Site-Specific Work Plan

Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Prepared for:

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SITE-SPECIFIC WORK PLAN
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REMEDIAL ACTION MRS-BLM UNIT 17
Former Fort Ord, California

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Acronyms and Abbreviations

Ahtna	Ahtna Global, LLC
APP	Accident Prevention Plan
Army	United States Army
bgs	below ground surface
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
Burleson	Burleson Consulting, Inc.
CAIS	Chemical Agent Identification Set
CAR	corrective action request
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosives
CMC	Central Maritime Chaparral
COC	chemical of concern
CTS	California tiger salamander
CWM	Chemical Warfare Material
DDESB	Department of Defense Explosives Safety Board
DGM	digital geophysical mapping
DMM	discarded military munitions
DoD	United States Department of Defense
DTSC	Department of Toxic Substances Control
EFA	Eucalyptus Fire Area
EM	Engineering Manual
EOD	Explosive Ordnance Disposal
EPA	United States Environmental Protection Agency
ESS	Explosives Safety Submission
FWV	Field Work Variance
GIS	geographic information system
GPO	geophysical prove-out
GPS	Global Positioning System
GSV	geophysical system verification
HA	Historical Area
HE	High Explosive
HFD	hazardous fragment distance
HMP	Habitat Management Plan
ID/IQ	Indefinite Delivery/Indefinite Quantity
ISO	industry standard object
IVS	instrument verification strip

KEMRON	KEMRON Environmental Services
KO	Contracting Officer
LUC	land use control
MACTEC	MACTEC Engineering and Consulting, Inc.
MD	munitions debris
MEC	munitions and explosives of concern
MFD-H	maximum fragmentation distance-horizontal
mm	millimeter
MMRP	Military Munitions Response Program
MOUT	Military Operations in Urban Terrain
MPPEH	material potentially presenting an explosive hazard
MQO	measurement quality objective
MRA	Munitions Response Area
MRS	Munitions Response Site
MSD	minimum separation distance
mV	millivolt
NRL	Naval Research Laboratory
ODDS	Ordnance Detection and Discrimination Study
OESS	Ordnance and Explosives Safety Specialist
Parsons	Parsons, Inc.
PBO	Programmatic Biological Opinion
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RAR	Remedial Action Report
RCWM	Recovered Chemical Warfare Materiel
RD/RA	remedial design/remedial action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RRD	range-related debris
RTK	real-time kinematic
SATOC	Single Award Task Order Contract
Shaw	Shaw Environmental Inc.
SLAM	simultaneous localization and mapping
SOP	standard operating procedure
SSDM	Site-Specific Data Manager
SSWP	Site-Specific Work Plan

SUXOS	Senior Unexploded Ordnance Supervisor
TCRA	Time Critical Removal Action
TM	Technical Memorandum
TIP	Technical Information Paper
U.S.	United States
USA	USA Environmental Inc.
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UXO	unexploded ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1.0 Introduction

Munitions Response Site (MRS)-Bureau of Land Management (BLM) Unit 17 (herein referred to as "Unit 17") is located in the Impact Area Munitions Response Area (MRA) at former Fort Ord, California (Figure 1). The Impact Area MRA consists of a 6,560-acre portion of the 8,000-acre historical Impact Area that is entirely within the natural resources management area identified in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (HMP; United States Army Corps of Engineers [USACE], 1997) and is currently identified for transfer to the BLM.

This Site-Specific Work Plan (SSWP) outlines the site-specific procedures for munitions and explosives of concern (MEC) remedial action in Unit 17 (Figure 2). The Impact Area MRA was evaluated in the *Final Track 3 Impact Area Munitions Response Area, Munitions Response, Remedial Investigation/Feasibility Study, Former Fort Ord, California* (Track 3 RI/FS; MACTEC Engineering and Consulting, Inc. [MACTEC], 2007). Based on the Remedial Investigation/Feasibility Study (RI/FS), the Track 3 remedy was selected and is documented in the *Final Track 3 Record of Decision* [ROD]*, Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California* (Track 3 ROD; United States Department of the Army [Army], 2008). The selected remedy includes the following:

- Vegetation clearance via prescribed burning and/or manual and mechanical cutting
- Technology-aided surface MEC removal[1]
- Digital geophysical mapping (DGM) survey
- Subsurface MEC removal in selected areas
- Land use controls (LUCs)

Prescribed burning was selected as the primary method to clear vegetation in habitat reserve containing Central Maritime Chaparral (CMC) to provide access to conduct MEC removals. Vegetation clearance using manual and mechanical methods to clear unburned areas within habitat reserve areas containing CMC would be restricted to the extent possible and would typically be limited to 50 acres or less within a MRS or unit. Where prescribed burning has been determined infeasible based on site-specific conditions, MEC remediation will be supported by manual and/or mechanical cutting, subject to United States Fish and Wildlife Service (USFWS) consultation under the Endangered Species Act and in coordination with United States Environmental Protection Agency (EPA) and Department of Toxic Substances Control (DTSC) as described in the Programmatic Biological Opinion (PBO; USFWS, 2017). The *Memorandum for Record-Minor Change to the Selected Remedy, Fort Ord Track 3 Impact Area MRA* (Army, 2011b) documents the types of areas that were identified as impractical for a prescribed burn prior to surface MEC removal. The types of areas include:

- Areas with specific types of MEC on the ground surface that require safety setback distances that exceed the Army's capabilities to conduct a safe prescribed burn (e.g., Units 11, 12, and 23)
- Areas where suitable burn conditions occur infrequently and are unpredictable (e.g., Units 1, 2, and 3)

[1] Department of Defense Explosives Safety Regulation 6055.9 (DoD, 2024), defines technology-aided surface removal as "A removal of UXO, DMM, or CWM on the surface (i.e., the top of the soil layer) only, in which the detection process is primarily performed visually, but is augmented by technology aids (e.g., hand-held magnetometers or metal detectors) because vegetation, the weathering of UXO, DMM, or CWM, or other factors make visual detection difficult."

- Areas adjacent to populated areas, where providing for contingency associated with burning is difficult (e.g., Units 4, 5A, 6, and 9)
- Areas with difficult terrain that prevents the development of sufficient burn containment lines (e.g., Units 28 and 25)

A Prescribed Burn Evaluation of the Impossible Canyon Complex, including Unit 17, was completed as part of the *Field Evaluation Report Munitions Response MRS-BLM Units 13/17/20* (KEMRON Environmental Services [KEMRON], 2019). Topography, wind behavior, fire behavior, proximity to homes/structures, and prescribed burn equipment resources were evaluated to determine the feasibility of safely conducting prescribed burns within the Impossible Canyon Complex (Figure 3). The evaluation recommended that prescribed burning not be performed in Unit 17 due to a combination of topography, wind, and fire behavior. The Army requested formal consultation with the USFWS to address changes to affect the Army cleanup action described in the *Reinitiation of Formal Consultation for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord* [Programmatic Biological Opinion] (USFWS, 2017*)* based on the feasibility of conducting prescribed burn in Units located in the eastern portion of the Fort Ord Impact Area MRA, to include Unit 17 (Army, 2018). USFWS concurred with the recommendation of not conducting prescribed burning in a follow-up letter, *Changes to Vegetation Clearance Activities Under the Programmatic Biological Opinion for Cleanup and Property Transfer Action Conducted at Former Fort Ord, Monterey County, California* (USFWS, 2019) that constitutes an amendment to the 2017 PBO. Based on the recommendation of the Prescribed Burn Evaluation, and the USFWS concurrence, prescribed burning will not be conducted in Unit 17. Vegetation clearance in Unit 17 will be completed by mechanical and/or manual means.

Unit 17 MEC remedial action technology-aided surface MEC removal, DGM surveys, and subsurface MEC removal in selected areas are being conducted in accordance with the Track 3 ROD (Army, 2008), *Final Work Plan, Remedial Design/Remedial Action (RD/RA), Track 3 Impact Area Munitions Response Area, Former Fort Ord* (Track 3 RD/RA Work Plan; USACE, 2009), and *Remedial Design (RD)/Remedial Action (RA) Work Plan Update, Track 3 Impact Area Munitions Response Area (MRA) Munitions and Explosives of Concern (MEC) Removal, Former Fort Ord, California* (Track 3 RD/RA Work Plan Update; KEMRON, 2018). The remedy in the Track 3 ROD for the Impact Area MRA was selected because it will achieve substantial risk reduction through MEC remediation and risk management through the implementation of LUCs. The selected remedy best balances the risk reduction and associated environmental impacts in supporting the anticipated future use of the site as undeveloped habitat reserve. As previously reported in the *Field Evaluation Report Munitions Response MRS-BLM Units 13/17/20* Field Evaluation Report (KERMON, 2019), steep slopes, rough terrain, dense vegetation, and/or the potential for intensified erosion related to vegetation removal in Unit 17 may prevent the completion of vegetation removal, surface MEC removal, and/or DGM survey. Areas, where surface MEC removal and DGM survey cannot be completed due to steep slopes, rough terrain, dense vegetation, and/or the potential for intensified erosion related to vegetation removal, will be documented and evaluated during the Technical Memorandum (TM) process. Subsurface removal is not currently planned in Unit 17. The TM process of identifying subsurface removal areas based on technology-aided surface MEC removal and DGM data is described in Section 2.5.7.

Applicable MEC standard procedures, protocols, and methodologies that are to be followed during the execution of Unit 17 MEC remedial action at the former Fort Ord are addressed in this SSWP and the *Addendum to the Quality Assurance Project Plan* [QAPP], *Volume II, Appendix A, Munitions and Explosives of Concern Remedial Action* (here referred to as the "MEC QAPP Addendum). The MEC QAPP Addendum is currently under review and

is not a final document. Any change in procedures in the Final MEC QAPP Addendum will apply to the remedial action addressed in this plan. These procedures will be referenced where appropriate but will not be reiterated herein.

1.1 Purpose

This SSWP discusses site-specific project procedures for implementing the MEC remedial activities within Unit 17. The overall scope of this project entails mechanical and manual vegetation removal, technology-aided surface MEC removal, and DGM survey for approximately 354 acres of Unit 17 where surface MEC removal has not been conducted. Figure 4 shows the Unit 17 planned MEC remedial action work grids and the Eucalyptus Fire Area (EFA) Time Critical Removal Action (TCRA) and other areas where MEC removal has been completed. DGM survey will be performed to document subsurface anomalies following vegetation removal and technology-aided surface MEC removal. A TM will be completed evaluating the technology-aided surface MEC removal findings and DGM survey data following the completion of a phased work area. Based on the technology-aided surface MEC removal findings and DGM survey data evaluation, the TM will provide recommendations for subsurface removal actions in selected areas. Subsurface MEC removal is not currently planned for Unit 17. Ahtna Global, LLC (Ahtna) will conduct subsurface MEC removal in areas selected through the TM process. The TM process will also provide an evaluation of the EFA TCRA visual surface removal area and identify any additional remedial actions within the boundaries of the EFA TCRA area.

Ahtna has prepared this SSWP for the United States Depart of the Army (Army), Fort Ord Base Realignment and Closure (BRAC) under a contract with the USACE number W9123824D0002 in continuation of the Comprehensive Environmental Response, Compensation, and Liability Act remedial actions at the former Fort Ord, Monterey California. The work elements discussed herein will be conducted in accordance with established USACE technical and administrative procedures in addition to protocols established in the MEC QAPP Addendum.

1.2 Site Location

Unit 17 is 562 acres located within the Impact Area MRA. Wildcat Ridge Road bounds the 562-acre unit to the south and west, Impossible Canyon Road to the northwest, Eucalyptus Road to the north, and Barloy Canyon Road to the east and south. The Unit 17 eastern boundary makes up a portion of the eastern edge of the historical Impact Area (Figure 2).

1.2.1 Military History

The Impact Area MRA includes ranges with various historical uses, designs, and characteristics. Over the years, various types of military munitions[2] were used during training activities within the Impact Area MRA including hand grenades, mortars, rockets, practice mines, artillery projectiles, pyrotechnics, and small arms. Select ranges were used for small arms training activities, while other ranges were characterized as multi-use. Firing ranges

[2] Title 10 United States Code Section 101(e)(4) defines "military munitions" as follows: "(A) The term "military munitions" means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. (B) Such term includes the following: (i) Confined gaseous, liquid, and solid propellants. (ii) Explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents.(iii) Chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, and demolition charges(iv)Devices and components of any item specified in clauses (i) through (iii). (C) Such term does not include the following: (i)Wholly inert items. (ii) Improvised explosive devices. (iii) Nuclear weapons, nuclear devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed."

were located along the perimeter of the historical Impact Area. Weapons firing was generally directed toward the center of the historical Impact Area. The historical Impact Area encompassed an area bounded by Eucalyptus Road to the north, General Jim Moore Boulevard to the west, South Boundary Road to the south, and Barloy Canyon Road to the east. Training activities at the Impact Area MRA ceased after the closure of Fort Ord in 1994. Table 1 and Figure 5 identify Unit 17 historical uses and ranges.

1.2.2 Population, Proximity, and Access

Unit 17 is within the Impact Area MRA, which is enclosed by a four-strand barbed wire fence with concertina wire along critical locations. Access is restricted to authorized personnel only. Potential exposure to MEC by unauthorized persons could occur through intentional trespassing incidents. To mitigate such incidents, an MRS Security Program is being implemented by the Army (Army, 2020). The Impact Area MRA is located on land planned to be transferred to the BLM. Existing access deterrents, such as warning signs posted approximately every 300 feet along the Impact Area MRA perimeter fencing, discourage but do not prevent entry into the area. Personnel from the Fort Ord BRAC Office and the BLM routinely check the Impact Area MRA fences to ensure that they remain in good condition and that repairs are completed in a timely manner. The fences are maintained through an interservice support agreement with the BLM and will be maintained long term as part of the remedy (Army, 2020).

1.2.3 Current and Future Site Use

Unit 17 is designated as undeveloped habitat reserve under the HMP (USACE, 1997) and is currently designated for transfer to the BLM. The HMP describes special land restrictions and habitat management requirements within habitat reserve areas. Based on the information provided by the BLM and the Track 3 Impact Area MRA RI/FS (MACTEC, 2007), the reuse of the area as a habitat reserve is anticipated to include a variety of activities including the following:

- Recreational access on established routes
- Habitat enhancement, including prescribed burning
- Fuel break construction and management
- Use of administrative areas
- Habitat monitoring and educational programs
- Species-specific monitors and habitat enhancement
- Road management and maintenance

1.2.4 Regulatory Status

MEC remedial activities will follow the requirements detailed in the Track 3 ROD (Army, 2008) and RD/RA Work Plan Update (KEMRON, 2018).

1.2.5 Topography

Portions of Unit 17 topography includes slopes of 30 degrees or greater and steep rugged terrain. The topography of Unit 17 consists of steep slopes with ridges rising to 600 feet above the canyon bottom characterized by well-defined, north-south ridgelines and eastward-flowing drainage channels within narrow moderately to steeply sloping canyons. Elevations range from approximately 190 feet above mean sea level at the north end of Unit 17 to 930 feet above mean sea level on Wildcat Ridge to the south (Figure 6).

1.2.6 Site Conditions

Unit 17 soil is sandy and prone to movement under the influences of water and wind. The potential for erosion is affected by soil composition, relative lithification or cementation, permeability, and runoff potential. There are three general soil types within Unit 17. The largest percentage is Xerorthents, dissected; followed by Arnold-Santa Ynez Complex; and, in a much smaller percentage, Santa Ynez Fine Sandy Loam. Erosion risk categories have been established ranging from the lowest risk of erosion susceptibility (Category 1) to the highest (Category 4) (KEMRON, 2019b). Table 2 and Figure 7 identify Unit 17 soil erosion risk categories and soil types.

1.2.7 Natural Resources

As part of the Impact Area MRA, Unit 17 is designated as undeveloped habitat reserve in the HMP (USACE, 1997). Unit 17 vegetation types include maritime chaparral, oak woodland/savannah, grassland, and coastal scrub (Figure 8). Special-status species that may be encountered within Unit 17 are discussed in Section 9.0. Measures to reduce impacts to natural resources will be implemented in accordance with the HMP (USACE, 1997) and PBO (USFWS, 2017). These measures are described in Field Standard Operating Procedure (SOP) 2 *Environmental Protection*, provided as an attachment to the MEC QAPP Addendum and summarized in Section 9.0 of this SSWP.

1.3 Previous Investigations

Various MEC sampling and removal activities have been conducted to date within areas of Unit 17. Figure 9 illustrates the previous sampling and removal activities completed in Unit 17. Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

1.3.1 Track 3 Impact Area MRA RI/FS

The Track 3 RI/FS (MACTEC, 2007) describes the site conditions and nature and extent of MEC based on then-available data. Sites identified in the Track 3 RI/FS that are located within or overlap portions of Unit 17 include the following:

- Rocket Launcher Range
- Close Combat Course
- Rifle Grenade Range
- Barloy Canyon Sub-Machine Gun Range
- Combat Pistol Range (Range 35A)
- Wildcat Ridge Day/Night Combat Course
- Range 35 3.5-Inch Rocket Launcher
- Machine Gun Assault/Close Combat/Mortar (Range 34)
- Seargent Time Training (STT) (Range 46)
- Wildcat Ridge Day/Night/Combat Development Command Experimentation Center (CDCEC) Range/Helicopter Attack (Range 32)

Table 1 and Figure 5 identify Unit 17 historical uses and ranges.

Based on previous investigations, historical documentation, types of historical ranges, and range locations, the Track 3 RI/FS identified the following types of MEC anticipated in Unit 17:

- Rifle Grenades
- 40 millimeter(mm) Projectiles
- 75mm Projectiles
- 3.5-inch practice Rockets

1.3.2 Impact Area Grid Sampling

An initial evaluation was completed in 1997 and 1998 to determine the scope of future munitions response[3] in the historical Impact Area (USA Environmental, Inc. [USA], 2000). Sampling efforts included investigation of 100-foot by 100-foot grids located behind and between the range fans around the perimeter of the Impact Area MRA. Detected items were investigated to a depth of 4 feet, with deeper excavations as approved by the USACE Ordnance and Explosive Safety Specialist (OESS). No MEC items were identified deeper than the specified removal depth. This sampling action ultimately included a 100% search and investigation of five 100-foot by 100-foot sample grids within Unit 17 (Figure 9; USA, 2000). A total of one unexploded ordnance (UXO) item and three discarded military munitions (DMM) items were recovered in the five Unit 17 100-foot by 100-foot grids. Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

1.3.3 MOUT Site Buffer

A MEC remedial action was completed within the Military Operations in Urban Terrain (MOUT) Site Buffer in 2014 (Figure 9). Manual vegetation clearance and a technology-aided surface and subsurface MEC removals were completed for approximately 22 acres of the MOUT Site Buffer. Approximately 13.75 of the 22 acres of the MOUT Site Buffer are located within Unit 17. Four UXO items and 78 DMM items were removed as part of MEC remediation activities in the Unit 17 portion of the MOUT Site Buffer (ITSI Gilbane, 2014a). Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

1.3.4 Site 39 Inland Ranges Remedial Action Completion

The Site 39 Inland Ranges Remedial Action Completion Report describes the soil remedial action completed through 2013 at ranges in areas designated as habitat reserve (ITSI Gilbane, 2014b). MEC removal on the surface and at depth was required to support soil remediation areas located within the Site 39 Inland Ranges where historical use included training with various types of munitions, including hand grenades, mortars, rockets, mines, and artillery.

HA-34 is a 13.8-acre area within Unit 17 located south of the intersection of Eucalyptus Road and Barloy Canyon Road (Figure 9). Historical documentation indicates that Range 34 was a multi-use range used as a close combat course from the late 1950s through the late 1960s, then later used as a machine gun assault course and a mortar range. Weapons authorized for use included the M60 machine gun, M14 rifle, M16 rifle, 80mm mortar, and 4.2-inch mortar. The focus of the remediation was to excavate soil contaminated with lead.

HA-34 was identified as having a moderate to high probability of encountering MEC and required MEC removal to depth within the footprint of the remediation areas prior to excavation. Four UXO items and 6,210 pounds of munitions debris (MD) were recovered during pre-remediation MEC removal. Approximately 29,330 cubic yards of soil were excavated during soil remediation activities with an excavation depth ranging from 1 to 5 feet.

[3] Title 32 Code of Federal Regulations Section 179.3 defines "munitions response" as "response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human health, or environmental risks presented by UXO, discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required."

Construction support was provided during soil remediation activities. One UXO item and MD including rifle smoke grenades, practice hand grenades, machine gun links, practice 40mm projectiles, illumination signals, blasting caps, and hand grenades were found during the soil remediation. Post-soil remediation MEC removal was conducted to a depth of 4 feet (based on the results of a DGM investigation) to facilitate safe habitat restoration activities. All detected anomalies were investigated or resolved. No MEC items were encountered and approximately 356 pounds of MD were recovered (ITSI Gilbane, 2014b). Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

1.3.5 Time Critical Removal Action – Eucalyptus Fire Area

In July 2003, an accidental fire started in the MOUT Site. The Eucalyptus Fire resulted in a patchwork of burned/unburned areas of approximately 367 acres of the northeastern corner of the Impact Area MRA to include Unit 17. The remaining acreage was on adjacent property that was previously transferred to the BLM. The burned area is referred to as the EFA.

The fire removed vegetation and made the ground surface accessible. A Time Critical Removal Action (TCRA) was conducted in the EFA in the Impact Area MRA to remove MEC exposed on the ground surface (Shaw, 2005). Visual surface MEC removal was completed for the accessible area of Unit 17 EFA TCRA (Figure 9). Vegetation cutting was not conducted as part of this operation.

High explosive (HE) 40mm projectiles were identified during the TCRA in areas of sandy soil where the possibility of live items being buried in the shallow depth below ground surface existed. Procedures were modified in the 22 grids associated with these areas to allow the use of metal detectors and subsurface investigation of anomalies to a depth of 6 inches as a precautionary safety measure in addition to the surface sweep (Figure 9; Shaw, 2005). No HE 40mm projectile MEC items were found during the subsurface investigation.

A total of 39 UXO items and 10 DMM items were removed through the Unit 17 EFA TCRA. MD consisted primarily of 3.5-inch practice rockets, practice hand grenades, hand grenade fuzes, practice rockets, and signals (Shaw, 2005). Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

1.3.6 Fuel Break MEC Removal

To prevent the spread of accidental fires and to manage prescribed burns within the Impact Area MRA, fuel breaks were established around portions of the Impact Area MRA perimeter and re-established in the interior portions of the Impact Area MRA. The Impact Area was divided into defensible polygons, and additional fuel breaks were reestablished. MEC removal actions were designed to address MEC to depths of 4 feet (USA, 2001). Various phases of analog and digital equipment MEC remediation have been performed within the Impossible Canyon Road and Wildcat Ridge fuel breaks from 2001 through 2020 (Parsons, Inc. [Parsons], 2001; Shaw, 2010 and 2011; and KEMRON, 2021). No MEC items were found in the portions of the Impossible Canyon Road fuel break that borders Unit 17 (KEMRON, 2021). A total of eight MEC items (four DMM and four UXO) were removed from the Wildcat Ridge fuel break that borders Unit 17 (KEMRON, 2021).

1.3.7 Annual Monitoring

The Army conducts monitoring of safety/security data for areas within Track 3 where removal of MEC has been completed as part of the selected remedy described within the Track 3 ROD (Army, 2008). This includes the review of reports and observations involving potential MEC; the recording, compilation, and analysis of MEC incident

reports; and conducting annual area walks. An assessment of area conditions is developed annually until the area is determined to have reached a stable condition.

Annual monitoring site walks were conducted in Unit 17 EFA between 2009 and 2011 (Army, 2009c; 2010; and 2011; Figure 9). Based on the absence of observed or reported MEC items since 2009 and the obstruction of the surface by vegetation regrowth following the Eucalyptus Fire, the 2011 Track 3 Surface Removal Area MEC Monitoring Report recommended discontinuing the monitoring of EFA (Army, 2011a).

The southern portion of HA-34 was retained in the surface monitoring program after the remainder of the EFA was removed from the program in 2012. Annual monitoring site walks were conducted in HA-34 between 2009 and 2019 (Army, 2009b; 2010; 2011; 2012; 2013; 2014; and 2016; KEMRON, 2017a; 2017c; 2019a; and 2020; Figure 9). From 2012 to 2015, one suspect MEC item that was subsequently determined to be MD was recovered during surface monitoring. Based on the absence of observed or reported MEC items since 2015 and no erosion issues being identified, the 2019 MEC Track 3 Surface Area Monitoring Report (KEMRON, 2020) recommended discontinuing the annual monitoring of HA-34 under the Track 3 surface monitoring program. The Army will continue to collect information about incidental munitions encounters via the reporting process as part of the Site Security Program.

1.3.8 Field Evaluation

A two-phased field evaluation approach was implemented for MRS-BLM Units 13, 17, and 20 to assess existing conditions prior to implementing the remedial action prescribed in the Track 3 ROD (Army, 2008). Phase I of the two-phased field evaluation included a visual reconnaissance survey of areas where existing site knowledge is limited. Phase I Field Evaluation visual reconnaissance survey walks were conducted in 2015 to gather information on the layout of Units 13, 17, and 20 and to better understand the general terrain and accessibility (KEMRON, 2017b). Unit 17 Phase I Field Evaluation Visual Reconnaissance Surveys are identified on Figure 9. Due to the lack of existing information regarding site condition in a large portion of Unit 17 interior a Phase II Field Evaluation was recommended.

Approximately 55,956 linear feet of surface investigation and follow-on reconnaissance survey transects were completed for the Unit 17 Phase II Field Evaluation (Figure 9). Transect design for the Unit 17 Phase II Field Evaluation was created utilizing a visual sample plan and was based on the identified areas of potential munitions use as indicated by anomalies on the ground surface and visual observation of range-related features. Follow-on reconnaissance survey walks were conducted along each completed surface investigation transect to document range-related features and items indicative of historical munitions use (KEMRON, 2019b). Two DMM and one UXO items were recovered during the Unit 17 Phase II Field Evaluation (Table 3 and Figure 10).

A Soil Erosion Risk Study was conducted during the Field Evaluation that provides an overview of the relative potential for surface soil instability and potential for erosion including soil type, slope (angle and length), aspect, existing erosion/vegetation, and geologic structure (KEMRON, 2019b). Four risk categories have been established ranging from the lowest risk of erosion susceptibility (Category 1) to the highest (Category 4). Table 2 and Figure 7 identify Unit 17 soil erosion risk categories.

1.4 Changes to the Work Plan

This SSWP was prepared after careful evaluation and is based on the best available information. During execution of the work, however, unforeseen circumstances or events may arise that require modification to the procedures discussed herein. The following approach will be followed should the need arise to modify this SSWP:

- An initial assessment will be made by the Ahtna MMRP Project Manager who will discuss a potential modification with the USACE Program Manager (and Contracting Officer [KO], if the change also requires a contract modification). The Ahtna MMRP Project Manager (or designee) will determine and document via memorandum to the USACE Program Manager, KO (if applicable), and the Fort Ord BRAC Office whether the change is material or procedural and how it will be implemented. If the change is material, the Army will notify regulatory agencies.
- Under no circumstances will any change to this SSWP be executed unless specifically approved by the USACE Program Manager and Ahtna MMRP Project Manager.
- If conditions requiring the change are material and involve a safety or quality concern, the Ahtna MMRP Project Manager will immediately suspend work affected by the unforeseen condition or activity until the cause is investigated and approved procedures are in place. The Ahtna MMRP Project Manager will immediately notify the USACE Program Manager and, the Fort Ord BRAC Office.

Changes to this SSWP will be identified using a Field Work Variance (FWV). Ahtna will develop and submit the required changes to USACE and Fort Ord BRAC Office for review and approval/acceptance. Approved modifications will be incorporated into this SSWP and provided to the regulatory agencies and interested stakeholders prior to implementation.

2.0 Technical Management Plan

2.1 General Requirements

This section serves as the Technical Management Plan, which identifies the general approach, methods, and operational procedures to be employed during the Unit 17 MEC remedial action. The scope includes mechanical and/or manual vegetation cutting, technology-aided surface MEC removal, DGM survey, and subsurface MEC removal in areas identified during the TM process.

Work performed at the site will be conducted in accordance with the Unit 17 Accident Prevention Plan (APP). The APP, which includes the Site Safety and Health Plan, is currently under review and is not a final document. The Final APP will be included as Appendix A of this SSWP.

Personnel duties and Ahtna's organization structure for the Unit 17 MEC remedial action are identified in the MEC QAPP Addendum. Discussion of protocols address under the MEC QAPP Addendum will not be repeated in this SSWP. Appropriate sections will be referenced to the MEC QAPP Addendum, as needed, to support technical management planning.

2.2 Guidance, Regulations, and Policy

The Impact Area MRA was evaluated in the Track 3 RI/FS (MACTEC, 2007). Based on the RI/FS, the Track 3 remedy was selected and is documented in the Track 3 ROD (Army, 2008). The selected remedy includes (1) vegetation clearance via prescribed burning, (2) technology-aided surface MEC removal, (3) subsurface MEC removal in selected areas, (4) DGM survey, and (5) LUCs. The *Memorandum for Record-Minor Change to the Selected Remedy, Fort Ord Track 3 Impact Area MRA* (Army, 2011b) documents the types of areas that were identified as impractical for a prescribed burn prior to technology-aided surface MEC removal. Prescribed burning is no longer planned for Unit 17. The decision to not perform prescribed burning has been approved by USFWS (USFWS, 2019).

The work will be performed under the requirements outlined in the United States Department of Defense (DoD) *Department of Defense Explosives Safety Regulation*, 6055.09, Edition 1, Change 1 (DoD, 2024) and DoD Instruction 4140.62, *Material Potentially Presenting an Explosive Hazard (MPPEH)*, Change 3 (DoD, 2019); USACE's *Safety and Occupational Health Requirements*, Engineering Manual (EM) 385-1-1 (USACE, 2024); the most current version of the Department of Defense Explosive Safety Board (DDESB) Technical Paper 16, *Methodologies for Calculating Primary Fragment Characteristics* and the fragmentation data sheet; and *Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern-Related Activities, Technical Paper 18, Revision 1* (DDESB, 2020). Additional applicable guidance, regulations, and policies are provided in the MEC QAPP Addendum.

2.3 Discovery of Chemical Warfare Material

Chemical Warfare Material (CWM) is not expected to be encountered within Unit 17 based on historical research and previous investigations. Procedures to be followed if CWM is encountered during work performed within Unit 17 are provided in UXO SOP 5 *MEC and MPPEH Management* provided as an attachment to the MEC QAPP Addendum. Further details regarding procedures to be followed in the event of the discovery of a suspect CWM item can be found in *Recovered Chemical Warfare Materiel (RCWM) Response Process, Engineering Pamphlet 75-1-3* (USACE, 2004). In the unlikely event of encountering Chemical Agent Identification Set (CAIS) the CAIS will be

handled in accordance with the procedures included in the Army's *Interim Guidance, Chemical Warfare Material Responses and Related Activities* dated 1 April 2009 (Army 2009a).

2.4 Procedures When MPPEH Cannot Be Readily Identified

In the event material potentially presenting an explosive hazard (MPPEH) is encountered that cannot be readily identified, the USACE OESS will be notified. If the USACE OESS is unable to identify the item, the USACE OESS will notify the USACE Project Manager immediately. The USACE OESS will contact an Explosive Ordnance Disposal (EOD) flight. The Senior Unexploded Ordnance Supervisor (SUXOS) will ensure that the area is secured until properly relieved by EOD personnel. All required documentation will be prepared for the operation.

If an item with an unknown filler is encountered, the item will be marked using a Global Positioning System (GPS), covered with plastic, and surrounded with sandbags, and plywood will be placed over the item. Security for these items will be in place when MEC teams are not working in Unit 17. Ahtna will immediately notify the Fort Ord BRAC Office and the USACE OESS. The OESS will notify the EOD flight and request a response to confirm liquid presence by means of X-ray. Upon confirmation of liquid filler, the OESS will notify Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Command and request a response to make a determination as to the type of liquid filler within the item. The SUXOS will ensure that the area is secured until properly relieved by EOD personnel, the CBRNE Command, or local authority. Procedures for MPPEH items that cannot be identified and items with an unknown filler are described in UXO SOP 5 *MEC and MPPEH Management* provided as an attachment to the MEC QAPP Addendum. Further details can be found in the *Recovered Chemical Warfare Materiel Response Process, Engineering Pamphlet 75-1-3* (USACE, 2004) and the Army's *Interim Guidance, Chemical Warfare Materiel Responses and Related Activities* (Army, 2009a).

2.5 Technical Scope

The Unit 17 MEC remedial actions are in accordance with the Track 3 ROD (Army, 2008), Track 3 RD/RA Work Plan Update (KEMRON, 2018), and the MEC QAPP Addendum. Figure 4 identifies Unit 17 planned MEC remedial action areas. The work elements for this project are listed in this section, and details of these elements and processes planned for implementation to meet project objectives are provided in subsequent subsections.

The Unit 17 MEC remedial action work includes the following:

- Manual and/or mechanical vegetation cutting in accessible areas of Unit 17
  - Mechanical vegetation cutting will be conducted in accessible areas of dense vegetation.
  - Manual vegetation cutting will be conducted in areas that are inaccessible to mechanical equipment.
  - Manual vegetation cutting will also be required to limb up trees to allow safe access for instrument-aided surface MEC removal.
- Technology-aided surface MEC removal in accessible areas of Unit 17 (approximately 354 acres).
- DGM survey in the accessible area of Unit 17 where vegetation cutting and technology-aided surface MEC removal has been completed.
- Subsurface MEC removal in selected areas.

The project work elements include the following:

- Work Element 1 – Perform work planning (including the preparation of this SSWP).

- Work Element 2 – Mobilize and set up the site. Multiple mobilizations may occur for separate teams performing different phases of work when those work phases begin.
- Work Element 3 – Perform road maintenance/repairs.
- Work Element 4 – Mechanical and/or manual vegetation cutting.
- Work Element 5 – Conduct a grid and border survey using the former Fort Ord Master Grid System to tie and establish MEC removal area boundaries.
- Work Element 6 – Conduct technology-aided surface MEC removal and disposal.
- Work Element 7 – Conduct a DGM survey of accessible areas in accordance with established measurement quality objectives (MQOs).
- Work Element 8 – Following the DGM survey, develop a TM that provides and evaluation of the unit (including the EFA TCRA Area) based on the work completed to date and, if necessary, describe additional subsurface removal action recommended based on the results of the completed work.
- Work Element 9 – Conduct additional remedial action as recommended by the TM and approved by the BRAC Cleanup Team.
- Work Element 10 – Perform erosion control as needed.
- Work Element 11 – If required, develop a Technical Information Paper (TIP) that details the completion of activities in Unit 17.
- Work Element 12 – Demobilize after final quality assurance (QA)/quality control (QC) inspections are completed.
- Work Element 13 – Develop a site-specific Remedial Action Report (RAR) for the Unit 17 MEC remedial action area.

2.5.1 Mobilization and Site Set Up

Multiple mobilizations may occur for this project, which includes mobilizations of the vegetation-cutting subcontractors and additional personnel as needed to support MEC remedial activities. Ahtna will use the compound at Building 4522, Joe Lloyd Way, as a field office. This field office will be the central command location for direction and coordination of MEC remedial activities. Personnel will report to the field office at the beginning of each workday for the daily health and safety briefing. Health and safety records will also be maintained in the field office. Temporary break and sanitation facilities will be established at the work site.

2.5.2 Road Maintenance

Maintenance and repairs of regularly maintained fuel break roads within the Impact Area MRA will be completed to ensure project field team and equipment accessibility to Unit 17. The extent of road maintenance will be minimized to protect environmental resources.

2.5.3 Vegetation Cutting

Vegetation in accessible areas of Unit 17 will be removed manually and/or mechanically. Procedures for vegetation cutting are included in Field SOP 4 *Vegetation Removal* provided as an attachment to the MEC QAPP Addendum. Mechanical and manual vegetation cutting will be conducted to the extent necessary to facilitate technology-aided surface MEC removal. Portions of Unit 17 present challenges for vegetation removal due to steep slopes, steep rugged terrain, and the potential for intensified erosion related to vegetation removal. Vegetation cutting and/or soil disturbance could increase, create, or intensify the potential for soil instability and

soil erosion in portions of Unit 17 (KEMRON, 2019b). Erosion risk categories have been developed ranging from the lowest risk of erosion susceptibility (Category 1) to the highest (Category 4). Table 2 and Figure 7 identify Unit 17 soil erosion risk categories. Mechanical and manual vegetation cutting risks will be considered on an area-by-area basis. Vegetation removal may be impractical and unsafe for mechanical and/or manual crews. Site conditions could intensify erosion potential and destabilize the soil surface. The SUXOS, Unexploded Ordnance Safety Officer (UXOSO), and Ahtna's Senior Biologist will evaluate areas where vegetation removal is deemed unsafe or has the potential to significantly exacerbate erosion potential on a case-by-case basis. GPS coordinates of areas deemed unsafe or inaccessible by the UXOSO will be collected to accurately identify the area. Safety concerns and field maps identifying the unsafe areas will be provided to the Fort Ord BRAC Office and USACE for review and concurrence and documented in the TMs. Specific measures to reduce or avoid impact to species and/or habitats will be identified by Ahtna's Senior Biologist using a site habitat checklist (MEC QAPP Addendum, Attachment C Forms). Procedures for environmental protection are included in Field SOP 2 *Environmental Protection*, provided as an attachment to the MEC QAPP Addendum.

A UXO Technician II or above will provide anomaly avoidance for vegetation-cutting teams. A magnetometer will be used as needed, in conjunction with a visual survey of the ground surface, to identify MEC/MPPEH and potential obstructions that could interfere with the mechanical or manual cutting process (e.g., barbed wire, range related debris [RRD], etc.). If MEC/MPPEH or an unknown item is encountered, vegetation cutting will stop and the UXO Technician will investigate the item. Procedures for management of MEC/MPPEH are provided in UXO SOP 5 *MEC and MPPEH Management,* provided as an attachment to the MEC QAPP Addendum. Procedures for demolition of MEC and MPPEH are described in UXO SOP 6 *Demolition of MEC and MPPEH,* provided as an attachment to the MEC QAPP Addendum. Following completion of the visual inspection in a mechanical cutting area, the UXO Technician will move outside of the mechanical vegetation cutting equipment predetermined minimum separation distance (MSD). The MSD for vegetation removal will be based on the larger distance of the hazardous fragment distance (HFD) or mastication throw distance.

Mechanical equipment, such as brush hogs, tractor accessorized Zerriest, feller bunchers (such as a TimberPro, TimberKing, or equivalent), with drum-type mastication head, may be used to cut the vegetation to the extent possible. Vegetation will be cut to a height of 6 inches or less above the ground surface unless vegetation is specifically marked for protection and avoidance by Ahtna's Senior Biologist. Areas with light to medium vegetation (i.e., where the ground surface can be readily observed) will be cut in one stage to a height of no more than 6 inches above the ground surface. In areas with dense vegetation that obscures the visual inspection of the ground surface, a first cut will be made to a height between 18 and 24 inches above the ground. Following technology-aided visual inspection, a second cut will be made to a height of no more than 6 inches above ground surface.

Manual tools, such as chainsaws, hand saws, trimmers, loppers, etc., may be used in oak and grassland areas and areas inaccessible to mechanical equipment. Branches and low-lying limbs of trees may be trimmed to increase accessibility to the ground surface in support of technology-aided surface MEC removal (Section 2.5.5). Manual tools may also be used to limb up vegetation delineated by Ahtna's Senior Biologist with approval from the Fort Ord BRAC Biologist. Manually cut vegetation will be chipped and removed from the work area or used for erosion control where feasible (Section 2.5.9). Chipped material will be used for erosion control where feasible and in coordination with the Fort Ord BRAC Office. If practical, areas where woodchips can be placed directly for erosion

control will be identified before cutting. Chipped material not used for erosion control will be stockpiled. Stockpile locations will be coordinated with the Fort Ord BRAC Office.

If required, Ahtna's Senior Biologist will identify invasive trees such as Monterey and Torey Pines, Monterey Cypress, acacia, or other invasive trees for removal and chipping. Invasive tree species would be removed from the work area using manual cutting. Woodchips that may contain seeds of invasive trees such as Monterey pines, Torey pines, Monterey cypress and acacia species would not be placed in maritime chaparral areas to avoid their spread and habitat conversion. Chipped material suspected to be contaminated with seed from invasive tree species would be identified and stockpiled separately from clean mulch to avoid cross contamination. Stockpile locations for material suspected to be contaminated with seed from invasive tree species would be coordinated with the Fort Ord BRAC Office. Contaminated stockpiles would be disposed of offsite.

2.5.4 Grid and Border Survey

Following vegetation cutting, MEC remedial action area work grids and border surveys will be established (Figure 4). Grids will be established via real-time kinematic (RTK) GPS on the Fort Ord Master Grid System of 100-foot by 100-foot grids and will be used for tracking MD, RRD, and MEC/MPPEH finds. Prior to the installation of a grid corner or border point, anomaly avoidance will be conducted at the grid corner/grid border point location to ensure no metallic objects are present. Wooden stakes will be placed at grid corners and along borders where necessary to define each grid. Each grid corner stake will be labeled with a unique identification. Further details regarding grid and border survey are included in Field SOP 3 *Grid and Border Survey,* provided as an attachment to the MEC QAPP Addendum.

2.5.5 Technology-Aided Surface MEC Removal

Procedures for technology-aided surface MEC removal are included in UXO SOP 2 *Technology-Aided Surface MEC Removal,* provided as an attachment to the MEC QAPP Addendum. Technology-aided surface MEC removal will be performed by qualified UXO Technicians following vegetation cutting and grid and border establishment. Site conditions (e.g., difficult terrain, trees) may prevent surface MEC removal from being conducted in certain areas. The SUXOS and UXOSO will evaluate areas where technology-aided surface MEC removal is deemed unsafe on a case-by-case basis. GPS coordinates of areas deemed unsafe or inaccessible by the UXOSO will be collected to accurately identify the area. Safety concerns and field maps identifying the unsafe or inaccessible area will be provided to the Fort Ord BRAC Office and USACE for review and concurrence and documented in the TMs. Furthermore, the field data will be used to update project maps, documents, and related data in the Fort Ord database.

The intent of the technology-aided surface MEC removal is as follows:

- Remove surface MEC
- Remove metallic debris including MD, RRD, and other debris that could impact the DGM survey results.

MPPEH, MEC, MD, MD items that could be mistaken for MEC, and RRD will be removed from the ground surface. Single expended small arms shell casings (small arms) will not be required to be picked up, because they do not pose an explosive hazard and will not interfere with the DGM survey. Piles of expended shell casings will be removed. Metallic objects the size of a low-explosive (LE) MKI, 37mm projectile (without fuze) (1.47 inches by 1.47 inches by 3.5 inches) or larger will be removed. The ground surface will be considered the extent of surface

removal. There will be no scuffing of soil to find metallic items detected with magnetometers. If an item is partially visible on the surface, it will be removed as part of surface removal.

During technology-aided surface MEC removal, UXO Teams will use magnetometers at all times to support visual identification of munitions. UXO Technicians will walk parallel lines across each removal grid to provide complete visual coverage. Visual and magnetometer inspection will be conducted in 5-foot-wide search lanes in all grids and will be delineated using rope. The UXO Team will investigate all magnetometer ring-offs on the exposed surface. If the surface is covered by cut vegetation, the UXO Technician will remove the vegetation at the magnetometer ring-off to expose the soil surface.

MEC and MPPEH will be managed in accordance with UXO SOP 5 *MEC and MPPEH Management,* provided as an attachment to the MEC QAPP Addendum, and *DoD Manual 4140.72-M Management of Material Potentially Presenting an Explosive Hazard* (DoD, 2021). All items recovered in the field are considered MPPEH prior to inspection. Upon initial inspection by the UXO Team Leader (UXO Technician III), a determination is made, and the item is segregated into one of the following categories: non-munitions, small arms ammunition, or MPPEH. MPPEH is subject to further evaluation and, if it cannot be confirmed as free of explosive hazard, is subjected to detonation. The SUXOS and the UXOSO (with input from the USACE OESS if available) will agree on the positive identification of the item and the disposition of the item prior to implementing demolition operations. Procedures for demolition of MEC and MPPEH are described in UXO SOP 6 *Demolition of MEC and MPPEH,* provided as an attachment to the MEC QAPP Addendum.

The location of each MPPEH item will be recorded using RTK-GPS. In areas with limited or no GPS reception, the item will be recorded using tape measurement from the southwest grid corner location to acquire the MPPEH item georeferenced location. MEC and MPPEH items identified by the UXO Teams will be entered into digital devices by item type, description, and weight. MD will be recorded by estimated weight on a grid-by-grid basis. If MD indicative of munitions with sensitive fuzes is noted, the items will be recorded by estimated wight on a grid-by-grid basis. The estimated weight of RRD per grid will be recorded. Recorded field data will be provided to the Site-Specific Data Manager (SSDM) at the end of the workday. Recovered MD will be stored in lockable containers at a designated staging area for inspection and future disposition.

UXO Teams will be trained to recognize and document evidence of potential soil contamination and historical military training items and features. Any indication of potential soil contamination or historical military training items and features will be documented and provided to personnel conducting range assessment as part of the Basewide Range Assessment program.

2.5.6 DGM Surveys

Following technology-aided surface MEC removal in accessible areas and completion of technology-aided surface MEC removal QA, DGM surveys will be conducted to provide a record of subsurface anomalies. Site conditions (e.g. unsafe terrain, trees) may prevent DGM from being performed in certain areas. The SUXOS and UXOSO will evaluate areas where DGM survey is deemed unsafe on a case-by-case basis. GPS coordinates of areas deemed unsafe or inaccessible by the UXOSO will be collected to accurately identify the area. Safety concerns and field maps identifying the unsafe or inaccessible will be provided to the Fort Ord BRAC Office and USACE for review and concurrence and documented in the TMs. Furthermore, the field data will be used to update project maps, documents, and related data in the Fort Ord database.

The EM61-MK2A in towed array, and as necessary the EM61-MK2As in person-portable mode, will be deployed for DGM surveys. Based on expected future planned work, the standards by which geophysical mapping can be classified as either Category A or Category B. In both cases, the objective is to map 100 percent of the area in question. Category A DGM surveys are conducted in areas where future subsurface removal actions are planned. Category A data are deemed complete and suitable for the selection of individual anomalies for intrusive investigation. Category B DGM surveys are conducted to obtain DGM data of sufficient quality to characterize the site for overall anomaly distribution and density. Category B data are collected with slightly relaxed MQOs, regarding line spacing. The significant difference between Category A and B data is the possible existence of data gaps in Category B datasets. With data gaps filled in, Category B data is of high enough quality that it could be used for anomaly selection and investigation purposes.

DGM survey procedures to include anomaly selection criteria and QC requirements are provided in GEO SOP 3 *DGM Using a Person-Portable System*, GEO SOP 4 *DGM Using a Towed Array System*, GEO SOP 5 *DGM Data Processing for a Person-Portable System,* GEO SOP 6 *DGM Data Processing for a Towed Array System*, and GEO SOP 8 *Geophysical Quality Controls* as attachments to the MEC QAPP Addendum. Detailed DGM Survey site-specific procedures are provided in Section 6.0 of this SSWP.

2.5.7 Technical Memorandum

A TM will be developed following completion of DGM survey. Guidelines for TM development are provided in Appendix B. The TM will provide an evaluation of the work completed to date, and if necessary, describes additional removal recommendations based on the evaluation. The TM will be considered an addendum to this SSWP. The TM process will include an evaluation of the EFA TCRA area and, if necessary, identify any additional remedial actions within the boundaries of the EFA TCRA area. If no subsurface MEC removal or additional remedial action is recommended, this will also be documented in the TM along with the rationale.

Factors that will be considered when determining whether additional removal is necessary include the following:

- Explosive hazards associated with MEC so far recovered
- Proximity to potential receptors
- Density of MEC recovered
- Consistency with applicable or relevant and appropriate requirements (e.g., HMP and PBO)

The TM will be provided for regulatory agency (EPA and DTS) review.

2.5.8 Subsurface MEC Removal

Areas requiring subsurface MEC removal will be identified in the TM to be developed following completion of technology-aided surface MEC removal and DGM in a phased work area. Subsurface MEC removal, if required, will be conducted in accordance with the MEC QAPP Addendum. Subsurface MEC removal may be analog-based or DGM-based, depending on site conditions.

If DGM based subsurface MEC removal is performed, DGM data quality will be reviewed and brought to the Category A standards appropriate for anomaly selection and subsequent intrusive investigation. As required, anomalies identified based on the DGM data will be intrusively investigated by qualified UXO Technicians to identify the source. If the subsurface contact proves to be MD, RRD, or other debris, visible metal will be removed, and the excavation will be rechecked by the UXO Team to verify that the area has been cleared. The vicinity around

the excavation will also be checked to make sure that other anomalies were not masked by the recovered item. Both the excavation location and the immediate 3 feet surrounding area will be checked by monitoring the response of the EM61-MK2A as it is moved over the area being tested. If a designated subsurface MEC remediation area is exhibiting a high density of subsurface anomalies in the DGM data, analog-based subsurface MEC removal (e.g., mag and dig) may be used to accomplish subsurface remediation. Procedures for intrusive investigations of DGM targets are described in UXO SOP 4 *Intrusive Investigation of DGM Targets,* provided as an attachment to the MEC QAPP Addendum.

Where analog-based subsurface MEC removal is conducted, qualified UXO Technicians will use magnetometers at all times to support intrusive investigation of subsurface anomalies. Analog-based subsurface MEC removal will be conducted in 5-foot-wide search lanes, and lanes will be delineated using rope. UXO Technicians will walk in parallel lines across each removal grid to provide complete coverage. UXO Technicians will investigate all magnetometer ring-offs in the subsurface to a depth of 4 feet, or deeper if directed by USACE OESS. Procedures for intrusive investigation using analog methods are described in UXO SOP 3 *Intrusive Investigation Using Analog Methods,* provided as an attachment to the MEC QAPP Addendum.

During subsurface MEC removal operations, MPPEH, MEC, MD, and MD items that could be mistaken for MEC will be removed from the subsurface. Metallic objects the size of an LE MKI 37mm projectile (without fuze) (1.47 inches by 1.47 inches by 3.5 inches) or larger will be removed from the excavation area.

MEC and MPPEH will be managed in accordance with the UXO SOP 5 *MEC and MPPEH Management,* provided as an attachment to the MEC QAPP Addendum, and *DoD Manual 4140.72-M Management of Material Potentially Presenting an Explosive Hazard (*DoD, 2021). Upon initial inspection by the UXO Team a determination is made, and the item is segregated into one of the following categories: non-munitions, small arms ammunition, or MPPEH. MPPEH is subject to further evaluation and, if it cannot be confirmed as free of explosive hazard, is subjected to detonation. The SUXOS and the UXOSO (with input from the USACE OESS if available) will agree on the positive identification of the item and the disposition of the item prior to implementing demolition operations. Procedures for demolition of MEC and MPPEH are described in UXO SOP 6 *Demolition of MEC and MPPEH,* provided as an attachment to the MEC QAPP Addendum.

The location of each MPPEH item will be recorded using RTK-GPS. In areas with limited or no GPS reception, the item will be recorded using tape measurement from the southwest grid corner location to acquire the MPPEH item georeferenced location. MEC MPPEH items identified by the UXO Teams will be entered into digital devices by item type, description, and weight. MD will be tracked by estimated weight on a grid-by-grid basis. If MD indicative of munitions with sensitive fuzes is noted, the item location will be recorded using RTK-GPS and the information will be entered into digital devices on a grid-by-grid basis. The estimated weight of RRD per grid will be recorded. Recorded field data will be provided to the SSDM at the end of the workday. Recovered MD will be stored in lockable containers at a designated staging area for inspection and future disposition.

2.5.9 Erosion Control

Prior to the start and during MEC remedial action field operations and to the extent possible, Ahtna's Senior Biologists will assess and document in the Site Habitat Checklist areas prone to erosion, areas where erosion already exists that could be intensified through vegetation cutting and identify measures to prevent or minimize these impacts. Decisions for implementing appropriate site erosion control mitigation will be developed in coordination with the Fort Ord BRAC Office and USACE.

During MEC remedial action field operations and at the completion of the project, Ahtna will provide appropriate erosion control, if required. Measures will be implemented to limit erosion due to vegetation cutting in support of MEC remedial actions. During the project Ahtna's Senior Biologist will monitor the presence and extent of existing and newly formed rills, gullies, and changes in drainage patterns. The presence and extent of existing and newly formed eroded locations will be documented by Ahtna's Senior Biologist. Erosion control actions will be implemented and documented by Ahtna's Senior Biologist. Erosion control measures can include the installation of jute netting, coir logs or straw wattles, silt fencing, woodchips from vegetation cutting, and other measures as needed. If required, Ahtna's Senior Biologist will monitor rainfall events and windy periods for erosion concerns and document the rainfall and/or wind induced erosion concerns and erosion control actions completed. The Environmental Protection Plan for this work is presented as Section 11.0 of this SSWP. As required, an appropriately qualified UXO Technician will provide anomaly avoidance during erosion control work.

2.5.10 Demobilization

Demobilization will occur when the project is completed with appropriate QA/QC checks performed. During demobilization, personnel will be retained only as long as necessary. If personnel are not required at other former Fort Ord MEC projects, they will be demobilized from the site. The following will occur prior to demobilization:

- Verification that all areas to be investigated/remediated are complete
- Identification of all areas that could not be investigated/remediated
- Verification that site restoration has been performed to requirements
- Documentation that ultimate disposition of property used during the project has been performed

2.5.11 Technical Information Paper

If required, a TIP may be developed following the completion of the activities recommended in the TM process. The TIP will document the completion of the remedial action, including additional work identified in the TM. The TIP will be prepared and submitted for regulatory agency (EPA and DTSC) review.

2.5.12 Remedial Action Report

A site-specific RAR will be prepared to summarize field operations and results generated from MEC remediation activities. Data acquired during these activities will be presented and used to support project conclusions. The RAR will be prepared and submitted for regulatory agency (EPA and DTSC) review.

2.6 Project Personnel, Organization, Communication, and Reporting

Personnel qualifications will be documented with all UXO Technicians meeting the qualification requirements of *Minimum Qualifications for Personnel Conducting Munitions and Explosives of Concern-Related Activities, Technical Paper 18* (DDESB, 2020). Key project personnel are identified in the organization chart provided in MEC QAPP Addendum. The project team will include the following managerial and technical positions:

- Military Munition Response Program (MMRP) Project Manager: Linda Temple, Ahtna
- Site Project Manager: Noel Handley, Ahtna
- SUXOS: Bruce Moe, Ahtna
- Unexploded Ordnance Quality Control Specialist (UXOQCS): Bruce McClain, Ahtna
- UXOSO: To be determined, Ahtna

- Contract Quality Control Supervisor: Bruce Wilcer, Ahtna
- Senior Biologist: Shawn Wagoner, Harris Environmental Group, Inc.
- Alternate Senior Biologist: Thor Anderson, Harris Environmental Group, Inc.
- QC Geophysicist: Trevor Smith, InDepth Corporation
- Senior Geophysicist: Brian Hecker, InDepth Corporation
- UXO Technicians: Ahtna
- SSDM: Penny Johnson, NAEVA Geophysics, Inc.
- Geographic Information System (GIS) Database Manager: Shaelyn Hession, Ahtna

Position responsibilities and team compositions are provided in the MEC QAPP Addendum.

3.0 EXPLOSIVES MANAGEMENT PLAN

The Explosives Management Plan follows UXO SOP 7 *Explosives Management,* provided as an attachment to the MEC QAPP Addendum, which contains the Explosives Management Plan for Unit 17 MEC remedial actions.

4.0 EXPLOSIVES SITING PLAN

Field work within Unit 17 will adhere to a DDESB-approved Explosives Safety Submission (ESS; KEMRON, 2016a), UXO SOP 8 *Explosives Siting* provided as an attachment to the MEC QAPP Addendum, and the APP. Based on available data, the Unit 17 munition with the greatest fragmentation distance as the Projectile, 90mm, HE, M71 and Projectile, 4.2-inch, mortar, HE, M3A1 with a HFD of 316 feet.

MEC	For Unintentional Detonations		For Intentional Detonations	
	Team Separation Distance (K40) (feet)	Hazardous Fragment Distance (HFD) (feet)	MFD without Engineering Control (feet)	Using Sandbag Mitigation (feet)
Projectile, 90mm, HE, M 71 and Projectile, 4.2-inch, mortar, HE, M3A1	81[1]	316[1]	1,939[2]	125

Notes:
For acronym definitions, please refer to list of Acronyms and Abbreviations at the front of this document.
[1] Based on Projectile, 4.2 in, mortar, HE, M3A1
[2] Based on Projectile, 90mm, HE, M71

During the remedial action, if MEC with a greater fragmentation distance is encountered, the MSDs will be adjusted in accordance with fragmentation data review forms and the most current version of DDESB *Methodologies for Calculating Primary Fragment Characteristics, Technical Paper 16*. Safety distances will be adjusted accordingly and an amendment to the applicable ESS will be submitted to USACE.

The field work will be conducted in such a manner that the public exclusion zone is not expected to impact neighboring residential properties. Ahtna will conduct the work utilizing engineering controls during intrusive investigation and detonation operations as needed.

5.0 Geophysical System Verification

Ahtna uses the geophysical system verification (GSV) process to verify and demonstrate the integrity of the geophysical mapping system. The collected data will also help to quantify site-specific geophysical characteristics that determine the detectability of items of interest. Digital geophysical instrument performance will be verified prior to field use and throughout the project duration. GSV has two components, the first performed prior to system use and consisting of operating DGM equipment over an instrument verification strip (IVS), and the second being blind seeding. Detailed procedures for IVS construction/use and blind seeding are found in GEO SOP 1 *IVS Installation and Use* and GEO SOP 2 *Blind Seed Item Installation,* provided as an attachment to the MEC QAPP Addendum. DGM survey equipment will be operated over an IVS seeded with industry standard objects (ISOs) buried at depths that are dependent upon the items selected. For the efficiency of DGM operations, an IVS location will be established at a suitable location in the vicinity of Unit 17 agreed upon by Ahtna, InDepth, Ahtna's Senior Biologist, Fort Ord BRAC Office, and USACE. A background geophysical mapping survey will be conducted at the selected location prior to IVS construction to verify that IVS targets are not seeded near existing anomalies. An IVS will not be utilized for DGM system verification until its design and construction have been approved by USACE. An IVS memorandum will be prepared following the completion of the initial DGM system verification detailing the GSV process and results.

DGM responses measured over the IVS ISOs will be compared to the known responses of these items, as determined by the Naval Research Laboratory (NRL), as well as to historical readings from previous EM61 surveys at former Fort Ord. Consistent results are indicative that the geophysical sensors and positioning instrumentation are working properly. MQOs for IVS surveys are described in Section 6.0 of this SSWP.

The primary DGM deployment platform for Unit 17 consists of a vehicular-towed array of three EM61-MK2A sensors using RTK-GPS for data positioning. One-meter by 0.5-meter EM61-MK2A coils are used for this array and are mounted so that the three coils are 15.75 inches (40 centimeters) above the ground surface, with centers laterally offset from each other by a distance of 1.65 feet (0.5 meters) from the center coil, in the direction of travel. In areas not conducive to the use of the towed array, a single-coil person-portable EM61-MK2A system will be used. The single-coil person-portable EM61-MK2A is mounted on standard manufacturer-provided wheels that position the coil at the same height above the ground surface as that of the towed array system (15.75 inches [40 centimeters]).

The IVS will include a series of tests over the test items placed at offset locations along three lanes to allow each EM61-MK2A sensor in the towed array to pass directly over the center of one item in each set. The lanes will be separated laterally by a distance of 1.65 feet (0.5 meters). Each IVS lane will contain one small ISO placed vertically at seven times the diameter inches below ground surface (bgs) and one small ISO placed horizontally and vertically at a depth of four times the diameter, respectively. Items in each lane will be separated by a distance of 10-20 feet along the lane depending on site-specific spatial constraints. To minimize tow vehicle turns and reduce negative impact on the habitat, the IVS is designed to be of sufficient length to include a background measurement section free of metallic interference. This design eliminates the need to survey multiple adjacent paths to obtain background measurements to comply with the original NRL approach.

The following table summarizes the IVS item information. Items are buried in sets of three such that one of each listed item is buried along each of the three IVS lanes.

IVS Seed Item Information

Item	Type	Orientation	Depth (Inches) [1]
IVS 1 / Blank	IVS End Point	NA	NA
ISO 1	Small ISO	Horizontal	6
ISO 2	Small ISO	Horizontal	6
ISO 3	Small ISO	Horizontal	6
ISO 4	Small ISO	Vertical	11
ISO 5	Small ISO	Vertical	11
ISO 6	Small ISO	Vertical	11
IVS 1 / Blank	IVS End Point	NA	NA

Notes:
For acronym definitions, please refer to list of Acronyms and Abbreviations at the front of this document.
[1] Depths listed are center of mass of the item.

IVS surveys will be conducted utilizing the same system configuration and survey procedures used for production DGM surveys. To minimize ground disturbance, IVS surveys will be collected in one direction to demonstrate the repeatability of collected data. In addition to the initial GSV IVS survey, IVS surveys will be conducted along with the geophysical system functional checks described in Section 6.0 of this SSWP daily during DGM operations to verify ongoing DGM system performance.

The second component of the GSV is the placement of blind seed items throughout the areas to be mapped. To produce standardized results for quantitative comparison, blind seed items will consist of small ISOs buried vertically with their center of mass placed at 6 inches bgs. For DGM surveys using RTK-GPS positioning, blind seed items will be placed such that each team encounters, on average, at least one seed item per day of DGM data collection. Seed item density will be increased to an average of two seed items encountered per day in areas where DGM surveys will be conducted utilizing simultaneous localization and mapping (SLAM) positioning methods. Blind seed items will be removed at the conclusion of work in each unit. Measurement performance criteria for blind seed item detection and identification are described in the MEC QAPP Addendum.

6.0 Geophysical Investigation Plan

This section details the Geophysical Investigation Plan for DGM activities planned in accessible areas of Unit 17 where vegetation has been removed and technology-aided surface MEC removal has been completed. This site-specific Geophysical Investigation Plan is intended to be used in addition to GEO SOP 3 *DGM Using Person-Portable System* and GEO SOP 4 *DGM Using Towed Array System* provided as an attachment to the MEC QAPP Addendum.

6.1 Geophysical Investigation Objectives

Following technology-aided surface MEC removal activities, DGM surveys will be conducted in accessible areas. The results of the DGM survey will be used to do the following:

- Evaluate subsurface conditions after completion of DGM to support recommendations in the TM.
- Serve as a record of anomalies left in place.
- Direct subsurface removal, if required, as recommended in the TM.

6.2 MEC Detection

Site-specific MEC detection capability has been previously demonstrated through the *Ordnance Detection and Discrimination Study (ODDS)* (Parsons, 2002). In the ODDS investigation, five plots were cleared in the portion of MRS-BLM Unit 12 known as Badger Flats, two of which were subsequently seeded with inert munitions items with locations known to the contractor. Geophysical prove-out (GPO) investigations using the ODDS plots have demonstrated that these items are generally detectable with the EM61-MK2A to performance depths 11 times the diameter of the target, as described in the *Final MRS-16 Geophysical Prove-Out Report, Former Fort Ord, California* (Shaw, 2007). For example, an MKII grenade was detected at 6 and 12 inches bgs; a 35mm M73 was detected at 24 inches bgs; a 37mm was detected at 18 inches bgs; an 81mm mortar M43 was detected at 36 inches bgs; and a 3-inch Stokes mortar was detected at 40 inches bgs. Table 3 and Figure 10 identify the MEC items recovered in Unit 17.

6.3 Personnel

Personnel duties for the implementation of DGM activities are provided in the MEC QAPP Addendum. The duty of the DGM team is to collect DGM data of sufficient quantity and quality to fulfill the project-specific MQOs. It is anticipated that field teams consisting of one InDepth geophysicist and one DGM Equipment Operator per team will execute the DGM survey. The DGM team will report to the Senior Geophysicist, who is responsible for the management and execution of the field work by the DGM teams. DGM data will be processed and analyzed off site by the InDepth's Geophysical Data Processor. All DGM survey activities will be managed by the Senior Geophysicist.

6.4 Geophysical Survey

Implementation of the DGM system is described in GEO SOP 3 *DGM Using Person-Portable System* and GEO SOP 4 *DGM Using Towed Array System,* provided as an attachment to the MEC QAPP Addendum.

Standards by which geophysical mapping will be conducted will be classified as Category B. If DGM data quality with the Category B DGM survey area is deemed inadequate for subsurface removal, additional data collection will be required to meet Category A MQOs. DGM surveys will be conducted in accordance with the MQOs designed for the project, which are discussed in the MEC QAPP Addendum and Section 6.0 of this SSWP. If a Category B

DGM survey area is subsequently designated for subsurface removal, DGM data quality will be evaluated to determine if it is adequate for subsurface removal.

DGM surveys may not be feasible in some portions of the site due to site conditions, such as steep slope and extreme terrain. In areas where overhead tree canopy precludes the use of RTK-GPS, the towed array will collect data as close to trees and other obstructions as possible without sacrificing efficiency or accuracy of data collection. Areas where RTK-GPS with the towed array is not able to be used due to overhead tree canopies, the person-portable EM61-MK2A using SLAM positioning may be utilized to acquire DGM data. If EM61-MK2A survey using SLAM positioning is deployed a point cloud basemap will be created using the SLAM system Method3 and the point cloud basemap used as the optional reference system for the DGM survey as provided in GEO SOP 10 *Simultaneous Localization and Mapping Position System* provided as an attachment to the MEC QAPP Addendum.

6.5 Data Processing

Data processing includes verification of DGM data quality using the MEC QAPP Addendum defined QC metrics, assessment of the track path and spatial sample density, data correction and leveling, creation of data profiles and gridded pseudocolor maps, and anomaly selection if required. InDepth Geophysical Data Processor will utilize vendor-supplied software and Oasis Montaj "UXO Land" to complete data processing tasks. DGM data processing and analysis procedures are summarized in this section, with details provided in GEO SOPS 5 *DGM Data Processing for a Person-Portable System* and GEO SOP 6 *DGM Data Processing for a Towed Array System* as attachments to the MEC QAPP Addendum.

Initial processing and review of the DGM data will be accomplished by the data collection team using vendor-supplied software (Multi61MK2 and ML61MK2 for towed array data and DAT61MK2 and TrackMaker61MK2 for person-portable data) to convert the raw data files into a digital file formatted for import into Oasis Montaj "UXO Land". The initial data review will also verify that the data satisfies data collection criteria and accurately represents spatial site conditions prior to providing them to the Geophysical Data Processor.

The Geophysical Data Processor will assess daily function check data and DGM survey data to verify that project MQOs are successfully met. Data processing includes the following:

- Verification of DGM data quality using the established MEC QAPP Addendum QC metrics
- Assessment of the track path and spatial sample density
- Data correction and leveling
- Creation of data profiles and gridded pseudocolor maps
- Anomaly selection (if required)

Following the data assessment and verification that project MQOs are successfully met, InDepth's Geophysical Data Processor will level the data to a common background, apply appropriate latency/lag corrections, apply any necessary filters, and grid the data. The Geophysical Data Processor will then generate profile line data and gridded images for interpretation.

6.6 Anomaly Selection

In areas where subsurface MEC removal is determined necessary, anomalies potentially representing subsurface MEC will be identified and selected. Target selections will initially be made using automated selection routines, based on the sum of the four response channels recorded by the EM61-MK2A using a selection threshold of 14

millivolt (mV). The target anomaly selection threshold of 14mV is based on the 37mm projectile. Further discussion of the basis for the 14mV initial selection threshold is included in the MEC QAPP Addendum. Selected targets will be checked for the following:

- Validity and position
- Additional characteristics include anomaly footprint size and shape.
- Signal to noise ratio
- Decay-time constants
- Previous GPO and IVS results
- Blind seed information
- Presence of surrounding anomalies

Targets found to be invalid or incorrectly located will be adjusted or removed, and additional anomalies not selected by the automated routine, yet deemed to represent potential MEC sources, will be manually selected. A more detailed discussion of the interpretation and target selection process is presented in the MEC QAPP Addendum.

6.7 Anomaly Reacquisition

In areas where subsurface MEC removal is determined necessary, reacquisition of geophysical anomalies for subsurface MEC removal will take place. Following dig sheet development, each anomaly will be reacquired using GPS. The location of each anomaly will be verified and refined, if necessary, by using an EM61-MK2A summation Channel 1-4 at 14mV to locate the anomaly's peak response, using the recorded anomaly response value as a guide. A non-metallic pin flag marked with a unique anomaly identification will be placed at the anomaly's peak response location. Further details regarding anomaly reacquisition are provided in GEO SOP 7 *DGM Target Reacquisition Using a Person-Portable System,* provided as an attachment to the MEC QAPP Addendum.

If required, UXO Technicians will intrusively investigate reacquired anomalies using procedures described in UXO SOP 4 *Intrusive Investigation of DGM Targets* provided as an attachment to the MEC QAPP Addendum. Verification of intrusive anomaly investigation results are detailed in GEO SOP 8 *Geophysical Quality Control,* provided as an attachment to the MEC QAPP Addendum.

6.8 DGM QC

QC of the geophysical system includes daily functional checks conducted prior to the onset of DGM activities and throughout DGM operations to demonstrate that the data are of sufficient quantity and quality to meet the project objectives. The functional checks, which will be documented in the daily digital field notes, are outlined in the following list:

- Equipment warm-up
- GPS static position check
- Static background geophysical sensor check
- Static spike geophysical sensor check
- Dynamic background geophysical sensor check (IVS)

- Dynamic spike geophysical sensor check (IVS)
- Cable shake test
- Personnel test (person-portable EM61-MK2A only)
- Tow vehicle test (towed array only)

MQOs identified in the MEC QAPP Addendum will be monitored during DGM survey activities as part of the DGM QC program. These MQOs provide a means to quantify the quality of the data collected during DGM surveys. A root-cause analysis will be developed, and a corrective action request (CAR) submitted if these metrics are exceeded.

DGM reporting requirements are provided in DATA SOP 4 *DGM Data Transfer to BRAC,* provided as an attachment to the MEC QAPP Addendum. Final DGM reporting, including delivery of all raw and final processed DGM data, will be included along with the TM and RAR prepared at the conclusion of the work.

7.0 Geospatial Information and Electronic Submittals

Geospatial Information and electronic submittals will be performed in accordance with DATA SOP 2 *GIS Data Management,* provided as an attachment to the MEC QAPP Addendum.

8.0 Work, Data, and Cost Management Plan

The Work, Data, and Cost Management Plan for all work addressed by this SSWP is provided in the MEC QAPP Addendum Section 6.0, and the following SOPs specifically:

- Data SOP 1 *Field Data Management*
- Data SOP 2 *GIS Data Management*
- Data SOP 3 *MMRP Data Management (Post Migration)*
- Data SOP 4 *DGM Data Transfer to BRAC*

Ahtna will provide weekly MMRP status updates to USACE and the Fort Ord BRAC Office. The weekly MMRP status update will outline the activities in progress and completed during the last week, the activities anticipated in the next week, habitat issues, schedule percent complete/metrics update, QA/QC update, and documents. The weekly MMRP status update will clearly display changes within the metrics. Ahtna will provide the Fort Ord BRAC Office and USACE, for approval and consideration, reasons for the changes to include a brief explanation for the shift, and the anticipated metrics for the remaining portion of field work.

9.0 Property Management Plan

The following equipment and facilities are expected to be required for the project:

- Crew cab 4x4 pickups
- Standard 4x4 pickups
- All-terrain vehicle
- Portable toilets
- RTK-GPS systems
- EM61-MK2A systems
- Towed array
- Schonstedt GA-52CXs (or equivalent)
- Minelab Vanquish 540 and/or Whites DFX 300 metal detectors (or equivalent)
- Radios for field crews
- Water coolers or bottled water
- Tow vehicle for towed array
- Mechanical vegetation cutting equipment
- Earth moving machinery (as required)
- Hand tools
- Power tools
- Explosive Storage Location
- Connex boxes for equipment and tool storage
- MD sorting tables
- Lockable MD storage bins
- Haul trailers for moving equipment as required
- Trauma kit
- First aid kits
- Fire extinguishers
- Vehicle chocks
- Containers for storage and shipping of material documented as safe

Property management will be conducted in accordance with established project procedures.

10.0 QC Plan

UXO SOP 10 *QC of Tasks Related to the Investigation and Management of MEC and Other Explosives-Related Operations* and GEO SOP 8 *Geophysical Quality Control*, provided as an attachment to the MEC QAPP Addendum, describes general project procedures to be implemented for analog and DGM QC tasks during MEC remedial actions. The following activities will be implemented with the three-phase inspection process:

- Vegetation removal
- Grid and border survey
- QC seeding program
- Technology-aided surface MEC removal
- 10% analog QC inspection
- DGM survey
- Subsurface MEC removal (not currently planned)
- MEC/MPPEH detonation
- MPPEH, MD, and scrap segregation, reporting, and disposition
- Site restoration and erosion control

The QC Geophysicist and UXOQCS will independently verify that inspections are effectively implemented. The UXOQCS (or designee) will also plan, perform, and document preparatory meetings, preparatory inspections, initial inspections, follow-up inspections, and completion inspections in coordination with the government QA representative.

10.1 QC Process

10.1.1 Detection Performance Goals

A QC survey will be performed by the UXOQCS following completion of surface and subsurface removal grids. Location of any MEC or MD item that could be mistaken for MEC will constitute a QC grid failure. Location of any metallic object the size of an LE, MK1, 37mm projectile (without fuze) (1.47 inches by 1.47 inches by 3.5 inches) or larger will constitute a QC grid failure. Grid acceptance/failure criteria are described in Section 2.3, Measurement Performance Criteria, of the MEC QAPP Addendum.

A CAR will be promptly developed if a grid QC failure occurs to investigate the grid failure root cause. Corrective action may include a grid reinspection process. Actions to prevent future recurrence will be based on the root cause but may include additional procedure controls, more rigorous UXOQCS field surveillance, and additional training. Corrective measures processes are provided in the MEC QAPP Addendum.

10.1.2 Analog QC Inspection

As MEC removal activities are completed in each removal grid, UXOQCS will conduct a QC survey with a Schonstedt GA-52CX magnetometer (or equivalent) over 10% of each removal grid. Within areas where surface MEC removals were conducted, the UXOQCS will perform technology-aided visual surface surveys as part of the inspection. Within areas where subsurface MEC removal activities were conducted, the UXOQCS will intrusively investigate anomalies if detected during the 10% QC sweep. Results of these investigations will be provided in the QC daily

log. Analog QC procedures are provided in UXO SOP 10 *QC of Tasks Related to the Investigation and Management of MEC and Other Explosives-Related Operations*, provided as an attachment to the MEC QAPP Addendum.

10.1.3 MQOs

As part of the DGM QC program, MQOs will be monitored during DGM survey activities. Metrics associated with the MQOs are provided in Section 6.0 of this SSWP.

10.1.4 Instrument Standardization

Daily standardization procedures and functional checks will be performed on all geophysical instruments and monitored as described in Section 6.0 of this SSWP and the MEC QAPP Addendum.

10.1.5 QC Seeding Program

A QC seeding program will be implemented for both analog and DGM surveys. QC seed items will be placed in areas where technology-aided surface MEC removal, DGM survey, and subsurface MEC removal are planned. QC seed items will be placed such that each team encounters, on average, at least one seed item per team per day of data collection. The seed item density will be increased to an average of two seed items encountered per day in areas where DGM surveys will be conducted utilizing SLAM positioning methods. QC seed items will be placed on the surface and in the subsurface based on project objectives and will be representative of items expected within the project area. QC seed item characteristics will be specified prior to placement. All seeds will be located using GPS.

Further details, including MQOs for blind seed item detection and identification, are provided in Section 6.0 of this SSWP and in GEO SOP 2 *Blind Seed Item Installation* and UXO SOP 10 *QC of Tasks Related to the Investigation and Management of MEC and Other Explosives-Related Operations*, provided as attachments to the MEC QAPP Addendum.

10.2 QA Operations

QA will be provided by USACE to assure that Ahtna's QC system is functioning as stated. Areas of QA include the following:

- Monitor contractor field practices, including announced and extemporaneous, unobtrusive observations.
- Review and observe field ground control and GPS procedures. This is meant to avoid georeferencing incompatibilities between Ahtna and USACE.
- Independently examine data files and anomaly maps. The USACE OESS will check the database against Team Leader grid sheets to ensure all flagged anomalies are excavated.
- Independently conduct technology-aided surface MEC surveys over a minimum of 10% of each of the grids where technology-aided surface MEC removal is conducted.
- Independently conduct analog QA over a minimum of 10% of each of the grids where an analog subsurface removal is performed.
- Independently conduct DGM QA, which may include 3–5% digital resurvey and may also include QA seeding and/or QA digs.

11.0 Environmental Protection Plan

This section describes the procedures to be employed to protect natural resources during the MEC remedial actions addressed in this SSWP. It includes a description of the natural resources present and a list of mitigation measures appropriate to the type of work activity and the habitat types that will be implemented to reduce impacts to these resources whenever possible. Field SOP 2 *Environmental Protection*, provided as an attachment to the MEC QAPP Addendum, also describes general project procedures to be implemented for environmental protection.

Unit 17 is within the Natural Resource Management Area that is designated for transfer to the BLM as undeveloped habitat reserve, as described in the HMP (USACE, 1997). The HMP describes special land restrictions and habitat management requirements within habitat reserve areas. Habitat reserve areas support a wide range of rare, threatened, and endangered species protected under both State and Federal laws; implementation of mitigation measures identified in the HMP are required to minimize potential adverse impacts to protected species. Chapter 3 of the HMP (USACE, 1997) describes mitigation measures that must be implemented during MEC investigation and remediation. In addition, the PBO (USFWS, 2017) contains terms and conditions, reasonable and prudent measures, and conservation measures, that need to be implemented during MEC activities to minimize and reduce impacts to protected species.

11.1 Description of Site and Natural Resources

CMC is a dominant habitat type at Fort Ord and is identified as a protected plant community in the HMP (USACE, 1997). This habitat supports a substantial portion of the total distribution of several rare, threatened, and endangered plants occurring at Fort Ord, which are designated as protected under the HMP. HMP-listed shrub species present include Hooker's manzanita (*Arctostaphylos h. hookeri*), sandmat manzanita (*Arctostaphylos pumila*), Toro manzanita (*Arctostaphylos montereyensis*), Monterey ceanothus (*Ceanothus rigidus*), and Eastwood's golden bush (*Ericameria fasciculata*). Other habitats present include areas of coast live oak woodland, meadow habitat, and wetlands (Burleson Consulting, Inc. [Burleson], 2018).

Habitat types occurring within Unit 17 are primarily CMC, with some areas of oak woodland, grassland, coastal scrub and vernal pools/wetlands (Figure 8). The habitat types that will be encountered within the project area could contain some special-status flora and fauna species identified in the HMP. Species within the CMC HMP-listed shrub complex include Hooker's manzanita (*Arctostaphylos hookeri*), sandmat manzanita (*Arctostaphylos pumila*), Toro manzanita (*Arctostaphylos montereyensis*), Monterey ceanothus (*Ceanothus rigidus*), and Eastwood's golden bush (*Ericameria fasciculata*) (Burleson, 2018).

Habitats within the site may also support special-status wildlife species identified in the HMP. Black legless lizards (*Anniella pulchra* [*nigra*]) could be encountered in any area with sandy soils (USACE, 1997). California tiger salamander (CTS) (*Ambystoma californiense*) can be encountered in areas near vernal pools or in upland habitats (USACE, 1997). Ponds 14 and 75 are located within Unit 17. CTS larvae were observed in Pond 14 during a 1992 baseline survey, but not in follow up baseline surveys (Jones and Stokes, 1992; Harding Lawson and Associates, 1999; Burleson, 2017 and 2020). CTS were not detected during a single baseline survey at Pond 75 (Kowalski, 2025). While CTS were not observed during baseline surveys at these ponds, they still may be encountered due to the presence of suitable habitat within Unit 17.

HMP annual plant species present within Unit 17 are the sand gilia (*Gilia tenuiflora ssp. arenaria*), and Monterey spineflower (*Chorizanthe pungens var. punegns*) (Burleson, 2018). Additionally, while Seaside bird's beak (*Cordylanthus rigidus ssp. Littoralis) and* Yadon's piperia *(Piperia yadonii)* were not observed during baseline surveys (Burleson, 2018), they still may be encountered due to the presence of suitable habitat within Unit 17.

11.2 Protection of Natural Resources

The project area is designated in the HMP for undeveloped habitat reserve. Measures to reduce impacts to natural resources will be implemented in accordance with the HMP and the PBO (USFWS, 2017). These measures are described in Field SOP 2 *Environmental Protection*, provided as an attachment in the MEC QAPP Addendum, and includes the following:

- Employee environmental training
- Preparation of habitat checklists
- Noting areas prone to erosion prior to and during MEC work
- Avoiding and reducing impacts to HMP plants and habitats
- Avoiding impacts to CTS and black legless lizards
- Replacement of topsoil when feasible
- Implementation of best management practices to reduce the spread of invasive weeds
- Restricted vehicle access
- Monitoring of erosion and invasive weeds during and after remedial activities

Mature Toro manzanitas that provide an important seed source for the species in Unit 17 shall be retained. In areas where the density of Toro manzanita is high, individuals six feet or taller shall be retained at intervals of approximately 50-feet. In areas where the density of Toro manzanita is low, the largest, most mature individuals in that area shall be retained. The individuals to be retained shall be evaluated by Ahtna's Senior Biologist prior to vegetation removal. Additionally, masticator operators shall receive additional training from Ahtna's Senior Biologist in Toro manzanita identification and shall cut around the large individuals. If necessary, the remaining Toro manzanitas may be limbed up to 8 feet to allow access beneath the individuals for surface MEC removal.

Initial erosion risks and prevention will be considered prior to the start of work, so the site is managed to avoid erosion to the extent possible. Decisions for implementing appropriate erosion control mitigation will be developed in coordination with the Fort Ord BRAC Office and USACE. Erosion control measures will be installed as needed at the site. Erosion control measures can include the installation of jute netting, coir logs or straw wattles, silt fencing, woodchips from vegetation cutting, and other measures as needed. Erosion control materials used to implement erosion control measures are listed below. Additional erosion control material may be employed at the site as needed.

- Jute netting – Biodegradable erosion jute netting may be utilized in steep areas to assist in preventing soil erosion by reducing the impact of rainfall and runoff.
- Coir logs or wattles – Biodegradable coir logs and/or wattles may be installed to stabilize soil and prevent soil migration. Coir logs can be used in conjunction with erosion control blankets.
- Silt fencing – Silt fencing is typically employed to intercept the movement of soil from disturbed soil surface.

- Woodchips from vegetation cutting – woodchips may be utilized in erosion-prone areas to assist in preventing soil erosion.

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Tables

Table 1. Unit 17 Historical Sites and Ranges

Name	Military History/Training Activities	Munitions Used/Potentially Used
Rocket Launcher Range	Identified on training maps from circa 1953 through 1958.	Rockets (3.5-inch)
Multi-Range Area Impact Area (MRS-15B)	Site MRS-15B encompasses the areas located behind the firing points and between the range fans around the perimeter of the Impact Area MRA and are accessible from South Boundary Road, Barloy Canyon Road, Eucalyptus Road or North-South Road (General Jim Boulevard).	Not applicable
Training Site 10 (MRS-27J, HA-142)	This bivouac area is identified as a former training site. MRS-27J was listed as Training Site 10 on a 1984 training map. Bivouac Area L was identified as being located at the site in 1967. Additionally, MRS-27J was identified as being located partially within the known distance range.	Signals, flares, simulators, grenades (hand)
Wildcat Ridge Day/Night Combat Course, CDCEC Range, Attack Helicopter and UH-1 Door Gunnery, Live Fire Exercise, Day/Night Combat (Range 32, Range 32A, HA- 32)	Appears to have been used for training exercises from as early as the 1940s to the late 1980s. Use ranged from a sub-machine gun training area in the 1940s to unspecified training in the 1950s, as inactive through most of the 1970s, and as a helicopter attack range in the 1980s.	Small arms ammunition (5.56mm, 7.62mm, M60), sub-caliber (20mm), cartridge (40mm practice), possible pyrotechnics for illumination
Machine Gun Assault Range, Close Combat Course, Close Combat Course No. 2, Mortar Range (Range 34, HA-34, HA-72)	Used as a Close Combat Course from the late 1950s through the late 1960s. By 1973, Fort Ord Training Ranges SOPs indicate that it was used as a Machine Gun Assault Course. By 1980, the range was used as a mortar range to support Range 31. SOPs indicate that the range was inactive by June 1991.	Small arms ammunition (5.56m, 7.62mm) projectile (60, 81mm, and 4.2-inch mortars), cartridge (40mm practice)
STT (Range 46)	Used from the early 1960s, possibly as early as 1958, for night firing, pistol firing, and other small arms firing. Range control records indicate it was used for military police training for much of its history.	Small arms ammunition (5.56mm, 7.62mm, 9mm, .38 caliber, .45 caliber)

Table 1. Unit 17 Historical Sites and Ranges

Name	Military History/Training Activities	Munitions Used/Potentially Used
Barloy Canyon Sub Machine Gun Range (HA-69)	This small arms range was used as a submachine gun range. This range was only shown on the Revised 1945 Training Map.	Small arms ammunition

Reference: Kemron Environmental Services, Inc., 2019. *Draft Final Field Evaluation Report, Munitions Response, MRS-BLM Units 13/17/20* . August. (OE-0956A)

Notes:
MRS: Munitions Response Site
HA: Historical Area
mm: millimeter
OE: Ordinance and Explosives
CDCEC: Combat Developments Command Experimentation Center
HA: Historical Area
SOP: Standard Operating Procedure
STT: Sergeant's Time Training

Table 2. Unit 17 Soil Erosion Risk Category Acreage Summary

Risk Category	Description	Slope Range (Degrees)	Unit 17 Risk Category Acreage	% Total
1	Flat to minimal slope; low grasses, manzanitas, and trees, sparse to dense; minimal to no existing erosion; variable aspect in sloped areas.	0-10	2	0.3
2	West-facing low slope or east-facing moderate slope; moderate to dense vegetation; minimal to moderate existing erosion.	10-20	122	21.2
3	West-facing moderate slope or moderate to high east-facing slope (degree of slope can vary outside the given range for this risk level); sparse to moderate vegetation; some existing erosion.	20-30	73	12.5
4	West-facing moderate to high slope (degree of slope can vary outside the given range for this risk level); moderate to high existing erosion; sparse to no vegetation; or could also be an east-facing high slope; high existing erosion; minimal vegetation.	>30	43	7.5

Reference: Kemron, 2019. *Draft Final Field Evaluation Report, Munitions Response, MRS-BLM Units 13/17/20* . August. (OE-0956A)

Notes:
%: percent
>: greater than

Table 3. Unit 17 Previous MEC Recovered

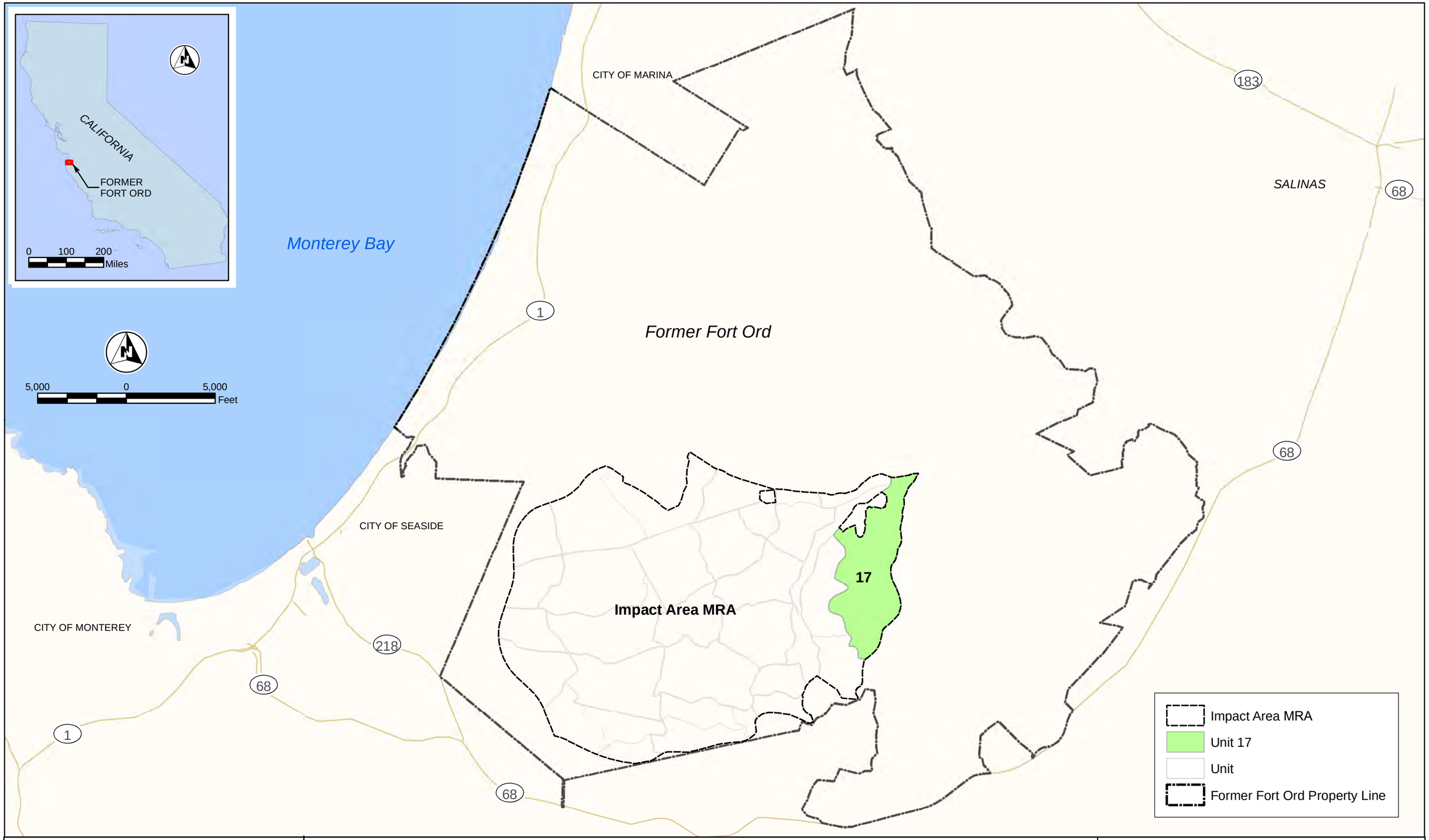
Date	Unit	Grid ID / Transect ID	Type	Description	Quantity	Depth (inches below ground surface)	Easting	Northing
9/1/1998	17	LB3-MH09-SF08	UXO	Projectile, 40mm, parachute, star, M662	1	1	5752285	2112843
9/2/1998	17	LB4-MI01-SF01	DMM	Cord, detonating	3	0	5752594	2115173
11/4/2003	17	LA3-MJ09-SJ10	UXO	Projectile, 40mm, parachute, M583 series	1	0	5754426	2111949
11/4/2003	17	LB3-MA10-SF03	UXO	Signal, illumination, ground, parachute, M19 series	1	0	5754794	2112568
11/5/2003	17	LB4-MI01-SF09	UXO	Fuze, grenade, hand, practice, M205 series	1	0	5756356	2120579
11/5/2003	17	LB4-MI01-SF09	UXO	Fuze, grenade, hand, practice, M205 series	1	0	5756360	2120579
11/5/2003	17	LB4-MI01-SF09	DMM	Fuze, grenade, hand, practice, M205 series	3	0	5756360	2120583
11/5/2003	17	LB4-MI01-SF09	UXO	Fuze, grenade, hand, practice, M205 series	12	0	5756356	2120579
11/5/2003	17	LB4-MI01-SI08	UXO	Grenade, rifle, antitank, M9 series	1	0	5756360	2120579
11/5/2003	17	LB4-MI01-SD09	UXO	Simulator, flash artillery, M110	1	0	5756360	2120583
11/6/2003	17	LB4-MI01-SD06	UXO	Grenade, rifle, antitank, M9 series	1	0	5756070	2120384
11/6/2003	17	LB4-MC01-SE07	UXO	Signal, illumination, ground, parachute, M19 series	1	0	5756165	2114452
11/6/2003	17	LB4-MC01-SC06	DMM	Cartridge, 40mm, practice, M382	1	0	5756078	2114293
11/6/2003	17	LB4-MC01-SE02	DMM	Cartridge, 40mm, practice, M382	1	0	5755651	2114485
11/11/2003	17	LB4-MF01-SJ01	UXO	Projectile, 40mm, cluster, white star, M585	1	0	5755551	2117994
11/11/2003	17	LB4-MF01-SG02	UXO	Projectile, 40mm, cluster, white star, M585	1	0	5755640	2117607
11/11/2003	17	LB4-MF01-SB01	DMM	Cartridge, 40mm, practice, M382	1	0	5755544	2117125
11/12/2003	17	LB3-MF10-SA10	DMM	Cartridge, 40mm, practice, M382	1	0	5755363	2120989
11/12/2003	17	LB3-MF10-SB07	DMM	Cartridge, 40mm, practice, M382	1	0	5755485	2120604
11/13/2003	17	LB3-MF09-SH06	UXO	Fuze, rocket, base detonating, M404	1	0	5754018	2117703
11/13/2003	17	LB3-MF10-SD06	DMM	Cartridge, 40mm, practice, M382	1	0	5755013	2117332
11/14/2003	17	LB3-ME09-SJ08	UXO	Projectile, 40mm, high explosive, M381	1	0	5754278	2116997
11/14/2003	17	LB3-MG09-SB03	UXO	Projectile, 40mm, smoke, M713 series	1	0	5753778	2118131
11/14/2003	17	LB3-ME10-SF05	DMM	Cartridge, 40mm, practice, M382	1	0	5754949	2116592
11/17/2003	17	LB3-MI10-SJ09	UXO	Grenade, hand, smoke, M18 series	1	0	5755363	2120989
11/17/2003	17	LB3-MI10-SI09	UXO	Signal, illumination, ground, M125 series	1	0	5755359	2120827
11/17/2003	17	LB4-MI01-SH01	UXO	Simulator, explosive boobytrap, whistling, M119	1	0	5755553	2120759
11/18/2003	17	LB3-MI10-SG10	UXO	Grenade, hand, practice, M69	1	0	5755414	2120668
11/18/2003	17	LB3-MI10-SG10	UXO	Grenade, hand, smoke, M48	1	0	5755485	2120604
11/19/2003	17	LB3-MI09-SA09	UXO	Projectile, 40mm, practice, M407A1	1	0	5754346	2120075
11/19/2003	17	LB3-MI09-SA09	UXO	Projectile, 40mm, practice, M407A1	1	0	5754359	2120085
11/19/2003	17	LB4-MI01-SF02	UXO	Projectile, 40mm, smoke, M713 series	1	0	5755665	2120533
11/19/2003	17	LB3-MH10-SH05	UXO	Projectile, 50mm, mortar, Type89, Japanese NI	1	0	5754977	2119727
11/20/2003	17	LB3-MH09-SF10	UXO	Projectile, 50mm, mortar, Type89, Japanese NI	1	0	5754492	2119548
12/8/2003	17	LB3-MI10-SA04	UXO	Fuze, grenade, hand, M204 series	1	0	5754889	2120032
12/8/2003	17	LB3-MI10-SA07	UXO	Grenade, hand, practice, M21	1	0	5755189	2120075

Table 3. Unit 17 Previous MEC Recovered

Date	Unit	Grid ID / Transect ID	Type	Description	Quantity	Depth (inches below ground surface)	Easting	Northing
12/10/2003	17	LB3-MG09-SD03	UXO	Rocket, 3.5inch, practice, M29 series	1	0	5753789	2118345
3/11/2004	17	LB3-MF09-SB10	UXO	Grenade, hand, smoke, white phosphorous, M15	1	0	5754456	2117124
3/11/2004	17	LB3-MF09-SB10	UXO	Projectile, 40mm, high explosive, M381	1	0	5754419	2117104
3/15/2004	17	LB3-ME09-SI08	UXO	Projectile, 40mm, high explosive, M381	1	0	5754232	2116836
3/16/2004	17	LB3-MF09-SB10	UXO	Grenade, hand, smoke, white phosphorous, M15	1	0	5754453	2117100
3/17/2004	17	LB3-MG08-SC10	DMM	Cartridge, 40mm, high explosive, M383	1	0	5753491	2118291
4/6/2011	17	B3E0J6	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	12	5755040	2116997
8/2/2011	17	B3F0B3	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	12	5754737	2117122
9/26/2011	17	B3E0J4	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	6	5754892	2116961
9/28/2011	17	B3E0J4	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	6	5754895	2116961
10/19/2011	17	B3E0J5	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	6	5754910	2116980
12/9/2012	17	LB3-MF10-SA05	UXO	Grenade, rifle, smoke, white phosphorous, M19 series	1	12	5754934	2117020
2/20/2013	17	MOUT50	DMM	Ignition cylinder, flamethrower, M1	78	24	5753520	2119056
2/25/2013	17	MOUT34	UXO	Projectile, 50mm, mortar, Type89, Japanese NI	1	1	5754258	2118947
3/4/2013	17	MOUT21	UXO	Fuze, grenade, hand, practice, M228	1	6	5754474	2120076
3/19/2013	17	MOUT04	UXO	Grenade, hand, fragmentation, MK II	2	2	5755429	2120813
1/24/2018	17	T015-020	DMM	Cartridge, 20mm, target practice, M204	1	0	5753577	2115712
1/24/2018	17	T015-019	DMM	Cartridge, 20mm, target practice, M204	1	0	5753616	2115766
1/30/2018	17	T027-002	UXO	Projectile, 75mm, shrapnel, MK I	1	0	5753371	2113074

Notes:
DMM: discarded military munitions
mm: millimeter
UXO: unexploded ordnance

Figures



Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 1
Regional Location Map

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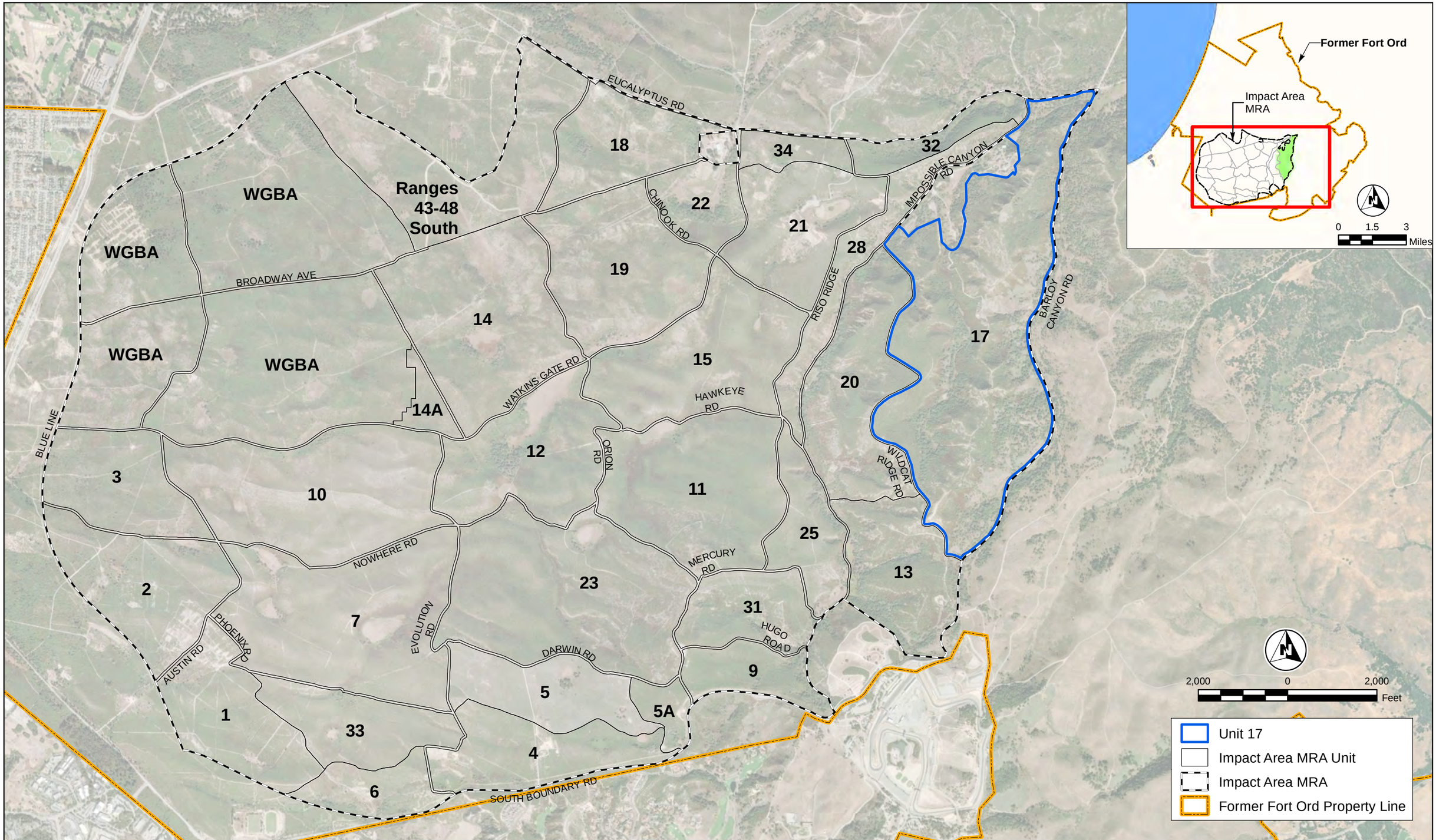

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 2
Impact Area MRA Unit 17 Map

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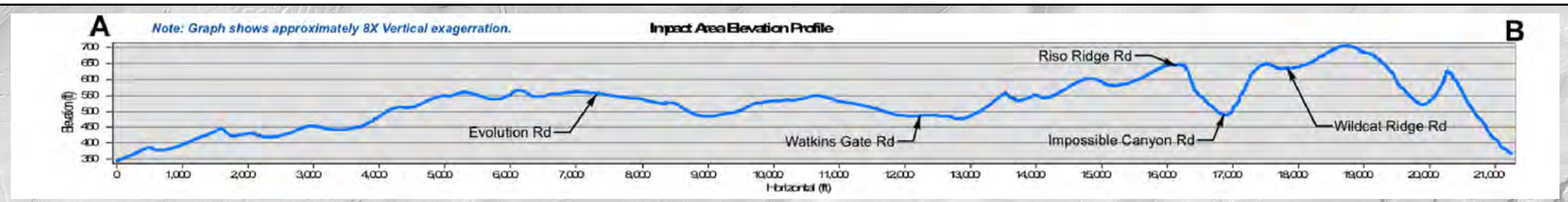

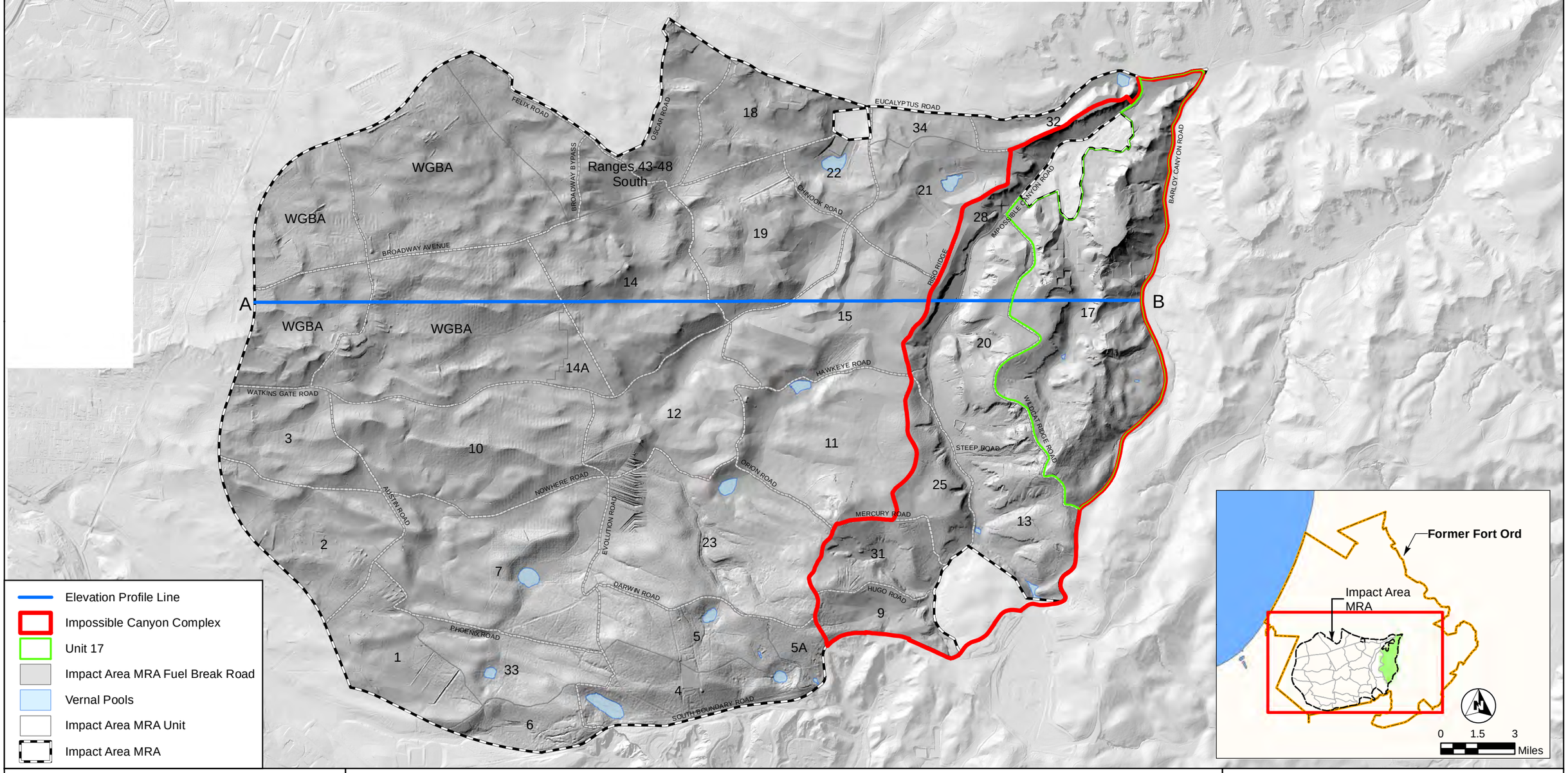

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 3
Impact Area MRS Unit 17 Elevation Profile

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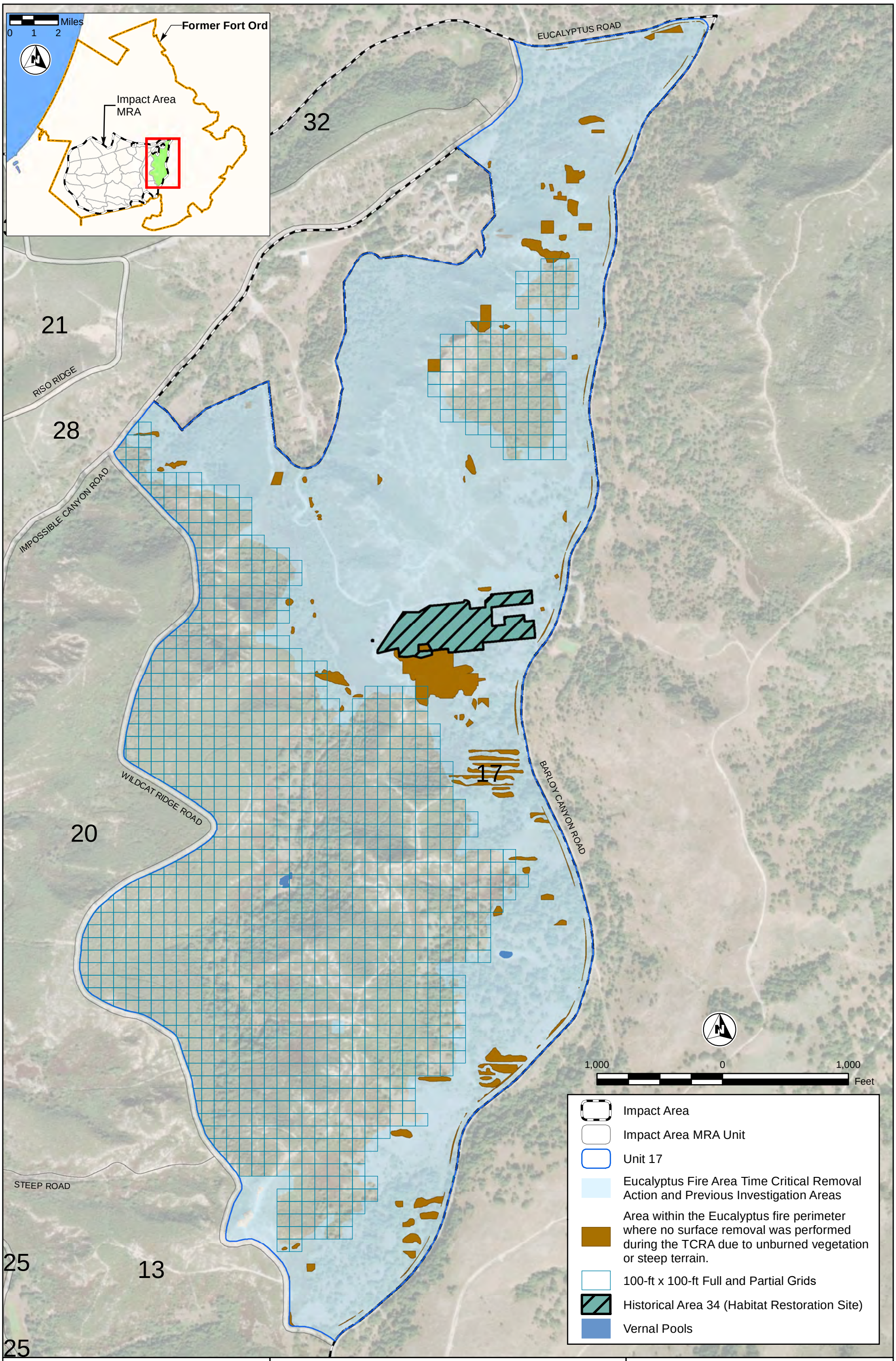

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 4
Unit 17 Planned MEC Remedial Action Area

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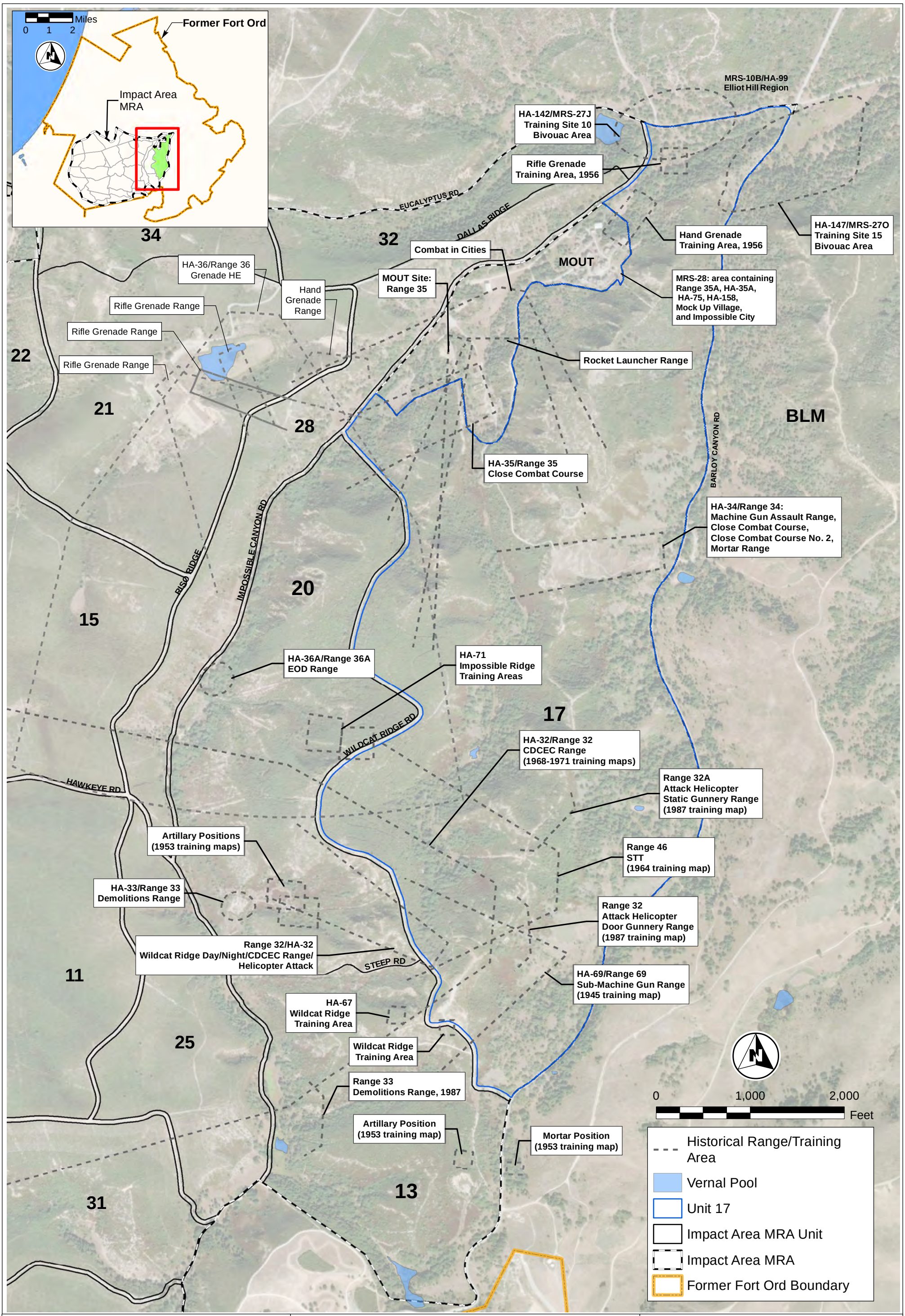

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 5
Unit 17 Historical Ranges and Training Areas

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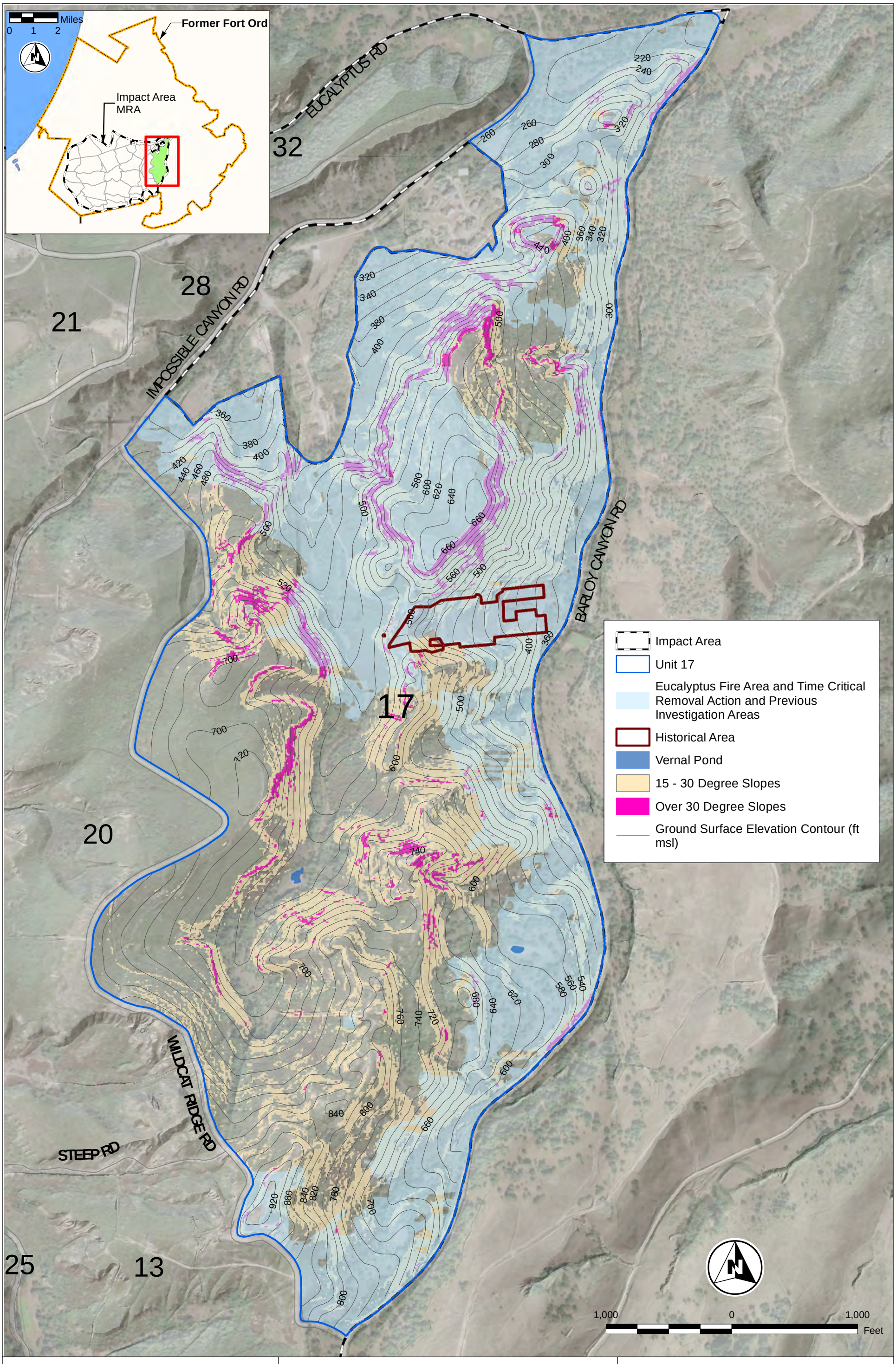

Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 6
Unit 17 Terrain Overview

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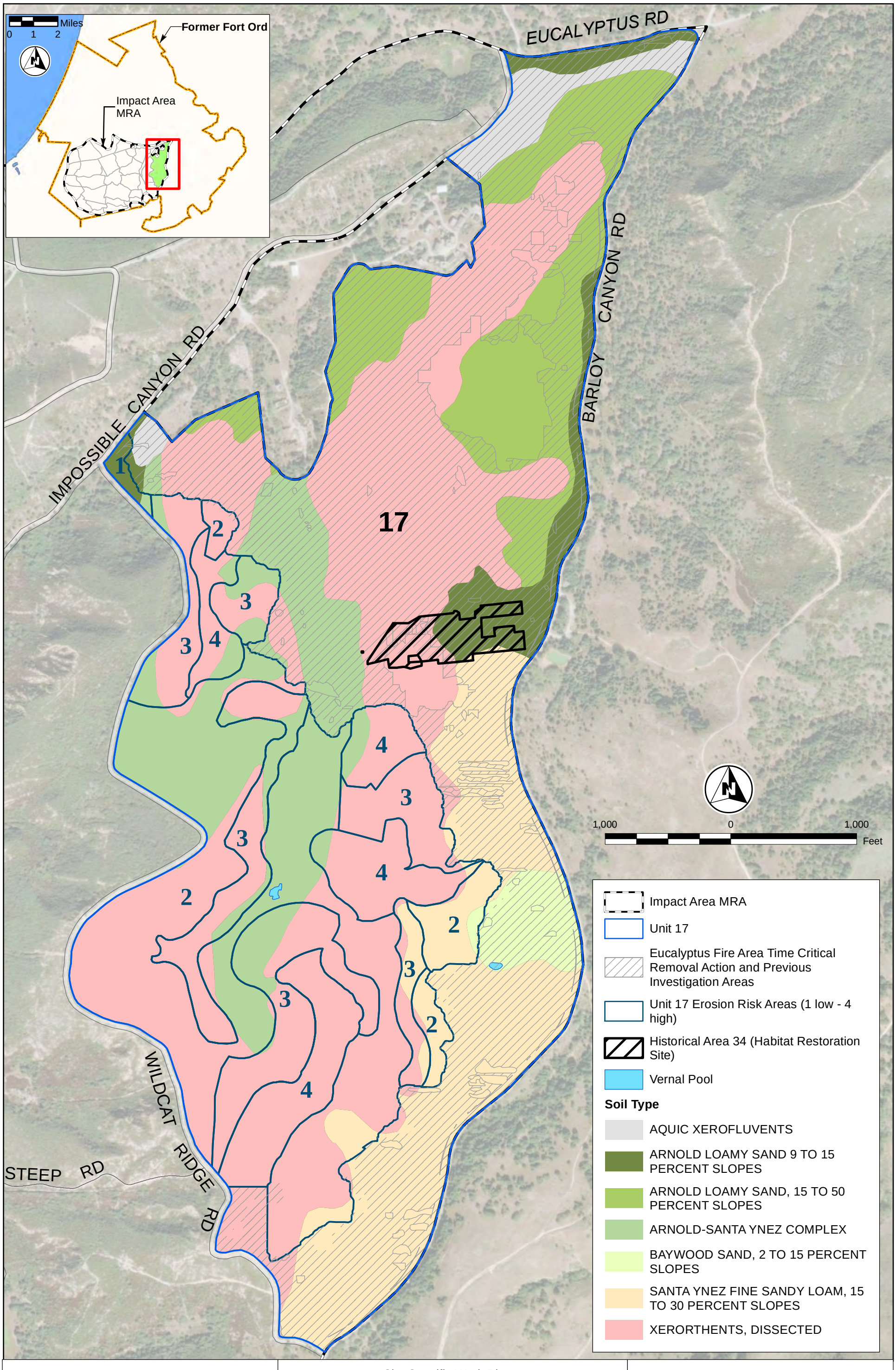

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 7
Unit 17 Soil Types and Erosion Risk Areas

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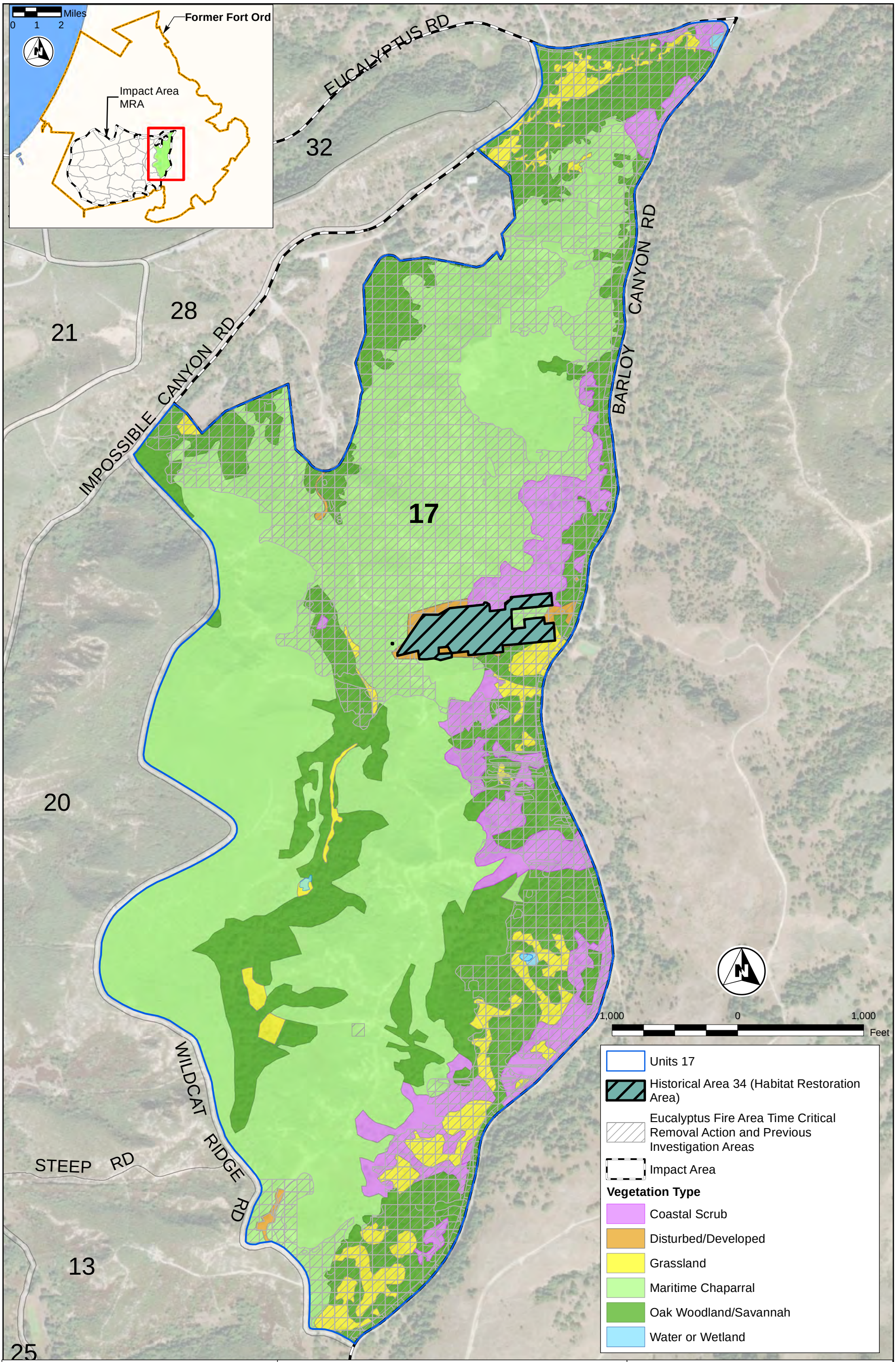

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 8
Unit 17 Vegetation Types

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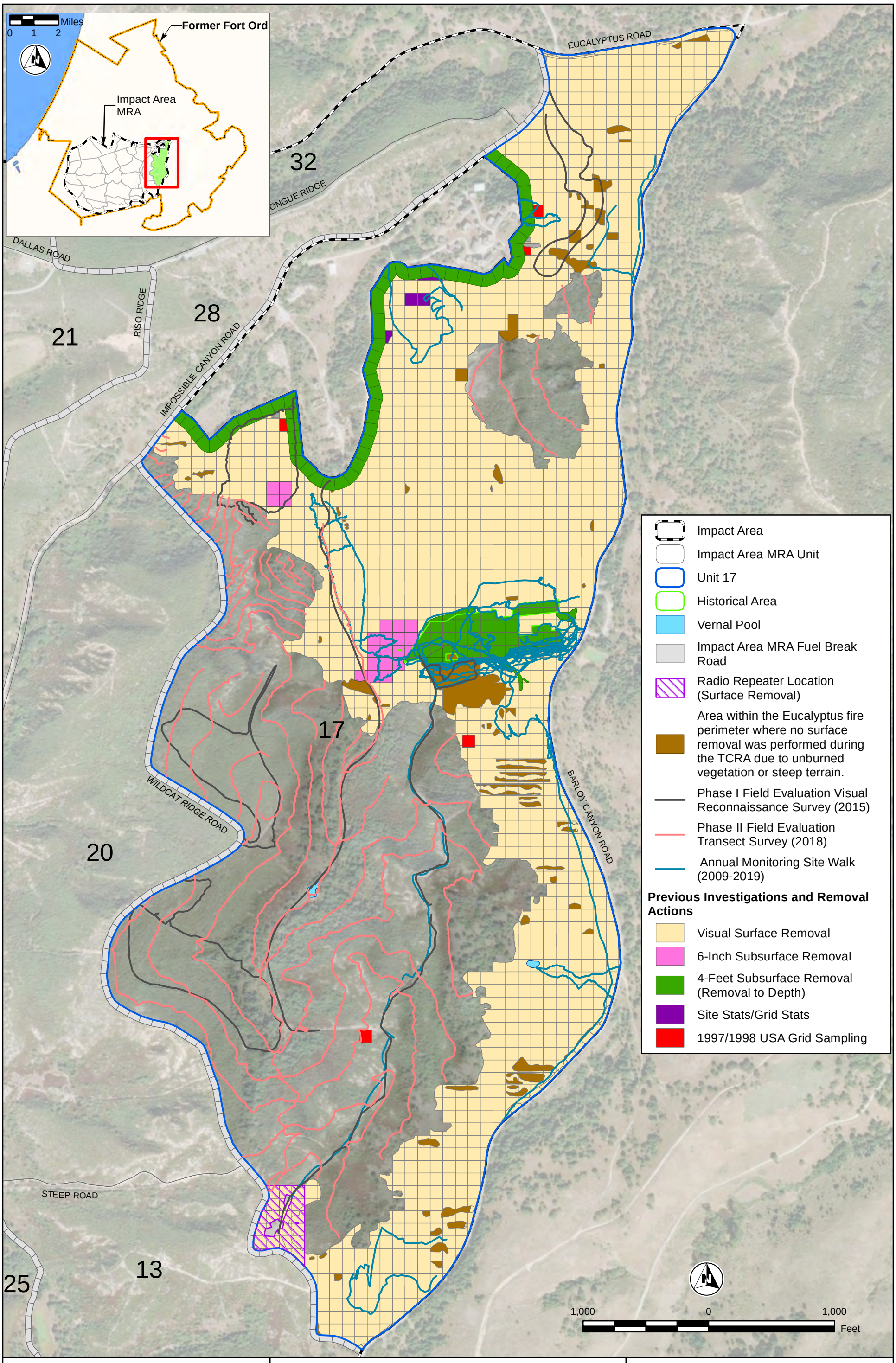

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Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 9
Unit 17 Previous Investigations, Removal Actions, and Site Walks

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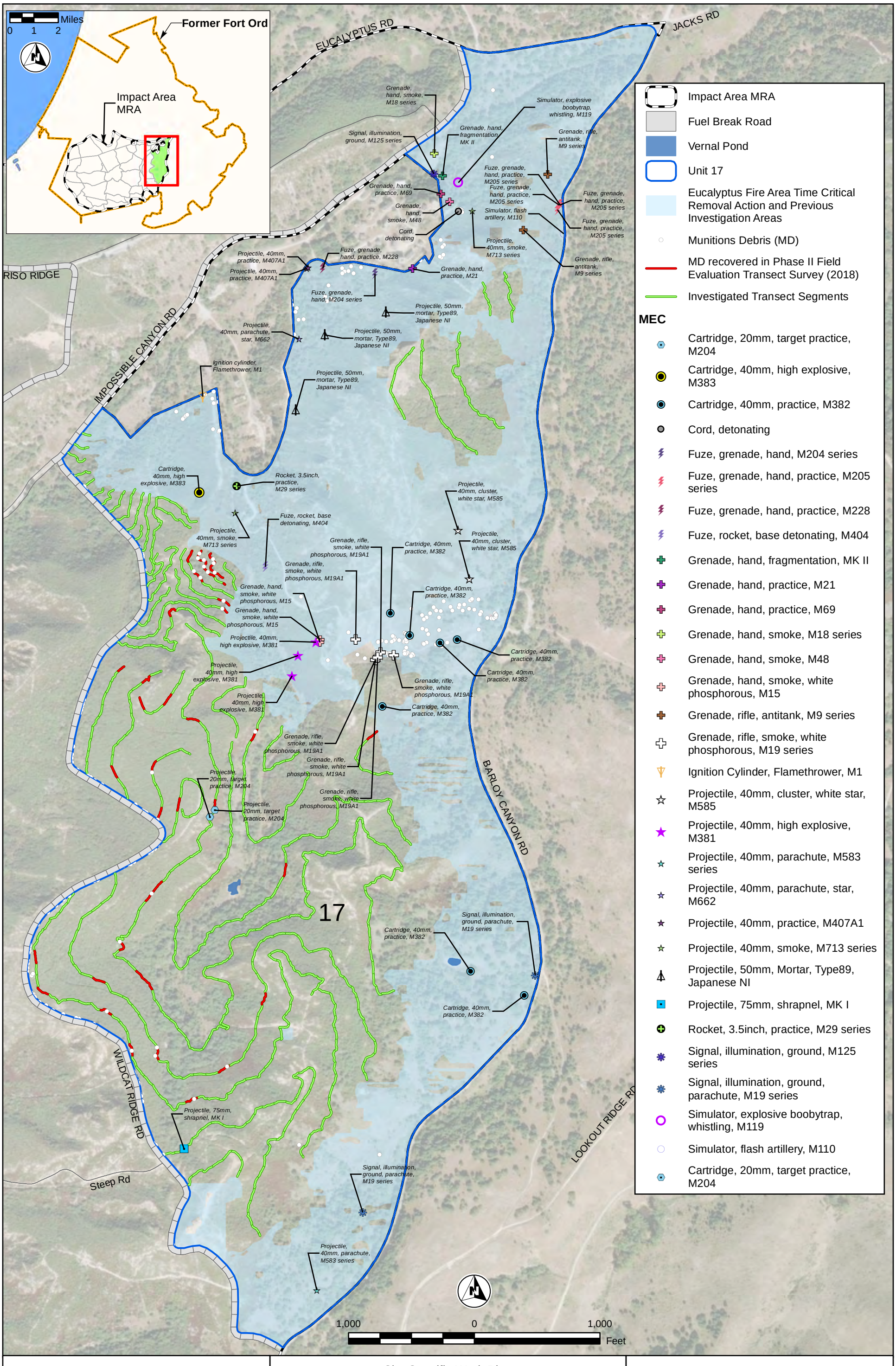

Site Specific Work Plan
Munitions and Explosives of Concern Remedial Action
MRS-BLM Unit 17
Former Fort Ord, California

Figure 10
Unit 17 Previous MEC and MD Recovered

Appendices

Appendix A

Accident Prevention Plan (PENDING)

Appendix B

Technical Memorandum Guidance

TECHNICAL MEMORANDUM GUIDELINES

The Track 3 ROD identifies the types of areas where additional work (e.g. subsurface MEC removal) would be conducted. They are (1) regularly maintained fuel breaks and access roads; (2) 100-ft wide buffers along the habitat-development border; and (3) other areas to address specific risk and/or land use needs. The third category of subsurface removal areas are identified through the Technical Memorandum process. As described in the SSWP, after a technology-aided surface MEC removal is completed for each work unit, digital geophysical survey will be conducted. The Army will review the surface removal and digital survey data and prepare a Technical Memorandum to the U.S. Environmental Protection Agency (EPA) and the California Department of Toxic Substances Control (DTSC) that will present an evaluation of the work completed to date and, if necessary, describe additional subsurface removal actions recommended based on the results of the completed work. Additional subsurface removal actions will address specific risk due to MEC and/or reuse needs such as proposed future BLM habitat restoration areas. If no additional work is recommended, this will also be documented in the Technical Memorandum along with the rationale for no further MEC removal.

Examples of areas that may be recommended for subsurface MEC removal include:

- An area determined to have a high density of subsurface anomalies and evidence of all-way-acting/piezoelectric fuzed UXO/DMM (40mm high explosive (HE) grenades, LAW rockets, and 90mm High-Explosive Anti-Tank (HEAT) projectiles). If individual anomalies cannot be distinguished, the area will be considered to have high density of subsurface anomalies. If both conditions exist the area will be a candidate for subsurface removal via excavation and sifting.
- Areas specifically requested by the future property recipient, determined as necessary for reuse of the area as a habitat reserve and identified in coordination with the Army.

Factors that will be considered when determining whether additional actions are necessary include, but are not limited to: (1) explosive hazards associated with MEC so far recovered; (2) proximity to potential receptors; (3) the density of MEC recovered; and (4) consistency with Applicable or Relevant and Appropriate Requirements (ARARs) (e.g., HMP and Biological Opinions). Timelines are as follows:

- The preliminary draft Technical Memorandum will be submitted to USACE and the Army within 21 days of completion of DGM at the site. Coordination with BLM will be completed at this stage.
- The Technical Memorandum will be submitted to EPA and DTSC within 45 days of the completion of the DGM. The Army will request regulatory agency (EPA and DTSC) review and EPA approval of the Technical Memorandum within 14 days of submittal.
- To avoid impacts to rare, threatened and endangered species, agency approval of the Technical Memorandum will be expedited to allow any additional actions to be executed before the next growing season. EPA and DTSC will respond in writing within the timeframe of the Army's request or as soon as practicable.

The MR BCT will make the final determination regarding whether or not any additional subsurface removal is required in the unit (area) that is addressed in the Technical Memorandum. Each Technical Memorandum will be considered an addendum to the SSWP, and therefore will be associated with a primary document and be disputable. Each Technical Memorandum and associated correspondence will be made available to the public in the Administrative Record.