

**Workshop Summary Notes
Fort Ord Environmental Cleanup
Technical Review Committee (TRC)**

February 14, 2023
Via Conference Call

The materials listed below were provided to attendees:

- An agenda
- Factsheet – Agency for Toxic Substances and Disease Registry (ATSDR) to Re-Evaluate 1985-1994 Drinking Water
- Presentation Slides – Operable Unit 2 (OU2) Landfill Operations & Maintenance Update
- Presentation Slides – Groundwater Cleanup Update
- Presentation Slides – Per- and Polyfluoroalkyl Substances (PFAS) Update
- Presentation Slides – Environmental Services Cooperative Agreement (ESCA)

Agenda Topics

1. Review of the February 11, 2023 Community Involvement Workshop (Open House)
2. Update: Re-Evaluation of Public Health Assessment by ATSDR
3. Presentation: Operable Unit 2 (OU2) Landfills Operations & Maintenance Update
4. Presentation: Groundwater Cleanup Update
5. Presentation: Per- and Polyfluoroalkyl Substances (PFAS) Update
6. Presentation: Environmental Services Cooperative Agreement (ESCA)

Meeting Participants

- R. Curtis Payton, II., U.S. Army
Fort Ord Cleanup Base Realignment
and Closure (BRAC) Environmental
Coordinator
- Maeve Clancy, U.S. Environmental
Protection Agency (USEPA)
- Amber Sellinger, Regional Water
Quality Control Board (RWQCB)
- Brett Leary, Department of Toxic
Substances Control (DTSC)
- Tammy Pickens, DTSC
- Erin Corr, U.S. Army Corps of
Engineers (USACE)
- Theresa Rodgers, USACE
- Derek Lieberman, Ahtna
- Eric Schmidt, Ahtna
- Melissa Broadston, City of Seaside
ESCA
- Ben Havens-Stokes, City of Seaside
ESCA
- Benjamin Gerhardtstein, ATSDR
- Jamie Raymen, ATSDR
- Andy Dudley, Agency for Toxic
Substances and Disease Registry
(ATSDR)
- John Marr, Agency for Toxic
Substances and Disease Registry
(ATSDR)
- Arianne Tucker, California State
University Monterey Bay
(CSUMB)
- Ken Folsom, CSUMB
- Ric Encarnacion, Monterey
County Department of
Environmental Health
- Derek Cray, Marina Coast Water
District (MCWD)
- Sarah Beeson, MCWD
- Jason No, Chenega
- Bart Kowalski, Chenega

- Hudson Facchini, Chenega
- Chieko Nozaki, Chenega

Opening Remarks

Mr. Curtis Payton opened the meeting by welcoming everyone to the call and introducing himself as the new U.S. Army BRAC Environmental Coordinator for Fort Ord. Mr. Payton handed the meeting to Mr. Jason No who facilitated the meeting.

Community Involvement Workshop (CIW) Recap

The Community Involvement Workshop Open House was held on Saturday, February 11, 2023 from 1000 to 1300 at Building 4522 Joe Lloyd Way. Mr. No described that outreach for the event included sending mail to 754 addresses and 2,029 emails to community members on January 27, 2023. Advertisement was also placed in local newspapers; Monterey Herald on February 9, 2023 and the Monterey County Weekly from February 2 – February 8, 2023.

Representatives from U.S. Army BRAC, USACE, USEPA, DTSC, RWQCB, ATSDR, ESCA, MCWD, Ahtna, Burluson, and Chenega were in attendance to provide information and answer questions for local community members. There was a total of 36 local community members that attended the CIW Open House.

This was the first in-person CIW since the pandemic and bus tours were not provided. The weather was rainy and other local events were also taking place at similar times. Mr. No then proceeded to read a list of community comments that were provided by the community members attending the CIW.

The next CIW will take place in July and bus tours are still to be determined.

Re-Evaluation of Public Health Assessment by ATSDR

Mr. Benjamin Gerhardstein of ATSDR provided an update on their re-evaluation of potential health risk from drinking water exposures that occurred between 1985-1994 at Fort Ord. This re-evaluation is being conducted at the petition request of Congressional Representatives. ATSDR is a federal public health agency of the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC).

Mr. Gerhardstein explained that they will review historical data from 1985-1994 for this re-evaluation. He explained since the last report/evaluation in 1996, new science, new methods, and new tools are now available to analyze the data. These scientific advances can give a better understanding how these chemicals of concern can affect human health. The new methods and tools can be used to estimate exposures from showering and other household water uses.

For more information, Mr. Gerhardstein referenced the factsheet and/or to contact himself or Ms. Jamie Rayman, the Health Educator and Community Involvement Specialist. Mr. Gerhardstein can be reached at bgerhardstein@cdc.gov and Ms. Rayman can be reached at jrayman@cdc.gov.

Operable Unit 2 (OU2) Landfills Operations & Maintenance Update

Mr. Eric Schmidt of Ahtna, continued the meeting next with an overview of the operations and maintenance activities on the Fort Ord OU2 Landfills. The history of the Fort Ord Landfills was presented along with a map of the location of the OU2 landfills. Mr. Schmidt noted that the Landfills originally consisted of six areas (A through F). A map was shown of the Fort Ord OU2 landfills location and the status of each area. Mr. Schmidt noted that Area A was clean-closed after the waste was relocated to the other landfill areas. A cross section of the landfill structure and photos of the process for the Area E cover system installation in 2013 were shown. The engineered cover for the landfills was constructed in 3 phases, 1997 to 1998, 2002 to 2003, and 2013. The landfill is covered with an engineered cover system that includes a geomembrane that is 60 mil (1.5 millimeters) thick. The geomembrane prevents rainwater from infiltrating through the landfilled waste to the groundwater. Mr. Schmidt described how the geomembrane is covered with about 2 feet of clean soil to support growth of native vegetation. The 2013 work included incorporating contaminated soils from range cleanup projects under a second layer of geomembrane. Covering Area E in 2013 was shown in 6 steps with photos; geomembrane factory inspection, rolling out geomembrane, joining geomembrane seams, welding geomembrane seams, placing vegetative cover soil, and hydroseeding with native seed.

The presentation continued with landfill cover maintenance, vegetative cover erosion repairs, and perimeter road erosion repairs. Photos showing recent erosion repairs and landfill perimeter road repairs were shown. Erosion is repaired with various methods, such as installing wattles of netting or fabric, seeding, and adding base rocks. Owl nest boxes and raptor perches have been installed in the landfill site to encourage natural removal of gophers and ground squirrels. Maps were shown with locations of the owl boxes and raptor perches to show optimal coverage. Owl nest boxes are cleaned annually and have had various rates of habitation since 2017.

Mr. Schmidt then continued to describe how landfill gas is produced in all landfills when organic waste decomposes. Gases are mostly methane and carbon dioxide with trace amounts of other organic gases. Landfill gas concentrations are monitored by probes in and around the landfills for compliance with California regulations to keep the methane concentrations below the lower limit of 5%. The landfill gas is actively pulled from the landfills and sent to the treatment system. Mr. Schmidt presented a map showing the locations of the landfill gas monitoring probes and another map detailing the locations of the landfill gas extraction wells and treatment system, consisting of a thermal treatment unit (TTU). He described how landfill gas is extracted and piped to the TTU to destroy the methane and other compounds, and noted landfill gas extraction is occurring in Areas D, E and F. The TTU has been in operation since August 2006. Annual testing charts that showed trends of methane and volatile organic compound concentration over time were also provided.

There were no questions on the presentation.

Groundwater Cleanup Update

The meeting continued with a presentation on the groundwater cleanup by Mr. Derek Lieberman of Ahtna. Mr. Lieberman began the presentation by providing definitions related

to groundwater cleanup and then presented a geologic cross section to explain the aquifer system in the northern portion of the former Fort Ord area.

The presentation continued by discussing the background, location, and cleanup details for the Fort Ord groundwater contamination plumes. Mr. Lieberman presented a map that showed the locations of the current groundwater contamination plumes and a composite perspective of the maximum historical extent of groundwater contamination plumes. There are three groundwater contamination areas undergoing treatment on the former Fort Ord. At Operable Unit 2 or OU2, trichloroethene or TCE is the primary chemical of concern. For the groundwater contamination area called Operable Unit Carbon Tetrachloride Plume or OUCTP, carbon tetrachloride or CT is the primary chemical of concern. At Sites 2 and 12, tetrachloroethene or PCE, is the primary chemical of concern. The primary chemical of concern at Operable Unit 1 was TCE, and the Army has met the cleanup objectives for this site.

Mr. Lieberman continued by showing a map with the locations of 450+ groundwater monitoring wells in the former Fort Ord. A schematic of the groundwater extraction and treatment system was shown and Mr. Lieberman explained how the treatment system worked to extract, clean, and return cleaned water to the aquifer. The groundwater is treated by passing through granular activated carbon vessels, similar to the water filters people use at home but just in a larger scale. The clean water is then pumped back in at strategic points to help contain the plume and to prevent contributing to saltwater intrusion. The used carbon in the treatment process is recycled.

Mr. Lieberman provided the status of the groundwater treatment systems as of December 31, 2022. He provided the number of gallons of water treated, the pounds of contaminants removed, and the aquifers where the treatment is on-going. This was noted for the OU2/OUCTP and Sites 2/12 systems where groundwater is extracted and treated with granular activated carbon.

Mr. Lieberman presented maps of each of the groundwater contamination plumes comparing the historical maximum extent of the contaminant plumes to the plume extent as of September 2022 to demonstrate the Army's cleanup progress and described the suspected sources of contamination for each plume.

At OU2, the original source of the groundwater contaminant plumes was from the former Fort Ord Landfills. The plumes in the A-Aquifer migrated west and into the Upper 180-Foot Aquifer, where the Salinas Valley Aquiclude ends. The plume migrated eastward in the Upper 180-Foot Aquifer. With active treatment, the plumes have seen a significant reduction in size and concentrations.

At Sites 2/12, the original source of the groundwater contaminant plume was assumed to be historical use and improper disposal of solvents. Groundwater cleanup began in 1999 with TCE as the primary chemical of concern. In 2011, PCE was detected at concentrations above the cleanup level in an area where it had not been detected before. Therefore, the Army conducted additional work at Sites 2/12, including a soil gas investigation, to find out how much PCE there was and has implemented additional remedial actions. The

investigation showed the soil gas contamination was not a human health concern for people at the site, but it was acting as a source to the groundwater contamination. The Army is monitoring soil gas probes and operating a soil vapor extraction system when necessary to prevent contaminants from getting into the groundwater. When contaminated soil gas is removed from the subsurface and is then treated, it is referred to as soil vapor extraction and treatment. The Fort Ord system uses granular activated carbon as a part of the treatment process, just like the groundwater treatment system. The cleanup project has been successfully addressing the chemicals of concern at this site. There is a very small PCE plume extent and Sites 2/12 remedial action is nearing completion.

For OUCTP, treatment is different for each of the three affected aquifers. In the A-Aquifer, enhanced *in situ* bioremediation is the remedy; in the Upper 180-Foot Aquifer it is groundwater extraction and treatment; and the remedy for the Lower 180-Foot Aquifer is monitored natural attenuation. Mr. Lieberman noted that the enhanced *in situ* bioremediation system was deployed in several areas. The system includes injection and extraction wells. Sodium lactate substrate is added to the groundwater via the injection wells then recirculated underground by pumping from the extraction wells. The sodium lactate is a food source for microbes and bacteria already in the groundwater, so the extra food makes the population of microbes grow. Afterwards the food is taken away, the microbes look for another energy source and start breaking down the carbon tetrachloride into harmless components, such as methane, ethane, and ethene.

Mr. Lieberman noted throughout the presentation that the drinking water is provided by the Marina Coast Water District. The drinking water supply wells are located outside the plume extents. The water is safe, regularly tested, and meets all regulatory standards. A link was provided to the latest Marina Coast Water District Consumer Confidence Report.

There were no questions on the presentation.

Per- and Polyfluoroalkyl Substances (PFAS) Update

Mr. Lieberman continued the meeting with an update on PFAS. Mr. Lieberman began the presentation by providing definitions and background information related to PFAS. Per- and polyfluoroalkyl substances (PFAS) were invented in the 1930s but were not widely used until the 1950s. They are a diverse group of chemical compounds that are used in many industrial applications and consumer products because they are resistant to heat, water, and oil. In the 1970s, the Department of Defense (DoD) began using Aqueous Film-Forming Foam (AFFF) that contained PFAS because it can quickly extinguish petroleum-based fires. PFAS do not break down easily and because they have been used in so many products, they are commonplace in the environment. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are the most extensively studied and historically the most widely-used throughout the U.S. In 2022, DoD and USEPA established screening levels for six PFAS, including PFOA and PFOS in drinking water and soil. A link was provided to the USEPA website about the screening levels. Mr. Lieberman noted that screening levels are risk-based values that help to determine if response or remediation activities are needed.

The presentation continued with Mr. Lieberman explaining that the Army conducted investigations to assess for the presence of PFOA and PFOS in groundwater at Operable

Unit 1 (OU1) and Operable Unit 2 (OU2). OU1 includes a former Fire Drill Area operated from the 1960s to 1980s where AFFF was used during training exercises. Two of the eight wells sampled had concentrations of PFOA that exceeded USEPA screening levels. OU2 includes a landfill that operated from the 1950s to 1980s and may have received waste materials containing PFAS. One of the twelve wells sampled had concentrations of PFOA and PFOS that exceeded USEPA screening levels. Mr. Lieberman presented maps of OU1 and OU2 showing the well locations and general groundwater flow directions. He noted that the Marina Coast Water District supply wells draw water from deeper aquifers and there are no supply wells in the OU1 and OU2 areas.

Mr. Lieberman explained that the Army follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risk. In 2022, the Army reviewed historical activities at former Fort Ord sites for potential releases of PFAS in a Preliminary Assessment (PA). A link to the PA Narrative Report was shared. The report indicates there was limited historical use of PFAS-containing material at the former Fort Ord. Further investigation in a Site Inspection (SI) is being conducted in seven sites. SI fieldwork was recently completed and samples are being analyzed for multiple PFAS. Depending on the results of the SI, additional steps in the CERCLA process may be implemented. Each step can take several years to complete depending on the complexity of the site.

Mr. Lieberman explained that 103 sites at the former Fort Ord were initially reviewed as part of the PA to determine if they were in one of the categories of historical uses that have the potential to result in storage, use, or release of PFAS-containing material. A map of the Primary Assessment Sites was shared. Of those 103 sites, forty-two sites advanced to Secondary Assessment for further evaluation to determine if a release may have occurred. A map of the Secondary Assessment Sites was shared. From the forty-two, ten sites advanced to the Tertiary Assessment where additional information such as geology, residential populations, groundwater use, etc. were determined. The information gathered was then used to develop a pathway and target assessment for each site. A “pathway” is the environmental medium through which a hazardous substance may threaten targets and a “target” is a physical or environmental receptor, such as a human population, a drinking water well, a fishery, or other sensitive environment, that is within the target distance limit for a particular pathway. A map of the Tertiary Assessment Sites was shared. Out of these ten sites, seven sites were identified in the PA Narrative Report to advance to the SI or Site Inspection stage. As part of the SI, samples were collected at each of these seven sites and are currently being analyzed. A draft SI Report will be available in late Spring 2023. Mr. Lieberman explained the SI will determine whether PFAS are present in the soil and groundwater and whether additional investigation may be needed to quantify the nature and extent of the contamination. A map with the suspected PFAS release sites, groundwater flow direction, and water supply wells was shared. Mr. Lieberman then shared photos and provided a brief overview of the seven suspected PFAS release sites that were included in the SI.

Site 2, the former Main Garrison sewage treatment plant (STP), is located in the Fort Ord Dunes State Park. The Main Garrison STP was the primary sewage treatment facility for the

former Fort Ord and could have received waste streams containing PFAS. Soil samples were collected from Ponding Area 1, which received effluent from the sludge drying beds, and groundwater samples were collected from downgradient wells north of the former STP.

At the former Main Garrison Fire Station, which is now Presidio of Monterey Fire Station at the Ord Military Community, the Fort Ord Fire Department reportedly disposed of old or expired AFFF in the unpaved area south of the fire station and soil samples were collected in this area. The Fire Department also used the Site 10 burn pit for training and demonstration purposes that included use of AFFF, so soil samples were also collected at this location. The nearest drinking water supply well is about three miles away, so groundwater samples were collected downgradient of these sites.

The former FAAF Fire & Rescue Station, which is now the Marina Fire Department Fire Rescue Station #2, and Site 40A, a former helicopter defueling area, are located at the Marina Municipal Airport, which used to be the Fritzsche Army Airfield. The Fort Ord Fire Department reportedly disposed of old or expired AFFF in the unpaved area south of the fire station. During a defueling activity in the 1970s or 1980s, a fuel tank ruptured resulting in a spill of 5 to 10,000 gallons of fuel. The Fire Department applied AFFF to the spill to prevent a fire from starting, which could have entered the drainage channel to the north of Site 40A. There is no pathway from these sites to a drinking water supply well, but sampling of soil and groundwater was done due to a reported release of AFFF at the site.

The former Fritzsche Army Airfield Fire Drill Area was formerly OU1. A PFAS release was suspected because the Fort Ord Fire Department used AFFF during training activities and groundwater monitoring at this site in 2015 found concentrations of PFOA that were above screening levels. There is no pathway from this site to a drinking water supply well, but soil and groundwater samples were collected due to a reported release of AFFF at the site.

OU2 includes a landfill that may have received waste streams containing PFAS during its operational period. Additionally, in the 1970s or 1980s, there were at least two fire incidents at the landfill where AFFF was used to suppress the fire. Groundwater monitoring at this site in 2019 also found concentrations of PFOA and PFOS above screening levels at one well.

Mr. Lieberman closed the presentation by explaining that the drinking water is safe and is provided by the Marina Coast Water District. The water is tested and meets all regulatory standards. A link was provided to the latest Marina Coast Water District Consumer Confidence report. Additional information and all reports mentioned in the presentations can be found at the Army's website, www.FortOrdCleanup.com

There were no questions on the presentation.

Environmental Services Cooperative Agreement (ESCA)

Mr. Ben Havens-Stokes with the City of Seaside provided presentation updates on the ESCA program. The Environmental Services Cooperative Agreement (ESCA) is a mechanism that allows the federal government to provide cleanup funding to approved

authorities. The purposes of the program are to address residual safety issues associated with former munitions training conducted in Fort Ord and the responsibility for the long-term implementation of the land use controls for public safety until June 30, 2028. The Fort Ord Reuse Authority dissolved in June 2020 and was succeeded by the City of Seaside. After June 2028, this responsibility will return to the Army. A timeline of the status and history of the agencies related to ESCA was shown.

All 3,300 acres have completed all munitions cleanup activity and have been transferred to the intended recipients. In 2007, when ESCA first started, all 3,300 acres were consolidated into 4 groups and the Interim Action Ranges, all according to similar cleanup and closure characteristics. This was a way to organize the properties located within different jurisdiction and future property re-uses. A color-coded map was shown, displaying the groups. The County North Munitions Response Area (MRA) is a part of a Record of Decision that requires no munitions cleanup and does not have land use control requirements. All other areas have completed munitions cleanup as outlined in the respective Records of Decision. Each Record of Decision includes land use control remedies which are further described in the land use controls implementation plan. The presentation then continued into the cleanup status and proposed reuses for each group.

- Group 1: Seaside and Parker Flats MRAs: removals complete, land use control requirements are described in Group 1 Land Use Control Implementation Plan/Operation and Maintenance Plan (LUCIP/OMP) (ESCA-0361E), land transferred. Proposed future reuses: residential, non-residential, habitat reserve, and Veteran's cemetery. Maps were presented showing the re-use designations.
- Group 2: CSUMB Off-Campus MRA: removals complete, land use control requirements are described in Group 2 LUCIP/OMP (ESCA-0305B), land transferred. Proposed future reuses: Residential and non-residential development. A map was presented showing the re-use designations.
- Group 3: Del Rey Oaks/Monterey, Laguna Seca Parking, and Military Operations in Urban Terrain (MOUT) Site MRAs: removals complete, land use control requirements are described in Group 3 LUCIP/OMP (ESCA-0301B), land transferred. Proposed future reuses: Habitat management, non-residential development, continued use as overflow parking for Laguna Seca, and continued use as a law enforcement training area by Monterey Peninsula College (MPC). Maps were presented showing the re-use designations.
- Group 4 Future East Garrison MRA: removals complete, land use control requirements are described in Group 4 LUCIP/OMP (ESCA-0364B), land transferred. Proposed future uses: residential, non-residential development, and habitat reserve. A map was presented showing the re-use designations.
- Interim Action Ranges MRA: removals complete, land use control requirements are described in the Interim Action Ranges MRA LUCIP/OMP (ESCA 0337B), land transferred to MPC. Proposed future reuses: non-residential development, and habitat reserve. A map was presented showing the re-use designations.

The presentation continued with a review of the land use controls which include (1) safety recognition training, (2) construction support, (3) residential use restrictions in applicable areas and (4) habitat reserve restrictions in applicable areas. The presentation continued

with a discussion of instruments that are used to enforce the land use controls, which include: local digging and excavation ordinances, memorandum of agreement with DTSC regarding monitoring and reporting of land use controls, covenants to restrict the use of property, and deed restriction. Safety training is available at FortOrdSafety.com and a review of the 3R's were given: Recognize, Retreat, Report.

The presentation concluded with recent activities that included meeting with land owners to discuss and review land use restrictions that apply to their land, updating signage, and checking fences.

There were no questions on the presentation.

What Happens Next

In the month of April, Fort Ord Cleanup will attend various local Earth Day events. Dates for these events will be posted on the Fort Ord Cleanup website. On May 20th, the guided nature walk will take place and reservations will be required. All information can be found at www.FortOrdCleanup.com. The next TRC meeting is scheduled for July and will focus on munitions cleanup and site security.

The meeting was closed.