

Fort Ord Superfund Site

3rd Five-Year Review

U.S. Department of the Army, Fort Ord Base Realignment and Closure Office
Monterey County, California • November 2011

The 3rd Fort Ord Five-Year Review Process is Underway

The U. S. Department of Army (Army) has begun conducting a formal review of cleanup remedies for the Fort Ord Superfund Site in Monterey County, California. The results of the basewide review will be documented in a report known as a Five-Year Review. For Fort Ord, this will be the 3rd Five-Year Review; previous Five-Year Reviews were conducted in 2002 and 2007.

The Review Team

The Army is the lead agency and is responsible for conducting the Five-Year Review at this site. The U.S. Environmental Protection Agency (EPA) will review the report in coordination with the California Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board, Central Coast Region (RWQCB).

What Is a Five-Year Review?

Five-Year Reviews involve a comprehensive assessment of the performance of an environmental cleanup program and its ongoing protectiveness of human health and the environment. The Review Team will evaluate environmental standards that affect the site which may have changed, whether the cleanup continues to be protective of human health and the environment and if it can be expected to remain protective after completion of the project.

Why Is a Review Conducted?

Superfund requires a review of cleanup actions every five years after the initiation of remedial actions if the levels of contaminants remaining at a site do not allow unrestricted use of the property.

What are the Main Questions the Review Answers?

- Is the remedy functioning as intended and as outlined in the Record of Decision (ROD) (the document that selects and provides the rationale for the remedy)?
- Are the assumptions used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

Background

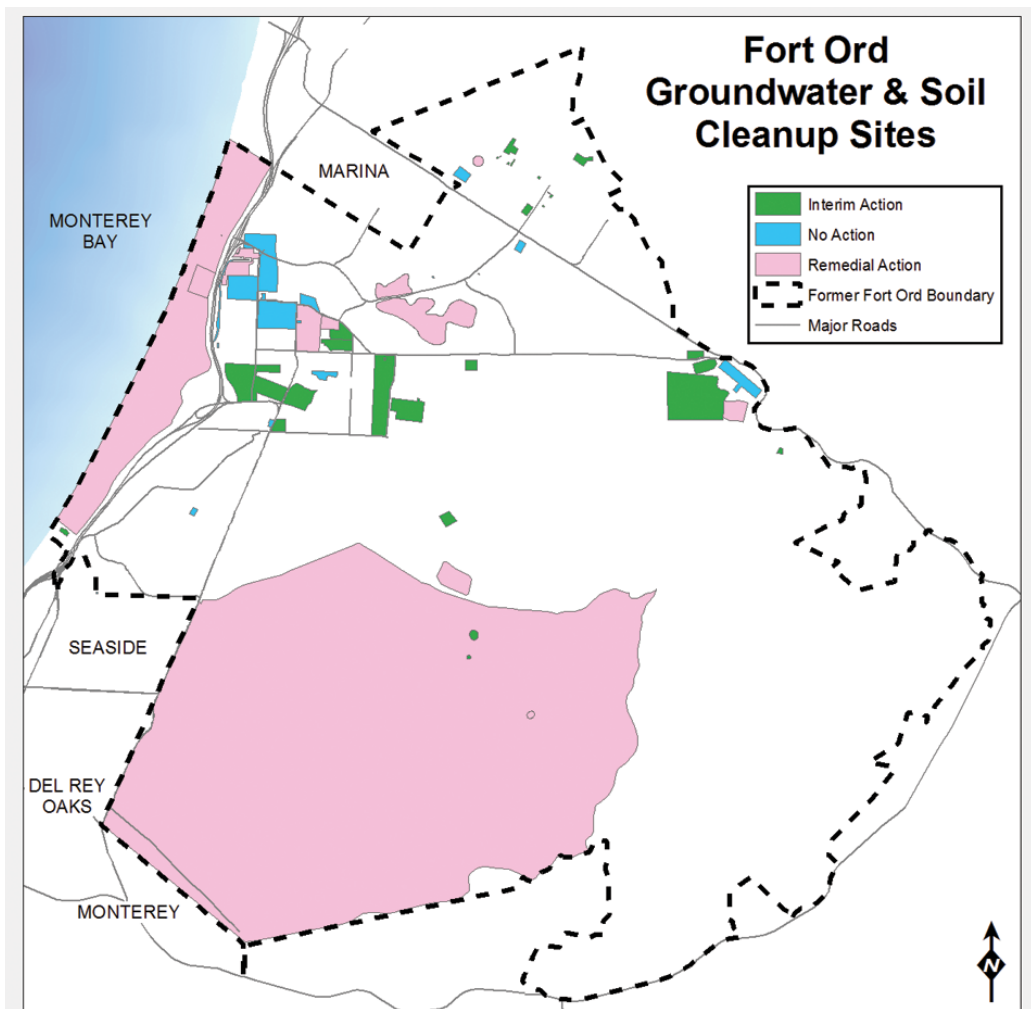
The former Fort Ord Army Base is adjacent to Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco. The former base consists of approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. Highway 1 passes through the western part of Fort Ord, separating the beachfront from the rest of the base.

Fort Ord served primarily as a training and staging facility for infantry troops beginning in 1917 until its deactivation in 1994.

During its active history, up to 40,000 military and civilians worked or lived on Fort Ord. Activities conducted throughout the base, including industrial activities and military munitions training, have resulted in the identification of numerous sites where hazardous substances have been detected in soil and groundwater. Munitions and explosives of concern (MEC) have been detected in former munitions training areas such as the Impact Area.

Investigation and Cleanup Recommendations

Since 1986, the Army has been conducting investigation and



cleanup actions at the former Fort Ord. Initially, the studies concentrated on identifying chemical contaminants in soil and groundwater, generally as a result of industrial and waste disposal activities. In 1993, the Army also began investigating sites where MEC were suspected to be present.

Sites were characterized during a Remedial Investigation (RI) and the cleanup alternatives were evaluated in a Feasibility Study (FS). These documents have received regulatory agency and public review. Cleanup remedy decisions are documented in the RODs. Regulatory agencies overseeing the Fort Ord cleanup include: The EPA, the DTSC, and the RWQCB. Remedial actions are being or have been implemented at the former Fort Ord sites in accordance with the RODs.

Soil and Groundwater Cleanup Sites

These sites have been grouped into three separate remedial categories, as described below; RODs were developed for each group. These categories are illustrated on the figure on page 1.

The three categories are described as follows:

1. **No Action Sites (in blue)** are those that require no further action, either because no release of contaminants was identified at the site or because the site activities are excluded under Superfund, (e.g. underground storage tank remediation).

2. **Interim Action Sites (in green)** are those that have contaminated soil with a limited volume and extent and, as a result, the soils were excavated as an interim action.
3. **Remedial Investigation Sites (in rose)** are those with more complex problems that require significant soil and/or groundwater remediation, development of a risk assessment, and an assessment of the applicable or relevant and appropriate requirements for cleanup.

In addition, three operable unit (OU) sites, which address geographic areas or specific site problems, have undergone considerable investigation and have remedial actions ongoing. These sites are: OU 1, the Fritzsche Army Airfield Fire Drill Area; OU 2, the Fort Ord Landfills; and OUCTP, the carbon tetrachloride plume. These OUs are supported by their own individual RODs.

Military Munitions Response Program (MMRP) Sites

Numerous munitions response sites (MRSs) have been identified through archive searches, interviews, and visual inspections, which have been conducted since 1993. These sites are shown in the figure on this page.

These MRSs comprise approximately 12,000 acres at the former Fort Ord. Types of MEC found include artillery projectiles, rockets, hand grenades, practice land mines, pyrotechnics, bombs, demolition materials, and other items. Restricted MRSs are fenced and warning signs are posted, while other areas that have undergone sufficient evaluations have been released for unrestricted uses.

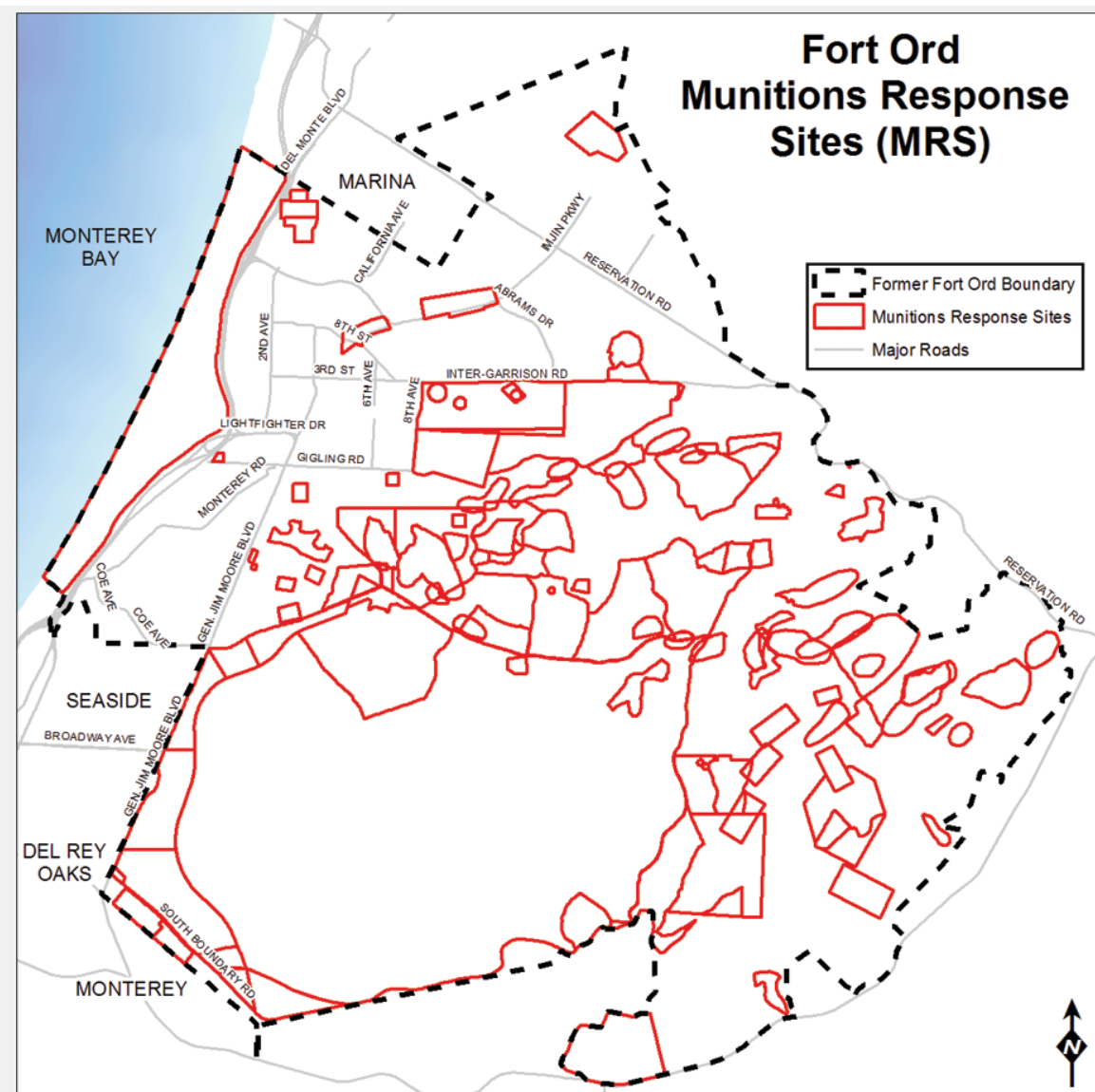
Response actions designed to minimize the explosive safety risk to the public under designated future uses are ongoing. Based on the investigation and characterization conducted, RODs have been and are being generated for groups of MRSs to specifically address the hazards. See section under **Military Munitions Response Program Sites** (Page 4) for more information.

Implemented Remedies

Soil and Groundwater Cleanup Sites

No Action Sites

Twelve sites were investigated and recommended for no further action under the No Action ROD. These sites had no land use restrictions and were evaluated in the 2nd Five-Year Review (2007).



Interim Action Sites

Soil cleanup has been completed at a number of sites, as identified in the Interim Action ROD. In the 1st Five-Year Review (2002), eight sites were reviewed and the agencies concurred that no further action is required. The sites were released for unrestricted use. In the 2nd Five-Year Review (2007), 12 additional sites were noted as complete and released for unrestricted use. The following three sites completed remedial actions since the 2nd Five-Year review, and will be evaluated in the current review.

- Site 6 – Range 39, Abandoned Car Dump
- Site 34B – Former Burn Pit
- Site 39B - Inter-Garrison Training Area -Historic Area 161 (HA-161)

Remedial Investigation Sites

The Basewide Remedial Investigation Sites ROD identified nine sites. In the 1st Five-Year Review (2002), the agencies concurred that no further action is required for the following four sites; these sites were released for unrestricted use:

- Sites 16 and 17
- Site 25
- Stormwater outfalls

The following active sites will be reviewed in detail and the effectiveness of their remedies evaluated during the 3rd Five-Year Review. A brief summary of each follows. For sites with groundwater contamination, the groundwater plumes are illustrated on the figure below:

Sites 2/12 – Soil remediation is complete. The Sites 2/12 groundwater plume is treated by a groundwater pump and treat plant constructed in 1999. The treatment system, originally consisted of two carbon adsorption vessels connected in series,

extracted water from eight wells; and discharged the water into two injection wells and three infiltration galleries. After startup, higher levels of vinyl chloride than anticipated were detected. System modifications were implemented including combining treated water from OU 2 with treated Sites 2/12 water for discharge.

Site 31 - After the initial remediation at Site 31, a section of the site on the north slope of a steep ravine was found to be contaminated with lead. After cleanup of this area was completed, a land use covenant for the north face of the ravine and the area under the power transmission lines was established. The land use covenant prohibits excavation, exposure of the soil, or use of the area as residential development.

Site 33 - At Site 33, the golf course maintenance facility, pesticides, herbicides, and metals were detected in soil at concentrations that did not pose a human health risk based on the non-residential reuse planned for this site. In addition, results of the ecological risk evaluation indicated that the low level site contamination was not likely to produce adverse effects in plant or animal populations. The remedy for Site 33, therefore, is a deed restriction on the property that prohibits residential use.

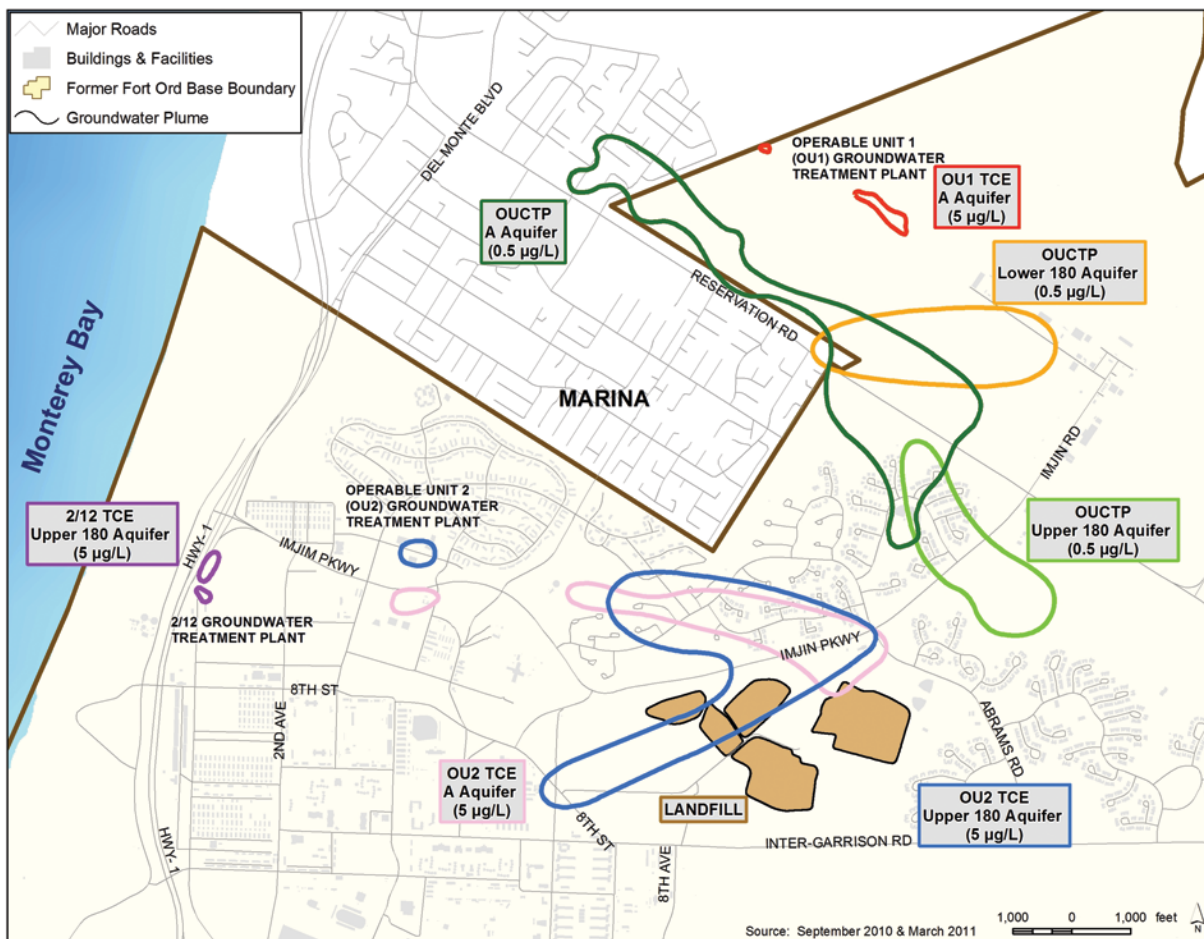
Site 39 - the Inland Ranges include Sites 5 and 9, and other areas. Explosive compounds, organic compounds, and metals have been detected at levels requiring remediation in shallow soils at 20 former firing ranges. These contaminated soils are currently being excavated and placed in the OU 2 Landfill as specified in the Site 39 ROD Amendment signed in September 2009.

The following sites and OUs have individual RODs for each.

Site 3 – This site, the Beach Ranges, includes the 17 small arms firing ranges west of Hwy 1 where the Army completed soil remediation under a ROD specific to Site 3. Subsequent to the

soil cleanup, the Army performed a post-remediation risk assessment for both ecological and human health risks and generated a final ROD that specifically addresses ecological risks at site 3. Site 3 is also known as MRS-22 under the military munitions response program. Land use restrictions prohibit residential use.

OU 1 - Studies conducted at OU 1, the Fritzsche Army Airfield Fire Drill Area, Fort Ord's first site investigation, concluded that soil and groundwater cleanups were required. About 4,000 cubic yards of contaminated soil were excavated and treated, and the area was backfilled with clean soil. In addition



to the soil cleanup, the site's first groundwater treatment facility was constructed in 1988 to remediate trichloroethene (TCE) and other related groundwater contaminants. In 2006, in response to the detection of contamination outside the capture zone of the original treatment system, a significant expansion of the OU 1 groundwater treatment system was completed and began operating. In addition, quarterly groundwater monitoring in 2005 and investigation in 2006 indicated that the additional contamination extended beyond the northwest property boundary of the former Fort Ord. In August 2008, operation of an off-site groundwater treatment system began and continued until February 2009 when monitoring data indicated that the remediation goals for the off-site area had been attained.

Current monitoring data for OU 1 indicates that remediation goals in the off-site area have been maintained and that the area of the contaminant plume containing concentrations that exceed the OU 1 ROD Aquifer Cleanup Goals is entirely within the boundary of the former Fort Ord.

OU 2 - the Fort Ord Landfill consists of the landfill itself and the associated contaminated groundwater. The landfill was addressed in two steps. First, a small, approximately 25-acre area of the landfill (called Area A) was excavated and hauled to another part of the landfill to consolidate the debris. This soil consolidation action allowed for clean closure of Area A, which is now available for unrestricted use.

Second, a cap was constructed on all the remaining areas of the landfill (Areas B, C, D, E, and F). A five-to-six acre portion of the capped Area E is being used for the placement of soils excavated from Site 39 as part of the vertical expansion described in the Site 39 ROD Amendment. Following placement of the Site 39 soils, a cap will be constructed over the added material. The action will be reported in the OU 2 Construction Completion Report. A thermal treatment unit is also operating at the landfill to collect and destroy landfill gas.

A groundwater treatment facility was constructed in 1995 to remediate contaminated groundwater, primarily TCE, associated with the landfill. Remediation is ongoing and expected to take about 30 years.

OUCTP - The Operable Unit Carbon Tetrachloride Plume is located in the north-central portion of Fort Ord. Carbon tetrachloride was discharged to the ground after it was used to clean radio parts during the 1950s. Data collected for the site investigation indicated that carbon tetrachloride had migrated through the soil to groundwater. A soil vapor extraction system, successfully removed soil vapor contamination.

Groundwater contamination has migrated downgradient and affects three aquifers. The ROD for OUCTP signed in November 2007 identified "in situ enhanced biodegradation" as the remedy for the A-Aquifer; "groundwater extraction and treatment using the existing OU 2 treatment system" for the Upper 180-Foot Aquifer; and "no action with monitored natural attenuation" for the Lower 180-Foot Aquifer. The remedy is being implemented and may take up to 15 years for bioremediation and up to 30 years for both extraction and treatment and for natural attenuation.

Military Munitions Response Program Sites

The MMRP at Fort Ord categorizes areas with similar MEC-related characteristics to expedite cleanup, reuse, and/or transfer of former Fort Ord property. According to this process, an area under investigation is assigned to one of four tracks, Tracks 0 through 3.

Track 0 Areas

Track 0 areas contain no evidence of MEC and have never been suspected as having been used for military munitions-related

activities of any kind. The Track 0 ROD was signed in 2002 and requires no action regarding munitions response for the Track 0 areas. The 129 areas listed in the Track 0 ROD consist largely of land that has been developed for military support or residential use throughout Fort Ord's history. The Track 0 ROD also contains a "Plug-In" process that is used for documenting no action determinations for other areas that meet the Track 0 criteria.

Track 1 Sites

Track 1 sites are areas where military munitions were suspected to have been used, but no further action is required because investigation has shown that the suspected training did not occur; that training did not involve explosive items; or that training at these sites involved only the use of practice and/or pyrotechnic items that are not designed to cause injury. The Track 1 ROD was signed in 2005 and included 21 MRSs. The Track 1 ROD also contains a "Plug-In" process that is used for documenting no further action determinations for other areas that meet the Track 1 criteria.

Track 2 Sites

Track 2 sites are areas where MEC items were present and a MEC removal action has been conducted. Two RODs have been signed for Track 2 sites – the Parker Flats Munitions Response Area (MRA) ROD and the Del Rey Oaks MRA ROD. These RODs implemented land use controls to include MEC safety education programs for site users, construction support, and restrictions on residential use for specified areas.

Track 3 Sites

Track 3 sites include areas where MEC items are known or suspected to be present. The Track 3 Impact Area MRA ROD was signed in 2008 and documents the remedial action for the Impact Area MRA. The selected remedy includes: (1) vegetation clearance via prescribed burning, (2) technology-aided surface removal of MEC items, (3) subsurface MEC removal in selected areas, and (4) land use controls. Remediation is ongoing and is expected to last 8 years or more.

Interim Action Munitions Response Sites

In addition to the four tracks, an Interim Action ROD was signed in 2002 and addressed sites that contain surface MEC items with sensitive fuses, in close proximity to residential neighborhoods and schools, and with a history of trespassing incidents. Three sites were included in the Interim Action ROD for military munitions – Ranges 43-48, Range 30A, and MRS-16. The selected remedy for these three sites included vegetation clearance via prescribed burning and surface and subsurface MEC removal. Remedial actions have been conducted in Ranges 43-48 and MRS-16. Range 30A was included in the Track 3 Impact Area MRA ROD.

Remaining Areas

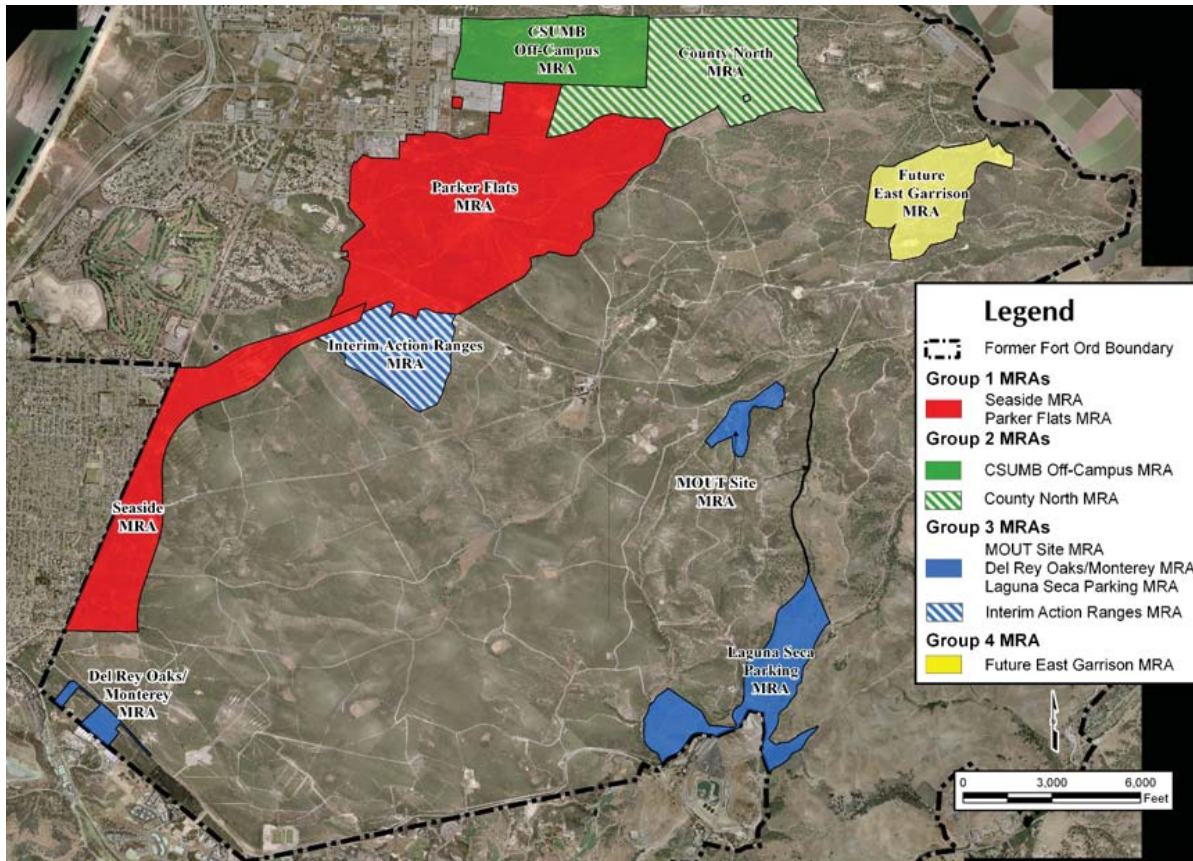
Potential explosive safety hazards in other areas within the former Fort Ord are being evaluated through the remaining areas RI/FS program. These areas include both previously identified MRSs and some areas in between existing MRSs. Over 8,000 acres are being investigated including a large portion of the Fort Ord Public Lands managed by the Bureau of Land Management.

Environmental Services Cooperative Agreement (ESCA) Sites

In connection with the early transfer of a portion of the former Fort Ord, the Fort Ord Reuse Authority (FORA) assumed some of the Army's cleanup obligations under an ESCA grant. Pursuant to the ESCA, FORA agreed to conduct the evaluation of MEC hazards on approximately 3,400 acres of the former Fort Ord and conduct remedial actions deemed necessary to protect human health and the environment under future uses.

FORA is conducting its ESCA remediation program in four areas defined as Group 1, Group 2, Group 3, and Group 4 (see ESCA sites figure below). Each of these Groups is being investigated separately.

conditions or concerns that you may have through the Army contacts listed on Page 6. The community input and interview findings will be incorporated into the 3rd Five-Year Review.



What Happens Next?

The Army has initiated its 3rd Five-Year Review to evaluate the effectiveness of the remedies described in this fact sheet. Following agency concurrence, expected in September 2012, the 3rd Five-Year Review Report will be made available to the public via the web site, Administrative Record, and Information Repositories listed below. A 4th Five-Year Review will be conducted in 2017.

Information Repositories

Documents (including all RODs and previous Five-Year Review Reports) related to cleanup activities at the Fort Ord Superfund Site are available to the

Protectiveness Statement from the Previous (2nd) Five-Year Review:

The remedies for a majority of the sites evaluated in the 2nd Five-Year Review (2007) were deemed protective or were expected to be protective upon completion. For those sites with remedies that were expected to be protective in the future, interim protectiveness was assured by either prohibiting or restricting land use, prohibiting groundwater use, or restricting access. At three sites (Site 3, Site 39, and the Interim Action Munitions Response Sites) the long-term protectiveness determination was deferred pending additional information.

How the Community Can Contribute to the Five-Year Review

During the Five-Year Review, the team will conduct interviews with various parties, including community members, to obtain information about the site and any concerns. The participants in the interviews may include:

- State and local regulatory agencies;
- Local jurisdictions
- Technical Assistance Grant recipient;
- Local homeowner associations;
- Local residents, businesses, and other concerned parties; interested citizen groups and community action groups.

The interviews will collect information about successes and/or problems with implementation of the remedies. The Army also encourages members of the community to contact us about site

public via the web site, Administrative Record, and Information Repositories listed below. When complete, the 3rd Five-Year Review Report will also be available at these locations.

Fort Ord Administrative Record

Building 4463 Gigling Road
Ord Military Community, CA 93944-5008
Telephone: (831) 393-9186

Seaside Library

550 Harcourt Avenue
Seaside, CA 93955
Telephone: (831) 899-2055

California State University Monterey Bay Library

100 Campus Center
Seaside, CA 93955-8001
(831) 582-3000

Para obtener una copia en Español, contacte: 831-393-1284

The Review Team

The Army is the lead agency and is responsible for conducting the Five-Year Review at this site. The EPA will review the report in cooperation with the DTSC and RWQCB. The key review team members include:

U.S. Department of the Army Base Realignment and Closure (BRAC) Former Fort Ord Contacts

Gail Youngblood

Fort Ord BRAC Environmental Coordinator
PO BOX 5008
Monterey, California 93944-5008
Phone: (831) 393-1284
Email: gail.youngblood@us.army.mil

Melissa Broadston

PO BOX 5008
Monterey, California 93944-5008
Phone: (831) 393-1284 or 1-800-852-9699
Email: melissa.broadston@us.army.mil

Fort Ord Reuse Authority (FORA) Environmental Services Cooperative Agreement (ESCA) Remediation Program Contacts

Stan Cook

Program Manager
Phone: (831) 883-3506
Email: ESCA@fora.org

United States Environmental Protection Agency, Region 9 Contacts

Martin Hausladen

Remedial Project Manager for groundwater
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 972-3007
Email: hausladen.martin@epa.gov

Lewis Mitani

Remedial Project Manager for soil remediation and the Army's
military munitions response program
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 972-3032
Email: mitani.lewis@epa.gov

Judy Huang

Remedial Project Manager for the FORA'S ESCA Remediation
Program
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 972-3681
Email: huang.judy@epa.gov

United States Environmental Protection Agency, Region 9 Contacts, continued

Viola Cooper

Community Involvement Coordinator
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 972-3243 or (800) 231-3075
Email: cooper.viola@epa.gov

California Environmental Protection Agency Department of Toxic Substances Control Contacts

Roman Racca

Remedial Project Manager for military munitions
8800 Cal Center Drive
Sacramento, California 95826-3200
Phone: (916) 255-6407
Email: Rracca@dtsc.ca.gov

Franklin Mark

Remedial Project Manager for water and soil
8800 Cal Center Drive
Sacramento, California 95826-3200
Phone: (916) 255-3584
Email: Fmark@dtsc.ca.gov

Tammy Pickens

Public Participation Specialist
8800 Cal Center Drive
Sacramento, CA 95826-3200
Phone: 916-255-3594
Email: Tpickens@dtsc.ca.gov

California Environmental Protection Agency Regional Water Quality Control Board Central Coast Contacts

Grant Himebaugh

Remedial Project Manager for water issues
895 Aerovista Place, Suite 101
San Luis Obispo, California 93401-7906
Phone: (805) 542-4636
Email: ghimebau@waterboards.ca.gov

Websites:

Army: www.fortordcleanup.com
ESCA: www.fora-esca-rp.com
USEPA: www.epa.gov/aboutepa/region9.html
DTSC: www.dtsc.ca.gov
RWQCB: www.swrcb.ca.gov/rwqcb3.com