United States Air Force
Air Force Flight Test Center
Environmental Management Office
Edwards AFB California
EPA ID: CA1570024504

Environmental Restoration Program

CERCLA NO ACTION RECORD OF DECISION

BASEWIDE WATER WELLS OPERABLE UNIT 3

Final

September 2003

ENVIRONMENTAL RESTORATION PROGRAM

FINAL

NO ACTION RECORD OF DECISION
OPERABLE UNIT 3
BASEWIDE WATER WELLS
AIR FORCE FLIGHT TEST CENTER
ENVIRONMENTAL MANAGEMENT
EDWARDS AIR FORCE BASE, CALIFORNIA

September 2003

DECLARATION

SITE NAME AND LOCATION

Edwards Air Force Base
Operable Unit 3
Kern and Los Angeles counties, California

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the remedial action selected for Edwards AFB, Operable Unit 3 (OU3), located in Los Angeles and Kern counties, California. Operable Unit 3 is defined as the basewide water wells and originally included 660 potential well sites determined from historical records and archival research. These wells were designed to provide water for domestic and agricultural use; and as such, they would not normally be suspected as potentially contaminating the environment. However, because the wells had been abandoned for some time, and were not secure, the potential for groundwater contamination through the wells needed to be investigated. Initial investigations determined that eight wells were suspected as potential contaminant pathways to groundwater and were retained in OU3 for further evaluation. The remaining wells were not contaminated and were removed from OU3 and the CERCLA program. Subsequent investigations determined that none of the eight wells retained in OU3 had contributed to any groundwater contamination and, furthermore, no soil contamination was found in the vicinity of any of the wells.

Because no contamination was found, the selected remedy for OU3 is the No-Action remedy. This remedial action was chosen in accordance with the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (CERCLA), as amended by the *Superfund Amendments and Reauthorization Act of 1986* (SARA) (42 United State Code Section 9601 et seq.) and the *National Oil and Hazardous Substances Pollution Contingency Plan* (NCP) (40 Code of Federal Regulations Part 300). The Administrative Record Index (Section 3.0, Administrative Record) identifies the documents on which the decision is based. These documents are on file and available from the Air Force Flight Test Center, Environmental Management Office, Edwards AFB, California.

DESCRIPTION OF THE SELECTED REMEDY

The U.S. Environmental Protection Agency (EPA), the U.S. Air Force, and the State of California EPA have selected No-Action as the remedy for Edwards AFB OU3. The basis of this selection is that the Remedial Investigation showed that either no contamination was detected at the site or that where contamination was detected, the contaminated soil was removed from the wells during the drilling for groundwater samples, so there was no residual soil in the wells. The Human Health Risk Assessment, conducted on data from the soil removed from the wells, and the resulting groundwater samples, determined that the risk associated with those sites, even if the soil had been left in the wells, was below the action level of $1x10^{-6}$ as described in the referenced OU3 Administrative Record documents. The wells were subsequently destroyed according to State and local requirements.

DECLARATION STATEMENT

Because no contamination exists in any of the OU3 well sites, the Air Force has determined that no remedial action is necessary to ensure protection of human health and the environment. The 5-year review will not be required.

Signature _____ Date Nov 6, 2003

Harold Singer, Executive Officer,
California Environmental Protection Agency
California Regional Water Quality Control Board/Lahontan Region

Signature _____ Date 9-30-03

Anthony J. Landis, P.E.
Chief, Northern California Operations
Office of Military Facilities
California Department of Toxic Substances Control

Signature _____ Date 15 Sept. 2003

Joel Jones
Chief, Federal Facility Cleanup Branch
U.S. Environmental Protection Agency/Region IX

Signature _____ Date 09 SEP 03

David Steckel, Chief
Environmental Restoration Division
Edwards Air Force Base, CA

TABLE OF CONTENTS

This page intentionally left blank.

LIST OF FIGURES

This page intentionally left blank.

1.0 DECISION SUMMARY

1.1 SITE NAME, LOCATION, AND DESCRIPTION

Edwards AFB is located in the Antelope Valley region of the western Mojave Desert in southern California, approximately 60 miles northeast of Los Angeles, California. The Base occupies an area of approximately 301,000 acres, or 470 square miles. Portions of the Base lie within Kern, Los Angeles, and San Bernardino counties (Figure 1).

Edwards AFB is characterized by broad alluvial valleys surrounded by low hills of consolidated bedrock. Two large playa lakes, Rogers and Rosamond dry lakes, and numerous small playa lakes occupy the alluvial valleys. The upland areas in the northwestern part of the base (Rosamond Hills and Bissell Hills) and in the east/southeastern part of the base (Leuhman Ridge and Mount Mesa) are underlain by consolidated bedrock. The contacts between the valley fill and the consolidated bedrock at the edges of the valleys are shallowly dipping in most places, but occasionally are faulted and near-vertical. Also, at the edges of the valleys, gently sloping alluvial plains and fans extend into the lowland areas.

Surface water drains from the nearby Tehachapi and San Gabriel mountains terminating in the lowland playa lakes. This surface drainage is the principal source of the groundwater recharge; however, much of it is lost to evaporation.

Operable Unit 3 encompasses eight abandoned water well locations throughout the base that were suspected as potential contaminant pathways to groundwater. These well locations, identified by historical and archival research, surveys, and homestead records, were cataloged for investigation.

1.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

During the early 1900s, settlers in the Mojave Desert began claiming parcels of land under the Homestead and Desert Land laws. Under these laws, settlers could claim up to 160 acres of land. The first settlers tried to dry farm the land, but drought forced them to start digging wells to supply underground water for domestic and agricultural uses.

During the late 1920s, the military began using the area as a practice bombing and gunnery range. As military operations expanded, the government acquired more homestead land. In 1949, what was then called the Muroc Army Air Field was renamed Edwards Air Force Base in honor of Capt. Glen Edwards, killed in the crash of the jet-powered flying wing in 1948. Eventually, the base grew to its present size of 301,000 acres. As the government acquired parcels of land, any existing structures were removed and the wells were abandoned. In some cases, the pumps were removed and wellheads cut off. Some wells were destroyed, filled with soil, or capped. Some, however, remained partially open and provided a potential pathway to groundwater.

Edwards AFB was placed on the National Priorities List (NPL) in 1990 and entered into a Federal Facility Agreement (FFA) with the U.S. EPA, the California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB). The U.S. Air Force, U.S. EPA, DTSC, and the RWQCB were designated as the Remedial Project Managers (RPM) under the FFA. The FFA, with the RPMs as the decision reviewing and approving body, provides a framework for developing, monitoring, and implementing response actions at Edwards AFB.

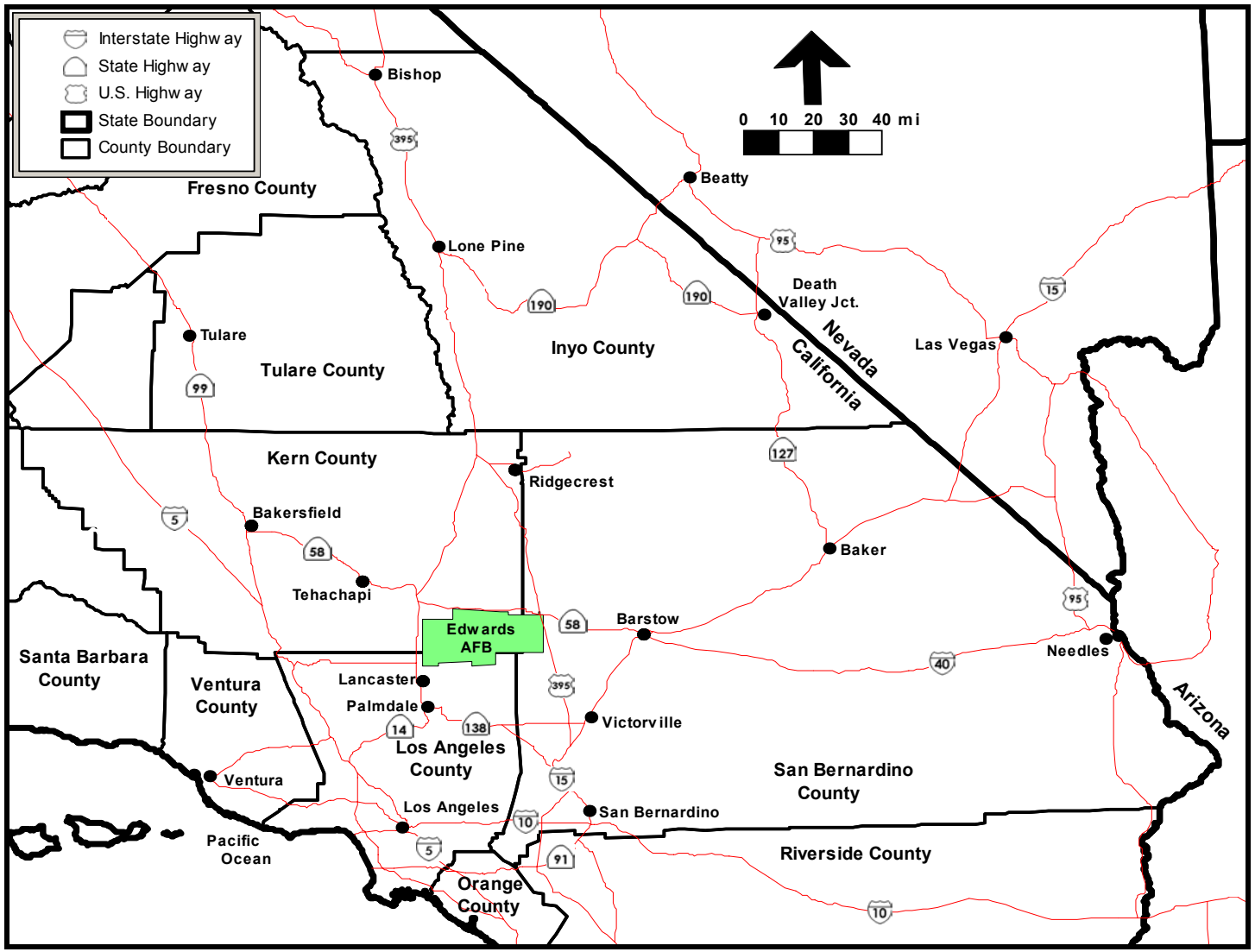

Figure 1. Edwards AFB General Vicinity

1.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Community Relations Plan (CRP) for Edwards AFB was completed in 1990 as a requirement of the FFA. The plan has been updated and the draft revised plan is currently in review. Consistent with the CRP, the Air Force established the Restoration Advisory Board (RAB) comprising members of the local community and the RPMs. The RAB meets on a quarterly basis to provide up-to-date information on the status of the restoration program. Edwards AFB also publishes fact sheets on current topics of interest and a monthly newsletter, *Report to Stakeholders* (RTS), highlighting current activities in the program. In addition the base maintains a web page with information on the restoration program.

The public comment period for the OU3 Proposed Plan extended from May 1, 2003, through June 16, 2003. A public meeting and availability session was held on May 22, 2003 at the Wanda Kirk Library in Rosamond, CA, to present the OU3 Proposed Plan and to accept comments from the public on the plan. No comments were received during the public comment period or during the public meeting.

1.4 SCOPE AND ROLE OF OPERABLE UNIT 3

In order to manage the complexities and diversity of the base geography, geology, and contaminants, the base was divided into 10 operable units. The basewide water wells comprise Operable Unit 3 and originally included 660 potential well sites determined from historical records and archival research. Because these wells were designed to provide domestic water, they were not suspected as potentially contaminating the environment. However, because they had been abandoned for some time, and were not secure, the potential for accidental or deliberate groundwater contamination through the wells needed to be investigated.

Initial investigations determined that only 51 of the 660 wells needed to undergo additional sampling and analysis. Results of the sampling and analysis indicated that 8 of the 51 wells were potential contaminant pathways to groundwater and, therefore, these 8 wells were retained in OU3 for further evaluation. Debris from well collapse, wind and erosion had filled some of the wells. The wells were designated CERCLA Sites 409, 410, 411, 412, 413, 414, 415, and 416 (Figure 2). The remaining wells were not contaminated and were removed from OU3 and the CERCLA program. Subsequent investigations determined that none of the eight wells in OU3 had contributed to any groundwater contamination and, furthermore, no soil contamination was found in the vicinity of any of the wells.

1.5 SITE CHARACTERISTICS

1.5.1 Site 409

Site 409 was an abandoned water well, likely used for agricultural and domestic purposes until the 1950s, identified by State Well designation convention as (State Well No.) 8/10-13R1, approximately 3.2 miles southwest of Rogers Dry Lake. Site 409 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of polynuclear aromatics in the soil. Remedial Investigation testing involved removing 153 feet of soil from the well and sampling the groundwater. No contamination was detected in the groundwater. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

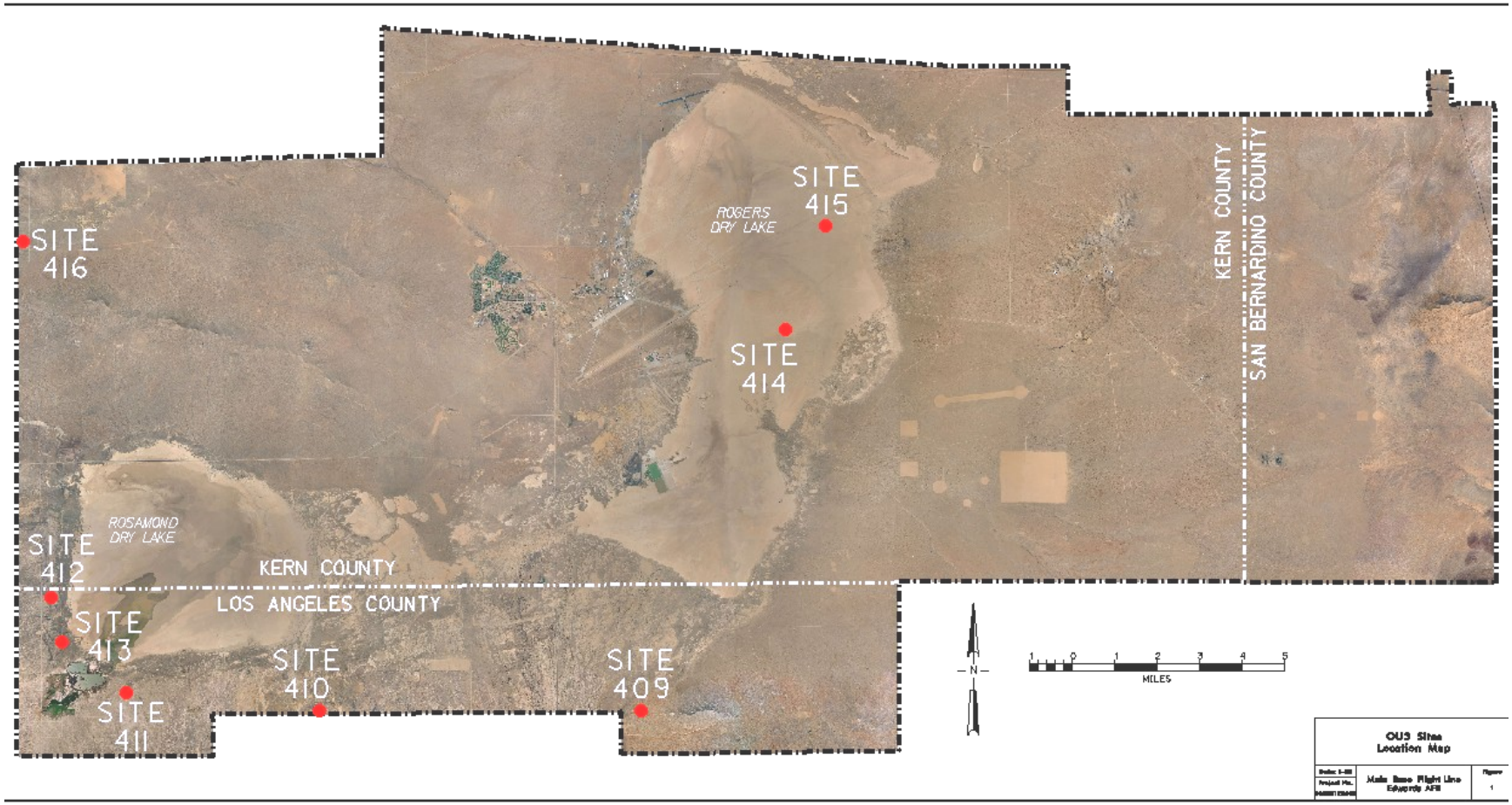

Figure 2. Site Locations for Operable Unit 3

1.5.2 Site 410

Site 410, State Well No. 8/11-14P2 approximately 1.8 miles southeast of Rogers Dry Lake, was an abandoned water well, likely used for agricultural and domestic purposes until the 1950s. Site 410 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of total petroleum hydrocarbons in the soil. Remedial Investigation testing involved removing 67 feet of soil from the well and sampling the groundwater. No contamination was detected in the groundwater. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.5.3 Site 411

Site 411, State Well No. 8/11-18E1, approximately 0.7 mile south of Rosamond Dry Lake, was an abandoned water well, likely used for agricultural and domestic purposes until the 1950s. Site 411 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of metals in the standing groundwater. Remedial Investigation testing involved removing 174 feet of soil from the well and sampling the groundwater. Only arsenic was detected above the maximum contaminant level (MCL) in the groundwater. However, arsenic is common in groundwater in the region and the detection was within background concentrations. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.5.4 Site 412

Site 412, State Well No. 8/12-2D2 approximately 0.5 mile west of Rosamond Dry Lake, was an abandoned water well, likely used for agricultural and domestic purposes until the 1950s. Site 412 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of metals in the standing groundwater. Remedial Investigation testing involved removing 111 feet of soil from the well and sampling the groundwater. Only arsenic was detected above the MCL in the groundwater. However, arsenic is common in groundwater in the region and the detection was within background concentrations. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.5.5 Site 413

Site 413, State Well No. 8/12-11G1 approximately 0.45 mile southwest of Rosamond Dry Lake, was an abandoned water well, likely used for agricultural and domestic purposes until the 1950s. Site 413 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of total petroleum hydrocarbons in the soil. Remedial Investigation testing involved removing 101 feet of soil from the well and sampling the groundwater. No contamination was detected in the groundwater. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

Site 414, State Well No. 9/9-3C1 on Rogers Dry Lake, was an abandoned test well, installed in 1966 and used to study the sedimentology and hydrogeology of lakebed sediments. Site 414 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of metals in the standing groundwater. Remedial Investigation testing involved removing 64 feet of soil from the well and sampling the groundwater. Arsenic, barium, beryllium, chromium, and lead were detected in the groundwater at concentrations slightly exceeding the MCL. However, all of these metals are common in groundwater in the

region and the detections were within background concentrations. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.5.6 Site 415

Site 415, State Well No. 10/9-23M1 on Rogers Dry Lake, was an abandoned test well, installed in 1966 and used to study the sedimentology and hydrogeology of lakebed sediments. Site 415 had initially shown elevated organic vapor readings and subsequent sampling showed a slight elevation of metals in the standing groundwater. Remedial Investigation testing involved removing 54 feet of soil from the well and sampling the groundwater. Arsenic, barium, beryllium, chromium, lead, and vanadium were detected in the groundwater at concentrations common in groundwater in the region and the detections were within background concentrations. Beryllium was also detected in the soil at slightly above the Preliminary Remediation Goal (PRG) of 1.1 mg/kg in effect at the time (1999), however, new PRGs issued in 2001 raised the level to 1900 mg/kg. Beryllium is therefore not a contaminant of concern. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.5.7 Site 416

Site 416, State Well No. 10/12-22Q1 in the northwest part of the base, was an abandoned water well, likely used for agricultural and domestic uses until the 1950s. Initial sampling at Site 416 showed elevated levels of arsenic in the soil and groundwater. Remedial Investigation testing involved removing 155 feet of soil from the well and sampling the soil and groundwater. Arsenic was detected in the groundwater at concentrations exceeding the MCL, however, the detections were consistent with regional data. Because the contaminated soil was removed in the cleanout and no subsequent contamination was detected in the soil or groundwater, no further investigation was recommended.

1.6 SUMMARY OF SITE RISKS

Because the Human Health Risk Assessment showed no risk and no soil remained in the wells as a result of the sampling activity, the RPMs approved all eight sites for no further investigation in 1999. Following this approval, in 1999 and 2000 all eight wells were properly destroyed according to State and local well abandonment guidelines. Data from the sampling activity were evaluated in a Human Health Risk Assessment and an Ecological Risk Prescoping Assessment.

The criteria used for evaluating and estimating the risk results were a cancer risk of $1x\ 10^{-6}$ and noncancer Hazard Index of 1. Although these criteria are typically regarded as conservative, exceeding one of both of these benchmark risk levels triggers additional more specific risk evaluation. The results of a comparison of the risk assessment results to these benchmark levels show that two of the sites, Sites 409 and 412 do not exceed these benchmark levels and no further evaluation is indicated. Four sites, Sites 411, 413, 414 and 415 exceeded these benchmark levels only in the residential scenario. The remaining two sites, Sites 410 and 416 exceeded these benchmark levels in both the residential and industrial scenario. In all of the above cases, however, the risk assessment was based on soil data obtained generally at depths greater than that at which routine exposure would be anticipated. Additionally, the contaminated soil was removed during the drilling for groundwater sampling and is no longer present.

For those sites where groundwater data resulted in exceedance of the risk levels (Sites 411, 413, 414, 415, and 416) the data showed that the levels of contamination were within the normal variation of naturally occurring background levels for the compounds in the area, primarily arsenic, lead and molybdenum.

1.7 EXPLANATION OF SIGNIFICANT CHANGES

No comments on the OU3 Proposed Plan were received during the public comment period or during the OU3 Proposed Plan public meeting. As a result, there are no changes from the Proposed Plan to this Record of Decision.

2.0 RESPONSIVENESS SUMMARY

The public comment period was held from May 1, 2003 through June 16, 2003. A public meeting and availability session was held at the Wanda Kirk Library in Rosamond, CA, on May 22, 2003. No comments or input were received during the public comment period or at the public meeting.

3.0 ADMINISTRATIVE RECORD

Annual Report IRP Activities at Basewide Water Wells, December 1998 through November 1999, December 1999.

Attachment for Annual Report IRP Activities at Basewide Water Wells, December 1998 through November 1999, December 1999

Basewide Human Health Risk Assessment Individual Human Health Risk Assessment Reports, February 2002.

Basewide Water Wells Closure Report, Sites 412, 413, 414, and 415, March 1997.

Basewide Water Wells Closure Report, Sites 412, 413, 414, and 415, May 2000.

Basewide Water Wells OU3 PA/SI Interim Report VI, January 1994.

Basewide Water Wells OU3 Site Characterization Informal Technical Information Report, Volumes 1 and 2, November 1995.

Basewide Water Wells OU3 Supplement to the Final Water Wells Sealing Plan, December 1996.

Basewide Water Wells OU3 Supplement to the Final Water Wells Sealing Plan, December 1999.

Basewide Water Wells Remedial Investigation Site Summary Report Site 416, October 1998.

Basewide Water Wells Site Characterization Informal Technical Information Report, Vols 1 and 2, August 1994.

Biological Resource Assessment Well Abandonment Program, June 1992.

Closure Report Site 409, 410, 411, and 416, May 2000.

Concurrence with OU 3 Basewide Water Wells No Further Investigation, July 2003.

Environmental Restoration Program, Human Health Risk Assessment, Basewide Water Wells, Operable Unit 3, February 2003.

Environmental Restoration Program, No Action Proposed Plan, Basewide Water Wells, Operable Unit 3, June 2003.

Final Water Wells Sealing Plan OU3 Basewide Water Wells, July 1996.

Interim Phase I Report for Basewide Water Wells OU3 PA/SI, November 1993.

Installation Restoration Program (IRP), Basewide Water Wells, OU3, Remedial Investigation Site Summary Report, Site 409, October 1998.

Installation Restoration Program (IRP), Basewide Water Wells, OU3, Remedial Investigation Site Summary Report, Site XXX (where XXX is 409, 410, 411, 412, 413, 414, 415, or 416), 1999.

IRP Basewide Water Wells Closure Report Sites 409, 410, 411, 416, July 1996.

Memorandum for Record, CERCLA Status of Sites, Operable Unit (OU) 3, Edwards AFB, California, 20 February 2003.

No Further Investigation Status Site XXX (where XXX is 30, 409, 410, 411, 412, 413, 414, or 415), July 2003.

Phase I Pre-Scoping Assessment, OUs 1, 2, 3 and 6, Ecological Risk Assessment, Installation Restoration Program Sites, Edwards AFB, October 2001.

Scoping Ecological Assessment (SERA) for OUs 1, 2, 3, and 6, January 2003.

Site Investigation OU3 Homestead Wells Cost Analysis Interim Technical Information Report, December 1999.