



WILLIAMS AFB ARIZONA

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 421703



DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER

AFCEC/CIBW
706 Brooks Road
Rome, NY 13441

8 October 2014

Ms. Carolyn d'Almeida
U.S. EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105

and

Mr. Wayne Miller, P.E., R.G.
Arizona Department of Environmental Quality
1110 West Washington Street, 4415B-1
Phoenix, Arizona 85007

Subject: Submission of "Meeting Minutes: Restoration Advisory Board Meeting, 25 March 2014, Former Williams Air Force Base, Mesa, Arizona"

The Air Force is pleased to submit the attached record of the Restoration Advisory Board Meeting held on 25 March 2014, at the Arizona State University Polytechnic Campus (Peralta Hall #132) in Mesa, Arizona. These minutes were approved by the RAB in the 16 September 2014 meeting. Included with the minutes are the attendee list and presentations slides.

Please contact me at (315) 356-0810 or catherine.jerrard@us.af.mil if you have any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read "Catherine Jerrard", is positioned above the printed name.

CATHERINE JERRARD, PE
BRAC Environmental Coordinator

Attachment:

1. Meeting Minutes: Restoration Advisory Board Meeting, 25 March 2014, Former Williams Air Force Base, Mesa, Arizona
 2. 25 March 2014 RAB meeting attendee list (redacted)
 3. 25 March 2014 RAB presentation slides
- c:
- ADEQ - Wayne Miller (2 and 1 CD)
 - Administrative Record – Terie Glaspey (1 and 1 CD)
 - AFCEC –Catherine Jerrard (1 and 1 CD)
 - ASU Libraries – Dan Stanton (1 and 1CD)
 - CNTS – Geoff Watkin (1 and 1 CD)
 - TechLaw – Michael Anderson (1 CD)
 - USEPA – Carolyn d’Almeida (1 and 1 CD)
 - USEPA – Eva Davis (1 and 1 CD)
 - UXOPro – Steve Willis (1 CD)
 - RAB Distribution List (via email transmittal)
 - File

**Former Williams Air Force Base (AFB)
Restoration Advisory Board (RAB)
Meeting Minutes**

**March 25, 2014, 7 p.m.
Arizona State University Polytechnic Campus
Peralta Hall #132
7171 E. Sonoran Arroyo Mall
Mesa, AZ**

Attendees:

<i>Name</i>	<i>Organization</i>
Ms. Cathy Jerrard	Air Force Civil Engineer Center (AFCEC)/Base Realignment and Closure (BRAC) Environmental Coordinator (BEC)/Air Force Co-chair
Mr. Len Fuchs	RAB Community Co-chair/Gilbert resident
Mr. Scott Johnston	Sytsma Group, Public Affairs support contractor
Mr. Brian Sytsma	AFCEC, Public Affairs support contractor
Mr. Geoff Watkin	Cherokee Nation Technology Solutions, AFCEC technical support contractor
Mr. Everett Wessner	AMEC, AFCEC remediation contractor
Mr. Don Smallbeck	AMEC, AFCEC remediation contractor
Ms. Carolyn d'Almeida	RAB member/U.S. Environmental Protection Agency (USEPA), Region 9, Remedial Project Manager (RPM)
Ms. Beverly Selvage	RAB member/Mesa resident
Mr. Stu Pearson	AMEC, Remedial design engineer
Ms. Kimberly Vaughn	HydroGeoLogic, Inc., project manager
Mr. Carmen Williams	RAB member/Phoenix/Mesa Gateway Airport
Ms. Latonya West	Arizona State University, Real Estate manager
Ms. Delfina Olivarez	Arizona Department of Environmental Quality (ADEQ)
Ms. Debra Edwards	U.S. Army Corps of Engineers
Mr. James Holt	RAB member/Queen Creek resident
Mr. Dale Anderson	RAB member/Gila River Indian Community
Mr. Richard Whitbeck	HydroGeoLogic, Inc., site manager
Mr. Troy Orender	U.S. Army Corps of Engineers
Mr. Wayne Miller	RAB member Arizona Department of Environmental Quality (ADEQ), RPM
Mr. Steve Willis	UXO Pro/Arizona Department of Environmental Quality (ADEQ) contractor
Ms. Lisa Gerdl	RAB member/Gilbert resident
Ms. Natalie Chrisman	AMEC, AFCEC remediation contractor
Ms. Eva Davis	U.S. Environmental Protection Agency (USEPA), Kerr Laboratory

Mr. Len Fuchs called the meeting to order at 7 p.m. and asked the attendees to introduce themselves and reminded everyone to please provide their contact information on the sign-in sheet (Attachment 1). The September 17, 2013 RAB minutes were approved. Ms. Cathy Jerrard provided a brief introduction and turned the presentation over to Mr. Everett Wessner.

Status Updates for ST035, ST012, FT002, SS017, and LF004

Mr. Wessner presented updates for each site; see attached slides (Attachment 2) for more information. RAB and community discussions for each site are presented below.

ST035, Former Base Gasoline Station Building 760

Mr. Wessner summarized the slides presenting the site background, contaminants, and cleanup methods in place. The soil vapor extraction (SVE) installed to remove fuel contaminants from the soil and groundwater is currently offline so a Rebound Study can be conducted. Before the system was shut down it was operating to treat the soil contamination in the vadose zone, which is the soil above the water table. Cleanup at the site is regulated by the ADEQ and the goal is to achieve site closure under the State Leaking Underground Storage Tank (LUST) regulations.

Before the system was shut down in December 2013 for the Rebound Study, the system had a 95.3 % operational uptime between July and September and removed 528 gallons of Total Petroleum Hydrocarbons (TPH). From October to shut down on 15 December, the system had an 82.8 % operational uptime and removed 438 gallons of TPH. The removal trends indicate that reduced amounts of petroleum hydrocarbons continue to be removed on a quarterly basis. These removal trends are indicative of significant cleanup at the site.

The average annual mass removal of TPH is declining as expected. It started at 8,800 gallons in 2011 and was down to 2,100 in 2013. 19,100 total gallons have been removed to date.

Mr. Wessner explained that the purpose of a Rebound Study for an SVE system is to assess the extent of the residual contamination remaining in the vadose zone. TPH concentrations were evaluated prior to shut down and during the rebound test period. The rebound TPH concentrations will be compared to the applicable regulatory thresholds to assess the need for restarting the treatment system. If the rebound test data indicates that existing concentrations are below regulatory standards, it will not be necessary to continue operation of the SVE system. Additionally, groundwater data is collected to determine if residual TPH concentrations have any effect on groundwater quality. The Rebound Study will be completed in the next three months.

In August 2013, 19 groundwater monitoring wells were sampled. In November 2013, 21 wells were sampled, including MW21S and MW21D that were installed in August 2013 to bound the downgradient portion of the plume.

Groundwater flow continues on a due east trajectory with a slight southern component.

Benzene at the site is below the cleanup standard in all wells. The only remaining compound above a cleanup standard is 1,2-dichloroethane.

Quarterly groundwater sampling will continue and the next event will be May 2014. Site closure is expected to be achieved under LUST regulation (R18-12-263.04) by April 2016.

Questions asked during ST035 presentation:

Mr. Holt asked what a Rebound Study is. Mr. Wessner responded that the SVE system is shut down and the subsurface equilibrates; then the soil vapor and the groundwater are analyzed to assess the level of contamination. If the residual contamination is below regulatory thresholds and does not rebound above those thresholds, then no further treatment of the soil is required.

ST012, Former Liquid Fuels Storage Operation

Mr. Wessner summarized the slides presenting the site background, contaminants, cleanup methods in place, and the path forward. The primary soil contaminants for the site are petroleum hydrocarbons, which includes benzene. The deep vadose zone, which is defined as greater than 25 feet below ground surface (bgs), is currently being treated with an SVE system.

The 1992 OU-2 Record of Decision (ROD) pump-and-treat remedy was ineffective in cleaning the groundwater. A pilot test for steam enhanced extraction technology was conducted and led to a Focused Feasibility Study in November 2012. Steam Enhanced Extraction (SEE) and enhanced bioremediation is the selected remedy for the groundwater problem. No complete human health exposure pathways have been identified for contaminants at the site.

The deep soil remedy is an SVE system. The system achieved a 95.6% operational uptime from July to September 2013 and removed 3,530 gallons of TPH. From October to December 2013 the system achieved 93.2% operational uptime and removed 3,120 gallons of TPH. Average TPH mass removal rate remained stable throughout 2013 with 14,600 gallons removed, up from 13,500 gallons in 2012. TPH removed to date is 270,600 gallons. The system continues to run as the new groundwater remedy is being constructed. The next SVE monitoring event is scheduled for March 2014.

The upper water bearing zone has a flow direction of northeast. The lower saturated zone has a flow direction of east/northeast. There were 27 groundwater monitoring wells sampled in November 2013 and the data indicates an increase of benzene concentrations at one well location in the upper zone and a general decrease in benzene concentrations in the lower zone.

The final ST012 Record of Decision Amendment 2 (RODA) was signed in September 2013 with the selected remedy being SEE and Enhanced Bioremediation (EBR). Public notification of this RODA was provided in November 2013 and the final ST012 RODA is available to the public in the Administrative Record and the Arizona State University Library (Tempe).

The Remedial Design phase is currently ongoing and the SEE system construction will take place from February 2014 to August 2014.

The final Remedial Design is expected to be complete in April 2014. It will be available on the Administrative Record and at the Arizona State University (ASU) Tempe library.

Mr. Wessner also presented the SEE implementation schedule (see slide 37).

Ongoing groundwater sampling and SVE performance monitoring will continue.

Questions asked during ST012 presentation:

Mr. Holt asked for clarification concerning slide 34 (groundwater monitoring update) about increased benzene concentrations in the upper water bearing zone and decreased concentrations in the lower zone. He stated that the previous maps show only one well having benzene in the upper zone and a plume in the lower zone. He asked if this is consistent with the statement on slide 34. Mr. Smallbeck responded that the statement is correct. That particular well in the upper zone has increased in concentration. There were two other wells where the benzene concentrations have decreased, but this well has increased in general. Mr. Holt stated that he thinks this is kind of weird. Mr. Smallbeck responded that this is not unusual. There are a number of reasons why it could be increasing locally, but it's not that uncommon. For the lower zone, although the plume footprint is essentially the same size, some of the concentrations within that footprint have actually decreased. The decreases are not sufficient to significantly change the overall footprint, but the concentrations have decreased in the wells that are used to depict that entire footprint. Samples are taken at the same time every year and at the same wells so that there is representative data (information) which allows one to see a progression of small changes that occur from year to year. Mr. Smallbeck indicated that the changes could be related to slight variations in stratigraphy and/or groundwater sampling. Mr. Holt asked if the well in the upper zone that has a higher concentration is an extraction well. Mr. Smallbeck responded that it is a monitoring well.

Mr. Holt asked how the SEE process cleans up the groundwater. Mr. Smallbeck responded that there were spills that occurred when the groundwater table was quite low and the spill infiltrated through the subsurface until it was near to where the groundwater table was located. Then, over the last 30 years the groundwater table has risen 30 feet through deep soil that was previously contaminated. When the groundwater table rose, it essentially encapsulated the free product that contributes to the groundwater contamination beneath the subsurface. The steam injection includes drilling down and injecting steam into a group of wells. The steam mobilizes the trapped contamination and it will be captured at the surface through an extraction well as a free phase product, JP4; as a vapor, which will be contained and treated; or in the groundwater which will be treated before it is discharged.

Mr. Holt asked if the groundwater is under pressure. Mr. Pearson responded that the depth of the water is almost 100 feet from the top of the water table to the bottom of the treatment zone, so there's 100 feet of water pressure. Mr. Holt asked if when the water is heated it increases the pressure. Mr. Pearson responded that the water pressure remains the same as the surrounding water table. When steam is injected, the water pressure has to be overcome, so steam is injected at a higher pressure in order to push it into the formation zone. Mr. Holt asked if that causes the groundwater to go where it hasn't before. Mr. Pearson responded that it could, but the treatment system contains extraction wells that will contain the groundwater on the site.

Mr. Holt added that we're not going to suddenly see of this stuff get transported 100 miles downstream. Mr. Smallbeck responded no, a critical part of the overall design is groundwater extraction to maintain containment of the groundwater on site during the SEE treatment.

FT002 Former Fire Training Area No. 2

Mr. Wessner stated soil contamination is the issue at this site and the contaminants of concern (COCs) are benzene, chloroform, and 1,4-dichlorobenzene. There is no evidence that the site soil contamination has impacted groundwater. The 1996 OU-3 ROD included a bioventing remedy for this soil site. However, confirmation sampling indicated the soil cleanup goals were not achieved. There is currently a Declaration of Environmental Use Restriction (DEUR) to prohibit residential use on the site because the soil cleanup goals were not met. The DEUR also requires applicable soil management procedures for excavations below 5 feet.

AMEC conducted confirmation soil and soil gas sampling in 2013. Soil and soil gas sample results from indicate that volatile organic compound (VOC) concentrations in the subsurface soil exceed levels that will allow unrestricted site closure. SVE will be conducted in 2014 to remediate subsurface soil contamination.

A Remedial Action/Site Closure work plan is currently under agency review and an SVE system is scheduled for installation and startup in April 2014. It is expected to operate for 6 months with the goal being regulatory approval for unrestricted site closure.

Questions asked during FT002 presentation:

There were none.

SS017, Former Pesticide/Paint Shop

Mr. Wessner provided background and a status update for SS017. SS017 is the old pesticide/paint shop and the chemical of concern is dieldrin in both the soil and groundwater. There was a removal action in

2000 in which soil contaminated with dieldrin was excavated and removed from the site. AMEC continues to monitor the groundwater to evaluate the presence of dieldrin. There are levels of dieldrin in some wells that intermittently exceed screening levels but there is no drinking water standard (referred to as the maximum contaminant level or MCL) for dieldrin in groundwater. Groundwater flows east. Dieldrin exceeded the EPA Regional Screening Level of 0.0015 ug/L in August 2013 at 3 wells (same as August 2012).

The Air Force has submitted an updated soil and groundwater risk evaluation for regulatory review. Air Force responses to regulatory comments are currently under review. The next steps will be based on the outcome of the soil and groundwater risk evaluations. Ongoing annual groundwater monitoring will continue until the soil and groundwater risk evaluations have been finalized. The next annual event is scheduled for August 2014.

Questions asked during SS017 presentation:

There were none.

LF004, Former Solid Waste Landfill

Mr. Wessner provided background and a status update for LF004. The OU-1 ROD dealt with soil contaminants at LF004, including dieldrin and beryllium in surface soil, and the remedy, a permeable cap, was successfully implemented. The groundwater has risen and as a result, groundwater impacts have been identified by ongoing semiannual groundwater sampling events. The COCs for groundwater are perchloroethylene (PCE) and trichloroethylene (TCE).

The Proposed Remedy is In-Well Air Stripping, Oxidation and Soil Vapor Extraction. The final RODA is currently being circulated for signature. The RODA should be final any week now and notification will be provided in the local newspaper. It will be available to the public at the Administrative Record and the ASU Tempe library.

A total of 49 wells at the site were sampled in November 2013. The groundwater flow direction is due east. TCE and PCE are the only contaminants above EPA MCLs and Arizona Aquifer Water Quality Standards of 5 micrograms per liter. TCE was found to be greater than the action levels in 12 wells and PCE greater than the action level in 14 wells.

Groundwater results indicate a downward trend in areas where TCE and PCE concentrations are highest although the remedy is not in place yet. The groundwater remedy will focus on accelerating that downward trend. The TCE and PCE plumes are stable and adequately defined. Semiannual sampling will take place in May 2014.

A pre-design investigation took place from September 2013 to March 2014. The RODA will be complete in April 2014 and a Remedial Design/Remedial Action work plan will be under regulatory review in May 2014. Semiannual sampling will continue with the next event schedule for May 2014. An annual Landfill Cap Inspection will take place in Fall 2014 and cap maintenance will be implemented based on inspection results. Remedial system construction and startup is schedule for May through August 2014.

Questions asked during LF004 presentation:

Ms. Selva stated that the Dieldrin was the contaminant she is worried about and asked if it was taken from other areas and put it at the landfill and if it formed a crust or something and eventually was taken away to a waste area. Mr. Smallbeck responded that he believed she was referring to the remediation that took place at SS017. Mr. Smallbeck indicated that part of the remedy for SS017 was to remove the soil

from SS017, transport it to the landfill and perform soil treatment. Mr. Watkin added that the treatment didn't achieve cleanup levels as expected so they ended up disposing of it offsite.

Mr. Holt asked what the remedial system is for this site. Mr. Wessner responded that the remedial system will be In-Well Air Stripping, Oxidation and Soil Vapor Extraction. Mr. Smallbeck added that all of the treatment will take place in the subsurface. Wells will be installed that will allow groundwater to be extracted and treated within the well then re-injected back into the aquifer. The wells include the unsaturated portion of deep soil to remove the soil gas. SVE will extract and treat contaminated soil gas from contaminated deep and shallow soil intervals. The remedy will address contaminants in both groundwater and soil gas to prevent exposure and the potential for future groundwater contamination.

Other Active Projects Update

An update on other active projects was provided. The Army Corps of Engineers in Huntsville, Alabama oversees the contract for the Munitions Response Site XU403 (located in Parcel N Debris Area).

HGL project manager Kimberly Vaughn gave an overview of the team members involved, a site description and location, previous site investigations, current field activities, final reports, planned site closure and future land use for the Munitions Response Site; see attached slides (Attachment 3) for more information.

Field work is anticipated to start in April 2014 and take two months to complete. It will include munitions removal, environmental sampling and debris removal. Following the completion of the fieldwork there will be several different completion reports; one for environmental results, and the other for munitions results. The chemical safety submission also has to be closed out. In addition, 34 acres of the site were previously cleared for munitions. A No Further Action document for those 34 acres will be prepared as well.

Questions asked during Other Active Projects update:

Mr. Anderson asked for a copy of Ms. Vaughn's slide presentation. Ms. Jerrard responded that the slides would be made available via email as soon as possible (the slides were distributed to RAB members and stakeholders on March 27).

Mr. Fuchs asked if HGL has ever had a serious safety incident. Ms. Vaughn responded they have not. In the continental U.S., all of the government's safety programs have excellent safety records for this type of cleanup.

Mr. Holt asked what the little green dots on slide 14 stood for. Ms. Vaughn responded that they were GPS coordinates for a point on the ground that indicated a piece of buried metal. The term used for these items is anomalies.

Mr. Holt asked if the points were identified by a metal detector. Ms. Vaughn responded that it is geophysical surveying. Mr. Holt asked if the metal detector shows the glass bottle. Ms. Vaughn responded no, that usually the glass bottles are found with metal debris, but the detectors cannot detect glass.

Mr. Holt stated that if the large concentration of green dots indicating there is a lot of metal, then there could be a lot of glass bottles as well. Ms. Vaughn responded that there could be, but it won't be known until it is dug up.

Mr. Holt stated that so far all the material found is just testing kits. Ms. Vaughn stated this is correct and responded that the only anticipated chemical agent is the testing kit bottles. No other type of chemical warfare agent is expected.

Meeting Wrap-up

That concluded the information portion of the evening. Three action items were identified as a result of the meeting:

- Mr. Anderson requested an invitation to the next inspection of the Landfill Cap in September for representatives from Gila River Indian Community.
- Mr. Anderson requested a tour of the Munitions Response Site upon completion of current cleanup actions.
- Mr. Anderson requested a meeting with Ms. Jerrard and representatives from Gila River Indian Community.

A tour of ST012 for RAB members at 6 p.m. was identified as an agenda item for the September 16, 2014 RAB meeting.

Mr. Fuchs adjourned the meeting at 8:11 p.m.

The next Williams RAB meeting is scheduled for Tuesday, September 16, 2014 at 6 p.m. at the Arizona State University Polytechnic Campus.

Attachments:

1. Sign in sheet
2. March 25, 2013 RAB meeting slide presentation
3. HGL Parcel N, Debris Area 1, Project Update slide presentation

Date: 25 March, 2014

Please sign in. If your information has changed since you last attended, please place an asterisk (*) next to your name.

	<u>NAME/ORGANIZATION</u>
1.	Scott Johnston/Sytna G
2.	Brian Sytsma
3.	GEOFF WATKIN
4.	Don Small/KC
5.	David Wassner
6.	Gene Delwage
7.	Kathryn West
8.	JAMES YOLT
9.	Kimberly Vaughn
10.	Debra Edwards
11.	Richard Whitbeck
12.	Troy Orender
13.	Carmen Williams
14.	Steve Willis
15.	

	<u>NAME</u>
✓ 16.	Dale A. Andersen
17.	Lisa Gerd
18.	Natalie Chrisman
✓ 19.	Carl Almend
20.	Eva Davis
✓ 21.	Wayne Miller
✓ 22.	Delfino Olivares
23.	
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Headquarters U.S. Air Force

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Former Williams AFB Restoration Advisory Board (RAB)



25 March 2014

Arizona State Polytechnic Campus
Peralta Hall Room 132
7171 E. Sonoran Arroyo Mall Rd.
Mesa, AZ

Headquarters U.S. Air Force

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Welcome & Introductions



Presented by:
Mr. Len Fuchs / Ms. Catherine Jerrard,
RAB Community Co-Chairs
and Scott Johnston



Welcome & Introductions

- n Mr. Len Fuchs, RAB Community Co-Chair
- n Ms. Catherine Jerrard, Air Force Civil Engineer Center (AFCEC), PM/BEC and RAB Co-Chair
- n Ms. Carolyn d'Almeida, Project Manager, U.S. Environmental Protection Agency (EPA), Region 9
- n Mr. Wayne Miller, Project Manager, Arizona Department of Environmental Quality (ADEQ)



Agenda

<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
7:00 PM	<u>RAB Meeting Convenes</u> <ul style="list-style-type: none">· Welcome and Introductions· Community Co-chair Remarks· Review September 2013 Meeting Minutes and Action Items	Mr. Len Fuchs Ms. Catherine Jerrard Mr. Scott Johnston
7:15-8:15 PM	<u>Program Updates</u> ST035 Status Update <ul style="list-style-type: none">· Aug and Nov 2013 Groundwater (GW) Results· Jul-Dec 2013 Soil Vapor Extraction (SVE) Performance Results· Path Forward ST012 Status Update <ul style="list-style-type: none">· OU-2/ST012 ROD Amendment 2 (RODA) Update· Jul-Dec 2013 SVE Performance Results· Nov 2013 GW Results· Remedial Design/Remedial Action (RD/RA) Update· Path Forward	Ms. Catherine Jerrard Mr. Everett Wessner



Agenda Continued

<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
7:30-8:15 PM	<u>Program Updates <i>continued</i></u> FT002 Status Update <ul style="list-style-type: none">Path Forward SS017 Status Update <ul style="list-style-type: none">Aug 2013 GW ResultsPath Forward LF004 Status Update <ul style="list-style-type: none">OU-1/LF004 ROD Amendment 1 (RODA) UpdateNov 2013 GW ResultsPath Forward	Mr. Everett Wessner
8:15-8:30	Munitions Response Site XU 403 Area 1	HGL
8:30-8:45 PM	<u>Meeting wrap-up</u> <ul style="list-style-type: none">Review action items for next meetingCall for agenda items for next meetingPropose next RAB meeting – 16 Sep 2014	Ms. Catherine Jerrard
8:45 PM	Adjourn	Mr. Len Fuchs

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Program Updates

**Sites ST035, ST012, FT002,
SS017, and LF004**

Presented by:
Ms. Catherine Jerrard, AFCEC
Mr. Everett Wessner, AMEC

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**Site ST035,
Former Building 760
Underground
Storage Tanks
(USTs)**



Site ST035 Location Map





Site ST035 Site Background

- **Building 760 gas station and oil/water separator**
 - § Gas dispensing until 1986
 - § Tank and dispensing equipment removed in 1993-1994
 - § Oil/water separator removed in 1996
- **Vadose zone soil chemicals of concern (COCs)**
 - § Benzene
- **Groundwater COCs**
 - § Benzene, toluene, ethylbenzene, xylenes (BTEX)
 - § 1,2-Dibromoethane (EDB)
 - § Methyl tertiary butyl ether (MTBE)
 - § 1,2-Dichloroethane (DCA)
- **Soil Vapor Extraction (SVE) system to treat COCs in vadose zone soil in operation**
- **Site cleanup regulated by ADEQ under Leaking Underground Storage Tank (LUST) regulation (R18-12-263)**
- **Ongoing quarterly groundwater monitoring**



Soil Vapor Extraction System Update

Jul - Sep 2013

- n **95.3% operational uptime**
- n **Total Petroleum Hydrocarbons (TPH) removed – 3,300 pounds or 528 gallons (553 gallons removed from Apr – June 2013)**

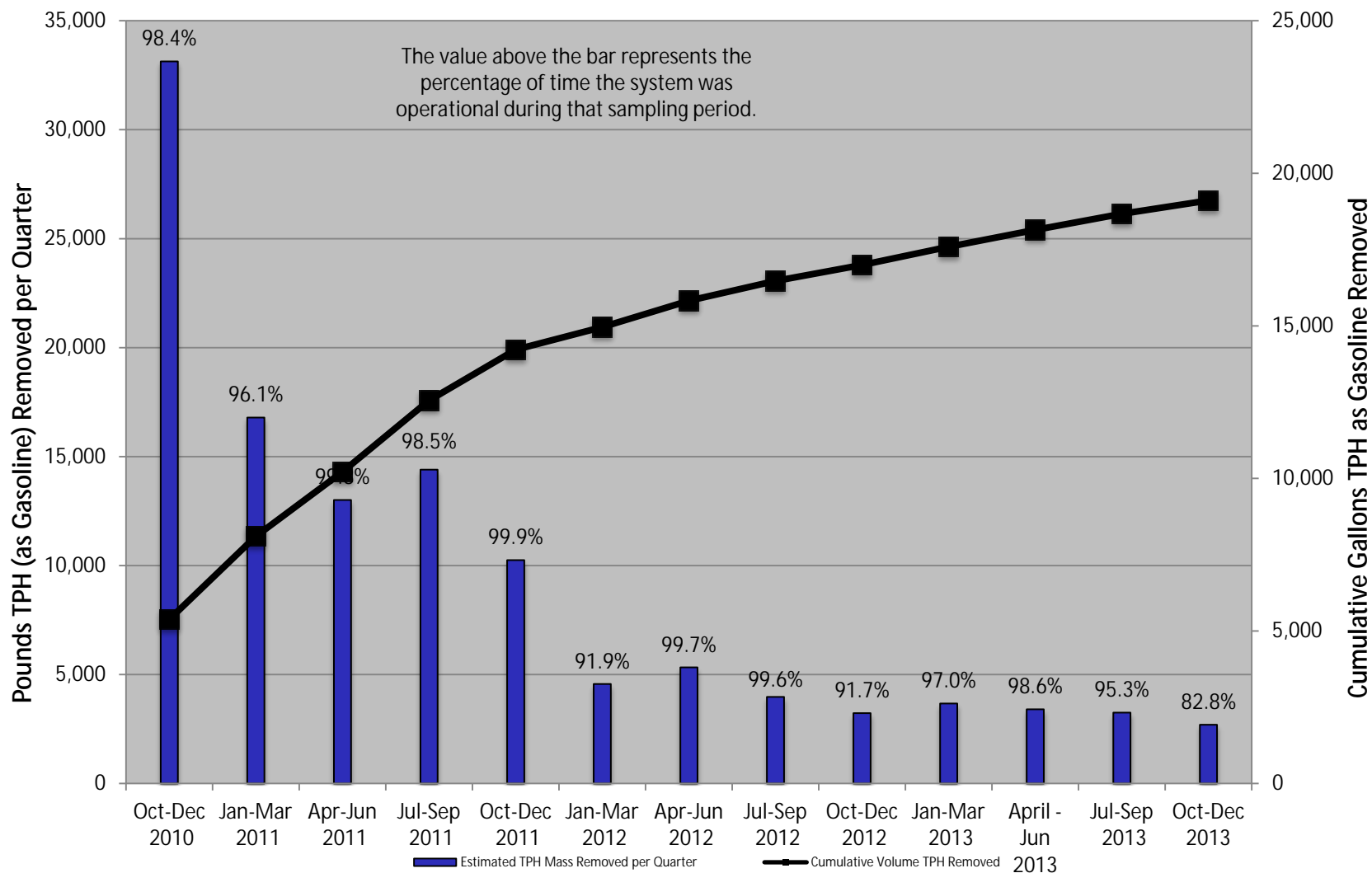
Oct - Dec 2013

- n **82.8% operational uptime (shut down on 15 Dec 13)**
- n **TPH removed – 2,700 pounds or 438 gallons**
- n **6 of 15 SVE wells operating (same as Jul-Sep 2013)**





Site ST035 SVE System Performance





Site ST035 SVE System Summary

- n **Average mass removal of TPH is declining as expected**
 - § 8,800 gallons removed in 2011
 - § 2,800 gallons removed in 2012
 - § 2,100 gallons removed in 2013
- n **19,100 gallons of TPH removed to date**
- n **SVE system operated within permit emission requirements in 2013**
- n **Operations shut down in Dec 2013 for Rebound Study**



ST035 SVE System Rebound Study

n Purpose:

Assess the extent of residual contamination in vadose zone soil.

n Approach:

- § Evaluate TPH concentrations prior to shut down**
- § Shut down SVE and monitor rebound in TPH concentrations (if present)**
- § Restart SVE and monitor TPH concentrations**



ST035 SVE System Rebound Study

(Continued)

n Analysis:

- § **Compare rebound concentrations to applicable regulatory thresholds**
- § **Use rate of concentration decline after restart to assess remaining duration of required operations**

n Status:

- § **Shut down operations in mid December 2013**
- § **Continuing to monitor vapor concentrations for equilibrium concentrations**
- § **Collected groundwater samples in February 2014**



Site ST035 Groundwater Monitoring Update August & November 2013 Sampling Events

- n **August 2013 - 19 wells sampled**

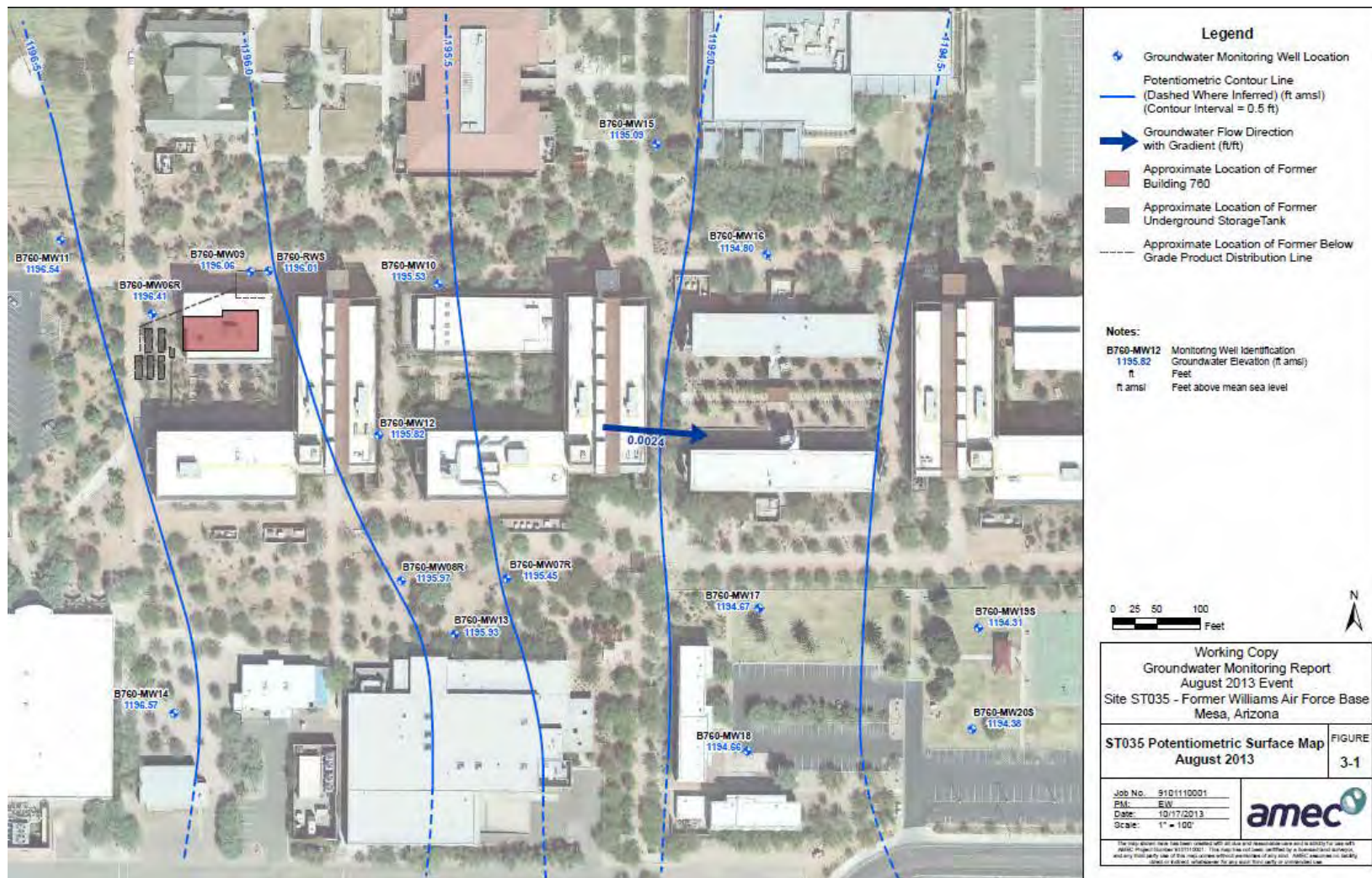
- n **November 2013 - 21 wells sampled (Includes MW21S and MW21D installed in August 2013)**

- n **Groundwater Flow Directions**
 - § **August 2013 - predominantly eastward**
 - § **November 2013 - due east**



Site ST035 Groundwater Monitoring Update

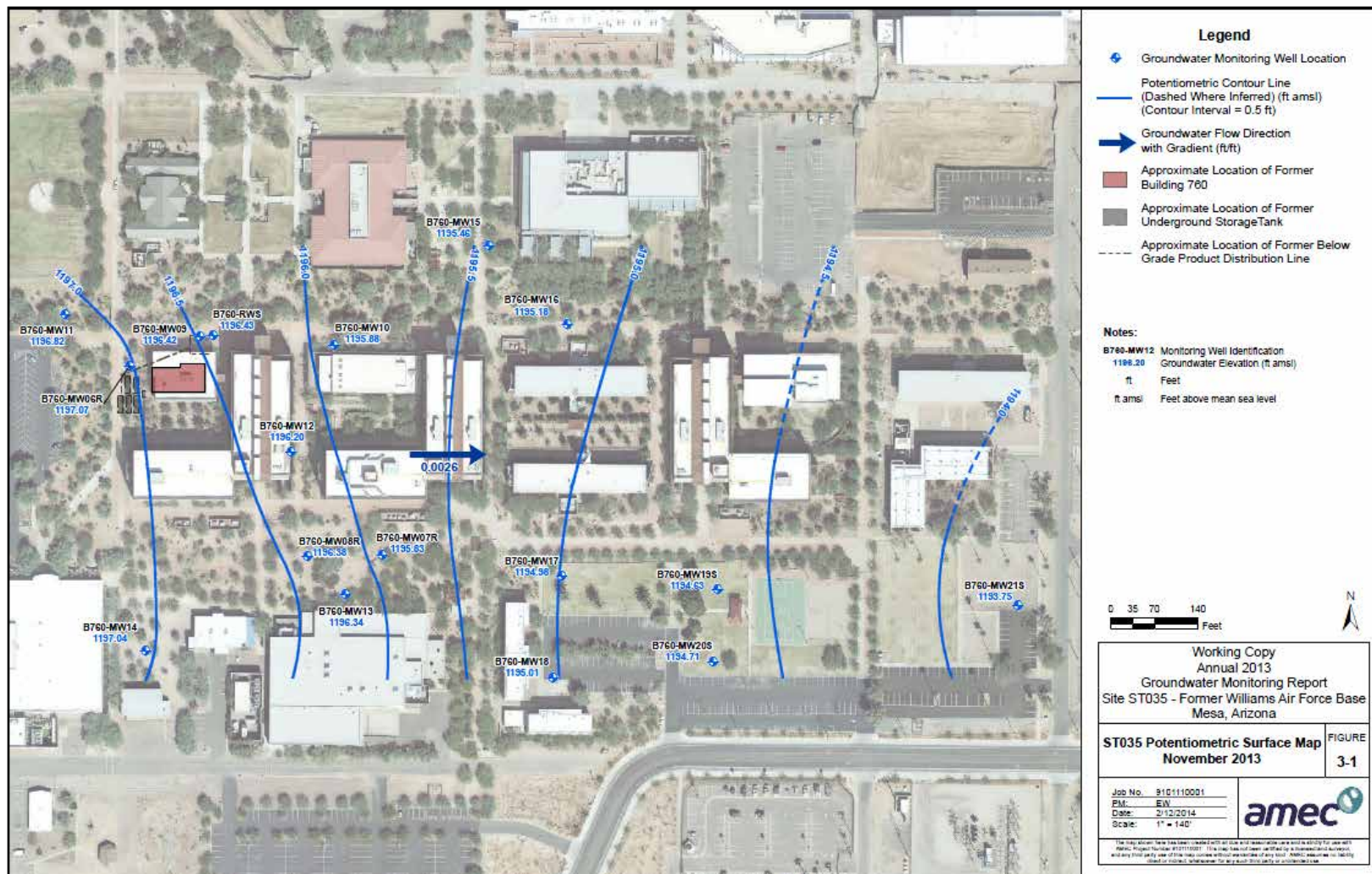
Flow Direction - August 2013





Site ST035 Groundwater Monitoring Update

Flow Direction - November 2013





August & November 2013 Groundwater Summary

n Benzene

- § All wells < Tier 1 Standard - both events
- § Concentrations in former source area have significantly decreased since SVE startup (2010)

n Toluene, Xylenes, MTBE, & EDB - All wells < Tier 1 Standard

n 1,2-DCA

- § 4 wells > Tier 1 Standard – Aug
- § 6 wells > Tier 1 Standard – Nov

n MTBE - All wells < Tier 1 Standard

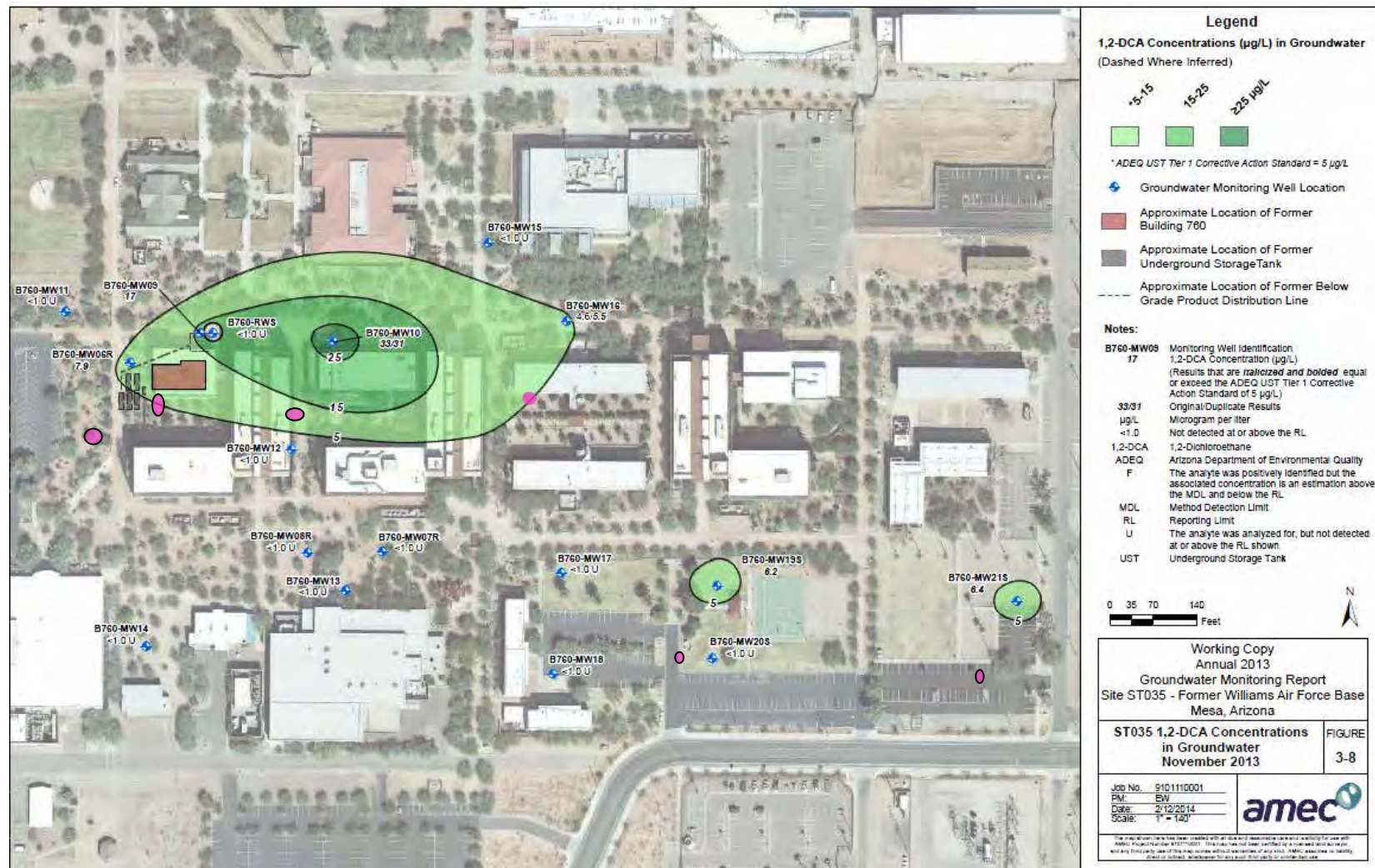
n Ongoing quarterly groundwater sampling



Site ST035 Groundwater Monitoring Update

1,2-DCA Isoconcentration Map

November 2013





Site ST035 Path Forward

- **Continue rebound testing and evaluate whether additional SVE operation is necessary**
- **Conduct quarterly groundwater sampling – Next event May 2014**
- **Achieve site closure under LUST regulation (R18-12-263.04) by Apr 2016**

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**Site ST012, Former
Liquid Fuels Storage
Area**



Site ST012 Location Map





Site ST012 Site Background

- **Former liquid fuels storage operation, COCs in soil and groundwater are TPH and benzene**
- **Shallow soil (< 25 feet deep) cleanup achieved (1996): Operable Unit (OU)-2 Record of Decision (ROD) 1992**
- **Deep vadose zone soil (> 25 feet deep) currently treated by SVE: OU-2 ROD Amendment 1996**
- **Original Groundwater pump and treat remedy was ineffective. Steam Enhanced Extraction and Enhanced Bioremediation was selected as the Amended Groundwater Remedy in the OU-2 ROD Amendment 2013**



Site ST012 SVE System Update

Jul – Sep 2013

- n 95.6% operational uptime
- n TPH removed – 23,200 pounds or 3,530 gallons (3,790 gallons in Apr-Jun 2013)

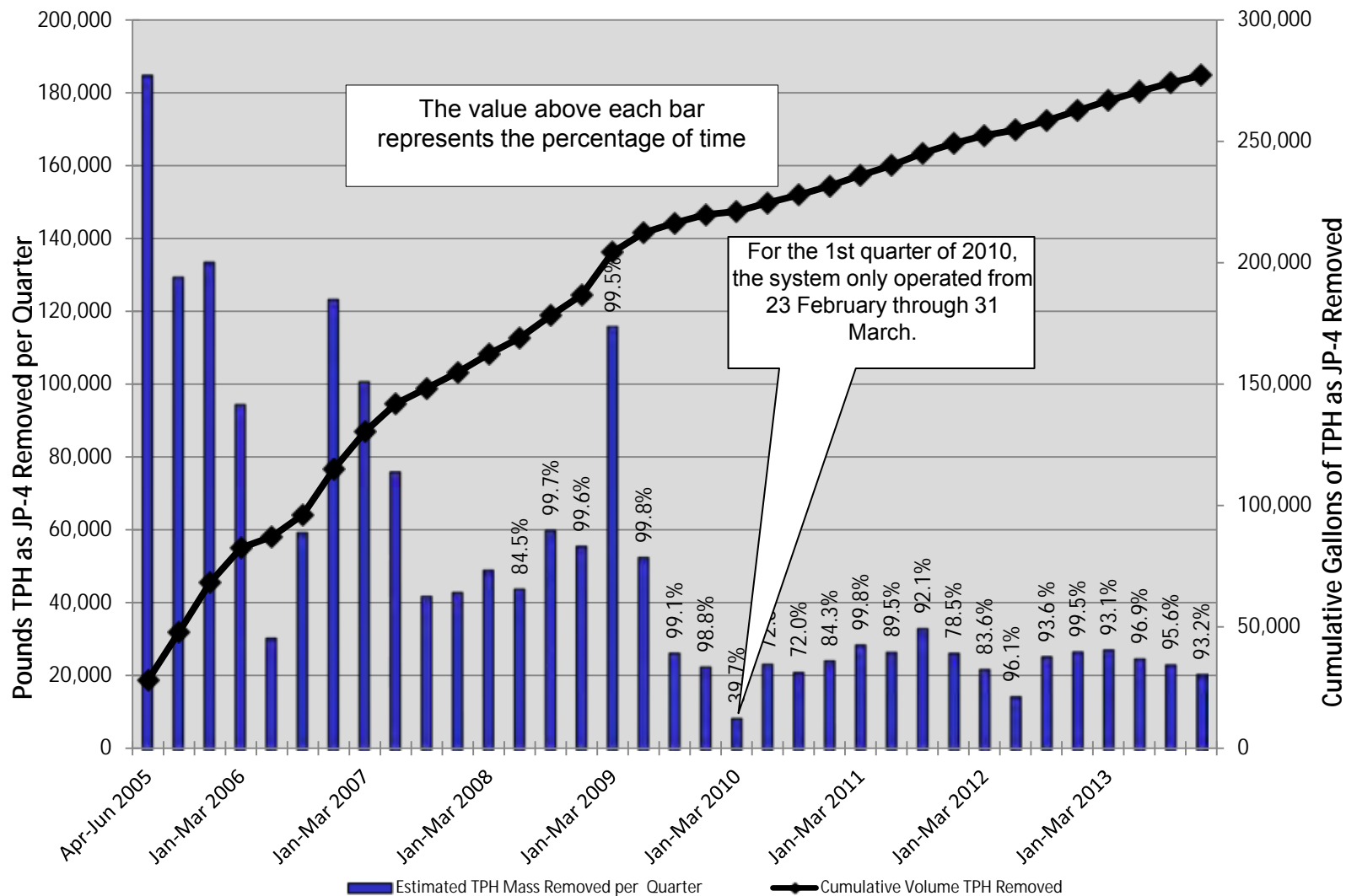
Oct – Dec 2013

- n 93.2% operational uptime
- n TPH removed – 20,500 pounds or 3,120 gallons
- n 9 of 27 SVE wells operating (same as Jul-Sep 2013)





Site ST012 SVE System Performance





Site ST012 SVE System Summary

- **Average TPH mass removal rate remained stable in 2013**
 - 13,500 gallons removed in 2012
 - 14,600 gallons removed in 2013
- **TPH removed to date – 270,600 gallons**
- **SVE Operations shut down in February for SEE utility installation. SVE operations was restarted on 17 March 2014**
- **Next SVE performance monitoring – Mar 2013**



Site ST012 Groundwater Chemical of Concern (COC)

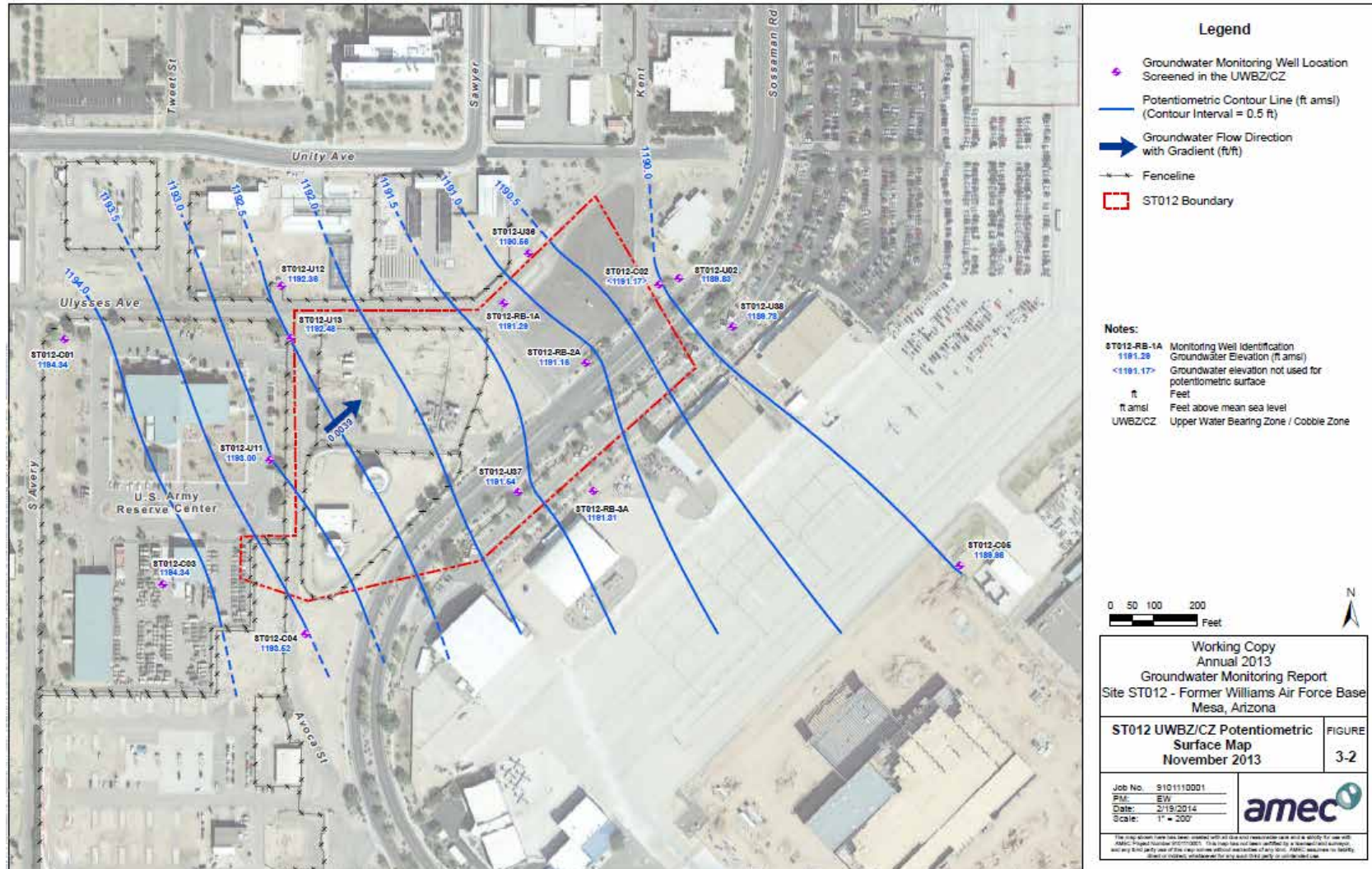
COC	OU-2 ROD Amendment 2 Cleanup Level (µg/L)
Volatile Organic Compounds (VOCs)	
Benzene	5
1,2-Dichloroethane	5
Ethylbenzene	700
Methylene Chloride	5
Naphthalene	28
PCE	5
Toluene	1,000
TCFME	2,100
Total Xylenes	10,000
Semi-volatile Organic Compounds (SVOCs)	
bis(2-Ethylhexyl)phthalate	6
2-Methylnaphthalene	27
2-Methylphenol	870
4-Methylphenol	870
Phenol	4,200
Metals	
Antimony	6
Chromium (Total)	100
Copper	1,300
Lead	15
Nickel	100
Silver	50
Zinc	1,400



Site ST012 Groundwater Monitoring Update

Nov 2013 Flow Directions

Upper Water Bearing Zone/Cobble Zone (UWBZ/CZ)





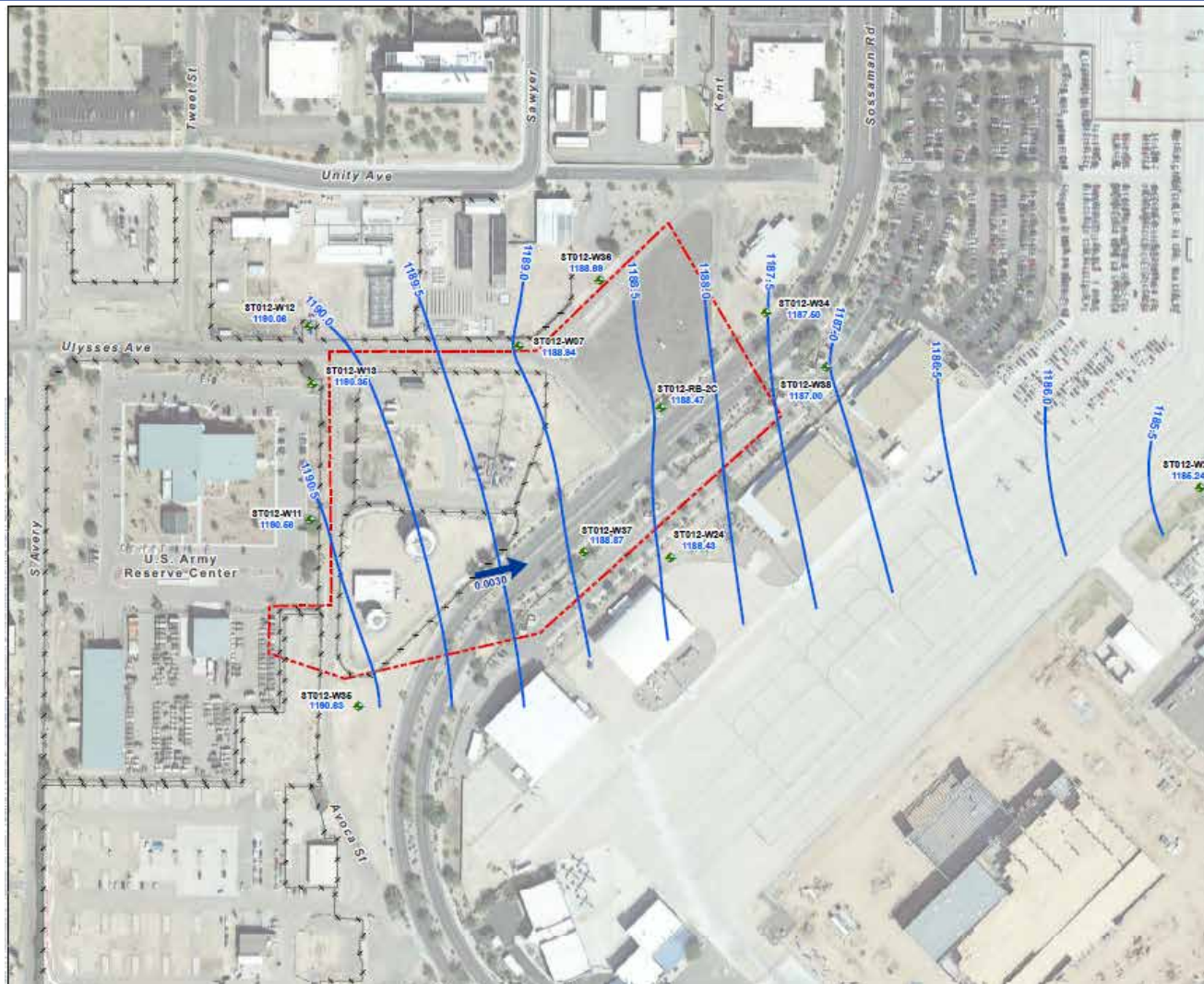
Site ST012 Groundwater Monitoring Update

Nov 2013 Flow Directions

Lower Saturated Zone (LSZ)

Williams Air Force Base

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Legend

- Groundwater Monitoring Well Location Screened in the LSZ
- Potentiometric Contour Line (ft amsl) (Contour Interval = 0.5 ft)
- Groundwater Flow Direction with Gradient (ft/ft)
- Fenceline
- ST012 Boundary

Notes:

- ST012-RB-2C Monitoring Well Identification
- 1188.47 Groundwater Elevation (ft amsl)
- ft Feet
- ft amsl Feet above mean sea level
- LSZ Lower Saturated Zone

0 50 100 200
Feet

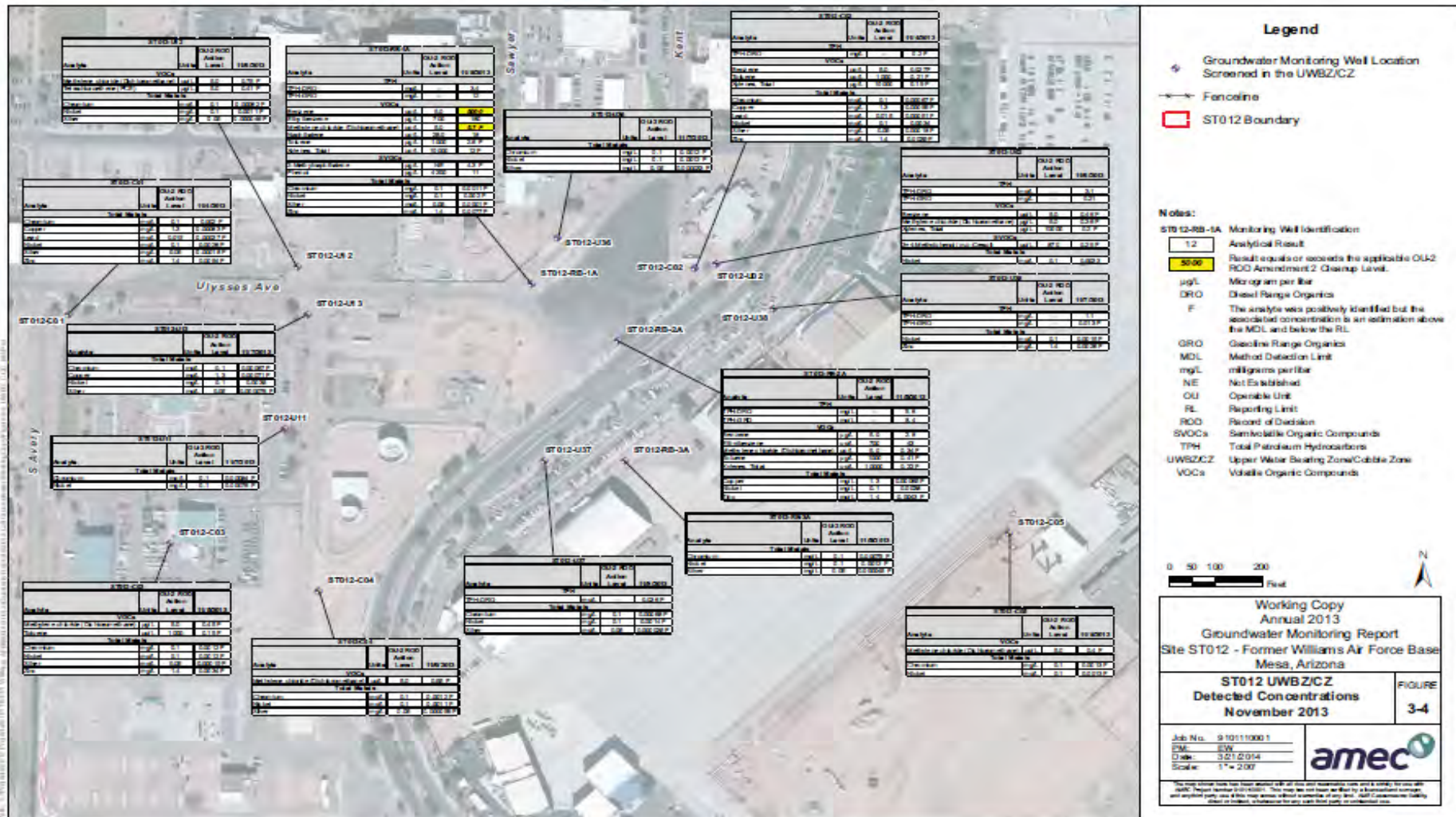


Working Copy Annual 2013 Groundwater Monitoring Report Site ST012 - Former Williams Air Force Base Mesa, Arizona	
ST012 LSZ Potentiometric Surface Map November 2013	FIGURE 3-3
Job No. 9101110001 PM: EW Date: 1/31/2014 Scale: 1" = 200'	
<small>The map shown here has been created with all data and resources available at the time of map creation and is not intended to be used for any other purpose. The map is not a warranty or a representation of any kind. AMEC disclaims any liability for any errors or omissions in this map or any data used in its creation.</small>	



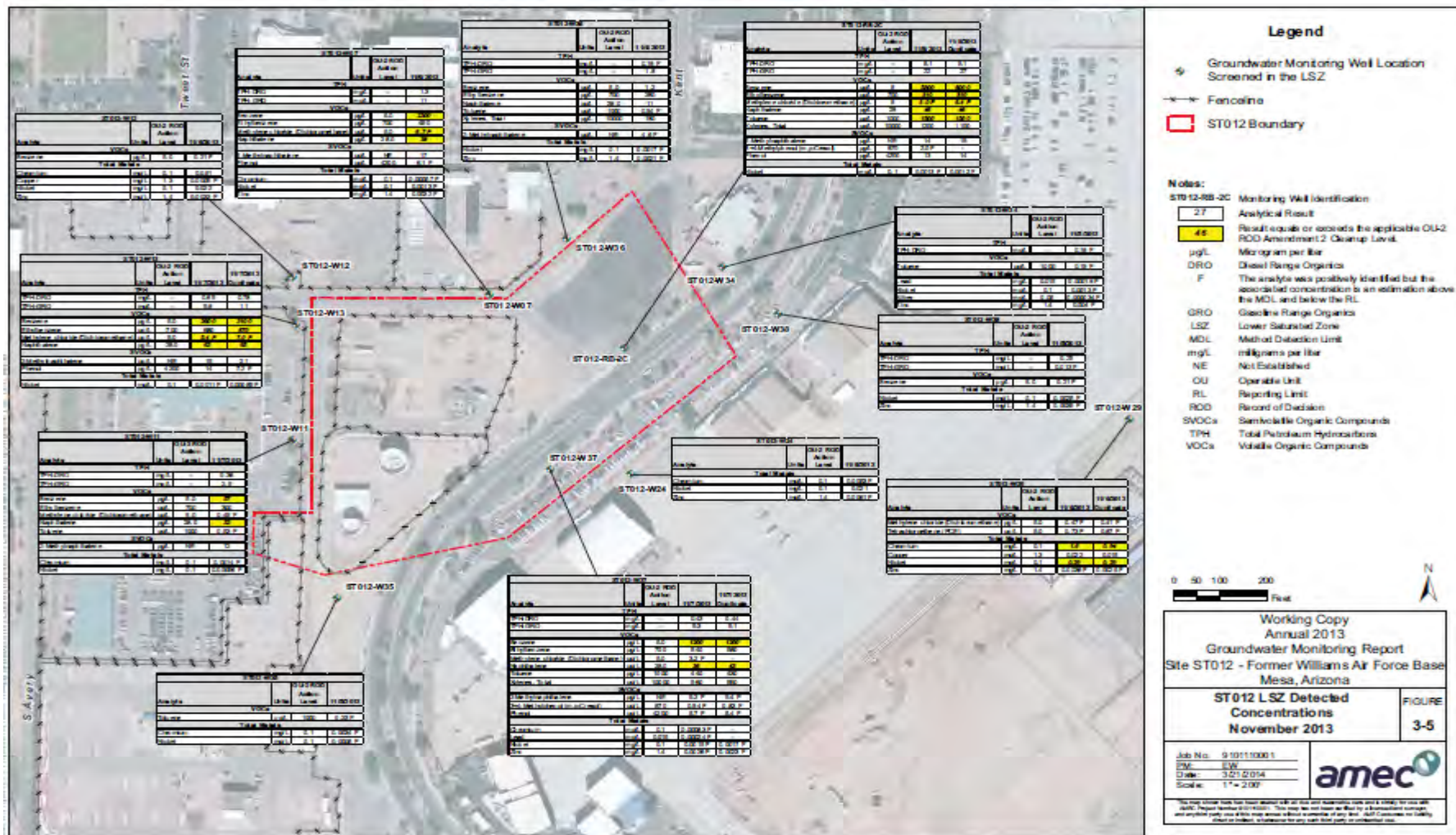
Site ST012 Groundwater Monitoring Update Nov 2013 Results > Cleanup Levels UWBZ/CZ

W42170001-0001 Page 42 of 92





Site ST012 Groundwater Monitoring Update Nov 2013 Results > Cleanup Levels LSZ

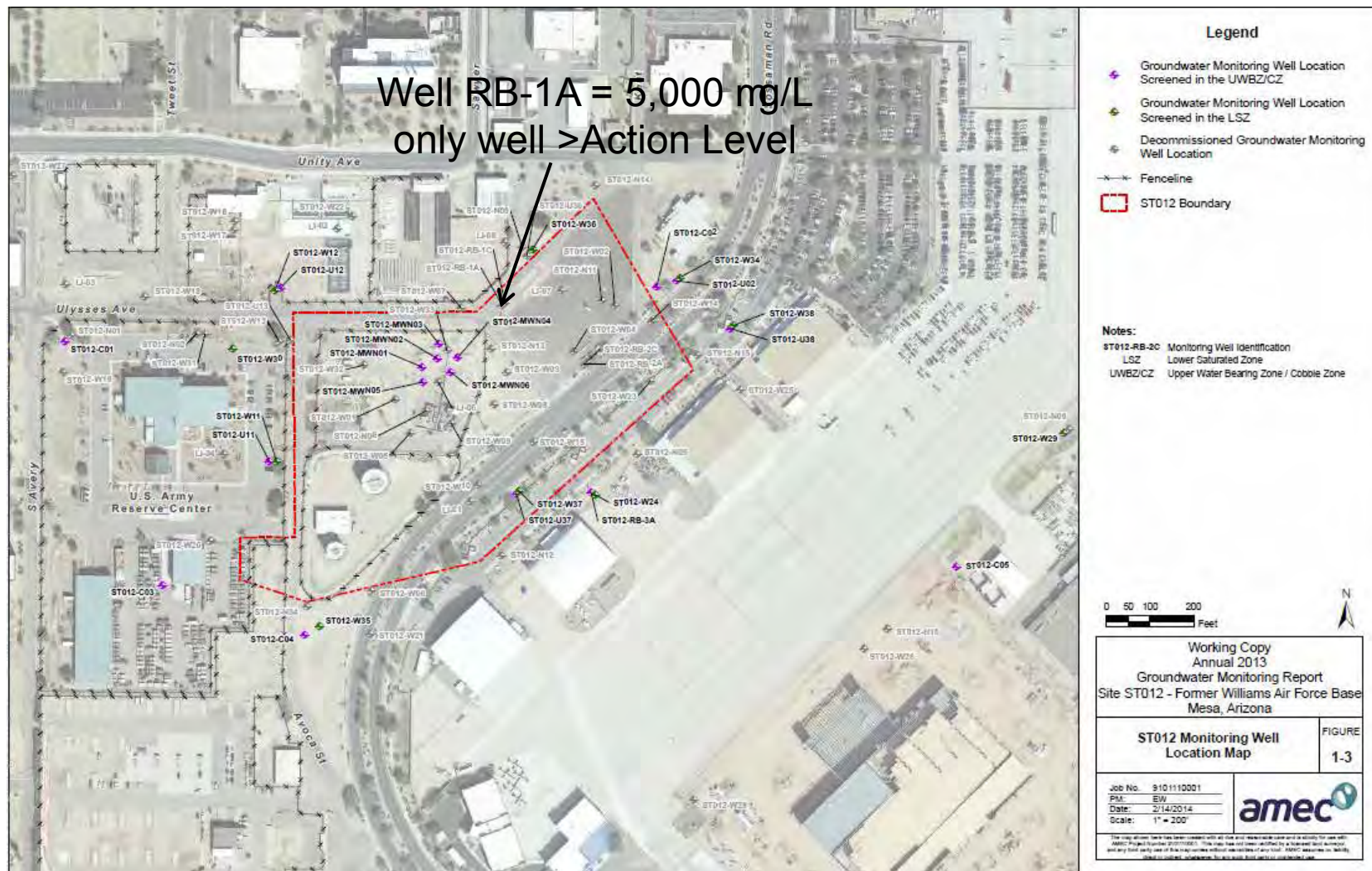




Site ST012 Groundwater Monitoring Update Nov 2013 Benzene Results > Cleanup Level UWBZ/CZ

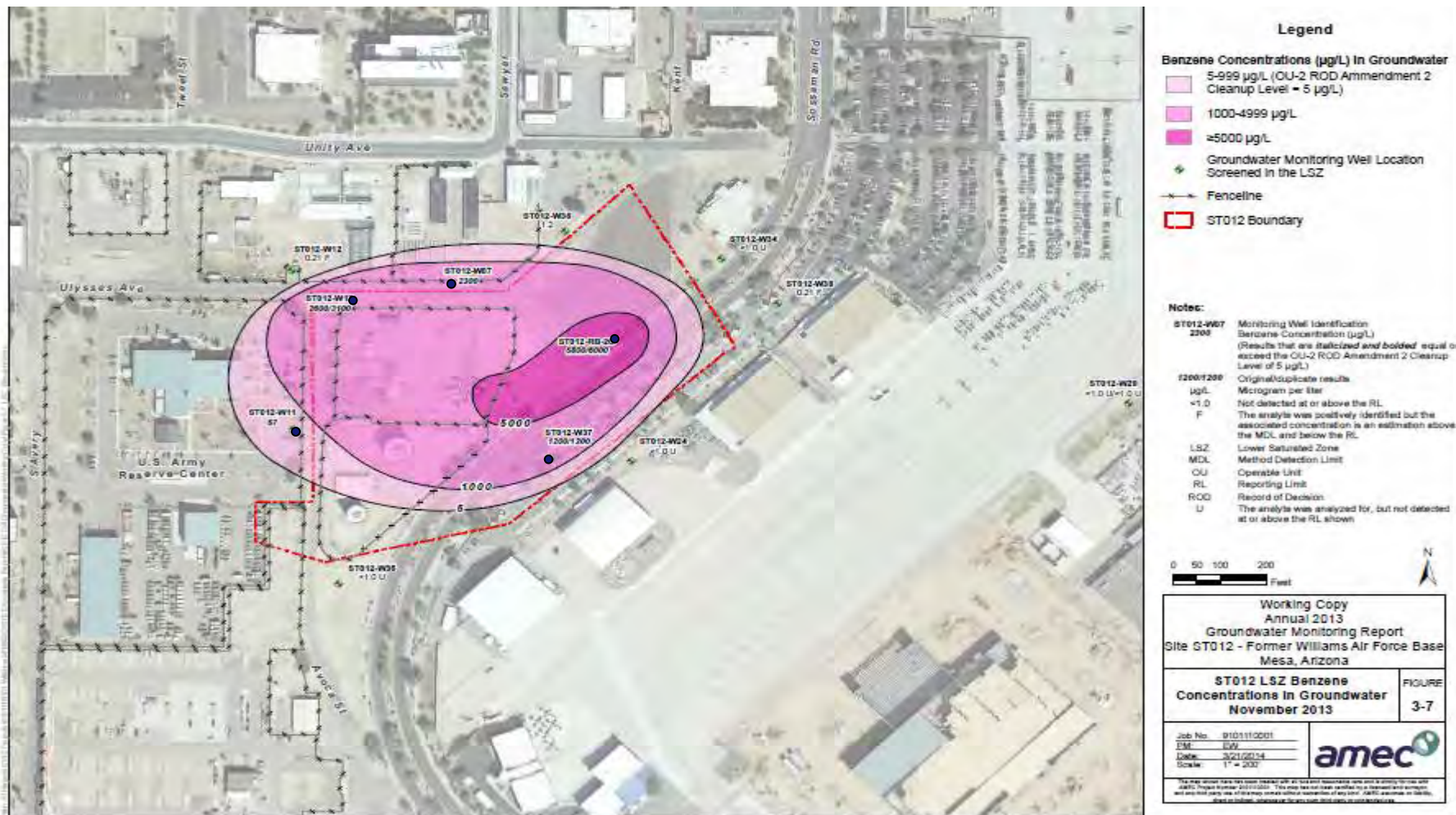
W421570.mxd AEH

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Site ST012 Groundwater Monitoring Update Nov 2013 Benzene Results > Cleanup Level LSZ





Site ST012 Groundwater Monitoring Update

Nov 2013 Sampling Event Summary

W111101 AR#

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- n **27 wells sampled**
- n **Groundwater flows northeast in UWBZ/CZ & east/northeast in LSZ**
- n **COC concentrations similar to historical (2009-2012) data, with noted exceptions:**
 - § **Increased benzene concentrations in UWBZ/CZ**
 - § **Decreased benzene concentrations in LSZ**

Analyte	# Wells > Action Level Nov 2013	# Wells > Action Level Nov 2012
Benzene	6	7
Naphthalene	5	3
Toluene	1	1
Ethylbenzene	2	0
Methylene Chloride	4	0

Locations where detections of naphthalene, toluene, ethylbenzene and methylene chloride exceeded action levels were within the benzene plume area.



W1211005 ARH Page 47 of 92

OU-2/ST012 ROD Amendment 2 (RODA)

- n **Final ST012 RODA 2 signed in September 2013**
- n **Selected Remedy - Steam Enhanced Extraction (SEE) and Enhanced Bioremediation (EBR)**
- n **Notification of final ST012 RODA 2 was provided in local newspaper in November 2013**
- n **Final ST012 RODA 2 is available to public in Administrative Record and at ASU library (Tempe)**



OU-2/ST012 Remedial Design/Remedial Action (RD/RA)

- n **Selected Remedy - SEE and EBR**
- n **The Draft and Draft Final versions of ST012 RD/RA have been reviewed by USEPA and ADEQ**
- n **Final ST012 RD/RA is currently under review**
- n **Review of Final ST012 RD/RA expected to be complete in April 2014**
- n **Final ST012 RD/RA will be available to public in Administrative Record and at ASU library**



ST012 SEE IMPLEMENTATION SCHEDULE

■ Equipment Procurement	Sep 2013
■ Well Abandonment/Drilling	Fall 2013–Spr 2014
■ Utility Connections	Feb 2014
■ SEE System Construction	Feb–Aug 2014
■ SEE Startup	Aug-Sep 2014
■ SEE Operation	Sep 2014–Nov 2015
■ Road Closure*	May 2014–Dec 2015
■ Cell Phone Lot Closure*	Aug 2014–Aug 2015
■ EBR Groundwater Treatment	Nov 2015–Nov 2018

***Construction activities will have temporary impacts from Mar to May 2014**



Site ST012 Path Forward

- **RD/RA Work Plan – Apr 2014**
- **Ongoing annual groundwater sampling**
- **Ongoing SVE performance monitoring**
- **SEE system construction – Feb-Aug 2014**
- **Continued communication with nearby businesses and stakeholders**

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**Site FT002, Fire
Training Area
Number 2**



Site FT002 Location Map





Site FT002 Site Background

- Fire protection training activities (1958-1991)
- Soil COC: benzene, chloroform, 1,4-dichlorobenzene
- No evidence of groundwater impact
- OU-3 ROD 1996; Soil Remedy (bioventing) implemented in 1996-1997
- Until cleanup levels are achieved, Declaration of Environmental Use Restriction (2008) to prohibit residential use and require soil management below 5 feet



Site FT002 Path Forward

- n **Soil and soil gas sample results from 2013 indicate that volatile organic compound (VOC) concentrations in the subsurface soil exceed levels that will allow unrestricted site closure**

- n **Soil vapor extraction (SVE) will be conducted in 2014 to remediate subsurface soil contamination**



Site FT002 Path Forward

- n Soil and soil gas sample results from 2013 indicate that VOC concentrations in the subsurface soil exceed levels that will allow unrestricted site closure**
- n SVE will be conducted in 2014 to remediate subsurface soil contamination**
- n Remedial Action/Site Closure Work Plan currently under agency review**
- n SVE system scheduled for installation and startup in April 2014**
- n SVE system is expected to operate for six months**
- n The goal is regulatory approval for unrestricted site closure**

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**Site SS017, Old
Pesticide/Paint
Shop**



Site SS017 Site Location Map





Site SS017 Background

- Old pesticide / paint shop
- Soil and groundwater COC: Dieldrin
- Removal action for soil completed in 2000
- Ongoing annual groundwater monitoring (Aug)
- Draft OU-6 ROD Mar 2012



August 2013 - Groundwater Summary

n Groundwater Flow Directions

- § **August 2013 – due east (downgradient ST035 well MW14 added to map)**
- § **August 2012 – east/southeast**

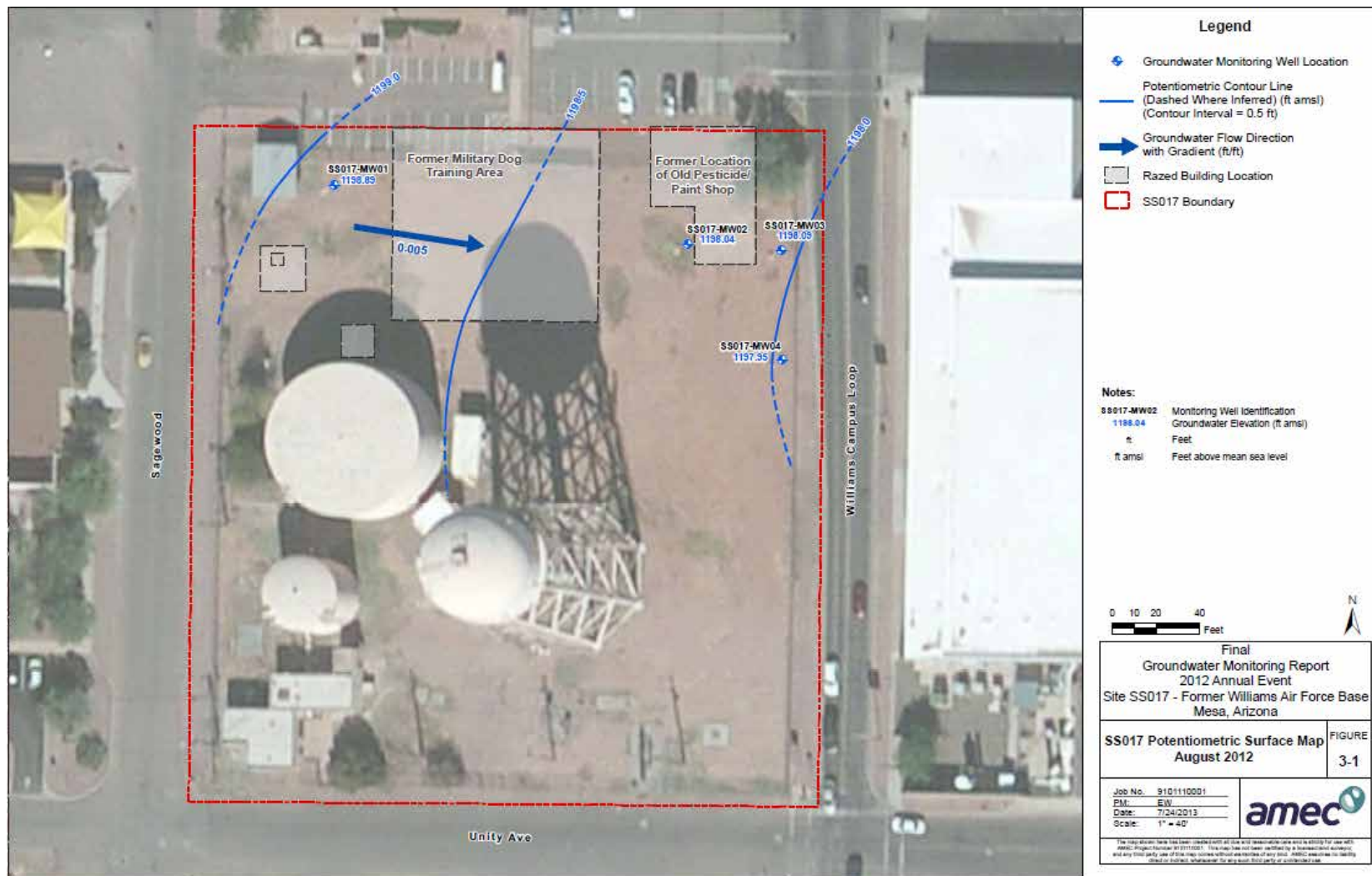
n Dieldrin exceeded the EPA RSL of 0.0015 mg/L in August 2013 at 3 wells (same as August 2012)

- § **MW02**
- § **MW03**
- § **MW04**



Site SS017 Groundwater Monitoring Update

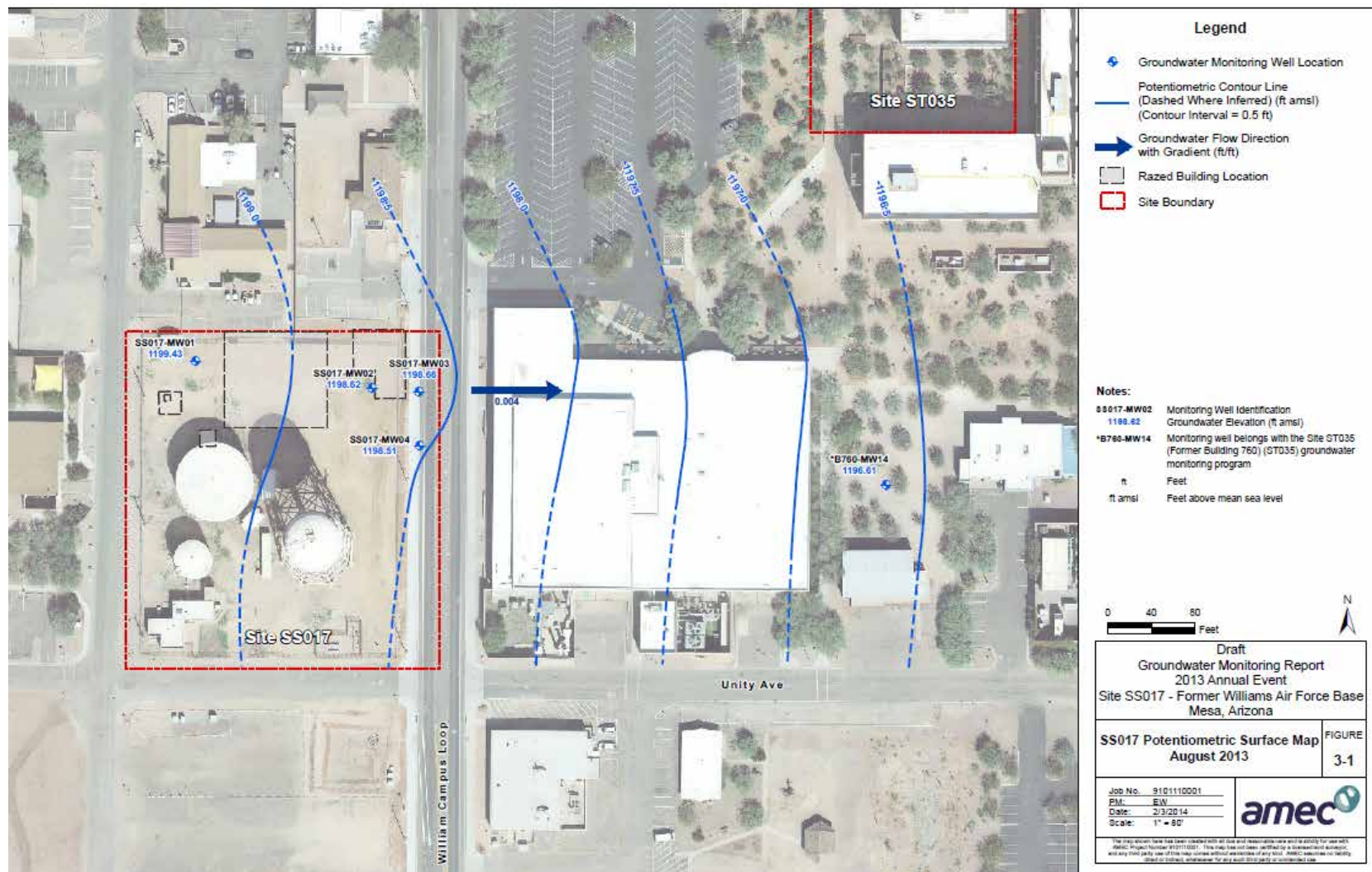
Flow Direction - August 2012





Site SS017 Groundwater Monitoring Update

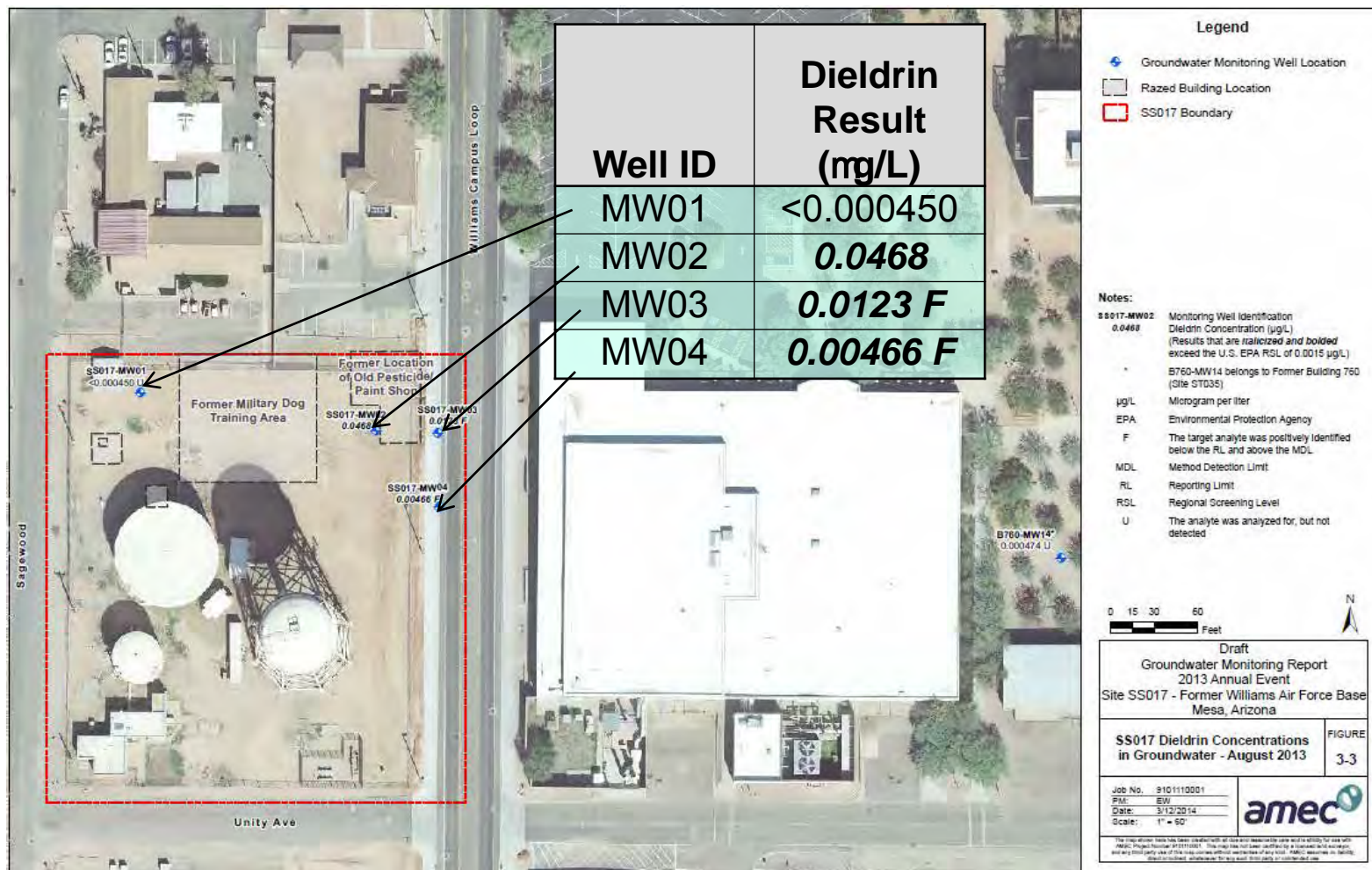
Flow Direction - August 2013





Site SS017 Groundwater Monitoring Update

Dieldrin Results - August 2013





Site SS017 Path Forward

- n **Air Force submitted updated soil and groundwater risk evaluation. Air Force responses to regulatory comments are under review.**
- n **Next steps will be based on outcome of soil and groundwater risk evaluation**
- n **Ongoing annual groundwater monitoring event (Aug)**
- n **Next groundwater monitoring event – Aug 2014**

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Site LF004, Landfill



Site LF004 Site Location Map





Site LF004 Site Background

■ Landfill

- Former solid waste landfill
- Operated from 1941 to 1976
- Closed in 1995 with a permeable soil cap (OU-1 ROD 1994)
- Rising groundwater table
- Ongoing semiannual groundwater monitoring

■ COCs

- Dieldrin and beryllium in surface soil
- Tetrachloroethene (PCE) and Trichloroethylene (TCE) in groundwater and soil gas



OU-1/LF004 ROD Amendment 1 (RODA)

- **Proposed Remedy – In-Well Air Stripping, Oxidation, and Soil Vapor Extraction**
- **Final LF004 RODA is currently being circulated for signature**
- **Upon completion of signature process, notification of final LF004 RODA will be provided in local newspaper**
- **Final LF004 RODA will be available to public in Administrative Record and at ASU library**



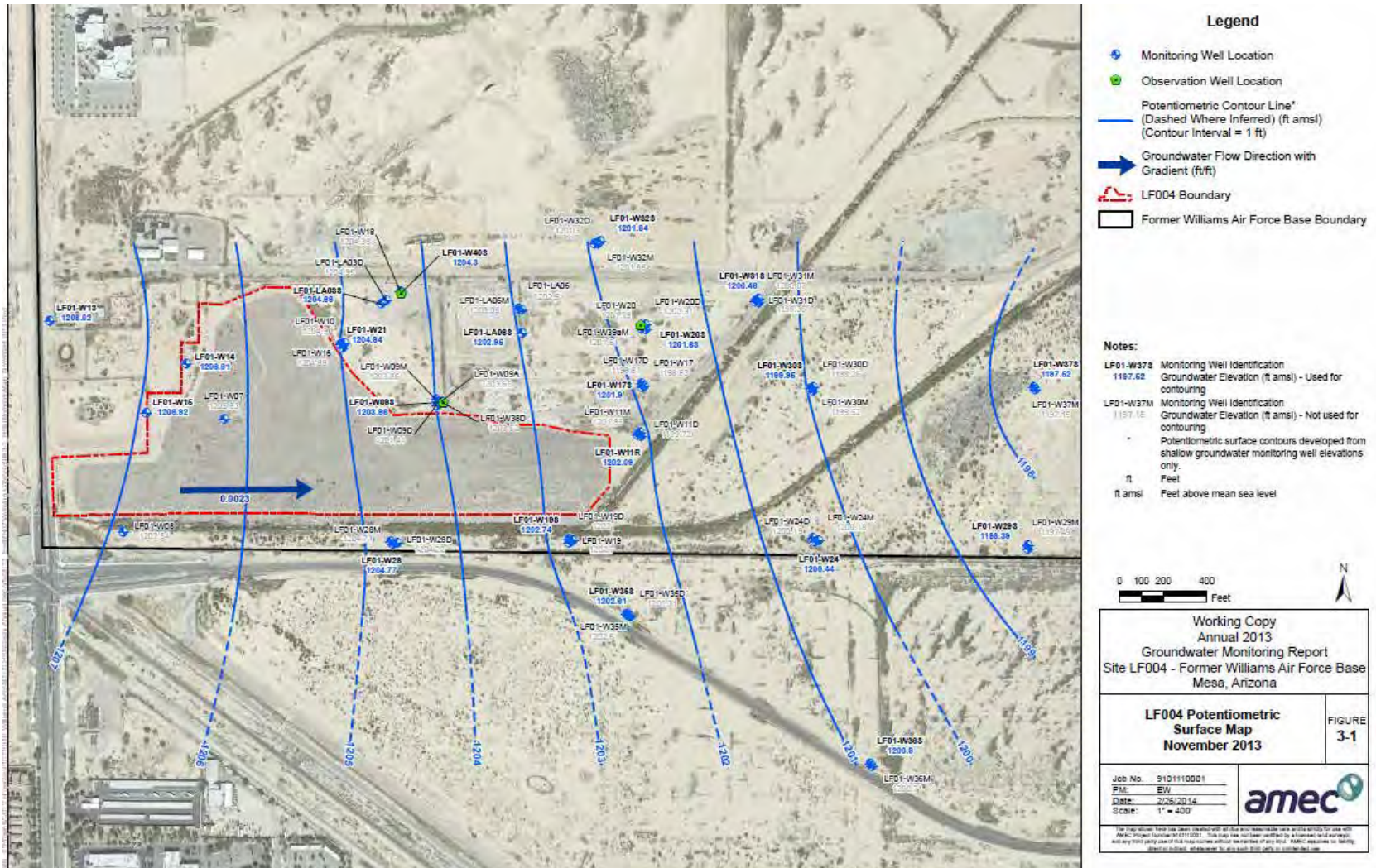
Site LF004 Groundwater Monitoring Update

November 2013 Sampling Event

- n 49 wells sampled
- n Groundwater Flow Direction – due east
- n TCE & PCE – only contaminants > EPA Maximum Contaminant Levels (MCLs) = 5 mg/L

Event	TCE # Wells >5 mg/L	PCE # Wells >5 mg/L
November 2013	12	14
May 2013	13	15

Site LF004 Groundwater Monitoring Update
November 2013 Flow Direction

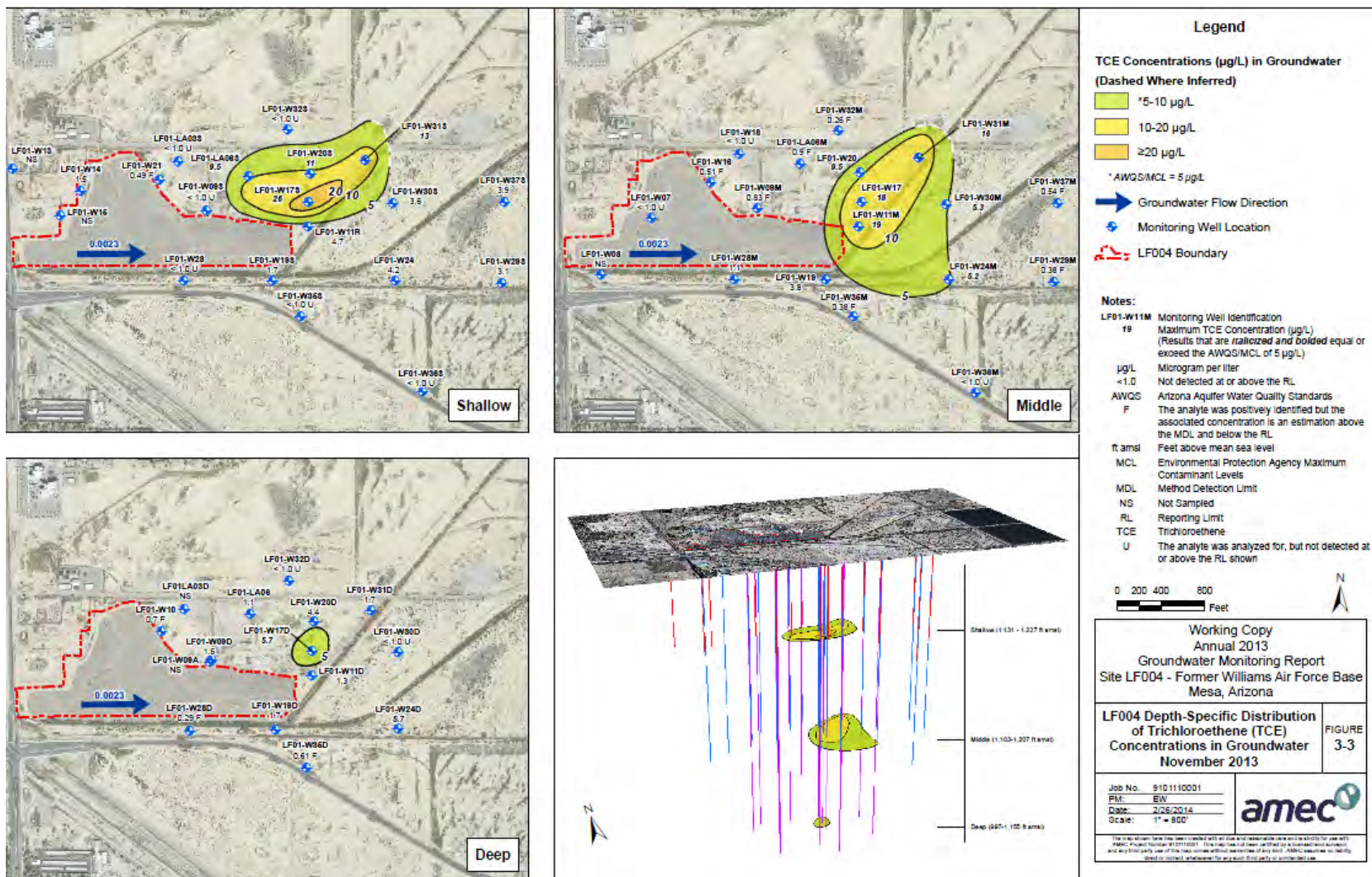




Site LF004 Groundwater Monitoring Update

TCE Isoconcentration Map

November 2013

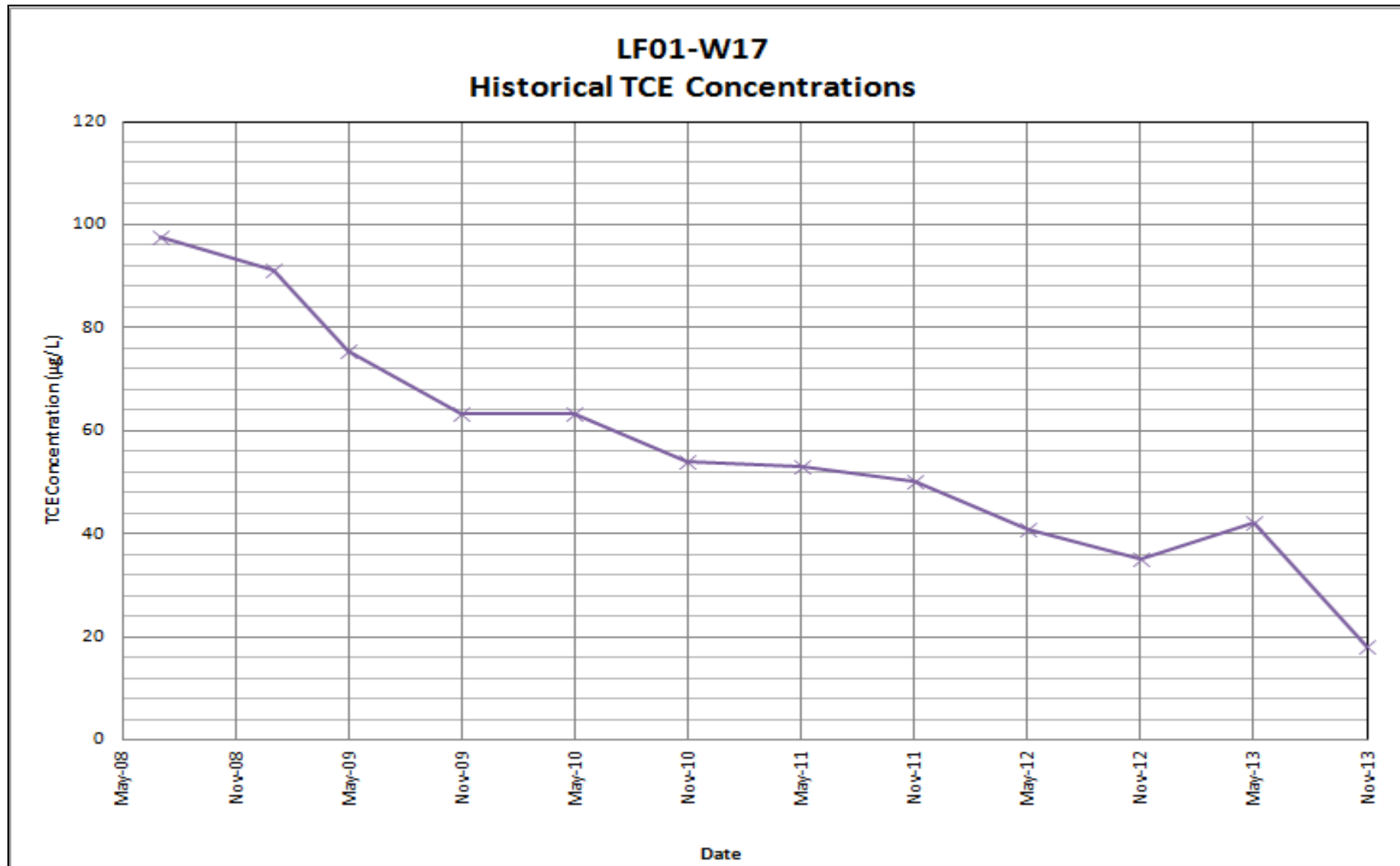




Site LF004 TCE Source Area Concentrations Since 2008

Wellbore ID#

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November 2013 Summary

- n **Groundwater results indicate downward trending concentrations of TCE and PCE in hot spot areas**
- n **TCE and PCE plumes are stable and adequately defined**
- n **Next groundwater sampling event – May 2014**



Site LF004 Path Forward

- n Pre-Design Investigation – Sep 2013-Mar 2014**
- n ROD Amendment – Apr 2014**
- n RD/RA Work Plan – May 2014**
- n Ongoing semi-annual groundwater monitoring –
Next event May 2014**
- n Annual Landfill Cap Inspection – Fall 2014**
- n Continue landfill maintenance**
- n Remedial system construction and startup –
May-Aug 2014**

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Other Active Projects

Presented by:
Ms. Catherine Jerrard
AFCEC

Headquarters U.S. Air Force

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Meeting Wrap-Up

Presented by:
Mr. Len Fuchs/ Ms. Catherine Jerrard
RAB Community Co-Chairs
and Scott Johnston



Meeting Wrap-Up

- **Review action items**
- **Call for agenda items for next RAB meeting**
- **Next RAB meeting 16 Sep 2014**
- **Meeting adjourned**

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Meeting Adjourned

Parcel N, Debris Area 1

Project Update

Restoration Advisory Board Meeting
September 16, 2014



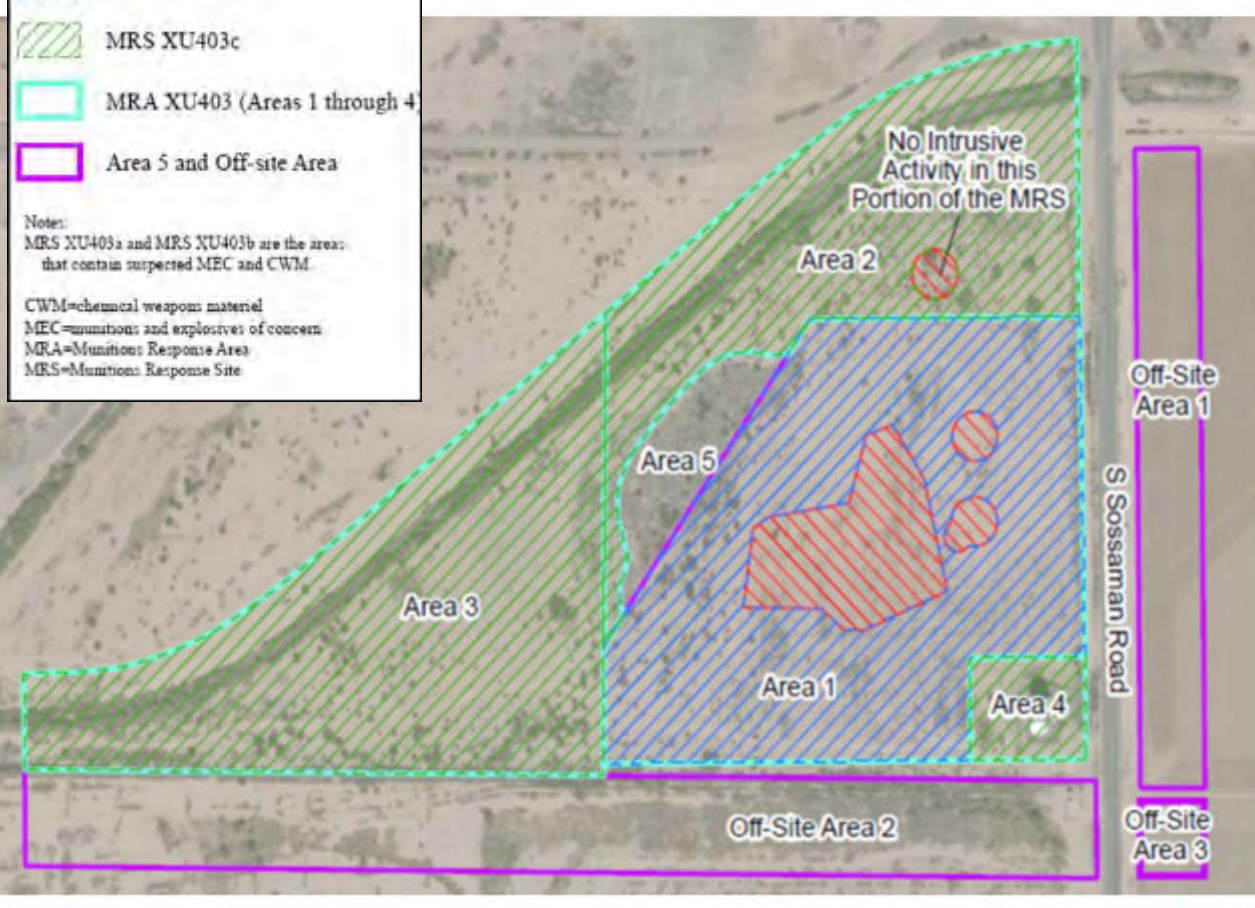
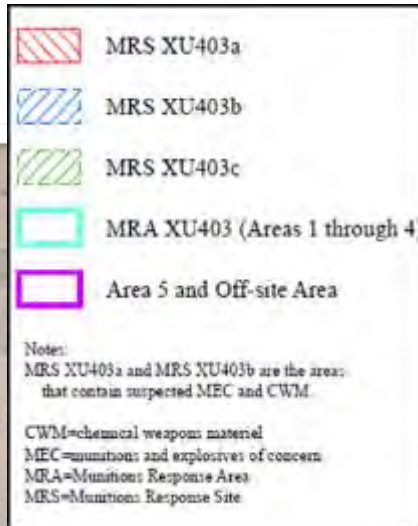
Parcel N, Debris Area 1

Summary

- **Introduction**
- **Site Overview**
 - **Brief History and Description**
 - **Past Investigations**
 - **Project Objectives**
- **Field Activities**
 - **March 2014-August 2014**
- **Moving Forward**
 - **Final Reports**
 - **Site Closure and Future Land Use**
- **Contact for More Information**



PARCEL N, DEBRIS AREA 1 SITE OVERVIEW



- MRA XU403 is 42 acres
- MRS XU403a/b combined total 17 acres
- Project focuses on portions of Area 1 and Area 2

Parcel N, Debris Area 1

Site Overview: Previous Investigations

- **Munitions and Explosives of Concern (MEC)**
 - Two electric squibs, 20 small pieces of bulk high explosive (HE) material, and 39 pieces of solid rocket motor propellant.
- **Munitions Debris (MD)**
 - Various fragments and pieces of small arms, flares, practice bombs, signal cartridges, hand grenade safety lever; some showing evidence of previously being subjected to burning
- **Evidence of Chemical Warfare Material (CWM)**
 - Chemical agent identification set (CAIS) used for training
 - From the less common K941 – contain the chemical agent mustard
 - Bottle caps and glass pieces also found
- **Current project objectives to remove munitions, CWM, and hazardous waste**

Parcel N, Debris Area 1 Field Activities March 2014

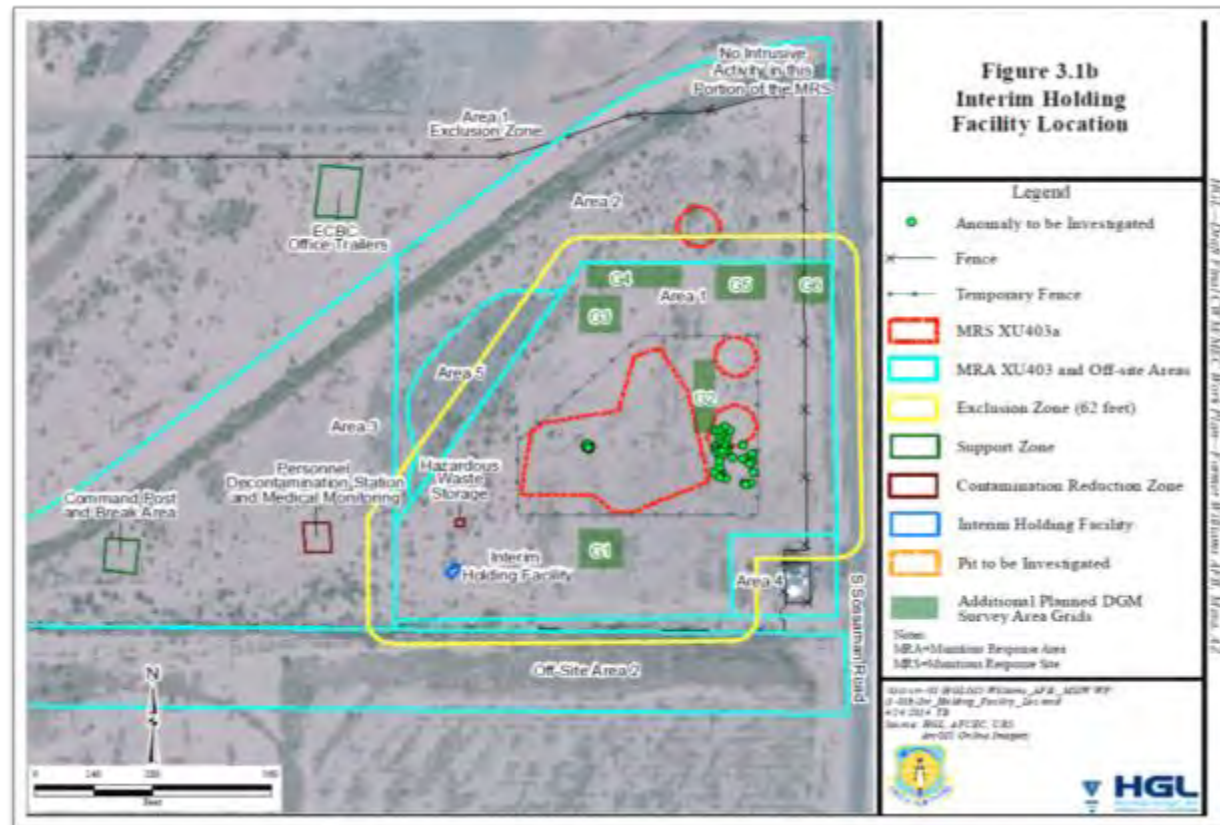
Delivery and setup of
equipment

Instrument verification
strip (IVS) setup

Geophysical survey – no
indication of additional
debris pits

Digital Geophysical
Mapping (DGM) of six
grids

Team training





Training Activities, Rescue Operation
April 11, 2014



Parcel N, Debris Area 1

Field Activities April 2014

- Huntsville Survey
(April 8th-11th)
- Team training continued
- Department of the Army pre-operational survey
(April 28th – May 2th)
- Response to survey feedback
(May 5th – May 9th)
- Notice to proceed with
intrusive operations received
May 9th

Parcel N, Debris Area 1 *Field Activities May 2014*

- Investigation of the 49 single point anomalies
- Pre-existing stockpile from pit B5 uncovered and sifted
- Pre-existing stockpiles from pit F1/F2 uncovered and sifted
- Intrusive excavation of pit F1/F2 began May 29th



Top: F1B Stockpile sifting

Center: Representative munitions debris from F1A stockpile

Left: F1B Stockpile soil sampling

Parcel N, Debris Area 1

Field Activities June 2014

- Excavation of pit F1/F2 continued until July 18th
- Munitions and explosives of concern (MEC): two partial M128 flares and one suspect fuze booster cup
- Small arms ammunition: Eleven .50 caliber full up rounds
- 1,444 pounds of munitions debris removed from F1/F2
- 163.5 pounds of cultural debris (nails, wire, scrap metal, trash)
- Samples collected from pit bottom, sidewalls, and stockpiles and analyzed for environmental contaminants, including chemical agents and explosives

Parcel N, Debris Area 1

Field Activities July 2014

- Pre-existing stockpile at B2/B3 sifted beginning July 21st
- Excavation of pit B2/B3: July 23rd – July 28th
 - No munitions and explosives of concern (MEC) found
 - 10.6 pounds of munitions debris removed
 - 4.05 pounds of cultural debris removed
 - 7 pounds of chemical agent identification set (CAIS) and related glass debris
 - 139 glass pieces, 9 empty, intact bottles
 - Glass debris concentrated in 18-inch x 18-inch area
- Sampling of pit bottom and sidewalls completed and analyzed for the same analytes as pit F1/F2
- Data reviews completed on July 31st



Parcel N, Debris Area 1

Field Activities August 2014

- Pits completely excavated and extents confirmed
- Incremental and discrete soil sampling within Area 1
 - Explosives, metals, and perchlorate
- Intrusive investigation of targets in Grid 1-Grid 6
- Surface sweep for propellant within Area 1
- All stockpile sampling completed and results compiled
 - “Clean” soils will be backfilled
 - Soils with screening level exceedances will be evaluated for proper disposal
- Archaeological findings to date include pottery shards



B2/B3 Pit activities

Parcel N, Debris Area 1

Next Activities

- Final 2014 Reports document the removal of munitions, CWM, and hazardous waste
 - Site Inspection Report, Oct/Nov 2014
 - Archaeological Monitoring Report, Oct/Nov 2014
 - After Action Report, Oct/Nov 2014
 - No Further Action Explosives Safety Submission
- Project Goal: Recommendation for Site Closure
- For more information, contact the Air Force Civil Engineer Center
Linda Geissinger
Air Force Civil Engineering Center Public Affairs
916-643-1250, Ext. 109
afrpa.west.pa@us.af.mil
<http://www.afcec.af.mil/brac/williams/index.asp>
- Questions?

Parcel N, Debris Area 1 *Closure*

Questions?



FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE