

Former Fort Ord Monterey County California

Groundwater Cleanup Update Technical Review Committee Meeting, February 11, 2021



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Fort Ord Groundwater: Definitions

ACL – Aquifer Cleanup Level, the cleanup goal for a COC in groundwater.

Aquifer – a body of rock or soil that is sufficiently permeable for groundwater to flow and serve as a water source.

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

COC – chemical of concern.

CT – carbon tetrachloride, primary COC at OUCTP.

Groundwater – all water under the ground, not water on the surface (rivers, lakes, etc.).

Groundwater Divide – a boundary between groundwater basins; groundwater flows away from a groundwater divide.

MNA – monitored natural attenuation.

OU – Operable Unit, discrete portion of remedial response that manages migration, or eliminates or mitigates a pathway of exposure.

PCE – tetrachloroethene, primary COC at Sites 2/12.

Plume – area of aquifer or unsaturated zone in which COCs are present at concentrations greater than cleanup levels.

SGCL – Soil Gas Cleanup Level, the cleanup goal for a COC in soil gas.

TCE – trichloroethene, primary COC at OU2.

Unsaturated Zone – the portion of the subsurface above the water table.

Water Table – depth below ground surface at which groundwater is found (at the top of the saturated zone).

Interpretive Geologic Cross Section





Explanation August 2020 Plume Extent "Current" ∼ OU2 TCE A-Aquifer ∼ OU2 TCE Upper 180-Foot Aquifer ∼ OUCTP CT A-Aquifer ∼ OUCTP CT Upper 180-Foot Aquifer ∼ OUCTP CT Lower 180-Foot Aquifer ∼ Site 12 PCE Unconfined Upper 180-Foot Aquifer Maximum Historical Plume Extent "Before" **OU1 TCE A-Aquifer OU2 TCE A-Aquifer** OU2 TCE Upper 180-Foot Aquifer OUCTP CT A-Aquifer OUCTP CT Upper 180-Foot Aquifer OUCTP CT Lower 180-Foot Aquifer Sites 2/12 PCE Unconfined Upper 180-Foot Aquifer Sites 2/12 TCE Unconfined Upper 180-Foot Aguifer Aquifer Cleanup Levels (ACLs) Trichloroethene (TCE) = 5 μ g/L (micrograms per liter) Carbon Tetrachloride (CT) = $0.5 \mu g/L$ Tetrachlorethene (PCE) for OUCTP and Sites $2/12 = 5 \mu g/L$ Tetrachlorethene (PCE) for OU2 = $3 \mu g/L$ OU1 cleanup is complete.



Date: 1/20/2021





Explanation

Groundwater Monitoring Wells

Former Fort Ord Boundary

Groundwater Monitoring Program







Groundwater Extraction and Treatment System Status

as of December 31, 2020

	OU2/OUCTP*	Sites 2/12
Treatment started	October 1995	April 1999
Gallons treated	8.360 billion	2.188 billion
Pounds of contaminants removed	904	493
Gallons of contaminants removed	72	39
Aquifers treated	A-Aquifer Upper 180-Foot Aquifer	Upper 180-Foot Aquifer

*The OUCTP remedy for the Upper 180-Foot Aquifer is connected to the OU2 groundwater treatment plant.

Groundwater Extraction and Treatment Systems Schematic



OU2 Groundwater Treatment Plant Relocation and System Expansion







OU2 A-Aquifer





OU2 Upper 180-Foot Aquifer





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Sites 2 and 12 Upper 180-Foot Aquifer



TCE at or above ACL (5 μg/L)
PCE at or above ACL (5 μg/L)
N



Remedy: Groundwater Extraction and Treatment



400-Foot Aquifer

Sites 2 and 12 Unsaturated Zone



Soil Vapor Extraction and Treatment System Schematic



Groundwater

OUCTP A-Aquifer





CT at or above ACL (0.5 μ g/L)

OUCTP Upper 180-Foot Aquifer



BEFORE

NOW

OUCTP Lower 180-Foot Aquifer



Per- and Polyfluoroalkyl Substances (PFAS)

- PFAS chemical compounds that are resistant to heat, water, and oil.
- Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)
 – historically the most widely-used throughout the United States.
- 1970s DoD began using Aqueous Film-Forming Foam (AFFF) that contained PFAS because it quickly extinguishes petroleum-based fires.
- PFAS are found in people, the environment, and wildlife and do not break down easily.
- There is evidence that exposure to PFAS can lead to adverse human health effects.
- PFAS are the subject of increasing regulation worldwide.



Per- and Polyfluoroalkyl Substances (PFAS)

- May 2016 USEPA established lifetime health advisory levels for PFOS and PFOA in drinking water https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisoriespfoa-and-pfos.
- Army is conducting historical records reviews to identify locations where there is a potential for a release of PFAS.
- Locations on Army installations where AFFF was used or stored had the greatest likelihood of releases.



PFAS Investigations at the former Fort Ord

- In 2020, the Army reviewed historical activities for potential releases of PFAS.
- Results indicate limited historical use of PFAS-containing material.
- Report available at https://docs.fortordcleanup.com/ar_pdfs /AR-OU2-722B//OU2-722B.pdf.
- The Army follows the CERCLA process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risk.



PFAS Investigations at the former Fort Ord

- The Army will conduct a Preliminary Assessment (PA) for PFAS at the following types of sites:
 - > Former fire training areas (FTAs) where firefighting exercises were conducted
 - Former AFFF storage locations (e.g., fire stations)
 - > Aircraft crash sites where AFFF may have been applied for fire control
 - Aviation hangars and other buildings or fuel storage areas where AFFF was used in the fire suppression system and where a release may have occurred
 - Other aviation assets (runways, fuel farms, defueling areas) where fuel- or petroleum-based fires may have occurred
 - > Landfills and waste disposal areas where PFAS-containing materials may have been disposed
 - Wastewater treatment plants that may have received liquid effluents from facilities that used or disposed of PFAS
 - AFFF firefighting equipment testing and washout discharge locations
- If the PA results indicate further investigation is needed, the Army will conduct additional soil and groundwater sampling.

Deletion of Portions of the former Fort Ord from the National Priorities List (NPL)

- On November 20, 2020, USEPA published a Federal Register notice announcing proposal to delete 11,934 acres of the former Fort Ord from the NPL.
- Proposal comment period ended December 21, 2020.
- Only specific areas where cleanup of military munitions and soil contamination is complete are proposed for deletion.
- Groundwater and soil gas contamination cleanup is still underway, and those media remain on the NPL.
- Remaining 15,893 acres and associated contamination, including potential PFAS, remain on the NPL.



For Additional Information

Visit the Army's website at: www.fortordcleanup.com

Visit the Fort Ord Administrative Record at: Building 4463 Gigling Road, Room 101 Ord Military Community Seaside CA 93955 (831) 393-9693 adminrecord@fortordcleanup.com