Page 4

Fort Ord Drinking Water Quality

Drinking water sources are protected from contaminated groundwater by institutional and engineering controls. Institutional controls include deed restrictions, California State Land Use Covenants (LUCs), Marina Municipal Code, and Monterey County Code, which prohibits construction of water wells within the Prohibition Zone (Figure 4). Engineering controls are the groundwater treatment systems (Figure 5).

The Marina Coast Water District (MCWD) supplies drinking water to the City of Marina and former Fort Ord. Drinking water supplied by MCWD meets all Federal, State, and local regulatory standards. Drinking water quality is regularly tested by MCWD and results are reported in an annual Consumer Confidence Report (CCR) found at: www.mcwd.org/ ccr.html.

TCE concentrations in drinking water supply wells are at very low levels and are not expected to increase. Groundwater modeling indicates concentrations will remain below drinking water MCLs. Monitoring wells upgradient of supply wells show stable or declining concentration trends. Fort Ord drinking water is safe and protected from contamination plumes.

Community Involvement Workshop—Fort Ord Groundwater

Frequently Asked Questions

Is the water safe to drink? Yes. The MCWD regularly monitors drinking water. These results are reported to the California State Water Resources Control Board, Division of Drinking Water, and the water quality results are published for the public to see on the MCWD website www.mcwd.org/ccr.html. In addition, the Army also routinely monitors three Ord Community drinking water supply wells used by the MCWD and the results are reported to the regulatory agencies EPA, RWQCB, and DTSC.

Is there contamination in groundwater from former Fort Ord activities? Yes. There's groundwater contamination at four sites.

Does the contamination affect drinking water supplies? Yes. The Army and the MCWD detected very low concentrations of TCE in three water supply wells located in the Ord Community. The amount detected is just above the detection limit but well below the MCL. The drinking water meets all federal and state drinking water standards.

What has the Army done to clean up groundwater contamination? The Army has removed or treated the source of the contamination and installed water treatment facilities at all known groundwater contamination sites. The U.S. Environmental Protection Agency (EPA), the California Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board (RWQCB) oversee groundwater cleanup programs at the former Fort Ord.

How long will it be before the groundwater cleanup is complete? The Army will continue to treat known contaminated groundwater sites until COCs are at or below ACLs. Due to the amount of water that must be pumped and treated, the concentrations of contaminants decline slowly over time. OU1 has met its ACLs and Sites 2/12 is expected to meet ACLs in the next few years. Removal of sufficient contamination to meet ACLs at OUCTP could take up to 20 years and at OU2 it could take up to 30 years.

Fort Ord Groundwater Cleanup Contact Information

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California State University Monterey Bay (CSUMB) Tanimura & Antle Family Memorial Library Circulation Desk, Bldg. 508, First Floor, Divarty Street, Seaside, (831) 582-3733, http://library.csumb.edu/

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U.S. Army, Fort Ord Base Realignment and Closure (BRAC) Office William Collins, BRAC Environmental Coordinator, (831) 242-7920, William.K.Collins.civ@mail.mil or Fort Ord Community Relations Office, (831) 393-1284, Melissa.M.Broadston.ctr@mail.mil

U.S. Environmental Protection Agency (EPA), Region IX ,Martin Hausladen Remedial Project Manager for Site 2/12, (415) 972-3007, Hausladen.Martin@epa.gov

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California EPA Regional Water Quality Control Board (RWQCB) Grant Himebaugh, Remedial Project Manager, (805) 542-4636, GHimebaugh@waterboards.ca.gov

Para obtener una copia en español, llame al (831) 393-1284

Fort Ord Groundwater

rivers and lakes).

Groundwater – All water

under the ground, not water

on the surface (for example

Aquifer—A body of rock or

soil that is sufficiently perme-

able for groundwater to flow

and serve as a water source.

Water Table-Depth below

the ground surface at which

groundwater is found.

Contents:

Page 1

FAQs

Groundwater 1 Definitions Conceptual Site 1 Model Groundwater 2 Monitoring Groundwater 3 Contamination and Treatment Drinking Water 4 Quality

Contact Information 4

4

Aquitard—A body of less permeable rock or soil between aquifers that retards the flow of water between the aquifers.



Fort Ord Community Relations Office: (831) 393-1284, or go to www.FortOrdCleanup.com

Groundwater Definitions

COCs—Chemicals Of Concern (present in groundwater).

MCL—Maximum Contaminant Level, the maximum allowable concentration of a chemical in drinking water.

ACL—Aquifer Cleanup Level, the cleanup goal for a COC in groundwater identified in a Record of Decision (typically the same as the MCL or lower).

Plume—Area of aquifer in which COCs are present at concentrations greater than the ACL. **OU**—Operable Unit, discrete portion of remedial response that manages migration, or eliminates or mitigates a pathway of exposure.

TCE—Trichloroethene, primary COC at OU1, OU2, and 2/12.

CT—Carbon tetrachloride, primary COC at OUCTP.

PCE—Tetrachloroethene, primary COC at 2/12.

February 2015

Groundwater Monitoring

The Army and regulatory agencies have identified four areas on the former Fort Ord where chemical releases associated with past Army activities have contaminated groundwater. These four areas are identified as Operable Unit 1 (OU1), Operable Unit 2 (OU2), Sites 2 and 12 (2/12) and Operable Unit Carbon Tetrachloride Plume (OUCTP).

- TCE is the main COC at OU1 and OU2.
- PCE is the main COC at Sites 2/12.
- CT is the main COC at OUCTP.

The Army has installed an extensive monitoring well network (Figure 2) to identify the COC plume boundaries in the affected aquifers and determine the flow rates and directions of the affected groundwater. As groundwater contamination is cleaned up, monitoring wells meeting the criteria shown in Figure 3 may be destroyed.

Figure 2 (above right): Monitoring well network in each of four contamination areas OU1, OU2, OUCTP, and Sites 2/12.

Figure 3 (below): Monitoring well decision rules flow chart determining sampling frequency and possible well destruction.

Figure 2



Figure 4



Groundwater Contamination and Treatment

Several groundwater treatment facilities pump contaminated groundwater from aquifers, remove contamination, and return treated groundwater to the aquifers. Groundwater cleanup will continue until COCs are below their respective ACLs. The four sites are described below.

OU1-Groundwater at this site was contaminated by former fire-fighting training in an area near the Marina Municipal Airport. Training ceased in 1985. The primary COC was TCE, an industrial solvent used for degreasing, dry cleaning, and cleaning of mechanical parts. Contaminated soil was removed in 1988, and as of September 2014, all sampling results from monitoring wells have been below the ACL for TCE. The groundwater treatment system is on standby during attainment monitoring and evaluation for site closeout.

OU2-A closed landfill south of the corner



Figure 3 **Well Status Decision Rules**



Page 2

of Imjin Parkway and Abrams Road caused groundwater contamination. An impermeable cover placed over the landfill now prevents rainwater from reaching and moving through the buried materials. A gas extraction and treatment system removes methane gas and COCs. Groundwater extraction for TCE, the main COC, from the A-Aquifer and the Upper 180-Foot Aquifer and treatment with GAC began in 1995. The plume has shrunk significantly, and to optimize cleanup, the treatment plant will be relocated nearer to the center of the plume.

Sites 2/12—A former maintenance facility in the current location of "The Dunes on Monterey Bay" shopping center (south of Imjin Parkway and east of Highway 1) caused groundwater contamination from improperly disposed solvents. Contaminated soil was removed in the 1990s. PCE is the primary COC. Groundwater extraction and treatment with GAC began in 1999 and is on-going. Recent investigation results support the recommendation to add soil vapor extraction to enhance the groundwater remedy and shorten the time required for cleanup.

OUCTP-Groundwater located north of Imjin Parkway and Abrams Road and along Reservation Road was contaminated by improperly disposed solvents. CT is the primary COC and cleanup includes enhanced in situ bioremediation (A-Aquifer), groundwater extraction and treatment with GAC (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.

Figure 5 (below): Groundwater remediation by groundwater extraction and treatment with GAC is the engineering control applied at the site. Treatment systems are optimized to improve efficiency. Optimization includes reviewing sampling data, treatment technologies, and modeling pumping configurations.