



**DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
INSTALLATION SUPPORT TEAM
EDWARDS AIR FORCE BASE, CALIFORNIA**

17 November 2016

MEMORANDUM FOR DISTRIBUTION

FROM: AFCEC/CZOW
120 North Rosamond Boulevard
Edwards AFB CA 93524

SUBJECT: Minutes of the Edwards Air Force Base (AFB) Restoration Advisory Board (RAB)
Meeting, 19 May 2016

1. Time: 1733
2. Place: Rosamond, California
3. Chairman: David Smith, Air Force Co-chair
4. The following RAB members were present:

<u>Name</u>	<u>Position</u>
Mr. Bruce Davies	Public Co-chair/North Edwards Public Representative
Mr. Kevin Depies	California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) Remedial Project Manager (RPM)
Mr. William Gaddis	Rosamond Public Representative
Ms. Christina Guerra	Lahontan Regional Water Quality Control Board (LRWQCB) RPM
Mr. Kevin Mayer	United States Environmental Protection Agency (U.S. EPA) RPM
Mr. Paul Schiff	Edwards AFB RPM
Dr. David Smith	Air Force Co-chair
Ms. Jocelyn Swain	Lancaster Public Representative
Ms. Amber Sweeney	Edwards AFB Base Housing Public Representative
Mr. Victor Yaw	Mojave Public Representative
Mr. Otto Zahn	Edwards AFB Main Base Test Wing Public Representative (Alternate)

5. The following members were absent:

<u>Name</u>	<u>Position</u>
Mr. Marvin Crist	Lancaster Public Representative (Alternate)
Mr. Edward Fuller	California City Public Representative
Dr. Joseph Mabry	Air Force Research Laboratory, Detachment 7 (AFRL) Public Representative

MSgt Robert Sims, Jr. Ms. Kerri Stewart	Edwards AFB Main Base Test Wing Public Representative National Aeronautics and Space Administration (NASA) Armstrong Public Representative
Rev. Philip Thompson Dr. Leslie Uhazy	Boron Public Representative Rosamond Public Representative (Alternate)
Vacant Vacant	Edwards AFB North Base Public Representative Edwards AFB South Base Public Representative

6. The following advisors were present:

<u>Name</u>	<u>Organization</u>
Mr. Ranney Adams	AFRL Environmental Manager
Mr. Joseph Dunwoody	Air Force Civil Engineer Center (AFCEC)/Installation Support Team-West (CZOW)
Mr. Ai Duong	AFCEC/CZOW
Mr. Gary Hatch	412th Test Wing (412 TW)/Public Affairs (PA)
Ms. Rebecca Hobbs	AFCEC /CZOW
Mr. Tom Merendini	AFCEC/CZOW
Mr. Craig Nathe	AFCEC/CZOW
Mr. Michael Rohall	AFCEC/CZOW
Dr. Nash Saleh	AFCEC/CZOW
Mr. Warren Seidel	412 TW/Judge Advocate (JA)

7. Others present were as follows:

<u>Name</u>	<u>Organization</u>
Ms. Ericka Buckreis	Eastern Kern County Resource Conservation District (EKCRCD)
Mr. Joe Gocong	Media Fusion
Mr. Julian Gumayagay	Public
Ms. Patrice Hallman	Public
Ms. Maribel Harms	JT3/CH2M
Ms. Sophia Merk	China Lake RAB Member
Mr. John Perry	Media Fusion
Ms. Leilani Richardson	JT3/CH2M (Recorder)
Mr. Peter Robles	AGEISS
Ms. Jena Romo	Media Fusion
Mr. Earl Wilson	China Lake RAB Member

8. Dr. Smith read the *Statement of Purpose and Conduct*.

9. Dr. Smith introduced Mr. Schiff as the new Remedial Project Manager for Edwards AFB. Mr. Schiff informed the RAB that he is familiar with the base and the cleanup program, having worked with the Environmental Restoration Program (ERP) for 14 years and at Edwards AFB for 19 years.

10. Dr. Smith presented the 19 November 2015 RAB meeting minutes for acceptance. The RAB accepted the minutes as presented.

11. New Business – *ERP Update* (Attachment 1). Dr. Smith encouraged the audience to contact him or Mr. Davies directly if they had any questions or concerns about the base’s cleanup program. He then introduced Mr. Nathe, an ERP manager at Edwards AFB.

a. At the November 2015 RAB meeting, the question was raised about the possibility of increasing the number of annual meetings. Mr. Nathe explained that the Air Force looked into the matter, but because of limited funding, will not be able to support more than two meetings each year. However, funding may be available for an out-of-cycle meeting if special circumstances arise.

b. Mr. Nathe briefed the status of two formal disputes at Edwards AFB. The U.S. EPA Administrator has deferred a final decision on the South AFRL Explanation of Significant Differences dispute until March 2017 to allow the state of California to update its toxicity value on perchloroethene (PCE). At that time, the Senior Executive Committee (SEC) will meet to discuss how the new toxicity value affects the dispute. Mr. Nathe said the Air Force and regulatory agencies met in April 2016 to clarify preliminary resolution on 8 out of 11 disputed issues on the AFRL Arroyos Record of Decision (ROD) dispute. The Dispute Resolution Committee needs to approve the resolution in addition to determining if the three remaining disputed items need to be elevated to the SEC.

c. Mr. Nathe presented the base’s investigation efforts into an emerging chemical called perfluorinated compounds or PFCs, which were used nationwide in certain types of firefighting foam. Potential release locations at Edwards AFB have been identified and will be investigated. The drinking water on base has been tested by Bioenvironmental Engineering, and results were non-detect.

(1) Mr. Gaddis asked what locations at Edwards AFB have been investigated. Mr. Nathe responded that PFC release locations were identified on the flightline, at firefighting stations and training areas, and aircraft crash sites.

(2) Mr. Nathe explained that PFCs are an emerging chemical and regulatory agencies have not yet established cleanup levels. The Air Force is being proactive in trying to identify and investigate possible release locations.

d. Mr. Nathe presented the progress of the base’s cleanup program, highlighting restoration activities performed within the last 6 months.

(1) Mr. Dunwoody noted that the Draft Final Northeast AFRL Feasibility Study (FS) will not be submitted to the regulators in July 2016, as noted on the briefing slides. There are still outstanding issues with the FS related to the formal disputes, so the document has been put on hold until further notice.

(2) Dr. Smith asked if the language in the AFRL Arroyos ROD regarding the definition of “unoccupied” for Building 8753 needs to address higher-risk groups, such as pregnant females. Mr. Schiff explained that the unoccupied state of the building will meet all of the criteria for human health, including pregnant women.

(a) Dr. Smith asked if there may be health concerns for a woman who was pregnant while performing maintenance of the servers at Building 8753. Mr. Schiff explained that there is no concern because a maintenance worker – pregnant or not – would only be in the building for a fraction of the time it would take to pose a hazard.

(b) Mr. Mayer explained that language in the AFRL Arroyos ROD will describe the patterns of occupancy and provide assurance that the amount of time spent by at-risk people does not exceed regulatory limits. The language will include occupancy rates for workers who need to maintain the servers in Building 8753.

(3) In regards to the briefing slide on the Draft Second Operable Unit (OU) 6 NASA Armstrong Five-Year Review (FYR), Mr. Schiff explained that the vapor intrusion pathway (VIP) assessment portion of the document will be issued to the regulators in May 2016, with the rest of the FYR report to follow in June 2016.

(4) Mr. Nathe clarified that the submittal of the Draft OU8 Site 25 FS to the regulators has been delayed until July 2016.

(5) Mr. Schiff explained that both 100-pound and 300-pound bombs were found as part of the Remedial Investigation into Military Munitions Response Program Site AL504 – a 1930s bombing range on base. He added that his team also found thicker shell-wall fragments indicating bigger bombs were dropped at the site.

e. Mr. Davies asked if the Air Force is currently using firefighting foam that contains PFCs. Mr. Dunwoody explained that there are two types of firefighting foam used at Edwards AFB. Buildings that are new or have been retrofitted use high-expansion foam that does not contain PFCs. Older buildings still use a type of foam called aqueous film-forming foam (AFFF), which does contain PFCs. Mr. Dunwoody said the Air Force has plans to convert all firefighting foam to a non-PFC material.

(1) Mr. Davies asked when PFCs were identified as a toxin. Mr. Nathe responded that PFCs are an emerging chemical that do not have established cleanup levels. Dr. Smith explained that the Air Force will only use AFFF in emergencies to save lives, and emphasized that the Air Force is aware of the potential hazards and will work to mitigate them. He added that AFFF is still used because of its effectiveness in saving lives when there is an aircraft mishap.

(2) Mr. Depies informed Mr. Davies that although cleanup levels have not yet been established, there are preliminary studies showing the toxic effects of PFCs in firefighting foams. He explained that establishing cleanup levels is a lengthy and rigorous process.

f. Mr. Gaddis stated that the RAB was briefed at the November 2015 meeting about the Air Force having trouble contacting landowners in the off-base munitions areas for access. He asked if that issue was still a concern. Mr. Schiff responded that the issue has been resolved. After the November 2015 RAB meeting, the Air Force obtained permission to enter more private properties, which provided a representative coverage of AL505-3 and AL505-5. The Air Force moved forward with the Site Inspection phase of both munitions areas and found nothing significant. For that reason, the Air Force is proposing to close both sites. Mr. Schiff added that, for the properties that were inaccessible, the Air Force performed visual surveys twice around each property.

g. Dr. Smith commented that the Air Force is not only cleaning up the environment, but recently started working with nationally recognized Native American tribes to ensure the preservation of artifacts or sites of historical significance. He stated that the Air Force continues to act as a contributing partner of environmental stewardship for the public and future generations.

12. Old Business – *Status of RAB Vacancies* – Mr. Hatch briefed that there are two vacancies on the RAB, for the South Base and North Base communities. Both vacancies were advertised three times, but no applications were received. Base officials will continue to advertise the positions until they are filled, using the base’s public website, directed e-mails to the North and South Base communities, and possibly the electronic base newspaper.

13. Opportunity for Public Comment – Mr. Hatch reported that one comment card was received from a member of the public to address the RAB members during the meeting. Ms. Merk introduced herself as a RAB member from China Lake. She explained that she has been attending Edwards AFB RAB meetings because she is interested in how the two RABs differ and in the result of the formal dispute regarding the PCE toxicity value. Ms. Merk commented that events that happen at Edwards AFB eventually affect China Lake. She also expressed appreciation for the cleanup efforts supported by the base.

a. Mr. Schiff thanked Ms. Merk for her comment and mentioned that the formal dispute on the PCE issue is delayed until the state of California finishes developing an updated toxicity value.

b. Mr. Depies explained that, prior to 2012, the California value was used to develop cleanup standards in decision documents at Edwards AFB. In 2012, the U.S. EPA released a PCE toxicity value that included a more recent cancer study as part of its evaluation. Citing U.S. EPA guidance, the Air Force started using the more recent U.S. EPA value to develop cleanup standards, even though the state value is lower. For that reason, the state invoked a dispute on the matter.

(1) Mr. Depies added that the dispute was elevated to the U.S. EPA Administrator for a final decision on the matter. The U.S. EPA Administrator issued a deferral letter in January 2016 to allow the state of California time to develop a new PCE toxicity value using the more recent cancer study that was evaluated as part of the U.S. EPA’s value. He noted that the state’s updated value has been submitted for public review and will undergo a review panel in mid-June 2016 to determine if the updated value should be issued.

(2) Mr. Depies explained that the state’s updated value is very similar to its current value, and the difference between the state and U.S. EPA values is due to different scientific inputs and assumptions applied during the evaluation process. He concluded by saying a determination on the dispute will be made once the state’s updated toxicity value is issued.

c. Dr. Smith commented that the Air Force and regulatory agencies are in disagreement over how clean is clean. Once a cleanup level is determined, the Air Force will clean to that level. He stressed that the Air Force, and specifically Edwards AFB, are not denying responsibility for addressing the cleanup.

d. Mr. Mayer added that there are two unique aspects of the PCE dispute: 1) the dispute involves a chemical that is inhaled, which makes it difficult to establish a cleanup standard, as is

done for groundwater contamination; and 2) both the U.S. EPA and California follow the same rigorous, objective, and scientific evaluation process, which resulted in different toxicity values.

e. Mr. Depies and Dr. Smith agreed that the dispute has the potential to affect other cleanup sites in addition to Edwards AFB and China Lake.

f. Ms. Guerra added that, similar to China Lake watching the Edwards AFB PCE dispute, Edwards AFB has started discussions with the Water Board to possibly change the beneficial use designations of surface and shallow groundwater at Edwards AFB, similar to what China Lake accomplished in 2012.

14. Reports from Public Representatives.

a. Ms. Swain, Lancaster, did not have anything to report.

b. Mr. Zahn, Main Base Test Wing, had no comments.

c. Mr. Yaw, Mojave, reported that he briefed an on-base co-worker about the RAB and the base's cleanup efforts. He also provided copies of the Report to Stakeholders to the Mojave Water Board for distribution to the community.

d. Mr. Gaddis, Rosamond, did not have anything new to report.

e. Ms. Sweeney, Base Housing, had no comments.

f. Mr. Davies, North Edwards, said he would like to see a financial impact document showing what it will cost the Air Force to use the state's PCE toxicity value versus the U.S. EPA's value.

15. Reports from RPMs.

a. Ms. Guerra, Cal/EPA LRWQCB, said the Air Force has been working collaboratively with the Water Board to address concerns with groundwater impacts.

b. Mr. Mayer, U.S. EPA, mentioned that FYRs are required every 5 years and the U.S. EPA has until 30 September 2016 to make a determination if the current cleanup remedy at OU6 NASA Armstrong remains protective of human health and the environment. He said the main concern at OU6 is the possibility of vapor intruding indoors, which originates from contaminated groundwater beneath occupied buildings. For that reason, the Second OU6 FYR thoroughly evaluates the potential risk of vapor intrusion, which will allow the U.S. EPA to assess if people are being exposed to unhealthy indoor air levels.

c. Mr. Schiff, Edwards AFB, informed the RAB that the Air Force works closely with all three regulatory agencies. He said the group meets on average every 6 weeks to discuss and collaborate on the cleanup at Edwards AFB.

d. Mr. Depies, Cal/EPA DTSC, briefed that the Air Force shut down a groundwater extraction and treatment system (GETS) at Site 25 in 2010 because it was not meeting its objectives. The GETS was installed as a voluntary removal action on the Air Force's part. He said that the

regulatory agencies have been monitoring the effects of the shutdown over the past few years and are concerned that the plume is advancing down the hill toward OU6 NASA Armstrong. As a result, the agencies are in discussion with the Air Force about turning on the system.

16. Dr. Smith thanked everyone for their attendance and adjourned the meeting at 1853. The next RAB meeting is proposed for 17 November 2016 in North Edwards.

//original signed by//

DAVID G. SMITH, NH-IV, DAF
Air Force Co-chair
Restoration Advisory Board

//original signed by//

BRUCE H. DAVIES
Public Co-chair
Restoration Advisory Board

Attachment:

Environmental Restoration Program Update for Edwards Air Force Base, CA

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412 AMDS/SGPB/SGPM

AFRL

RAB Members

Cal/EPA DTSC

Cal/EPA RWQCB

Kern County Environmental Health Services Department

U.S. EPA



Environmental Restoration Program Update for Edwards AFB, Calif.

Craig Nathe
Edwards AFB Restoration Program Manager
May 2016

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List of Acronyms

AFB = Air Force Base
AFRL = Air Force Research Laboratory, Detachment 7
DRC = Dispute Resolution Committee
DTSC = Dept. of Toxic Substances Control
FS = Feasibility Study
FYR = Five-Year Review
MMRP = Military Munitions Response Program
OU = Operable Unit
PAH = polycyclic aromatic hydrocarbon
PCE = perchloroethene
PFC = perfluorinated compound
RI = Remedial Investigation
ROD = Record of Decision
UCMR = Unregulated Contaminant Monitoring Rule
VI = vapor intrusion
VIP = vapor intrusion pathway

2



RAB Meetings

At the November 2015 meeting, board members asked about increasing the number of annual meetings

- Funding can only support two meetings a year
- For special circumstances, subject to funding availability

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Status of Formal Disputes

Two disputes at the Air Force Research Laboratory, Det 7 (AFRL)

- **South AFRL Explanation of Significant Differences**
 - The U.S. EPA Administrator deferred a final decision until March 2017 to allow California to update its toxicity value on perchloroethene (PCE)
 - California published an updated PCE toxicological value in February 2016
 - Public review closed 1 April 2016 with two upcoming public meetings prior to adoption of a new regulation
 - After California finalizes its toxicity value, the Senior Executive Committee will meet to discuss the outcome

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Status of Formal Disputes

Two disputes at the Air Force Research Laboratory, Det 7 (AFRL)

- **Arroyos Record of Decision (ROD)**
 - The Air Force, U.S. EPA and California's Dept. of Toxic Substances Control (DTSC) met in April 2016 to clarify preliminary resolution of 8 out of 11 issues
 - Pending concurrence from regulators
 - The preliminary resolution will be forwarded to the Dispute Resolution Committee (DRC) for final approval
 - The DRC is expected to determine if the remaining 3 issues need to be elevated to the Senior Executive Committee

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Perfluorinated Compounds (PFCs)

Edwards AFB Investigation Efforts

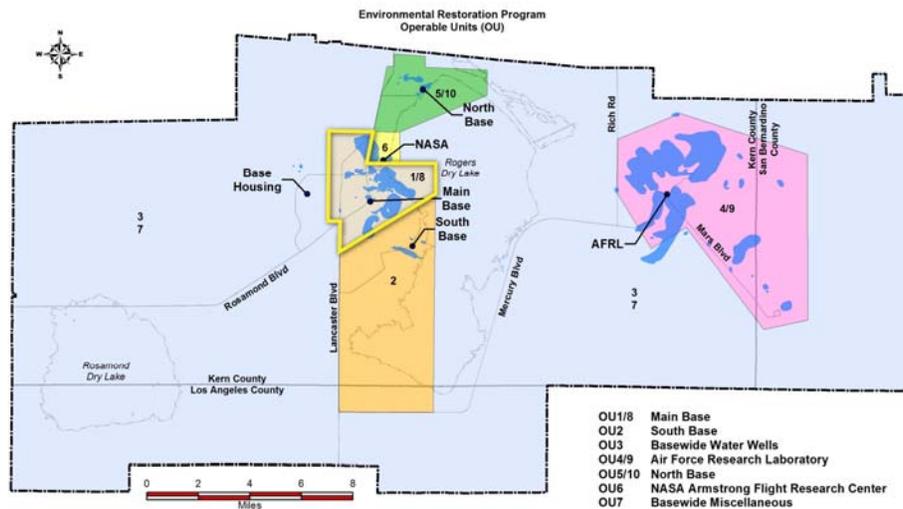
- **Aqueous film-forming foam used in firefighting efforts**
- **Potential release locations identified**
 - Locations will be investigated
 - Drinking water on Edwards AFB has been tested by Bioenvironmental
 - Tested for PFCs as part of U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR) 3
 - Results show non-detect/no imminent danger
 - Detection limits are an order of magnitude below U.S. EPA's provisional health advisory levels

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Operable Unit (OU) 1/8 Main Base



7



OU1/8 Main Base

Currently addressing regulator comments on Draft OU1/8 Feasibility Study (FS) Addendum Work Plan

- Draft Final version to be submitted July 2016
- Outlines the approach to complete the Feasibility Study Addendum

2015 OU1/8 Groundwater Monitoring

- Comprehensive sampling (650+ wells) was completed in November-December 2015
- Draft OU1/8 Groundwater Monitoring Report to be submitted in August 2016

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OU1/8 Main Base

Well Installations within OU1

- Installation of 7 new wells was completed in November-December 2015
- An additional 14 wells are projected to be installed in the fall of 2016
- Goal is to improve plume delineations, primarily at the plume leading edges, to support the OU1/8 FS Addendum

Vapor Intrusion (VI) Pathway Assessments

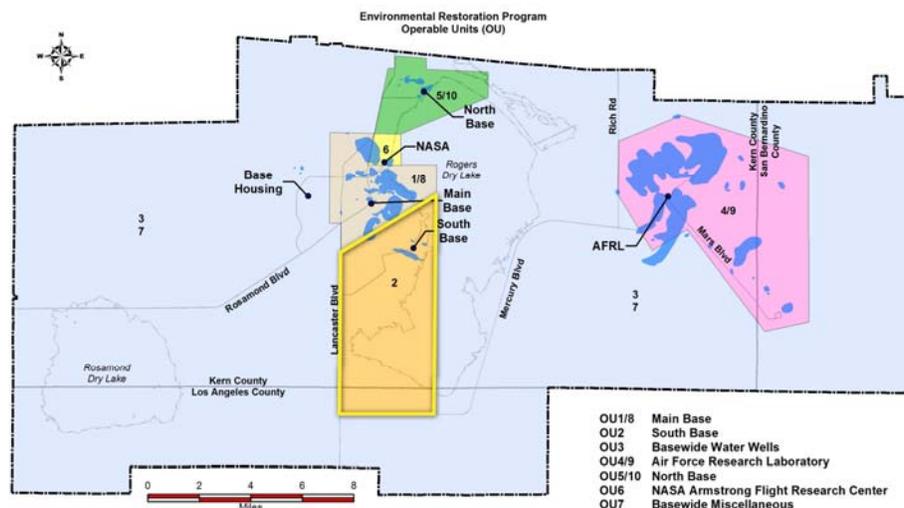
- VI Assessment Report for buildings within OU1/8 (Main Base) and OU5/10 (North Base) was submitted to the regulators in March 2016

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OU2 South Base



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10



OU4/9

Air Force Research Laboratory

Vapor Intrusion Pathway (VIP) Assessments at Bldg. 8753 Arroyos

- A tentative agreement was reached by the Air Force, DTSC and U.S. EPA Region 9 to classify Bldg. 8753 as unoccupied in the AFRL Arroyos ROD
 - Bldg. 8753 is in the process of being converted into server rooms
- AFRL employees will continue to use the building's restroom and perform maintenance of the computer servers
- The regulators will coordinate on language in the ROD to satisfy the "unoccupied" description for any patterns of intermittent occupancy that do not exceed risk cleanup levels for industrial standards

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OU4/9

Air Force Research Laboratory

Draft Final Northeast (NE) AFRL FS to be submitted to regulators in July 2016

Draft Final NE AFRL Groundwater Monitoring Report being prepared for submittal to regulators in June 2016

Preparing responses to regulatory comments on:

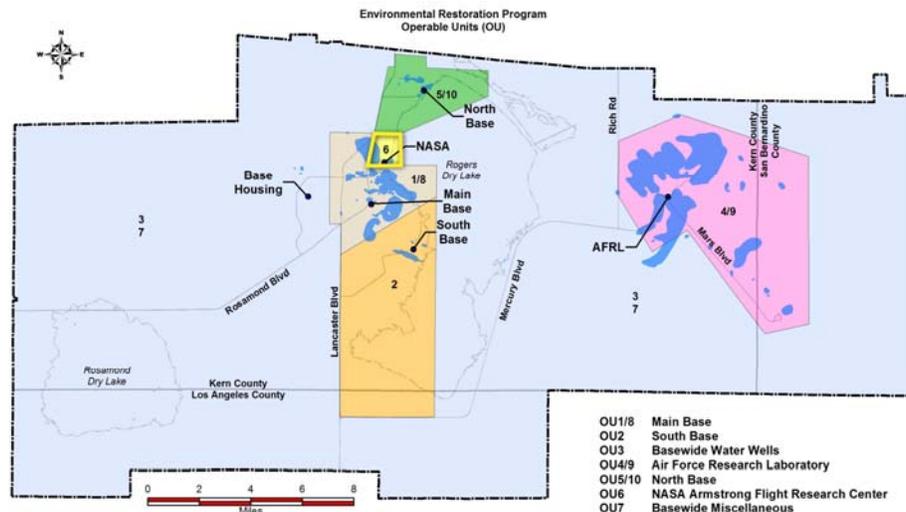
- Sites 6 and 113 Groundwater Monitoring Report
- Sites 39 (OU4/9) and 270 (OU7) Work Plan

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OU6 NASA Armstrong



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17



OU6 NASA Armstrong

**Draft Second Five-Year Review (FYR)
scheduled to be submitted to the
regulators in late May 2016**

- Includes VIP assessment with additional winter sampling event

**Final Second FYR scheduled to be
published in September 2016**

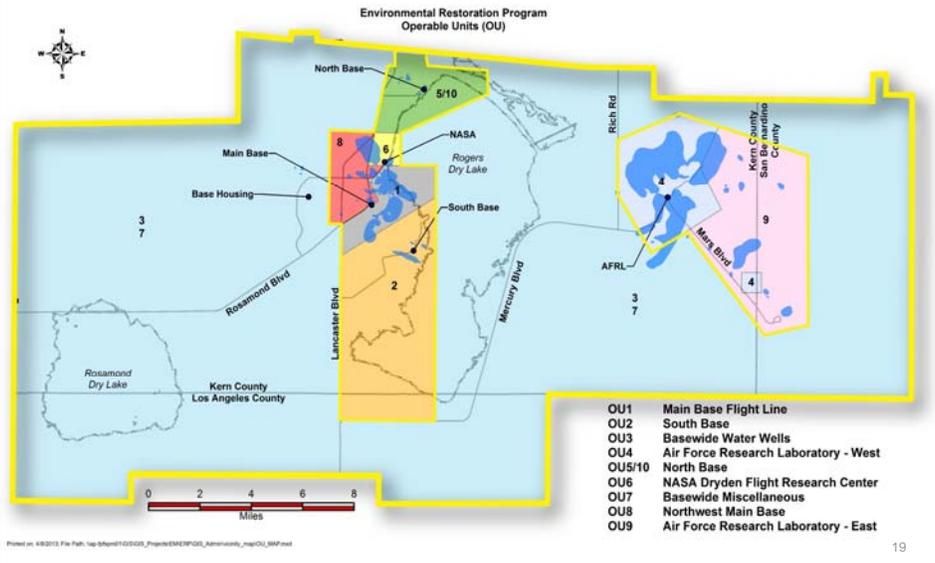
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OU7

Basewide Miscellaneous



OU7

Basewide Miscellaneous

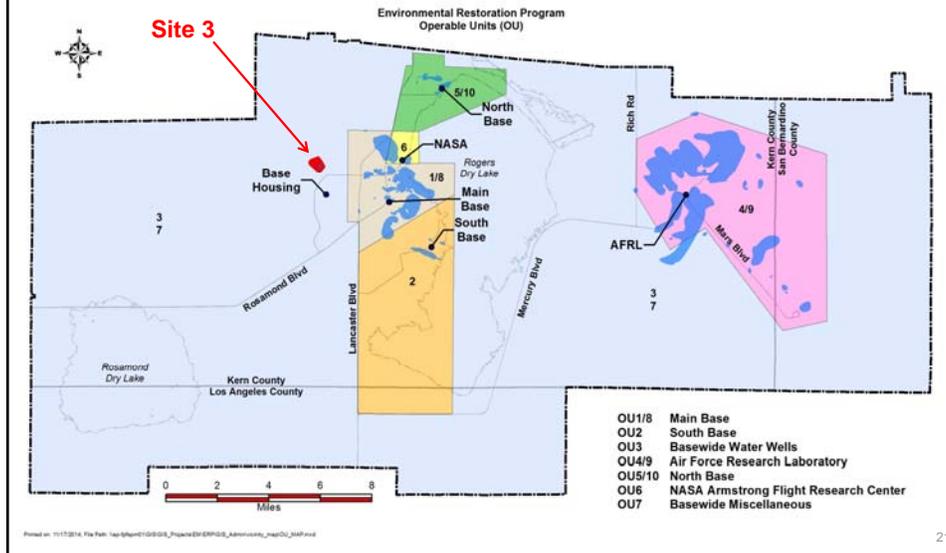
Final Remedial Investigation (RI)/FS Work Plan for OU7 Sites 267, 269, and 294 was published 21 August 2015

Field work for Supplemental RI/FS was completed April 2016

Draft Supplemental RI/FS Report is scheduled for December 2016



OU7 Site 3



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OU7 Site 3 Landfill

Field work to implement the final remedy at Site 3 will begin in June 2016

- Remove surface debris
- Move waste from a cell (from across the street) into the main area of waste cells
- Cover waste cells

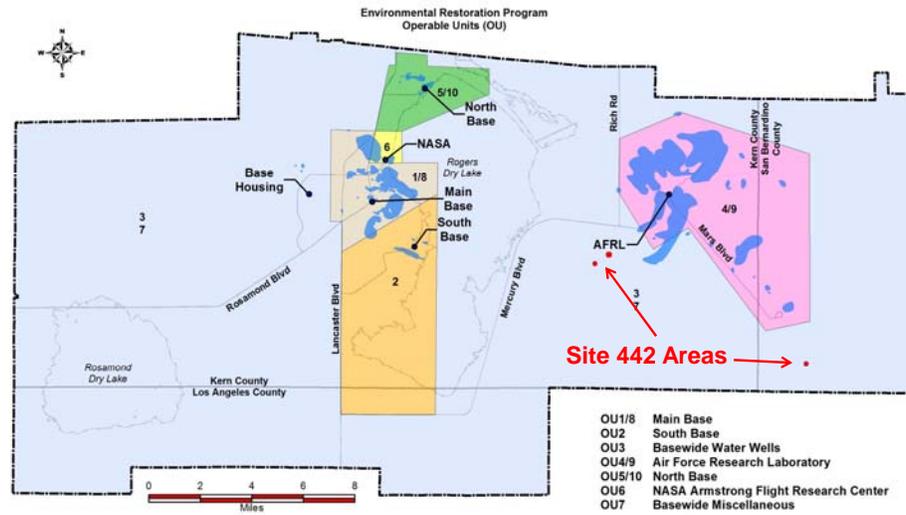
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OU7

Chemical Warfare Materiel



- OU1/8 Main Base
- OU2 South Base
- OU3 Basewide Water Wells
- OU4/9 Air Force Research Laboratory
- OU5/10 North Base
- OU6 NASA Armstrong Flight Research Center
- OU7 Basewide Miscellaneous



OU7

Chemical Warfare Materiel

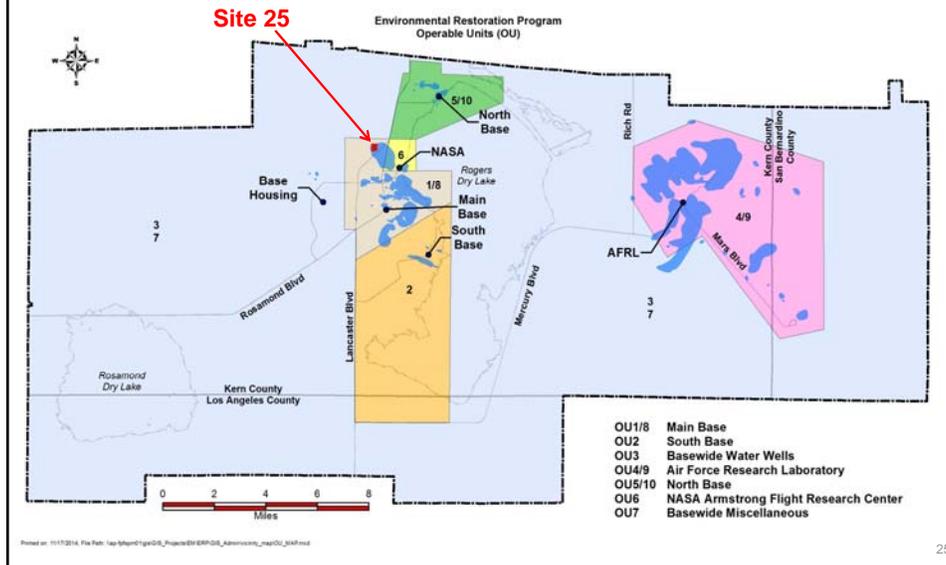
Completed a semiannual inspection of the cover in January 2016, minor repairs required

Completed land survey of settlement markers in January 2016 (same surveyor as initial)

Monument ID	December 2012 Elevation (feet amsl)	October 2014 Elevation (feet amsl)	Difference in Elevation between 2016 and 2012 (feet)	February 2016 Elevation (feet amsl)*	Difference in Elevation between 2016 and 2012 (feet)*
A1-1	2479.90	2479.88	-0.02	2479.89	-0.01
A2-1	2544.80	2544.70	-0.10	2544.81	0.01
A2-2	2537.60	2537.48	-0.12	2537.60	0.00
A2-3	2540.40	2540.25	-0.15	2540.36	-0.04
A3-1	3015.10	3015.10	0.00	3015.07	-0.03



OU8 Site 25



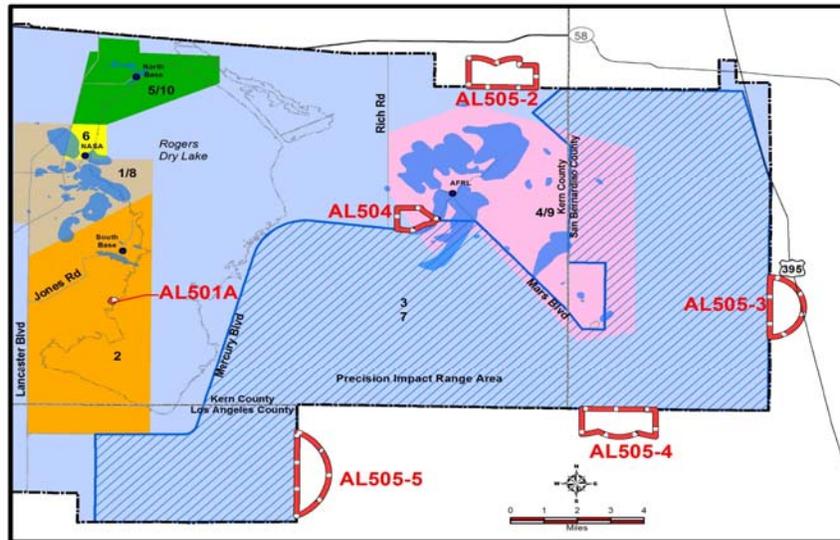
OU8 Site 25

Remedial Investigation/Feasibility Study

- Final Remedial Investigation Report Addendum No. 2 was submitted January 2016
 - Detailed a vertical gradient study of Rogers Dry Lakebed
- Draft Feasibility Study scheduled for late May 2016



Military Munitions Response Program



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Military Munitions Response Program

Remedial Investigation within AL501A, AL504, AL505-2, and AL505-4 completed in April 2016

- Intrusive Investigation was required to characterize subsurface material
- Within AL504 (on base), encountered 10 live and fused 100-lb general-purpose bombs (circa 1930s) which required timely detonation
- Video of practice bombing of AL504 (battleship target) in 1936:
<http://www.britishpathe.com/video/u-s-bombers-target-practice-aka-bullseye-bombing>

Site Inspection within AL505-3 and AL505-5 completed in April 2016

- Site Inspection was required to determine if RI required
- No munitions, explosives, or munitions debris encountered

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Military Munitions Response Program

Photos from AL504 Activities



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Questions?



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