

Fort Ord Environmental Cleanup 2016 Annual Report

Fort Ord BRAC Office

August 2017



Participants on the May 2017 long walk inside the Impact Area.

THE FORT ORD CLEANUP PROGRAM

OVERALL PROGRAM GOALS

1. Protect human health and the environment;
2. Promote preservation, enhancement and restoration of habitat;
3. Transfer property for land uses determined by the community reuse plan.

2017 HEADLINES

1. Five areas are being prepared for prescribed burns in 2017 as part of the munitions cleanup program.
2. Munitions cleanup work has started in the northern portion of the Fort Ord National Monument. Munitions cleanup also continues to take place inside the Impact Area.
3. Groundwater cleanup is complete at Fort Ord's oldest groundwater treatment system, Operable Unit 1. Cleanup began in 1988.
4. Fort Ord's largest groundwater treatment plant, Operable Unit 2, is moving to another area to be closer to the source of the remaining groundwater contamination.
5. The Army continues to conduct habitat restoration activities in locations disturbed by the Army's cleanup activities.
6. The Army is preparing the 4th Five-Year Review report.
7. The Army is interested in your opinions about the cleanup. Please take part in this assessment by completing the enclosed Community Outreach Survey.

PROGRAM ELEMENTS

Accomplishments for each of the six program elements are shown on page 6. For additional information on each, go to the Fort Ord Cleanup web site for maps, reports, and other information.

MUNITIONS CLEANUP

<http://fortordcleanup.com/programs/munitions/>

PRESCRIBED BURNS

<http://fortordcleanup.com/prescribed-burns/>

GROUNDWATER CLEANUP

<http://fortordcleanup.com/programs/groundwater/>

SOIL CLEANUP AND LANDFILL MONITORING

<http://fortordcleanup.com/programs/soil/>

HABITAT MANAGEMENT

<http://fortordcleanup.com/programs/habitat/>

COMMUNITY OUTREACH

<http://fortordcleanup.com/community>

You can help determine the level of community interest at Fort Ord and refine the public participation program to meet the community's information needs. Take the survey on page 7.

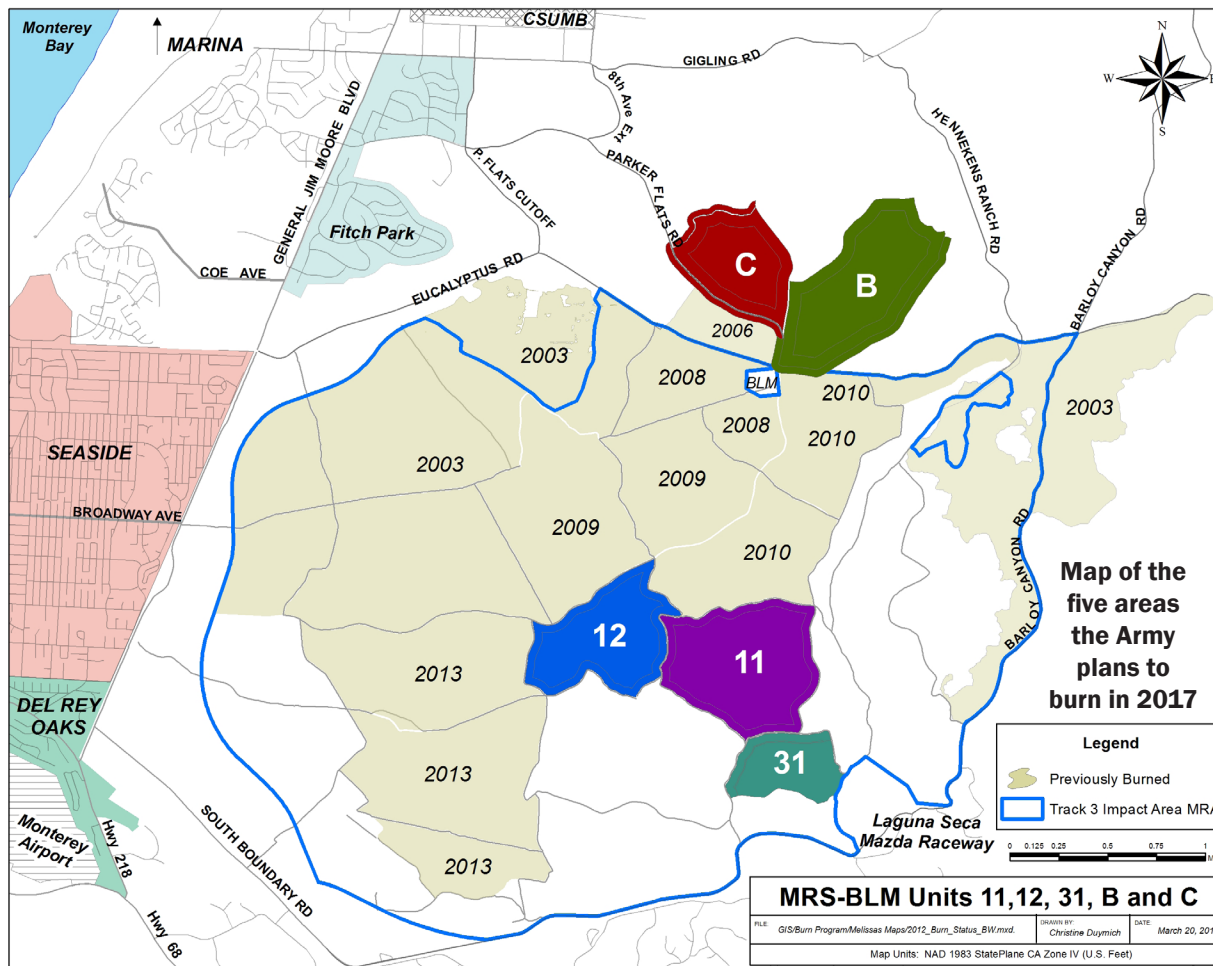
**PARA OBTENER UNA COPIA EN ESPAÑOL, CONTACTE: 831-393-1284.
FOR A COPY OF THIS NEWSLETTER IN SPANISH, CALL 831-393-1284.**

LANDFILL MONITORING

The Army operated a landfill during the years Fort Ord served as a training base. The landfill provided waste disposal for Fort Ord's housing, offices and support facilities, such as machine shops and motor pools. The Army stopped accepting waste into the landfill in 1987. Like many municipal landfills from this era, Fort Ord's landfill was later found to be leaching Volatile Organic Compounds into the groundwater beneath it. The Fort Ord Landfill site also known as Operable Unit 2 or OU2, consists of linear trenches of buried waste called cells covering approximately 100 acres. Due to the presence of contamination in groundwater, the Army installed a groundwater extraction and treatment facility which has been operating since 1995. The landfill cells are now covered with a low permeability cover to prevent rain water from coming into contact with the waste and cause chemicals to leach through the soil into groundwater beneath the landfill.

Now that the landfill is covered, the Army conducts a regular maintenance program to make sure treatment systems are operating efficiently and the cover remains intact. The cover is inspected routinely and repairs are made to any minor damage caused by erosion and animals. The Army monitors and analyzes groundwater as a part of a groundwater monitoring program. Monitoring at the Fort Ord landfill has been conducted since the landfill was covered.

As with most landfills, decay of organic waste produces gases (primarily methane and carbon dioxide). Over time, as wastes continue to decay, less methane will be produced and eventually will decline to near zero. The Army installed a landfill gas extraction and treatment system to capture landfill gas from reaching high concentrations and migrating off the landfill. The landfill gas treatment system uses a thermal treatment unit that destroys methane and potentially hazardous trace gases collected. The treatment system accomplishes two goals: to maintain methane concentrations in the soil at the landfill perimeter at acceptable levels and to remove chemicals that might otherwise migrate to groundwater.



PRESCRIBED BURNS PLANNED FOR 2017

The Army is preparing to conduct five prescribed burns on the former Fort Ord during 2017. See photo above for a map of the areas. Prescribed burns are a necessary part of the munitions cleanup of former Fort Ord training ranges. These ranges were used for many weapons systems during the years Fort Ord was in operation. Prescribed burns remove heavy brush on the land so it is safe for cleanup workers to conduct ordnance removal. Prescribed burns also encourage recovery of endangered and sensitive plant species and also reduce risk of wildfires.

In order to minimize the impact of prescribed burns to the local community, the Army has developed a "burn prescription" that provides specific conditions when prescribed burns can be conducted. The prescription requires certain weather conditions, fuel moisture, and fire resources (such as personnel and equipment) before a prescribed burn can be ignited. The prescription is sufficiently rigorous that in past years there were no days that fulfilled all the requirements. For example, in 2016 the Army planned to conduct prescribed burns, but no days met all the requirements of the burn prescription.

The Army's "burn season" is between July 1 and December 31, and in the Monterey Bay region suitable weather conditions meeting the burn prescription typically occur during the fall months. The Army works with meteorologists from the Naval Postgraduate School and California Air Resources Board to predict when the proper conditions will occur.

Under proper conditions, the smoke from the prescribed burns is pushed to the upper atmosphere and some residual smoke remains near ground level. People who have concerns about exposure to smoke may want to take precautions to avoid or reduce exposure during any burn.

Enroll in the free Prescribed Burn direct notification program at FortOrdCleanup.com for updates and information.



Photo of a 2010 burn at the former Fort Ord

MUNITIONS CLEANUP

In 1993 an archival investigation was conducted to locate areas where military munitions may have been used. Additional archive searches, follow-on interviews and visual inspections conducted since 1993 indicated that approximately 12,000 acres were known or suspected to contain munitions and explosives of concern, also known as MEC. Types of MEC found at Fort Ord include artillery projectiles, rockets, hand grenades, practice land mines, pyrotechnics, bombs, demolition materials and other items. Removal actions were conducted in many of the identified areas. In 1998, the Army began a comprehensive evaluation of past investigations and removal actions to develop remedial actions that will support long-term reuse of Fort Ord. Much of the recent munitions cleanup work has been concentrated in the Impact Area. In May 2017, after the signature of a Record of Decision, the Army began a munitions cleanup in the northern portion of the Fort Ord National Monument. The Army calls this munitions cleanup area “Bureau of Land Management Area B” or BLM Area B, for short. It is about 800 acres and located north of the former Impact Area.

The Army and the Bureau of Land Management are committed to providing a safe parkland for visitors, workers, and wildlife on the former Fort Ord. Munitions investigations in the northern portion of the national monument have



Munitions safety is discussed at the cleanup booth at the Presidio of Monterey Language Day event, May 2017.

prompted additional cleanup work that will take place in stages for several years. The cleanup will temporarily affect access to the road and trail systems that are being used for public recreation. Visitors who comply with posted restrictions and remain on designated trails are safe from munitions hazards. We ask that you **Mind the Signs.**

Know Before You Go. If you use the northern portion of the Fort Ord National Monument for recreation, we recommend that you check current road and trail closures. These can be found at www.fortordcleanup.com/programs/blm-area-b/ and at the Army’s information line at 1-800-852-9699. Remember the “3Rs” of explosive safety: recognize, retreat, and report.

GROUNDWATER CLEANUP

GREAT NEWS FOR CLEANUP AT OPERABLE UNIT 1

As part of the Superfund cleanup of former Fort Ord, the Army, with oversight by federal and state regulatory agencies, implemented a program to stop further migration of contamination and clean up contaminated groundwater at Operable Unit 1. The cleanup program included treatment of contaminated soil from a former fire training area (treatment completed in 1988) and construction of three systems to treat groundwater contamination that originated from the fire training area. During operation, the groundwater treatment systems pumped contaminated groundwater from extraction wells and transported the pumped groundwater to a treatment system where contaminants were removed through a granular activated carbon process. The treated groundwater

was returned to the A-aquifer. Two of the three treatment systems were removed after groundwater in those areas had reached the cleanup goals. Groundwater sampling in the third area confirms that groundwater cleanup goals have been achieved site-wide. The remaining groundwater treatment system is being removed this summer. After more than 30 years of groundwater treatment, the cleanup is now complete.

RELOCATION OF OPERABLE UNIT 2 GROUNDWATER TREATMENT PLANT

The Army continues to operate the existing Operable Unit 2 groundwater treatment plant as part of the groundwater remediation project. Water is extracted through a series of wells and sent to a treatment plant where contaminants are removed by a granular activated carbon

filtration process. The clean water is then reinjected into the ground.

Currently a new groundwater treatment plant is being constructed at the Operable Unit 2 landfills and should be completed by February 2018. The existing groundwater treatment plant (with its big blue tanks located off Imjin Parkway) will be removed once the new groundwater treatment plant is operational. The new groundwater treatment plant will extract and treat groundwater more effectively and accelerate the remediation effort. In addition, the move will allow Monterey Peninsula College (the land owner) to expand their campus on the current site of the treatment plant. If you travel on Imjin Parkway, you may see some of the construction activities. Groundwater treatment will not be interrupted during these transitional activities.

CONTINUED ON PAGE 4

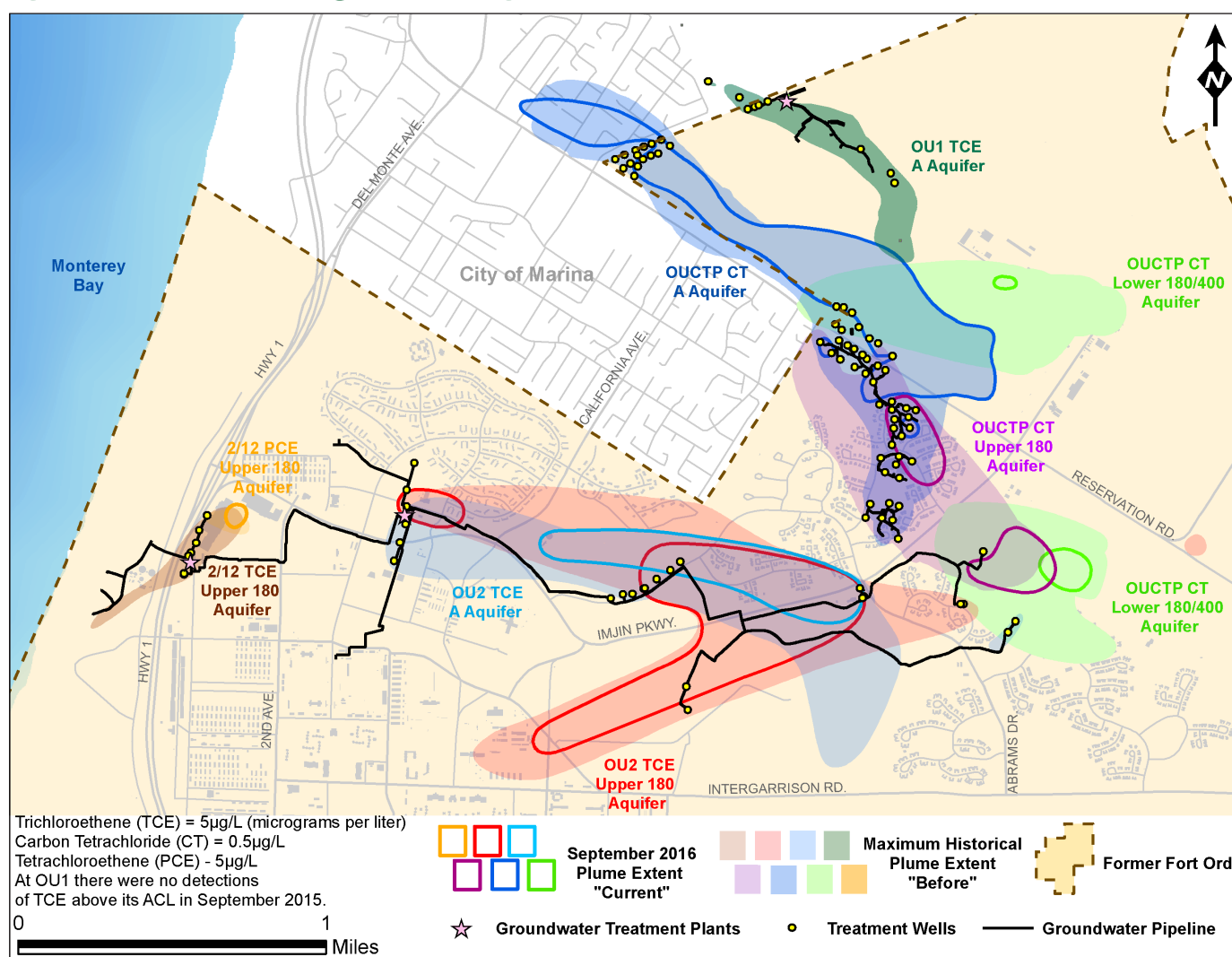
GROUNDWATER CLEANUP (continued from page 3)

SITES 2 AND 12 GROUNDWATER TREATMENT PLANT

The Army continues to operate the Sites 2 and 12 groundwater treatment plant to remove contaminants from groundwater. Groundwater is extracted and treated by granular activated carbon and the air stripper. In 2015, a soil vapor extraction and treatment system was installed as a supplement to enhance the existing groundwater remediation process by removing and treating contaminated soil gas. The groundwater and soil vapor treatment system will continue to operate until impacted groundwater meets the aquifer cleanup level. Treatment is expected to continue for another 2 to 3 years.

OPERABLE UNIT CARBON TETRACHLORIDE

Groundwater located north of Imjin Parkway and Abrams Road and along Reservation Road was contaminated by improperly disposed solvents. Carbon Tetrachloride is the primary contaminant of concern and cleanup includes enhanced in situ bio-remediation using sodium lactate (A-Aquifer), groundwater extraction and treatment with granular activated carbon (Upper 180-Foot Aquifer), and monitored natural attenuation (with wellhead treatment as a contingency measure) (Lower 180-Foot Aquifer). Remediation began in 2009 for the A-Aquifer and in 2011 for the Upper and Lower 180-Foot Aquifers. Additional injection



Current and historical extent of the groundwater contamination

wells and sodium lactate injection system were installed in November 2016. The injection of sodium lactate into groundwater through injection wells began in December 2016 and ended in January 2017. To enhance the distribution of sodium lactate within the A-Aquifer, groundwater recirculation also began in December 2016 and is expected to be finished at the end of August 2017. Additional enhanced in situ bioremediation will be conducted in the future.

YOUR DRINKING WATER IS SAFE

Water pumped from the Marina Coast Water District supply wells meets the drinking water safety standards established by the US Environmental Protection Agency and the California State Water Resources Control Board, Division of Drinking Water.

SOIL CLEANUP AND HABITAT MANAGEMENT

The Site 39 Inland Ranges are a former historical Impact Area used for live fire training exercises with a variety of military munitions and small arms. Soil contamination may have occurred in the areas where military munitions were fired into, fired upon, or used on the facility in the form of artillery and mortar projectiles, rockets, guided missiles, rifle and hand grenades, demolition materials, and small arms. An assessment was designed to investigate ranges and training areas for possible chemical contamination related to various types of military munitions and small arms. There are three activities linked to the Site 39 soil cleanup: (1) identification, cleanup,

and management of contaminated soil, (2) habitat restoration, and (3) habitat monitoring of restored areas. Cleanup of the majority of contaminated areas identified in the Record of Decision are complete.

The majority of the Impact Area is a habitat reserve area which has been designated as part of the Fort Ord National Monument. The habitat within the impact area primarily consists of a central maritime chaparral plant community with many listed and rare species. When designated habitat areas require soil cleanup, the Army completes a habitat assessment of the area. Upon completion of soil cleanup, restoration and monitoring activities are conducted according to the Habitat Res-

toration Plan. To date, the Army has restored 22 acres of central maritime chaparral plant community. The Army is currently restoring 39 acres, and plans to restore an additional 2.3 acres. All restored sites are monitored to ensure plants are growing back successfully, as specified in the Habitat Restoration Plan. In 2016, 42 pounds of native seed was collected. Seed broadcasting of 8 areas was also completed in 2016. Finally, the Army monitored 1,683 acres of maritime chaparral habitat and 31 acres of vernal pools in 2016. As more munitions clearance activities are completed, the Army will continue to evaluate the area for potential soil contamination and excavation, if necessary.

COMING SOON: THE 4TH FIVE- YEAR REVIEW

A great deal of cleanup work has already occurred at the former Fort Ord. How can we tell whether the work that has been done addressed the problems? Does it continue to protect human health and the environment?

The U.S. Environmental Protection Agency requires an evaluation every five years to address exactly those questions, and the Fort Ord Cleanup program is in the middle of preparing the fourth Five-Year Review Report for the years 2012-2016. The U.S. Environmental Protection Agency (EPA) will review the report in cooperation with the California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB).

The major questions the Five-Year Review will address are:

- Are the remedies (the cleanup actions that were implemented) functioning as intended and as outlined in Records of Decision?
- 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 remedies?

Previous Five-Year Reviews were conducted in 2002, 2007, and 2012. The fourth Five-Year Review will be released September 2017.



David Styer discusses native species found on Fort Ord at the May 2017 Nature Walk inside the Impact Area.



Photo shows a few of the 100 people who participated in the February 2017 Open House and Bus tour of the Fort Ord groundwater cleanup areas. Go to the news section of FortOrdCleanup.com for details of upcoming events.

COMMUNITY OUTREACH SURVEY

We'd like your help to refine the community outreach program for Fort Ord by participating in the 2017 Fort Ord cleanup community survey.

We regularly update the Fort Ord Community Relations Plan which describes how community members can participate in decisions about the environmental cleanup of the former Fort Ord. We use input from community members through the Environmental Cleanup Community Survey and community interviews. We are very

interested in learning how you would like to participate in the environmental cleanup at Fort Ord.

Additionally, the information we collect from the survey and community interviews will be used to help determine the level of community interest at Fort Ord and refine the public participation program to meet the community's information needs.

The survey is provided on page 7 or you can complete it online at <http://fortordcleanup.com/community/public-survey/>. Thank you.



Bill Collins discusses the munitions cleanup in the northern portion of the Fort Ord National Monument with a cyclist.

Fort Ord Cleanup Accomplishments

For more information, visit <http://fortordcleanup.com>

MUNITIONS CLEANUP

- The Army is preparing five areas for prescribed burning in 2017.
- Removal of munitions and explosives of concern continues in the Impact Area.
- Removal of munitions and explosives of concern in the northern portion of the Fort Ord National Monument began after a Record of Decision was signed May 2017.

HABITAT MANAGEMENT

- To date, the Army has restored 22 acres of central maritime chaparral plant community.
- The Army is currently restoring 39 acres, and plans to restore an additional 2.3 acres.
 - 42 pounds of native seed was collected in 2016.
- Seed broadcasting of 8 acres was completed at four locations: Historic Areas 26, 28, 34, and 37.
- The Army monitored 1683 acres of maritime chaparral habitat and 31 acres of vernal pools in 2016.
 - Annual monitoring report to U.S. Fish and Wildlife was completed.

LANDFILL MONITORING

- 149,161 pounds of methane and 0.9 pounds of OU2 groundwater constituents of concerns removed in 2016.
- Current methane levels measured at the landfill perimeter meet regulatory standards and have been below 5% for many years.
- Monitoring shows no impact from landfill gases upon surrounding community.
- Studies have indicated that the amount of gas produced is not sufficient to consider use of the gas as a potential power source.

GROUNDWATER CLEANUP

- Operable Unit 1: Sampling and monitoring show that the Operable Unit 1 groundwater cleanup goals have been met. The site is now closed and demolition of the treatment system is underway.
- Operable Unit 2: A new groundwater treatment plant is being constructed at the Operable Unit 2 Landfills to replace the existing plant to expedite the remediation effort. The existing groundwater treatment plant continues to treat groundwater extracted from the A-Aquifer and Upper 180-ft Aquifer until the new plant is operational.
- Sites 2 and 12: The Army continues to operate the Sites 2 and 12 groundwater treatment plant to remove contaminants from groundwater. Groundwater is extracted and treated by granulated activated carbon and the air stripper. In 2015, a soil vapor extraction and treatment system was installed as a supplement to enhance the existing groundwater remediation process by removing and treating contaminated soil gas. Groundwater treatment is expected to continue for another 2 to 3 years until cleanup standards are met.
- Operable Unit Carbon Tetrachloride Plume: Carbon Tetrachloride is the primary contaminant of concern and cleanup includes enhanced in situ bio-remediation (A-Aquifer), groundwater extraction and treatment with granulated activated carbon (Upper 180-Foot Aquifer), and monitored natural attenuation (with wellhead treatment as a contingency measure) (Lower 180-Foot Aquifer).

Water pumped from Marina Coast Water District supply wells on former Fort Ord consistently meets Federal and State drinking water standards.

SOIL CLEANUP

- Cleanup of the majority of contaminated areas identified in the Record of Decision is complete.
- If additional cleanup areas are identified, they will be addressed at a future date.

COMMUNITY OUTREACH

- 2016 outreach activities included:
- 9 tours with a total of 415 participants
 - Guided Nature walk included 80 participants
 - 730 local students heard a munitions safety briefing
 - Cleanup information booths at: Sea Otter Classic, Earth Day Celebrations, Monterey County Fair, Marina Equestrian Center, and Bureau of Land Management Public Lands Day



Fort Ord Environmental Cleanup Community Survey

1. When did you become aware of the environmental cleanup of the former Fort Ord?

2. How did you first learn about the environmental cleanup of the former Fort Ord?
 television news newspapers news
 newspaper notices neighbors/friends
 Fort Ord newsletter other (please describe)

3. Is the information you currently receive about the Fort Ord cleanup:
 about right too much too little
 other (please describe)

4. What type of Fort Ord cleanup activities/information interests you?
 groundwater soil military munitions
 vegetation burning property transfer
 Environmental Services Cooperative Agreement
 other (please describe)

5. How should the Army contact you about cleanup issues?
 newsletter (mail) fact sheets (mail) email
 public meetings events/tours website
 other (please describe)

6. How would you contact the Army about cleanup issues?
 public meetings written comments (mail)
 email telephone 1-800 number
 small group meetings (clubs/associations)
 other (please describe)

7. What time and place would be most convenient for you to attend public meetings about Fort Ord cleanup subjects?

8. In what language(s) would like to receive cleanup information?

9. What newspaper do you read the most?

10. What library do you use the most?

11. Are you aware of the cleanup information repositories?
 Yes No
 If yes, have you visited the cleanup information repository located at: (check all that apply)
 California State University, Monterey Bay Library
 Fort Ord Administrative Record, Bldg 4463
 Seaside Library www.FortOrdCleanup.com
 (online Administrative Record Access)

12. What are your particular interests or concerns about the cleanup process?

13. How would you like the Army to address your interests or concerns?

14. Is there a person, group, or organization you think would be interested in talking to the Army about the Fort Ord cleanup process?

15. Is there anything else about the cleanup you would like to share with us?

16. Do you live in the Monterey Bay – Salinas Valley area?
 Yes No If yes, how long:
 0-5 years 6-12 years 13-20 years 21 or more years

17. Are you aware of the Fort Ord Reuse Authority Environmental Services Cooperative Agreement munitions remediation program?
 Yes No

THANK YOU VERY MUCH FOR YOUR TIME AND INTEREST

Please return the completed survey by mail no later than November 1, 2017, to:

Fort Ord Environmental Cleanup Community Survey
Fort Ord BRAC Office
P.O. Box 5008
Monterey, CA 93944-5008

Be sure to affix the appropriate postage. Call the Community Relations Office (831) 393-1284 for more information.
Or you can save a stamp/paper and take the survey online; go to the “News” section at www.FortOrdCleanup.com.

Para obtener una copia en Español contacte (831) 393-1284.



2016 Annual Report Inside This Issue

The Fort Ord Cleanup Program:

Goals & Highlights 1

**Prescribed Burns Planned
for 2017 2**

Landfill Monitoring 2

Munitions Cleanup 3

Groundwater Cleanup 3

**Soil Cleanup & Habitat
Management 4**

**Coming Soon: The 4th
Five-Year Review 5**

Community Outreach 5

**Cleanup Program
Accomplishments 6**

Community Survey 7

Fort Ord Environmental Cleanup

Community Relations Office
P.O. Box 5008
Monterey, CA 93944

PRSR STD
U.S. Postage
PAID
Monterey, CA
Permit No. 49

ECRWSS

Postal Customer

FORT ORD AGENCY CONTACTS

The Army is responsible for conducting cleanup of the former Fort Ord, but it must do so in a manner that complies with federal and state laws and under the supervision of federal and state regulatory agencies. The Fort Ord cleanup is being conducted under the Superfund or "CERCLA" cleanup process. CERCLA is an acronym for the federal law entitled the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund. It encompasses cleanup of soil and groundwater that contain hazardous substances such as metals, pesticides, and other chemical contaminants common to landfills, firing ranges, and other military sites. At Fort Ord, the Superfund cleanup is supervised by the U.S. Environmental Protection Agency, California Department of Toxic Substances Control and the Regional Water Quality Control Board. Under an agreement between the Army and regulatory agencies, each agency assigns a representative to the Base Cleanup Team. Contacts for each of the participating agencies in Fort Ord's cleanup are listed below.

The Environmental Services Cooperative Agreement (ESCA) is an Army grant to the Fort Ord Reuse Authority (FORA) for munitions remediation on 3,340 acres that have been transferred to FORA. The ESCA munitions remediation program is supervised by U.S. Environmental Protection Agency and California Department of Toxic Substances Control.

U.S. Department of the Army Base Realignment and Closure (BRAC)

William K. Collins, BRAC Environmental Coordinator
Phone: (831) 242-7920
E-mail: William.K.Collins.civ@mail.mil

Community Relations Office

Phone: (831) 393-1284
or 1-800-852-9699
E-mail: Melissa.M.Broadston.ctr@mail.mil

FORA ESCA Remediation Program

Stan Cook, Program Manager for ESCA Remediation Program
Phone: (831) 883-3672
E-mail: ESCA@fora.org

U.S. Environmental Protection Agency

Maeve Clancy, Remedial Project Manager for the Army's cleanup program and FORA ESCA Remediation Program
Phone: (415) 947-4105

Viola Cooper, Community Involvement Coordinator
Phone: (415) 972-3112 or (800) 231-3075

E-mail: Cooper.Viola@epa.gov

California Environmental Protection Agency Department of Toxic Substances Control

Vlado Arsov, Remedial Project Manager for Army's munitions cleanup and FORA ESCA Remediation Program
Phone: (916) 255-4988

E-mail: Vlado.Arsov@dtsc.ca.gov

Min Wu, Remedial Project Manager for groundwater, soil remediation, and property transfer

Phone: (916) 255-3621
E-mail: Min.Wu@dtsc.ca.gov

Tammy Pickens, Public Participation Specialist

Phone: 916-255-3594
E-mail: Tammy.Pickens@dtsc.ca.gov

California Environmental Protection Agency Regional Water Quality Control Board

Grant Himebaugh, Remedial Project Manager for groundwater

Phone: (805) 542-4636
E-mail: GHimebaugh@waterboards.ca.gov

PARA OBTENER UNA COPIA EN ESPAÑOL, CONTACTE 831-393-1284
FOR A COPY OF THIS NEWSLETTER IN SPANISH, CALL 831-393-1284