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## Superfund Proposed Plan

# Remedial Action is Proposed For Impact Area Munitions Response Area, Track 3 Munitions Response Remedial Investigation / Feasibility Study, Former Fort Ord, California

United States Department of the Army

June 25, 2007

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## INTRODUCTION

The United States Department of the Army (Army) is presenting this **Proposed Plan\*** for the public to review and comment regarding cleanup of the Impact Area **Munitions Response Area** (Impact Area **MRA**), one of the Track 3 Munitions Response **Remedial Investigation/Feasibility Study** sites (**Track 3 MR RI/FS sites**) at the former Fort Ord Army base in Monterey County, California (**Figure 1**).

Specifically, this Proposed Plan identifies the **Preferred Remedial Alternative** for the cleanup of **Munitions and Explosives of Concern (MEC)** in the Impact Area MRA. For this 6,560-acre area designated as habitat reserve, the Preferred Remedial Alternative is *Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls*.

This Proposed Plan is based on information presented in the *Final Track 3 Impact Area Munitions Response Remedial Investigation/Feasibility Study, Former Fort Ord, California (MACTEC, 2007)*, as well as other documents in the Fort Ord **Administrative Record**. The Administrative Record contains documents used in making decisions for environmental cleanup projects at the former Fort Ord. The Army encourages members of the local community and other interested parties to review these documents and make comments on this Proposed Plan.

Public comments will be considered before any action is selected and approved. Information on how to comment on this document and the location of the Administrative Record is provided on **pages 15-16** of this Proposed Plan.

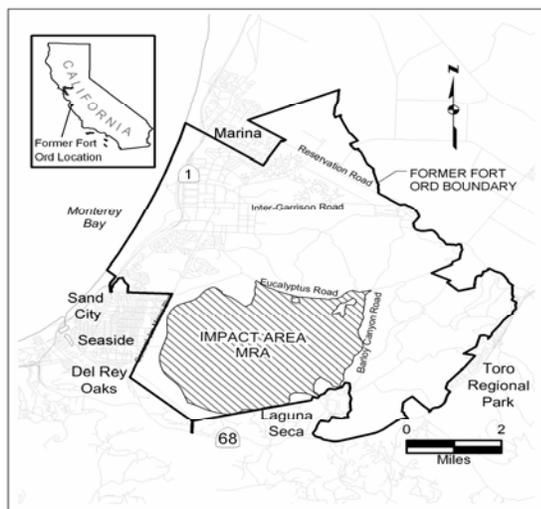


Figure 1. Impact Area MRA and Fort Ord Location Map

Dates to remember:  
**MARK YOUR CALENDAR**  
**PUBLIC COMMENT PERIOD:**  
**June 28 to July 28, 2007**

Comments on the Proposed Plan:

**PUBLIC MEETING:**  
**July 10, 2007 6 -8 pm at the Embassy Suites Hotel**  
**1441 Canyon Del Rey, Seaside, California.**

The Army will hold a public meeting to explain the Proposed Plan, listen to comments, and answer questions. Oral and written comments will also be accepted at the meeting.

Written comments may be sent to:  
Department of the Army, Fort Ord Base Realignment and Closure (BRAC) Office  
Attn: Gail Youngblood  
BRAC Environmental Coordinator  
P.O. Box 5008, Monterey, CA 93944-5008

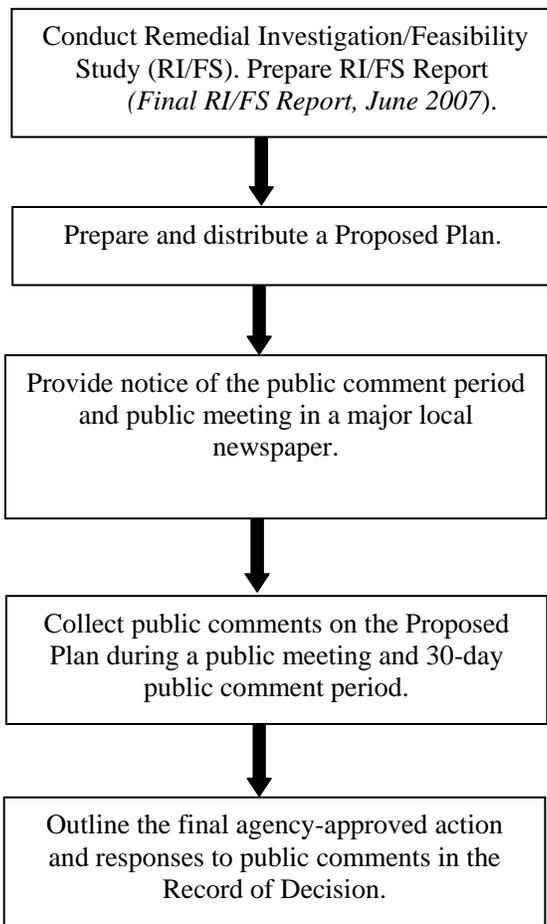
\* The terminology used in this Proposed Plan that first appears in **bold letters** is defined in the **Glossary** found at the back of this document on **pages 17-18**. References to **Figures, Tables, and page numbers** also appear in **bold letters**.

The Army has evaluated **remedial alternatives** to clean up MEC in the Impact Area MRA, described in the Track 3 Impact Area MRA RI/FS (MACTEC, 2007). The purposes of this Proposed Plan are to:

- Provide background information.
- Describe the remedial options considered.
- Identify the Preferred Alternative for remedial action and explain the reasons for the preference.
- Solicit public review and comment of the alternatives described.
- Provide information on how the public can be involved in the remedy selection process.

This Proposed Plan contains terms adopted by the Army for the overall Fort Ord **Military Munitions Response Program (MMRP)**, formerly known as the Fort Ord **Ordnance and Explosives (OE) Cleanup Program**. Military munitions terms used in this Proposed Plan are defined in the Glossary found on **pages 17 and 18**. Specifically, the term **munitions and explosives of concern (MEC)** is used in this Proposed Plan in place of two different terms used by the Army in past OE Cleanup Program documents to indicate explosive munitions items: (1) ordnance and explosives (OE), and (2) **unexploded ordnance (UXO)**.

The flow chart shown on **Figure 2** summarizes the Impact Area MRA Track 3 decision-making process that includes public and regulatory agency involvement and approval of the proposed remedy.



The Army is the responsible party and lead agency for investigating, reporting, making cleanup decisions, and taking cleanup actions at the former Fort Ord. This Proposed Plan for the Impact Area MRA is part of the Army’s community relations program, a component of the requirements of Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** or **Superfund**, and follows U.S. Environmental Protection Agency (EPA) guidance (EPA, 1989).

Public comments on this Proposed Plan will be accepted during a public meeting and during the 30-day public review and comment period. The Army and the EPA in consultation with the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), will consider public comments and make a final decision in a **Record of Decision (ROD)**. The selected remedy will be implemented for the Impact Area MRA to clean up MEC and to manage the risk to future land users from any MEC that could potentially remain after the cleanup. Army responses to public comments on this Proposed Plan will appear in the "Responsiveness Summary" section of the ROD. The flow chart shown on **Figure 2** summarizes the development and approval process for the Impact Area MRA Track 3 ROD.

The Impact Area MRA includes two areas previously evaluated in the Interim Action program; a southern portion of Ranges 43-48, and Range 30A. These areas were evaluated as part of the Track 3 Impact Area MRA. When selected in the Track 3 Record of Decision (Track 3 ROD), the remedy is intended to serve as the final remedy for these two interim action areas. In effect, the Track 3 ROD will amend the Interim Action ROD regarding the southern portion of Ranges 43-48 and Range 30A (Army, 2002).

**Figure 2. Track 3 Impact Area MRA Record of Decision Process**

## SUMMARY OF IMPACT AREA MRA SITE CHARACTERISTICS

The historical Impact Area is located in the southwestern portion of the former Fort Ord, bounded by Eucalyptus Road to the north, Barloy Canyon Road to the east, South Boundary Road to the south, and General Jim Moore Boulevard to the west. The Impact Area MRA consists of the 6,560-acre portion of the 8,000-acre historical Impact

Area that is entirely within the natural resources management area described in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (HMP; USACE, 1997) (**Figure 1**). The Impact Area MRA is to be managed as a “habitat reserve” by the future landowner after the selected remedy has been completed by the Army and the property is transferred. The currently identified future recipient of the Impact Area MRA property is the Bureau of Land Management (BLM). BLM is currently preparing a habitat conservation plan (HCP) for the former Fort Ord, in coordination with Fort Ord Reuse Authority and other former Fort Ord property recipients, that identifies the types of reuse activities that are planned for the future habitat reserve (Zander, 2007).

The historical 8,000-acre Fort Ord Impact Area was used for military training from 1917 until base closure in 1993. Military munitions found within the Impact Area include World War I era items (Stokes mortars and 37 and 75mm projectiles), and numerous World War II and later era items including rockets, artillery and mortar projectiles, rifle and hand grenades, practice land mines, pyrotechnics, and demolition materials. Both practice and live munitions were used.

Within the 6,560-acre Impact Area MRA shown on **Figure 3**, previous actions included MEC removals on roads, trails, and permanent fuel breaks; surface removal actions in the Watkins Gate Burn Area and Eucalyptus Fire Area; sampling in limited areas; and surface and subsurface removals in portions of MRS-Ranges 43-48. These investigations identified the following:

- MEC identified within the Impact Area MRA includes, but is not limited to, high explosive and practice projectiles, high explosive and practice rockets, high explosive and practice rifle and hand grenades, high explosive and practice mortars, and pyrotechnics.
- Based on existing data, the highest concentrations of MEC are expected to occur within range fans identified on historical training maps.
- Previous MEC cleanup remedial actions indicate that MEC occurs on the ground surface or within 1 foot below ground surface, and the densities appear to drop off quickly below a depth of 1 foot.

The Impact Area MRA is fenced, warning signs are posted, and access is controlled by the Army. The perimeter of the historical Impact Area is patrolled to detect and prevent trespassing.

The Impact Area MRA is covered by dense vegetation. The dominant plant community in the Impact Area MRA is Central Maritime Chaparral (CMC). This plant community is host to

## BACKGROUND

The former Fort Ord is located in northwestern Monterey County, California, approximately 80 miles south of San Francisco (**Figure 1**). The former Army base is made up of approximately 28,000 acres of land next to Monterey Bay and the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. A Southern Pacific Railroad track and Highway 1 pass through the western portion of former Fort Ord, separating the beach from the rest of the base. Laguna Seca Recreation Area, Toro Park, and Highway 68 border former Fort Ord to the south and southeast.

Since it was established in 1917, Fort Ord served primarily as a training and staging facility for infantry and cavalry troops. From 1947 to 1975, Fort Ord was a basic training center. After 1975, the 7<sup>th</sup> Infantry Division was based at Fort Ord. Fort Ord was selected for closure in 1991. The majority of the soldiers were reassigned to other Army posts in 1993. The Army has retained a portion of former Fort Ord property as the Ord Military Community (OMC) and U.S. Army Reserve Center. The remainder of Fort Ord was identified for transfer to federal, state, and local government agencies and other organizations for reuse.

Because cavalry, field artillery, and infantry units used the historical Impact Area for training, maneuvers, and other purposes, MEC is present both on the surface and below the ground surface in the Impact Area MRA. Military munitions typically used within the Impact Area MRA include artillery and mortar projectiles; rockets and guided missiles; rifle and hand grenades; land mines; pyrotechnics; bombs; and demolition materials.

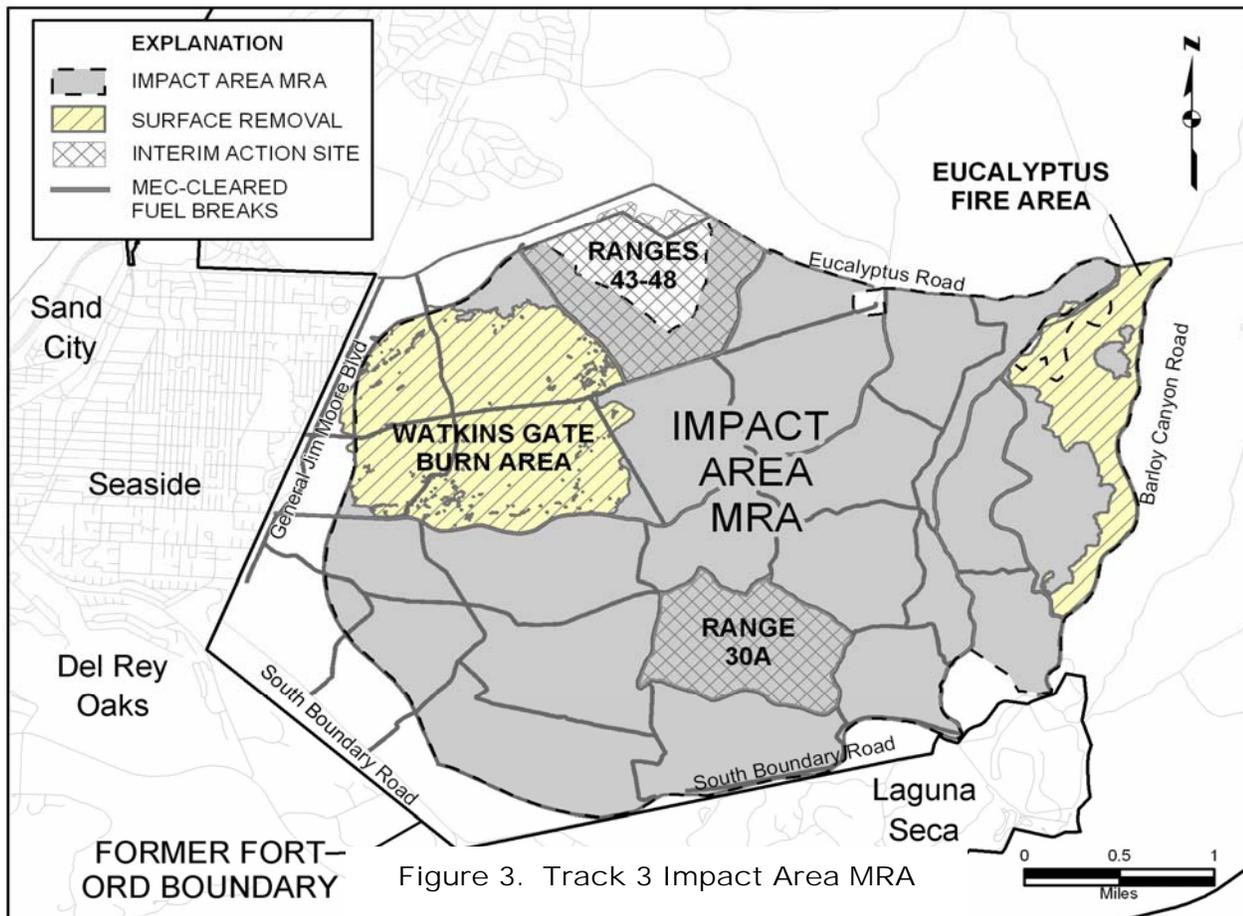
Fort Ord was placed on the National Priorities List (NPL) of **Superfund** sites by the EPA on February 21, 1990, due to evidence of contaminated soil and groundwater. A Federal Facility Agreement (FFA) was signed in July 1990 by representatives of the Army, EPA, and the DTSC and Regional Water Quality Control Board (RWQCB) —agencies that are part of Cal/EPA. The FFA established schedules for conducting investigations and requires the cleanup process be conducted as expeditiously as possible. In 1991, the basewide **Remedial Investigation / Feasibility Study (RI/FS)** for soil and groundwater contamination (hazardous and toxic waste or HTW) began, and Fort Ord was placed on the Base Realignment and Closure (BRAC) List.

Since 1993, MEC-related field investigations, sampling, and removal activities have been conducted at many former Fort Ord sites by the Army. This investigation and removal work was focused on addressing explosive hazards. In 1998, the Army agreed to evaluate MEC at the former Fort Ord in an MR RI/FS consistent with CERCLA, and the MR RI/FS work plan was issued in 1999.

several federally threatened and endangered species as well as many other rare species. The CMC habitat at former Fort Ord is unique, in that it supports the largest known populations of Monterey spineflower and sandmat manzanita, as well as abundant populations of sand gilia, Toro manzanita, Monterey ceanothus, and other special-status species. Other plant communities that occur within the Impact Area MRA include inland coast woodland (about 200 acres), grassland (over 250 acres), and wetlands (about 25 acres). These richly diverse habitats support a broad array of wildlife species.

Habitat management in the Impact Area MRA is essential to the protection and management of protected species within this habitat reserve, and is vital to the reuse of the former Fort Ord because it balances species losses in other areas of the former Fort Ord that are designated for development. The habitat management responsibilities of the Army and those who will reuse the former Fort Ord are compiled in the HMP and other documents (USACE, 1997). The HMP was prepared in accordance with the U.S. Fish and Wildlife Service (USFWS) Biological Opinions (USFWS, 1993, 1997a, b). Changes to the HMP have also been documented since it was published, including additional Biological Opinions (USFWS, 1999, 2002, 2005), an Assessment (Zander, 2002), a Memorandum of Understanding (BLM, Army, 2004), a Revised Attachment A Habitat Management Plan Map (USACE, 2005), and additional requirements anticipated during reuse described in the draft HCP (Zander, 2007). The HMP and these additional documents establish the guidelines for the conservation and management of plant and wildlife species and habitats that largely depend on former Fort Ord land for survival. These documents also describe planned land use and conservation and management requirements, including habitat monitoring requirements for target species within habitat reserve areas found within the Impact Area MRA.

The Impact Area MRA is currently undeveloped. While the environmental investigation and cleanup is ongoing, habitat management activities such as invasive species and erosion control are implemented on a routine basis. Other activities include ecological monitoring such as plant and animal studies. These activities are conducted under the supervision of the Army and require specific training, and generally require UXO escort. No accidents involving MEC have occurred during these ongoing activities. Information regarding the remedial investigation conducted for the Impact Area MRA was presented in the RI (Volume I; MACTEC, 2007).



## SUMMARY OF SITE RISKS

The Remedial Investigation concluded that MEC is present on the surface and in the subsurface of the Impact Area MRA, including high explosive munitions. Based on the RI, a risk assessment was conducted to evaluate the explosive risk to human health associated with MEC within the Impact Area MRA. The Impact Area MRA Risk Assessment (RI, Section 4.0, Volume I, MACTEC, 2007) utilized the Fort Ord Ordnance and Explosives Risk Assessment Protocol, which was developed to estimate the risk to future land users from MEC in terms of an “Overall MEC Risk Score” (Malcolm Pirnie, 2002). Overall MEC Risk Scores were estimated for three scenarios: (1) a baseline scenario (conditions prior to conducting any MEC removal); (2) a hypothetical surface removal after-action scenario (estimated risk after conducting surface-only removal action at the MRA); and (3) a hypothetical removal-to-depth (intrusive investigation of all anomalies) after-action scenario (estimated risk after conducting removal-to-depth at the MRA). Overall MEC risk scores are expressed in letters A through E.

<b>Overall MEC Risk Score</b>	A	B	C	D	E
	Lowest	Low	Medium	High	Highest

Based on the draft HCP (Zander, 2007), the types of reuse activities that are planned for the future habitat reserve upon property transfer of the Impact Area MRA include:

- Route, road, and trail management and maintenance;
- Habitat enhancement;
- Fuel break construction and management;
- Use of administrative areas;
- Habitat monitoring and educational programs;
- Species specific monitors and habitat enhancement;
- Controlled access including restricting recreational use to established routes.

These activities have varying levels of ground disturbance. In general, the results of the Risk Assessment indicated:

- 1) Baseline (Current) Risks – The risk is the highest (E) for all reusers.
- 2) Surface MEC Removal – The hypothetical after-action risks following implementation are medium (C) for surface-only reusers such as habitat monitors and hikers. The risk remains the highest (E) for all reusers intruding below ground surface (such as firefighters battling wildfires or creating fuel breaks, habitat workers placing stakes, performing invasive weed control or planting, or construction workers).
- 3) Subsurface MEC Removal – The hypothetical after-action risks following implementation are the lowest (A) for surface only receptors and receptors intruding to up to 1 foot below the ground surface. The risk remains the highest (E) for deeper-intruding reusers (such as habitat workers digging below 1 foot to perform weed control or planting, and construction workers).

## REMEDIAL ACTION OBJECTIVES

The primary Remedial Action Objectives (RAOs) for the Impact Area MRA reuse areas are to (1) reduce risks to human health and the environment, and (2) comply with **Applicable or Relevant and Appropriate Requirements (ARARs)** such as federal and state laws and regulations that can be used to set cleanup standards while supporting the reuse of the Impact Area as a habitat reserve. Potential ARARs that may be pertinent to implementation of each of the remedial alternatives were identified in the Impact Area MRA Feasibility Study (FS, Volume II, Table 1; MACTEC, 2007). A range of remedial alternatives were developed in the FS to clean up MEC on the property; these alternatives were evaluated against the nine CERCLA evaluation criteria specified in the EPA's RI/FS Guidance (EPA, 1989) in order to identify one that best satisfies the RAOs.

## SUMMARY OF REMEDIAL ACTION ALTERNATIVES

Four remedial alternatives were evaluated for the clean up of MEC that exist in the Impact Area MRA:

- Alternative 1: No Further Action
- Alternative 2: Technology-Aided Surface MEC Remediation and Land Use Controls
- Alternative 3: Subsurface MEC Remediation and Land Use Controls
- Alternative 4: Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas and Land Use Controls.

Although surface and subsurface MEC remediation would result in eliminating many MEC items from the site and reducing the possibility of future exposures, the risk assessment indicated that potential After Action MEC Risk scores would remain in the high range for those receptors conducting intrusive activities. Therefore, **Land Use Controls (LUCs)** were included as part of Remedial Alternatives 2, 3, and 4 to support safe reuse of the area as a habitat reserve, including: (1) property transfer documentation outlining use restrictions including the prohibition of unrestricted land use; (2) access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining the perimeter fence and signs; (3) MEC recognition and safety training; (4) construction monitoring for intrusive activities.

The Impact Area MRA is densely vegetated; therefore, in order to provide safe access for workers to conduct MEC removals, Alternatives 2, 3, and 4 all require vegetation clearance as a first step. Methods of vegetation clearance for different plant communities at the former Fort Ord were evaluated. The Impact Area MRA is designated habitat reserve, and is primarily covered by Central Maritime Chaparral (CMC). The *Evaluation of Vegetation Clearance Methods Technical Memorandum, Ordnance and Explosives Remedial Investigation/Feasibility Study, Former Fort Ord, California* (Vegetation Clearance Technical Memorandum; *Harding ESE, 2002*) identified prescribed burning as the only method that can be used on a large scale within CMC and Coastal Scrub plant communities. For additional information on prescribed burning, see the **Prescribed Burning Text Box on Page 7**.

### *Description of Remedial Action Alternatives*

The following summarizes the components of each of the four remedial action alternatives developed in the FS (Volume II; *MACTEC, 2007*).

**ALTERNATIVE 1: No Further Action**—This alternative would take no further action to achieve the remedial action objectives, and is provided, as required under CERCLA and the National Contingency Plan (NCP), as a baseline for comparison to the other proposed remedial alternatives.

**ALTERNATIVE 2: Technology-Aided Surface MEC Remediation and Land Use Controls**—It would take 8 years to complete surface MEC remediation in the Impact Area MRA if 800 acres were cleaned up each year. This alternative would include the following components:

- Planned prescribed burning of up to 800 acres per year (in a series of several small burns of approximately 100 acres in size; see **Prescribed Burning Text Box, page 7**) to clear vegetation and provide access for MEC surface removals;
- Technology-aided surface MEC removal throughout the entire Impact Area MRA, and detonation with engineering controls of any MEC identified. MEC detection instruments would be available onsite for investigation and removal of any MEC present in areas where the ground surface is not visible;
- Digital mapping to provide a record of remaining anomalies and to assist future property users in identifying areas with specific MEC safety support requirements for surface or subsurface activities. Burned vegetation would be cut to provide access to the digital geophysical equipment, and post-remediation habitat monitoring would be conducted to assess the impacts of cutting vegetation; and
- Implementation of Land Use Controls (MEC recognition and safety training; construction monitoring for intrusive activities; access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining a perimeter fence and signs; fire suppression helicopter support for select future habitat management prescribed burns; and property transfer documentation outlining use restrictions including the prohibition of unrestricted land use).

### **Vegetation Clearance by Prescribed Burning**

The Vegetation Clearance Technical Memorandum evaluated several vegetation clearance methods that may be applicable in different plant communities, and identified prescribed burning as the only method that can be used on a large scale within CMC and Coastal Scrub plant communities. Other vegetation clearance methods were evaluated, but their use is allowable on a limited basis only, or further study is required.

The major elements of prescribed burning include:

- Coordination with the local air district;
- Preparation of a burn prescription/burn plan outlining the objectives of the burn, burn area, and the range of environmental conditions under which the burn will be conducted; workforce and equipment resources required to ignite, manage and contain the fire; and communication procedures;
- Site preparation, including establishment and maintenance of containment lines;
- Conducting the burn within the range of environmental conditions established in the burn prescription; and
- Follow-up operations to ensure that the fire is fully contained.

Based on past experience and habitat conservation considerations, it is anticipated that prescribed burns would be conducted in stages and consist of several small burns, approximately 100 acres in size (actual size could be more or less than 100 acres depending on site-specific characteristics) over several days rather than one large burn.

Regularly-maintained roads and fuelbreaks that are accessible by vehicles and fire management equipment currently divide the site into several sections (300 to 500 acres in size). These sections would be further divided by utilizing established roads and trails to the extent possible that can be expanded as temporary fuel breaks (instead of creating brand new fuel breaks through thick vegetation that would involve higher level of effort and potential avoidable habitat impacts). The sizes of the burn areas are contingent on many factors, the most important being the location and condition of major fuelbreaks (well maintained, substantial fuel breaks where a fire could be held from spreading past that location). Other factors considered are topography, slope, aspect, fuel type, fuel loading, fire behavior, and the proximity of urban/wildland interface. The actual size and configuration of burn areas would be determined by the Army fire department in charge. The fire department would determine these parameters to minimize the size and duration of each burn, to best maintain control of the burn, to minimize smoke impacts, to be able to execute the burn within the narrow meteorological window, minding also explosives safety and other technical and practical considerations. The fire department will select areas to strategically create a buffer between the Impact Area MRA and the surrounding communities to protect the communities from any potential wildfire or fire hazard. Proposed burn areas, containment lines, and supporting rationale would be described in site-specific implementation work plans (anticipated to be prepared for each year of planned cleanup work) that would be submitted for DTSC review and EPA concurrence.

Each contiguous prescribed burn area would not exceed 400 acres (separated by a minimum of 25 acres to allow a mosaic pattern consisting of difference age classes of vegetation) unless specifically coordinated with USFWS. Per the HMP, no more than 800 acres would be allowed to be prescribed burned in any given year.

The Army will provide public notification of planned prescribed burns. A prescribed burn will be started only when optimum burn conditions are confirmed. Mobilization of fire management personnel and equipment, and public notification, will occur when optimum burn conditions are reasonably expected. Once mobilized, fire and management personnel, equipment, and supplies may be in place and standing by for several days. Because the Army will be waiting for appropriate atmospheric conditions rather than trying to anticipate them, the Army will not know conclusively until moments before the fire is lit that the burn will occur that particular day. In addition, multiple burn events may be conducted over a period of several days that could be interrupted by one or more days of no burning. Through community notification, the public will be advised of reasonable precautions they can take to minimize exposure to smoke from prescribed burns, such as staying indoors with doors and windows closed, and limiting outdoor activity when smoke is present.

**ALTERNATIVE 3: Subsurface MEC Remediation and Land Use Controls**—Due to logistical considerations, subsurface MEC removals can be accomplished for approximately 300 acres annually. At this rate, it would take 22 years to complete subsurface MEC remediation in the Impact Area MRA. This alternative would include the following components.

- Planned prescribed burning of up to 300 acres per year (in a series of several small burns of approximately 100 acres in size; see **Prescribed Burning Text Box, page 7**) to clear vegetation and provide access to conduct MEC removals;
- Technology-aided surface MEC removal, and subsurface MEC removal throughout the entire Impact Area MRA (intrusive investigation of all anomalies); and detonation with engineering controls of any MEC identified. Burned vegetation would be cut to make the site accessible for subsurface MEC removal and digital mapping;
- Digital mapping to provide a digital record, and investigation of remaining anomalies;
- Implementation of Land Use Controls (MEC recognition and safety training; construction monitoring for intrusive activities; access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining a perimeter fence and signs; and property transfer documentation outlining use restrictions including the prohibition of unrestricted land use); and
- Post-remediation habitat monitoring (collecting data on HMP species and habitats, and performing mapping, data management and evaluation, and reporting), and habitat restoration as needed.

Based on a review of currently available data, a total of approximately 320 acres of the Impact Area MRA could contain significant amounts of MEC and/or metallic debris. Implementing subsurface MEC removal in these areas may require large-scale excavations that could include sifting the top 2-foot layer of soil, which would cause significant habitat impacts, including the temporary loss of listed species, seedbank, or critical habitat for the special-status species. The HMP and additional requirements currently limit the amount of temporary habitat destruction to 75 acres. It should be noted that the size of the area that would require excavation and sifting is approximate; it could only be confirmed during MEC remediation. It would also be necessary to conduct active habitat restoration, and it would be necessary to re-initiate formal consultation with the USFWS in accordance with the requirements of the Endangered Species Act.

**ALTERNATIVE 4: Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls**—This alternative assumes Technology-Aided Surface MEC Remediation is conducted throughout the entire Impact Area MRA, and Subsurface MEC Remediation would be conducted in selected areas such as fuel breaks and access roads, and selected areas in order to address specific concerns and needs. It would take 8 years to complete surface MEC remediation with subsurface MEC remediation in selected areas in the Impact Area MRA if 800 acres were cleaned up each year. This alternative would include the following components:

- Planned prescribed burning of up to 800 acres per year (in a series of several small burns of approximately 100 acres in size; see **Prescribed Burning Text Box, page 7**) to clear vegetation and provide access to conduct MEC removals;
- Technology-Aided surface MEC removal throughout the entire Impact Area MRA, and detonation with engineering controls of any MEC identified. MEC detection instruments would be available onsite for investigation and removal of any MEC present in areas where the ground surface is not visible;
- Subsurface MEC removal (intrusive investigation of all anomalies) on fuel breaks and roads essential to habitat management activities, and in selected areas that may require subsurface MEC removal for specific purposes to support the reuse (assumed to be approximately 10 percent of the Impact Area MRA);
- Digital mapping to provide a record of remaining anomalies to assist future property users in identifying areas with specific MEC safety support requirements for surface or subsurface activities. Burned vegetation would be cut to provide access to the digital geophysical equipment. Anomalies within the areas identified for subsurface removal would be investigated or resolved;

- Implementation of Land Use Controls (MEC recognition and safety training; construction monitoring for intrusive activities; access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining a perimeter fence and signs; fire suppression helicopter support for select future habitat management prescribed burns; and property transfer documentation outlining use restrictions including the prohibition of unrestricted land use); and
- Post-remediation habitat monitoring (collecting data on HMP species and habitats, and performing mapping, data management and evaluation, and reporting), and habitat restoration as needed.

For the purposes of the FS, the total area of subsurface MEC removal was assumed to be approximately 10 percent (656 acres) of the Impact Area MRA (6,560 acres), including:

- Regularly maintained fuel breaks and access roads identified by the Army and future land owner for habitat management.
- A minimum 100-foot buffer area along the habitat-development border of the Impact Area MRA on the habitat side of the border that is adjacent to developed areas, and would act as an additional safety zone and provide firefighters with the ability to fight wildfires that might occur within the Impact Area from the border buffer area. The firefighters would be able to temporarily widen fuel breaks under such circumstances, to protect life and property on the development side of the border. Per the HMP, fuel breaks are to be maintained on the development side of the border. The width of the buffer could be widened based on area-specific conditions that will be specified in the site-specific work plans for each phase of work. Vegetation would be allowed to regrow in the 100-foot buffer following Subsurface MEC Removal.
- Other areas to address specific risk and/or reuse needs, such as proposed, future habitat restoration sites, and areas of high density anomalies and associated with sensitive-type munitions (assumed to be approximately 85 acres of the Impact Area MRA) that would be candidates for subsurface MEC removals via excavation and sifting as further described below.

Based on a review of currently available data, a total of approximately 85 acres of the Impact Area MRA could contain significant amounts of MEC and/or metallic debris that are associated with sensitively fuzed types of MEC that could present a significant hazard to reusers that may work in these areas if only the surface is cleared of MEC and the items are encountered. These areas are candidates for subsurface MEC removals in order to make it safe for future reusers. This effort is assumed to include sifting the top 2-foot layer of soil, which would cause significant temporary impacts and loss of listed species, seedbank, or critical habitat. It should be noted that the size of the area that would require excavation and sifting is approximate; it could only be confirmed during MEC remediation. Depending on the actual size of these large-scale excavations, it may also be necessary to re-initiate formal consultation with the USFWS in accordance with the requirements of the Endangered Species Act.

## EVALUATION AND COMPARISON OF ALTERNATIVES

Remedial alternatives were evaluated and compared based on EPA's nine evaluation criteria specified in EPA's *Guidance for Conducting Remedial Investigations/Feasibility Studies Under CERCLA (EPA, 1989)*. The evaluation and comparison of each of the four remedial action alternatives based on these nine criteria is summarized below based on their ability to achieve the following nine (9) evaluation criteria.

**THRESHOLD CRITERIA**

<b>1) OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT</b>		
<b><i>Overall Protection of Human Health</i></b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Unsafe for the future property owner to conduct the required habitat management activities, and to the public.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Protective of human health. Land Use Controls would provide a level of protection that would allow for proper management of the habitat reserve.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes	Protective of human health. Provides greatest level of protection; would remove all detected MEC on surface and in subsurface. Land Use Controls would provide a level of protection that would allow for proper management of the habitat reserve.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Protective of human health. Provides a high level of protection; would remove all detected MEC on surface and reuse-specific selected areas in the subsurface. Land Use Controls would provide a level of protection that would allow for proper management of the habitat reserve.

<b>1) OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT</b>		
<b><i>Overall Protection of The Environment</i></b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Existing minimum requirements under HMP, and other requirements for management of the habitat such as prescribed burning and monitoring could not be implemented.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Protective of environment. Prescribed burning of CMC habitat is essential for long-term management of listed and sensitive species. Prescribed burning and MEC removals would be performed incorporating required mitigation to avoid and reduce impacts to listed species or critical habitat for species. Post-remediation habitat monitoring would continue to be conducted.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes, for majority of Impact Area MRA	Protective of environment for majority of Impact Area MRA. Prescribed burning of CMC habitat is essential for long-term management of listed and sensitive species. Prescribed burning and MEC removals would be performed incorporating required mitigation to avoid and reduce impacts to listed species or critical habitat. Most significant impacts to the environment due to approximately 320 acres containing high-density anomalies anticipated to require large-scale excavations to remove subsurface MEC. Post-remediation habitat monitoring would continue to be conducted, and habitat restoration as necessary.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Protective of environment for majority of Impact Area MRA. Prescribed burning of CMC habitat is essential for long-term management of listed and sensitive species. Prescribed burning and MEC removals would be performed incorporating required mitigation to avoid and reduce impacts to listed species or critical habitat. Some impacts to the environment due to approximately 85 acres containing high density anomalies associated with sensitively fuzed munitions anticipated to require large-scale excavations to remove subsurface MEC for safe reuse. Post-remediation habitat monitoring would continue to be conducted, and habitat restoration as necessary.

**THRESHOLD CRITERIA (Continued)**

<b>2) COMPLIANCE WITH ARARS</b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	HMP and other requirements for management of the habitat such as prescribed burning and monitoring could not be implemented.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	MEC remediation would be implemented in compliance with ARARs. HMP and other requirements for management of the habitat such as prescribed burning and monitoring could be implemented.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes, for majority of Impact Area MRA	MEC remediation would be implemented in compliance with ARARs. HMP and other requirements for management of the habitat such as prescribed burning and monitoring could be implemented for the majority of the Impact Area MRA. The HMP and other requirements currently limit the amount of temporary habitat destruction to 75 acres. Large-scale excavations in high-density anomaly areas of approximately 320 acres is not consistent with the HMP and other requirements. It would therefore be necessary to re-initiate formal consultation with the USFWS in accordance with the requirements of the Endangered Species Act (ESA).
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	MEC remediation would be implemented in compliance with ARARs. HMP and other requirements for management of the habitat such as prescribed burning and monitoring could be implemented for the majority of the Impact Area MRA. Approximately 85 acres of high density anomaly areas associated with sensitively fuzed munition types would require large-scale excavation; it may therefore be necessary to re-initiate formal consultation with the USFWS in accordance with the requirements of the ESA.

**BALANCING CRITERIA**

<b>3) SHORT-TERM EFFECTIVENESS</b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Not effective in the short term because no action is taken.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Workers and the community would be protected during implementation of prescribed burning, MEC removal, and land use controls via safety protocols. Prescribed burns may cause some smoke impacts to the community, which are expected to be temporary. Community notification and smoke management would minimize potential impacts from smoke. Regarding the environment, would not have significant short-term impacts.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes	Workers and the community would be protected during implementation of prescribed burning, MEC removal, and land use controls via safety protocols. Prescribed burns may cause some smoke impacts to the community, which are expected to be temporary. Community notification and smoke management would minimize potential impacts from smoke. Due to logistical considerations involved in conducting subsurface removals, smaller areas would be cleaned up each year; therefore, this alternative would take longer to implement and complete. Regarding the environment, would have significant short-term impacts on the environment for the portions of the Impact Area MRA where areas of high-density anomalies would require excavation and sifting.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Workers and the community would be protected during implementation of prescribed burning, MEC removal, and land use controls via safety protocols. Prescribed burns may cause some smoke impacts to the community, which are expected to be temporary. Community notification and smoke management would minimize potential impacts from smoke. Regarding the environment, would have significant short-term impacts on the environment for the portions of the Impact Area MRA where areas of high density anomalies associated with sensitively fuzed munitions types would require excavation and sifting.

**BALANCING CRITERIA (Continued)**

<b>4) LONG-TERM EFFECTIVENESS AND PERMANENCE</b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Not effective or permanent in the long term since no further action would be taken to address MEC risks. It would be unsafe for the future property owner to conduct the required habitat management activities, and the continued presence of MEC on the ground surface would pose a hazard to the public.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Provides long-term effectiveness and permanence during reuse, because all MEC detected on the surface would be removed, and land use controls would be implemented to mitigate risks from MEC potentially remaining during reuse.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes	Provides long-term effectiveness and permanence during reuse, because all MEC detected on the surface and in the subsurface would be removed using the best appropriate technology, and land use controls would be implemented to mitigate risks from MEC potentially remaining during reuse.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Provides long-term effectiveness and permanence during reuse, because all MEC detected on the surface and in selected areas of the subsurface would be removed using the best appropriate technology, and land use controls would be implemented to mitigate risks from MEC potentially remaining during reuse.

<b>5) REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT</b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Does not provide reduction because no further action would be taken.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Provides significant reduction through surface MEC removal.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes	Provides greatest degree of reduction through surface and subsurface MEC removal.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Provides significant reduction through surface removal and subsurface MEC removal in selected areas.

<b>6) IMPLEMENTABILITY</b>		
Remedial Alternative	Meets Criteria?	Evaluation and Comparison Summary
1: <i>No Further Action</i>	No	Not administratively feasible to implement. While the No Further Action Alternative would be easy to implement, it would not comply with ARARS. In addition, taking no further action is unacceptable in terms of safety, and the necessary approvals are not expected.
2: <i>Technology-Aided Surface MEC Remediation and Land Use Controls</i>	Yes	Implementable from an administrative perspective. Necessary approvals to conduct MEC removals and associated habitat management could be obtained. Necessary services, equipment, and skilled workers to implement are readily available. High level of effort to implement; requires significant coordination to implement prescribed burning prior to MEC removals.
3: <i>Subsurface MEC Remediation and Land Use Controls</i>	Yes	Implementable from an administrative perspective. Necessary approvals to conduct MEC removals and associated habitat management could be obtained. Significant coordination required for excavation of high density anomaly areas. Necessary services, equipment, and skilled workers to implement are readily available. Highest level of effort to implement; requires significant coordination to implement prescribed burning prior to MEC removals.
4: <i>Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls</i>	Yes	Implementable from an administrative perspective. Necessary approvals to conduct MEC removals and associated habitat management could be obtained. Necessary services, equipment, and skilled workers to implement are readily available. High level of effort to implement; requires significant coordination to implement prescribed burning prior to MEC removals.

**BALANCING CRITERIA (Continued)**

<b>7) COST</b>	
<b>Remedial Alternative</b>	<b>Evaluation and Comparison Summary</b>
1: No Further Action	No costs
2: Technology-Aided Surface MEC Remediation and Land Use Controls	\$88.9 million
3: Subsurface MEC Remediation and Land Use Controls	\$423.2 million
4: Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls	\$138.4 million
Long Term Management Measures*	\$435,000

\* Long Term Management Measures apply to each of the Remedial Alternatives.

**MODIFYING CRITERIA**

<b>8 &amp; 9) STATE &amp; COMMUNITY ACCEPTANCE</b>		
<b>Remedial Alternative</b>	<b>Meets Criteria?</b>	<b>Evaluation and Comparison Summary</b>
1: No Further Action	No	Addressed in the Impact Area MRA RI/FS ROD once comments on the Proposed Plan have been received. This alternative is not expected to be acceptable to the regulatory agencies or public.
2: Technology-Aided Surface MEC Remediation and Land Use Controls	No	Addressed in the Impact Area MRA RI/FS ROD once comments on the Proposed Plan have been received. Based on agency comments on the RI/FS, it is anticipated to not be acceptable to the regulatory agencies.
3: Subsurface MEC Remediation and Land Use Controls	Yes	Addressed in the Impact Area MRA RI/FS ROD once comments on the Proposed Plan have been received. Based on agency comments on the RI/FS, it is anticipated to be acceptable to the regulatory agencies.
4: Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls	Yes	Addressed in the Impact Area MRA RI/FS ROD once comments on the Proposed Plan have been received. Based on agency comments on the RI/FS, it is anticipated to be acceptable to the regulatory agencies.

**PREFERRED ALTERNATIVE**

Based on the evaluation and comparison of the four remedial alternatives, the Army proposes Alternative 4 – Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls as the preferred alternative for implementation at the Impact Area MRA because it best meets the nine evaluation criteria specified in the EPA’s RI/FS Guidance (EPA, 1989).

This alternative is recommended because it will achieve substantial risk reduction through MEC removal and risk management through land use controls. The alternative best balances the risk reduction and associated environmental impacts in supporting the anticipated future use of the site as a habitat reserve.

At the completion of the remedial action, including the initial implementation of land use controls, the following Long Term Management Measures will be implemented: a land transfer document that outlines any land use restrictions, such as prohibition of unrestricted land use; annual monitoring and reporting; and five-year review reporting required under CERCLA. After the MEC remedial actions have been completed, and the property is transferred to the future landowner, the Army will continue to implement and maintain the Land Use Controls identified under the Preferred Alternative, which include:

- MEC recognition and safety training;
- Construction monitoring for intrusive activities;
- Access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining a perimeter fence and signs;
- Fire suppression helicopter support for select future habitat management prescribed burns; and
- Use restrictions as described above, and including the prohibition of unrestricted land use.

**The Preferred Alternative**

**Alternative 4: Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls**

The Preferred Alternative includes:

- Prescribed burning to clear vegetation (see **page 7**)
- Technology-aided surface MEC removal throughout entire Impact Area MRA
- Subsurface MEC removal in selected areas of the Impact Area MRA (such as fuel breaks and roads; a minimum 100-foot buffer area along the habitat-development border; and other areas to address specific risks and/or reuse needs); a Technical Memorandum will be submitted to EPA and DTSC that presents an evaluation of the surface removal and if necessary, describe additional subsurface removals recommended based on the results of the initial work.
- Digital mapping to provide a record of remaining anomalies to assist future property users in identifying areas with specific MEC safety support requirements. Anomalies within the areas identified for subsurface removal will be investigated or resolved.
- Implementation of Land Use Controls (MEC recognition and safety training; construction monitoring for intrusive activities; access management measures including regular security patrols of the Impact Area MRA perimeter and maintaining a perimeter fence and signs; fire suppression helicopter support for select future habitat management prescribed burns; and property transfer documentation outlining use restrictions including the prohibition of unrestricted use). The Army will prepare a Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP) describing the requirements and responsibilities for implementing and maintaining the land use controls after property transfer.
- Post-remediation habitat monitoring
- Habitat restoration as needed.

Long Term Management Measures that will also be implemented include:

- Property transfer document that outlines use restrictions
- Annual Monitoring & Reporting
- 5-Year Review Reporting.

Based on information currently available, the lead agency believes the Preferred Alternative meets the threshold criteria and provides the best approach among the remedial alternatives with respect to the balancing and modifying criteria. The lead agency expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): 1) be protective of human health and the environment; 2) comply with ARARs (or justify a waiver); 3) be cost-effective; 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element (or justify not meeting the preference).

The implementation of Land Use Controls will be described in the Land Use Control Implementation Remedial Design/Remedial Action Work Plan (LUCI RD/RAWP).

After technology-aided surface MEC removals are completed for each phase of work described in the site-specific work plans, digital geophysical mapping will be conducted. Following the geophysical mapping the Army will review the data and prepare a Technical Memorandum to EPA and DTSC that will present an evaluation of the work completed to date and if necessary, describe additional subsurface removals recommended based on the results of the initial work. Factors that would be considered when determining whether additional actions are necessary include, but are not limited to: (1) type of MEC encountered and danger associated with MEC; (2) proximity to potential receptors; (3) density of items; and (4) consistency with ARARs. If no additional work is required this would also be documented in the Technical Memorandum along with the rationale for no further removal actions.

Each Technical Memorandum would be an addendum to the site-specific work plan, and therefore, would be associated with a primary document and be disputable. To avoid impacts to the rare, threatened and endangered species, completion and agency approval of the Technical Memorandum will be expedited to allow any additional actions to be executed before the next growing season. Each Technical Memorandum and associated correspondence would be made available to the public in the Administrative Record.

**HOW TO MAKE COMMENTS**

The Army is the responsible party and lead agency for investigating, reporting, making cleanup decisions, and taking cleanup actions at the former Fort Ord. The Army, as lead agency, is soliciting public comments on the Preferred Alternative of Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls, as well as other remedial action alternatives described in this Proposed Plan to manage the risk from MEC at the Impact Area MRA. The Track 3 Impact Area MRA RI/FS (MACTEC, 2007) provides a detailed site report that describes the information gathered during

the literature review and site investigations, as well as a more detailed description of the reasons for the Army's recommendation of Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and Land Use Controls. This and other reports referenced herein are available for review at the Information Repositories and the Administrative Record listed below.

Public comments will be considered before any action is selected and approved. Written and oral comments on this Impact Area MRA Proposed Plan will be accepted at the public meeting/hearing scheduled on July 10, 2007 from 6:00 p.m. to 8:00 p.m. at the Embassy Suites Hotel, 1441 Canyon Del Rey, Seaside, California. Representatives from the Army, EPA, and DTSC will be present at this meeting to explain the Impact Area MRA Proposed Plan, listen to concerns, answer questions, and accept public comments.

Written comments will be accepted throughout the 30-day public comment period from June 28 to July 28, 2007. Correspondence should be postmarked no later than July 28, 2007 and should be sent to the attention of the U.S. Army representative at the following address (*Please reference the Impact Area MRA Proposed Plan in your correspondence*):

**Department of the Army**  
**Fort Ord Base Realignment and Closure (BRAC) Office**  
**ATTN: Gail Youngblood**  
**BRAC Environmental Coordinator**  
**P.O. Box 5008**  
**Monterey, California 93944-5008**

## INFORMATION ACCESS

### **U.S. Army Representative**

Department of the Army  
Fort Ord Base Realignment and Closure (BRAC) Office  
P.O. Box 5008  
Monterey, California 93944-5008  
Contact: Gail Youngblood, BRAC Environmental Coordinator  
(831) 393-1284 FAX: (831) 393-9188  
Hours: 8:00 am - 5:00 pm

### **Regulatory Representatives**

U.S. Environmental Protection Agency, Region IX  
Superfund Federal Facilities Cleanup Branch  
75 Hawthorne Street, Mail Code SFD-8-3  
San Francisco, California 94105  
Contact: Judy Huang (415) 972-3681  
Hours: 8:00 am - 5:00 pm

Cal/EPA Department of Toxic Substances Control, Region 2  
Site Mitigation/Office of Military Facilities  
8800 Cal Center Drive  
Sacramento, California 95826  
Contact: Roman Racca (916) 255-6407  
Hours: 8:00 am - 5:00 pm

## **Information Repositories**

California State University Monterey Bay (CSUMB) Library Learning Complex  
100 Campus Center, Bldg. 12  
Seaside, California 93955 (831) 582-3733  
For current library hours, call or visit <http://library2.csumb.edu/about/hours.php>

### Seaside Branch Library

550 Harcourt Avenue  
Seaside, California 93955 (831) 899-2537  
Hours: Mon-Thurs 10:00 am-8:00 pm; Fri/Sat 10:00 am-5:00 pm

## **Administrative Record Department Location**

Fort Ord Administrative Record ([www.fortordcleanup.com](http://www.fortordcleanup.com))  
Building 4463 Gigling Road, Room 101  
Ord Military Community, California 93944-5008  
(831) 393-9186 / Hours: Mon-Fri 9:00 am-4:00 pm. Other hours by appointment.  
Closed daily, 12:00 pm to 1:30 pm and Federal holidays.

## REFERENCES

U.S. Bureau of Land Management (BLM) and U.S. Army (Army), 2004. *Memorandum of Understanding Concerning the Proposed East Garrison/Parker Flats Land-Use Modification Between the Fort Ord Reuse Authority, Monterey Peninsula College, County of Monterey.* August.

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\_\_\_\_\_, 1997. *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California (HMP).* With technical assistance from Jones and Stokes, Sacramento, California. April.

U.S. Department of the Army (Army), 2002. *Record of Decision, Interim Action For Ordnance and Explosives at Ranges 43-48, Range 30A, and Site OE-16, Former Fort Ord, California.* August 26.

U.S. Environmental Protection Agency (EPA), 1989. *Guidance for Conducting Remedial Investigation/Feasibility Studies Under CERCLA. Interim Final.* EPA 540/G-89/001. October.

U.S. Department of the Interior, Fish and Wildlife Service (USFWS), 2005. *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields (1-8-04-F-25R).* March.

\_\_\_\_\_, 2002. *Biological Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, as it affects Monterey Spineflower Critical Habitat, (1-8-01-F-70R).* October.

\_\_\_\_\_, 1999. *Biological and Conference Opinion on the Closure and Reuse of Fort Ord, Monterey County, California (1-8-99-F/C-39R)*. Response to Army letter dated 11/11/98 to reinitiate formal consultation in accordance with Section 7 of Endangered Species Act of 1973. March.

\_\_\_\_\_, 1997a. *Biological and Conference Opinion on the Closure and Reuse of Fort Ord (1-8-97-F/C-13)*. January.

\_\_\_\_\_, 1997b. *Biological and Conference Opinion on the Closure and Reuse of Fort Ord, Monterey County, California (1-8-97-F/C-23R)*. April.

\_\_\_\_\_, 1993. *Biological Opinion for the Disposal and Reuse of Fort Ord, Monterey County, California (I-8-93-F-14)*. October.

Zander Associates, 2002. *Assessment East Garrison - Parker Flats Land Use Modifications, Fort Ord, California*. May.

\_\_\_\_\_, 2007. *Draft Habitat Conservation Plan for Former Fort Ord, California*. January

## GLOSSARY

**Administrative Record** – A compilation of all documents relied upon to select a remedial action pertaining to the investigation and cleanup of Fort Ord.

**Applicable or Relevant and Appropriate Requirements (ARARs)** – Federal and State laws and regulations pertaining to environmental cleanups that can be specific to the chemicals found at a site, the potential actions proposed to address contamination at a site, or the location of the site.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, otherwise known as Superfund)** – A federal law that addresses the funding for and cleanup of abandoned or uncontrolled hazardous waste sites. This law also establishes criteria for the creation of key cleanup documents such as the Remedial Investigation (RI), Feasibility Study (FS), Proposed Plan, and Record of Decision (ROD).

**Feasibility Study (FS)** – An evaluation of potential remedial technologies and treatment options that can be used to clean up a site.

**Land Use Controls (LUC)** – Land use controls are physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms include fences, pavement, or signs. Legal mechanisms include deed restrictions that limit how the property is used. Administrative mechanisms include providing munitions recognition training for workers who do intrusive work.

**Military Munitions** [formerly OE] – 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. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents, 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, demolition charges, and devices and components thereof.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, except that the term does include non-nuclear 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. (10 U.S.C. 2710(e)(3)(A) and (B)).

**Military Munitions Response Program (MMRP)** [formerly OE Cleanup Program] – Program established by the Department of Defense to manage environmental, health and safety issues presented by MEC.

**Munitions Debris** [formerly OE Scrap] – Remnants of munitions (e.g., penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal. Munitions debris is confirmed inert by technically-qualified personnel.

**Munitions and Explosives of Concern (MEC)** [formerly OE and UXO] – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means: (A) Unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5) (A) through (C); (B) Discarded military munitions (DMM), as defined in 10 U.S.C. 101(e)(4) (A) through (C); or (C) Explosive munitions constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard.

**Munitions Response Area (MRA)** – Any area on a defense site that is known or suspected to contain MEC. Examples include former ranges and munitions burial areas. A munitions response area is made up of one or more munitions response sites.

**Munitions Response Site (MRS)** [formerly OE Site] – A discrete location within a MRA that is known to require a munitions response.

**Ordnance and Explosives (OE)** – Consists of either (1) or (2) below:

- (1) Ammunition, ammunition components, chemical or biological warfare materiel or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record control of any Department of Defense organization or activity.
- (2) Explosive soil, which refers to mixtures of explosives in soil, sand, clay, or other solid media at concentrations such that the mixture itself is explosive.

**Preferred Remedial Alternative** – The remedial alternative that, when compared to other potential alternatives, was determined to best meet the nine CERCLA evaluation criteria in the Feasibility Study, and is proposed for implementation at a site.

**Proposed Plan** – A plan that identifies the preferred alternative for a site cleanup, and is made available to the public for comment.

**Record of Decision (ROD)** – A report documenting the final action, approved by the regulatory agencies, that is required at Superfund sites.

**Remedial Alternatives** – Potential remedies to address contamination (in this case, MEC).

**Remedial Investigation (RI)** – Exploratory inspection conducted at a site to define the nature and extent of chemicals, and in this case, MEC present.

**Superfund** – See Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) above.

**Track 3 MR RI/FS Site** – Areas where: (1) MEC are suspected or known to exist, but investigations are not yet complete or need to be initiated, or (2) any suspected or known areas identified in the future. The Impact Area MRA qualifies as a Track 3 site because MEC exist and actions have not been completed.

**Technology-Aided Surface MEC Remediation** – 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.

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

**UXO-Qualified Personnel** – Personnel who have performed successfully in military EOD positions, or are qualified to perform in the following Department of Labor, Service Contract Act, Directory of Occupations, contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist or Senior UXO Supervisor (*DDESB, 2004*).