

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**MEETING OF JUNE 10 AND 11, 2009
Victorville**

ITEM: 12

SUBJECT: **RESOLUTION AUTHORIZING THE EXECUTIVE OFFICER TO SIGN THE RECORD OF DECISION FOR THE CHEMICAL WARFARE MATERIEL SITES, OPERABLE UNIT 7, EDWARDS AIR FORCE BASE, KERN COUNTY**

CHRONOLOGY: This is a new item.

ISSUE: Should the Water Board concur with the remedial action proposed by the Air Force for four sites and authorize the Executive Officer to sign the Record of Decision? The Board is asked to evaluate whether the proposed action complies with State requirements based on information presented with this item.

DISCUSSION: Edwards Air Force Base submitted a Draft Final Record of Decision for the OU 7 Chemical Warfare Materiel Sites describing its proposed remedial actions for four sites. One site has been clean closed and no further action is proposed. The other three sites consist of buried waste in landfill trenches that are from 10 to 15 feet deep. Mustard and sarin gas and napalm are suspected to be disposed at the sites. These three sites are located east of Rogers Dry Lake near the Air Force Research Laboratory.

The proposed remedy will consist of constructing an alternative final landfill cover that will perform as well as the state prescriptive landfill cover (specified in title 27, California Code of Regulations) to isolate the waste from storm water and precipitation at the three sites. Because this site meets the regulatory definition for Closed, Abandoned, and Inactive sites, it is not a regulatory requirement to install a final cover equivalent to the prescriptive final cover and the Water Board may use its discretion when deciding whether to require groundwater monitoring. However, the Air Force has proposed this remedy component to fully isolate the waste from precipitation. For two sites, the depth to groundwater is about 200 feet and groundwater sampling showed no evidence of a release to groundwater. At the third site a soil boring was advanced to 250 feet and no groundwater was encountered. Soil gas monitoring will be conducted every five years to monitor for any potential releases from the site. These three sites will have Land Use Controls where

necessary to ensure there is no exposure from the buried waste. The final landfill cover design will be completed during the Remedial Design phase following signature of the Record of Decision.

Staff has reviewed the Draft Final Record of Decision and other available data and information and concludes the proposed remedy satisfies the Basin Plan, Water Board policies and regulations, and applicable State law state requirements, provided Water Board staff's comments are incorporated into the Final Record of Decision.

The Air Force does not accept that some California State requirements such as Basin Plan water quality objectives and soil cleanup levels and Resolution 92-49 are requirements for this remedial action from a legal perspective. However, it has complied with these requirements from a technical perspective in the proposed action. The Record of Decision includes "agree-to-disagree" language that preserves each party's legal rights and allows the State to take further action if, in the future, the State finds that the remedy does not comply with California State requirements.

**RECOMMEND
ATION:**

Adoption of Resolution as proposed

- Enclosures:
1. Proposed Resolution
 2. Staff Report

JC/tp BO2009/EAFB OU7 GS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

RESOLUTION NO. R6V-2009-(PROPOSED)

AUTHORIZING THE EXECUTIVE OFFICER TO SIGN
THE RECORD OF DECISION FOR
CHEMICAL WARFARE MATERIEL, OPERABLE UNIT 7
EDWARDS AIR FORCE BASE

Kern County

WHEREAS, the California Regional Water Quality Control Board, Lahontan Region, (Water Board) finds:

1. Edwards Air Force Base (EAFB) submitted a Draft Final Record of Decision (ROD), dated January 9, 2009, for the Operable Unit 7 (OU 7) Chemical Warfare Materiel sites. EAFB intends further remedial actions at three sites and no further remedial action at one site.
2. The proposed remedial activities described in the January 2009 Draft Final ROD will comply with all applicable or relevant and appropriate requirements of the Water Board and are protective of water quality.

THEREFORE BE IT RESOLVED:

That the Lahontan Water Board authorizes the Executive Officer to:

1. Concur with the remedial actions as documented in the January 9, 2009 Draft Final Record of Decision; and
2. Sign the final version of the Record of Decision provided that there are no significant changes between the Draft Final and the Final Record of Decision.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Control Board, Lahontan Region, on June 10, 2009.

HAROLD J. SINGER
EXECUTIVE OFFICER

JC/rp BO2009/EAFB OU7 CWM ROD-Resolution.doc

12-0003

STAFF REPORT

RECORD OF DECISION

**CHEMICAL WARFARE MATERIEL SITES
OPERABLE UNIT 7**

EDWARDS AIR FORCE BASE

June 2009

**California Regional Water Quality Control Board, Lahontan Region
14440 Civic Dr., Ste 200, Civic Drive
Victorville, CA 92393-2306**

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12-0004

1. Introduction

This item provides information for the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board) to consider regarding whether it concurs with a Record of Decision (ROD) for remedial actions at the Edwards Air Force Base (EAFB), Operable Unit 7 (OU-7), Chemical Warfare Materiel Sites. The Air Force submitted a Draft Final ROD for 4 sites, dated January 9, 2009. This ROD addresses human health and ecological risks and potential threats to groundwater. Further actions are proposed at three sites. No further remedial action is proposed at one site.

The Water Board's role is to determine whether State requirements are met for site remediation and decide whether to concur with the Air Force's selected remedy. Water Board staff has reviewed the proposed remedy and determined the proposed actions comply with Water Board requirements. Water Board staff recommends the Water Board authorize the Executive Officer to sign the Final ROD.

2. Chemical Warfare Materiel Sites Information

EAFB is located in the western Mojave Desert. Figure 1 shows the base and the four sites addressed in the ROD. The sites are described below.

- a. Site 426 – World War II Chemical Warfare Materiel Storage Yard – This facility was located in the main base area and used for handling and storage of chemical warfare materiel during World War II. All infrastructure associated with this site was removed as an interim response action. No contaminants remain that pose a threat to human health or the environment or water quality. The site is clean closed. Water Board staff concurs with No Further Action proposed for this site. This site is not discussed further.
- b. Site 442, Explosive Ordnance Burial Locations (Areas 1 – 3) – These sites are located east of Rogers Dry Lake as shown on Figure 2. Potentially intact hazardous munitions or munitions residue, along with chemical warfare agents and industrial chemicals were disposed by burying in unlined waste cells. Based on archival research, chemical gas, incendiary bombs, and nerve agents may have been disposed. The specific contents of each area were not disturbed during investigation due to the potentially hazardous nature of the waste. Instead, environmental conditions were evaluated circumstantially using: photograph research, visual observations, subsurface geophysical surveys, passive and active soil gas sampling, soil samples collected from the surface and in soil borings installed adjacent to the waste cells, and groundwater sampling where groundwater was encountered. Table 1 describes Site 442 Area-specific information.

Table 1 – Site 442, Areas 1, 2, and 3 Conditions

Condition	Area 1	Area 2	Area 3
Years of operation	1942 – 1952	1942 – 1952	1942 – 1960s
Estimated trench depth	12-15 ft. below ground	10 ft. below ground	Undetermined
Estimated existing cover thickness	4 ft.	4 ft.	4 ft.
Estimated Waste cell area	5,150 sq. ft.	39,250 sq. ft.	3,600 sq. ft.
Estimated Waste volume	2,900 cu. yds.	21,800 cu. yds.	2,000 cu. yds.
Depth to groundwater	209 ft	191 ft	No groundwater encountered at 250 ft

No contaminants were detected in groundwater at Areas 1 and 2. No groundwater was encountered at Area 3 to a depth of 250 feet below ground surface and the soil boring was terminated. Trace levels of volatile and semi-volatile organic compounds near the detection limit were detected in shallow soil gas samples collected in the upper 15 feet below ground surface. The site geology consists of alluvial material over granitic bedrock. The alluvial thickness ranges from 30 feet (Site 3), to 60 feet (Site 2), to greater than 200 feet (Site 1). There is no evidence waste within these units threaten groundwater quality because: (1) the units ceased receiving waste over 40 years ago, (2) groundwater is deep, (3) no contaminants were detected in groundwater, (4) the sites are remote, (5) only trace levels of contaminants were detected in shallow soil gas samples, and (6) the wastes have low mobility.

3. Proposed Closure Strategy

The Site 442, Areas 1, 2, and 3 waste cells are being closed in-place as both: (1) hazardous waste landfills under Title 22, California Code of Regulations and (2) non-hazardous waste landfills - Closed, Abandoned, or Inactive units - under Title 27, California Code of Regulations. The following remedy components are proposed for Site 442, Areas 1 – 3.

- a. Use an alternative final landfill cover, consisting of native soil, to ensure the waste within the trenches is isolated as well as would occur from a landfill cover prescribed in Title 27, California Code of Regulations.
- b. Complete site grading to prevent storm water ponding and promote runoff.
- c. Construct a berm wall to prevent storm water from running onto the sites.
- d. Install a tortoise-proof fence to provide site access control.
- e. Vegetate disturbed areas with native plants.
- f. Conduct soil gas sampling adjacent to the waste cells at least once every 5 years.
- g. Conduct annual inspections and complete needed facility repairs.

- h. Implement and maintain Land Use Controls to prevent human and ecological receptor contact with the buried waste.

The final alternative landfill cover design will be completed and installed in the Remedial Design/Remedial Action process following the ROD signature. Periodic 5-year remedy performance reviews will be completed.

4. Analysis of Water Board Requirements

Water Board staff determined that the proposed remedy meets the requirements of the Basin Plan, State laws, policies and regulations. In summary, the proposed actions comply with the requirements described below.

- a. Section 13304 of the California Water Code requires dischargers that have polluted, or threaten to pollute, groundwater to clean it up.
Staff Analysis – Interim actions completed and remedy components satisfy this requirement.
- b. State Board Resolution 88-63 establishes criteria for designating MUNICIPAL beneficial uses.
Staff Analysis – Appropriate groundwater beneficial uses are stated in the ROD.
- c. Water Quality Control Plan for the Lahontan Region (Basin Plan) including, the following elements:
 - i. Table 2-2, Beneficial Uses for Groundwater of the Lahontan Region, Department of Water Resources Basin (DWR) Basin No. 6-44 (Antelope Valley) where the beneficial uses are Municipal (MUN), Agricultural (AGR), Industrial Service Supply (IND) and Freshwater Replenishment (FRSH) and DWR Basin No. 6-41 (Middle Mojave River Valley) where the beneficial uses are the same but also include Aquaculture (AQUA).
Staff Analysis – The remedy protects groundwater beneficial uses by preventing leaching.
 - ii. Narrative and numerical groundwater quality objectives listed on page 3-11. These include primary and secondary drinking water standards.
Staff Analysis – No releases from the units were detected.
 - iii. Soil Cleanup Levels listed on pages 4.2-4 and 4.2-5. This narrative criterion requires soils to be cleaned to background or to levels that do not pose a risk to human health or the environment and be protective of groundwater quality objectives.

Staff Analysis – Waste will be closed in place to prevent contaminants from leaching by preventing stormwater infiltration. Periodic soil gas monitoring will ensure early detection of volatile constituents so that waste constituents do not migrate and violate water quality objectives. The landfill cover and land use controls will prevent exposure from buried waste.

- d. Title 27, California Code of Regulations. This regulation specifies non-hazardous waste landfill closure and post closure maintenance and monitoring requirements, procedures for completing groundwater corrective actions, and criteria for developing groundwater cleanup levels. Numerous specific sections of this regulation, in addition to some sections of title 22, California Code of Regulations for hazardous waste landfills are cited in the ROD as Applicable or Relevant and Appropriate Requirements (ARARs).

Staff Analysis - The site is a Closed, Abandoned, or Inactive landfill as defined in section 20080, title 27 California Code of Regulations because the contents are suspected hazardous and non-hazardous waste and the units stopped receiving waste before November 27, 1984. This allows the Water Board discretion on whether to require a groundwater monitoring program to be implemented.

Water Board staff requested the remedy specify that the final alternative landfill cover "isolate the waste in the unit from precipitation ... at least as well as a final cover built in accordance with applicable prescriptive standards" (reference section 21090(1), title 27, California Code of Regulations). The regulation does not require that a final cover be installed over the old waste cells because they stopped accepting waste before the effective date of the regulations. However, the Air Force has agreed to install an alternative final cover that would perform as well as the cover prescribed by the regulations. Water Board staff believe the periodic soil gas monitoring will provide "early warning" of a potential future release that could affect groundwater. There will be long-term maintenance of the cover. Therefore, Water Board staff does not believe that groundwater monitoring is necessary.

5. Agree to Disagree

The ROD describes areas where the Air Force and Water Board "agree-to-disagree" regarding whether some state criteria are ARARs for purposes of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). However, Water Board staff agrees that the remedies described in the ROD comply with state requirements.

6. Conclusions

In January 2009, EAFB submitted a Draft Final ROD for the OU 7 Chemical Warfare Materiel Sites. Water Board staff has reviewed the ROD and other available data and information. The Draft Final ROD satisfies state requirements, provided agreed upon responses to comments are incorporated in the Final ROD. Based on our review the proposed actions meet requirements of the Basin Plan, policies and regulations, and State law. Installation of an alternative final landfill cover that isolates the waste as well as the prescriptive landfill cover is not required but is proposed and will preclude the need for the Water Board to require ongoing groundwater monitoring. Periodic soil gas monitoring will be performed at least once every five years. These measures comply with state requirements.

7. Recommendation

Board staff recommends the Water Board concur the OU-7 Chemical Warfare Materiel Sites ROD. Staff recommends the Board adopt a resolution authorizing the Executive Officer to sign the EAFB OU-7 ROD.

- FIGURES:
1. Edwards AFB Area Map
 2. Edwards AFB OU-7, Sites 442, Areas 1-3

FIGURE 1 Edwards AFB Map & Location of Sites 426 and 442 (Areas 1, 2, and 3)

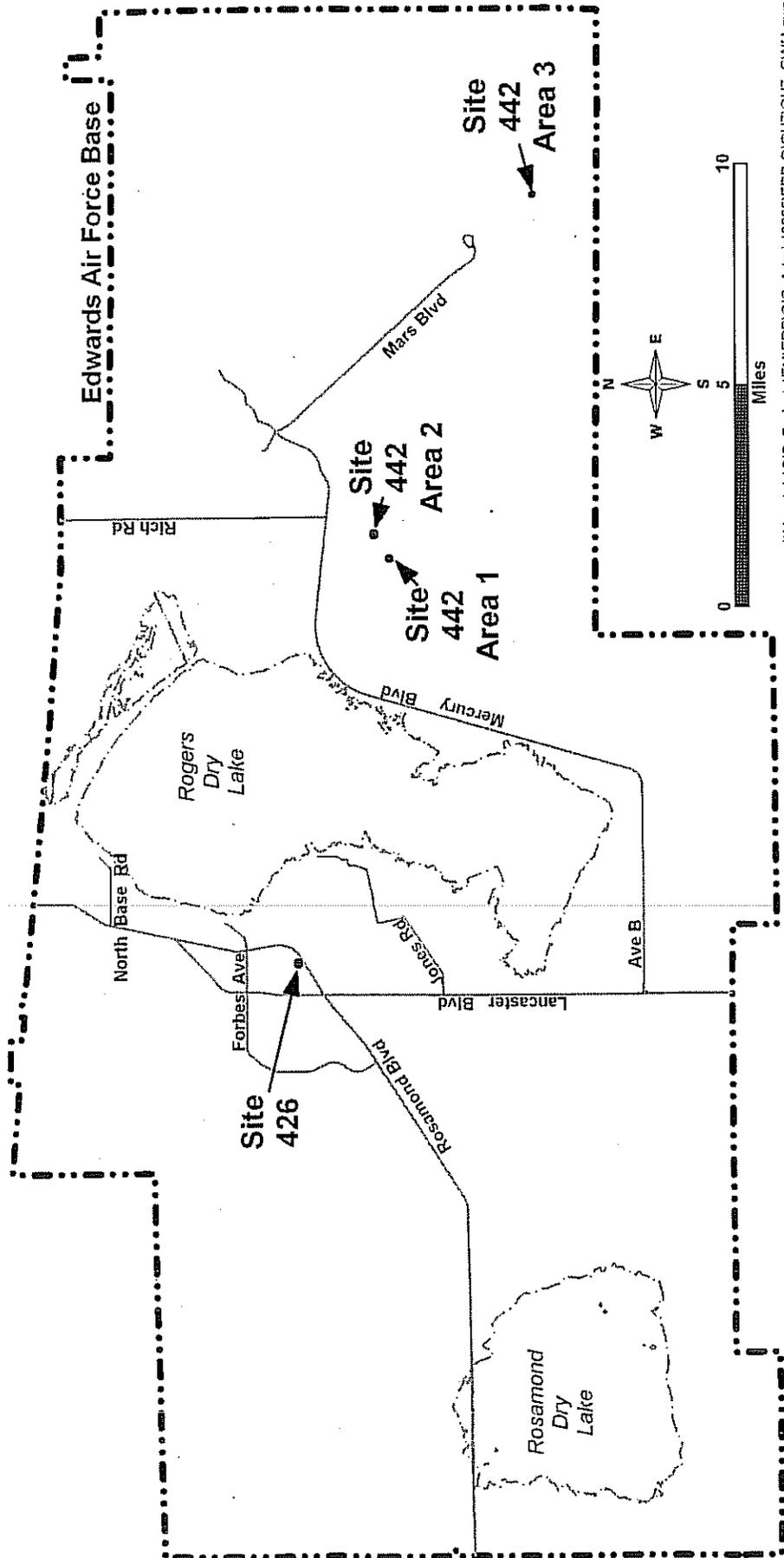


FIGURE 2 Site 442 (Areas 1, 2, and 3) Relationship to Municipal Well Fields and Containment Zone

