

Fort Ord Cleanup Fact Sheet: Operable Unit 1

History:

The Army's Fritzsche Army Airfield Fire Drill Area, also known as Operable Unit 1 or OU1, was a Fort Ord fire response training area for firefighters. Fuel and solvents were discharged into an unlined pit, ignited, then extinguished.

Environmental investigations began in 1984 and continued through 1987 to document the nature and extent of the contamination in soil and groundwater. The investigations indicated that some of the chemicals from the fuel and solvents used during the training leaked into the soil and groundwater -- causing contamination. The chemicals of concern (COC) identified in the groundwater were benzene, trans-1,2, dichloroethene, methyl ethylketone, and trichloroethene (TCE). TCE is the primary COC in groundwater at OU1 because it is detected at the highest concentrations across the greatest extent of the impacted groundwater at OU1. The main COC identified in the soil investigations was petroleum hydrocarbon which was confined to the surface and shallow soil areas. Following these studies, the Army excavated and treated 4,000 cubic yards of soil from the Fire Drill Area using a method called **bioremediation**. After completion of soil testing after the bioremediation/cleanup, it was determined that no further cleanup was necessary for the soil. Further cleanup was required for the groundwater. In 1988, the Army constructed a groundwater treatment system (the original treatment system) which used **activated carbon** to clean the contaminated groundwater in this area.

Chemicals of Concern (COCs)

Elements or compounds that are present in the soil or groundwater at concentrations that could detrimentally affect human health or the environment. At OU1, 10 COCs were identified in groundwater but trichloroethene (TCE) is the primary COC.

A Closer Look at Soil and Groundwater Cleanup Processes

Bioremediation allows natural processes to clean up harmful chemicals in the environment. Microscopic "bugs" or *microbes* that live in soil and groundwater like to eat certain harmful chemicals, such as those found in petroleum hydrocarbons like gasoline. When microbes completely digest these chemicals, they change them into water and harmless gases such as carbon dioxide.

Activated carbon is a material used to filter harmful chemicals from contaminated water. It looks like tiny granules of black sand. As contaminated water flows through an activated carbon filter, chemicals *sorb* or stick to the surface and within the pores of the granules. Most tap water filters and fish tank filters at home contain activated carbon and work the same way. Tanks filled with activated carbon are often used as part of a pump and treat system to clean up contaminated groundwater, such as the systems used to clean the groundwater at former Fort Ord's OU1.

The Original Groundwater Pump and Treatment System:

The groundwater pump and treatment system pumped water from wells placed in the contaminated areas of the

groundwater. The extracted water was then sent through tanks that contained activated carbon which removed the hazardous chemicals from the groundwater. The treated water was returned to the ground through a spray irrigation system. This system was shut down in February 2006 to evaluate if there was any return (also called rebound) of contaminated water in this area. The groundwater monitoring results indicated no

significant rebound occurred, so the original treatment system remains shut down and mothballed; however, the quarterly groundwater monitoring in this area continues today. This open space area of the former Fort Ord is part of the University of California at Santa Cruz Natural Reserve System. The land associated with the former Fritzsche Army Airfield has been transferred to the City of Marina for use as a civilian airport.



In the original system pictured above, the OU1 groundwater was pumped through the three white tanks that hold activated carbon. The TCE and other contaminants stick to the activated carbon. The clean water is then returned to the ground.

Documenting the Aquifer Cleanup Goal and Cleanup Activities: The 1995 OU1 Record of Decision:

In 1995, the Army and its regulatory partners, the U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances (DTSC), and California Regional Water Quality Control Board (RWQCB) completed and signed the Operable Unit 1 Record of Decision (a Record of Decision (ROD) is an official decision document that describes the selected cleanup for an area). The OU1 ROD established a specific aquifer cleanup goal (the cleanup goal for a contaminant in groundwater identified in a Record of Decision) for each of ten COCs, including TCE, the primary COC.

Your Drinking Water is Safe.

The Marina Coast Water District (MCWD) supplies water to the City of Marina and former Fort Ord. The water supplied at Fort Ord meets regulatory standards. Water quality is regularly tested by MCWD and results are reported in a Consumer Confidence Report available at www.mcwd.org/water_quality.html. Groundwater test results from all monitoring wells on the former Fort Ord are routinely provided to U.S. Environmental Protection Agency, California Regional Water Quality Control Board, California Department of Toxic Substances Control, and the local community. The city of Marina's drinking water wells draw water from very deep aquifers over 900 feet below the ground surface. MCWD collects samples from these wells annually which are analyzed by a state-certified laboratory. Results show all the wells provide safe drinking water which meets all federal and state standards.

Building a Second Groundwater Treatment System -- The Northwest Treatment System:

In 2000, groundwater monitoring identified additional contamination beyond the original treatment system capture zone. Subsequent investigations showed that contamination had migrated approximately 2,500 feet away from the original area. In 2003, the Army awarded a contract to complete all remaining remediation. The remaining groundwater contamination at the site on the former Fort Ord was planned to be addressed by a new treatment system called the Northwest Treatment System.

In 2006, construction began on the Northwest Treatment System and in 2007 it was upgraded and expanded to increase extraction and treatment. The map on page 5 shows the location of this treatment system as well as the pipes and wells.



Northwest Treatment System: The OU1 groundwater is pumped through the blue tanks that hold activated carbon. The TCE and other contaminants stick to the activated carbon in the tanks and are removed from the water. The clean water is then returned to the ground.

Water Samples Identify TCE in an Off-Site Area – The Pilot Study and the Third Groundwater System, the Off-Site System:

In 2005, the Army found that contamination exceeding the aquifer cleanup goal had migrated off the former Fort Ord site. The contamination had migrated approximately 1,500 feet from the former Fort Ord property boundary. As a pilot study project in August 2008, the Army constructed and installed a third groundwater pump and treat system called the Off-Site System on the Armstrong Ranch property. The Army also installed additional monitoring wells on the Armstrong Ranch property and one well (MW-OU1-094A) in the sidewalk along Quebrada Del Mar in the Monterey Bay Estates neighborhood. These wells helped determine the extent of the OU1 groundwater contamination. **It is important to note that TCE has never been detected in any of the water samples from Well MW-OU1-94A located on Quebrada Del Mar.**



Off-Site System: Just like the other OU1 groundwater systems, groundwater is pumped through tanks that hold activated carbon. The TCE and other contaminants stick to the activated carbon in the tanks and are removed from the water. The clean water is then returned to the ground.

The pilot study's off-site treatment system operated full-time from August 2008 until

February 2009. This system was shut down or “mothballed” when the aquifer cleanup goal was achieved. A series of rebound tests started in February 2009 indicated that COC concentrations (TCE) remain below the aquifer cleanup goal. Even though this groundwater treatment system was shut down, the Army continues to monitor the groundwater in this area to make sure the cleanup remains complete. The map on page 5 shows this treatment system and associated wells and piping.

What Happens Next:

This summer, the Army will publish a report, called the Explanation of Significant Differences that documents many aspects of the OU1 cleanup on the Army’s former Airfield. You may also see our public notice in the newspaper that announces the availability of this Explanation of Significant Differences report. The Army will continue to monitor the Operable Unit 1 groundwater every three months and continue to operate the Northwest Treatment System until the aquifer cleanup goal is met. For further assurance that the groundwater cleanup remains successful, Monterey County has adopted an ordinance prohibiting new water supply wells in the OU1 area until cleanup is completed.

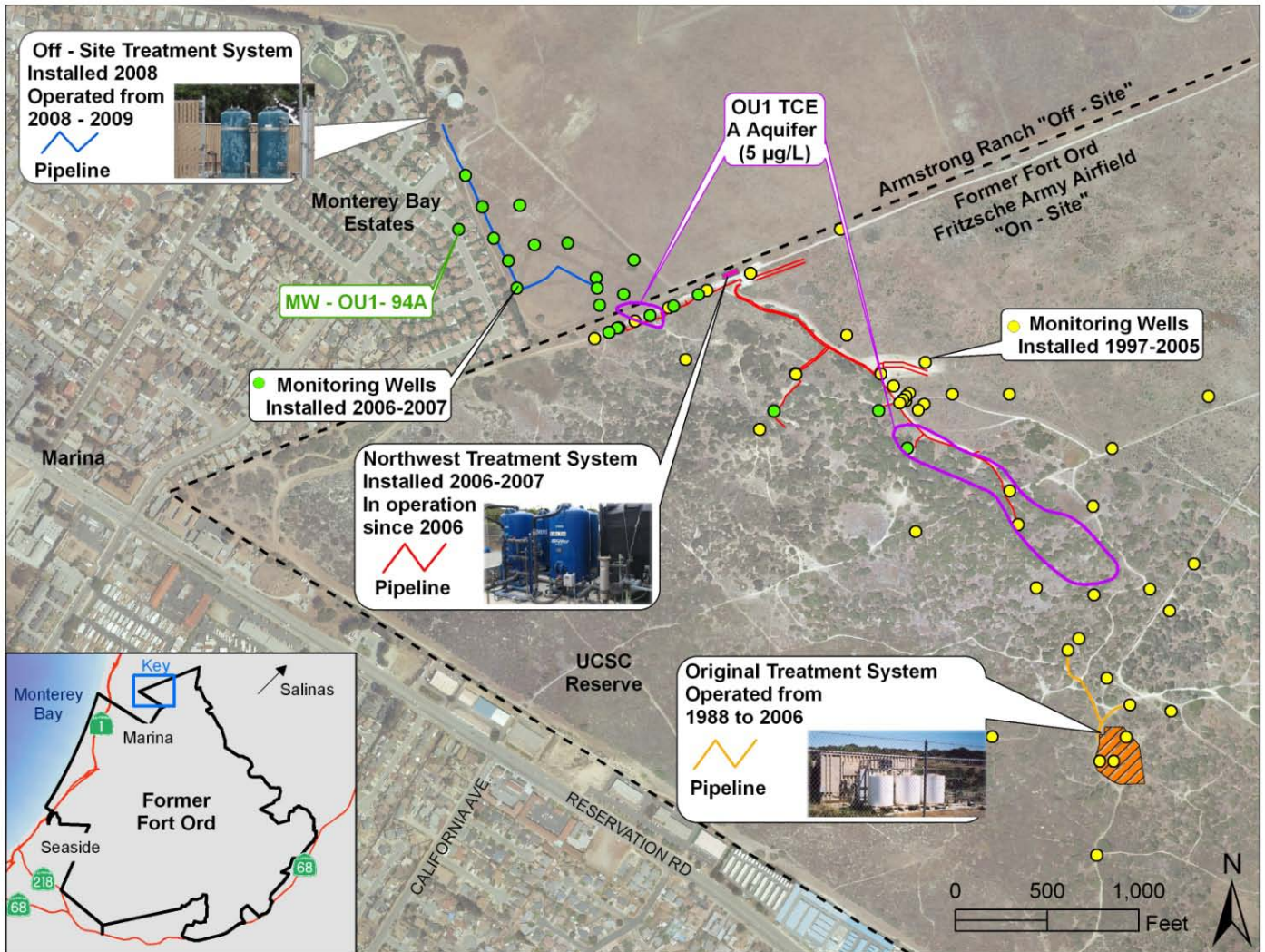
To Learn More About the Fort Ord Cleanup:

Please contact Melissa Broadston, U.S. Army Fort Ord Base Realignment and Closure Cleanup (BRAC) Office at (831)393-1284 or email Melissa.Broadston@us.army.mil to discuss your question or concerns. Or, you can contact the representatives (below) of the regulatory agencies involved with the Fort Ord drinking water and water cleanup:

- **U.S. Environmental Protection Agency, Region IX:** Martin Hausladen, Remedial Project Manager, (415) 972-3007, Hausladen.Martin@epamail.epa.gov
- **California Environmental Protection Agency, Department of Toxic Substances Control:** Franklin Mark, Remedial Project Manager, (916) 255-3584, FMark@dtsc.ca.gov
- **California Environmental Protection Agency, Regional Water Quality Control Board:** Grant Himebaugh, Remedial Project Manager, (805) 542-4636, Ghimebaugh@waterboards.ca.gov

If you are interested in learning more about the OU1 cleanup activities or if you’d like to review the OU1 cleanup documents we invite you to visit our cleanup web site www.FortOrdCleanup.com.

Overview and Current Stage of OU1 Cleanup



Summary: The map above shows the current groundwater plume footprint and some of the key events in the OU1 groundwater investigation and treatment process ongoing since 1986. Aquifer cleanup goals were established in a 1995 ROD which identified 10 COCs. Many monitoring wells and three pump-and-treat systems have been installed over the years. After undergoing treatment, only TCE remains a consistent contaminant above the aquifer cleanup goal of 5 micrograms per liter (5 µg/L). In recent years, concentrations have been steadily decreasing and the footprint of the contaminated plume has been shrinking, indicating that the treatment system will achieve a successful cleanup. Continued monitoring of selected wells ensures that the cleanup remains effective after all treatment systems are eventually shut down.