Record of Decision
Interim Action For Ordnance and Explosives at Ranges 43–48, Range 30A, and Site OE–16
Former Fort Ord, California

United States Department of the Army
Presidio of Monterey, California

CONTENTS

TABLES

PLATES

APPENDIX

ACRONYM LIST

ARAR	applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
Cal-EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMC	central maritime chaparral
DDESB	Department of Defense Explosive Safety Board
DHS	Department of Health Services
DRMO	Defense Reutilization and Marketing Office
DTSC	Department of Toxic Substance Control
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FFA	Federal Facility Agreement
FORA	Fort Ord Reuse Authority
FS	Feasibility Study
HE	high explosive
HEAT	high explosive antitank
HEDP	high explosive dual purpose
HLA	Harding Lawson Associates (now Harding ESE, a MACTEC Company)
HMP	Habitat Management Plan
IA	interim action
LAW	light antitank weapon
mm	millimeter
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MRA	Multi-Range Area
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NPV	net present value
ODDS	Ordnance Detection and Discrimination Study
OE	ordnance and explosives
O&M	operations and maintenance
RAO	remedial action objective
RI	remedial investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SOP	standard operating procedures
TBC	To Be Considered
TP	training practice
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
WWII	World War II

1.0 DECLARATION

The former Fort Ord is located near Monterey Bay in northwestern Monterey County, California (Plate 1). Since 1917, portions of the former Fort Ord were used by cavalry, field artillery, and infantry units for maneuvers, target ranges, and other purposes. Ordnance and explosives (OE) were fired into, fired upon, or used on the facility in the form of artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, land mines, pyrotechnics, bombs, and demolition materials. Both unexploded ordnance (UXO) and ordnance scrap are present at parts of the former Fort Ord.

This Interim Action Record of Decision (Interim Action ROD) addresses sites at the former Fort Ord that contain live, sensitively fuzed surface OE items in close proximity to residential neighborhoods and schools with a history of trespassing incidents (Plate 2). The Army, as the lead agency, has determined that an Interim Action is appropriate to protect human health from the imminent threat posed by OE at three Interim Action sites (Ranges 43–48, Range 30A, and Site OE–16) while an ongoing comprehensive study of OE cleanup needs at the former Fort Ord is conducted under the basewide OE Remedial Investigation/Feasibility Study (basewide OE RI/FS).

This Interim Action ROD summarizes the Interim Action OE Remedial Investigation/Feasibility Study (IA OE RI/FS) conducted for Ranges 43–48, Range 30A, and Site OE–16, documents the selected interim action remedies at these sites, and includes a responsiveness summary to public comments on the IA OE RI/FS Proposed Plan (*Interim Action is Proposed for Vegetation Clearance, Ordnance and Explosives Remedial Action, and Ordnance and Explosives Detonation, Ranges 43–48, Range 30A, and Site OE–16, Former Fort Ord, California*).

1.1 Site Name and Location

The former Fort Ord is located near Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco. The base comprises approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. The Southern Pacific Railroad and Highway 1 pass through the western portion of the former Fort Ord, separating the beach front from the rest of the base. Laguna Seca Recreation Area and Toro Regional Park border former Fort Ord to the south and southeast, respectively, as well as several small communities such as Toro Park Estates and San Benancio.

The Interim Action sites addressed in this ROD include Ranges 43-48 (498 acres) and Range 30A (388 acres) — located within the former Fort Ord Multi-Range Area (MRA) — and Site OE–16 (80 acres), which is adjacent to the MRA. The MRA consists of numerous firing ranges where personnel were trained in the use of live ammunition. The MRA and Site OE–16 are fenced and posted with signs warning of the dangers associated with OE that is present at these sites, and the site perimeters are patrolled regularly by security personnel.

1.2 Basis and Purpose

The need for Interim Action for OE at Ranges 43–48, Range 30A, and Site OE–16 is based on a number of factors. There are a number of documented incidents involving OE prior to base closure, in which three children and one adult were killed, and 10 people were seriously injured due to trespassing and unauthorized handling of OE found at the MRA. Since Fort Ord closed in 1994, development and reuse of land on and nearby the former Fort Ord has substantially increased public access. A state university, public schools, housing, and major roadways are located in close proximity to the IA sites. Despite existing site security measures such as fences, warning signs and kiosks, regular security patrols, and

public education and outreach regarding potential OE hazards at the former Fort Ord, trespassing incidents continue to occur. And most importantly, Ranges 43–48, Range 30A, and Site OE–16 in particular contain highly dangerous OE (sensitive fuzing and high explosives) on or near ground surface in close proximity to the public).

This Interim Action ROD is the decision document that addresses Interim Action for OE at Ranges 43–48, Range 30A and Site OE–16 at the former Fort Ord. The purpose of this Interim Action ROD is to present the selected remedial actions for reducing immediate hazards from OE at these sites as an Interim Action while a comprehensive study of OE cleanup needs at the former Fort Ord is being conducted under the basewide OE RI/FS. Potential chemical contamination associated with OE was evaluated in the *Final Ordnance Detonation Sampling and Analysis Plan* (*Harding ESE, 2000*) and Basewide RI/FS (*HLA, 1995*). This action is undertaken pursuant to the President's authority under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 104, as delegated to the Army in accordance with Executive Order 12580, and in compliance with the process set out in CERCLA section 120. The remedies were selected in accordance with CERCLA, as amended by the Superfund Amendment and Reauthorization Act (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The selection of these remedies is authorized pursuant to CERCLA section 104, and the selected remedies will be carried out in accordance with CERCLA section 121. This decision is based on documents contained in the Administrative Record for the former Fort Ord.

The Department of Toxic Substances Control (DTSC), a part of the California Environmental Protection Agency (Cal/EPA), has had an opportunity to review and comment on the Army's selected remedies, which are consistent with DTSC's comments. The United States Environmental Protection Agency (EPA) concurs with the Army's selected remedies.

1.3 Site Assessment

The response action selected in this Interim Action Record of Decision is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants at these sites which may present an imminent and substantial endangerment to public health or welfare.

1.4 Description of the Remedies

The selected remedial alternatives described in this Interim Action ROD address current or potential significant risks to human health and the environment posed by OE at Ranges 43–48, Range 30A and Site OE–16 at the former Fort Ord, California as described in the IA OE RI/FS (*Harding ESE, 2002*).

Areas where interim remedial actions are undertaken will be further evaluated under the basewide OE RI/FS for the former Fort Ord to determine the adequacy of actions taken, their consistency with the long-term remedy, and the need for further action, if any. The evaluation will consider:

- The effectiveness of the geophysical detection instruments used
- The potential benefits of newly developed detection technologies
- The consistency of conceptual site models with actual field conditions
- The completeness of interim remedial actions relative to data quality objectives identified for the basewide OE RI/FS

- An assessment of any potential residual OE risks
- An assessment of detonation procedures and any potential environmental effects, and
- The need for long-term risk management measures to address any potential residual OE risks.

The Interim Action cleanup approach to address risks from OE at the Interim Action sites includes three components:

- Vegetation Clearance Alternatives to clear vegetation and provide required ground surface visibility for the safety of OE workers prior to conducting remedial actions
- OE Remedial Action Alternatives to detect and remediate OE, and
- OE Detonation Alternatives to detonate OE identified during remedial actions.

For each of the Interim Action sites, the remedy was selected as described below.

Vegetation Clearance via Prescribed Burning

Prescribed burning will include:

- Preparation of a burn plan outlining the objectives of the burn; the burn area; the range of environmental conditions under which the burn will be conducted; the manpower and equipment resources required to ignite, manage, and contain the fire; a smoke management plan; and establishment of communication procedures for the fire crew and to the public and other affected agencies.
- Site preparation, including removal of debris; establishment and maintenance of primary, secondary, and tertiary containment lines, staging areas, and escape routes; and protection of existing structures by removing nearby vegetation and applying fire suppressant foam or demolishing and removing the structures.
- Conducting the burn within the window of environmental conditions established in the burn plan.
- Conducting the burn in a manner to ensure the fire is fully contained and does not escape the perimeter of the burn area.
- Offering voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn.
- Conducting air monitoring during the prescribed burns; data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative.

OE Remedial Action via Surface and Subsurface OE Removal

Surface and Subsurface OE Removal will consist of identification of OE (conduct a visual search and operate OE detection equipment), and remediation of any OE found/detected on the ground surface of the site and in the subsurface to depths determined in the site-specific work plan. Subsurface OE removal depths will be determined based on: (1) the type of OE, (2) the typical depth at which the OE type is found, (3) planned reuse of specific areas within the Interim Action site, and (4) the capabilities of the geophysical detection equipment selected as best suited for site conditions by the OE site geophysicist.

The programmatic work plan will be amended to specify procedures by which each item discovered will be subject to waste characterization using California's regulations, and those items determined to be hazardous waste pursuant to the definition of hazardous waste will be managed in accord with such regulations. The programmatic work plan is a primary document under the Federal Facility Agreement (FFA) outlining the programmatic approach to OE surface and subsurface removal throughout the former Fort Ord, and it was approved by the DTSC and EPA. The amendment addressing waste characterization will also be approved by DTSC and EPA before the waste characterization process is implemented.

OE Detonation via Detonation with Engineering Controls

OE Detonation with Engineering Controls will consist of applying additional detonating charges to single or consolidated OE items, and applying engineering controls (covering the OE with tamped dirt, sandbags, contained water, or other materials) prior to detonation to reduce the blast and any associated fragmentation, emissions, or noise.

1.5 Statutory Determination

This interim action is protective of human health and the environment in the short term and is intended to provide adequate protection until a final basewide OE ROD is signed for the former Fort Ord; complies with those federal and state requirements that are applicable or relevant and appropriate for this limited-scope action; and is cost-effective. Although this is an interim action which is not designed to fully address the threat posed by OE, it provides for the destruction of identified OE items and thus meets the statutory mandate for remedies which reduce the toxicity (threat of explosion) of OE to the maximum extent practicable. The basewide OE RI/FS will address fully any remaining threats posed by conditions at Ranges 43–48, Range 30A, and Site OE–16. Because this remedy may result in OE remaining on-site, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after commencement of the remedial action. These sites will be evaluated as part of the next comprehensive 5-year review for the former Fort Ord. Because this is an Interim Action ROD, review of this site will be further evaluated under the basewide OE RI/FS for the former Fort Ord.

1.6 ROD Data Certification Checklist

The following information is included in the Decision Summary section of this ROD (Section 2.0). Additional information can be found in the Administrative Record file for this ROD.

Imminent Threat

An imminent threat to trespassers and habitat maintenance workers at the Interim Action sites exists due to hazards associated with OE that must be mitigated to protect human health. The imminent threat is posed by the following site-specific factors:

- The sites contain sensitively fuzed, highly dangerous OE present on the ground surface and predominantly within the uppermost one foot of soil.
- The sites are located 1/2 mile from residential neighborhoods and within 1 mile of several schools.
- Existing access deterrents at the sites such as regular security patrols, barbed-wire and chain link fences posted with warning signs, and reinforced with concertina wire discourage, but do not prevent entry into the sites. Documented trespassing incidents include instances where persons,

including children, have removed training items and ordnance-related scrap within the Interim Action sites.

Baseline Risk

Baseline risk from contact with OE cannot be quantitatively estimated based on current information. However, a qualitative discussion of overall risk due to OE is valuable in evaluating various OE-related factors that lead to adverse human health outcomes. Evaluation of OE risk is best discussed in terms of the likely contact of humans with OE items and the type of OE items. The greater the likelihood of contact, the greater the risk. In general, risks from contact with OE are acute and potentially catastrophic in nature, and may result in crippling injuries or death. Potential receptors at the Interim Action sites include trespassers and habitat maintenance workers.

OE-related factors that are considered in evaluating OE risk and determining the need for remedial action include:

- Size and Type of OE — The smaller the item, the more tempting it is to pick it up. Types of OE may range from inert practice items to high explosives;
- Type of Fuze — Some fuzes are more sensitive than others;
- Amount of OE Present — The more OE present, the more likely some will be found;
- Depth of OE — Surface and shallow subsurface OE items are the most accessible and therefore represent the greatest risk;
- Accessibility of Area Containing OE — The more easily accessible the area, the more likely people will use it; also, the greater the population in close proximity to a site, the more people are likely to use an area.

Cleanup Goals

Remedial actions at the Interim Action sites are being evaluated on an interim basis because the basewide OE RI/FS will not be completed until 2005. Therefore, the cleanup goals for these sites are to: (1) take quick action to protect human health from an imminent threat and/or (2) institute temporary measures to stabilize the Interim Action sites in the short term, while a final remedial solution is being developed under the basewide OE RI/FS for these and other sites at the former Fort Ord. Because of the presence of OE in adjacent areas, appropriate site security measures will be maintained in undeveloped areas at least until a final remedy is selected and implemented.

Source Materials

OE items are the source materials constituting principal threats at the Interim Action sites. As described in Section 2.11, OE will be addressed by: (1) removing vegetation to provide required ground surface visibility for the safety of OE workers prior to conducting remedial actions; (2) detecting and remediating OE on the surface and in the subsurface; and (3) detonating OE found during these actions using engineering controls.

Future Land Use

Current and reasonably anticipated future land use for most of the land within the Interim Action sites is as habitat reserve that will remain undeveloped. Within Ranges 43–48, only Transfer Parcel E21b.3 is planned for development.

Resource Availability

A total of 966 acres of land will have the immediate OE hazard remediated. As a result of the selected remedy, habitat management activities prescribed in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (HMP) (*USACE, 1997*) can be implemented for the majority of land at the Interim Action sites that is designated as habitat reserve, and land can be developed and reused in the remaining areas.

Estimated Costs

Estimated capital costs, annual operation and maintenance (O&M) costs for a period of 5 years, and total present worth costs associated with the selected remedies based on a discount rate of 6.4 percent (Section 2.11) are summarized as follows for Vegetation Clearance, OE Remedial Action, and OE Detonation:

- ***Ranges 43–48*** – Total Cost: $13.6 - $14.2 million (Capital: $13.4 - $14.0 million; 5 Years O&M: $213,000).
- ***Range 30A*** – Total Cost: $8.3 - $9.3 million (Capital: $8.2 - $9.2 million; 5 Years O&M: $149,000).
- ***Site OE–16*** – Total Cost: $1.62 - $1.63 million (Capital: $1.59 - $1.6 million; 5 Years O&M: $30,000).

Key Factors in Selecting the Remedies

Key factors that led to selecting the remedies were identified in the evaluation and comparison of the Interim Action Alternatives based on the nine criteria specified in the NCP and the EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (*EPA, 1988, 2000*). The selected remedies best meet the threshold, balancing, and modifying criteria as follows:

Vegetation Clearance Via Prescribed Burning

Threshold Criteria

- *Overall Protection of Human Health* – Smoke management and offering voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn would minimize impacts of the burn on human health. Prescribed burn workers would conduct burn from safe distance. Protects OE workers by clearing vegetation prior to entering OE sites to conduct remediation. Based on the results of the Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43–48 (Air Emissions Technical Memorandum; Harding ESE, 2001), emissions from OE that may be detonated during prescribed burning are expected to be insignificant and not of concern in terms of human health. Air monitoring will be performed during the prescribed burns and the data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative.

- *Protection of the Environment* – Central maritime chaparral (CMC) has evolved with fire as a critical part of its natural life cycle.

- *Compliance with Applicable or Relevant and Appropriate Requirements* (ARARs) – Complies with ARARs, which includes Endangered Species Act (ESA) and HMP requirements (USACE, 1997) that burning be used as the primary method of vegetation clearance in CMC habitat areas predominant at the Interim Action sites. Complies with air emissions regulations providing technical standards for prescribed burning activities.

Balancing Criteria

- *Short Term-Effectiveness* – Very effective; clears vegetation quickly.

- *Reduction of Toxicity, Mobility, or Volume Through Treatment* – This criterion is not applicable to vegetation clearance.

- *Long Term Effectiveness and Permanence* – Effective in the long term because it has beneficial effects on the regrowth and long term health of CMC vegetation.

- *Implementability* – Easy to implement to clear vegetation over large areas if conducted in close coordination with regulatory agencies and the public. Personnel and equipment are readily available.

- *Cost* – Ranges 43–48 – $1.92 million.
  Range 30A – $1.52 million.
  Site OE–16 – $318,000.

Modifying Criteria

- *State Acceptance* –The DTSC has had an opportunity to review and comment on the Army's selected vegetation clearance alternatives, which are consistent with DTSC's comments.

- *Community Acceptance* – On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of vegetation clearance via prescribed burning was met with both support and a range of concerns by the public as described in the Responsiveness Summary (Section 3.0). Members of the public expressed concern regarding potential impacts from smoke that will be generated during prescribed burning. The Army plans to minimize potential impacts from prescribed burning through implementation of a burn plan (including a smoke management plan) and offering voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn. In addition, air monitoring will be performed during the prescribed burns.

OE Remedial Action Via Surface and Subsurface OE Removal

Threshold Criteria

- *Overall Protection of Human Health and the Environment* – Protective; remediates OE hazards consistent with planned reuse. Minor destruction to environment in locating OE. Mitigation per HMP.

- *Compliance with ARARs* – Complies with ARARs.

Balancing Criteria

- *Short Term-Effectiveness* – Very effective; remediates OE.

- *Reduction of Toxicity, Mobility, or Volume Through Treatment* – Would reduce toxicity (threat of explosion), mobility and volume of OE.

- *Long Term Effectiveness and Permanence* – Very effective in the long term at reducing OE risks because it remediates all OE to depths consistent with planned reuse of the Interim Action sites. Because of the presence of OE in adjacent areas, site security measures such as a fence will remain in undeveloped areas until a final remedy is selected and implemented.

- *Implementability* – Difficult to implement over large areas, but equipment and personnel are available. Performed for many years at the former Fort Ord.

- *Cost – Ranges 43–48* – $10.63 to $11.16 million (depending on depth of subsurface OE removal)
  Range 30A – $6.69 to $7.72 million (depending on depth of subsurface OE removal)
  Site OE–16 – $1.29 to $1.30 million (depending on depth of subsurface OE removal)

Modifying Criteria

- *State Acceptance* –The DTSC has had an opportunity to review and comment on the Army's selected OE remedial action alternatives, which are consistent with DTSC's comments.

- *Community Acceptance* – On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of OE remedial action via surface and subsurface removal was generally accepted by the public as described in the Responsiveness Summary (Section 3.0). The public recognized the need for cleanup of OE to address safety issues facing communities in and near the former Fort Ord and to prepare for beneficial reuses of the land. Some members of the public supported selection of the enhanced site security measures alternative while long term response actions for OE are being evaluated under the basewide OE RI/FS (scheduled for completion in 2005). OE remediation at these sites was determined to be the most effective means of mitigating OE risks because enhanced site security measures are not as effective at addressing the following site conditions: (1) numerous trespassing events have been documented at the Interim Action sites in recent years (including children climbing fences and removing training items and ordnance related scrap), (2) the sites are located near several residential neighborhoods and schools, and (3) site security measures deter but do not prevent trespassing.

OE Detonation Via Detonation with Engineering Controls

Threshold Criteria

- *Overall Protection of Human Health and the Environment – Protective*. Emissions from OE detonations are expected to be insignificant and not of concern in terms of human health based on information evaluated for the Final Ordnance Detonation Sampling and Analysis Plan (Detonation SAP; Harding ESE, 2000). Potential chemical contamination associated with detonation of OE is expected to be insignificant and not of concern in terms of human health based on the results of the Basewide RI/FS (HLA, 1995).

- *Compliance with ARARs* – Complies with ARARs.

Balancing Criteria

- *Short Term-Effectiveness* – Very effective; removes explosive hazard through detonation of OE.
- *Reduction of Toxicity, Mobility, or Volume Through Treatment* – Would reduce OE risks.
- *Long Term Effectiveness and Permanence* – Very effective in the long term for reducing OE risks through detonation.
- *Implementability* – Easy to implement because it is performed as part of OE remediation. Performed for many years at the former Fort Ord. Equipment and personnel are readily available.
- *Cost – Ranges 43–48 – $1.1 million*
  Range 30A – $124,000
  Site OE–16 – $13,000

Modifying Criteria

- *State Acceptance* –The DTSC has had an opportunity to review and comment on the Army's selected OE detonation alternatives, which are consistent with DTSC's comments.
- *Community Acceptance* – On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of OE detonation via detonation with engineering controls was generally accepted by the public as described in the Responsiveness Summary (Section 3.0). Some members of the public also supported use of a detonation chamber for those OE items that could be safely picked up and transported to a chamber for detonation. A detonation chamber captures and cleans the demolition gases, contains fragmentation, reduces noise associated with the detonation, and may reduce associated fire risks for transportable OE items. However, based on site-specific OE data collected during recent surface removals at the Interim Action sites, only a small percentage of OE items at these sites could be safely picked up and transported to a detonation chamber. In addition, engineering controls typically used for detonations (such as covering the OE with tamped dirt, sandbags, contained water, or other materials) also control and minimize the blast and any fragmentation, emissions, or noise associated with detonations. Emissions and potential chemical contamination from OE are expected to be insignificant and not of concern in terms of human health based on the results of the Final Ordnance Detonation Sampling and Analysis Plan (Harding ESE, 2000) and Basewide RI/FS (HLA, 1995).

Record of Decision
Interim Action For Ordnance and Explosives at Ranges 43–48, Range 30A, and Site OE–16
Former Fort Ord, California

Signature Sheet for the foregoing Record of Decision for interim action for ordnance and explosives at Ranges 43-48, Range 30A, and Site OE-16, Former Fort Ord, California, among the United States Army, the United States Environmental Protection Agency, and the California Environmental Protection Agency, Department of Toxic Substances Control.

Raymond J. Fatz

Raymond J. Fatz
Deputy Assistant Secretary
Department of the Army
Office of the Deputy Assistant, Secretary of the Army
(Environment, Safety, and Occupational Health)

13 SEP 2002

Date

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Signature Sheet for the foregoing Record of Decision for interim action for ordnance and explosives at Ranges 43–48, Range 30A, and Site OE–16, Former Fort Ord, California, among the United States Army, the United States Environmental Protection Agency, and the California Environmental Protection Agency, Department of Toxic Substances Control.

Deborah Jordan
Chief, Federal Facility and Site Cleanup Branch
U.S. Environmental Protection Agency
Region IX

9-20-02
Date

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Former Fort Ord, California

Signature Sheet for the foregoing Record of Decision for interim action for ordnance and explosives at Ranges 43–48, Range 30A, and Site OE–16, Former Fort Ord, California, among the United States Army, the United States Environmental Protection Agency, and the California Environmental Protection Agency, Department of Toxic Substances Control.

The State of California, Department of Toxic Substances Control (DTSC) had an opportunity to review and comment on the Interim Action Record of Decision (ROD) and our concerns were addressed.

Anthony J. Landis, P.E.
Chief of Operations
Office of Military Facilities
California Environmental Protection Agency
Department of Toxic Substances Control

9-26-02
Date

2.0 DECISION SUMMARY

2.1 Site Description

The former Fort Ord is located near Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco (Plate 1). The base comprises approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. The Southern Pacific Railroad and Highway 1 pass through the western portion of former Fort Ord, separating the beachfront from the rest of the base. Laguna Seca Recreation Area and Toro Regional Park border former Fort Ord to the south and southeast, respectively, as well as several small communities such as Toro Park Estates and San Benancio.

2.2 Site History

Since the base was selected in 1991 for Base Realignment and Closure and was officially closed in September 1994, site visits, historic and archival investigations, OE sampling, and removal actions have been performed and documented in preparation for transfer and reuse of former Fort Ord property. The Ord Military Community, located within the Main Garrison portion of former Fort Ord, will be retained by the Army. Since base closure in September 1994, lands outside the Ord Military Community have been subjected to the reuse process. Some of the property on the installation has been transferred. A large portion of former Fort Ord lands was assigned to the Bureau of Land Management (BLM). Other areas on the installation have been or will be transferred to federal, state, local, and private entities through economic development conveyance, public benefit conveyance, negotiated sale, or other means.

2.3 History of OE Use

Since 1917, portions of the Installation were used by infantry units for maneuvers, target ranges, and other purposes. OE that have been fired into, fired upon, or used on the facility include artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, practice land mines, pyrotechnics, bombs, and demolition materials. A wide variety of conventional OE items have been located at sites throughout the former Fort Ord, including pyrotechnics and explosives.

2.4 Enforcement and Regulatory History

The reuse of the former Fort Ord following transfer of property increases the possibility of the public being exposed to explosive hazards. In November 1998, the Army agreed to evaluate OE at former Fort Ord in an OE RI/FS consistent with the CERCLA. A Federal Facility Agreement (FFA) was signed in 1990 by the Army, EPA, and DTSC (formerly the Department of Health Services or DHS) and the California Regional Water Quality Control Board (RWQCB). The FFA established schedules for performing remedial investigations and feasibility studies and requires that remedial actions be completed as expeditiously as possible. In April 2000, an agreement was signed between the Army, EPA and DTSC to evaluate OE at the former Fort Ord subject to the provisions of the Fort Ord FFA.

The Army is preparing the basewide OE RI/FS for the former Fort Ord to address OE-related hazards, which will include input from the community and require regulatory agency review and approval. The basewide OE RI/FS will review and evaluate past investigative and removal actions, as well as recommend future response actions deemed necessary to protect human health and the environment on the basis of proposed reuses specified in the Fort Ord Reuse Authority (FORA) Reuse Plan or as amended or periodically updated.

Information will be gathered and evaluated during the basewide OE RI/FS to categorize all areas of the former Fort Ord according to actions that have been taken or future remedial actions that are identified as necessary to mitigate hazards associated with OE. The information will be evaluated with regard to site knowledge, the quality of the available information, work completed, and intended future land uses. The basewide OE RI/FS for the former Fort Ord will consider all property at the base in terms of past OE-related use and potential future OE hazards as described in the basewide OE RI/FS Work Plan (*USACE, 2000*). The basewide OE RI/FS is organized as a "tracking" process whereby sites with similar characteristics will be grouped to expedite cleanup, reuse, and/or transfer based on current knowledge.

A No Action ROD addressed areas on the former Fort Ord that have been identified as requiring no OE-related action to protect human health (public safety) and the environment (referred to as Track 0 areas). Other Track (1 through 3) areas will be addressed separately for the other lands that have or are suspected to have a history of OE-related use. An area is assigned to a specific track according to the level of OE investigation, sampling, or removal conducted to date as described in the basewide OE RI/FS Work Plan (*USACE, 2000*). The Track 3 ROD is scheduled to be completed in 2005. Basewide OE RI/FS documents have been and will be prepared in cooperation with the regulatory agencies and will be reviewed and approved by the EPA and DTSC. The documents will also be placed in the Administrative Record and made available for public review and comment.

2.5 Highlights of Community Participation

In March, 2002 the Army issued the Final IA OE RI/FS report (*Harding ESE, 2002*) and presented the Interim Action Proposed Plan for Ranges 43–48, Range 30A and Site OE–16 at former Fort Ord to the public for review and comment (*Army, 2002*). The Proposed Plan presented the preferred alternatives for each site and summarized information in the IA OE RI/FS and other documents in the Administrative Record. These documents are available to the public at the following locations:

- Chamberlin Library, Building 4275, General Jim Moore Boulevard, Ord Military Community (formerly Fort Ord), California
- Seaside Branch Library, 550 Harcourt Street, Seaside, California
- California State University, Monterey Bay, Library Learning Center, 100 Campus Center, Building 12, Seaside, California.

The Administrative Record is available at Building 4463, Gigling Road, Ord Military Community (formerly Fort Ord), California, Monday through Friday from 9:00 a.m. to 4:00 p.m.

Comments on the Proposed Plan were accepted during a public review-and-comment period beginning on March 12, 2002. At the request of the public the comment period was extended from 30 days to 60 days, ending on May 13, 2002. Public meetings were held on March 25, 2002, at the Oldemeyer Center, 986 Hilby Avenue, Seaside California and on March 26, 2002, at Spreckels Veterans Memorial Building, Corner of 5th Street & Llano Avenue, Spreckels, California. At that time, the public had the opportunity to ask the Army and regulatory agencies questions and orally and verbally submit their comments on the Proposed Plan. In addition, written comments were accepted during the public comment period. Responses to comments received during the public comment period are included in the Responsiveness Summary presented in Section 3 of this ROD. Two minor changes to the remedies in the Proposed Plan are described in Section 2.16.

2.6 Scope and Role of the Interim Action

An interim action is a remedial action that can be implemented quickly and that, although not necessarily intended as a final remedial measure at a site, substantially reduces immediate risks to human health or the environment. This Interim Action ROD describes remedial actions to be taken for OE at each of the Interim Action sites, and will neither be inconsistent with, nor preclude, implementation of a final remedy, which will be evaluated in the basewide OE RI/FS.

2.7 Rationale for Conducting an Interim Action for OE

The Army, as the lead agency, has determined that an interim action is appropriate to protect human health from the imminent threat posed by OE at Ranges 43–48, Range 30A, and Site OE-16 and is warranted for the following reasons:

- These sites contain sensitively fuzed, highly dangerous OE present on the ground surface and predominantly within the uppermost one foot of soil.
- Existing access deterrents such as regular security patrols, barbed-wire and chain link fences and gates posted with warning signs, and reinforced with concertina wire discourage, but do not prevent entry into the sites. Trespassers may knowingly or unknowingly come in contact with these items and cause them to explode.
- Documented trespassing incidents include instances where persons, including children, have removed training items and ordnance related scrap. These sites are located less than 1/2 mile from residential neighborhoods and within 1 mile of several schools.

2.8 Summary of Site Risks

All three Interim Action sites evaluated are in close proximity to residential areas. Although these sites are fenced and posted with warning signs to limit access to authorized personnel only, trespassing incidents have been recorded. Many types of OE items have been found at the ranges, but chief among these are small and easily portable items containing extremely sensitive fuzes, such as 40 millimeter (mm) grenades, antitank rockets, and various high explosive (HE) projectiles and mortar rounds. Because of the nature of the ordnance used on these ranges, much of it is on the surface and is readily accessible to unauthorized personnel. The surface and shallow subsurface OE items represent the greatest risk. In general, risks from contact with OE are acute and potentially catastrophic in nature, and may result in crippling injuries or death.

2.9 Site Descriptions, Risks and Proposed Reuse

Descriptions of the Interim Action sites; risks from OE; types and amounts of OE; site locations, their public proximity, and access; and proposed reuses are described below.

2.9.1 Ranges 43–48

2.9.1.1 Site Description

Ranges 43–48 cover approximately 498 acres to the south of Eucalyptus Road in the south-central portion of the former Fort Ord (Plate 3). The majority of the site is designated as habitat reserve and will remain undeveloped (473 acres), and a limited portion of the site (25 acres) will be developed and reused.

These ranges were part of the former Fort Ord's Multi-Range Area (MRA) and are categorized as firing ranges where personnel were trained in the use of live ammunition. The MRA is fenced and posted with signs warning of the dangers associated with OE. Vegetation at Ranges 43-48 mainly consists of CMC with some grassland areas.

Training facilities maps indicate these ranges were used for a variety of live fire exercises from the 1940s through the 1990s. Records and recent field investigations indicate the ammunition used at these ranges included 4.2-inch, 60mm, and 81mm mortars; 14.5mm subcaliber projectiles; 35mm subcaliber rockets; 90mm recoilless rifle rounds; 84mm high explosive antitank (HEAT) projectiles; 40mm HE grenades; 66mm light antitank weapon (LAW); small arms; practice anti-personnel mines; dragon guided missiles; practice claymore mines; and fragmentation hand grenades.

2.9.1.2 Risks from OE

In general, risks from contact with OE are acute and potentially catastrophic in nature, and may result in crippling injuries or death. The risks from OE at Ranges 43–48, including its location, public proximity, and access are summarized below.

2.9.1.3 Types and Amounts of OE

The former firing ranges contain sensitively fuzed, highly dangerous OE present on the ground surface or at shallow depths below the ground. As described above, numerous types of OE ranging from hand grenades to 90mm recoilless rifle rounds are known or suspected to be on the site. During recent limited surface removals in 2001, thousands of OE items were recovered at Ranges 43-48.

2.9.1.4 Location, Public Proximity and Access

This Interim Action site is adjacent to (less than 4,000 feet from) residential neighborhoods at Ord Military Community (Fitch and Marshall Parks) and is near the City of Seaside. The Fitch and Martin Luther King Jr. Middle Schools are located less than a mile from Ranges 43–48 (Plate 2). Existing site security measures include: four-strand barbed-wire fencing with one to two rolls of concertina wire behind it, chain link gates reinforced with concertina wire, and warning signs posted approximately every 500 feet along the fencing. In the last three years, five documented incidents of persons trespassing into the Ranges 43–48 site occurred. In 1999, there were two documented cases of children entering the fenced MRA at Ranges 44 and 45, and collecting and removing 40mm practice grenades found on the ground surface. Although no one was injured in these incidents, it substantiates the premise that fences posted with warning signs deter, but do not prevent entry.

2.9.1.5 Proposed Reuse

The majority of this Interim Action site is designated as habitat reserve and will remain undeveloped (portions of BLM Parcels F1.4.2, F1.4.10.1, F1.4.10.2, F1.8, F1.9.1, F1.9.2, F1.10, F1.11.1, and F1.11.2). Future reuse of Transfer Parcel E21b.3 is development.

2.9.2 Range 30A

2.9.2.1 Site Description

Range 30A includes approximately 388 acres located in the southeastern portion of the MRA, approximately 1,500 feet north of South Boundary Road and to the west of Barloy Canyon Road (Plate 4). The Interim Action site was identified based on the presence of 40mm HE projectiles and is

designated as habitat reserve. Range 30A is part of the former Fort Ord MRA and is categorized as a firing range where personnel were trained in the use of live ammunition. The MRA is fenced and posted with signs warning of the dangers associated with OE. Vegetation at Range 30A mainly consists of CMC with some grassland areas.

Range 30A was constructed in 1990 as a 40mm machine gun range and was in use until 1993. According to the Fort Ord Training Ranges Standard Operating Procedure (SOP), the only weapon authorized for use at Range 30A from 1991 and 1992 was the MK19 40mm machine gun, Mod 3. Ammunition authorized for use at Range 30A included HE, high explosive dual purpose (HEDP) and target practice (TP).

2.9.2.2 Risks from OE

The risks from OE at Range 30A, including its location, public proximity, and access are summarized below.

2.9.2.3 Types and Amounts of OE

Range 30A is known to contain sensitively fuzed, highly dangerous 40mm grenades and evidence of 60mm and 81mm mortars and 37mm, 75mm, 155mm, and 8-inch projectiles. Limited surface removals in 2001 in the accessible areas of Range 30A have recovered hundreds of whole or partial OE and OE scrap items.

2.9.2.4 Location, Public Proximity and Access

The Range 30A Interim Action site is located in close proximity (approximately 2,200 feet north) to the Laguna Seca residential area and Laguna Seca Golf Course, and less than a mile from the Laguna Seca Raceway (Plate 2). South Boundary Road, located approximately 2,000 feet to the south, is open to vehicular traffic during events at Laguna Seca Raceway and is always open to the public for jogging, hiking, and biking. This range was part of the former Fort Ord's MRA and is categorized as a firing range where personnel were trained in the use of live ammunition. The MRA is fenced and posted with signs warning of the dangers associated with OE. Existing access deterrents include: four-strand barbed-wire fencing with one to two rolls of concertina wire behind it, chain link gates reinforced with concertina wire, and warning signs posted approximately every 500 feet along the fencing. In 2001 alone, two incidents of damaged fencing that may have been caused by trespassers occurred within 2,000 feet of Range 30A (near Range 30), and three other incidents of fence damage were reported within 4,000 feet of the range (near Range 29). Although no one was injured in these incidents, it substantiates the premise that fences posted with warning signs deter, but do not prevent entry.

2.9.2.5 Proposed Reuse

As part of the closure of the former Fort Ord, the MRA will be transferred to the BLM and most of the MRA will remain undeveloped as habitat reserve. The HMP (*USACE, 1997*) presents the revised boundaries of the habitat reserve areas and describes special land restrictions and habitat management requirements for target species within the reserve areas. Management of the habitat reserve area will fall under the jurisdiction of BLM.

2.9.3 Site OE–16

2.9.3.1 Site Description

Site OE–16 includes approximately 80 acres located immediately north of the former Fort Ord MRA, between Eucalyptus and Parker Flats roads and bounded by Watkins Gate Road to the east (Plate 5). This site will become habitat reserve and will remain undeveloped. The Bureau of Land Management (BLM) land (immediately adjacent) is open to the public for hiking, biking, jogging, and horseback riding. Site OE–16 is surrounded by a temporary 6-foot high chain linked fence. The site is posted with signs warning of the dangers associated with unexploded ordnance. Vegetation at Site OE–16 mainly consists of CMC with some grassland areas.

Site OE–16 is a World War II (WWII) era rocket range, and is identified as a "bazooka practice" area on Fort Ord Training Facilities maps dating from 1945 and 1946. Available training maps after 1946 do not identify the bazooka practice area. According to Fort Ord Range Control, this range was probably used as an antitank rocket range during and shortly after WWII. Available information indicates that Site OE–16 had been used for training and live fire exercises from approximately the 1940s until the time the base was officially closed in 1994. Practice and HEAT rockets and rifle grenades were used in the 1940s and possibly the early 1950s. The site was later used for a portion of time as an anti-armor training area. Evidence from the site indicates that both practice and HEAT rounds were used.

2.9.3.2 Risks from OE

The risks from OE at Site OE–16, including its location, public proximity, and access are summarized below.

2.9.3.3 Types and Amount of OE

Site OE–16 contains sensitively fuzed, highly dangerous OE, such as HEAT projectiles, present on the ground surface or at shallow depths below the ground. During recent limited surface removals in 2001, hundreds of OE items, including expended and live 2.36-inch rockets (practice and HEAT), practice antitank mines, rifle grenades, hand grenade fuzes, and OE scrap were recovered.

2.9.3.4 Location, Public Proximity and Access

Site OE–16 is located adjacent to the MRA and land that has been transferred to the BLM. The BLM land is open to the public for hiking, biking, jogging, and horseback riding. Site OE–16 is surrounded by a temporary 6-foot high chain linked fence posted with signs warning of the dangers associated with unexploded ordnance. The site is in close proximity to a residential neighborhood (Fitch Park) on the former Fort Ord (Plate 2). In 2001, an incident of persons trespassing within the MRA adjacent to Site OE–16 was reported. In addition, five incidents of trespassing into the MRA adjacent to Site OE–16 occurred within the last three years. Although no one was injured in these incidents, it substantiates the premise that fences posted with warning signs deter, but do not prevent entry.

2.9.3.5 Proposed Reuse

The land that includes Site OE–16 will be transferred to the BLM and will remain undeveloped as habitat reserve. The HMP for former Fort Ord (*USACE, 1997*) presents the revised boundaries of the habitat reserve areas and describes special land restrictions and habitat management requirements for target species within the reserve areas. Management of the habitat reserve area will fall under the jurisdiction of BLM.

2.10 Interim Remedial Action Objectives

The Interim Remedial Action Objectives (Interim RAOs) are to reduce risks to human health and the environment associated with OE and comply with federal and state ARARs.

2.11 Descriptions of Alternatives

In order to perform comprehensive OE-related actions at these sites, a three-tiered approach to developing Interim Action Alternatives was used. Interim Action Alternatives for each of the three Interim Action sites include the following components:

- Vegetation Clearance Alternatives
- OE Remedial Action Alternatives
- OE Detonation Alternatives.

The methods considered for each of the three-tiered alternatives are described below, followed by site-specific descriptions of the alternatives.

Vegetation Clearance Alternatives

Vegetation Clearance Alternatives consist of site preparation procedures to clear vegetation to bare ground or approximately 6 inches above ground surface. This will allow the proper operation of OE detection equipment and will provide the required ground surface visibility for the safety of OE cleanup workers. Based on the screening and evaluation of vegetation clearance methods presented in the Interim Action OE RI/FS, the following methods were retained for further consideration for all three Interim Action sites and are described below:

- No Action
- Prescribed Burning
- Mechanical Cutting Methods
- Manual Cutting Methods.

No Action

The No Action Alternative is provided, as required under the CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes no action would be taken to clear vegetation prior to remedial activities.

Prescribed Burning

Prescribed burning is the use of fire under a specific set of conditions to burn vegetation. Prescribed burning is used in a large number of plant communities in California to achieve a range of objectives. The most common uses of prescribed burning are: fuel hazard reduction and control; range improvement; agricultural land clearing; commercial forest stand improvements; slash reduction or removal (tree cutting operations); and habitat maintenance or enhancement. The CMC community that occurs at the former Fort Ord is similar to other California chaparral associations, having herbaceous and shrub plant species which are considered dependent on fire for reproduction. Reproductive strategies that relate to the

occurrence of fire include the release of dormancy by heating (*Wright, 1931*), and the reduction or alteration of chemicals either on the seed coat or in the soil, which inhibit reproduction (*Muller, 1966; Christensen and Muller, 1975*). Several of these plant species are either uncommon or endemic to the Monterey Peninsula, and include federally endangered and state threatened species. These species are subject to management provisions of the HMP that include the use of prescribed burning for habitat maintenance or enhancement (*USACE, 1997*).

Mechanical Cutting Methods

Mechanical cutting is conducted by an operator situated on self-propelled equipment in the area being cleared. An example would be a worker operating a tractor from inside the cab. This method consists of using human-operated equipment in three basic configurations to cut vegetation: tractor pulled, track-carriers with booms, and skid-steer. Mechanical clearance would have adverse impacts on rare, threatened and endangered plants present at the Interim Action sites during and after implementation because it does not facilitate the long-term health and functioning of their habitat. If CMC vegetation is mechanically cleared, it likely will not grow back as diverse or healthy and may result in converting CMC habitat to more common vegetation types. The HMP identifies species and habitats of concern at Fort Ord and outlines mitigation measures to reduce or avoid impacts. The mitigation measures established in the HMP are intended to ensure successful regeneration of special status species and their habitats following remedial actions. For instance, implementation of mechanical clearance in habitat reserve areas containing chaparral greater than 50 acres in size would not be consistent with the Biological and Conference Opinion (*USFWS, 1993, 1997*) issued by the United States Department of the Interior, Fish and Wildlife Service (USFWS) in accordance with the ESA.

Vegetation that is mechanically cleared would typically be chipped or shredded as it is cut to minimize handling, and the chips would be broadcast across the site. Based on Fort Ord-specific experience, although the chipped material falls onto the ground and may reduce visibility of the ground surface, it does not have a significant impact on identification of OE items using OE detection equipment.

Manual Cutting Methods

Manual cutting is conducted by an operator who is on foot while operating the equipment. Examples would be a worker using pruning shears or a handheld trimmer fitted with a brush blade. This method involves cutting and clearing of vegetation using motorized chainsaws, power chippers, mowers, weed eaters, and non-motorized hand tools such as clippers and loppers. Cutting would have the same adverse impacts on rare, threatened and endangered plants as would be caused by mechanical cutting. Implementation of manual clearance in habitat reserve areas containing chaparral greater than 50 acres in size would not be consistent with the Biological and Conference Opinion (*USFWS, 1993, 1997*) issued by the United States Department of the Interior, Fish and Wildlife Service (USFWS) in accordance with the ESA.

Vegetation that is manually cleared would fall onto the ground and cover OE and reduce visibility. In order to clear cut vegetation from the ground surface, significant additional labor would be required to gather and stockpile it in staging areas, and shred or chip it to reduce its volume. This could cause workers to come into direct contact with OE.

OE Remedial Action Alternatives

OE Remedial Action Alternatives address actions to reduce threats associated with the presence of OE at the Interim Action sites. Based on the evaluation of OE Remedial Action Alternatives presented in the Interim Action OE RI/FS the following methods were retained for further consideration for all three Interim Action sites and are described below:

- No Action with Existing Site Security Measures
- Enhanced Site Security Measures
- Surface and Subsurface OE Removal.

No Action with Existing Site Security Measures

The No Action with Existing Site Security Measures Alternative is provided, as required under CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes existing site access restrictions such as fencing, warning signs, and regular security patrols would be maintained in accordance with the OE Site Security Program Summary (*Army, 2001*). There are no capital costs associated with the No Action with Existing Site Security Measures Alternative.

Enhanced Site Security Measures

Enhanced Site Security Measures would include improvements to existing site security measures at the Interim Action sites, and makes the following assumptions:

- Existing fencing will be upgraded to the maximum level possible to deter access.
- Large warning signs will be posted at a greater frequency along fencing and at access roads or gates that lead to the Interim Action site
- The frequency of patrols will be increased around the perimeter of the site.

Specifically, existing four-strand barbed wire or chain link fencing will be replaced with permanent 10-foot chain link fencing reinforced with concertina wire around the entire boundaries of the sites. Existing access gates will be replaced with 10-foot high chain link gates reinforced with concertina wire. The integrity of the fencing will be monitored weekly and repaired and maintained. Warning signs will be posted every 100 feet along the fence, and larger warning signs (4 foot by 6 foot) will be posted at each access gate. The frequency of patrols of perimeter fencing and access gates will be increased from every eight hours to every four hours.

Surface and Subsurface OE Removal

Surface and subsurface OE Removal will consist of identification of OE (conduct a visual search and operate OE detection equipment), and remediation of any OE found/detected on the ground surface of the site and in the subsurface to depths determined in each site-specific work plan. Subsurface OE removal depths will be determined based on (1) the type and amount of OE, (2) the typical depth the type of OE is found, (3) planned reuse of specific areas within the Interim Action site, and (4) the capabilities of the geophysical detection equipment selected as best suited for site conditions by the OE site geophysicist. The site-specific work plan, a primary document under the FFA outlining the surface removal approach and planned subsurface OE removal depths, will be available for regulatory agency and public review and comment.

OE Detonation Alternatives

OE Detonation consists of detonating any OE found during remediation of OE after vegetation clearance has been performed. OE workers would conduct a visual search and walk the site using geophysical OE detection equipment. Any OE identified visually or using the detection equipment would be handled as follows:

Small Arms/Subcaliber OE Items - including bullets/ammunition and expended practice 35mm subcaliber M73 rockets (without spotting charge) would be transported to an approved, state and/or RCRA permitted offsite facility for treatment and/or recycling. These transportable OE items would be excluded from onsite procedures and are not considered further in the evaluation of detonation alternatives.

Nontransportable OE Items – For the purposes of addressing OE at the former Fort Ord, non-transportable OE items include those that are non-movable (unsafe to move under any circumstances), and moveable (may be moved by hand only within close proximity to their original position for consolidation and/or to ensure detonations are performed under the safest possible conditions). Except under extraordinary circumstances, movable OE items will not be moved until the day of detonation. Because nontransportable OE items are extremely dangerous and cannot be moved except under the circumstances described above, detonation-in-place with engineering controls is the selected alternative for all nontransportable OE items. Although detonation of OE has the potential to release air pollutants to the atmosphere, the information evaluated for the Detonation SAP (*Harding ESE, 2000*) suggest that air emissions from ordnance detonations at the former Fort Ord are not expected to be significant. In addition, detonation would be performed in conjunction with engineering controls that typically consist of covering the OE item to dampen the explosion and in turn minimize OE-related emissions as described below.

Transportable OE Items – For the purposes of addressing OE at the former Fort Ord, transportable OE items are those that, as determined by the OE contractor and the Army (with concurrence of the United States Army Corps of Engineers [USACE] UXO Safety Specialist), may be transported by vehicle from their original position for the purposes of storage, consolidation with other items for detonation, or for offsite destruction. A range of methods for detonation of transportable OE items are available and potentially applicable at the Interim Action sites.

For OE items that can be transported (excluding small arms/subcaliber OE items as described above), engineering controls and use of a detonation chamber are detonation methods that are available and potentially applicable at the Interim Action sites. Engineering controls include covering the OE with tamped dirt, sandbags, contained water, or other materials, and using foam tents or bomb pots prior to detonation to control the blast and any fragmentation, emissions, or noise that would be associated with the detonation. The foam tent is not approved for use by Department of Defense Explosives Safety Board (DDESB) and the bomb pot is not designed for destruction of OE and does not contain emissions (it merely controls the direction of the blast by funneling it upward). Therefore, these methods are eliminated from further consideration as engineering controls. Only one type of detonation chamber (the Donovan Chamber) is approved for use by the DDESB, and is described below. Emissions from detonated OE are expected to be insignificant and not of concern in terms of human health based on information evaluated for the Detonation SAP (*Harding ESE, 2000*). Based on the screening and analysis of the OE detonation methods, the following methods were retained for further consideration as OE Detonation Alternatives and are described below:

- No Action
- Detonation with Engineering Controls
- Detonation Chamber and Detonation with Engineering Controls.

No Action

The No Action Alternative is required for consideration under CERCLA and the NCP as a baseline for comparison to the other alternatives, and would consist of taking no action to detonate any OE items found at the Interim Action sites. There is no cost associated with the No Action Alternative.

Detonation with Engineering Controls

The Detonation with Engineering Controls Alternative consists of applying explosive charges to single or consolidated OE items, and applying engineering controls (covering the OE with tamped dirt, sandbags, contained water, or other materials) prior to detonation. These controls will reduce the blast, fragmentation, emissions, or noise that would be associated with the detonation. This method would be applicable and well suited for detonations at the Interim Action sites because it can be performed in any location OE is found during remediation of OE. Emissions from detonated OE are expected to be insignificant and not of concern in terms of human health based on information evaluated for the Detonation SAP (*Harding ESE, 2000*).

Detonation Chamber and Detonation with Engineering Controls

The Detonation Chamber and Detonation with Engineering Controls Alternative consists of operation of the Donovan Blast Chamber for transportable OE items and using detonation with engineering controls as described above for nontransportable OE items. As described above, the Donovan Chamber is the only type of chamber approved for use by the DDESB. The Donovan Chamber is a detonation containment device capable of withstanding multiple detonations. Based on recent Time-Critical Removal Action surface removals and on general OE removal data collected during previous OE removals at the former Fort Ord, approximately 80 percent of OE items anticipated to be found at Ranges 43-48 would be nontransportable items that are too dangerous to be transported to the temporary detonation chamber locations. For approximately 20 percent of the OE items anticipated to be found, this method would contain the noise and emissions, contain fragmentation, and reduce fire risks associated with detonations, but would require handling and transfer of OE over the Interim Action sites to temporary chamber locations immediately within the perimeter of the Interim Action sites (i.e., access gates, firing points). For the other 80 percent of the OE items found, applying engineering controls (covering the OE with tamped dirt, sandbags, contained water or other materials) prior to detonation to control the blast would also reduce noise and emissions, contain fragmentation, and reduce fire risks associated with detonations, but not to the same degree as detonation in the chamber.

2.11.1 Description of Alternatives – Ranges 43-48

Vegetation Clearance Alternatives

Vegetation Clearance Alternatives consist of site preparation procedures to clear vegetation to bare ground or approximately 6 inches above ground surface. This will allow the proper operation of OE detection equipment and will provide the required ground surface visibility for the safety of OE cleanup workers.

No Action

The No Action Alternative is provided, as required under the CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes no action would be taken to clear vegetation prior to remedial activities.

Capital Cost: $0

Annual O&M $0

Prescribed Burning

Prescribed burning under a specific set of conditions to burn vegetation. Includes costs for voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn.

Capital Cost: $1.7 million

Annual O&M Cost: $50,000

5 Year O&M net present value (NPV): $213,000

Mechanical Cutting Methods

Mechanical cutting conducted by an operator situated on self-propelled equipment in the area being cleared.

Capital Cost: $1.4 million

Annual O&M Cost: $50,000

5 Year O&M NPV: $213,000

Manual Cutting Methods

Manual cutting conducted by an operator who is on foot while operating the equipment.

Capital Cost: $2.5 million

Annual O&M Cost: $50,000

5 Year O&M NPV: $213,000

OE Remedial Action Alternatives

OE Remedial Action Alternatives address actions to reduce threats associated with the presence of OE at the Interim Action sites.

No Action with Existing Site Security Measures

The No Action with Existing Site Security Measures Alternative is provided, as required under CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes existing site access restrictions such as fencing, warning signs, and regular security patrols would be maintained in accordance with the OE Site Security Program Summary (*Army, 2001*).

Capital Cost: $0

Annual O&M Cost: $55,000

5 Year O&M NPV: $235,000

Enhanced Site Security Measures

Enhanced Site Security Measures would include improvements to existing site security measures at the Interim Action sites, and makes the following assumptions:

- Existing fencing will be upgraded to the maximum level possible to deter access
- Large warning signs will be posted at a greater frequency along fencing and at access roads or gates that lead to the Interim Action site
- The frequency of patrols will be increased around the perimeter of the site.

Capital Cost: $1.1 million

Annual O&M Cost: $785,000

5 Year O&M NPV: $3.4 million

Surface and Subsurface OE Removal

Surface and Subsurface OE Removal consists of identification of OE (conduct a visual search and operate OE detection equipment), and remediation of any OE found/detected on the ground surface of the site and in the subsurface to depths determined in each site-specific work plan. The site-specific work plan, a primary document under the FFA outlining the surface removal approach and planned subsurface OE removal depths, will be available for regulatory agency and public review and comment. Subsurface OE removal depths will be determined based on (1) the type and amount of OE, (2) the typical depth the type of OE is found, (3) planned reuse of specific areas within the Interim Action site, and (4) the capabilities of the geophysical detection equipment selected as best suited for site conditions by the OE site geophysicist. Costs for Subsurface OE Removal are based on a range of costs associated with conducting a 1 ft. to 4 ft. OE removal consistent with the planned reuse in specific areas of the site.

Capital Cost: $$10.63 to $11.16 million

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Alternatives

OE Detonation consists of detonating any OE found during identification and/or remediation of OE after vegetation clearance has been performed.

No Action

The No Action Alternative is required for consideration under CERCLA and the NCP as a baseline for comparison to the other alternatives, and would consist of taking no action to detonate any OE items found at the Interim Action sites. There is no cost associated with the No Action Alternative.

Capital Cost: $0

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation with Engineering Controls

The Detonation with Engineering Controls Alternative consists of applying explosive charges to single or consolidated OE items, and applying engineering controls (covering the OE with tamped dirt, sandbags, contained water, or other materials) prior to detonation.

Capital Cost: $1,073,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Chamber and Detonation with Engineering Controls

The Detonation Chamber and Detonation with Engineering Controls Alternative consists of operation of the Donovan Blast Chamber for transportable OE items (approximately 20 percent of the total items) and using detonation with engineering controls as described above for nontransportable OE items (approximately 80 percent of the total items).

Capital Cost: $1,140,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Cost estimates for these remedial alternatives are from the Final Draft IA OE RI/FS (*Harding ESE, 2002).*

2.11.2 Description of Alternatives – Range 30A

Vegetation Clearance Alternatives

Vegetation Clearance Alternatives consist of site preparation procedures to clear vegetation to bare ground or approximately 6 inches above ground surface. This will allow the proper operation of OE detection equipment and will provide the required ground surface visibility for the safety of OE cleanup workers.

No Action

The No Action Alternative is provided, as required under the CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes no action would be taken to clear vegetation prior to remedial activities.

Capital Cost: $0

Annual O&M Cost $0

Prescribed Burning

Prescribed burning under a specific set of conditions to burn vegetation. Includes costs for voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn.

Capital Cost: $1.4 million

Annual O&M Cost: $35,000

5 Year O&M NPV: $149,000

Mechanical Cutting Methods

Mechanical cutting conducted by an operator situated on self-propelled equipment in the area being cleared.

Capital Cost: $1.1 million

Annual O&M Cost: $35,000

5 Year O&M NPV: $149,000

Manual Cutting Methods

Manual cutting conducted by an operator who is on foot while operating the equipment.

Capital Cost: $2.0 million

Annual O&M Cost: $35,000

5 Year O&M NPV: $149,000

OE Remedial Action Alternatives

OE Remedial Action Alternatives address actions to reduce threats associated with the presence of OE at the Interim Action sites.

No Action with Existing Site Security Measures

The No Action with Existing Site Security Measures Alternative is provided, as required under CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes existing site access restrictions such as fencing, warning signs, and regular security patrols would be maintained in accordance with the OE Site Security Program Summary (*Army, 2001*).

Capital Cost: $0

Annual O&M Cost: $38,000

5 Year O&M NPV: $164,000

Enhanced Site Security Measures

Enhanced Site Security Measures would include improvements to existing site security measures at the Interim Action sites, and makes the following assumptions:

- Existing fencing will be upgraded to the maximum level possible to deter access

- Large warning signs will be posted at a greater frequency along fencing and at access roads or gates that lead to the Interim Action site
- The frequency of patrols will be increased around the perimeter of the site.

Capital Cost: $1.0 million

Annual O&M Cost: $752,000

5 Year O&M NPV: $3.2 million

Surface and Subsurface OE Removal

Surface and subsurface OE Removal consists of identification of OE (conduct a visual search and operate OE detection equipment), and remediation of any OE found/detected on the ground surface of the site and in the subsurface to depths determined in each site-specific work plan. The site-specific work plan, a primary document under the FFA outlining the surface removal approach and planned subsurface OE removal depths, will be available for regulatory agency and public review and comment. Subsurface OE removal depths will be determined based on (1) the type and amount of OE, (2) the typical depth the type of OE is found, (3) planned reuse of specific areas within the Interim Action site, and (4) the capabilities of the geophysical detection equipment selected as best suited for site conditions by the OE site geophysicist. Costs for Subsurface OE Removal are based on a range of costs associated with conducting a 1 ft. to 4 ft. OE removal consistent with the planned reuse in specific areas of the site.

Capital Cost: $6.8 to 7.7 million

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Alternatives

OE Detonation consists of detonating any OE found during remediation of OE after vegetation clearance has been performed.

No Action

The No Action Alternative is required for consideration under CERCLA and the NCP as a baseline for comparison to the other alternatives, and would consist of taking no action to detonate any OE items found at the Interim Action sites. There is no cost associated with the No Action Alternative.

Capital Cost: $0

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation with Engineering Controls

The Detonation with Engineering Controls Alternative consists of applying explosive charges to single or consolidated OE items, and applying engineering controls (covering the OE with tamped dirt, sandbags, contained water, or other materials) prior to detonation.

Capital Cost: $124,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Chamber and Detonation with Engineering Controls

The Detonation Chamber and Detonation with Engineering Controls Alternative consists of operation of the Donovan Blast Chamber for transportable OE items (approximately 20 percent of the total items) and using detonation with engineering controls as described above for nontransportable OE items (approximately 80 percent of the total items).

Capital Cost: $136,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Cost estimates for these remedial alternatives are from the Final Draft IA OE RI/FS (*Harding ESE, 2002).*

2.11.3 Description of Alternatives – Site OE–16

Vegetation Clearance Alternatives

Vegetation Clearance Alternatives consist of site preparation procedures to clear vegetation to bare ground or approximately 6 inches above ground surface. This will allow the proper operation of OE detection equipment and will provide the required ground surface visibility for the safety of OE cleanup workers.

No Action

The No Action Alternative is provided, as required under the CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes no action would be taken to clear vegetation prior to remedial activities.

Capital Cost: $0

Annual O&M $0

Prescribed Burning

Prescribed burning under a specific set of conditions to burn vegetation. Includes costs for voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn.

Capital Cost: $288,000

Annual O&M Cost: $7,000

5 Year O&M NPV: $30,000

Mechanical Cutting Methods

Mechanical cutting conducted by an operator situated on self-propelled equipment in the area being cleared.

Capital Cost: $228,000

Annual O&M Cost: $7,000

5 Year O&M NPV: $30,000

Manual Cutting Methods

Manual cutting conducted by an operator who is on foot while operating the equipment.

Capital Cost: $411,000

Annual O&M Cost: $7,000

5 Year O&M NPV: $30,000

OE Remedial Action Alternatives

OE Remedial Action Alternatives address actions to reduce threats associated with the presence of OE at the Interim Action sites.

No Action with Existing Site Security Measures

The No Action with Existing Site Security Measures Alternative is provided, as required under CERCLA and the NCP, as a baseline for comparison to the other proposed alternatives. This alternative assumes existing site access restrictions such as fencing, warning signs, and regular security patrols would be maintained in accordance with the OE Site Security Program Summary (*Army, 2001*).

Capital Cost: $0

Annual O&M Cost: $8,000

5 Year O&M NPV: $35,000

Enhanced Site Security Measures

Enhanced Site Security Measures would include improvements to existing site security measures at the Interim Action sites, and makes the following assumptions:

- Existing fencing will be upgraded to the maximum level possible to deter access
- Large warning signs will be posted at a greater frequency along fencing and at access roads or gates that lead to the Interim Action site
- The frequency of patrols will be increased around the perimeter of the site.

Capital Cost: $412,000

Annual O&M Cost: $336,000

5 Year O&M NPV: $1.4 million

Surface and Subsurface OE Removal

Surface and subsurface OE Removal consists of identification of OE (conduct a visual search and operate OE detection equipment), and remediation of any OE found/detected on the ground surface of the site and in the subsurface to depths determined in each site-specific work plan. The site-specific work plan, a primary document under the FFA outlining the surface removal approach and planned subsurface OE removal depths, will be available for regulatory agency and public review and comment. Subsurface OE removal depths will be determined based on (1) the type and amount of OE, (2) the typical depth the type of OE is found, (3) planned reuse of specific areas within the Interim Action site, and (4) the capabilities of the geophysical detection equipment selected as best suited for site conditions by the OE site geophysicist. Costs for Subsurface OE Removal are based on a range of costs associated with conducting a 1 ft. to 4 ft. OE removal consistent with the planned reuse in specific areas of the site.

Capital Cost: $1.29 to $1.3 million

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Alternatives

OE Detonation consists of detonating any OE found during remediation of OE after vegetation clearance has been performed.

No Action

The No Action Alternative is required for consideration under CERCLA and the NCP as a baseline for comparison to the other alternatives, and would consist of taking no action to detonate any OE items found at the Interim Action sites. There is no cost associated with the No Action Alternative.

Capital Cost: $0

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation with Engineering Controls

The Detonation with Engineering Controls Alternative consists of applying explosive charges to single or consolidated OE items, and applying engineering controls (covering the OE with tamped dirt, sandbags, contained water, or other materials) prior to detonation.

Capital Cost: $13,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Detonation Chamber and Detonation with Engineering Controls

The Detonation Chamber and Detonation with Engineering Controls Alternative consists of operation of the Donovan Blast Chamber for transportable OE items (approximately 20 percent of the total items) and using detonation with engineering controls as described above for nontransportable OE items (approximately 80 percent of the total items).

Capital Cost: $28,000

Annual O&M Cost: $0

5 Year O&M NPV: $0

Cost estimates for these remedial alternatives are from the Final Draft IA OE RI/FS (*Harding ESE, 2002).*

2.12 Comparative Analysis of Alternatives

The evaluation of Interim Action Alternatives is discussed within the following three categories that encompass the nine criteria:

- **Effectiveness** (Includes Overall Protection of Human Health and the Environment, Compliance with ARARs, Short-Term Effectiveness, Long-Term Effectiveness and Permanence, and Reduction of Toxicity, Mobility, or Volume through Treatment)
- **Implementability** (Includes State and Community Acceptance)
- **Cost**

The three evaluation criteria categories used in the comparative analysis are described below:

Effectiveness

Effectiveness is the ability of the alternative to provide protection of human health and the environment in the short term and comply with ARARs. The evaluation of each alternative is based on the effectiveness of the alternative in: (1) meeting the Interim RAOs, (2) minimizing potential impacts to human health and the environment during and following implementation, (3) the reliability, proven history, and permanence of the alternative with respect to the conditions found at the site, (4) the ability of the alternative to achieve reduction of toxicity, mobility, or volume through treatment of the components of concern, and (5) the ability to meet federal and state applicable requirements.

Implementability

Implementability is based on the technical and administrative feasibility of applying a given alternative. Technical feasibility considerations include the availability of clearance, removal, storage, and disposal services, necessary equipment, and skilled workers to implement a particular option. Administrative feasibility includes obtaining necessary regulatory approvals. State and community comments on the IA OE RI/FS and Proposed Plan have been received and are addressed in Section 3.0 of this ROD.

Cost

Capital and operations and maintenance (O&M) costs are estimated for each alternative based on quotes for labor, materials, and equipment necessary to implement the alternative. For annual O&M costs, the NPV is calculated over a period of years based on a 6.4 percent interest rate (Source: *Engineering News*

Record Cost Index for Construction, January, 2002). The cost estimates have an accuracy of +50 percent/-30 percent. Cost estimates for these remedial alternatives are from the Final Draft IA OE RI/FS (*Harding ESE, 2002)*.

Tables 1 through 3 summarize the comparative analyses of alternatives for each of the three Interim Action sites.

2.13 Principal Threat Waste

The NCP establishes an expectation that the lead agency will use treatment to address the principal threats posed at a site whenever practicable as described in NCP §300.430(a)(1)(iii)(A). OE in general is the source material constituting a principal threat at the Interim Action sites.

Source materials that pose a principal threat at the Interim Action sites are as follows:

Ordnance and explosives (OE) — OE is anything related to munitions designed to cause damage to personnel or material through explosive force or incendiary action, including bombs; warheads; missiles; projectiles; rockets; antipersonnel and antitank mines; demolition charges; pyrotechnics; grenades; torpedoes and depth charges; high explosives and propellants; and all similar and related items or components explosive in nature or otherwise designed to cause damage to personnel or material.

Unexploded ordnance (UXO) — UXO is a military munition that contains an explosive or pyrotechnic charge and has been primed, fuzed, armed, or otherwise prepared for action, and that has been fired, placed, dropped, launched, projected, and remains unexploded by design or malfunction. These can be, but are not limited to, high-explosive warheads, rocket motors, practice munitions with spotting charges, torpedoes, artillery and mortar ammunition, grenades, incendiary munitions, electroexplosive devices, and propellant-actuated devices. Fuzes with live explosive boosters or dets are classified as UXO. Some kick-outs from open detonation or open burn operations may be UXO.

Source materials that do not pose a principal threat at the Interim Action sites are as follows:

Ordnance and explosives scrap (OE scrap) — OE scrap includes those wholly inert items such as inert practice items, which are fragments of functioned ordnance, as designed or intentionally destroyed, and which contain no explosive or energetic material. OE scrap is inert and does not pose a safety risk.

2.14 Selected Remedies

The selected remedy for each of the sites is summarized below based on the evaluation and comparison of alternatives presented in Tables 1 through 3.

2.14.1 Vegetation Clearance Via Prescribed Burning

Effectiveness

- Overall Protection of Human Health – Although smoke generated during prescribed burning has the potential for impacting human health, site preparation, smoke management, and voluntary temporary relocation for any Monterey County resident who wishes to relocate during a prescribed burn would minimize impacts of the burn on human health. Prescribed burn workers would conduct the burn from a safe distance. Protects OE workers by clearing vegetation prior to entering OE areas to conduct remediation. Based on the results of the *Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43–48, Former Fort Ord, Monterey, California (Harding ESE, 2001)* (Air Emissions Technical

Memorandum), air pollutant emissions from incidental OE detonation during a prescribed burn in Ranges 43 through 48 (also applicable to burning of CMC habitat at the other Interim Action sites) would be minor compared to emissions contributed directly by biomass burning, and would result in pollutant concentrations well below health-protective regulatory screening levels. Air monitoring will be performed during the prescribed burns and the data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative.

- Protection of the Environment – CMC has evolved with fire as a critical part of its natural life cycle, and wildlife has adapted to fire.

- Compliance with ARARs – Complies with ARARs which includes ESA, as well as HMP requirements (*USACE, 1997*) that burning be used as the primary method of vegetation clearance in CMC habitat areas predominant at the Interim Action sites. Complies with air emissions regulations providing technical standards for prescribed burning activities.

- Short Term-Effectiveness – Very effective; clears vegetation quickly.

- Reduction of Toxicity, Mobility, or Volume Through Treatment – This criterion is not applicable to vegetation clearance.

- Long Term Effectiveness and Permanence – Effective in the long term because it has beneficial effects on the regrowth and long term health of CMC vegetation.

Implementability

- Prescribed burning can be implemented to clear vegetation over large areas if conducted in close coordination with regulatory agencies and the public. Voluntary relocation effort will require significant effort. Personnel and equipment are readily available.

- State and Community Acceptance –The DTSC has had an opportunity to review and comment on the Army's selected vegetation clearance alternative, which is consistent with DTSC's comments. On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of vegetation clearance via prescribed burning was met with both support and a range of concerns by the public as described in the Responsiveness Summary (Section 3.0). Some members of the public expressed concern regarding potential impacts from smoke that will be generated during prescribed burning. The Army plans to minimize potential impacts from prescribed burning through implementation of a burn plan (including a smoke management plan), and offering voluntary temporary relocation for any Monterey County residents who wish to relocate during a prescribed burn. In addition, air monitoring will be performed during the prescribed burns.

Cost

- Ranges 43-48 – Total estimated cost is $1.9 million.

- Range 30A – Total estimated cost is $1.5 million.

- Site OE–16 – Total estimated cost is $318,000.

2.14.2 OE Remedial Action Via Surface and Subsurface OE Removal

Effectiveness

- Overall Protection of Human Health and the Environment – Protective; remediates OE hazards consistent with planned reuse. Minor destruction to environment in locating OE. Mitigation per HMP.
- Compliance with ARARs – Complies with ARARs.
- Short Term-Effectiveness – Very effective; remediates OE.
- Reduction of Toxicity, Mobility, or Volume Through Treatment – Would reduce mobility and volume of OE.
- Long Term Effectiveness and Permanence – Very effective in the long term at reducing OE risks because it removes OE to depths consistent with planned reuse of the Interim Action site.

Implementability

- Difficult to implement over large areas, but equipment and personnel are available. Performed for many years at the former Fort Ord.
- State and Community Acceptance –The DTSC has had an opportunity to review and comment on the Army's selected OE remedial action alternative, which is consistent with DTSC's comments. On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of OE remedial action via surface and subsurface OE removal was generally accepted by the public as described in the Responsiveness Summary (Section 3.0). The public recognized the need for cleanup of OE to address safety issues facing communities in and near the former Fort Ord and to prepare for beneficial reuses of the land. Some members of the public supported selection of the enhanced site security measures alternative while long term response actions for OE are being evaluated under the basewide OE RI/FS (scheduled for completion in 2005). OE remediation at these sites was determined to be the most effective means of mitigating OE risks because enhanced site security measures are not as effective at addressing the following site conditions: (1) numerous trespassing events have been documented at the Interim Action sites in recent years (including children climbing fences and removing training items and ordnance related scrap), (2) the sites are located near several residential neighborhoods and schools, and (3) site security measures deter but do not prevent trespassing.

Cost

- Ranges 43-48 – Total estimated cost ranges from $10.6 to $11.2 million
- Range 30A – Total estimated cost ranges from $6.8 to $7.7 million
- Site OE-16 – Total estimated cost ranges from $1.29 to $1.3 million.

2.14.3 OE Detonation Via Detonation with Engineering Controls

Effectiveness

- Overall Protection of Human Health and the Environment – Protective. Previous study has shown that air and soil emissions from detonations are expected to be insignificant (*Harding ESE, 2000*).
- Compliance with ARARs – Complies with ARARs.
- Short Term-Effectiveness – Very effective; removes explosive hazard through detonation of OE.
- Reduction of Toxicity, Mobility, or Volume Through Treatment – Would reduce OE risks.
- Long Term Effectiveness and Permanence – Very effective in the long term for reducing OE risks through detonation.

Implementability

- Easy to implement because it is performed as part of OE remediation. Performed for many years at the former Fort Ord. The necessary equipment and personnel are readily available.
- State and Community Acceptance –The DTSC has had an opportunity to review and comment on the Army's selected OE detonation alternative, which is consistent with DTSC's comments. On the basis of written and verbal comments received from the public during public review of the IA OE RI/FS and Proposed Plan, the selected remedy of OE detonation via OE detonation with engineering controls was generally accepted by the public as described in the Responsiveness Summary (Section 3.0). Members of the public also supported use of a detonation chamber for those OE items that could be safely picked up and transported to a chamber for detonation. A detonation chamber captures and cleans the demolition gases, contains fragmentation, reduces noise associated with the detonation, and reduces associated fire risks for transportable OE items. However, based on site-specific OE data collected during recent surface removals at the Interim Action sites, a small percentage of OE items at these sites could be safely picked up and transported to a detonation chamber. In addition, engineering controls typically used for detonations (such as covering the OE with tamped dirt, sandbags, contained water, or other materials) also control and minimize the blast and any fragmentation, emissions, or noise associated with detonations. Emissions and potential chemical contamination from detonated OE are expected to be insignificant and not of concern in terms of human health based on information evaluated for the Detonation SAP (*Harding ESE, 2000*) and Basewide RI/FS (*HLA, 1995*). The effectiveness of detonation methods will be evaluated based on the analysis of the data gathered during the remedial action at Ranges 43–48 and/or ongoing actions performed as part of the basewide OE RI/FS.

Cost

- Ranges 43-48 – Total estimated cost is $1.1 million
- Range 30A – Total estimated cost is $124,000
- Site OE-16 – Total estimated cost is $13,000.

Total Selected Remedy Costs

The total costs for the Selected Remedy for the sites, which includes Vegetation Clearance, OE Remedial Action, and OE Detonation is estimated as follows:

- **Ranges 43-48** – TOTAL: $13.6 - $14.2 million (Capital: $13.4 - $14.0 million; 5 Year O&M: $213,000).
- **Range 30A** – TOTAL: $8.3 - $9.3 million (Capital: $8.2 - $9.2 million; 5 Year O&M: $149,000).
- **Site OE-16** – TOTAL: $1.62 - $1.63 million (Capital: $1.59 - $1.6 million; 5 Year O&M: $30,000).

2.15 Statutory Determinations

This interim action is protective of human health and the environment in the short term and is intended to provide adequate protection until a final ROD is signed; complies with those federal and state requirements that are applicable or relevant and appropriate for this limited-scope action; and is cost-effective. Although this is an interim action which is not designed to fully address the threat posed by OE, it provides for the destruction of identified OE items and thus meets the statutory mandate for remedies which reduce the toxicity (threat of explosion) of OE to the maximum extent practicable. The basewide OE RI/FS will address fully any remaining threats posed by conditions at Ranges 43–48, Range 30A, and Site OE–16. Because this remedy may result in OE remaining on-site, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after commencement of the remedial action. Because this is an Interim Action ROD, review of this site will be further evaluated under the basewide OE RI/FS for the former Fort Ord.

2.16 Documentation of Significant Changes

There were no significant changes to the selected interim remedies outlined in the Proposed Plan. The following minor changes were made:

- The Ranges 43–48 Interim Action site was initially identified as 555 acres including Site OE-15MOCO.2 (coincident with transfer parcel E21b.3) and the eastern portion of Site OE-15SEA.4 (portion of transfer parcel E23.2). In response to comments received on the Draft IA OE RI/FS, the Army reduced the Ranges 43–48 Interim Action site by approximately 82 acres within these two sites that are designated for future development. In addition, minor adjustments to the boundaries of the habitat reserve and future development areas within the site resulted in adjustment of the boundary for the Ranges 43–48 Interim Action site to include 473 acres of habitat reserve area and 25 acres of development area, for a total of 498 acres. Additional minor boundary changes may be necessary in order to conduct the prescribed burn in a safe manner. The approximate boundary for the Ranges 43–48 Interim Action site is shown on Plate 3.
- The potential ARARs presented in the Final IA OE RI/FS have been subject to ongoing review and discussion between the Army, EPA and DTSC. An updated list of ARARs is included in Appendix A of this ROD.

3.0 RESPONSIVENESS SUMMARY

3.1 Overview

At the time of the public review period for the *Army's Superfund Proposed Plan: Interim Action Is Proposed For Vegetation Clearance, Ordnance and Explosives Remedial Action, and Ordnance and Explosives Detonation, Ranges 43–48, Range 30A, and Site OE–16, Former Fort Ord, California*, dated March 8, 2002, the Army identified Prescribed Burning for Vegetation Clearance; Surface and Subsurface Ordnance and Explosives (OE) Removal for OE Remedial Action; and Detonation with Engineering Controls for OE Detonation as the preferred Interim Action alternatives for Ranges 43–48, Range 30A, and Site OE–16 (the Interim Action sites) at the former Fort Ord.

Summary of Public Comments

On the basis of the written and verbal comments received, the Army's Proposed Plan was received by the public with mixed reviews. While there is a general recognition of the need to clear OE at these sites, substantial concerns have been expressed regarding the selected alternative of prescribed burning for vegetation clearance because of the potential for impacts of burning and associated smoke on the surrounding community. On the other hand, many individuals expressed support for the selected alternative on the basis of substantial environmental benefit and from the perspective of fire safety. The issues and concerns expressed in the public comments are categorized below, and the Army's responses are provided in Section 3.3:

A. Interim Action Cleanup Approach. In general, the public supported Interim Action for cleanup of OE. However, several members of the public requested an extension of the Proposed Plan review period, and raised concerns about: 1) the purpose of the proposed Interim Action, 2) why it has taken so long to initiate the cleanup, and 3) whether the selected alternatives were the best alternatives in terms of their potential impacts on human health and the environment. There were also differing views from members of the public on whether the alternatives selected for vegetation clearance (prescribed burning), OE remedial action (surface and subsurface OE removal), and OE detonation (detonation with engineering controls) were the best alternatives to be implemented out of all of those evaluated in the Interim Action OE RI/FS, and whether sufficient detail had been provided regarding how the alternatives would be implemented.

B. Proposed Plan Scope. Some members of the public felt the Proposed Plan did not include sufficient information on: 1) the methods to be used for OE detection, 2) details on the number of people that will voluntarily relocate during prescribed burning and the costs of voluntary relocation to the community, 3) who will pay for damages if prescribed fires get out of control, and 4) how the Army plans to ready areas adjacent to the planned burn areas (near homes and other public areas) in case the prescribed fires get out of control.

C. Community Issues. Concerns were expressed regarding the safety of the community due to the presence of OE at the former Fort Ord in close proximity to residential neighborhoods and schools. Although the public supports OE remedial action to address OE risks, they also expressed concern regarding the safety of people living near areas that will undergo interim action. Some members of the public were also concerned that the economic livelihood of certain communities was affected by the closure of the former Fort Ord, and that cleanup-related economic opportunities should be offered to the affected communities.

D. Regulatory Issues. Several members of the public cited statutes they thought should be considered for Interim Action for OE and for OE in general at the former Fort Ord, such as the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Some expressed that an Environmental Impact Statement (EIS) should be performed that looks at all the health impacts associated with taking the action outlined in the Proposed Plan, and specifically for prescribed burning for vegetation clearance and detonation of OE. Others thought that OE present at the Interim Action sites is a hazardous waste, and hazardous materials will be released as OE is detonated during the proposed actions, and that such a release is governed by Land Disposal Restrictions and presents threats to human health and the environment. Some members of the public felt the issue of hazardous chemicals being released should be evaluated further before the Interim Action is implemented.

E. Prescribed Burning for Vegetation Clearance. Many issues regarding prescribed burning were raised by members of the public. Many supported prescribed burning because: 1) they felt is was the most effective way of clearing vegetation for OE remedial action to be conducted safely, 2) controlled (prescribed) burning would lessen the potential for future wildfires, and 3) it is beneficial to the type of habitat that occurs at the Interim Action sites. Many were also against prescribed burning because they were concerned about the fire getting out of control and endangering the public, and they were concerned about adverse health effects of smoke exposure from burning vegetation and OE that would be detonated by the fire.

F. Voluntary Relocation Issues During Prescribed Burning. Members of the public were concerned about the impacts of voluntary relocation during prescribed burns, including: 1) which communities would be offered voluntary relocation by the Army, 2) how the Army will make sure everyone knows when the burns will occur, 3) whether non-citizens that live and work in the area will be offered voluntary relocation, 4) how long people will need to be voluntarily relocated, 5) whether voluntary relocation costs could be paid up-front for people who cannot afford out-of-pocket expenses and later reimbursement, 6) whether the environment to which voluntarily relocated citizens will return after the burn will be safe in terms of after-effects of the burn such as ash deposits, and 7) how claims for potential property and health damages can be filed and how insurance coverage will be handled.

Other Comments. One individual forwarded copies of 449 postcards that were addressed to Congressman Farr, and requested they be considered as public comments to the Proposed Plan opposing the prescribed burning. Some postcards were dated between July and October of 2001 prior to issuance of the Proposed Plan and Draft IA OE RI/FS report, and were not submitted by the individuals directly to the Army as public comments on the Interim Action Proposed Plan. However, the Army acknowledges that the concerns expressed in the postcards do exist in the community and address them in this Responsiveness Summary. The postcards included opinions that an Environmental Impact Statement (EIS) should be prepared before burning and that public health would be better protected through preparation of an EIS (see response to Comment D1); opposition to the prescribed burning and toxic burning at the former Fort Ord (see response to Comment E2); opinions that a health assessment should be conducted (see responses to Comments E3 and D2); concerns that air emissions from burning at the former Fort Ord could be hazardous to public health, and burning poison oak could be irritable to smoke-sensitive individuals (see response to Comment E3); opinions that alternatives to burning should be considered (see response to Comment A5); and opinions that any decision should be supported by science (see response to Comment A5). :

3.2 Background on Community Involvement

In 1991, the former Fort Ord was added to the Base Realignment and Closure (BRAC) List. The economic impact of the former Fort Ord's closure has created much community interest relative to the

potential economic reuse of portions of the former Fort Ord. The Interim Action sites are under consideration mainly for habitat reserve.

Focused community involvement regarding the Proposed Plan has most recently involved the public's review of the Army's Proposed Plan for Interim Action. A 30-day public comment period began March 12, 2002 and was extended to 60 days at the request of the public, closing on May 13, 2002.

This responsiveness summary responds to written comments received during the public comment period as well as oral comments expressed during the public meetings conducted on March 25 and March 26, 2002.

3.3 Summary of Comments Received During the Public Comment Period and Department of the Army Responses

Comments raised during the Interim Action Proposed Plan public comment period are categorized by six topics as summarized below: A) Interim Action Cleanup Approach, B) Proposed Plan Scope, C) Community Issues, D) Regulatory Issues, E) Prescribed Burning for Vegetation Clearance, and F) Voluntary Relocation Issues During Prescribed Burning, and are summarized in Section 3.4.

A. Interim Action Cleanup Approach

Several comments on the Interim Action cleanup approach were made as summarized below. In general, the public supported Interim Action for cleanup of OE. While there is a general recognition of the need to clear OE at these sites, substantial concerns have been expressed regarding the selected alternative of prescribed burning for vegetation clearance because of the potential for impacts of smoke on the surrounding community. The Army is working to reduce the potential for exposure through careful planning for the burns and offering voluntary temporary relocation for any Monterey County residents who wish to relocate during the prescribed burns. In addition, air monitoring will be performed during the prescribed burns and the data will be used to further evaluate prescribed burning as the vegetation clearance alternative.

As summarized below, several members of the public raised concerns about the purpose of Interim Action for OE, and the selected alternatives, and requested an extension of the Proposed Plan review period.

A1. Many members of the public supported the overall approach to Interim Action cleanup for OE because safety is the main issue and is a top priority. Many comments were received that cleanup of OE in preparation for reuse of land at the former Fort Ord will benefit the public, and the efforts of the Army, regulatory agencies, and other involved parties in developing a sound cleanup approach for OE are appreciated. Many people stated that they support the Army in proceeding with implementation of the preferred alternatives (prescribed burning for vegetation clearance followed by surface and subsurface OE removal and detonation with engineering controls). In addition, several people questioned why it has taken so long to implement the cleanup of OE at the Interim Action sites (and cleanup of OE in general at the former Fort Ord), and were unclear regarding the intended reuse of the Interim Action sites.

Response: The Army is committed to conducting Interim Action cleanup for OE because of the presence of live, sensitively fuzed surface OE items at the Interim Action sites, their close proximity to residential neighborhoods and schools, and the history of trespassing incidents at these sites. The Army has been conducting vegetation clearance and OE sampling and OE removal actions at the former Fort Ord for many years, and continues to do so in high priority areas that are accessible using vegetation clearance methods other than prescribed burning. However, OE is potentially present on thousands of acres at the former Fort Ord, which will take time to investigate and clean up. In the mean time, the Army is

conducting a basewide OE RI/FS for all of the former Fort Ord, which is scheduled to be completed in 2005. The basewide OE RI/FS will consist of a comprehensive evaluation of all OE-related data for the entire former Fort Ord (including data from OE sampling and removal actions and interim actions), including long-term response alternatives for cleanup and risk management of OE. As stated in the Proposed Plan and clarified in Section 2.16, the intended reuse of the Interim Action sites is primarily as habitat reserve (941 acres) with some limited development (25 acres).

A2. Several members of the public requested a 30-day extension to the public comment period for the Superfund Interim Action Proposed Plan. Some members of the public also requested that comments made during the Question and Answer session of the March 25 and March 26, 2002 public meetings be included by reference as comments on the Proposed Plan and the transcript become part of the Administrative Record. In addition, copies of Interim Action and other related documents were requested to be distributed to specific individuals that had not yet received them, and the Army was asked about the possibility of holding additional public meetings on the Proposed Plan.

Response: A 30-day public comment period began March 12, 2002 and was extended to 60 days at the request of the public, closing on May 13, 2002. Comments made during the Proposed Plan public meeting are addressed within this responsiveness summary. Regarding the public meeting, it is clear from a review of the transcripts and the agenda that the meeting facilitator repeatedly announced to the meeting participants that only comments made during the "public comment period" portion of the meeting would be considered. Copies of requested documents were distributed by the Army to individuals that expressed an interest in receiving them. In addition, the Army has made documents related to the Interim Action OE RI/FS available for public review; copies are available in the former Fort Ord Administrative Record, in the information repositories, and on the web site www.fortordcleanup.com. Regarding the possibility of holding an additional public meeting, the Army believes sufficient opportunities for the public to meet and discuss the proposed interim action have been provided. The Army conducted the following meetings as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Superfund and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP):

- Two public meetings were held on March 25 and 26, 2002 that specifically addressed the Proposed Plan. These meetings included "Question and Answer" sessions with a panel of experts, and provided opportunities to submit verbal or written comments. Written comments were also welcomed any time during the 60-day public comment period in person at the Army's offices, or via regular or electronic mail.

Additional public input opportunities were provided as follows:

- Two Former Fort Ord Environmental Cleanup Symposium meetings were held on September 19 and November 14, 2001 that addressed vegetation clearance and other aspects of the proposed interim action, and members of the public were invited to submit written comments during these meetings.

- A Former Fort Ord Environmental Cleanup Open House was held on January 12, 2002 that addressed the proposed interim action, and members of the public were invited to submit written comments during the Open House.

- A Community Involvement Workshop was held on February 6, 2002 that addressed the proposed interim action, and members of the public were invited to submit written comments during the workshop.

- Two Technical Review Committee meetings were held on February 7 and May 9, 2002 that addressed the proposed interim action.

- Three Community Bulletins (approximately 50,000 copies) were mailed to citizens living in the postal regions of Monterey, Seaside, Del Rey Oaks, Marina, and unincorporated areas of south Salinas (including Spreckels) that addressed vegetation clearance and other aspects of the proposed interim action.

- Former Fort Ord Cleanup Newsletters were sent to citizens on the Army's direct mailing list that addressed vegetation clearance and other aspects of the proposed interim action.

A3. Some members of the public were unclear that the purpose of the Interim Action was to clean up OE and not just clear vegetation since so much attention had been focused on the pros and cons of prescribed burning as a vegetation clearance method.

Response: The Army acknowledges a significant amount of attention has been focused on the use of prescribed burning as a vegetation clearance alternative during community meetings and in community bulletins that addressed Interim Action for OE. This level of attention was due to the Army's recognition of past and current public concerns regarding the potential for fires to escape and the effects of smoke on human health and the environment if prescribed burning was implemented for vegetation clearance. As stated in the IA OE RI/FS and the Proposed Plan, the purpose of the interim action is to address OE risks through remedial action on an interim basis because the basewide OE RI/FS will not be completed until 2005, and there is a need to (1) take quick action to protect human health from an imminent threat and/or (2) institute temporary measures to stabilize the Interim Action sites in the short term, while a final remedial solution is being developed under the basewide OE RI/FS for these sites. The Proposed Plan clearly states that OE risks can be addressed by implementing interim action alternatives that consist of three components: (1) vegetation clearance, (2) OE remedial action, and (3) OE detonation.

A4. Several people felt Interim Action was being driven by the need to protect trespassers from being injured at the Interim Action sites, and that consideration of potential risks to people voluntarily trespassing should not outweigh the potential risks to the community at large from involuntary exposure to air emissions from prescribed burning and OE detonations. In addition, information on mechanisms the Army has in place for citizens to report information on potential OE burial locations was requested.

Response: The Army recognizes there are public concerns regarding prescribed burning and OE cleanup being conducted adjacent to populated areas, and that OE remedial activities may have impacts on people at the former Fort Ord and in surrounding communities. Please see Response to Comments D2, E2, and E3 below that provide the Army's response to concerns regarding air emissions from prescribed burning and OE detonations. The Army acknowledges the potential for OE to be buried at the former Fort Ord, which will be evaluated under the basewide OE RI/FS. The Army regularly publishes notices in its public outreach and information materials and on its Website (www.fortordcleanup.com) on how citizens can report potential OE burial locations or other OE-related information in person, by mail, or by calling the Army's telephone hotline for reporting any OE-related information.

The purpose of the Interim Action is to prevent any accidental injury from OE. The need for Interim Action for OE at Ranges 43–48, Range 30A, and Site OE–16 is based on the following factors:

- *Deaths and Serious Injuries Occurred Even When Access Was Restricted.* Prior to base closure, Fort Ord operated as a restricted access "closed" military training installation. During this time, restricted access, the presence of soldiers and live fire training, and site security measures

dissuaded people from trespassing into the MRA and other OE areas. Even so, three children and one adult were killed, and 10 people were seriously injured due to trespassing and unauthorized handling of OE found at the MRA.

- *Public Access Has Substantially Increased Since Base Closure*. Since Fort Ord closed in 1994, development and reuse of land on and nearby the installation has substantially increased public access compared to when it was restricted. There are now:
  - A public university and large student population at the installation (California State University, Monterey Bay)
  - Civilians living in former military housing less than one mile from the MRA
  - Numerous recreational uses of land transferred to BLM (such as hiking, biking, equestrian, orienteering, etc.) in areas bordering the MRA
  - Major public roads throughout the installation, including one used to enter a public automobile raceway that draws large crowds of people on a regular basis (located less than one mile from the MRA), and
  - 10 public schools located within three miles of the MRA (two less than a mile away).

- *Documented Trespassing Has Occurred an Average of Five Times a Year.* All of these factors increase the potential for trespassing and accidents involving OE now that the installation is being used by the public. Despite existing site security measures such as fences, warning signs and kiosks, regular security patrols, and public education and outreach regarding potential OE hazards at the former Fort Ord, numerous trespassing incidents have occurred since base closure. In the last four years during which time trespassing data has been well documented, 21 separate trespassing incidents have occurred at the MRA (an average of five times a year).

- *Ranges 43–48, Range 30A, and Site OE–16 Contain Highly Dangerous OE in Close Proximity to the Public Where Trespassing Has Occurred*. Of the many areas containing OE at the former Fort Ord, Ranges 43-48, Range 30A, and Site OE-16 in particular contain highly dangerous OE (sensitive fuzing and high explosives) on or near ground surface in close proximity to the public. These sites are located within or adjacent to the MRA; and contain dense vegetation that obscures the presence of sensitive OE on the ground. Existing site security measures described above have not prevented entry into these sites. In the last three years, trespassers entered Ranges 43–48 five times (including several locations close to Site OE–16), and entered Range 30A on three or more occasions (and five incidences of fence damage of unknown origin have occurred).

These factors demonstrate the need for interim action at these sites. The impacts to the community were considered in the Interim Action OE RI/FS, and the Army plans to take appropriate action to mitigate impacts to the public during the Interim Action. The Army evaluated a range of cleanup alternatives in the Interim Action OE RI/FS, and concluded prescribed burning for vegetation clearance, surface and subsurface OE removal for OE remedial action, and OE detonation with engineering controls for OE detonation were the preferred alternatives and best met U.S. EPA's nine CERCLA evaluation criteria. Please see Section 6.1.1.2 of the Interim Action OE RI/FS (*Prescribed Burning — Impacts to the Public*, *Level of Effort in Terms of Personnel,* and *Accidental Detonation of Unexploded Ordnance*) for precautions the Army would take to minimize impacts to the public during prescribed burning and OE cleanup. These precautions are summarized below.

- Preparation of a burn plan outlining the objectives of the burn; the burn area; the range of environmental conditions under which the burn will be conducted; the manpower and equipment resources required to ignite, manage, and contain the fire; a smoke management plan; and

establishment of communication procedures for the fire crew and to the public and other affected agencies.

- Site preparation, including removal of debris; establishment and maintenance of primary, secondary, and tertiary containment lines, staging areas, and escape routes; and protection of existing structures by removing nearby vegetation and applying fire suppressant foam or demolishing and removing the structures.

- Conducting the burn within the window of environmental conditions established in the burn plan.

- Conducting the burn in a manner to ensure the fire is fully contained and does not escape the perimeter of the burn area.

- Offering voluntary temporary relocation for any Monterey County residents who wish to relocate during the prescribed burns.

- Conducting air monitoring and meteorological profiling prior to and during the burn

- Assessing air monitoring data in terms of potential health impacts from burning as described in the Response to Comment E2 below. Based on the results of the *Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43–48, Former Fort Ord, Monterey, California (Harding ESE, 2001)* (Air Emissions Technical Memorandum), air pollutant emissions from incidental OE detonation during a prescribed burn in Ranges 43 through 48 (also applicable to burning of CMC habitat at the other Interim Action sites) would be minor compared to emissions contributed directly by biomass burning, and would result in pollutant concentrations well below health-protective regulatory screening levels.

- Arranging for fire suppressant crews to stand by during the burn and emergency fire crews from local jurisdictions to be on notice in case the fire traveled in an unplanned direction.

- Preventing potential public exposure to OE fragmentation from incidental detonations during prescribed burning by: (1) conducting a pre-field analysis of the type, size, and orientation of the OE known or expected to be present in a given area and its proximity to the public, (2) calculation of the maximum distance flying fragments or blast debris would travel based on the type and size of OE, and (3) implementation of mitigation measures if necessary to prevent public exposure (such as preventing access to the potential fragmentation area and establishing an additional safety zone/exclusion zone during remedial activities).

A5. There were differing views from members of the public on (1) whether the alternatives selected for vegetation clearance, OE remedial action, and OE detonation were the most protective of human health and the environment out of all of the alternatives evaluated in the Interim Action OE RI/FS; (2) whether sufficient detail was provided regarding implementation of the alternatives, including the time frame for conducting interim action; (3) how costs were assigned as either capital vs. operations and maintenance (O&M) costs, (4) how costs could be accurately estimated for OE removal based on limited data on the density of OE, and (5) whether other alternatives should be or were considered. Some members of the public felt mechanical clearance should be used instead of prescribed burning; suggested innovative methods for clearing vegetation using helicopters or other remotely operated methods; questioned why innovative aerial OE detection methods weren't considered in the Ordnance Detection and Discrimination Study (ODDS); and wondered why the detonation chamber or other such controls were not selected for use during OE detonation. Several people commented that fencing the sites would not be protective of human health (as evaluated under the

Existing and Enhanced Site Security Measures alternatives), and others stated that they preferred fencing of the Interim Action sites to the alternatives proposed by the Army.

Response: "Overall Protection of Human Health and the Environment" is one of U.S. EPA's nine CERCLA criteria that was considered by the Army and determined to be achievable during implementation of each of the Interim Action alternatives. The Army appreciates suggestions from the public on innovative or alternative methods for vegetation clearance, OE remedial action, and OE detonation. In addition, the Army recognizes the complexity of having three separate components of each site alternative (as well as multiple methods that were screened and considered prior to alternative development) would raise questions about various methods that were or were not considered, and their benefits and drawbacks. Potentially applicable methods for vegetation clearance, OE remedial action, and OE detonation were considered in the Interim Action OE RI/FS, and those that best met U.S. EPA's CERCLA evaluation criteria were retained and developed as alternatives for Interim Action.

As specified in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988), details regarding implementation of the alternatives (including time frames for implementation) will be provided in site-specific work plans as follows:

- *Vegetation Clearance* — A site-specific burn plan will be prepared as described in the response to Comment A4 above, and will be available for regulatory agency and public review and comment.

- *OE Remedial Action and OE Detonation* — A site-specific work plan will describe the approach that will be used for surface and subsurface OE remediation, including: (1) selection of OE detection methods and equipment that are best suited for site conditions by the OE site geophysicist/UXO Safety Specialist, and (2) standard operating procedures for detonating OE. The site-specific work plan is a primary document under the Federal Facility Agreement, and will be available for regulatory agency and public review and comment.

Costs were assigned as either capital vs. operations and maintenance (O&M) costs, and were estimated as described in the IA OE RI/FS. Capital costs include those costs associated with implementing and conducting the remedial action, such as labor, materials, equipment, mobilization and demobilization, engineering, data management, and site restoration. O&M costs include ongoing operational site inspections, maintenance and repairs. Capital and O&M costs associated with implementing each of the alternatives were estimated based on historical data from previous remedial activities at Fort Ord, and quotes for labor, material, and equipment from contractors and vendors. OE removal costs were estimated based on site-specific data regarding OE density and type collected at each of the Interim Action sites during recent surface removals. As specified in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988), and *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA, 2000), these costs are preliminary estimates for planning purposes only; are intended to fall within a range of accuracy of +50 percent/-30 percent; and will be refined during the work plan phase of the interim action.

Innovative aerial OE detection methods were not considered in the Ordnance Detection and Discrimination Study (ODDS) because their performance has not been demonstrated as a commercially available tool for similar field conditions as are found at the former Fort Ord. Based on recent Time-Critical Removal Action surface removals, approximately 80 percent of OE items anticipated to be found at Ranges 43–48 would be nontransportable items that are too dangerous to be transported for detonation in a chamber as follows:

- Of the 2,457 OE items identified during recent surface removals, 1,750 were identified as small arms/small caliber items (including bullets/ammunition and expended practice 35mm subcaliber

M73 rockets without a spotting charge) that could be transported to a properly state-and/or RCRA-permitted offsite facility for treatment and/or recycling. Transportable OE items such as these would be excluded from onsite procedures and were not considered further in the evaluation of detonation alternatives.

- Of the remaining OE items (707), approximately 20 percent (134) were determined by the UXO safety specialist to be transportable to a detonation chamber.

Therefore, the detonation chamber was not selected for use during OE detonation because: (1) based on site-specific data from recent OE surface removals, the majority of OE items found at the Interim Action sites are too dangerous to pick up and transport into a detonation chamber, (2) the OE items found at the Interim Action sites are scattered over hundreds of acres, and would have to be picked up and transported over terrain that in some places would be inaccessible to the trailer-mounted detonation chamber, (3) a range of engineering controls can be implemented instead that provide OE workers with flexibility in containing OE detonations in a manner tailored to site-specific conditions while minimizing contact with OE, and (4) a recent Fort Ord-specific study of potential emissions from detonating OE indicate emissions are not of concern in terms of human health *(Harding ESE, 2000)*. Therefore, use of a detonation chamber that requires extra handling of dangerous OE items, cannot be used for the majority of OE items found at the sites, would be difficult to utilize due to access limitations, and may offer no additional reduction in potential health effects of detonation is not warranted. Fencing the Interim Action sites was determined to be not as protective of human health and the environment as conducting surface and subsurface OE removal and was therefore not selected as the preferred alternative. OE removal cost estimates were based on prior OE contractor experience and historical data from the Interim Action sites and other similar sites at the former Fort Ord.

The following summary of the methods and approaches screened and evaluated in the IA OE RI/FS for vegetation clearance, OE remedial action, and OE detonation demonstrates the breadth of the analysis performed. The IA OE RI/FS evaluated the following:

- Nine Vegetation Clearance Methods, of which four passed the screening based on 13 different criteria and were evaluated as alternatives: (1) No Action, (2) Manual Clearance, (3) Mechanical Clearance, (4) Remotely-Operated Mechanical Clearance, (5) Prescribed Burning, (6) Animal Grazing (goats, sheep, and cattle), (7) Herbicide Application, (8) "Crush and Burn" (mechanical crushing followed by prescribed burning), and (9) "Brown and Burn" (herbicide application followed by prescribed burning).

- Five OE Remedial Action Approaches, of which one consisted of four different methods, and one for which three different approaches were screened: (1) No Action with Existing Site Security Measures, (2) Enhanced Site Security Measures [(2a) Warning Signs, (2b) Informational Kiosks, (2c) Fencing, (2d) Security Patrols], (3) Surface and Subsurface OE Removal [selected based on a screening of three different approaches: (3a) Surface OE Removal – Identify and Remove All OE on the Surface, (3b) Subsurface OE Removal – Identify, Investigate, and Remove All Anomalies to Depths Consistent with Planned Reuse in Each Area, and (3c) OE Removal to Depth – Identify, Investigate, and Remove All Anomalies to Depth Found].

- Three OE Detonation Approaches, of which two were screened for a range of different methods for three different categories of OE items (transportable, non-transportable, and small arms / subcaliber OE items): (1) No Action, (2) Detonation with Engineering Controls [multiple methods for two categories of OE items], and (3) Detonation Chamber and Detonation with Engineering Controls [a combination of one method for transportable OE items, and multiple methods for non-transportable OE items].

B. Proposed Plan Scope

Several comments were received from the public regarding whether sufficient information was included in the Proposed Plan regarding details of implementing the selected alternatives.

B1. A comment was made that the scope of the Proposed Plan must include "notice and analysis" and "sufficient information as may be necessary to provide a reasonable explanation of the Proposed Plan and alternative proposals considered" pursuant to 42 USC section 9617(a). They also noted that the method of OE detection and the type of equipment that will be used to perform subsurface removals is deferred to another time; therefore whether the action will be protective of human health and the environment and what the costs will be are unknown. In addition, the comment was made that the National Environmental Policy Act (NEPA) does not allow deferred studies or plans.

Response: The Proposed Plan is intended to summarize the cleanup approach presented in detail in the Interim Action OE RI/FS. As specified in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988), details regarding implementation of the alternatives (including time frames for implementation) will be provided in site-specific work plans. OE detection equipment will be selected and Standard Operating Procedures (SOPs) will be performed in accordance with the *Ordnance Detection and Discrimination Study for Fort Ord* (*USACE, 2001*). The site-specific work plan will describe the approach that will be used for surface and subsurface OE remediation, including selection of OE detection methods and equipment that are best suited for site conditions by the OE site geophysicist/UXO Safety Specialist. The site-specific work plan, a primary document under the FFA outlining the surface removal approach and planned subsurface OE removal depths, will be available for regulatory agency and public review and comment. Please see Response to Comment D1 below regarding the applicability of NEPA; the CERCLA process provides an equivalent process.

As described in the Interim Action OE RI/FS, costs for OE detection and remediation were estimated based on the range of costs associated with conducting OE remediation from 1 ft. to 4 ft. consistent with the planned reuse in specific areas of the Interim Action sites. Costs were estimated based on: 1) historical data from previous OE detection and removal activities at the former Fort Ord, and 2) contractor and vendor quotes, as described in the IA OE RI/FS and summarized in the Proposed Plan.

B2. Some members of the public asked for details regarding the number of people to be relocated and associated costs, as well as what the costs to the larger community would be if support agencies such as the Red Cross and local Fire Departments are needed during prescribed burning.

Response: As described above, the Proposed Plan is intended to summarize the cleanup approach presented in detail in the Interim Action OE RI/FS. The magnitude of the voluntary relocation effort will depend on a number of factors such as the location and size of the prescribed burn, the time of year the burn is conducted, and the number of people that would volunteer to participate in the program. The total number of people that will voluntarily relocate at the time each of the prescribed burns are conducted is unknown at this time. For the purposes of estimating costs in the IA OE RI/FS, data from similar relocation efforts that assume 500 people would voluntarily relocate for three days during each burn were included in the capital costs for prescribed burning and are summarized in the Proposed Plan. As specified in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988), and *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA, 2000), these costs are preliminary estimates for planning purposes only; are intended to fall within a range of accuracy of +50 percent/-30 percent; and will be refined during the relocation planning phase of the interim action.

As described in detail in the Interim Action OE RI/FS, the major elements of prescribed burning for purposes of vegetation clearance include the following components:

- Preparation of a burn plan outlining the objectives of the burn, the burn area, and the range of environmental conditions (temperature, humidity, wind speed/direction, fuel load, and fuel moisture) under which the burn will be conducted. The burn plan also describes the manpower and equipment resources required to ignite, manage, and contain the fire, and establishes the communication procedures for the fire crew and to the public and other affected agencies.

- Site preparation, including establishment and maintenance of primary, secondary, and tertiary containment lines, staging areas, and escape routes.

- Conducting the burn within the window of environmental conditions established in the burn plan.

- Performing operations to ensure that the fire is fully contained and does not escape the perimeter of the burn area.

- Offering voluntary temporary relocation for Monterey County residents who wish to relocate during the prescribed burns.

Implementation of these measures is intended to control the burn within the prescribed area. As described above, the burn plan will address the manpower and resources that will be needed prior to, during, and after the prescribed burns. Potential costs associated with use of local support agencies such as the Red Cross or local Fire Departments are unknown; if the Army utilizes local support agencies during prescribed burning, they will work with these agencies regarding reimbursement as needed.

B3. A question was posed about whether the Army would be responsible for damages to people's homes if fires get out of control, and who would pay if people or agencies don't have the proper insurance coverage.

Response: The Army will be conducting the prescribed burns under controlled conditions to avoid the potential for damage to property outside prescribed areas as described above. If every effort is made by the Army and support agencies to control the prescribed burns, and yet these measures fail to prevent damages, claims for prescribed burn-related damages that are not covered by insurance can be considered by the Army through the claims process.

B4. A comment was made regarding the effort involved in making the adjacent areas to the burn ready for fire in terms of clearing fire breaks near homes and public areas, how it would be done, and whether the costs were included in the Proposed Plan. In addition, an opinion was expressed that existing firebreaks are not wide enough to prevent the fire from jumping across them and burning unplanned areas and endangering the public, and questions were asked about how the fire would be conducted, such as what type of fuel would be used to start the fires.

Response: As described in Response to Comment B3 above, site preparation, including establishment and maintenance of primary, secondary, and tertiary containment lines, firebreak, staging areas, escape routes, and fuel type will be established prior to conducting prescribed burns. Specifications for fire breaks are provided by the Ord Military Community Fire Department. These procedures will be implemented within the Interim Action sites to contain the prescribed burn and are not planned for areas outside controlled site boundaries. Details regarding the type of fuel and other aspects of conducting the prescribed burns will be provided in the burn plan, which will be available for public and regulatory agency review and comment.

C. Community Issues

Several members of the public commented on community issues regarding safety during Interim Action for OE, the presence of OE at the former Fort Ord in general, reuse of the Interim Action sites, and economic opportunities related to the cleanup as summarized below.

C1. Concerns were expressed regarding the safety of the community during Interim Action and the safety of people living near areas that may contain OE at the former Fort Ord in general. In addition, members of the public that provide services to minors (such as day care centers and schools) wondered how they would be able to protect the children under their care from potential impacts from smoke during prescribed burns if they did not have the legal authority to relocate the children.

Response: The Army realizes the communities near Fort Ord are affected by the presence of OE, and has prepared the Interim Action OE RI/FS to address the immediate threats associated with OE at the Interim Action sites. Please see Response to Comment A4 above, that: (1) describes the rationale for conducting interim action to protect human health in response to increased development and public use of the former Fort Ord, and (2) summarizes the measures the Army will implement to protect the safety of the community during interim action. In addition, the Army is conducting a basewide OE RI/FS for all of the former Fort Ord, which is scheduled to be completed in 2005. The basewide OE RI/FS will consist of a comprehensive evaluation of all OE-related data for the entire former Fort Ord (including data from OE sampling and removal actions and interim actions), including long-term response alternatives for cleanup and risk management of OE. In the mean time, the Army maintains fences, warning signs, and other site controls, and regularly patrols areas containing OE that have not yet been subjected to an investigation and cleanup to enforce existing access restrictions.

Please see Response to Comment F1 regarding advance notification of the public regarding prescribed burns that will be implemented as part of the Army's relocation program. It is anticipated that caregivers, as well as parents and legal guardians, will be notified through that public notification process and take actions as they deem appropriate, such as planning indoor activities during the prescribed burns and temporarily relocating out of the area during prescribed burns.

C2. Several members of the public commented that the Interim Action sites should be cleaned up and transferred as soon as possible to provide housing for the local homeless community.

Response: The Army recognizes community concerns regarding the timeliness of cleanup, transfer, and reuse of the former Fort Ord. This action is an interim remedial action intended to address immediate OE hazards. Reuse of the Interim Action sites is set by the Fort Ord Reuse Authority (FORA) Reuse Plan, and is proposed as a mixture of development and habitat reserve areas.

C3. Some members of the public were concerned that the economic livelihood of certain communities was affected by the closure of the former Fort Ord, and that cleanup-related jobs and economic opportunities should be made available to the affected communities.

Response: The Army is aware of the economic impacts of the closure of the former Fort Ord, and has been conducting investigation and cleanup activities at the base since it was listed for closure in 1991 in an effort to prepare Fort Ord lands for reuse as specified in the FORA reuse plan. The Army and its contractors have contracts in place with local businesses and cleanup-related jobs are available to qualified persons with required training.

C4. The Army was asked how "community acceptance" of the Proposed Plan would be determined. Some members of the public felt this criterion is not met for the Proposed Plan because most people don't know about the Proposed Plan.

Response: As described in the Proposed Plan, community acceptance, along with State acceptance, is one of the two modifying criteria amongst U.S. EPA's nine CERCLA evaluation criteria. Community acceptance is gauged using available public input and reactions to the information presented within the Proposed Plan as summarized in this Responsiveness Summary. The Army acknowledges some members of the community do not accept the Proposed Plan; however, many members of the public do accept it and recognize the need for Interim Action to address risks from OE at the Interim Action sites. Please see Response to Comment A2 above for a description of the meetings and other mailings and activities the Army has conducted as part of its public participation responsibilities under Section 117(a) of CERCLA or Superfund and Section 300.430(f)(2) of the NCP. In addition to conducting meetings, the Army has mailed out three Community Bulletins, newsletters, and the Proposed Plan that provide information on the proposed interim action, and has published notices of meetings in local newspapers and on the Fort Ord Environmental Cleanup Website.

D. Regulatory Issues

Several comments were made by members of the public regarding the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) documentation and other statutes they thought the Army should consider for the proposed Interim Action as summarized below.

D1. Several members of the public commented that they felt the Army is violating NEPA because they have not conducted an Environmental Impact Statement (EIS) pursuant to 42 USC § 4332(2)(C) either for the Proposed Interim Action or for OE remedial action at the former Fort Ord in general. In addition, if the Army takes the position that the CERCLA process being followed is the "functional equivalent" of a NEPA EIS, they requested the Army provide any precedence or documentation of this equivalency. If the legal authority is not in the public domain, they requested the Army provide a copy to Fort Ord Toxics Project and the Administrative Record, particularly if any opinions are from the Department of Justice. The comments also indicated the Army must prepare and certify an EIS for all OE remedial actions for all of the former Fort Ord and treat them as a single EIS pursuant to 40 CFR § 1508.25(a), and should not just prepare an individual EIS for the proposed Interim Action or otherwise take a "piecemeal" approach to conducting EISs.

Response: In accordance with Army policy, Federal Register Volume 67, No. 61, March 29, 2002, sections 15297, 15298, response actions implemented in accordance with CERCLA or RCRA are not legally subject to NEPA and do not require a separate NEPA analysis. As a matter of Army policy, CERCLA and RCRA analysis and documentation should incorporate the values of NEPA; establish the scope of the analysis through full and open public participation; analyze all reasonable alternative remedies; evaluate the significance of impacts resulting from the alternatives examined; and consider public comments in the selection of the remedy. The decision maker shall ensure that issues involving substantive environmental impacts are addressed by an interdisciplinary team. This process serves as the functional equivalent to NEPA, and has been followed by the Army in preparation of the IA OE RI/FS and Proposed Plan.

The CERCLA/NCP process provides for evaluation of alternatives and public involvement in a manner that is functionally equivalent to the NEPA process, and compliance is achieved by following the NCP procedures. CERCLA specifically seeks to avoid unnecessary duplication of effort. The CERCLA/NCP process addresses, where appropriate, consideration of environmental effects and compliance with applicable legal standards, and the public is afforded the same opportunity to review and comment that is provided by NEPA. CEQA does not apply to federal decisions.

Regarding preparation of a single EIS for all OE remedial actions at the former Fort Ord pursuant to 40 CFR § 1508.25(a) (rather than taking a "piecemeal" approach for the proposed Interim Action), the Army

is conducting a comprehensive basewide OE RI/FS that will follow the same CERCLA/NCP process as described above, therefore a separate NEPA analysis is not required.

D2. Comments were made that the significant environmental consequences of all alternatives (including the proposed interim action alternatives) must be analyzed under CEQA pursuant to 40 CFR section 1502.16(d). Specifically, prescribed burning is selected as the vegetation clearance alternative for which an analysis of the chemical components of the smoke itself needs to be conducted in terms of its impacts on human health and the environment. Several comments were made that the immediate and long-term ramifications of burning and the associated risks have not been clearly outlined and communicated to the public for the planned interim actions. They commented that there is no risk assessment or health study that says burning is safe for people or the wildlife that live at the former Fort Ord, and pointed out that many citizens have experienced health problems in the past from inhaling smoke from burning (especially children and the elderly who are the most sensitive receptors). The comments requested that the Army conduct a health study or risk assessment on the affects of prescribed burning on human health. Numerous harmful chemicals were cited as potentially being present in smoke from burning the vegetation itself, such as mercury, dioxins, urushiol from burning poison-oak, harmful chemicals from burning manzanita, as well as particulates; several studies that attest to the potential for these harmful components to be present in smoke from burning vegetation are cited and attached as part of the public record. Some commentators asked whether the vegetation that will be burned has been sampled to see what chemicals it contains that will go into the smoke. Some people were also concerned that in addition to the hazardous components of the burning vegetation, thousands of pounds of OE and related hazardous substances and residual contamination at the Interim Action sites would be released during burning and detonation of OE. Comments were made regarding the Air Emissions Technical Memorandum the Army conducted that modeled 38 potential chemicals from OE that may be emitted in the smoke, and pointed out that it was not based on actual data collected from a burn at Fort Ord, and so its conclusion that levels of chemicals in the smoke will be below health-based action levels is not valid. In addition, a comment was made regarding why Ranges 43–48 was the only subject of the study and not all of the Interim Action sites. Concerns were expressed that the explosive compounds present at the Interim Action sites will go into the smoke, which are known to be mutagenic and toxic, and pesticides or herbicides sprayed at Fort Ord will also be released into the smoke during a burn. One commentator asked why the Proposed Plan did not state that hazardous, toxic and radioactive wastes will be burned during the prescribed burns. In addition, concerns were raised regarding chemicals from poison oak being released into smoke, and the serious health effects this may pose. The questions was asked whether the Army would monitor the smoke and measure what's in it during the first burn, and if that data would be used in a study that tells what the risks are to people exposed to smoke during prescribed burns. In addition, they asked if monitoring during the first burn shows harmful levels of substances in the smoke, whether the Army would stop the burn and reconsider future burns.

Response: As described in the Response to Comment D1 above, a separate NEPA analysis is not required for response actions conducted in accordance with CERCLA. CEQA does not apply to federal decisions. The Army acknowledges smoke generated during prescribed burning could have adverse impacts on sensitive individuals, and as such, has included measures to minimize or mitigate potential impacts (such as a voluntary temporary relocation reimbursement program) as part of the remedy as described in the Response to Comments A4 and B2 above.

The Army conducted an assessment of OE-related air emissions that may be associated with conducting a burn at the Ranges 43–38 Interim Action site. The results are presented in the Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43 through 48, Former Fort Ord (*Harding ESE, 2001*) (Air Emissions Technical Memorandum) prepared in cooperation with and under review by the regulatory agencies. The study focused on Ranges 43–48 because the Ranges 43-48 area is considered to have the highest concentration of OE on the surface in the MRA. Site

conditions at the other two Interim Action sites (Range 30A and Site OE–16) are similar to Ranges 43–48 in terms of vegetation, habitat reserve status, and the presence of highly dangerous OE on the ground surface. Therefore, the results of the study based on data from Ranges 43–48 are expected to be representative in terms of site conditions and provided the most conservative scenario for the study. The Air Emissions Technical Memorandum does not address the issue of possible human health effects from biomass burning; these effects will be addressed in the studies and assessments being performed by the Army and the Agency for Toxic Substances and Disease Registry (ATSDR) as described in the Response to Comment E2 below.

The conclusion of the Air Emissions Technical Memorandum is that air pollutant emissions from incidental OE detonation during a prescribed burn in Ranges 43–48 (and the other two comparable Interim Action sites) will be minor compared to emissions contributed directly by biomass burning, and will contribute pollutant concentrations well below health-protective regulatory screening levels. In addition, air monitoring will be conducted during prescribed burning, and studies and assessments of potential human health effects from smoke associated with prescribed burning at the former Fort Ord will be conducted as described in Response to Comment E2 below. The air monitoring data will provide information on the constituents of concern in the smoke from both biomass (vegetation) and other chemicals. The monitoring data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative. With regards to impacts of prescribed burning on wildlife and habitat, the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) supports the Habitat Management Plan for the former Fort Ord (*USACE, 1997*), which emphasizes the positive impacts of burning on special status habitat and species, and indicates the impacts of burning on other plant species and wildlife at the former Fort Ord are not of concern.

D3. Several comments were made regarding many ARARs the Army has not considered that pertain to interim action for OE.

Response: The Army, in consultation with the EPA and DTSC, conducted an analysis of potentially "applicable" or "relevant and appropriate" requirements (ARARs) in the Interim Action OE RI/FS. A requirement may be either "applicable" or "relevant and appropriate." Potential federal and state ARARs that may be pertinent to OE-related Interim Actions at the former Fort Ord were listed in Table 5 of the final Interim Action OE RI/FS.

Applicable requirements are defined as those cleanup or control standards, or other substantive environmental protection requirements, criteria, or limitations, promulgated under federal or state laws. Applicable requirements are identified on a site-specific basis by determination of whether the jurisdictional prerequisite of a requirement fully addresses the circumstances at the site or the proposed remedial activity. All pertinent jurisdictional prerequisites must be met for the requirement to be applicable. These jurisdictional prerequisites are as follows:

- The party must be subject to the law
- The substances or activities must fall under the authority of the law
- The law must be in effect at the time the activities occur
- The statute or regulation requires, limits, or protects the types of activities.
- A requirement is applicable if the specific terms (or jurisdictional prerequisites) of the statute or regulation directly addresses the circumstances at the site.

Relevant and appropriate requirements refer to those cleanup standards, or other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law, that while not necessarily applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site, and whose use is well suited to the particular site. The relevance and appropriateness of a requirement can be judged by comparing a number of factors including the characteristics of the remedial action, the items in question, or the physical circumstances of the site, with those addressed in the requirement. If there is sufficient similarity between the requirements and the circumstances at the site, determination of the requirement as relevant and appropriate may be made.

Determining whether a requirement is both relevant and appropriate is a two-step process. First, to determine relevance, a comparison is made between the response action, location, or chemicals covered by the requirement and related conditions at the site, release, or potential remedy. A requirement is relevant if it generally pertains to these conditions. Second, to determine whether the requirement is appropriate, the comparison is further refined by focusing on the nature of the items, the characteristics of the site, the circumstances of the release, and the proposed response action. The requirement is appropriate if, based on such comparison, its use is well suited to the particular site. The facility must comply with the substantive elements of requirements that are determined to be both relevant and appropriate.

"To Be Considered" requirements (TBCs), the final class of requirements the Army considered during the development of ARARs, are non-promulgated advisories or guidance documents issued by federal or state governments. They do not have the status of ARARs, and are not legally binding, but may be considered in determining the necessary cleanup levels or actions to protect human health and the environment.

The Army, EPA and DTSC considered potential ARARs for Interim Action, and through the screening and evaluation process described above, identified the ARARs presented in Table 5 of the Interim Action OE RI/FS as potentially applicable to interim action. Through an ongoing review and discussion between the Army and regulatory agencies the list of ARARs has been updated, and the table is included in Appendix A of this ROD.

D4. Several comments were made that detonation of OE releases hazardous waste. In addition, one of the comments states that the Army originally said only 20 percent of OE items would detonate during burning, but at the Proposed Plan meeting, John Christopher of the DTSC said it was more like 80 to 100 percent. Comments were also made regarding open detonation of OE and whether it is governed by California Land Disposal Restrictions and is prohibited by California Health and Safety Code 41800, Monterey Bay Unified Air Pollution Control District (MBUAPCD) rules, and Title 22 California Code of Regulations (CCR) 66265.352. Concerns were expressed that the type of OE that would be detonated is not well defined, and therefore thousands of pounds of OE and related known and unknown hazardous substances would be released during burning and detonation, including explosive compounds that are known to be mutagenic and toxic, and pesticides or herbicides sprayed at the former Fort Ord could also be released into the smoke during a burn. The comment was made that pursuant to the National Contingency Plan (NCP) Sections 300.415 and 300.420, these actions must be evaluated to see whether they are protective of human health and the environment.

Response: The approximate percentage of OE items that would detonate during burning were estimated in the "Question and Answer" session of the Proposed Plan public meeting on March 26, 2002 at 10 to 80 percent (not "80 to 100 percent" as stated in the comment). As summarized in the Proposed Plan, the Army's selected alternative for OE detonation is "Detonation with Engineering Controls" — not "open detonation" as stated in the comment. Detonation with engineering controls consists of covering the OE with tamped dirt, sandbags, contained water, or other materials prior to detonation to control the blast and fragmentation, emissions, or noise that would be associated with the detonation.

The type of OE that is present at the Interim Action sites is partially defined based on data collected during the Interim Action Remedial Investigation, Time Critical Removal Actions, and recent surface removals conducted at the Interim Action sites. These data were presented in Tables 2 through 4 of the IA OE RI/FS, which included thousands of OE items (identified by type) that are considered representative of the type of OE at these sites. The Army conducted an assessment of OE-related air emissions that may be associated with conducting a burn at the Ranges 43–48 Interim Action site (which is considered representative of the other two Interim Action sites as well), which modeled 38 potential chemicals from OE (chosen based on site-specific data) that may be emitted in the smoke. The results are presented in the Air Emissions Technical Memorandum prepared in cooperation with and under review by the regulatory agencies, which indicated emissions from OE that may be detonated during prescribed burning are expected to be insignificant and not of concern in terms of human health. In addition, air monitoring will be performed during the prescribed burns and the data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative.

Land Disposal Restrictions as they relate to detonation of OE are not applicable or relevant and appropriate because the selected remedy does not involve placement of hazardous waste in a land disposal unit. The term 'land disposal' is defined under RCRA section 3004(k) as including, but not limited to, 'any placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave.' The terms 'landfill', 'surface impoundment,' and the others refer to specific types of units defined under RCRA regulations."

Section 300.415 is related to removal actions, and the proposed interim action is a remedial action, not a removal action. Section 300.420 is related to remedial site evaluation and does not pertain to the proposed interim action. Regarding the release of OE-related compounds during interim action, the evaluation of alternatives presented in the Interim Action OE RI/FS considered protection of human health and the environment and determined the preferred alternatives will meet this criterion.

Please see Responses to Comments D2 above and E2 below regarding studies and assessments that have been and will be conducted regarding emissions associated with implementation of the selected remedy.

D5. The comment was made that the U.S. EPA has the final authority for selection and approval of the Interim Action alternatives, not the Army.

Response: The Army is the lead agency for investigating, reporting, and implementing remedial actions at the former Fort Ord. Public comments on the Proposed Plan were considered by the Army, in consultation with the EPA and DTSC in making a final decision in the Record of Decision (ROD) regarding the Interim Action related to OE at the former Fort Ord. Under the Federal Facility Agreement (FFA), if there is a dispute between the FFA signatories, the EPA Administrator has the final remedy selection authority.

E. Prescribed Burning for Vegetation Clearance

Several comments were made by members of the public regarding prescribed burning for vegetation clearance as summarized below.

E1. Many members of the public supported prescribed burning for vegetation clearance because they felt: (1) prescribed burning is the most effective way of clearing vegetation for OE remedial action to be conducted safely, (2) controlled (prescribed) burning would lessen the potential for future wildfires, and (3) burning is beneficial to the type of habitat that occurs at the Interim Action sites.

Response: The comments on the positive aspects of prescribed burning are acknowledged. The Army considered these and other factors such as prescribed burning's proven effectiveness at the former Fort Ord in similar types of habitat, and the short duration of this vegetation clearance method compared to the other methods evaluated that would allow for safe access into areas where OE cleanup needs to be conducted within days of conducting the burn.

E2. Many members of the public were against prescribed burning because they were concerned about adverse health effects of smoke exposure from burning vegetation and OE that would be detonated. Information from the DTSC on the toxic effects of smoke exposure was requested. In addition, it was asked why Fort Ord-specific Agency for Toxic Substances and Disease Registry (ATSDR) Health Consultation Reports were not included in the Interim Action OE RI/FS; whether the results of the reports were relevant to the Army's Proposed Plan to conduct prescribed burning; and whether the reports evaluated toxicity data.

Response: The Army acknowledges that smoke inhalation can have an adverse effect on sensitive individuals under certain conditions. The burn plan will set protocols to reduce smoke generation and manage smoke dispersion to minimize downwind impacts. There will also be a voluntary temporary relocation reimbursement program available for those Monterey County residents who wish to leave the area during prescribed burning. In addition, air monitoring will be conducted during the prescribed burns.

ATSDR has prepared two reports related to the former Fort Ord:

- In 1996, ATSDR performed a public health assessment of the entire facility, and determined that "currently, no one is being exposed to contaminants from Fort Ord sources." This report and its conclusions were not cited in the IA OE RI/FS because it does not cite data reflecting conditions at the Interim Action sites, and the report's conclusions refer only to current exposures rather than to threats. In terms of examining OE risks, the ATSDR report was not conclusive, and did not provide proven or relevant information for the interim action evaluation. In addition, since the ATSDR report was prepared as an assessment of the entire installation and did not specifically address the Interim Actions sites, it will be considered as part of the comprehensive basewide OE RI/FS being conducted for the entire former Fort Ord.

- In 2001, ATSDR performed a health consultation "to evaluate past sampling efforts during a controlled fire [at the former Fort Ord in 1999] to assist with a plan to collect air pollution data during a future controlled burn" at the request of the Monterey County Health Department. ATSDR has established a public health team to review technical data and to respond to community health concerns related to prescribed burning at the former Fort Ord. In their report, ATSDR concluded available sampling data from the 1999 burn was insufficient to evaluate public health exposure to the community at the time of the burn in terms of both sampling protocols and toxicity data, and they provided recommendations for sampling during future burns. This report and its conclusions were not cited in the IA OE RI/FS because the evaluation was inconclusive. ATSDR's recommendations for sampling during future burns will be considered in development of the Army's burn plan for the Interim Action sites.

The ATSDR team has reviewed and commented on the Draft Ordnance Detonation Sampling and Analysis Plan, Former Fort Ord, Monterey, California (*Harding ESE, 2000*). In addition, based on the results of the *Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43–48* (Air Emissions Technical Memorandum; *Harding ESE, 2001*), emissions from OE that may be detonated during prescribed burning are expected to be insignificant and not of concern in terms of human health. The ATSDR may be reviewing the data generated if burning is implemented, and will evaluate any potential adverse health effects that might arise from human exposure

to the smoke associated with burning. If appropriate, ATSDR plans to perform follow-up health consultations in the surrounding community.

E3. Several people asked whether the Army will monitor the smoke and measure what's in it during the first burn, and if that data will be used in a study that tells what the risks are from smoke exposure. In addition, the question was asked if monitoring during the first burn shows harmful levels of substances in the smoke, whether the Army will stop the burn and reconsider future burns.

Response: The Army will monitor the smoke and measure what's in it during the first burn, and that data will be used to further evaluate the effectiveness of prescribed burning as a vegetation clearance alternative. The interim remedial actions will be conducted in accordance with the smoke management guidelines outlined in California Code of Regulations, Title 17 and will include air monitoring and a post burn evaluation. Please see response to Comment A4 above regarding the precautions the Army will take to minimize downwind smoke exposure.

E4. Many members of the public were against prescribed burning because they were concerned about the fire getting out of control and endangering the public.

Response: The Army acknowledges public concerns regarding the potential for prescribed burns to escape controlled areas. Prescribed burning has been used extensively at former Fort Ord for decades because of military training activities, and has also been used to clear CMC vegetation from OE sites similar to the Interim Action sites to support removal actions at the former Fort Ord since 1994. An escape is defined as fire outside the control lines that is unmanageable with onsite resources. Of the five prescribed burns conducted at the former Fort Ord from 1994 – 1998, one burn resulted in an escape in 1997 when 300 acres were burned in addition to the 100 acres planned to be burned.

In order to minimize impacts from prescribed burning and minimize the chance of an escape such as the one that occurred in 1997, the Army will conduct the following activities:

- Preparation of a burn plan outlining the objectives of the burn; the burn area; the range of environmental conditions under which the burn will be conducted; the manpower and equipment resources required to ignite, manage, and contain the fire; a smoke management plan; and establishment of communication procedures for the fire crew and with the public and other affected agencies.

- Site preparation, including removal of debris; establishment and maintenance of primary, secondary, and tertiary containment lines, staging areas, and escape routes; and protection of existing structures by removing nearby vegetation and applying fire suppressant foam or demolishing the structures.

- Conducting the burn within the window of environmental conditions established in the burn prescription.

- Conducting the burn in a manner to ensure the fire is fully contained and does not escape the perimeter of the burn area.

- Coordinating contingency plans with the local fire agencies; having fire suppressant crews stand by during the burn; and having emergency fire crews from local jurisdictions be on notice in case the fire travels in an unplanned manner.

- Offering voluntary temporary relocation for Monterey County residents who wish to relocate during the prescribed burns.

E5. Members of the public questioned whether prescribed burning's beneficial impacts on the environment as described in the proposed interim action necessarily means it is the best overall method for implementation. Several comments were made that although the Army claims burning is beneficial to habitat at the Interim Action sites, wildlife will be affected by burning. The question was asked whether the habitat is truly dependent upon fire for its survival and reproduction, and if not, whether other methods could be used instead. In addition, several members of the public had questions about: (1) how prescribed burning will affect the natural fire cycle; (2) how often prescribed burning would need to be repeated once the natural cycle is disrupted; (3) how the Army will address potential adverse impacts of prescribed burning on habitat, such as encroachment of non-native species in cleared areas, or the incidental taking of endangered or threatened species and their habitat; (4) whether prescribed burning would still be required by the Habitat Management Plan (HMP) for the former Fort Ord if it was not being used for interim action, and (5) whether the Fort Ord-specific data regarding seedling regrowth being much higher after a prescribed burn compared to after mechanical vegetation clearance (referenced in the IA OE RI/FS report) is directly relevant to the Interim Action sites.

Response: Prescribed burning is not expected to have adverse impacts on vegetation, disrupt the natural fire cycle, or be required to be implemented again on a specific timeline. The Interim Action OE RI/FS evaluated and screened eight different vegetation clearance methods based on fourteen different screening criteria. In addition, the four vegetation clearance alternatives that were retained from the screening were further evaluated based on EPA's nine evaluation criteria. The screening and evaluation indicated prescribed burning was the preferred alternative for vegetation clearance during interim action. Mitigation measures described in Chapter 3 of the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (*USACE, 1997*) will be implemented to minimize impacts to fish and wildlife resources during vegetation clearance. As described in the Proposed Plan and final IA OE RI/FS, prescribed burning has beneficial effects on the regrowth and long term health of vegetation at the Interim Action sites. With regards to impacts of prescribed burning on wildlife and habitat, the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) supports the Habitat Management Plan for the former Fort Ord (*USACE, 1997*), which emphasizes the positive impacts of burning on special status habitat and species, and indicates the impacts of burning on other plant species and wildlife at the former Fort Ord are not of concern. Regarding whether prescribed burning would still be required by the Habitat Management Plan (HMP) for the former Fort Ord if it was not being used for interim action; in general, yes it would be required for vegetation clearance in habitat reserve areas that exceed 50 acres.

The Fort Ord-specific data regarding seedling regrowth being much higher after a prescribed burn compared to after mechanical vegetation clearance (referenced in the IA OE RI/FS report) is directly relevant to the Interim Action sites, which contain the same type of habitat (primarily central maritime chaparral) that was evaluated in the study.

F. Voluntary Relocation Issues During Prescribed Burning

Several comments were made by members of the public regarding the voluntary temporary relocation program being offered during prescribed burning for vegetation clearance as summarized below.

F1. Members of the public felt that the impacts of relocation would be significant, and asked which communities would be offered relocation by the Army, and whether the Army would offer relocation to non-citizens that live and work in the area. They also asked what the basis was for the relocation costs estimated in the IA OE RI/FS report and wondered whether they were included in the total per-acre prescribed burning costs. Concerns were also raised regarding how the Army will make sure everyone knows when the burns will occur, and how much warning will be given. People also asked how many days people will need to be relocated, and how they will know when it is safe to return to their communities. In addition, it was pointed out that many low-income people cannot afford out-of-pocket

expenses for relocating to motels and eating out at restaurants, and asked whether the Army would offer to pay those people up-front who can't afford to relocate with their own money. Comments were also made regarding how people will know whether the environment to which relocated citizens will return after the burn will be safe in terms of after-effects of the burn such as ash deposits and smoke residue.

Response: The Army recognizes there are public concerns regarding the impacts of voluntary relocation, and will consider those concerns during the development of the voluntary temporary relocation reimbursement program. The magnitude of the voluntary relocation effort and associated costs will depend on a number of factors such as the location and size of the prescribed burn, the time of year the burn is conducted, and the number of people who voluntarily relocate. The total number of people that will voluntarily relocate at the time each of the prescribed burns are conducted is unknown at this time. For the purposes of estimating costs in the IA OE RI/FS, data from similar relocation efforts that assume 500 people would volunteer to relocate for three days during each burn were included in the capital costs for prescribed burning and are summarized in the Proposed Plan. As specified in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988), and *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA, 2000), these costs are preliminary estimates for planning purposes only; are intended to fall within a range of accuracy of +50 percent/-30 percent; and will be refined during the relocation planning phase of the interim action.

The voluntary temporary relocation plan will also address notification of the public; voluntary relocation will be offered to residents of Monterey County who wish to temporarily during the prescribed burns. The Army will coordinate with the Red Cross to provide services to non-citizens. Prior to the burn, Army personnel will coordinate voluntary relocation efforts and ensure the public is informed of the prescribed burn through a notice in a local newspaper, public meetings, and other avenues of communication as appropriate. A voluntary relocation program will be offered for four days and three nights during each of the burns as described in the Response to Comment A4 above. The relocation period will end on the fourth day, unless otherwise notified by the Army. The Army may base its decision on site-specific conditions at that time. The Army will make special prepayment arrangements for those citizens that make advance arrangements with the Army who cannot afford to pay out-of-pocket expenses. .

F2. A question was asked regarding how claims for potential property and health damages will be filed, and whether the Army will pay for any damages that are not covered by insurance. In addition, the question was asked if it is true if a person files a claim with the Army to pay for medical expenses due to health effects of the burn, that they must sign a waiver that prevents them from ever asking for any other reimbursement or damages from the Army.

Response: The Army has an established process for citizens to file such claims. If the claim is approved, at the time of settlement, the claimant must agree to reimburse, indemnify and hold harmless the United States, its agents, servants and employees from any and all causes of action that arise or may arise from the acts or omissions that gave rise to the claim by reason of the same subject matter.

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TABLES

Table 1. Summary and Comparison of Interim Action Alternatives Evaluation – Ranges 43-48
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	Prescribed Burning	Mechanical Methods	Manual Methods	No Action with Existing Site Security Measures	Enhanced Site Security Measures	Subsurface OE Removal	No Action	Detonation w/Engr Controls	Detonation Chamber & Detonation w/Engr Controls
Effectiveness *(Includes Overall Protection of Human Health and the Environment, Compliance with ARARs, Short-Term Effectiveness, Long-Term Effectiveness and Permanence, Reduction of Toxicity, Mobility or Volume Through Treatment)*	Not effective in short or long term because it takes no action to address the need for vegetation clearance if Subsurface Removal of OE is selected as the OE Remedial Action alternative. Effective if No Action w/ Existing Site Security or Enhanced Site Security is selected as OE Remedial Action alternative because vegetation clearance would not be required. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Very effective in short term at clearing vegetation quickly over large areas; effective as a long term because it has beneficial effects on the regrowth and long term health of CMC vegetation. Would comply with ARARs and be protective of human health and the environment (with mitigation measures such as smoke management and relocation of affected residents during burning). Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols which have been breached by trespassers in the past. Would not be protective of human health or the environment if no action is taken to mitigate OE hazards. Would not reduce toxicity, mobility, or volume of OE.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols which could still be breached by trespassers. Would not be as protective of human health or the environment since it does not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term at reducing OE hazards because it removes all OE to depths consistent with planned reuse of IA site. Would comply with ARARs and be protective of human health and the environment by removing OE hazards. Would reduce mobility and volume of OE.	Not effective in short term or long term because it takes no action to address OE hazards. Would not be protective of human health or the environment. Would not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term for 100% of OE items in reducing OE-related hazards through detonation. Would comply with ARARs and be protective of human health and the environment. Would reduce hazards associated with OE.	<u>Detonation Chamber</u> Effective for 20% of OE items that can be safely transported to temporary chamber location. Requires additional handling of OE to place in chamber. Would comply with ARARs and be protective of human health and the environment. Effective in short and long term and would reduce hazards associated with OE. <u>Engineering Controls</u> Very effective for 100% of OE items as previously described.

Table 1. Summary and Comparison of Interim Action Alternatives Evaluation – Ranges 43-48
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	Prescribed Burning	Mechanical Methods	Manual Methods	No Action with Existing Site Security Measures	Enhanced Site Security Measures	Subsurface OE Removal	No Action	Detonation with Engineering Controls	Detonation Chamber and Detonation with Engineering Controls
Implementability *(Includes State & Community Acceptance)*	Easy to implement because it takes no action to clear vegetation. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement to clear vegetation quickly; would take approximately 1 month to coordinate burn and clear vegetation. Equipment and personnel readily available. Must be conducted in close coordination with agencies and public to address concerns about smoke and fire danger. Would require prior public notification, smoke management while conducting the burn, and temporary relocation of individuals from areas affected by smoke to unaffected areas to minimize impacts of smoke and emissions. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (498 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (498 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no additional action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Moderately easy to implement because it takes no additional action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols and maintaining new measures for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement over large areas, but equipment and personnel are readily available. Performed for many years at Fort Ord. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no action to detonate UXO found during OE Remedial Action. Difficult to implement from an administrative perspective because detonation of UXO would be required to eliminate OE hazards once found. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement; performed during OE removal activities at Fort Ord for many years. Equipment and personnel readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	<u>Detonation Chamber</u> Difficult to implement because it requires additional handling of OE to place in chamber and chambers cannot be moved over 498 acres of IA site. A chamber could be temporarily located at each of five access gates to the IA site, but OE would still have to carried over hundreds of acres and stockpiled at the temporary locations to be detonated in the chamber, increasing the potential for accidental detonation. Based on site-specific surface OE removal data, 20% of OE items would be eligible for detonation in the chamber. <u>Engineering Controls</u> Can be used for 100% of OE items and implementable as previously described. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.
Cost	No Cost	Capital: $1.7 million O&M: $213,000 (5 years) TOTAL: $1.9 million	Capital: $1.4 million O&M: $213,000 (5 years) TOTAL: $1.6 million	Capital: $2.5 million O&M: $213,000 (5 years) TOTAL: $2.8 million	Capital: None O&M: $235,000 (5 years) TOTAL: $235,000	Capital: $1.1 million O&M: $3.3 million (5 years) TOTAL: $4.5 million	Capital: *$10.6 - 11.2 million O&M: None TOTAL: *$10.6 - 11.2 million	No Cost	Capital: $1.1 million O&M: None TOTAL: $1.1 million	Capital: $1.1 million O&M: None TOTAL: $1.1 million

* Range of Costs for Subsurface OE Removal based on estimated costs for 1 ft. to 4 ft. depth of removal.

ARAR Applicable or relevant and appropriate requirements.
DTSC Department of Toxic Substances Control, a part of Cal/EPA.
EPA U.S. Environmental Protection Agency
HMP Habitat Management Plan.
OE Ordnance and Explosives.
O&M Operations and Maintenance.
UXO Unexploded Ordnance.

Table 2. Summary and Comparison of Interim Action Alternatives Evaluation – Range 30A
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	Prescribed Burning	Mechanical Methods	Manual Methods	No Action with Existing Site Security Measures	Enhanced Site Security Measures	Subsurface OE Removal	No Action	Detonation w/Engr Controls	Detonation Chamber & Detonation w/Engr Controls
Effectiveness *(Includes Overall Protection of Human Health and the Environment, Compliance with ARARs, Short-Term Effectiveness, Long-Term Effectiveness and Permanence, Reduction of Toxicity, Mobility or Volume Through Treatment)*	Not effective in short or long term because it takes no action to address the need for vegetation clearance if Subsurface Removal of OE is selected as the OE Remedial Action alternative. Effective if No Action w/ Existing Site Security or Enhanced Site Security is selected as OE Remedial Action alternative because vegetation clearance would not be required. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Very effective in short term at clearing vegetation quickly over large areas; effective as a long term because it has beneficial effects on the regrowth and long term health of CMC vegetation. Would comply with ARARs and be protective of human health and the environment (with mitigation measures such as smoke management and relocation of affected residents during burning). Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols which have been breached by trespassers in the past. Would not be protective of human health or the environment if no action is taken to mitigate OE hazards. Would not reduce toxicity, mobility, or volume of OE.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols which could still be breached by trespassers. Would not be as protective of human health or the environment since it does not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term at reducing OE hazards because it removes all OE to depths consistent with planned reuse of IA site. Would comply with ARARs and be protective of human health and the environment by removing OE hazards. Would reduce mobility and volume of OE.	Not effective in short term or long term because it takes no action to address OE hazards. Would not be protective of human health or the environment. Would not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term for 100% of OE items in reducing OE-related hazards through detonation. Would comply with ARARs and be protective of human health and the environment. Would reduce hazards associated with OE.	<u>Detonation Chamber</u> Effective for 20% of OE items that can be safely transported to temporary chamber location. Requires additional handling of OE to place in chamber. Would comply with ARARs and be protective of human health and the environment. Effective in short and long term and would reduce hazards associated with OE. <u>Engineering Controls</u> Very effective for 100% of OE items as previously described.

Table 2. Summary and Comparison of Interim Action Alternatives Evaluation – Range 30A
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	**Prescribed Burning**	**Mechanical Methods**	**Manual Methods**	**No Action with Existing Site Security Measures**	**Enhanced Site Security Measures**	**Subsurface OE Removal**	**No Action**	**Detonation with Engineering Controls**	**Detonation Chamber and Detonation with Engineering Controls**
Implementability *(Includes State & Community Acceptance)*	Easy to implement because it takes no action to clear vegetation. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement to clear vegetation quickly; would take approximately 1 month to coordinate burn and clear vegetation. Equipment and personnel readily available. Must be conducted in close coordination with agencies and public to address concerns about smoke and fire danger. Would require prior public notification, smoke management while conducting the burn, and temporary relocation of individuals from areas affected by smoke to unaffected areas to minimize impacts of smoke and emissions. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (388 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (388 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no additional action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Moderately easy to implement because it takes no additional action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols and maintaining new measures for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement over large areas, but equipment and personnel are readily available. Performed for many years at Fort Ord. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no action to detonate UXO found during OE Remedial Action. Difficult to implement from an administrative perspective because detonation of UXO would be required to eliminate OE hazards once found. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement; performed during OE removal activities at Fort Ord for many years. Equipment and personnel readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	<u>Detonation Chamber</u> Difficult to implement because it requires additional handling of OE to place in chamber and chambers cannot be moved over the 388 acres IA site. A chamber could be temporarily located at each of five access gates to the IA site, but OE would still have to carried over hundreds of acres and stockpiled at the temporary locations to be detonated in the chamber, increasing the potential for accidental detonation. Based on site-specific surface OE removal data, 20% of OE items would be eligible for detonation in the chamber. <u>Engineering Controls</u> Can be used for 100% of OE items and implementable as previously described. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.
Cost	No Cost	Capital: $1.4 million O&M: $149,000 (5 years) TOTAL: $1.5 million	Capital: $1.8 million O&M: $149,000 (5 years) TOTAL: $1.9 million	Capital: $2.0 million O&M: $149,000 (5 years) TOTAL: $2.1 million	Capital: None O&M: $164,000 (5 years) TOTAL: $164,000	Capital: $1.0 O&M: $3.2 million (5 years) TOTAL: $4.2 million	Capital: *$.6.8 to $7.7 million O&M: None TOTAL: *$6.8 to $7.7 million	No Cost	Capital: $124,000 O&M: None TOTAL: $124,000	Capital: $136,000 O&M: None TOTAL: $136,000

* Range of Costs for Subsurface OE Removal based on estimated costs for 1 ft. to 4 ft. depth of removal.

ARAR Applicable or relevant and appropriate requirements.
DTSC Department of Toxic Substances Control, a part of Cal/EPA.
EPA U.S. Environmental Protection Agency
HMP Habitat Management Plan.
OE Ordnance and Explosives. O&M Operations and Maintenance.
UXO Unexploded Ordnance.

Table 3. Summary and Comparison of Interim Action Alternatives Evaluation – Site OE-16
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	**Prescribed Burning**	**Mechanical Methods**	**Manual Methods**	**No Action with Existing Site Security Measures**	**Enhanced Site Security Measures**	**Subsurface OE Removal**	**No Action**	**Detonation w/Engr Controls**	**Detonation Chamber & Detonation w/Engr Controls**
Effectiveness *(Includes Overall Protection of Human Health and the Environment, Compliance with ARARs, Short-Term Effectiveness, Long-Term Effectiveness and Permanence, Reduction of Toxicity, Mobility or Volume Through Treatment)*	Not effective in short or long term because it takes no action to address the need for vegetation clearance if Subsurface Removal of OE is selected as the OE Remedial Action alternative. Effective if No Action w/ Existing Site Security or Enhanced Site Security is selected as OE Remedial Action alternative because vegetation clearance would not be required. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Very effective in short term at clearing vegetation quickly over large areas; effective as a long term because it has beneficial effects on the regrowth and long term health of CMC vegetation. Would comply with ARARs and be protective of human health and the environment (with mitigation measures such as smoke management and relocation of affected residents during burning). Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Effective in short term at clearing vegetation; however, could only be used in limited areas of 50 acres in size in CMC habitat reserve due to HMP requirements, and would not clear vegetation as thoroughly as burning. Not effective in the long term because it would have detrimental effects on the regrowth and long term health of CMC vegetation. Would not comply with ARARs if used on more than 50 acres in CMC habitat reserve, would not be protective of human health in terms of worker direct exposure to OE while clearing, and would not be protective of the environment. Reduction of toxicity, mobility, or volume criteria is not applicable to vegetation clearance.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols which have been breached by trespassers in the past. Would not be protective of human health or the environment if no action is taken to mitigate OE hazards. Would not reduce toxicity, mobility, or volume of OE.	Not effective in short term or long term at reducing OE hazards because it takes no action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols which could still be breached by trespassers. Would not be as protective of human health or the environment since it does not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term at reducing OE hazards because it removes all OE to depths consistent with planned reuse of IA site. Would comply with ARARs and be protective of human health and the environment by removing OE hazards. Would reduce mobility and volume of OE.	Not effective in short term or long term because it takes no action to address OE hazards. Would not be protective of human health or the environment. Would not reduce toxicity, mobility, or volume of OE.	Very effective in short term and long term for 100% of OE items in reducing OE-related hazards through detonation. Would comply with ARARs and be protective of human health and the environment. Would reduce hazards associated with OE.	<u>Detonation Chamber</u> Effective for 20% of OE items that can be safely transported to temporary chamber location. Requires additional handling of OE to place in chamber. Would comply with ARARs and be protective of human health and the environment. Effective in short and long term and would reduce hazards associated with OE. <u>Engineering Controls</u> Very effective for 100% of OE items as previously described.

Table 3. Summary and Comparison of Interim Action Alternatives Evaluation – Site OE-16
Record of Decision, Interim Action for Ordnance and Explosives
Former Fort Ord, California

Evaluation Criteria	Interim Action Alternatives									
	Vegetation Clearance Alternatives				OE Remedial Action Alternatives			OE Detonation Alternatives		
	No Action	Prescribed Burning	Mechanical Methods	Manual Methods	No Action with Existing Site Security Measures	Enhanced Site Security Measures	Subsurface OE Removal	No Action	Detonation with Engineering Controls	Detonation Chamber and Detonation with Engineering Controls
Implementability *(Includes State & Community Acceptance)*	Easy to implement because it takes no action to clear vegetation. State and Community Acceptance will be addressed in the IA RI/FS ROD once comments on the IA RI/FS report and Proposed Plan have been received.	Easy to implement to clear vegetation quickly; would take approximately 1 month to coordinate burn and clear vegetation. Equipment and personnel readily available. Must be conducted in close coordination with agencies and public to address concerns about smoke and fire danger. Would require prior public notification, smoke management while conducting the burn, and temporary relocation of individuals from areas affected by smoke to unaffected areas to minimize impacts of smoke and emissions. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (80 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement to clear vegetation quickly; would take several months to clear vegetation over entire IA site and would require close coordination with OE remedial workers. Equipment and personnel readily available. However, cannot be used to clear vegetation over entire IA site (80 acres) due to HMP requirements that limit its use to 50 acres or less in CMC habitat reserve found at the IA site. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no additional action beyond maintaining existing site security measures such as fencing, warning signs, and security patrols for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Moderately easy to implement because it takes no additional action beyond enhancing existing site security measures such as fencing, warning signs, and security patrols and maintaining new measures for an interim period of 5 years while final long term O&M measures are decided in the basewide OE RI/FS. Equipment and personnel are readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Difficult to implement over large areas, but equipment and personnel are readily available. Performed for many years at Fort Ord. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement because it takes no action to detonate UXO found during OE Remedial Action. Difficult to implement from an administrative perspective because detonation of UXO would be required to eliminate OE hazards once found. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	Easy to implement; performed during OE removal activities at Fort Ord for many years. Equipment and personnel readily available. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.	<u>Detonation Chamber</u> Difficult to implement because it requires additional handling of OE to place in chamber and chambers cannot be moved over 80 acres of IA site. A chamber could be temporarily located at each of five access gates to the IA site, but OE would still have to carried over many acres and stockpiled at the temporary locations to be detonated in the chamber, increasing the potential for accidental detonation. Based on site-specific surface OE removal data, 20% of OE items would be eligible for detonation in the chamber. <u>Engineering Controls</u> Can be used for 100% of OE items and implementable as previously described. Community acceptance is addressed in Section 3 of the ROD. DTSC has reviewed and commented on the Army's selected remedies, which are consistent with DTSC's comments.
Cost	No Cost	Capital: $288,000 O&M: $30,000 (5 years) TOTAL: $318,000	Capital: $228,000 O&M: $30,000 (5 years) TOTAL: $258,000	Capital: $411,000 O&M: $30,000 (5 years) TOTAL: $441,000	Capital: None O&M: $35,000 (5 years) TOTAL: $35,000	Capital: $412,000 O&M: $1.4 million (5 years) TOTAL: $1.8 million	Capital: *$1.29 - $1.3 million O&M: None TOTAL: *$1.29 - $1.3 million	No Cost	Capital: $13,000 O&M: None TOTAL: $13,000	Capital: $28,000 O&M: None TOTAL: $28,000

* Range of Costs for Subsurface OE Removal based on estimated costs for 1 ft. to 4 ft. depth of removal.

ARAR Applicable or relevant and appropriate requirements.
DTSC Department of Toxic Substances Control, a part of Cal/EPA.
EPA U.S. Environmental Protection Agency
HMP Habitat Management Plan.
OE Ordnance and Explosives.
O&M Operations and Maintenance.
UXO Unexploded Ordnance.

APPENDIX A

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

APPENDIX A
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR
RECORD OF DECISION, INTERIM ACTION FOR ORDNANCE AND EXPLOSIVES
FORMER FORT ORD, CALIFORNIA

Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			Federal ARARs	
Endangered Species Act (16 USC §§ 1531–1543)	16 USC § 1536 (a) and (c); 16 USC § 1538 (a)(1)	Applicable (1,2,3)* / Location	Federal agencies are required under Section 7 of the ESA to ensure that their actions do not jeopardize the continued existence of a listed species or result in destruction of or adverse modification of its critical habitat (16 USC § 1536). If the proposed action may affect the listed species or its critical habitat, consultation with the USFWS and/or California Fish and Game may be required (50 CFR § 402.14). Additionally, Section 9 of the ESA prohibits the illegal taking of a listed species (16 USC§ 1538(a)(1).	The Army has completed an endangered species, Section 7 consultation, and the USFWS has issued a Biological Opinion for the Army disposal and reuse actions at Fort Ord. Endangered plant and animal species and critical habitats occur at Fort Ord. Each OE site will be screened for potential impacts to any endangered species identified in the April 1997 Habitat Management Plan for the former Fort Ord. The provisions of the HMP satisfy the requirements of the ESA.
Migratory Bird Treaty Act (MBTA)	16 U.S.C. §§703-712	Applicable (1,2,3) / Location	The statute sections prohibit the taking, possession of, buying, selling, purchasing, or bartering of any migratory bird, including feathers or other parts, nest eggs, or products, except as allowed by regulations.	The requirement includes specific standards of control. U.S. Fish and Wildlife Service has issued a non-jeopardy biological opinion for Army predisposal actions to include the remediation of OE, which provides that vegetation clearance activities occur outside the nesting seasons for migratory birds.
Hazardous Materials & Transportation Act	49 CFR Part 172.101	Applicable (3) / Chemical and Action	These regulations impose procedures and controls on the transportation of hazardous materials.	The regulations include specific standards of control and substantive requirements, criteria and limitations that may apply to the transport of detonation materials and selected recyclable ordnance materials.
Federal Resource Conservation and Recovery Act (RCRA), Subpart M (Military Munitions Rule)	40 CFR Parts 266 and 270	Relevant and Appropriate (2, 3) / Chemical and Action	The regulations identify when military munitions become a solid waste, and if these wastes are hazardous, the management standards apply.	The rule is relevant and appropriate, particularly with regard to management of OE that is determined to be a hazardous waste. The rule provides for the transportation and storage of waste military munitions in accordance with DDESB standards.

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Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs	
California Endangered Species Act	Fish and Game Code §§ 2051 et seq.; §2080.	Relevant and Appropriate (1,2,3) / Location	The statute sections provide a declaration of policy and definitions. Section 2080 provides that no person shall take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts.	Section 2080 includes specific standards of control with respect to the taking of endangered or threatened species. Under CERCLA, the Army is not required to comply with non-substantive, procedural and administrative provisions of §2051. The Army has coordinated the development of the HMP with CDFG and that mitigation measures to protect both State and federal rare, threatened and endangered species have been identified and will be implemented during the Army's action of remediation of OE.
California Fish and Game Code	§3511	Relevant and Appropriate (1,2,3) / Location	This statute section prohibits taking or possessing fully protected birds or parts thereof, listed as: (a) American peregrine falcon (*Falco peregrinus anatum*) (b) Brown pelican (c) California black rail (*Laterallus jamaicensis coturniculus*) (d) California clapper rail (*Rallus longirostris obsoletus*) (e) California condor (*Gymnogyps californianus*) (f) California least tern (*Sterna albifrons browni*) (g) Golden eagle (h) Greater sandhill crane (*Grus canadensis tabida*) (i) Light-footed clapper rail (*Rallus longirostris levipes*) (j) Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*) (k) Trumpeter swan (*Cygnus buccinator*) (l) White-tailed kite (*Elanus leucurus*) (m) Yuma clapper rail (*Rallus longirostris yumanensis*).	The requirement includes specific standards of control that may apply to the American peregrine falcon (some possibility), golden eagle (slight possibility), brown pelican (not likely but possible), and California least tern (not likely but possible). Vegetation clearance activities will occur outside the nesting seasons for these protected birds.
California Fish and Game Code	§3513	Relevant and Appropriate (1,2,3) / Location	This statute section declares that it is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.	The requirement includes specific standards of control. U.S. Fish and Wildlife Service has issued a non-jeopardy biological opinion for Army predisposal actions to include the remediation of OE. In addition, vegetation clearance activities will occur outside the nesting seasons for migratory birds.
California Fish and Game Code	§3503.5	Relevant and Appropriate (1,2,3) / Location	This statute section prohibits the take, possession or destruction of any birds in the orders of Falconiformes or Strigiformes, or to take, possess, or destroy the nest or eggs of any such bird, except as provided in the code.	The requirement includes specific standards of control that may apply to vultures, hawks, ospreys, falcons and owls. Vegetation clearance activities will occur outside the nesting seasons for these birds.

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Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Fish and Game Code	Title 14, CCR §472	Relevant and Appropriate (1,2,3) / Location	This regulation limits the taking of nongame birds and mammals except for specified species.	The requirement includes specific standards of control that may affect American crows. Vegetation clearance activities will occur outside the nesting seasons.
California Fish and Game Code	§4800 et. seq.	Relevant and Appropriate (1,2,3) / Location	This statute section declares that it is unlawful to take, injure, possess, transport or sell any mountain lion.	The requirement includes specific standards of control. Due to the size of vegetation clearance and OE remediation activities, it is unlikely that mountain lions will be negatively affected. In fact, the use of fire to set back plant community succession will result in an improvement to wildlife habitat that will benefit mountain lions.
California Fish and Game Code	Title 14, CCR §§40-42	Relevant and Appropriate (1,2,3) / Location	These regulations make it unlawful to take, possess, purchase, propagate, sell, transport, import, or export any native reptile or amphibian, unless under special permit.	The requirement includes specific standards of control that may apply to black legless lizard and coast horned lizard. CDFG was heavily involved in the development of the Installation-Wide Multispecies Habitat Management Plan (HMP) which included the development of mitigation measures to protect the California black legless lizard.
California Clean Air Act (Health and Safety Code)	Monterey Bay Unified Air Pollution Control District Rule 407	Applicable (1) / Action	This rule provides substantive limitations on the conditions under which open outdoor fires may be conducted.	The rule includes specific substantive limitations. It also includes non-substantive, procedural and administrative provisions with which the Army, under CERCLA, is not required to comply. <u>Substantive requirements:</u> §3.3, prohibiting burn on no-burn days. The Army will conduct prescribed burns on allowable days in accordance with CCR Title 17, §80110.

Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Clean Air Act (Health and Safety Code)	Monterey Bay Unified Air Pollution Control District Rule 432	Applicable (1) / Action	The prohibitory rule describes permit requirements, allowable days for burning, and restrictions. The rule includes both substantive and procedural requirements regarding open burning.	The rule includes specific standards of control. It also includes non-substantive procedural and administrative provisions with which the Army, under CERCLA, is not required to comply. <u>Substantive requirements:</u> §3.3, prohibiting burn on no-burn days. The Army will conduct prescribed burns on allowable days in accordance with CCR Title 17, §80110. §3.5.1, burn shall be ignited only by devices and methods approved by the California Department of Forestry and Fire Protection. The Army will use ignition devices approved by CDF. §3.5.5, materials to be burned shall be dry and reasonably free of dirt, soil and visible surface moisture prior to burning, and shall be free from combustible impurities such as tires, tar paper, household rubbish, demolition or construction debris, and other materials not grown at a site. The Army will comply with this section by removing tires, structures and other debris from the sites prior to conducting prescribed burns, where it is safe to do so. Numerous OE items have been removed from the ground surface of the sites in 2000 and 2001, where accessible and where it was safe to do so. Emissions from incidental detonation of OE during prescribed burning are expected to be insignificant, based on a study conducted by the Army, in consultation with EPA and DTSC (*Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43 through 48* (Harding ESE, 2001)). The study concluded that air pollutant emissions from incidental OE detonation during a prescribed burn will be minor compared to emissions contributed directly from biomass burning, and will result in pollutant concentration well below health-protective regulatory screening levels. ▪ The regulation is intended to protect the public health. The Army will substantively comply with this regulation by implementing the site preparation measures as described above, as well as conducting the burns in accordance with the smoke management program, applying resources to contain the fire within the intended boundaries, and offering voluntary temporary relocation to any Monterey County residents who wish to relocate during the prescribed burns, to minimize public exposure to smoke.

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Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Health and Safety Code, Division 20	Title 22, CCR Division 4.5	Applicable (3) / Chemical and Action	The statute and regulations provide for identification of hazardous waste in §§66261. If a material is a hazardous waste, Division 4.5 provisions further regulate hazardous waste generators, transporters, and treatment, storage, and disposal facilities.	The Army will evaluate discovered items in accordance with the approved programmatic work plan to determine the presence of energetic materials or other constituents that would cause it to be characterized as a hazardous waste. Substantive requirements: ▪ Storage: onsite storage of OE items occur in a designated bunker that meets the standard of DDESB 6055.9 STD, including security measures such as fences, signs, and an alarm system. ▪ Transportation: offsite transportation of small arms ammunition and subcaliber OE items will incorporate applicable manifesting and placarding requirements. Conforms to Defense Reutilization and Marketing Office (DRMO) instruction. ▪ Disposal/recycling: offsite disposal or recycling facility or facilities for small arms ammunition and subcaliber OE items will be state and/or RCRA-authorized.
California Health and Safety Code	Title 22, CCR §66264.601-603	Relevant and appropriate (2) / Action	These regulations apply to hazardous waste treatment which is conducted in a device that does not meet the definition of a “container” in 22 CCR 66260.10 is characterized as a “Miscellaneous Unit” subject to the provisions of 22 CCR 66264.601-603. For activities where detonations are in a device that meet the 22 CCR 66260.10 definition of a container, the requirements for “temporary units,” as set forth in 22 CCR 66264.553 apply.	The regulations include generally described narrative standards. Compliance with substantive requirements is achieved through regulatory coordination of site-specific work plan and Detonation Sampling and Analysis Plan with EPA and DTSC in accordance with CERCLA and FFA. Under CERCLA, the Army is not required to comply with procedural requirements such as obtaining a permit.

Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Health and Safety Code	Title 22, CCR §66265.382	Relevant and Appropriate (3)/ Chemical and Action	Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 kilometers/second at sea level). Owners or operators choosing to open burn or detonate waste explosives shall do so in accordance with the following table and in a manner that does not threaten human health or the environment. lb. waste explosives Min. Distance from OB/OD to property 0 to 100 204 meters (670 feet) 101 to 1,000 380 meters (1,250 feet) 1,001 to 10,000 530 meters (1,730 feet) 10,001 to 30,000 690 meters (2,260 feet)	The requirement includes specific standards of control and addresses situations similar to that being addressed under IA.
California Fish and Game Code	§1900 et. seq.	Relevant and Appropriate (1,2,3)/ Action	These statute sections sets forth programmatic and administrative provisions, and in §1908, provides that no person shall import into the state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant	Although the definition of "person" in the statute does not apply to the Army, the standards of control are relevant and appropriate, and the citation is therefore considered as ARAR. The Army is implementing the HMP which contains mitigation measures designed to protect the continued survival of rare and endangered plants.

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Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Fish and Game Code	Title 14, CCR §783 et. seq.	Relevant and Appropriate (1,2,3)/ Action	These regulations provide that no person shall import into the State, export out of the State or take, possess, purchase, or sell within the State, any endangered species, threatened species, or part or product thereof, or attempt any of those acts, except as otherwise provided in the California Endangered Species Act, Fish and Game Code Section 2050, et seq. ("CESA"), the Native Plant Protection Act, the Natural Community Conservation Planning Act, the California Desert Native Plants Act, or as authorized under this article in an incidental take permit. The regulations also provide programmatic and administrative procedures for incidental take permits.	The Section includes specific standards of control with respect to taking rare or endangered plants. Although the definition of "person" in the statute does not apply to the Army, the standards of control are relevant and appropriate, and the citation is therefore considered as ARAR. The Army is implementing the HMP which contains mitigation measures designed to protect the continued survival of threatened and endangered species.

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Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			State of California ARARs (Continued)	
California Clean Air Act (Health and Safety Code)	Title 17, CCR §80100 et. seq.	Relevant and Appropriate (1)/ Action	The regulations provide guidelines, programs and agency procedures for smoke management plans.	The regulations are relevant and appropriate. The Army will comply with substantive elements of the regulations. Under CERCLA, the Army is not required to comply with procedural and administrative provisions; however these elements will be addressed as part of the interim remedial design/remedial action process. <u>Substantive requirements:</u> §80110(d) prohibiting burn on no-burn days. The Army will conduct prescribed burns on allowable days in accordance with CCR Title 17, §80110. §80145(o)(1) [local air district smoke management plan or other enforceable mechanisms shall] require the material to be burned to be free of material that is not produced on the property or in an agricultural or prescribed burning operation. Material not to be burned includes, but not limited to, tires, rubbish, plastic, treated wood, construction/demolition debris, or material containing asbestos. The Army will comply with this section by removing tires, structures and other debris from the sites prior to conducting prescribed burns, where it is safe to do so. Numerous OE items have been removed from the ground surface of the sites in 2000 and 2001, where accessible and where it was safe to do so. Emissions from incidental detonation of OE during prescribed burning are expected to be insignificant, based on a study conducted by the Army, in consultation with EPA and DTSC (*Technical Memorandum, Air Emissions from Incidental Ordnance Detonation During a Prescribed Burn on Ranges 43 through 48* (Harding ESE, 2001)). The study concluded that air pollutant emissions from incidental OE detonation during a prescribed burn will be minor compared to emissions contributed directly from biomass burning, and will result in pollutant concentration well below health-protective regulatory screening levels. ▪ The regulation is intended to protect the public health. The Army will substantively comply with this regulation by implementing the site preparation measures as described above, as well as conducting the burns in accordance with the smoke management program, applying resources to contain the fire within the intended boundaries, and offering voluntary temporary relocation to any Monterey County residents who wish to relocate during the prescribed burns, to minimize public exposure to smoke.

Source or Authority	Requirement, Standard, or Criterion	Type	Description	Remarks
			Regulations that were considered as potential ARARs in the Final IA RI/FS but subsequently dropped	
California Fish and Game Code	§3005		The statute section prohibits the taking of birds or mammals, except non-game mammals, with any net, pound, cage, trap, set line or wire, or poisonous substance. Included in the term "taking" is the killing of birds or mammals by poison.	Birds and mammals will be protected by achieving the identified Remedial Action Objectives (RAOs). Further, the scope of the interim actions does not include intentional taking of birds and mammals with unlawful devices.
California Fish and Game Code	§4000 et. seq.		This statute section provides that a fur-bearing mammal may be taken only with a trap, firearm, bow and arrow, poison under a proper permit, or with the use of dogs.	The scope of the interim actions does not involve intentional taking of fur-bearing mammals with unlawful devices.
California Fish and Game Code	Title 14, CCR §460		This regulation makes it unlawful to take Fisher, marten, river otter, desert kit fox and red fox.	The interim remedial actions will not result in the take of Fisher, marten, river otter, desert kit fox and red fox. The species of red fox protected by the State is located in the Sierra Nevada mountain range. The species of red fox located at former Fort Ord is an introduced species and is not protected by this section.
California Clean Air Act	Health and Safety Code §41701		This statute section prohibits the discharge into the atmosphere from any source whatsoever any air contaminant for a period or periods aggregated more than three minutes in any one hour which is dark or darker than No. 2 on the Ringelmann Chart or obscures the view to a degree equal to or greater than smoke.	Agricultural burning for which a permit has been granted pursuant to Article 3 (commencing with §41850, emission limitations for agricultural burning) are exempt from this requirement per §41704(b). The interim action prescribed burns will be conducted under MBUAPCD Rule 407, which implements the requirements of Article 3 (California Health and Safety Code §41850 et. seq.). The exemption applies though the Army is not required to obtain a permit under CERCLA.

1 = Vegetation Clearance; 2 = OE Remedial Action; 3 = Detonation of OE