

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

**STAFF REPORT FOR REGULAR MEETING OF FEBRUARY 9, 2007
Prepared on January 12, 2007**

ITEM NUMBER: 10
SUBJECT: Military Facilities Update

INTRODUCTION

This Staff Report summarizes the progress of cleanup efforts conducted under the Department of Defense's (DoD) Environmental Restoration Program during the last 12 months. Note new information is provided in italics to differentiate from information that has been provided in prior reports.

Regulatory Background

The Environmental Restoration Program was established by the Superfund Amendments and Reauthorization Act of 1986 to address historic activities at federal facilities that that could pose a threat to human health or the environment. DoD follows the investigation, cleanup, and closure process laid out by the Comprehensive Environmental Response, Compensation, and Liability Act. The U.S. Environmental Protection Agency (USEPA) is the lead regulatory agency at all California DoD facilities on the National Priorities List (i.e., federal "Superfund Sites") with support from Water Boards and Department of Toxic Substances Control (DTSC). Former Fort Ord Army Base is the only DoD Superfund site in the Central Coast Regional Water Quality Control's (Regional Water Board) jurisdiction. DoD has transferred two facilities, Former Fort Ord Army Base and Lompoc Branch U.S. Disciplinary Barracks Federal Correction Facility, to non-military uses. DoD continues to include these sites in the Environmental Restoration Program as "Base Realignment and Closure Installations."

A 1997 agreement between the State Water Quality Control Board (State Water Board) and DTSC designated the respective roles of the two agencies at the various DoD facilities. At DoD

facilities on the Central Coast, the Regional Water Board either shares the lead regulatory role with DTSC (e.g., Vandenberg Air Force Base) or is the sole lead (e.g., Camp Roberts National Guard Base). The Regional Water Board's primary oversight responsibilities include: (1) reviewing and commenting on technical reports and studies designed to develop remedial alternatives; (2) achieving public outreach and education through public meetings; (3) providing oversight for leaking underground storage tank cases. The Regional Water Board's authority for cleanup of contaminated DoD sites include: California Water Code, Division 7, Section 1300, Section 13304, and Section 13172, and California Health and Safety Code, Chapter 6.7.

Program Overview

The Regional Water Board is reimbursed for regulatory oversight at DoD facilities through the DoD and State "Memorandum of Agreement." Most of the DoD budget for the Central Coast Region covers oversight at Vandenberg Air Force Base (VAFB), Former Fort Ord Army Base, Lompoc Branch U.S. Disciplinary Barracks Federal Correction Facility, Fort Hunter Liggett Army Base, Camp Roberts National Guard Base, and Monterey Peninsula Airport (a former Navy Air Base). As of the first quarter (25 percent) of the State's fiscal year, the Region Water Board has expended 21 percent of its total annual allotment of \$418,000. The Regional Water Board is on track for meeting DoD commitments and staff does not anticipate spending all allotted funds.

There are numerous other military-related sites in the Central Coast Region that DoD classifies as "Formerly Used Defense Sites." Formerly Used Defense Sites are sites that were previously

owned, operated, or leased by DoD. An example of a Formerly Used Defense Site currently being addressed through the Environmental Restoration Program is Monterey Peninsula Airport (see discussion of this site below). Many of the Formerly Used Sites were only used for a short period of time (e.g., during World War II) or had limited activities (e.g., satellite stations). In most cases, there is little site information on Formerly Used Defense Sites and DoD ranks them as low priority for funding purposes. The State Water Board is currently working with DTSC and DoD to prioritize actions at Formerly Used Defense Sites in California.

VANDENBERG AIR FORCE BASE (VAFB)

Lead Staff: Carol Kolb

Background

VAFB, located on the north coast of Santa Barbara County, is the third largest U.S. Air Force installation, occupying almost 100,000 acres and 35 miles of coast line. Basewide cleanup is being implemented through the DoD's Environmental Restoration Program. Program implementation follows the provisions of a Federal Facility Site Remediation Agreement, entered into by the Air Force, Regional Water Board, and DTSC on August 22, 1991.

Sites/Chemicals of Concern

Environmental Restoration Program sites at VAFB include: closed landfills, space launch complexes, missile silos, fuel and chemical spill areas, and underground storage tank areas. Identified chemicals of concern include: jet fuels, rocket fuels, petroleum hydrocarbons, solvents, polychlorinated biphenyls, pesticides, perchlorate, metals, and unexploded ordnance.

Emergent Chemicals/Perchlorate

The "Basewide Preliminary Assessment/Site Investigation" for six emergent chemicals of concern (perchlorate, n-nitrosodimethylamine, polybrominated diphenyl ether, 1,4-dioxane, 1,2,3-trichloropropane, and total/hexavalent chromium) began in January 2004. The total number of sites to be evaluated is 133, including a total of 58 Environmental Restoration Program sites and 75 Areas of Concern. The site investigations are anticipated to be complete by June 2007.

Progress/Success Stories

Sites 8 and 9: (Space Launch Complex-4 East and Space Launch Complex-4 West): These two adjacent launch complexes were active from 1964 until they were decommissioned in 2006. Launch activities resulted in two very long narrow groundwater plumes of trichloroethene and perchlorate. The Site 9 plume extends over 3,000 feet to the Pacific Ocean. In November 2003, VAFB began operation of a dual-phase (groundwater and soil vapor) extraction system at the Site 9 groundwater hot spot. Performance data through November 2006 show that approximately 2.2 million gallons of groundwater were processed by the system. Over this period, the treatment system removed 640 pounds of volatile organic compounds from soil vapor and 14.2 pounds from groundwater. In addition, 2.2 pounds of perchlorate were removed from groundwater. In March 2005, VAFB began a pilot study using in-situ bioremediation at the groundwater hot spot. Bioremediation appears to be successfully reducing trichloroethene to concentrations at or below its maximum contaminant level (MCL) and perchlorate to below the detection limit of 1 part per billion (ppb). Based on the success of the in-situ system, VAFB is in the process of implementing a similar pilot study in the groundwater hot spot at Site 8.

Site 15: (ABRES-B Launch Complex): Site 15 is a former launch complex located approximately 1.5 miles from the Pacific Ocean. The complex was built in 1959 and was used for missile launches through 1967. Large quantities of the solvent trichloroethene were used to clean the missiles prior to launch. The trichloroethene migrated into the shallow aquifer in the underlying sand dunes. At least two narrow plumes extend from the launch pads to San Antonio Creek, which is over 3,000 feet south of the pads. Surface water samples show that trichloroethene and its break down products are present in the water column of San Antonio Creek. To date, these detected concentrations are below MCLs. However, staff is very concerned about potential impacts to the creek and has requested that VAFB expedite remedial actions. VAFB has agreed to evaluate the feasibility of installing a containment system at the leading edge of the plumes to prevent further impacts to the creek. VAFB is working to obtain

the necessary funding to support these expedited efforts.

Site 20: Since 1998, VAFB has operated a source reduction system as an interim remedial action at Site 20, a former underground storage tank area. *The Final Performance Monitoring Report shows that, since the system began operating, it has removed an estimated 12,270 pounds of hydrocarbons from the vapor phase and 108 pounds of hydrocarbons from the groundwater phase.*

On June 2, 2006, staff received the Draft "In-situ Chemical Oxidation Treatment Work Plan." The Work Plan proposed an in-situ chemical oxidation treatment that includes injection of Fenton's reagent (an oxidizing agent) into the saturated zone to treat dissolved-phase chlorinated and fuel-related compounds including total petroleum hydrocarbons, benzene, 1,1-dichloroethane, and 1,2-dichloroethane. Staff provided comments in September 2006 and VAFB addressed all of our comments on October 17, 2006. With approval from DTSC, VAFB will issue a Final "In-situ Chemical Oxidation Treatment Work Plan."

Site 21: (Fire Training Area): From 2004 to 2005, VAFB excavated approximately 30,000 cubic yards of soil contaminated with petroleum, polychlorinated biphenyls, volatile organic compounds, and dioxin. VAFB disposed of the material at an off-site disposal facility. *In November 2006, VAFB submitted a "Request to Backfill Main Excavation," which included findings from an abbreviated risk assessment. The report concluded that a risk assessment analysis demonstrated that no additional excavation was necessary and requested to backfill the existing excavated area prior to the rainy season. Regional Water Board staff concurred with the proposed backfilling to prevent ponding in the excavated area. Staff did not concur with the conclusion that no additional excavation is required. Petroleum hydrocarbons were detected in soil above cleanup levels adjacent to the main excavated area. As requested by Regional Water Board staff, VAFB will submit additional figures and conduct a Feasibility Study in support of its request prior to the February Regional Water Board meeting.*

Site 60: Site 60 (General Service Administration Service Station) is a former gas station at the South Base entrance that has methyl tert-butyl ether (MTBE) groundwater contamination. *The monitoring results from the permeable reactive barrier (PRB) system, installed in the summer of 2002 near the source area, continues to show declines in MTBE concentrations. However, MTBE was detected during 2006 quarterly monitoring at a greater concentration in one monitoring well down gradient from the PRB. The greater concentration is likely due to the presence of a nearby sewer pipe, which may act as a preferential pathway. In October 2006, staff received a draft field modification that proposed to grout the area around the sewer line. The field modification also proposed to: 1) install the PRB technology at the leading edge of the plume to replace the oxygen release compound system that has not been successful in assisting with bioremediation; 2) sample additional source area soils in support of the proposed soil excavation; 3) conduct additional investigation of the middle aquifer to determine if there are MTBE impacts; and 4) sample surface water from a ditch at the leading edge of the plume. Regional Water Board staff approved the field modification and expects a progress update from VAFB prior to the February Regional Water Board meeting.*

Additional Investigations: Areas of Interest and Areas of Concern

VAFB is proactively investigating multiple onsite areas that could be associated with releases of contaminants. An area of interest is defined as any area that could cause environmental concern, but does not pose a serious immediate threat to human health and the environment. If a review of historical information confirms the potential threat, the area of interest is classified as an Area of Concern and VAFB will undertake additional investigations to determine appropriate subsequent actions. *Approximately 160 of the originally identified 166 Areas of Concern have been closed (since 2003, approximately 50 Areas of Interest have been converted to Areas of Concern). Also, 100 additional Areas of Interest have been converted to Areas of Concern.*

"Triad" and Areas of Concern: *Regional Water Board staff, DTSC, Department of Fish and Game, VAFB and its consultants are working together using the Triad model to conduct site*

investigations at Areas of Concern. "Triad," a term coined by the USEPA, is a new approach to hazardous waste site assessment and remediation that can lead to faster and more cost effective remediation, while returning sites to productive use. The approach is possible because of recent technology advances and better understanding of subsurface fate and transport.

The Triad approach consist of three main concepts: 1) decision-making and uncertainty analysis through systematic planning, 2) dynamic work strategies, and 3) real-time measurement technologies. Systematic planning includes identification of decisions to be made, development of a conceptual site model, and an evaluation of decision uncertainty. Dynamic work strategies are strategies for site characterization, remediation, and monitoring that allow for change based on real-time data. Real-time measurement technologies return results quickly enough to influence the progress of data collection and field activities. The Triad process is unique because it requires that staff make real-time decisions based on real-time data.

Triad Implementation at Areas of Concern: On December 7, 2006, we received the "Background and Standard Approach Document—Revision No. 4." The document, which is a regularly updated, serves as a general guidance for groundwater and soil investigation activities at all Areas of Concern and the underground storage tank program. It outlines investigation types and approaches, decision process, real-time measurement technologies, and risk assessment guidance.

To initiate the Triad approach, VAFB develops a conceptual site model for each Area of Concern. The Regional Water Board, DTSC, and VAFB visit the sites together, discuss the site models, and refine the investigation approach. After all parties agree on the investigation approach "real-time" data is collected and posted on a website for all parties to review. Regional Water Board staff will continue to partner with VAFB and DTSC to implement the Triad approach.

Underground Tank Program: To date, a total of 770 underground storage tank sites have been

closed and an additional 100 tank sites may require assessment.

FORMER FORT ORD ARMY BASE

Lead Staff: Grant Himebaugh

Background

The former Fort Ord Army Base encompasses 28,000 acres between the cities of Seaside and Marina. The USEPA declared the base a federal Superfund site in February 1990 based on impacts to the City of Marina's municipal water supply from facility-related groundwater contaminant. The base officially closed in September 1994 and the most of the facility became available for conversion to civilian use.

Sites/Chemicals of Concern

Since the facility's closure, the U.S. Army's base closure team has identified over 40 environmental sites. The primary water quality concerns involve landfill gas, one carbon tetrachloride groundwater plume, and three trichloroethene groundwater plumes.

Progress/Success Stories

On this federal Superfund site, Regional Water Board staff work with USEPA and DTSC to oversee cleanup activities. Several large-scale groundwater plumes are undergoing remediation. Landfill gas and the carbon tetrachloride groundwater plume are being remediated via gas removal systems. During the January through December 2006 time period, over 82 pounds of contaminants (i.e., trichloroethene and carbon tetrachloride) were removed from the three active remediation systems.

The carbon tetrachloride plume's Feasibility Study, containing the proposed final remedy, has been reviewed and approved by the regulatory agencies. The proposed cleanup strategy is an in-situ biodegradation system. The remedy was presented at a public meeting, and the U.S. Army issued its Record of Decision.

When concerns arose regarding the spread of Operable Unit 1 contaminants across the former Fort Ord border, the U.S. Army circumvented problems with a fixed-price contract by hiring a separate contractor for the investigation. Results this fall indicate the extended trichloroethene

plume boundary does not extend beneath nearby residences. To date, maximum concentrations are between 14 and 20 ppb. The newly defined plume geometry extends from the original plume as anticipated, with all three monitoring wells adjacent to the Monterey Bay Estates II neighborhood having no detectable contaminants.

The Operable Unit 1 Remedial Pilot Study System has been successfully installed and began operations in July 2006. This cleanup system is located at the Former Fort Ord Army Base boundary with Armstrong Ranch.

Challenges

Trichloroethene from the landfill plume continues to create intermittent appearances in Fort Ord Well No. 29, a public supply well now owned and operated by the Marina Coast Water District. Although all detections have been below 1.0 ppb (MCL 5.0 ppb), the U.S. Army has responded with a treatment system modification.

MONTEREY PENINSULA AIRPORT

Lead Staff: Grant Himebaugh

Background

Monterey Peninsula Airport is a Formerly Used Defense Site comprising 455 acres three miles southeast of downtown Monterey. Leased by the U.S. Navy from the Monterey Peninsula Airport District (Airport District) in 1942, today the Airport serves the local area with commercial and private air service.

Sites/Chemicals of Concern:

Known cleanup sites include two former 50,000-gallon concrete underground storage tanks with an associated petroleum groundwater plume and a trichloroethene groundwater plume. A former fire fighting training facility and several other potentially contaminated sites have been ruled out as contaminant sources.

Progress/Success Stories

In May 2003, The U.S. Army Corps of Engineers (USACE) initiated a treatability study to remediate trichloroethene in groundwater at the Casanova Oak Knoll's Neighborhood Park. Another cleanup system at the Airport's trichloroethene contaminant source area began operation in fall 2003. Community feedback for both of these facilities has been positive.

As the Airport's remediation progresses, the USACE is transitioning into site assessments at four other Formerly Used Defense Sites. These former sites include the Salinas Army Airfield, Hollister Airport, Watsonville Airport and the former Camp McQuaide, now known as the Monterey Bay Academy. The USACE's willingness to begin work at four new sites at a time when its shifting limited project funds out of the State is a direct result of past Central Coast Region successes.

Challenges

Due to operational testing and some equipment and power failures, consistent and measurable cleanup system performance has not yet been obtained; however, the USACE has made significant progress towards correcting these problems. Included in this effort is the installation of two new groundwater monitoring wells, which will result in a more comprehensive monitoring system.

FORT HUNTER LIGGETT

Lead Staff: Grant Himebaugh

Background

Fort Hunter Liggett is a U.S. Army training facility consisting of approximately 165,000 acres in southern Monterey County. Current and historic uses of this facility include field exercises and weapons and equipment testing. Most of the land is undeveloped and is used for field training. Portions of Fort Hunter Liggett are leased for cattle grazing. The Main Garrison includes offices, barracks, motor pools, and instrument fabrication/testing facilities. DTSC is the lead agency for cleanup activities; however, the Regional Water Board is primarily responsible for most of the sites that require further action.

Sites/Chemicals of Concern

Environmental Restoration Program sites include a closed landfill, former underground storage tanks, spill areas, unexploded ordnance areas, hazardous waste accumulation sites, and former fire fighting training areas. The primary chemicals of concern include chlorinated solvents, petroleum, oils, lubricants, heavy metals, chlorinated pesticides, and PCBs.

Progress

The base-wide restoration program is ahead of schedule. To date, action is complete at 32 of the 34 sites at Fort Hunter Liggett. The two remaining sites consist of the facility landfill and a groundwater plume associated with two former petroleum tanks. Both of these sites are being successfully remediated.

The U.S. Army has responded to the Regional Water Board's letter on emergent chemicals in a letter stating that, based on site history, the emergent chemicals are not constituents of concern. Additionally, the results of an analysis of the facility's water supply well found no detectable concentrations of perchlorate.

LOMPOC BRANCH U.S. DISCIPLINARY BARRACKS

Lead Staff: David Schwartzbart

Background

The Lompoc Branch U.S. Disciplinary Barracks Federal Correction Facility is located approximately two miles northwest of the City of Lompoc, Santa Barbara County. The property was purchased by the War Department in 1941, and operated as part of Camp Cooke until 1946, when it was converted to a military detention center. In 1959, the U.S. Bureau of Prisons (Bureau of Prisons) took over management of the facility, which is currently operated as high, medium, and low security prisons. The property consists of approximately 2,900 acres and includes a sign factory, electron cable manufacturing plant, furniture factory, print shop, cattle ranch, dairy, butchering plant, sewage treatment plant, and farm.

This facility was selected for closure as part of the 1995 DoD's Base Realignment and Closure and ownership was transferred to the current operator, Bureau of Prisons, in 2003. An Environmental Baseline Survey Report, which delineated potential or known areas of concern, was completed in June 1997. The Regional Water Board is the lead agency for this site and the County of Santa Barbara is also overseeing environmental issues at a landfill and closure of former underground storage tank sites.

Sites/Chemicals of Concern

Sites being addressed as cleanups include Wood Dump/Landfill, Washrack Site, and

Former Farm Fuel Site. Constituents of concern at these sites include chlorinated solvents, petroleum, oils, lubricants, and metals.

Progress

Wood Dump: The Wood Dump cover, erosion controls and runoff conveyances functioned well during the 2005-2006 rain season. Regional Water Board staff worked with the U.S. Army and its consultants to develop an appropriate long-term monitoring and reporting program to document the conditions at the Wood Dump Landfill. The U.S. Army's consultant submitted the "Final Post Site Mitigation Maintenance and Monitoring Plan" on December 13, 2005, which incorporated comments from Regional Water Board staff, U.S. Army, Bureau of Prisons, and Santa Barbara County Environmental Health. Several issues are being clarified or improved before Regional Water Board staff approval is issued.

Washrack and Farm Fuel: Since 2002, the U.S. Army has conducted in-situ remediation to degrade tetrachloroethene at the Washrack Site and 1,2 dichloroethane at the Farm Fuel Site. Because of the aquifer properties at the Washrack site, the Army has had to inject greater volumes of substrate for in-situ bioremediation to achieve effective contaminant degradation rates. Based on current degradation rates and remaining groundwater contaminant concentrations up to 15 times MCL, continued groundwater treatment might achieve acceptable cleanup levels in approximately three to five years.

CAMP ROBERTS

Lead Staff: Grant Himebaugh

Background

Camp Roberts is a California Army National Guard installation located approximately 10 miles north of Paso Robles. The 42,000-acre facility spans northern San Luis Obispo County and southern Monterey County. The installation was built in 1941, and used as a staging/training area for the U.S. Army until 1971, when it was transferred to the California Army National Guard. The National Guard and U.S. Army currently use Camp Roberts for training. The installation contains two developed areas, the Main and East Garrisons. The remaining lands are used for training and firing ranges. Most

areas of potential or known contamination are associated with industrial-related activities conducted during World War II and the Korean War and are located in the Main Garrison. Because of limited funding from the Army National Guard, the environmental restoration process is still in the investigative phase. The Regional Water Board is the sole regulatory lead at this installation.

Sites/Chemicals of Concern

Fifty-eight sites were investigated during the Site Inspection phase, which was completed in 2003. The potential chemicals of concerns consist mainly of petroleum hydrocarbons and some solvents. The contents of the former landfills are largely uncharacterized but include burn ash and ordnance.

Progress

In the fall of 2005, the Army National Guard awarded a "paid for performance" environmental investigation contract. The Army's consultant presented its scope of work and schedule for a Remedial Investigation/Feasibility Study and for closure of two former landfills. *Final covers have been completed for most of the landfill cells. The*

consultant is scheduled to provide the draft "Remedial Investigation/Feasibility Study" in 2007.

Beginning in late 2005, perchlorate was reported in the active landfill monitoring program. The first detection was at 6 ppb. *A facility water supply analysis found no detectable concentrations of perchlorate. The Army National Guard has continued its detection-monitoring program, and a final evaluation report regarding the perchlorate source and appropriate responses is expected within approximately one year. Additional evaluation of emergent chemicals will be conducted during the upcoming remedial investigation.*

CONCLUSION

The Regional Water Board's DoD oversight program remains very active and effective. Cooperative relationships with military personnel, consultants, various agency staff, and the public have been maintained and substantial remediation continues.