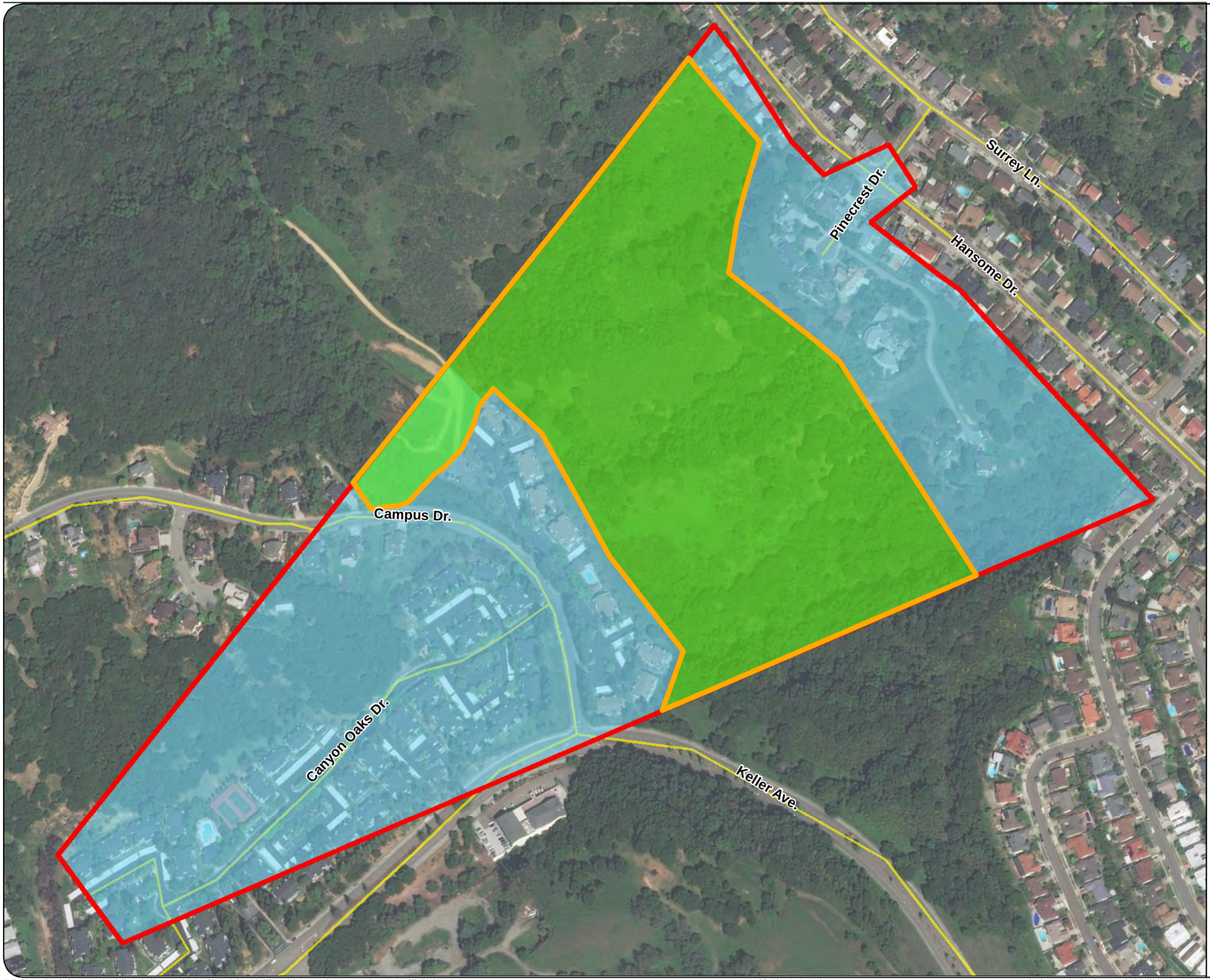
DRAWN	DATE	CONTRACT NO.
KAPELANL	2/21/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/21/2018	0011

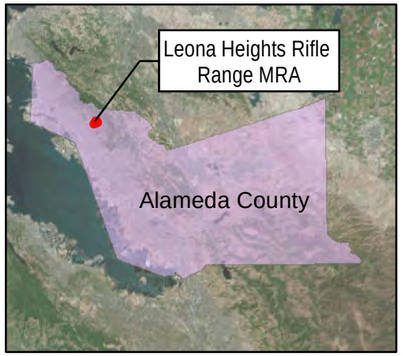
FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-1_Site Location Map.mxd 1:39:13 PM 2/21/2018 kapelanl

WGS 1984 UTM Zone 10N

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Road
- Private Land Owners - Residential Areas (48.29 acres)
- EBRPD Leona Canyon Regional Open Space Preserve (33.04 acres)
- Leona Heights Rifle Range MRA
- California State Boundary
- Alameda County

Acronyms:
EBRPD - East Bay Regional Park District
MRA - Munitions Response Area

N
W E
S

0 175 350 Feet
1 inch = 275 feet

Property Owner Map

Leona Heights Rifle RangeMRS
Record of Decision

Figure 2-2

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

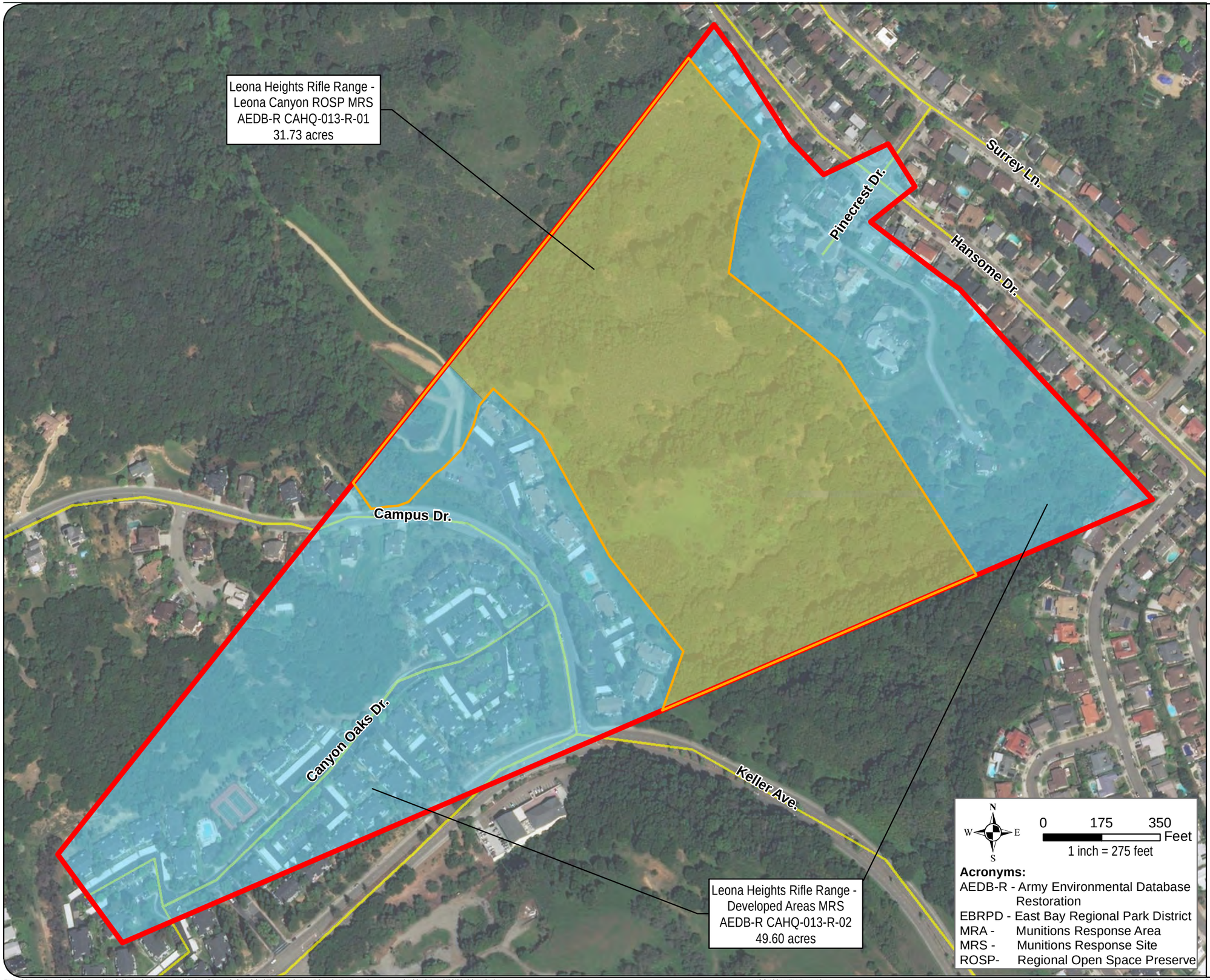
DRAWN	DATE	CONTRACT NO.
KAPELANL	2/21/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/21/2018	0011

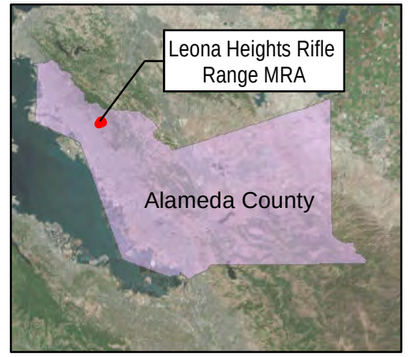
FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-2_Property Owner Map.mxd 1:51:04 PM 2/21/2018 kapelanl

WGS 1984 UTM Zone 10N

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Road
- Leona Heights Rifle Range - Leona Canyon ROSP MRS (31.73 acres) AEDB-R CAHQ-013-R-01
- Leona Heights Rifle Range - Developed Area MRS (49.60 acres) AEDB-R CAHQ-013-R-02
- Leona Heights Rifle Range MRA
- EBRPD Leona Canyon Regional Open Space Preserve
- California State Boundary
- Alameda County

Acronyms:

AEDB-R - Army Environmental Database Restoration
EBRPD - East Bay Regional Park District
MRA - Munitions Response Area
MRS - Munitions Response Site
ROSP- Regional Open Space Preserve

MRS and MRA Boundary Map

Leona Heights Rifle RangeMRS Record of Decision

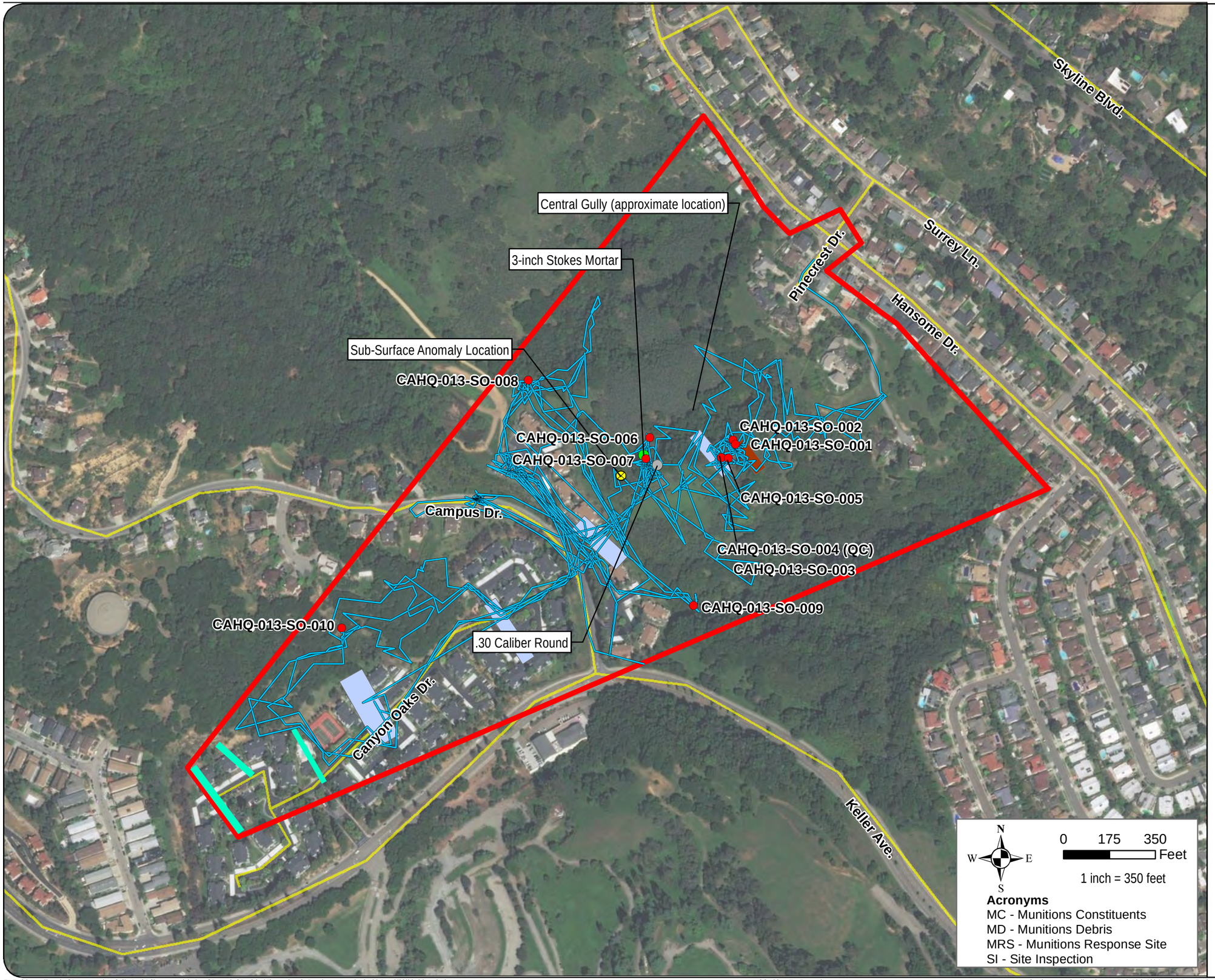
Figure 2-3

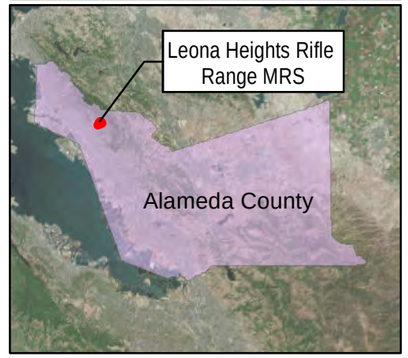
WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-3_RI MRS and MRA Boundary Map.mxd 1:32:40 PM 2/22/2018 kapelanl
WGS 1984 UTM Zone 10N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- MC Sample Location
- MD - 3-inch Stokes Mortar
- .30 Caliber Round
- Sub-Surface Anomaly Location
- Road
- SI Visual Instrument Aided Survey Transects
- Firing Line
- Target Area
- Target System Trench
- Leona Heights Rifle Range MRS
- California State Boundary
- Alameda County

Site Inspection Results Map

Leona Heights Rifle Range MRS
Record of Decision

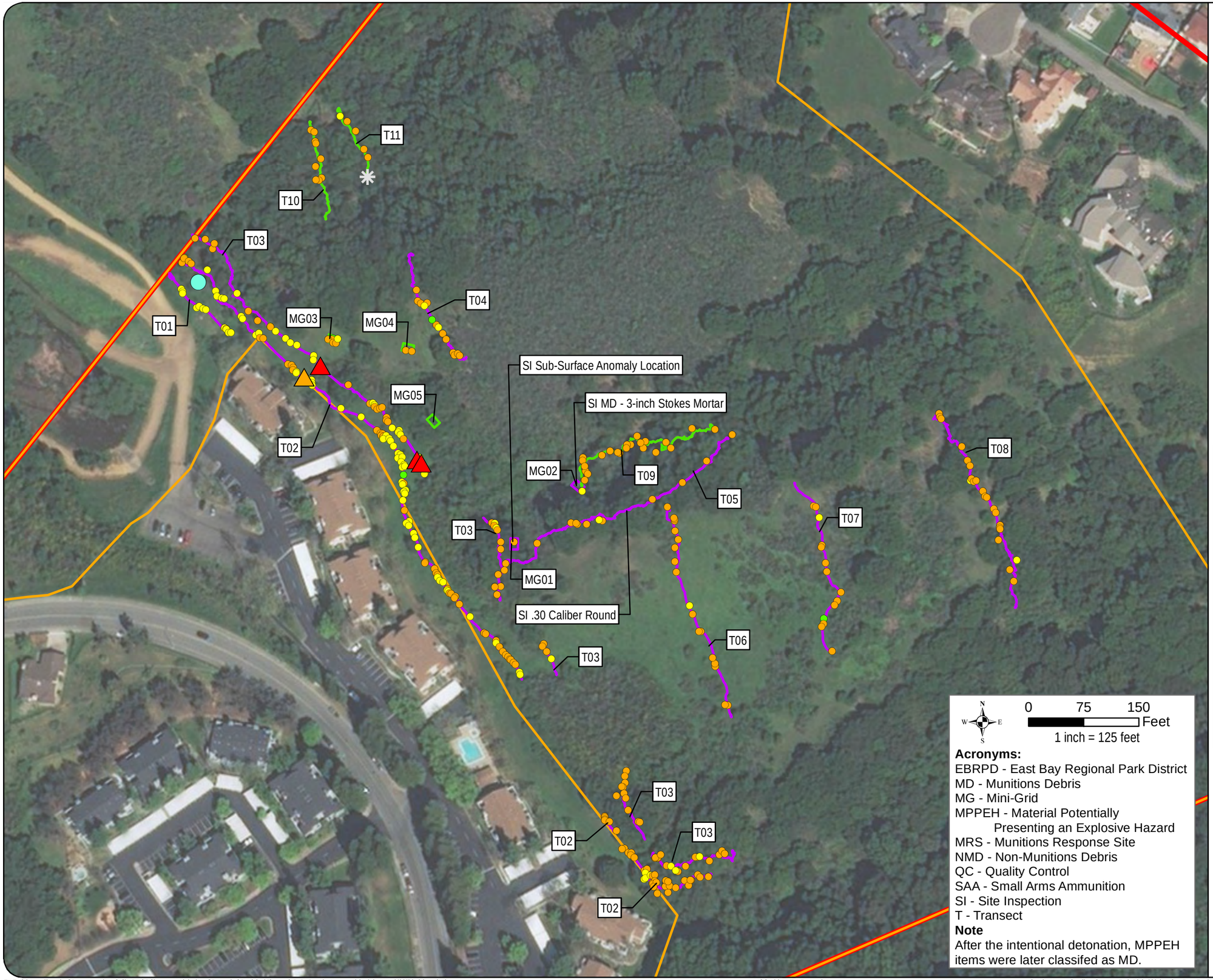
Figure 2-4

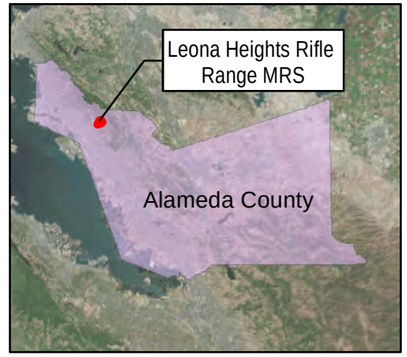
WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-4_SI Results Map.mxd 1:31:30 PM 2/22/2018 kapelanl
WGS 1984 UTM Zone 10N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Staging Area
- Demolition Area
- MPPEH (n=3)
- MD (n=1)
- NMD (n=102)
- SAA (n=245)
- QC SEED (n=4)
- Actual Transects and Mini-Grids
- Additional Transects and Mini-Grids
- Leona Heights Rifle Range MRS
- EBRPD Leona Canyon Regional Open Space Preserve
- California State Boundary
- Alameda County

N, W, E, S

0 75 150 Feet

1 inch = 125 feet

Acronyms:

EBRPD - East Bay Regional Park District
MD - Munitions Debris
MG - Mini-Grid
MPPEH - Material Potentially Presenting an Explosive Hazard
MRS - Munitions Response Site
NMD - Non-Munitions Debris
QC - Quality Control
SAA - Small Arms Ammunition
SI - Site Inspection
T - Transect

Note

After the intentional detonation, MPPEH items were later classifed as MD.

Remedial Investigation Results Map

Leona Heights Rifle Range MRS
Record of Decision

Figure 2-5

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

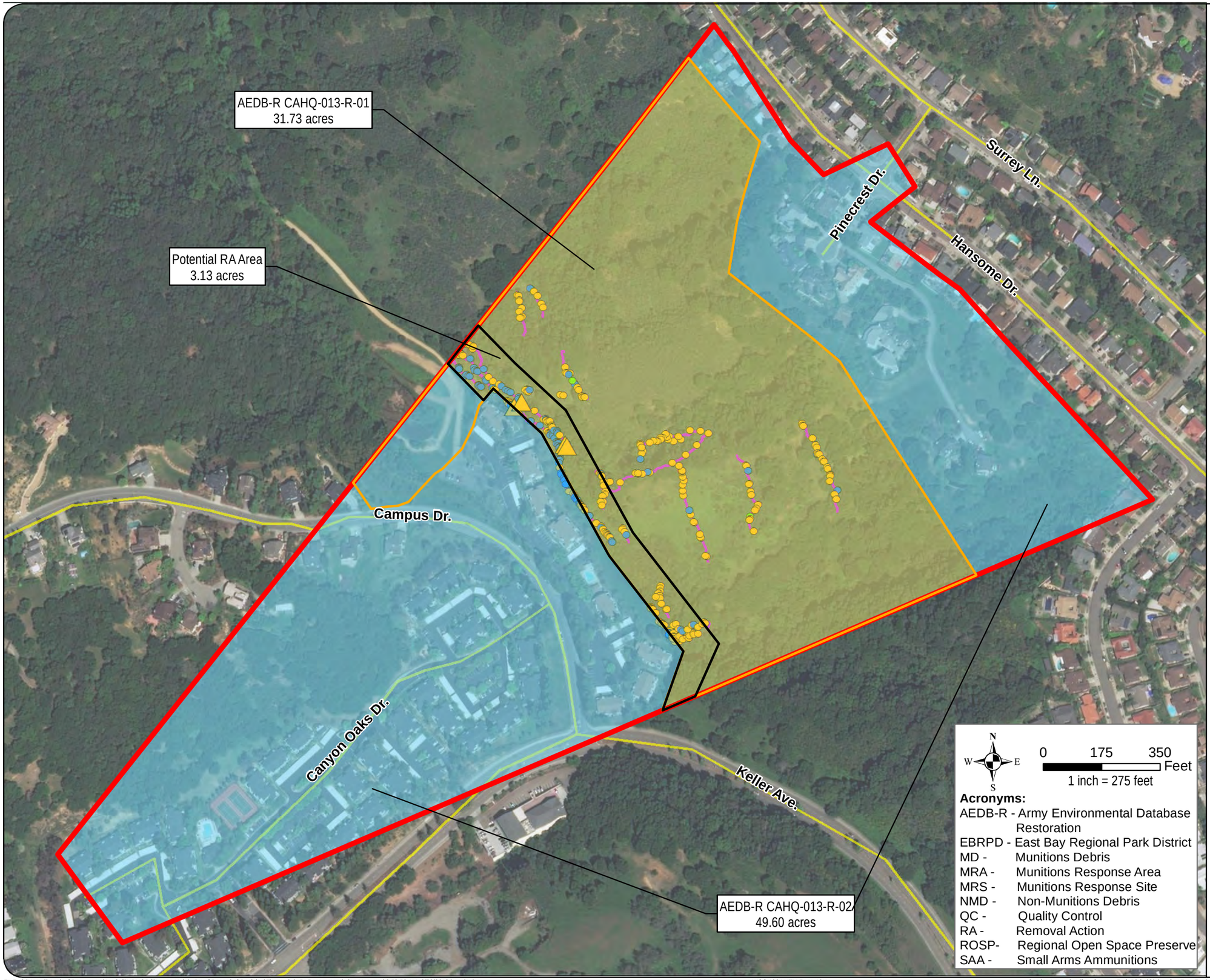
DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

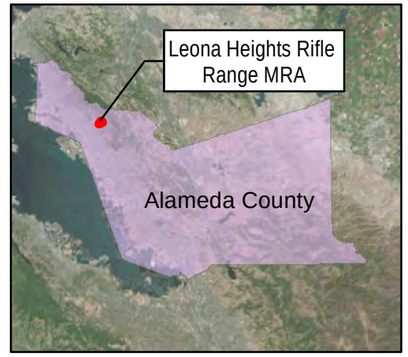
FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-5_RI Results Map.mxd 8:40:24 AM 2/22/2018 kapelanl

WGS 1984 UTM Zone 10N

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Transect
- Road
- MD
- NMD
- SAA
- QC SEED
- Leona Heights Rifle Range - Leona Canyon ROSP MRS (31.73 acres) AEDB-R CAHQ-013-R-01
- Leona Heights Rifle Range - Developed Area MRS (49.60 acres) AEDB-R CAHQ-013-R-02
- Potential RA Area (3.13 acres)
- Leona Heights Rifle Range MRA
- EBRPD Leona Canyon Regional Open Space Preserve
- California State Boundary
- Alameda County

N W E S

0 175 350 Feet

1 inch = 275 feet

Acronyms:

AEDB-R - Army Environmental Database Restoration
EBRPD - East Bay Regional Park District
MD - Munitions Debris
MRA - Munitions Response Area
MRS - Munitions Response Site
NMD - Non-Munitions Debris
QC - Quality Control
RA - Removal Action
ROSP- Regional Open Space Preserve
SAA - Small Arms Ammunitions

Remedial Investigation Recommendation Map

Leona Heights Rifle RangeMRS
Record of Decision

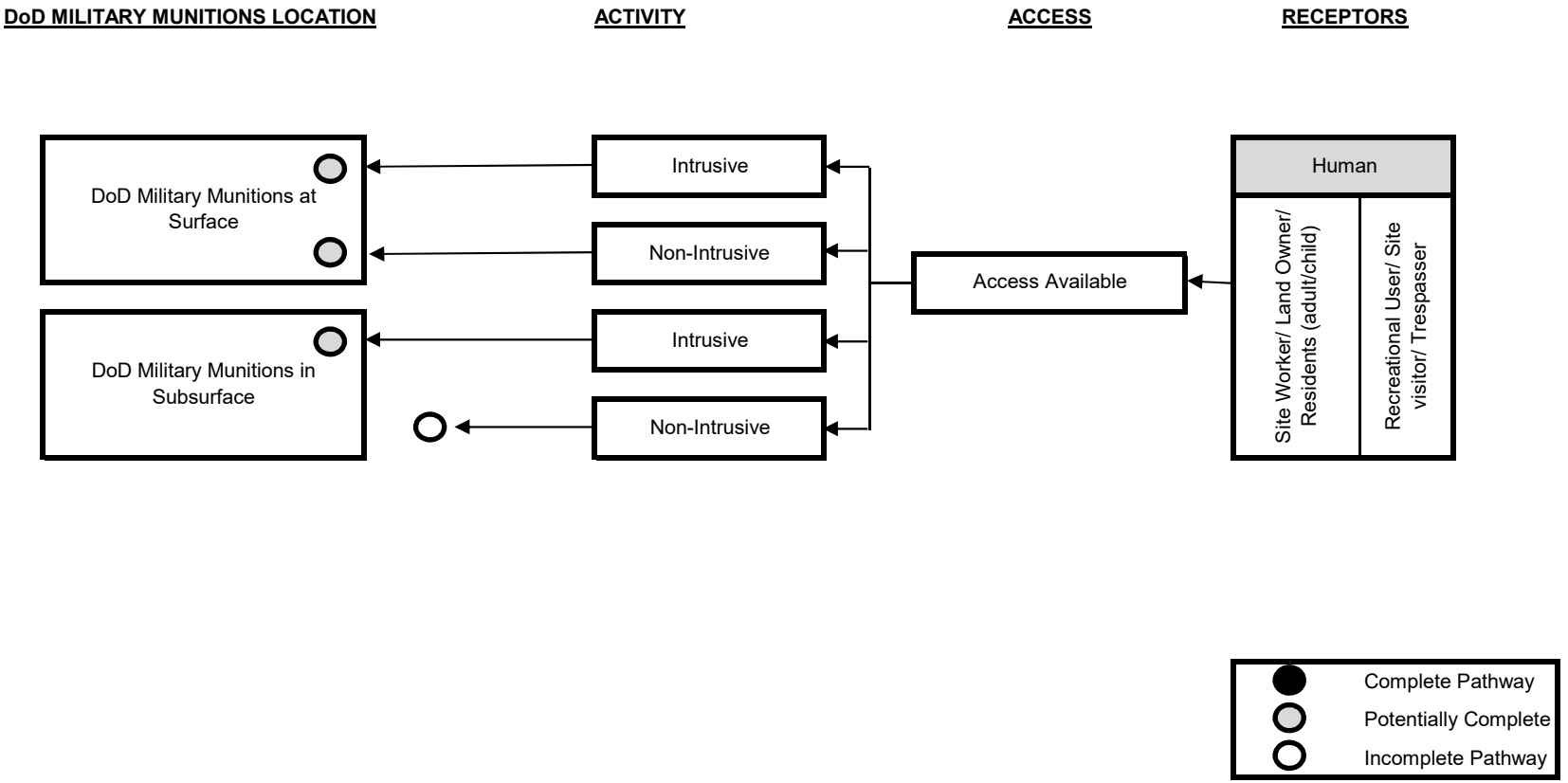
Figure 2-6

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

This Page Intentionally Left Blank

Figure 2-7
DoD Military Munitions Conceptual Site Model



This Page Intentionally Left Blank

Leona Heights Rifle Range - Leona Canyon ROSP MRS AEDB-R CAHQ-013-R-01 31.73 acres

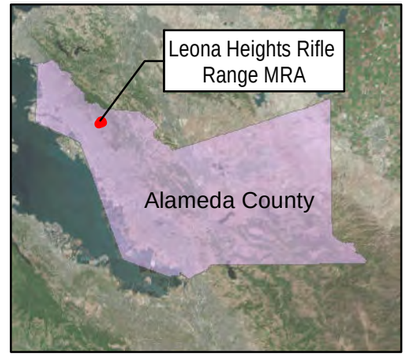
Educational Controls
Public Notice
Community Awareness Meeting
Letter Notification
Information Pamphlet
Fact Sheet
Website

Surrey Ln.
Pinecrest Dr.
Hansome Dr.
Campus Dr.
Canyon Oaks Dr.
Keller Ave.

Leona Heights Rifle Range - Developed Areas MRS AEDB-R CAHQ-013-R-02 49.60 acres

N W E S
0 175 350 Feet
1 inch = 275 feet

Acronyms:
AEDB-R - Army Environmental Database Restoration
EBRPD - East Bay Regional Park District
MRA - Munitions Response Area
MRS - Munitions Response Site
ROSP - Regional Open Space Preserve



Legend
- Warning Sign
- Fence (actual location may be limited by topography)
- Road
- Leona Heights Rifle Range - Leona Canyon ROSP MRS (31.73 acres) AEDB-R CAHQ-013-R-01
- Leona Heights Rifle Range - Developed Area MRS (49.60 acres) AEDB-R CAHQ-013-R-02
- Leona Heights Rifle Range MRA
- EBRPD Leona Canyon ROSP
- California State Boundary
- Alameda County

Alternative 2
Land Use Controls

Leona Heights Rifle Range MRS
Record of Decision

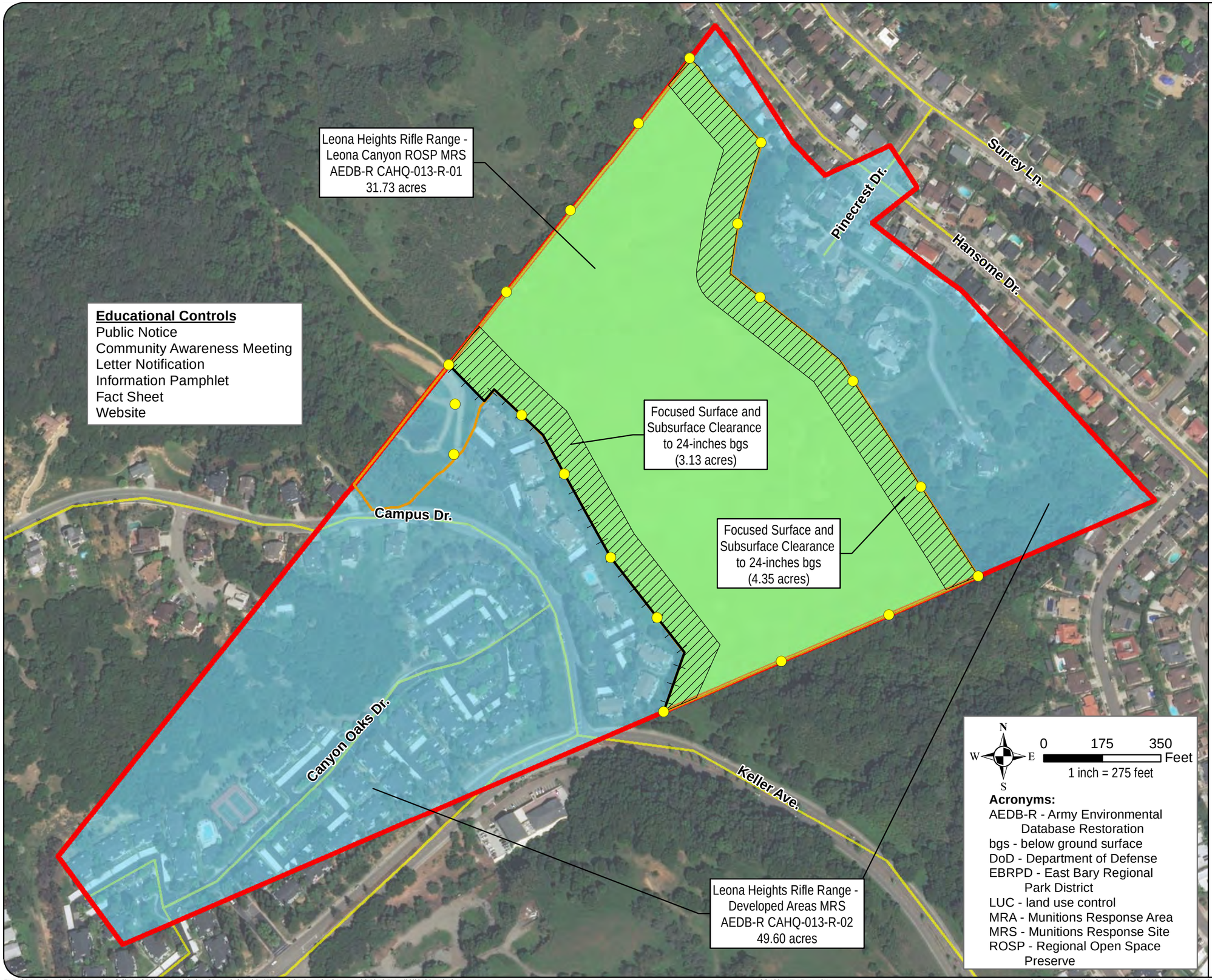
Figure 2-8

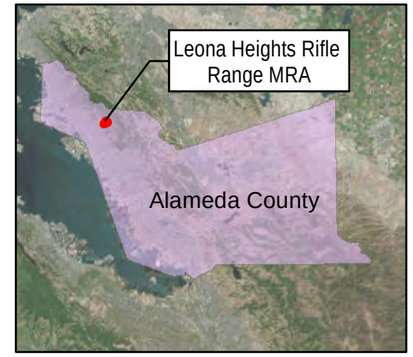
WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-8_Alternative 2 Map.mxd 9:12:15 AM 2/22/2018 kapelanl
WGS 1984 UTM Zone 10N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Warning Sign
- Fence (actual location may be limited by topography)
- Road
- Surface and Subsurface Clearance to 24-inches bgs (7.48 acres)
- Leona Heights Rifle Range - Leona Canyon ROSP MRS (31.73 acres) AEDB-R CAHQ-013-R-01
- Leona Heights Rifle Range - Developed Area MRS (49.60 acres) AEDB-R CAHQ-013-R-02
- Leona Heights Rifle Range MRA
- EBRPD Leona Canyon ROSP
- California State Boundary
- Alameda County

N W E S

0 175 350 Feet

1 inch = 275 feet

Acronyms:

AEDB-R - Army Environmental Database Restoration
bgs - below ground surface
DoD - Department of Defense
EBRPD - East Bary Regional Park District
LUC - land use control
MRA - Munitions Response Area
MRS - Munitions Response Site
ROSP - Regional Open Space Preserve

Alternative 3 - LUCs and Focused Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions

Leona Heights Rifle Range MRS Record of Decision

Figure 2-9

WESTON SOLUTIONS

841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

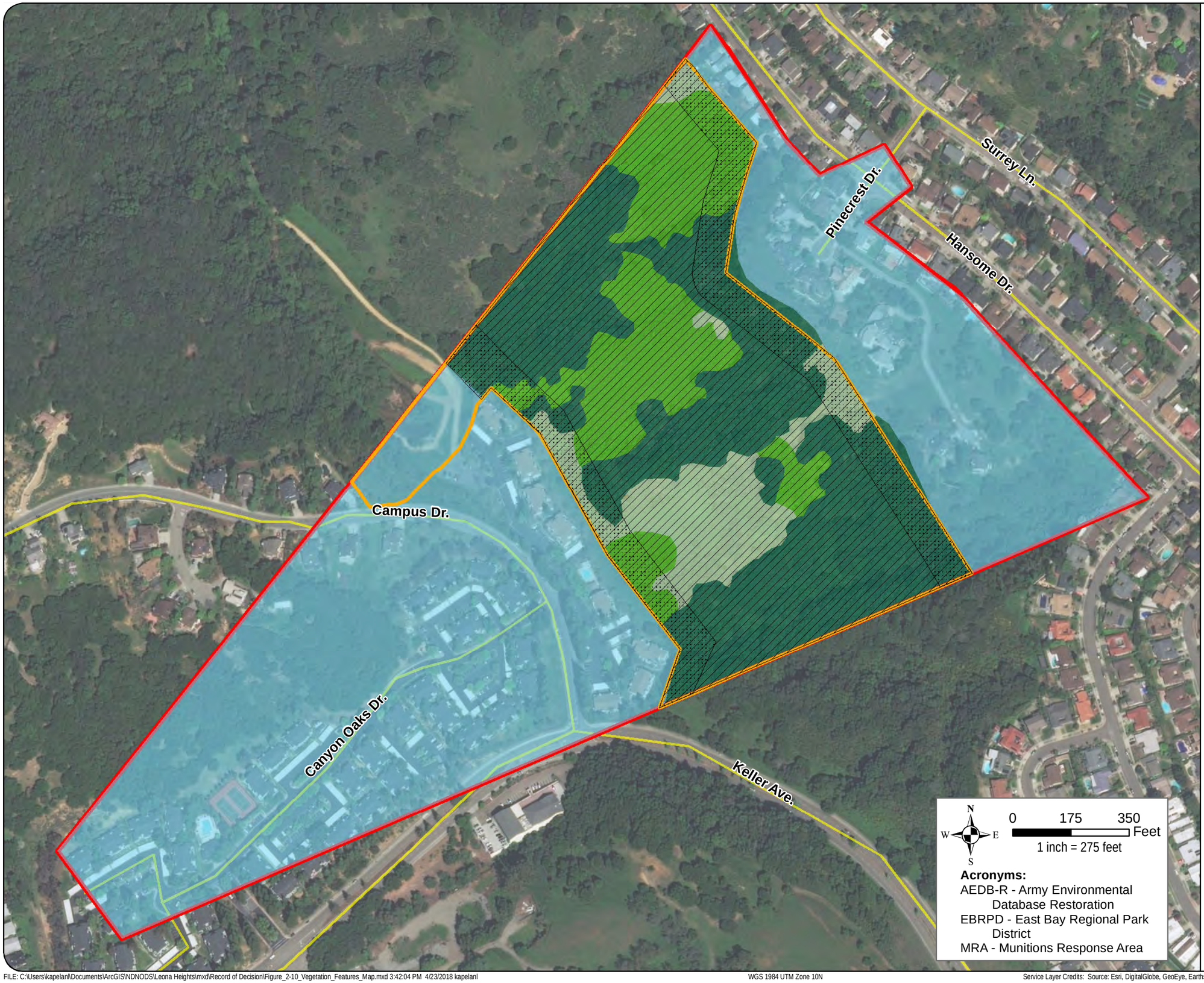
DRAWN	DATE	CONTRACT NO.
KAPELANL	4/23/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	4/23/2018	0011

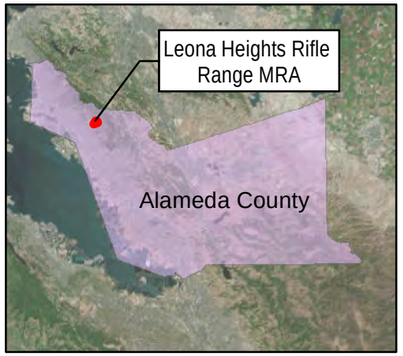
FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-9_Alternative 3 Map.mxd 3:50:13 PM 4/23/2018 kapelanl

WGS 1984 UTM Zone 10N

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank





Legend

- Road
- Grass (slender oat,etc.)
- Shrubs (blackberry, buckwheat, etc.)
- Trees (live oak, etc.)
- Hardscape
- Alternative 3 Clearance Area
- Alternative 4 Clearance Area
- EBRPD Leona Canyon Regional Open Space Preserve
- Leona Heights Rifle Range MRA
- California State Boundary
- Alameda County

Acronyms:

AEDB-R - Army Environmental Database Restoration
EBRPD - East Bay Regional Park District
MRA - Munitions Response Area

Vegetation Features Map

Leona Heights Rifle Range MRS
Record of Decisiont

Figure 2-10

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	4/23/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	4/23/2018	0011

FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-10_Vegetation_Features_Map.mxd 3:42:04 PM 4/23/2018 kapelanl
WGS 1984 UTM Zone 10N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank

Leona Heights Rifle Range - Leona Canyon ROSP MRS AEDB-R CAHQ-013-R-01 31.73 acres

Educational Controls
Public Notice
Community Awareness Meeting
Letter Notification
Information Pamphlet
Fact Sheet
Website

Surface and Subsurface Clearance to 24-inches bgs (31.73 acres)

Leona Heights Rifle Range - Developed Area MRS AEDB-R CAHQ-013-R-02 49.60 acres

Surrey Ln.
Pinecrest Dr.
Hansome Dr.
Campus Dr.
Canyon Oaks Dr.
Keller Ave.

Legend
- Warning Sign
- Road
- Surface and Subsurface Removal to 24-inches bgs (31.73 acres)
- Leona Heights Rifle Range - Leona Canyon ROSP MRS (31.73 acres) AEDB-R CAHQ-013-R-01
- Leona Heights Rifle Range - Developed Area MRS (49.60 acres) AEDB-R CAHQ-013-R-02
- Leona Heights Rifle Range MRA
- EBRPD Leona Canyon Regional Open Space Preserve
- California State Boundary
- Alameda County

N W E S
0 175 350 Feet
1 inch = 275 feet

Acronyms:
AEDB-R - Army Environmental Database Restoration
bgs - below ground surface
EBRPD - East Bay Regional Park District
LUC - land use control
MRA - Munitions Response Area
MRS - Munitions Response Site
ROSP - Regional Open Space Preserve

Alternative 4 - LUCs and Surface and Subsurface (24-Inches bgs) Removal of DoD Military Munitions

Leona Heights Rifle Range MRS Record of Decision

Figure 2-11

WESTON SOLUTIONS
841 BISHOP STREET SUITE 2301 HONOLULU, HAWAII 96813 808.275.2900

DRAWN	DATE	CONTRACT NO.
KAPELANL	2/22/2018	W912DR-09-D-0006
CHKD BY	CHKD DATE	DELIVERY ORDER NO.
MACMILS	2/22/2018	0011

FILE: C:\Users\kapelanl\Documents\ArcGIS\NDNODS\Leona Heights\mxd\Record of Decision\Figure_2-11_Alternative 4 Map.mxd 1:09:02 PM 2/22/2018 kapelanl
WGS 1984 UTM Zone 10N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

This Page Intentionally Left Blank

3.0 RESPONSIVENESS SUMMARY

This section provides a summary of the public comments regarding the PP for NFA at the Leona Heights Rifle Range – Developed Areas MRS and Focused Surface and Subsurface (to 24-Inches bgs) Removal of DoD Military Munitions for the Leona Heights Rifle Range – Leona Canyon ROSP MRS located in Alameda County, California. From 05 January 2018 to 09 February 2018, ARNG held a 35-day public comment period to accept comments on the PP. No comments were received during the public comment period.

A meeting was held with EBRPD on 10 January 2018 at the Nike Classroom, 17600 Lake Chabot Road, Castro Valley, California to inform East Bay Park personnel on the location and history of the Leona Heights Rifle Range MRA/MRSs and introduce the DoD's 3 R's safety education program (Recognize, Retreat, Report).

A public meeting was held on 10 January 2018 at 6:30 pm at Skyline Pizza, 4400 Keller Avenue #300, Oakland, California 94605. One member of the Skyline Homeowner's Association (HOA) was present as well as members of EBRPD. Questions were asked regarding the type of fencing proposed, the text proposed for the warning signs, timing of the implementation for signs and fences, and how to provide other HOA members with information about the project. No formal comments were submitted.

3.1 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

DTSC provided written concurrence with the ROD for NFA at the Leona Heights Rifle Range – Developed Areas MRS and Focused Surface and Subsurface (to 24-Inches bgs) Removal of DoD Military Munitions for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (**Appendix C**). Comments from the EBRDP and ARNG responses are also provided in **Appendix C**.

3.2 TECHNICAL AND LEGAL ISSUES

No technical or legal issues were identified during the public review period of the PP. There are no technical or legal issues that require additional discussion.

This Page Intentionally Left Blank

4.0 REFERENCES

CA.gov., 'Geoportal'. N.p., 2015. Web. 25 June 2015.

Department of Defense Explosives Safety Board (DDESB), 2009. *DDESB Technical Paper (TP) 16. Methodologies for Calculating Primary Fragment Characteristics*. Revision 3.

Department of Defense (DoD), 2012. *Department of Defense Manual (DoDM) 4715.20: Defense Environmental Restoration Program.* March.

DoD, 2015. *DoD Instruction (DoDI) 4140.62: Management and Disposition of Material Potentially Presenting an Explosive Hazard.* August.

EA Engineering, Science and Technology, Inc. (EA), 2009. *Final State/Territory Inventory Report, National Guard Bureau, Non-Department of Defense Owned, Non-Operational Defense Sites Inventory, California.* May.

Technical Working Group – Hazard Assessment (TWG-HA), 2008. *Interim Munitions and Explosives of Concern Hazard Assessment Methodology*. October.

U.S. Army Corps of Engineers (USACE), 2013. *Engineering Manual (EM) 385-1-97: Explosives Safety and Health Requirements Manual.* April.

USACE, 2014. *EM 385-1-1: Safety and Health Requirements.* November.

USACE, 2015. *EM 200-1-15: Technical Guidance for Military Munitions Response Actions*. October.

U.S. Census Bureau, 2018a. *Quick Facts – Alameda County, California*. Accessed 13 February 2018 via website: https://www.census.gov/quickfacts/fact/table/alamedacountycalifornia/PST045216

U.S. Census Bureau, 2018b. *Quick Facts – Oakland City, California*. Accessed 13 February 2018 via website: https://www.census.gov/quickfacts/fact/table/oaklandcitycalifornia,CA/AGE115210

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA, NRCS), 2018. *Web Soil Survey Tool*, website accessed on 13 February 2018 at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

U.S. Environmental Protection Agency (USEPA), 1999. *EPA 540-R-98-031, OSWER 9200.1-23P, PB98-963241: A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. July.

USEPA, 2001. *EPA 540-R-01-007: Comprehensive Five-Year Review Guidance*. June.

U.S. Fish and Wildlife Service (USFWS). 2018. *Species by County Report; County: Alameda, California.* Accessed on 13 February 2018 via website: https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=06001

U.S. Geological Survey (USGS), 2011. *Gap Analysis Program (GAP). National Land Cover*, Version 2. August.

Western Region Climate Center (WRCC, 2015). wrcc.dri.edu. *'Oakland, CALIFORNIA - Climate Summary'.* Accessed on 25 June 2015.

WRCC, 2017a. *California, Average Wind Speed, OAKLAND INTL AP ASOS [KOAK]*. Accessed on 18 July 2017 from: https://wrcc.dri.edu/htmlfiles/westwind.final.html#CALIFORNIA

WRCC, 2017b. *California, Prevailing Wind Direction, OAKLAND INT'L AP, CA (KOAK).* Accessed on 18 July 2017 from: https://wrcc.dri.edu/htmlfiles/westwinddir.html#CALIFORNIA

Weston Solutions, Inc. (WESTON), 2011. *Final Historical Records Review/Site Inspection Work Plan for California, Army National Guard Munitions Response Sites, Site Inspection Phase*. September.

WESTON, 2012. *Final Site Inspection Report, Army National Guard Munitions Response Sites, Site Inspection Phase, California.* August.

WESTON, 2016a. *Final Community Relations Plan, MMRP Munitions Response Services, National Guard Bureau, Leona Heights Rifle Range (CAHQ-013-R-01), Alameda County, California.* June.

WESTON, 2016b. *Final Remedial Investigation Work Plan, MMRP Munitions Response Services, National Guard Bureau, Non-DoD Non-Operational Defense Sites, Remedial Investigation/Feasibility Study Program. Leona Heights Rifle Range (CAHQ-013-R-01), Alameda County, California.* May.

WESTON, 2017a. *Final Remedial Investigation Report, MMRP Munitions Response Services, National Guard Bureau, Non-DoD Non-Operational Defense Sites, Remedial Investigation/Feasibility Study Program, Leona Heights Rifle Range (CAHQ-013-R-01), Alameda County, California.* May.

WESTON, 2017b. *Final Feasibility Study, MMRP Munitions Response Services, National Guard Bureau, Leona Heights Rifle Range (CAHQ-013-R-01), Alameda County , California.* September.

WESTON, 2018. *Proposed Plan, Leona Heights Rifle Range Munitions Response Site, Alameda County, California, CAHQ-013-R-01*. February.

APPENDIX A

ADMINISTRATIVE RECORD INDEX

This Page Intentionally Left Blank

ADMINISTRATIVE RECORD FILE INDEX

Index Sorted by: Document Date

Originally Compiled: February 2018

Leona Heights Rifle Range Munitions Response Site (MRS)
Alameda County, Arizona

Title <> Subject	Date	Author	Author Affiliation	Pages	Recipient	Document Type
State/Territory Inventory Report <> The purpose of the Inventory Report was to collect specific information to develop an inventory of MRSs in California and develop a draft Munitions Response Site Prioritization Protocol (MRSPP) for each MRS. The Inventory Report identified the Leona Heights Range MRS.	May – 2009	EA Engineering, Science, and Technology, Inc.	EA Engineering, Science, and Technology, Inc.	138	CAARNG ARNG USAEC USACE	Report
Historical Records Review (HRR)/Site Inspection (SI) Work Plan <> The HRR conducted as part of the SI Work Plan was to further document historical and other known information for the California MRSs, to supplement the information developed during the Inventory Report, and to address data gaps. During the HRR for the Leona Heights Rifle Range MRS, records and photos were reviewed.	Sep. – 2011	Weston Solutions, Inc.	Weston Solutions, Inc.	233[1]	ARNG USACE	Report
SI Report <> The purpose of the SI was to determine the presence or absence of Department of Defense (DoD) military munitions and munitions constituents (MC) at the California MRSs that may pose a threat to human health and the environment. Munitions debris was identified during the SI and it was recommended that the Leona Heights Rifle Range MRS go forward to a Remedial Investigation (RI).	Aug. – 2012	Weston Solutions, Inc.	Weston Solutions, Inc.	1,286	CAARNG, ARNG USACE	Report
Community Relations Plan (CRP) <> The CRP describes methods for distributing public information and seeking community input regarding the Leona Heights Rifle Range MRS.	June-2015	Weston Solutions, Inc.	Weston Solutions, Inc.	54	ARNG USACE CAARNG	Report
RI Work Plan <>The RI Work Plan presented the technical approach for conducting field work for the RI. The purpose of the RI was to gather sufficient on-site data necessary to characterize the nature and extent of DoD military munitions and MC at the Leona Heights Rifle Range MRS.	May – 2016	Weston Solutions, Inc.	Weston Solutions, Inc.	526	USACE ARNG CAARNG	Report

ADMINISTRATIVE RECORD FILE INDEX

Index Sorted by: Document Date

Originally Compiled: February 2018

Leona Heights Rifle Range Munitions Response Site (MRS)
Alameda County, Arizona

Title <> Subject	Date	Author	Author Affiliation	Pages	Recipient	Document Type
RI Report <> The purpose of the RI report was to present information gathered during the RI field work to determine the nature and extent of DoD military munitions and MC at the Leona Heights Rifle Range MRS. The RI recommended that the MRS should be converted to a Munitions Response Area (MRA) and be divided into two MRSs: the Leona Heights Rifle Range – Leona Canyon Regional Open Space Preserve (ROSP) MRS and the Leona Heights Rifle Range – Developed Areas MRS. The RI Report recommended that the Leona Heights Rifle Range – Leona Canyon ROSP MRS go forward in a Feasibility Study (FS) to address potential DoD military munitions hazards at the site. No further action (NFA) was recommended for MC. For the Leona Heights Rifle Range – Developed Areas MRS, NFA was recommended for both DoD military munitions and MC.	May-2017	Weston Solutions, Inc.	Weston Solutions, Inc.	424	USACE ARNG CAARNG	Report
FS <> The purpose of the FS was to determine the best approach to mitigate the explosive hazards that potentially remain at the Leona Heights Rifle Range – Leona Canyon ROSP MRS by identifying and screening remedial technologies and process options, developing and screening alternatives, and performing a detailed comparative evaluation of the alternatives. The FS recommended Land Use Controls (LUCs) and Focused Surface and Subsurface (to 24-Inches below ground surface [bgs]) Removal of DoD Military Munitions. The FS recommended NFA for the Leona Heights Rifle Range – Developed Areas MRS.	Sep. – 2017	Weston Solutions, Inc.	Weston Solutions, Inc.	122	USACE ARNG CAARNG	Report
Proposed Plan <> The Proposed Plan presents the chosen action for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and the Leona Heights Rifle Range – Developed Areas MRS. The Proposed Plan recommended LUCs and Focused Surface and Subsurface (to 24-Inches bgs) Removal of DoD Military Munitions for the Leona Heights Rifle Range – Leona Canyon ROSP MRS and NFA for the Leona Heights Rifle Range – Developed Areas MRS.	Feb. – 2018	Weston Solutions, Inc.	Weston Solutions, Inc.	14	ARNG USACE CAARNG	Report

[1]Not including appendices.

APPENDIX B

DOCUMENTATION OF PUBLIC NOTICES

This Page Intentionally Left Blank

Oakland Tribune
600 Grand Ave., #308
Oakland, CA 94610
510-723-2850

Legal No. **0006085245**

3761217

WESTON SOLUTIONS
SHAWN MACMILLAN
841 BISHOP ST., #2301
HONOLULU, HI 96813-3957

PROOF OF PUBLICATION

FILE NO. Leona Heights PP

In the matter of

Oakland Tribune

The Oakland Tribune

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Oakland Tribune, a newspaper published in the English language in the City of Oakland, County of Alameda, State of California.

I declare that The Oakland Tribune is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated December 6, 1951, in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Oakland Tribune as a Newspaper of General Circulation, Case Number 237798. Said order states that "The Oakland Tribune is a newspaper of general circulation within the City of Oakland, and the County of Alameda, and the State of California, within the meaning and intent of Chapter 1, Division 7, Title 1 [§§ 6000 et seq.], of the Government Code of the State of California." Said order has not been revoked, vacated, or set aside.

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

01/05/2018

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated: January 5, 2018

Public Notice Advertising Clerk

PUBLIC NOTICE
The Army National Guard Invites Your Comments on the Proposed Plan for the Leona Heights Rifle Range Munitions Response Sites, Alameda County, California

As part of the Department of Defense's (DoD) Military Munitions Response Program (MMRP), the U.S. Army National Guard invites the public to review and comment on the proposed restoration plan for the Leona Heights Rifle Range Munitions Response Area (MRA) which includes the Leona Heights Rifle Range – Leona Canyon Regional Open Space Preserve (ROSP) Munitions Response Site (MRS) and Leona Heights Rifle Range – Developed Area MRS located along Keller Avenue and Campus Drive in Sequoyah, approximately seven miles southeast of downtown Oakland, California. The Army is the lead agency responsible for environmental investigations and cleanup activities of these sites under the Comprehensive Environmental Response, Compensation, and Liability Act. The California Department of Toxic Substances Control (DTSC) is a supporting agency in the decision making process.

The Proposed Plan for the Leona Heights Rifle Range – Developed Area MRS (CAHQ-013-R-02) is to implement No Further Action. This plan was developed based on site investigations that indicated no munitions and explosives of concern (MEC), or munitions constituents, present within the MRS and the significant earthwork and resulting hardscape (residences, condominiums, parking lots, roads, sidewalks, etc.) as part of the residential development. California DTSC concurs with the proposed plan of No Further Action for this MRS.

Although no MEC was encountered during site investigations, utilizing the most conservative assumptions the Proposed Plan for the Leona Heights Rifle Range – Leona Canyon ROSP MRS (CAHQ-013-R-02) is to implement land use controls (LUCs) and focused surface and subsurface (24-inches below ground surface [bgs]) clearance to address risks associated with a potential MEC hazard at the MRS. No munitions constituents were found to be present on this MRS. California DTSC concurs with the proposed plan for this MRS.

We invite your questions and comments on the Proposed Plan during the public comment period from 5 January 2018 – 9 February 2018. The Leona Heights Rifle Range Proposed Plan is available to the public at the following:

Eastmont Library 7200 Bancroft Ave, Suite 211 Oakland, CA 94605 510-615-5726	Hours: 11:30 am to 7:00 pm; Monday 10:00 am to 5:30 pm; Tuesday-Thursday 12:00 pm to 5:30 pm; Friday	FTP Site: ftp://share.westonsolutions.com Username: LeonaHeightsRO Password: LeonaHeightsRO

Written comments for the Leona Heights Rifle Range Proposed Plan should be postmarked or e-mailed no later than 9 February 2018 and sent to:

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

A public meeting for the Leona Heights Rifle Range MRSs has been scheduled for 10 January 2018 at 6:30 pm at Skyline Pizza, 4400 Keller Ave #300, Oakland, CA 94605. The public meeting for the Proposed Plan will include a presentation of the site investigation results, remedial alternatives, the preferred alternative, a time for questions and answers about the project, and an opportunity for members of the public to comment in writing on the Proposed Plan.

OT #6085245; Jan. 5, 2018

APPENDIX C

STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSE

This Page Intentionally Left Blank

MacMillan, Shawn

From: MacMillan, Shawn
Sent: Monday, June 25, 2018 7:53 AM
To: 'Dan Sykes'
Cc: Janet Gomes; Becky Tuden; Steve Castile; Kristina Kelchner; Anna Fong; Gretchen Rose; Brad Gallup; Michele Hammond; Nate Luna; Kelly Barrington; Matthew Graul; James Lukasko SPK; Walter Gee; Reuben Sendejas; Trego, Tim; MacMillan, Shawn
Subject: RE: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments

Hi Dan,

Thank you for providing comments on the Stakeholder Draft Record of Decision (ROD) for the Leona Heights MRS. Per our conversation last week EB Parks comments on the ROD (below) have been acknowledged and passed along to the Army National Guard. They will be included in the follow on Removal Action phase of work at the MRS.

Please let me know if you have any questions.

Have a good week,

Shawn MacMillan | Senior Geoscientist

Weston Solutions, Inc.
O 808-275-2901
C 808-387-6186

From: Dan Sykes [mailto:DSykes@ebparks.org]
Sent: Tuesday, June 19, 2018 11:41 AM
To: Trego, Tim <Tim.Trego@WestonSolutions.com>
Cc: Janet Gomes <JGomes@ebparks.org>; MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>; Becky Tuden <BTuden@ebparks.org>; Steve Castile <scastile@ebparks.org>; Kristina Kelchner <kkelchner@ebparks.org>; Anna Fong <Afong@ebparks.org>; Gretchen Rose <GRose@ebparks.org>; Brad Gallup <bgallup@ebparks.org>; Michele Hammond <MHammond@ebparks.org>; Nate Luna <nluna@ebparks.org>; Kelly Barrington <KBarrington@ebparks.org>; Matthew Graul <MGraul@ebparks.org>
Subject: RE: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments

Dear Tim:

East Bay Regional Park District Staff have reviewed the Record of Decision. We appreciate the Army Corps' continued willingness to keep the Park District informed as a stakeholder in the MRS planning process. We are glad to see that the ROD includes signs, a fence and subsurface clearance actions to mitigate the potential risks in the MRS (munitions response site). The Park District's Operations Staff previously provided technical comments on April 20, 2018 that you recorded during the recent public comment period. You have already responded to these comments and incorporated them into the Record of Decision, so I will not repeat those comments here. Thank you for adding a second area for subsurface clearing as we requested.

In addition, the Park District has subject matter experts in natural and cultural resources who are familiar with the resources at the MRS and have also reviewed the ROD. We understand that the project will require removal of some vegetation by thinning, and limited areas of ground disturbance by digging. Therefore, we also offer the following procedural comments regarding the next phases of the project, including development of the Work Plan, environmental compliance and implementation.

1. The Park District would expect to see in the Removal Action Work Plan how the Army Corps intends to comply with federal and state requirements for natural and cultural resources. We understand that the Army Corps is anticipating these future steps as part of the "applicable or relevant and appropriate requirements" (ARARs) that are referenced in the ROD. It is our understanding that these requirements may include, as necessary:
    a. Consultation with federal and state wildlife agencies for avoidance and minimization measures for sensitive species
    b. Compliance with Section 106 of the National Historic Preservation Act
    c. Appropriate protocols to address the possibility of uncovering any unknown cultural resources, which may require, if necessary, the use of an archaeological site monitor and outreach to Native American tribes (if desired, the Park District could provide recommendations for these).
2. Although the project site is relatively disturbed, there is the possibility of encountering cultural resources during clearance operations. If a historic (non-ordinance) artifact were uncovered, the Park District would have an interest in archiving it and mapping its location.
3. The Park District would expect to see in the Work Plan what protocol would be used to ensure equipment arriving at and leaving the site is clean, to avoid spreading weeds, seeds and plant pathogens.
4. The Park District would expect to see in the Work Plan what suitable erosion control methods (e.g., seeding or runoff controls) will be used if thinning work will involve larger areas of cleared ground (e.g., greater than 0.1 acre).

Thank you again for the opportunity to comment.
Best Regards,

East Bay Regional Park District
Healthy Parks Healthy People

Dan Sykes
Parkland Unit Manager **|** Parkland Unit
East Bay Regional Park District
7901 Redwood Road, Oakland, CA 94619
T: 510-544-3128
DSykes@ebparks.org | www.ebparks.org

From: Trego, Tim [mailto:Tim.Trego@WestonSolutions.com]
Sent: Tuesday, June 19, 2018 8:56 AM
To: Dan Sykes <DSykes@ebparks.org>
Cc: Janet Gomes <JGomes@ebparks.org>; MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>; Lukasko, James J CIV USARMY CESPK (US) <James.J.Lukasko@usace.army.mil>; Gee, Walter F (Walt) II CTR (US) <walter.f.gee.ctr@mail.mil>; Reuben Sendejas - CA Army National Guard (reuben.r.sendejas.nfg@mail.mil) <reuben.r.sendejas.nfg@mail.mil>

Subject: RE: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments
Importance: High

Dan,

Good morning.

When do you expect to provide your approval or additional comments on the Leona Heights Record of Decision response to comments? You requested an extension until 16 June 2018 to provide your approval.

I look forward to your response back.

Timothy A. Trego, P.E. | Senior Project Manager
Weston Solutions, Inc.
1435 Garrison Street, Suite 100
Lakewood, CO 80215
Office: (303) 729-6107 Internal Ext. 1107
Cell: (210) 606-7441
Fax: (303) 729-6101

From: Dan Sykes [mailto:DSykes@ebparks.org]
Sent: Friday, May 25, 2018 11:05 AM
To: Trego, Tim <Tim.Trego@WestonSolutions.com>
Cc: Janet Gomes <JGomes@ebparks.org>; MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>
Subject: RE: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments

Good morning, Tim: Thank you for the opportunity to comment on the ROD. Janet and I have done a preliminary review of the revised document, but unfortunately, key Park District personnel have not been available to review it yet. I would like to request an opportunity for an additional 3 weeks for review, with comments/questions submitted back to you by June 15. Thank you for your consideration.

Dan Sykes
Parkland Unit Manager | Parkland Unit
East Bay Regional Park District
7901 Redwood Road, Oakland, CA 94619
T: 510-544-3128
DSykes@ebparks.org | www.ebparks.org

Please consider the environment before you print

From: Trego, Tim [mailto:Tim.Trego@WestonSolutions.com]
Sent: Wednesday, May 23, 2018 11:33 AM
To: Janet Gomes <JGomes@ebparks.org>
Cc: MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>; Trego, Tim <Tim.Trego@WestonSolutions.com>
Subject: FW: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments
Importance: High

Janet,

Good afternoon.

Will you be able to provide me with your approval or additional questions regarding the response to comments? If you cannot provide it today, can you let me know when?

Take care,

Timothy A. Trego, P.E. | Senior Project Manager
Weston Solutions, Inc.
1435 Garrison Street, Suite 100
Lakewood, CO 80215
Office: (303) 729-6107 Internal Ext. 1107
Cell: (210) 606-7441
Fax: (303) 729-6101

From: Trego, Tim
Sent: Wednesday, May 16, 2018 11:15 AM
To: Janet Gomes <JGomes@ebparks.org>
Cc: Trego, Tim <Tim.Trego@WestonSolutions.com>; MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>; james.J.Lukasko@usace.army.mil; Reuben Sendejas - CA Army National Guard (reuben.r.sendejas.nfg@mail.mil) <reuben.r.sendejas.nfg@mail.mil>; Gee, Walter F (Walt) II CTR (US) <walter.f.gee.ctr@mail.mil>
Subject: Leona Heights MRS Stakeholder Draft Record of Decision (ROD) Response to Comments

Janet,

Good morning.

Attached are the responses to your comments regarding the Leona Heights Stakeholder Draft ROD for your review and approval. I have also attached the red-lined text incorporating our responses and the associated figure changes.

Please provide your approval of the response to comments on or before 23 May 2018. If you need more time though, please let me know.

Take care,

Timothy A. Trego, P.E. | Senior Project Manager

Weston Solutions, Inc.
1435 Garrison Street, Suite 100
Lakewood, CO 80215
Office: (303) 729-6107 Internal Ext. 1107
Cell: (210) 606-7441
Fax: (303) 729-6101

CONFIDENTIALITY: This email and attachments may contain information which is confidential and proprietary. Disclosure or use of any such confidential or proprietary information without the written permission of Weston Solutions, Inc. is strictly prohibited. If you received this email in error, please notify the sender by return e-mail and delete this email from your system. Thank you.

Comments for the

Stakeholder Draft Record of Decision
MMRP Munitions Response Services
National Guard Bureau
Leona Heights Rifle Range (CAHQ-013-R-01)
Alameda County, California
Contract No.: W912DR-09-D-0006
Delivery Order No. 0011 Mod #3

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response By	Response
TECHNICAL COMMENTS							
1	Janet Gomes	1-2	1.3	16-22	Request project timeline at least 30 days in advance. Review of requested trail closure dates and hours of work.	LK	Comments noted. These comments will be included in an appendix to the ROD. Details, including the project timeline, signs and public notices, public meetings, letter notifications, informational pamphlets, factsheets, websites, etc. will be included in the Work Plan for the next phase of work, under a separate contract.
2	Janet Gomes	2-18	2.11.2	28-36	Request 30 day advance notice and review of educational controls such as: Signs and public notices.	LK	
3	Janet Gomes	2-18	2.11.2	21-32	Request 2 week advance notice for any public meetings, copies of any letter notifications, informational pamphlets and fact sheets and a link to web sites.	LK	
4	Janet Gomes	2-18	2.11.3	31-36	Request for review of signs placed at 300 foot intervals. Request for a contact phone number for public concerns direction to appropriate Army agency.	LK	
5	Janet Gomes	2-18	2.11.2	32-33	Fencing to include a minimum of two gates for emergency access, fuel reduction work and firefighting requires access. Fuel management areas LE003 & LE004.	LK	Concur - The text has been revised to indicate a minimum of two gates will be included for emergency access: Engineering controls would include fencing along the southwestern border between the Leona Canyon ROSP and adjacent residential areas and warning signs located at access points to the Leona Canyon ROSP and along MRS boundaries at approximately 300-foot intervals to warn potential receptors of the potential DoD military munitions hazards. ***At least two gates will be placed in the fence for emergency access, fuel reduction work, and firefighting access.***
6	Janet Gomes	2-18	2.11.2	32-36	Request 30 day advance notice for any closures affecting public access.	LK	Comments noted. These comments will be included in an appendix to the ROD. Details, including the closures, signage, vegetation removal, etc. will be included in the Work Plan for the next phase of work, under a separate contract.
7	Janet Gomes	2-19	2.11.3	31-33	Request 30 day advance notice for any closures or potential work in area affecting public access. Requesting signage of 3.13 acres to be cleared. Vegetation removal would require Stewardship District policy review.	LK	

Stakeholder Draft Record of Decision
MMRP Munitions Response Services
National Guard Bureau
Leona Heights Rifle Range (CAHQ-013-R-01)
Alameda County, California
Contract No.: W912DR-09-D-0006
Delivery Order No. 0011 Mod #3

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response By	Response
8	Dan Sykes	2-19	2.11.3	14-15	Review vegetation feature map 2-10. Request to also clear a 100' buffer and remove ordinance to the 24" bgs depth, in a 100' buffer west of the homes along Hansom Drive, within the EBPRD boundary. This area is in our fuels management area "LE004" (MAP ATTACHED) and is an area that our Fire crews and fuelbreak crews working with hand tools and/or grazing goats, actively manage and clear brush and vegetation. The report preparers may not have considered the increased risk of someone encountering unexploded ordinance in this area because they were not aware that we actively work in that area. Fuels management area "LE003" which the ROD does propose to clear with a 100' buffer, which we are in favor of. Area LE003 is also actively managed for fuels reduction and people may encounter ordinance.	LK	Concur - The ROD has been revised to include an additional clearance area (100-foot buffer) on the northeast side of the MRS and the figures and ROD have been updated accordingly.
9	Janet Gomes	2-19	2.11.3	1-4	Requesting 30 day review of any changes to signage.	LK	Comments noted. These comments will be included in an appendix to the ROD. Details, including the signage, advanced notice, Five-year review requirements, etc. will be included in the Work Plan for the next phase of work, under a separate contract.
10	Janet Gomes	2-22	2.13.2	33-34	Request minimum 7 day advance notice for any closures affecting public access.	LK	
11	Janet Gomes	2-26	2.15.6	19-24	Five-year review requirement. Request reports of five-year review.	LK	

EDITORIAL COMMENTS

					None.		

COMMENTS PROVIDED BY

Initials	Name	Department/Organization	Email Address	Phone
		East Bay Parks		
DS	Dan Sykes	East Bay Regional Parks	Dsykes@ebparks.org	510-544-3128
JG	Janet Gomes	East Bay Regional Parks	Jgomes@ebparks.org	510-690-6675

MacMillan, Shawn

From: Racca, Roman@DTSC <Roman.Racca@dtsc.ca.gov>
Sent: Friday, May 04, 2018 6:12 AM
To: MacMillan, Shawn
Cc: Walter Gee; James Lukasko SPK; Reuben Sendejas; Trego, Tim; Lugo (Kapelanczyk), Lara
Subject: RE: Leona Heights Stakeholder Draft Record of Decision Review/Comment - EBP

Shawn,
I have no comments on the Draft Record of Decision for Leona Heights. Thanks.
Roman

Roman A. Racca, P.G.
Senior Engineering Geologist
State-Wide Munitions Response Coordinator
Cal EPA/Dept. of Toxic Substances Control
8800 Cal Center Drive
Sacramento, Ca. 95826
Office: 916.255.6407
Mobile: 916.203.6124
Fax: 916.255.3734
Roman.racca@dtsc.ca.gov

From: MacMillan, Shawn [mailto:Shawn.MacMillan@WestonSolutions.com]
Sent: Monday, April 23, 2018 3:33 PM
To: Racca, Roman@DTSC <Roman.Racca@dtsc.ca.gov>
Cc: Walter Gee <walter.f.gee.ctr@mail.mil>; James Lukasko SPK <james.j.lukasko@usace.army.mil>; Reuben Sendejas <reuben.r.sendejas.nfg@mail.mil>; Trego, Tim <Tim.Trego@WestonSolutions.com>; Lugo (Kapelanczyk), Lara <Lara.Kapelanczyk@WestonSolutions.com>; MacMillan, Shawn <Shawn.MacMillan@WestonSolutions.com>
Subject: FW: Leona Heights Stakeholder Draft Record of Decision Review/Comment - EBP

Hi Roman-
Did you have any comments on the Leona Heights Stakeholder Draft Record of Decision? If you concur we will finalize the document.

r/

Shawn MacMillan | Senior Geoscientist

Weston Solutions, Inc.
O 808-275-2901
C 808-387-6186