Final

Travis Air Force Base
Environmental Management
Building 570, Travis AFB, California
Environmental Restoration Program
Remedial Program Manager's
Meeting Minutes

23 September 2009, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 23 September 2009 at 0930 in the Base Civil Engineer's Conference Room, Building 570, Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Lonnie Duke	Travis AFB
• Glenn Anderson	Travis AFB
• James Chang	U.S. Environmental Protection Agency (USEPA)
• Alan Friedman	California Regional Water Quality Control Board (Water Board)
• Jose Salcedo (by phone)	California Department of Toxic Substances Control (DTSC)
• Dezso Linbrunner	United States Army Corp of Engineers (USACE), Omaha District
• Rachel Hess	ITSI
• Mary Snow	TechLaw Inc.
• Mike Wray	CH2M HILL
• Chuck Elliott	CH2M HILL

Handouts distributed at the meeting and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting, Teleconference, and Document Schedule
- Attachment 3 SBBGWTP Monthly Data Sheet (August 2009)
- Attachment 4 CGWTP Monthly Data Sheet (August 2009)
- Attachment 5 Presentation: SS016 Source Area
- Attachment 6 Presentation: SD036/SD037 Hot Spot
- Attachment 7 Presentation: DP039 Mid-Plume Characterization
- Attachment 8 Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 26 August 2009 RPM meeting minutes were approved and finalized as written, with an exception to section 6, first paragraph.

Mr. Chang requested a minor change to the 'general discussion' section regarding Feasibility Study (FS).

B. Action Item Review

Action Items from August were reviewed.

Action item 1- has been closed. Will be removed from schedule.

Action item 2 – Ms. Hess will get first draft of the revisions to the Remedial Action Work Plan for FT005 to Mr. Duke sometime next week. Date was revised to October 2009.

Action item 3 – Completed. Status will be changed to 'closed.' The RAB site visit has been scheduled for Friday, 25 September 2009 from 10:30 to 11:30. Mike Reagan and Jim Dunbar are scheduled to attend. Dave Cooper from EPA may attend.

C. Master Meeting and Document Schedule Review

The Travis AFB Master Meeting and Document Schedule was discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

— The next RPM meeting will be 21 October 2009. The RAB meeting will be held on 22 October 2009.

Travis AFB Master Document Schedule

— Basewide GW ROD, Potrero Hills Annex ROD: No change.

— RD/RA QAPP Update: Moved to historical.

— Model QAPP Update: The Model QAPP is in a draft final stage. The revised dates reflect actual dates, based on when comments were received. The document will go final on 2 October 2009.

— Comprehensive Site Evaluation Phase II Work Plan: No change. We are waiting for acceptance of responses to DTSC comments before going draft final.

— Focused Feasibility Study (FFS): The schedule for this document has been moved into 2010, because we need a large amount of data to support the FFS, and the data collection is still ongoing in the field.

— Phases 1 & 2 Vapor Intrusion Report: No change.

— Phytostabilization Tech Memo: Moved to historical.

— SS016 RPO Work Plan: Dates have been updated. The Air Force is collecting data requested in the EPA comments.

— Field Sampling Plan: Dates have been updated. It caught our attention that this document should have been a Primary document, according to the Federal Facility Agreement. Field Sampling Plan will be moved to Primary Document Section of the schedule. The draft-final will be submitted on 30 September 2009, and then it will go final in 30 days.

Mr. Chang indicated that the Air Force's responses to EPA comments on the FSP were acceptable.

— Natural Attenuation Assessment Report (NAAR): No change. Under regulatory review. Mr. Chang said they will have comments. For example: Is MNA right for chlorinated hydrocarbons ? MNA is hard to evaluate when you have the pump and treat systems operating. Mr. Anderson asked if EPA concerns are site specific or global? Mr. Chang said site specific. Mr. Smith added that as TCE breaks down, it goes through a lot of phases, and vinyl chloride is one of them. It is less stable and doesn't stay vinyl chloride very long. If you keep the process going, vinyl chloride breaks down into ethene or ethane.

The DTSC estimates their comments will be submitted on time. The Water Board indicated their comments may be submitted on time.

— DP039 RPO Work Plan: Dates have been revised. Currently undergoing pre-draft review.

— SD036/SD037 RPO Work Plan: No change. We were hoping to get the draft out today. We had a comment from the geologist from the USACE. We are addressing that comment, and the work plan should be out soon.

— ST018 POCO Remedial Action (RA) Work Plan: No change. Draft final went out for review. Mr. Friedman asked for a hard copy due to the size of the document.

— ST027B Site Characterization Report: No change. Still working on conducting the final round of sampling and well installation. We are now looking at 30 September 2009 before we can start the last phase of field work. The runway closure dates were pushed back to 30 September through 9 October 2009.

— LF008 Rebound Test Tech Memo: Dates have been updated to reflect actual dates. The tech memo went out draft and is undergoing regulatory review.

— Quarterly Newsletter (Guardian): Dates have been updated to reflect actual dates. Newsletter went out yesterday.

2. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 2)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.6% uptime, and 4.6 million gallons of groundwater were extracted and treated during the month of August 2009. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 103 gallons per minute (gpm) and electrical power usage was 18,600 kWh; 25,482 pounds of CO_2 was created (based on DOE calculation). Approximately 1.4 pounds of volatile organic compounds (VOCs) were removed in August. The total mass of VOCs removed since the startup of the system is 370 pounds (see Attachment 3).

SBBGWTP was shut down for a short time to acid wash the air stripper in August 2009. Samples were collected on 4 August 2009. Total VOC concentrations were again, very low. TCE and CIS-1,2-DCE were the only VOCs detected in the influent sample. 1,2-Dichloroethane, the indicator chemical for Site FT005, was not detected in the influent sample. VOCs were not detected in the effluent sample, indicating good treatment efficiency.

Mr. Duke said that an evaluation of the GSAP results was in progress for continuing the FT005 rebound study.

Optimization activities: SBBGWTP was shut down on 31 August 2009 to support the creek sediment remedial actions. The effluent discharges into the creek and we want to minimize the volume of water in the creek while the remedial actions are taking place. We will restart the plant in approximately one month, when the sediment remedial actions are complete.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime, and approximately 1.8 million gallons of groundwater were extracted and treated during the month of August 2009. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 42 gpm, and electrical power usage was

26,128 kWh for all equipment connected to the Central plant; 35,795 pounds of CO_2 was created. Natural gas usage for the ThOx was 1,206 therms. Approximately 5.45 pounds of VOCs were removed from groundwater, and 2.45 pounds from vapor, in August. The total mass of VOCs removed since the startup of the system is 11,087 pounds (see Attachment 4).

Samples were collected 4 August 2009. VOCs were non-detect in the effluent sample. The new carbon is working very well.

Optimization activities: CGWTP: The WTTP SVE system was sampled. The VOC concentrations were below 1000 ppbv; results are attached (table 2). In accordance with the annual RPO report, the vapor portion of these wells was taken offline on 24 August 2009 for an extended rebound study. The CGWTP was also shut down on 31 August 2009 to support the creek sediment remedial actions. We will restart the plant in approximately one month, when the sediment remedial actions are complete.

B. Union Creek Cleanup Update

Mr. Duke gave an update on the Union Creek Cleanup. It is moving a lot faster than anticipated. Mr. Duke said that it is a credit to the field crew ITSI has out there. Mr. Duke added he was very pleased at how fast they are moving along; they set up cofferdams, and were starting to remove sediments by the second day.

Mr. Duke offered to take anyone interested to Union Creek this afternoon and stated that this site will be included on the RAB tour scheduled for this Friday. ITSI is starting to dress up the site. They took the remaining SD001 and SD033 confirmation samples yesterday.

Mr. Anderson added the Air Force is also a conducting a concurrent vegetation removal project in the creek as well. It has to do with aircraft safety. The vegetation removal is to prevent birds from nesting. Mr. Duke said they had a problem with thousands of redwing black birds nesting in the reeds there and they did some damage to an airplane recently, which got the attention of the Base Commander.

C. Vapor Intrusion (VI) Update

Mr. Anderson gave an update on the VI assessment. As mentioned in the MMDS discussion above, we have not updated the MMDS for this document yet. The draft should be coming out in January 2010. Ms. Royer, who is working on this report, is also working on the GSAP report. The GSAP report is scheduled to be completed first. Mr. Anderson asked Mr. Chang if he will be submitting any data validation report for the samples that EPA collected? Mr. Chang confirmed that he would be adding to our report. Mr. Anderson asked to get the data back by the end of next month. Mr. Wray added that Ms. Royer will probably start on the document in early November.

Mr. Chang asked about when the next phyto-sampling was scheduled. He indicated that Greg Nagle wants to be there for that sampling. Mr. Anderson indicated that the

sampling would take place before the start of the wet season, near the end of the dry season. He said he'd confirm the sampling dates and get that information back to Mr. Chang.

3. PRESENTATIONS

A. SS016 Source Area (see Attachment 5)

Mr. Elliott gave a presentation on the status of the Site SS016 RPO field work. Mr. Elliott said that the proposed field work at sites SS016, SD036/SD037, and DP039 was presented in the two previous RPM meetings. After last month's meeting, we began the field investigation. He presented the initial results received up through Monday night, 21 September 2009. The field investigation is still in progress.

The source area for Site SS016 is located in the northwest corner of site SS016, in the vicinity of Building 18 and a former oil water separator (OWS) location. The SS016 source area has the highest levels of trichloroethene (TCE) at the Base currently. The TCE plume starts in the source area and travels to the southeast beneath the active airfield parking ramp and runway.

Currently we are operating under an interim groundwater ROD, signed approximately 12 years ago. The IRA objective under the IROD was source control, which means control of the movement of the plume to prevent it from migrating downgradient. Existing remedial processes include groundwater and soil vapor extraction and treatment. These systems were designed to capture VOC concentrations greater than 1,000 µg/L. Two 5-year reviews in 2003 and 2008 both concluded that the 'source control' objective for Site SS016 was being met. Our goal now is to remove contaminant mass using remedy enhancement, and to go beyond just controlling the plume.

The source up until now really had been a mystery. The likely source areas are thought to be: the former OWS, a sump beneath Building 18, a chemical storage area on the east side of the building, and a catch basin in the wash rack area. Mr. Elliott referred to a map of the proposed drilling and step-out locations presented in our last RPM meeting. One of the surprising results of the data collection is the shallow bedrock (15 ft.) we found which is dry for the most part. Mr. Wray added that at this site we would usually drill two borings; one is a pilot boring to log the lithology using continuous coring and looking for the wet layers, and then we would drill a second boring using the data from the pilot boring to optimize the hydropunch sampling locations. Mr. Elliott concluded because the lithology in the Site SS016 source area turned out to be very dry, that made it hard to use the hydro-punch; so we had to make a decision to either abandon the hole or install a monitoring well. The map presented showed new monitoring wells installed. The TCE results were very high near the catch basin, indicating we may have found the "smoking gun." Maps showing TCE concentration levels and locations were handed out for this presentation.

Next steps:

1) Define hot spots. Reconsider/optimize the EVO injection design.

2) Prepare tech memo that summarizes the existing data, includes cross sections, and identifies locations of potential EVO injection points and monitoring wells.

3) Prepare completion report after EVO injection is accomplished.

4) Evaluate ongoing progress in GSAP reports.

B. SD036 and SD037 Hot Spots (see Attachment 6)

Mr. Elliott gave the presentation for sites SD036/SD037. These sites are in the West Industrial Operable Unit (WIOU). The IROD remedial goal for these sites was to control source area contamination where TCE is greater than 1,000 ppb, and to control migration of the plume downgradient to where TCE exceeded 100 ppb. The IROD remedial action down in the far downgradient area where TCE concentrations are between the MCL and 100 ppb is MNA assessment. There have been two 5-year reviews completed, and they both concluded that these remedial goals are being met. In fact, if you look at the WIOU data, it shows significant drops in TCE concentration levels over that whole area. This has been one of the biggest success areas for the base. TCE greater than 1000 ppb was not found in sites SD033/SD034/SD041/SD043.

We have TCE concentrations greater than 1,000 ppb in only two locations: SD036 and SD037. SD036 at PZ07S, we have a shallow and a deep screened interval. The shallow section concentration is 1200 ppb, and the deeper section of PZ07S is below 1,000 ppb. For Site SD037, the TCE concentration is 1600 ppb at well MW524. We presented the initial sampling locations and the step-out locations at last month's RPM meeting**.** Mr. Elliott explained the lithology of this site in detail.

Results of the current investigation at Site SD036 so far are: On the west side and south side we did not find any TCE concentrations over 1,000 ppb. On the east side, and on the north side, we found some elevated TCE concentrations. Boring HP2031 had TCE at 3,430 ppb at 41 feet bgs, and boring HP2033 had TCE at 5,840 ppb just below water table at 35 feet bgs. Next we will collect step-out samples based on the initial results. We will be drilling step-outs to the east, north, and southeast. Mr. Elliott added we are collecting more than two samples in each boring now to get a better vertical profile of the contamination. Mr. Elliott said bedrock is 60 to 70 feet bgs, however, we continue to drill and are able to go down to 100 feet or so before we hit refusal. We drilled deeper to see if there are any zones in bedrock; fracture zones that could transmit ground water.

Next steps:

1) Step out to the north and east.

2) After the hot spot is defined, optimize the EVO injection design.

3) Prepare a tech memo summarizing the existing data, and identifying locations of EVO injection point and monitoring wells.

4) Prepare completion report after EVO injection is accomplished.

5) Evaluate ongoing progress in GSAP reports.

Results of the current investigation at Site SD037 so far are: This site is a little more complicated. A new hangar and parking lot are under construction at the site. The map shown is out of date; it does not show the footprint of the large new hangar. The study area is next to this new hangar and, because of the construction in progress, we could not work during the week, we have had to work over the last several weekends. We are trying to find the edge of the 1000 ppb TCE line in the hot spot area. Interestingly, we found an unidentified well where we were going to drill a boring. We decided to sample this well, even though it is only 22 feet deep. The TCE concentration in the well was 5.5 ppb. We decided to drill a new boring in this area. Bedrock is at 70 feet bgs. The higher TCE concentration levels are to the east next to the new hangar, which presents a problem. Mr. Duke said we might be able to go another 15-20 feet east that will put us right next to the building. Mr. Linbrunner asked if HP2031 and HP2033 are going to be developed into monitoring or extraction wells. Mr. Duke said no, and that they have already been backfilled with grout. Mr. Elliott offered a tour of the site after the meeting.

Next steps:

1) Step out to the east if possible.

2) After the hot spot is defined, optimize the EVO injection design.

3) Prepare tech memo summarizing the existing data, and identifying locations of EVO injection point and monitoring wells.

4) Prepare completion report after EVO injection is accomplished.

5) Evaluate ongoing progress in GSAP reports.

C. DP039 Mid-Plume Characterization (see Attachment 7)

Mr. Elliott gave a presentation for site DP039. This site has the bioreactor, the phytoremediation area, and the downgradient MNA assessment area. The contamination originated from a sump that was constructed outside building 755. This was the site with TCE concentrations in the 200,000 ppb range. Now TCE concentrations in the source area are around 100 ppb. The concern is plume migration; we do not want the plume to migrate downgradient and interfere with the MNA assessment area. The goal of the current investigation is to characterize TCE above 500 ppb, downgradient of the phytoremediation area.

Next steps:

1) After the 500-ppb boundary is defined, optimize the EVO barrier design.

2) Prepare a tech memo identifying locations of EVO injection points and monitoring wells.

3) Prepare a completion report after EVO injection is finished.

4) Evaluate ongoing progress in GSAP reports.

D. Program Update: Activities Completed, In Progress and Upcoming (see Attachment 8)

Mr. Wray gave the Management Overview Briefing presentation.

1) Completed Documents & Field Work slide:

No new items added.

2) In Progress Documents & Field Work slide:

Documents:

SD036/SD037 RPO Work Plan (Pre-draft) - will be sent out for review next week.

ST018 RA Work Plan (Draft)

DP039 RPO Work Plan (Pre-draft) - will be sent out for review 30 September 2009.

LF008 Rebound Study Tech Memo (Draft)

Field Work:

SD036/SD037 Site Characterization (hot spots) – a couple more borings probably next week.

ST018 Site Characterization (and Remedy Installation), started yesterday, installing extraction wells and carbon system. We are considering the use of solar panels to power the remedy.

SD001/SD033 Sediment RA, in progress.

3) Upcoming Documents & Field Work slide:

Documents:

Focused Feasibility Study pushed to January 2010 to add updated data and conceptual site models.

Field Work:

ST027B Site Characterization (phase 3) is scheduled for Sept/Oct.

ST014 monitor well install (site 3) to add an aircraft rated monitoring well cap.

4. NEW ACTION ITEM REVIEW

No new action items.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith reminded everyone that the RAB meeting is coming up on 22 October 2009.

6. POTENTIAL RESPONSE TO COMMENTS (RTC) MEETINGS

None.

General Discussion

Mr. Smith said there will be a lot of vacation time coming up with his staff due to the Air Force "use or lose" leave policy. He said he will try to make a vacation schedule available and have it ready by next month's RPM meeting.

5. Action Items

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	Update document schedule to include revised names and dates in Remedial Action Work Plan for Sediment Sites	July 2009	**Closed**
2.	Air Force	Update document schedule to include revised names and dates for interim plans for FT005	October 2009	**Open**
3.	Air Force	Coordinate site visit of sediment excavations with RAB members	September 2009	**Closed**

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
23 September 2009, 9:30 A.M.
AGENDA

1. ADMINISTRATIVE

   A. PREVIOUS MEETING MINUTES
   B. ACTION ITEM REVIEW
   C. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS

   A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)
   B. UNION CREEK CLEANUP UPDATE (LONNIE)
   C. VAPOR INTRUSION UPDATE (GLENN)

3. PRESENTATIONS

   A. STATUS OF CURRENT INVESTIGATIONS
      (1). SS016
      (2). SD036/SD037
      (3). DP039
   B. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

6. POTENTIAL RESPONSE TO COMMENTS MEETINGS

   - COMPREHENSIVE SITE EVALUATION PHASE 2 WORK PLAN
   - SS016 RPO WORK PLAN
   - FIELD SAMPLING PLAN

Travis AFB Master Document Schedule

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-28-09		—
02-25-09		—
03-25-09		—
04-22-09		04-23-09
05-20-09		—
06-24-09		—
07-22-09		—
08-26-09		—
09-23-09		—
10-21-09		10-22-09
—	11-16-09	—
12-09-09		—

Travis AFB Master Document Schedule

PRIMARY DOCUMENTS				
	Basewide Groundwater Travis, Glenn Anderson		Potrero Hills Annex Travis, Glenn Anderson	Model QAPP Update Travis, Glenn Anderson ITSI, Rachel Hess
Life Cycle	**Proposed Plan**	**ROD**	**ROD**	**Plan**
Scoping Meeting	NA	**01-24-07**	**180 days after Water Board Order Rescinded**	**06-26-09**
Predraft to AF/Service Center	04-14-10	07-21-10	+ 360 days	07-03-09
AF/Service Center Comments Due	04-28-10	08-04-10	+ 420 days	07-10-09
Draft to Agencies	05-12-10	08-18-10	+ 480 days	07-20-09
Draft to RAB	05-12-10	08-18-10	+ 480 days	07-20-09
Agency Comments Due	07-07-10	10-13-10	+ 540 days	08-18-09
Response to Comments Meeting	**TBD**	TBD	**+ 555 days**	**08-26-09**
Agency Concurrence with Remedy	TBD	NA	+ 570 days	NA
Public Comment Period	TBD	NA	+ 615 to 645 days	NA
Public Meeting	**TBD**	**NA**	**+ 625 days**	**NA**
Response to Comments Due	TBD	TBD	+ 640 days	08-24-09
Draft Final Due	08-04-10	11-10-10	+ 640 days	09-01-09
Final Due	09-01-10	12-08-10	+ 700 days	10-02-09

PRIMARY DOCUMENTS		
	Comprehensive Site Evaluation Phase II **Travis, Glenn Anderson** **Sky Research, Ian Roberts**	**Focused Feasibility Study** **Travis, Glenn Anderson** **CH2M Hill, Loren Krook**
Life Cycle	**Work Plan**	**FFS**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	01-15-09	01-14-10
AF/Service Center Comments Due	02-12-09	01-28-10
Draft to Agencies	04-29-09	02-11-10
Draft to RAB	04-29-09	02-11-10
Agency Comments Due	08-10-09	04-15-10
Response to Comments Meeting	**09-23-09**	**04-21-10**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	09-30-09	06-16-10
Draft Final Due	09-30-09	06-16-10
Final Due	10-30-09	07-19-10

SECONDARY DOCUMENTS		
Life Cycle	**Vapor Intrusion Report Travis, Glenn Anderson CH2M HILL, Leslie Royer**	**SS016 RPO Work Plan Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	12-08-08	06-11-09
AF/Service Center Comments Due	12-15-08	06-25-09
Draft to Agencies	01-12-09	07-02-09
Draft to RAB	01-12-09	07-02-09
Agency Comments Due	02-17-09	08-03-09
Response to Comments Meeting	**02-25-09**	09-23-09
Response to Comments Due	TBD*	09-30-09
Draft Final Due	NA	NA
Final Due	TBD*	09-30-09
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

*The Vapor Intrusion report will be rescheduled to incorporate the Phase 3 data and evaluation per discussion with EPA on 30 March 2009.

SECONDARY DOCUMENTS			
Life Cycle	**Field Sampling Plan Travis AFB, Glenn Anderson CH2M HILL, Loren Krook**	**Natural Attenuation Assessment Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer**	**DP039 RPO Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	04-28-09	07-07-09	09-17-09
AF/Service Center Comments Due	05-12-09	07-21-09	10-01-09
Draft to Agencies	06-26-09	08-26-09	10-09-09
Draft to RAB	06-26-09	08-26-09	10-09-09
Agency Comments Due	07-27-09 (08-20-09)	09-25-09	11-09-09
Response to Comments Meeting	**09-23-09**	**10-07-09**	**11-18-09**
Response to Comments Due	09-30-09	10-23-09	12-14-09
Draft Final Due	NA	NA	NA
Final Due	09-30-09	10-23-09	12-14-09
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

SECONDARY DOCUMENTS				
Life Cycle	**SD036/SD037 RPO Work Plan** **Travis AFB, Lonnie Duke** **CH2M HILL, Tony Chakurian**	**ST018 POCO Remedial Action Work Plan** **Travis AFB, Lonnie Duke** **CH2M HILL, Gavan Heinrich**	**ST027B Site Characterization Report** **Travis AFB, Lonnie Duke** **CH2M HILL, Gavan Heinrich**	**LF008 Rebound Test Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick**
Scoping Meeting	**NA**	**NA**	**NA**	**NA**
Predraft to AF/Service Center	08-13-09	08-18-09	12-18-09	08-14-09
AF/Service Center Comments Due	08-27-09	09-01-09	01-01-10	08-28-09
Draft to Agencies	09-23-09	09-15-09	01-18-10	09-17-09
Draft to RAB	09-23-09	09-15-09	01-18-10	09-17-09
Agency Comments Due	10-23-09	10-13-09	02-19-10	10-19-09
Response to Comments Meeting	**11-16-09**	**10-21-09**	**02-24-09**	**10-21-09**
Response to Comments Due	11-25-09	10-28-09	03-10-10	11-10-09
Draft Final Due	NA	NA	NA	NA
Final Due	11-25-09	10-28-09	03-10-10	11-10-09
Public Comment Period	NA	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**	**NA**

INFORMATIONAL DOCUMENTS		
Life Cycle	**Quarterly Newsletters (Oct 2009) Travis, Glenn Anderson**	**2008/2009 GSAP Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	NA	10-26-09
AF/Service Center Comments Due	NA	11-09-09
Draft to Agencies	09-23-2009	11-23-09
Draft to RAB	NA	11-23-09
Agency Comments Due	10-05-2009	01-15-10
Response to Comments Meeting	**TBD**	**01-28-10**
Response to Comments Due	10-06-2009	02-24-10
Draft Final Due	NA	NA
Final Due	10-09-2009	02-24-10
Public Comment Period	NA	**NA**
Public Meeting	**NA**	**NA**

HISTORICAL	
Life Cycle	**Phytostabilization Tech Memo Travis, Glenn Anderson Parsons, Bill Plaehn**
Scoping Meeting	**10-09-08**
Predraft to AF/Service Center	02-09-09
AF/Service Center Comments Due	02-16-09
Draft to Agencies	04-29-09
Draft to RAB	04-29-09
Agency Comments Due	05-29-09
Response to Comments Meeting	**07-22-09**
Response to Comments Due	07-28-09
Draft Final Due	NA
Final Due	08-26-09
Public Comment Period	NA
Public Meeting	**NA**

South Base Boundary Groundwater Treatment Plant
Monthly Data Sheet

Report Number: 108 **Reporting Period: 1-31 August 2009** **Date Submitted: 22 September 2009**

This data sheet includes the following: results for the operation of the South Base Boundary Groundwater Treatment Plant (SBBGWTP), a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the system, and a summary of analytical results for selected samples collected.

Operations Summary – August 2009

Operating Time: **741 hours** Percent Uptime: 99.6**%**

Electrical Power Usage: 18,600 kWh

Gallons Treated: **4.6 million gallons** Gallons Treated Since July 1998: **661 million gallons**

Volume Discharged to Union Creek: **4.6 million gallons**

VOC Mass Removed: **1.4 pounds**[a] VOC Mass Removed Since July 1998: **370 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: $3,831[b]

Monthly Cost per Pound of Mass Removed: $3,931[b]

[a] Calculated using August 2009 EPA Method SW8260B analytical results.
[b] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

Flow Rates

Average Groundwater Total Flow Rate: 103.0 gpm[a]

Average Flow Rate (gpm)[b]							
FT005				**SS029**		**SS030**	
EW01x05	Off line[e]	EW736x05	Off line[c]	EW01x29	Off line[e]	EW01x30	4.6
EW02x05	1.7	EW737x05	Off line[c]	EW02x29	5.4	EW02x30	2.6
EW03x05	4.6	EW742x05	Off line[c]	EW03x29	Off line[d]	EW03x30	Off line[d]
EW731x05	Off line[c]	EW743x05	Off line[d]	EW04x29	9.7	EW04x30	21.5
EW732x05	Off line[c]	EW744x05	Off line[c]	EW05x29	0.9	EW05x30	11.5
EW733x05	Off line[c]	EW745x05	Off line[c]	EW06x29	12.7	EW06x30	Dry
EW734x05	Off line[e]	EW746x05	Off line[c]	EW07x29	15.8	EW711x30	10.8
EW735x05	Off line[c]						
FT005 Total:		**6.3**		**SS029 Total:**	**44.5**	**SS030 Total:**	**51.0**

[a] The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant.
[b] Extraction well flow rates are based on the average of the weekly readings.
[c] Extraction well was shut down for a rebound study in December 2007 based on the *Work Plan for RPO Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007).
[d] Extraction well is off line due to low VOC concentrations.
[e] Extraction well was not operational during August 2009 due to malfunctioning equipment.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP (water)	3 August 2009	10:45	3 August 2009	13:15	Acid wash the air stripper.

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 4 August 2009. Sample results are presented in Table 1. The total VOC concentration (37.2 µg/L) in the influent sample has decreased significantly since the July 2009 sample (74.9µg/L). TCE and cis-1,2-DCE were the only VOCs detected in the influent sample. 1,2-Dichloroethane, the indicator chemical for Site FT005, was not detected in the influent sample. VOCs were not detected in the effluent sample, indicating good treatment efficiency.

Extraction wells EW01x05 and EW01x29 were off line during August 2009. EW01x05 was shutdown due to a motor short, and EW01x29 was shut down due to an inoperable level transmitter. The level transmitter for well EW01x29 is expected to be replaced in September 2009.

The system was shutdown on 3 August 2008 to acid wash the air stripper and associated pipes.

Optimization Activities

On 4 December 2007, nine extraction wells (EW731x05, EW732x05, EW733x05, EW737x05, and EW742x05 through EW746x05) were shut down for rebound testing in accordance with the *Work Plan for Remedial Process Optimization (RPO) Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007). These wells continue to remain off line.

All of the extraction wells within FT005 will be turned off in as part of a continuing rebound study in accordance with the optimization activities discussed in the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant (CH2M HILL, 2009)*. Prior to initiating the extended rebound study, analytical results from FT005 monitoring and extraction well samples collected during the June 2009 GSAP event will be used to ensure that contaminant concentrations have stabilized or decreased, and that the rebound study remains appropriate. The FT005 wells that remain online will likely be turned off in September 2009. All of the equipment no longer in use at FT005 will be cataloged and stored as appropriate for future use.

No other optimization activities were performed.

.

Table 1
Summary of Groundwater Analytical Data for August 2009 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	4 August 2009 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.18	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.17	0	ND	ND
1,1-Dichloroethane	5.0	0.24	0	ND	ND
1,2-Dichloroethane	0.5	0.22	0	ND	ND
1,1-Dichloroethene	5.0	0.24	0	ND	ND
cis-1,2-Dichloroethene	5.0	0.23	0	2.1	ND
trans-1,2-Dichloroethene	5.0	0.54	0	ND	ND
Methylene Chloride	5.0	0.61	0	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND
Trichloroethene	5.0	0.20	0	35.1	ND
Vinyl Chloride	0.5	0.24	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.091	0	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND
Toluene	5.0	0.098	0	ND	ND
Xylenes	5.0	0.093 – 0.24	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	8	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	ND
Total Suspended Solids (mg/L)	NE	0.001	0	17	NM

[a] In accordance with Appendix B of the *Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual* (CH2M HILL, 2004).

J = analyte concentration is considered an estimated value
mg/L = milligrams per liter
N/C = number of samples out of compliance with discharge limits
ND = not detected
NE = not established
NM = not measured
µg/L = micrograms per liter

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 120 **Reporting Period: 1-31 August 2009** **Date Submitted: 22 September 2009**

This data sheet includes the following: results for the operation of the Central Groundwater Treatment Plant (CGWTP), West Treatment and Transfer Plant (WTTP), and thermal oxidation (ThOx) system (previously referred to as the two-phase extraction [TPE] system). A summary of flow rates for the CGWTP, WTTP, ThOx, and extraction wells EW01x16, EW02x16, EW03x16, EW605x16, and EW610x16; a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for selected samples collected are also included on this data sheet.

Operations Summary – August 2009

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	744 hours	**CGWTP:**	100%	**CGWTP:**	1,300 kWh
WTTP:	Water: 742 hours	**WTTP:**	Water: 99.7%	**WTTP:**	18,417 kWh
	Vapor: 576 hours		Vapor: 77.4%		
ThOx:	666 hours	**ThOx:**	89.5%	**ThOx:**	6,411 kWh

ThOx: Natural Gas Usage: 3,183 therms

Gallons Treated: **1.8 million gallons**

Gallons Treated Since January 1996: **417 million gallons**

VOC Mass Removed:

5.45 lbs (groundwater only)[a]

2.45 lbs (vapor only)[b]

VOC Mass Removed Since January 1996:

2,452 lbs from groundwater

8,635 lbs from vapor

ThOx DRE: 99.7%

Rolling 12-Month Cost per Pound of Mass Removed: $1,238[c]

Monthly Cost per Pound of Mass Removed: $1,404 [c]

[a] Calculated using August 2009 EPA Method SW8260B analytical results.
[b] Total VOC vapor mass removed was calculated using EPA Method TO-14 analytical results for the ThOx and WTTP SVE systems.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and electric and natural gas costs related to operation of the system.

DRE = destruction removal efficiency

Flow Rates

Average Groundwater Flow Rate: **42 gpm**[a]

Location	Average Flow Rate	
	Groundwater (gpm)[b]	Soil Vapor (scfm)
EW01x16	23.6	NA
EW02x16	6.9	NA
EW03x16	0.8	NA[c]
EW605x16	off line[d]	NA[c]
EW610x16	off line[d]	NA[c]
WTTP	14.7[e]	117
ThOx	0.04[e]	51.0

[a] as measured by the effluent discharge to the storm drain divided by the operating time during the month.
[b] as measured by extraction well totalizer divided by the operating time.
[c] soil vapor was extracted from this well; however, the flow rates are not measured at individual wells at SS016.
[d] Well offline due to construction activities on the parking apron. Wells damaged during concrete repair.
[e] as measured by the effluent groundwater pumped to the CGWTP divided by the operating time.

gpm = gallons per minute
NA = not applicable/not available
scfm = standard cubic feet per minute

Flow Rates

Average Flow Rate from the WIOU, DP039, and LF008 Extraction Wells (gpm)[a]							
SD037/ SD043				SD033/SD034/ DP039		LF008/SD036	
EW599x37	0.5	EW705x37	1.3	EW501x33	0.5	EW719x08	Off line[c]
EW700x37	3.3	EW706x37	1.4	EW503x33	1.5	EW720x08	Off line[c]
EW701x37	1.5	EW707x37	1.0	EW01x34	0.5	EW721x08	Off line[c]
EW702x37	1.9	EW510x37	4.0	EW03x34	0.5	EW593x36	2.4
EW703x37	0.5	EW511x37	1.1	EW563x39	Off line[b]	EW594x36	0.6
EW704x37	2.2	EW555x43	0.3	EW782x39	Off line[b]	EW595x36	1.0

gpm—gallons per minute

[a] Extraction well flow rates are based on the average of previous month's readings.
[b] Extraction wells were shut off to facilitate the Bioreactor Sustainability Study at Site DP039.
[c] Extraction wells shut off to support a rebound study at Site LF008.

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater):					
CGWTP	31 August 2009	12:30	1 October 2009 (planned)		System manually shut down to accommodate Union creek sediment removal work in September 2009
WTTP (Groundwater):					
WTTP	31 August 2009	12:30	1 October 2009 (planned)		System manually shut down to accommodate Union creek sediment removal work in September 2009
WTTP (Vapor):					
WTTP	24 August 2009	09:15			SVE system shut down for rebound study
ThOx (Vapor):					
ThOx	August 2009		August 2009		Various shutdowns due to low natural gas pressure
ThOx	31 August 2009	1330	1 October 2009 (planned)		System manually shut down to accommodate Union creek sediment removal work in September 2009

CGWTP = Central Groundwater Treatment Plant
WTTP = West Treatment and Transfer Plant
ThOx = Thermal Oxidation System

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP was performed on 4 August 2009. Groundwater sample results are summarized in Table 1. The total VOC concentration (356.3 µg/L) in the August 2009 CGWTP influent groundwater sample has decreased slightly since the July 2009 event. No VOCs were detected in the effluent sample.

On 10 July 2009, piping associated with extraction wells EW605x16 and EW610x16 were damaged during construction activities on the parking apron just south of the ThOx unit (Site SS016). At the time of this incident, neither extraction well was in service due to interlocking alarm conditions present at the ThOx unit. Because of the damage, both wells were isolated and taken offline pending their repair. It is estimated that repair work will begin in September 2009, and the wells returned to service in October 2009.

Each system (CGWTP, WTTP, ThOx) was taken offline on 31 August 2009 due to sediment removal activities being conducted in Union Creek at various locations on base. Each groundwater system ultimately discharges to Union Creek, so discharge was halted to assist with dewatering necessary for sediment removal at the two Union Creek sites.

Optimization Activities

In an effort to optimize mass removal efforts from the WTTP SVE system, each well feeding the WTTP SVE system was sampled in July 2009 to determine which wells were producing the least amount of VOCs. As mentioned in the July 2009 Monthly Data Sheet, all wells leading to the WTTP SVE system contained total VOC vapor concentrations of less than 1,000 ppbv. All of these results are representative of rebound conditions since the WTTP SVE system was taken offline for approximately five (5) weeks during carbon change out activities.

In accordance with the annual RPO report, all eight (8) wells associated with the WTTP SVE system were taken offline on 24 August 2009. These wells will undergo an extended rebound study throughout the rest of the interim period. This optimization will continue the effort of base-wide systems optimization. During the rebound study period, each well will be sampled (soil gas) on an annual basis to monitor rebound concentrations.

No other optimizations were performed in July 2009.

Table 1
Summary of Groundwater Analytical Data for August 2009 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	4 August 2009 (µg/L) N/C	Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Bromodichloromethane	5.0	0.17	0	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.18	0	ND	ND	ND	ND
Chloroform	5.0	0.17	0	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.22	0	0.35 J	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.082	0	0.28 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.10	0	0.17 J	ND	ND	ND
1,1-Dichloroethane	5.0	0.24	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.22	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.24	0	0.66	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.23	0	79.3	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.54	0	3.3	ND	ND	ND
Methylene Chloride	5.0	0.61	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	0.91	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.21	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND	ND
Trichloroethene	5.0	0.20 – 1.0	0	271	ND	ND	ND
Vinyl Chloride	0.5	0.24	0	0.28 J	ND	ND	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.091	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND	ND
Toluene	5.0	0.098	0	ND	ND	ND	ND
Total Xylenes	5.0	0.093 – 0.24	0	ND	ND	ND	ND

[a] In accordance with Appendix G of the *Travis AFB Central Groundwater Treatment Plant Operations and Maintenance Manual* (URS Group, Inc., 2002).

J = analyte concentration is considered an estimated value
N/C = number of samples out of compliance with discharge limits
ND = not detected
µg/L = micrograms per liter

Results of Stage 1 Field Investigations

Travis Air Force Base, California

Investigations Underway

- Site SS016 Source Area
- Site SD036 Hot Spot
- Site SD037 Hot Spot
- Site DP039 Mid-Plume Characterization

Site SS016 OSA Description

- OSA located in the northwest corner of Site SS016
- Contaminant plume of trichloroethene (TCE) begins in OSA and travels southeast beneath active runway
- Existing remedial processes in the area include both groundwater and soil vapor extraction and treatment

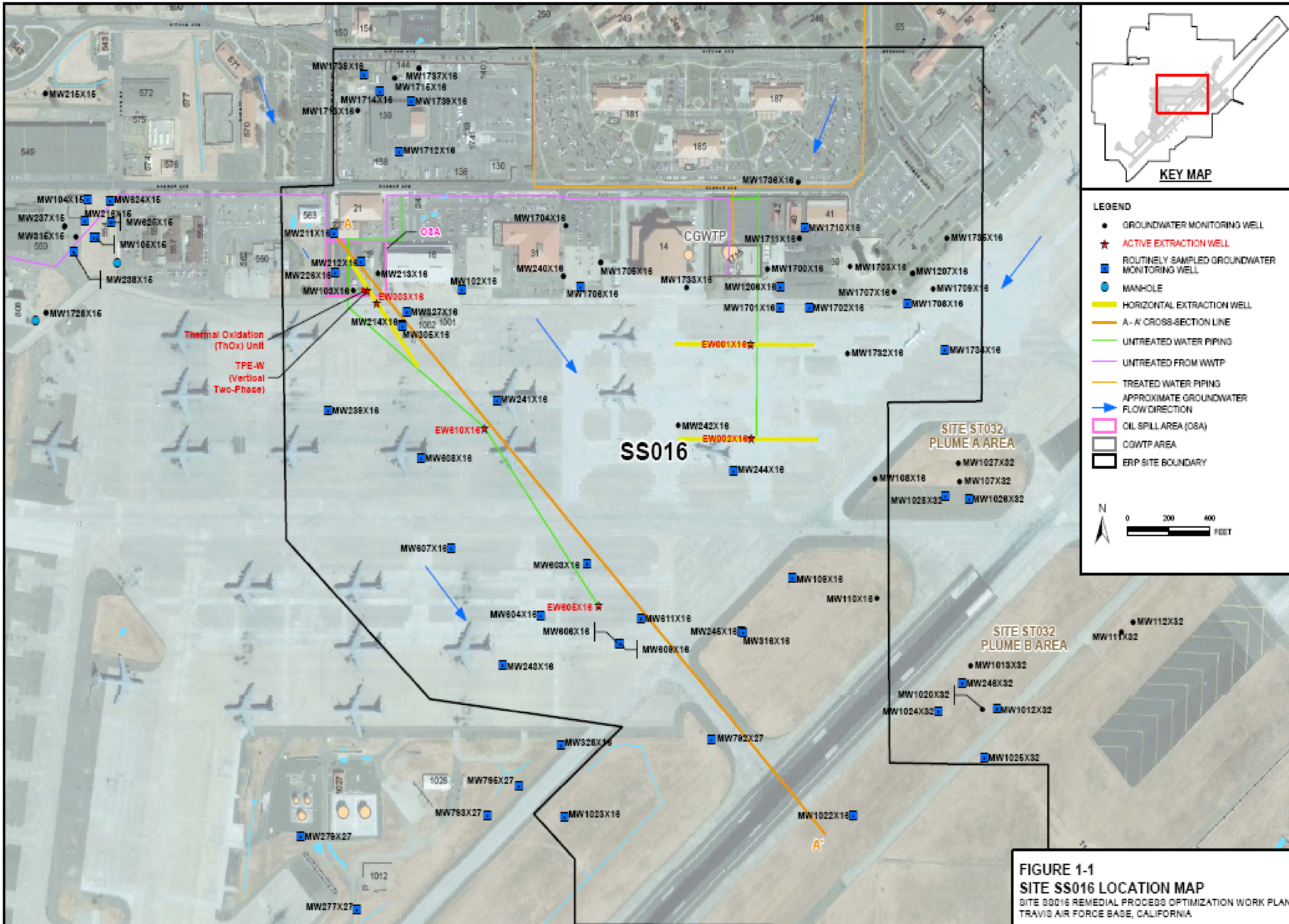


FIGURE 1-1
SITE SS016 LOCATION MAP
SITE SS016 REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

Existing Remediation in the OSA

- Groundwater extraction from EW003x16 treated at Central Groundwater Treatment Plant (CGWTP)
- Soil vapor extraction from EW003x16 and Two Phase Extraction Well (TPE-W) treated at Thermal Oxidation (ThOx) unit

Current Remedies

- Source Control is the Interim Remedial Action Objective (IRAO)
- Groundwater extraction system designed to capture volatile organic compound (VOC) concentrations greater than 1,000 µg/L
- 5-year reviews in both 2003 and 2008 concluded that the source control objective for Site SS016 is being met
- TCE concentrations in the OSA remain as high as 18,000 µg/L in groundwater (fourth quarter 2008)

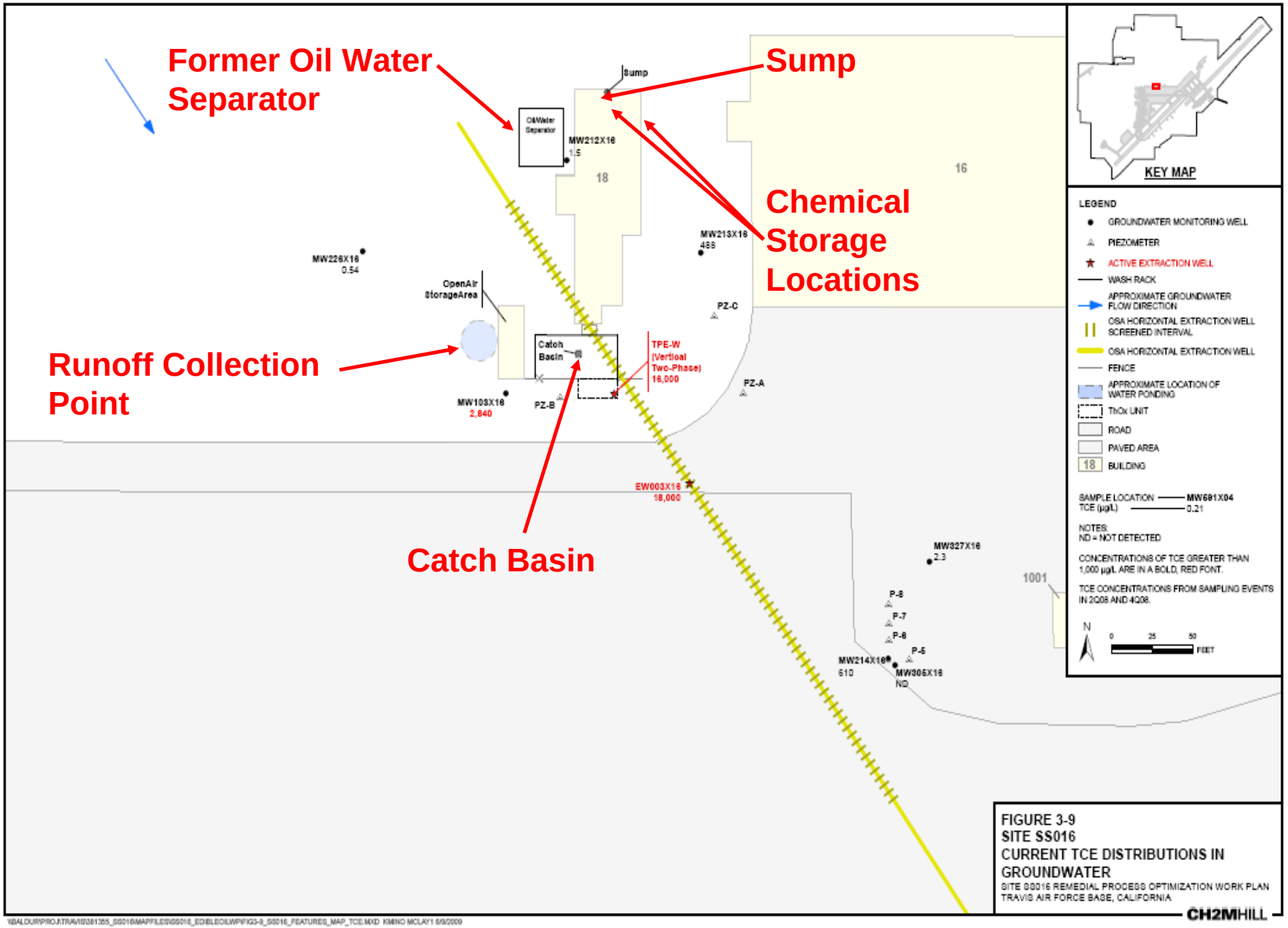


FIGURE 3-9
SITE SS016
CURRENT TCE DISTRIBUTIONS IN GROUNDWATER
SITE SS016 REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL


CLOSED

Work Plan Phased Approach

- Phase 1 – Site characterization and plume delineation
  - Define the TCE plume to 1,000 µg/L
  - Confirm source areas
- Phase 2 – Remediation Optimization
  - Utilize findings during characterization activities to optimize injection of Emulsified Vegetable Oil (EVO)

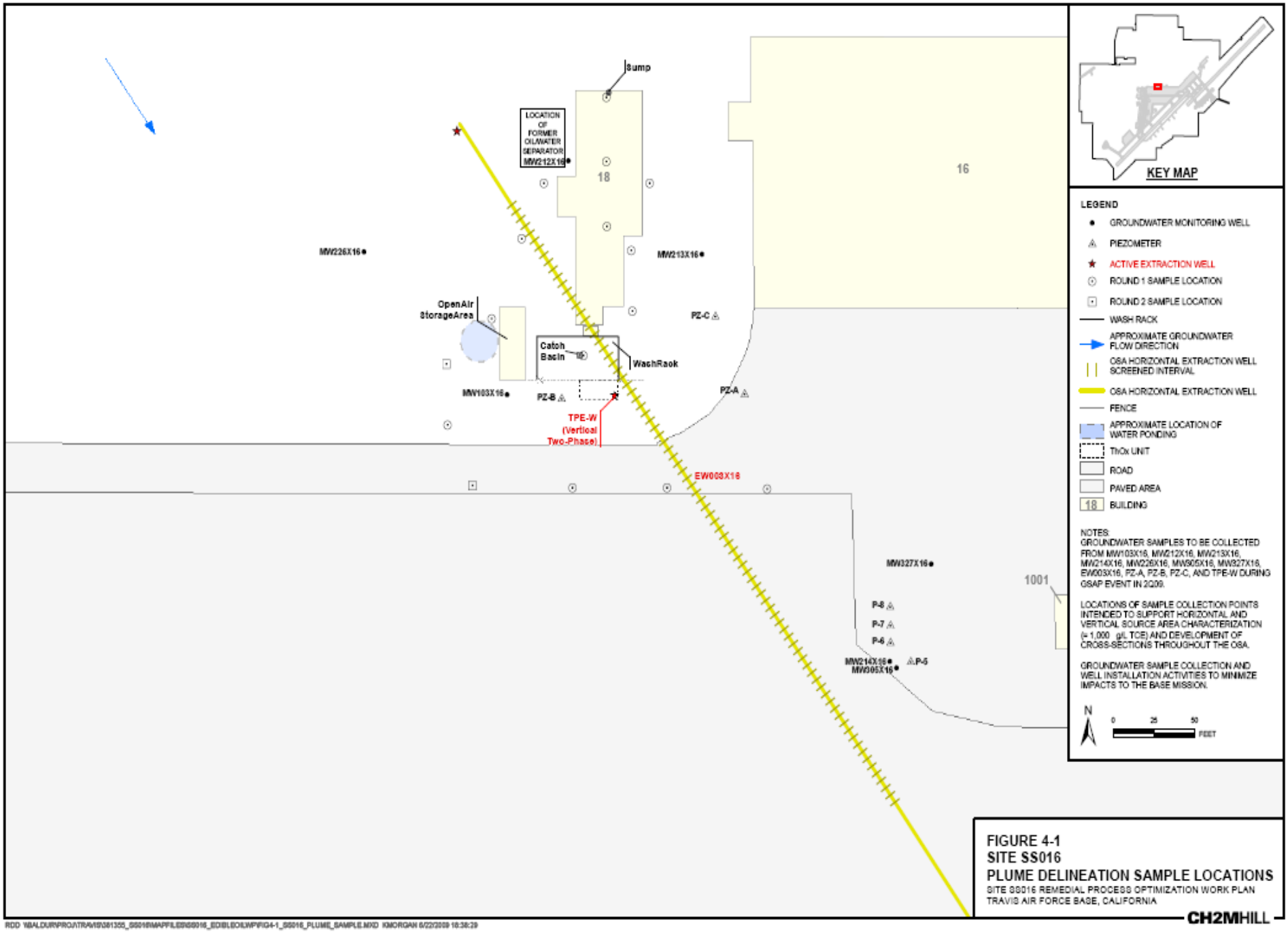


FIGURE 4-1
SITE SS016
PLUME DELINEATION SAMPLE LOCATIONS
SITE SS016 REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

RDD \\BALDURPROJ\TRAV\69381355_SS016\MAPFILES\SS016_EDIBLEOILWP\FIG4-1_SS016_PLUME_SAMPLE.MXD KMORGAN 6/22/2009 10:38:29

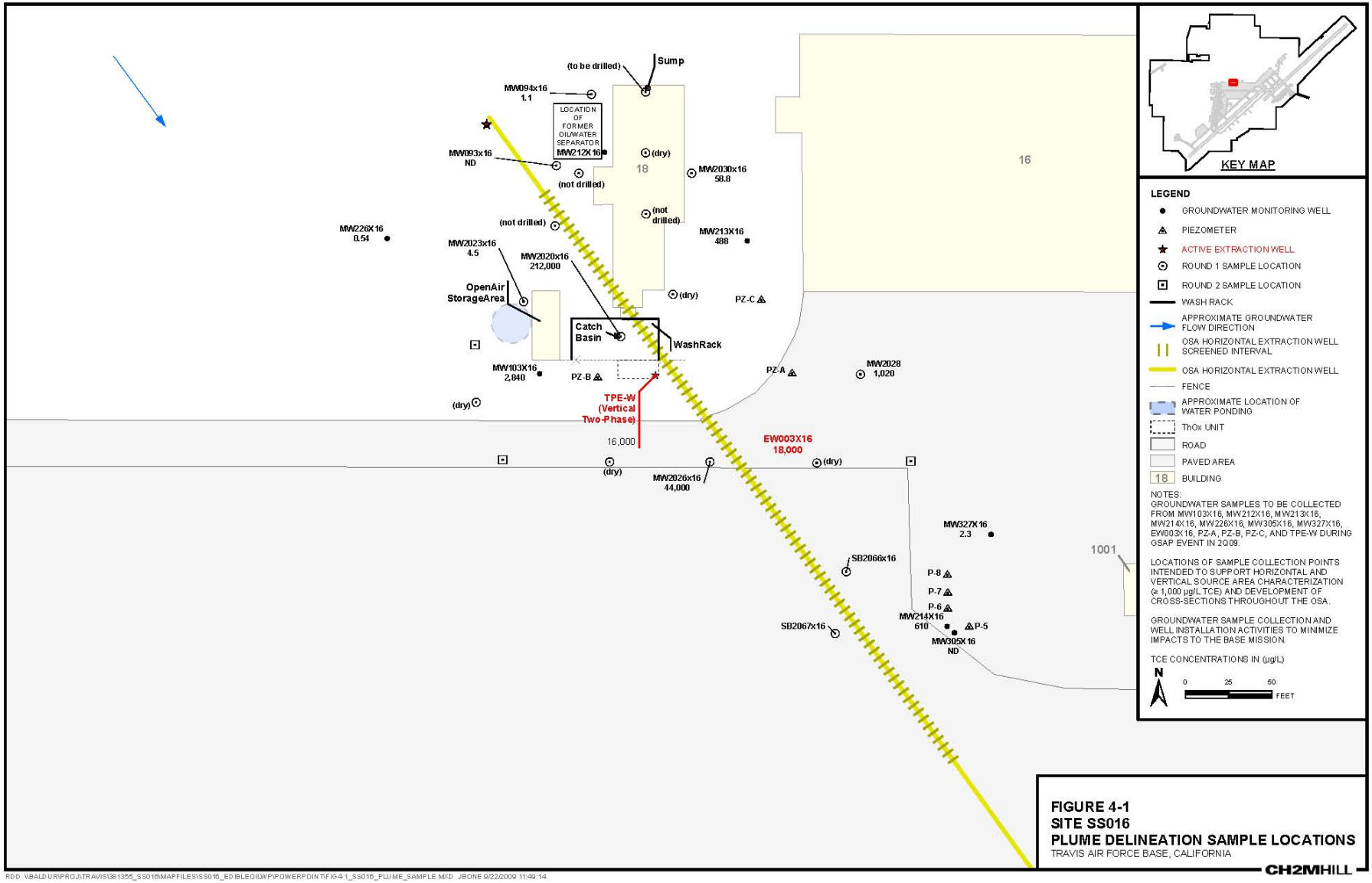


FIGURE 4-1
SITE SS016
PLUME DELINEATION SAMPLE LOCATIONS
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

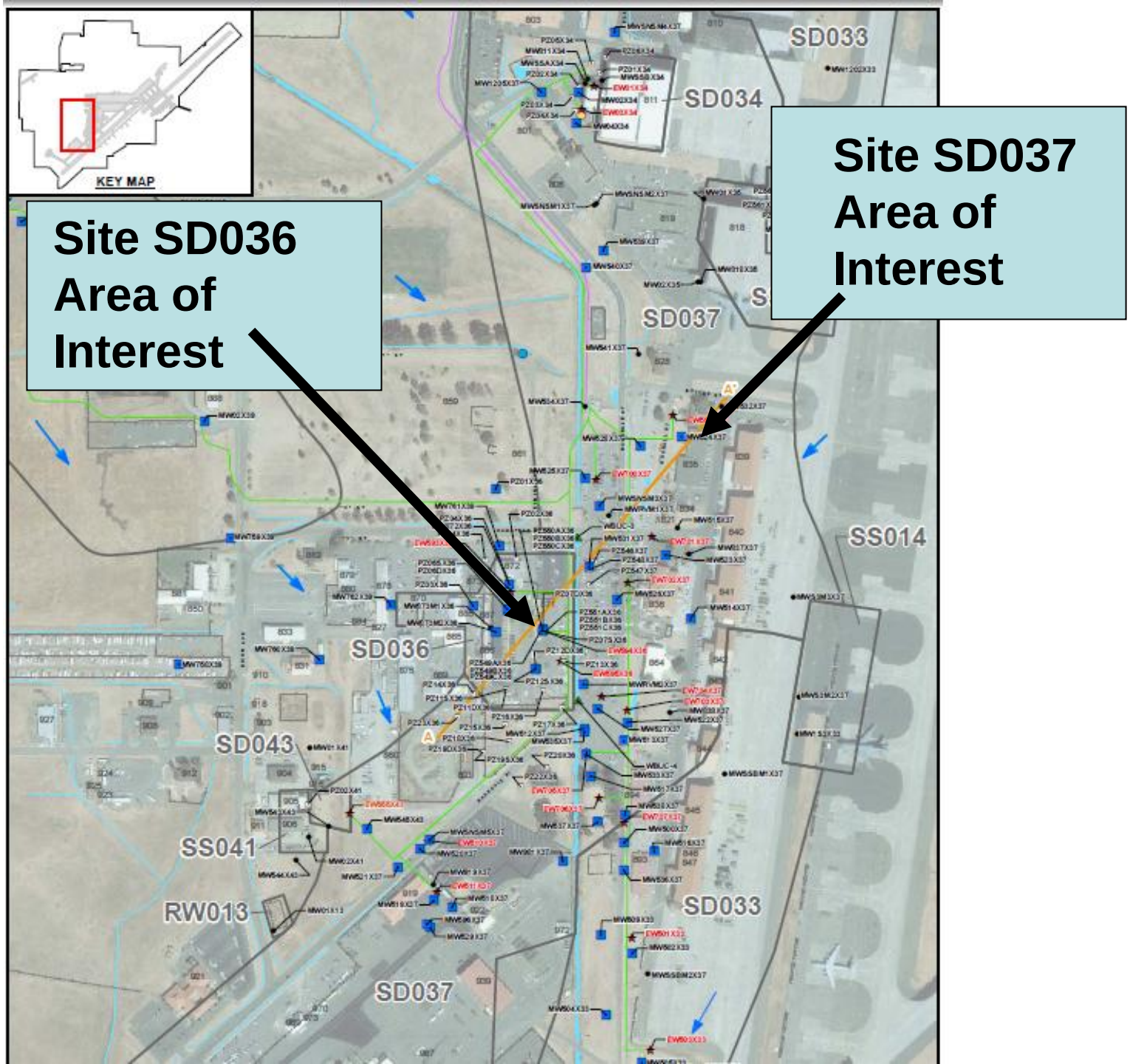
RDD \\BALDUR\PROJ\TRAVIS\381355_SS016\MAPFILES\SS016_EDIBLEOIL\WP\POWERPOINT\FIG4-1_SS016_PLUME_SAMPLE.MXD JBONE 9/22/2009 11:49:14

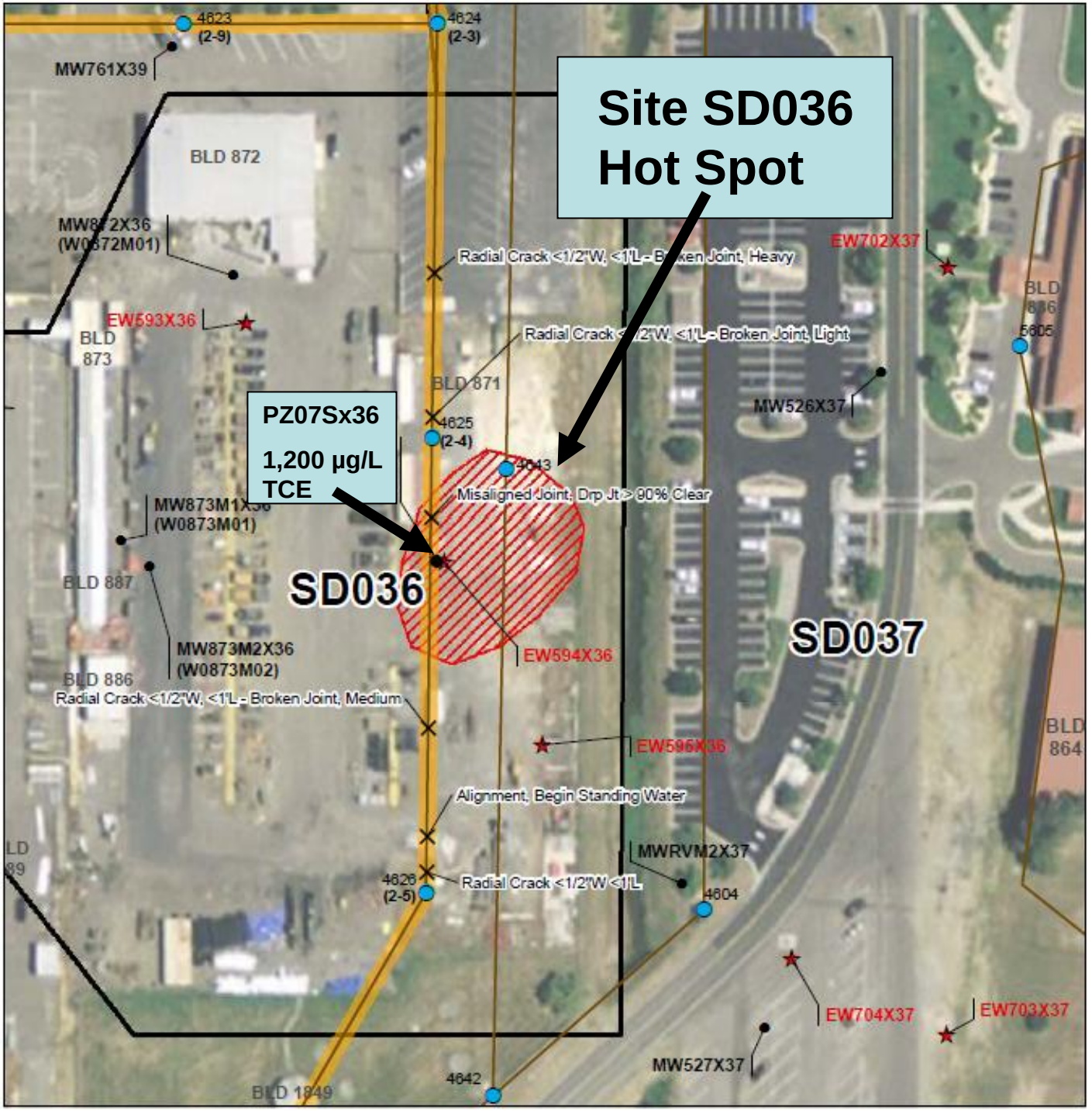
Site SS016—Next Steps

- Source area bounded on the east and west
- Complete angle boring beneath the sump, and downgradient borings beneath the parking apron
- After the hot spot is defined, reconsider/optimize the EVO injection design
- Prepare technical memo that summarizes the existing data and identifies locations of EVO injection points and monitoring wells
- Prepare completion report after EVO injection is accomplished
- Evaluate ongoing progress in GSAP reports

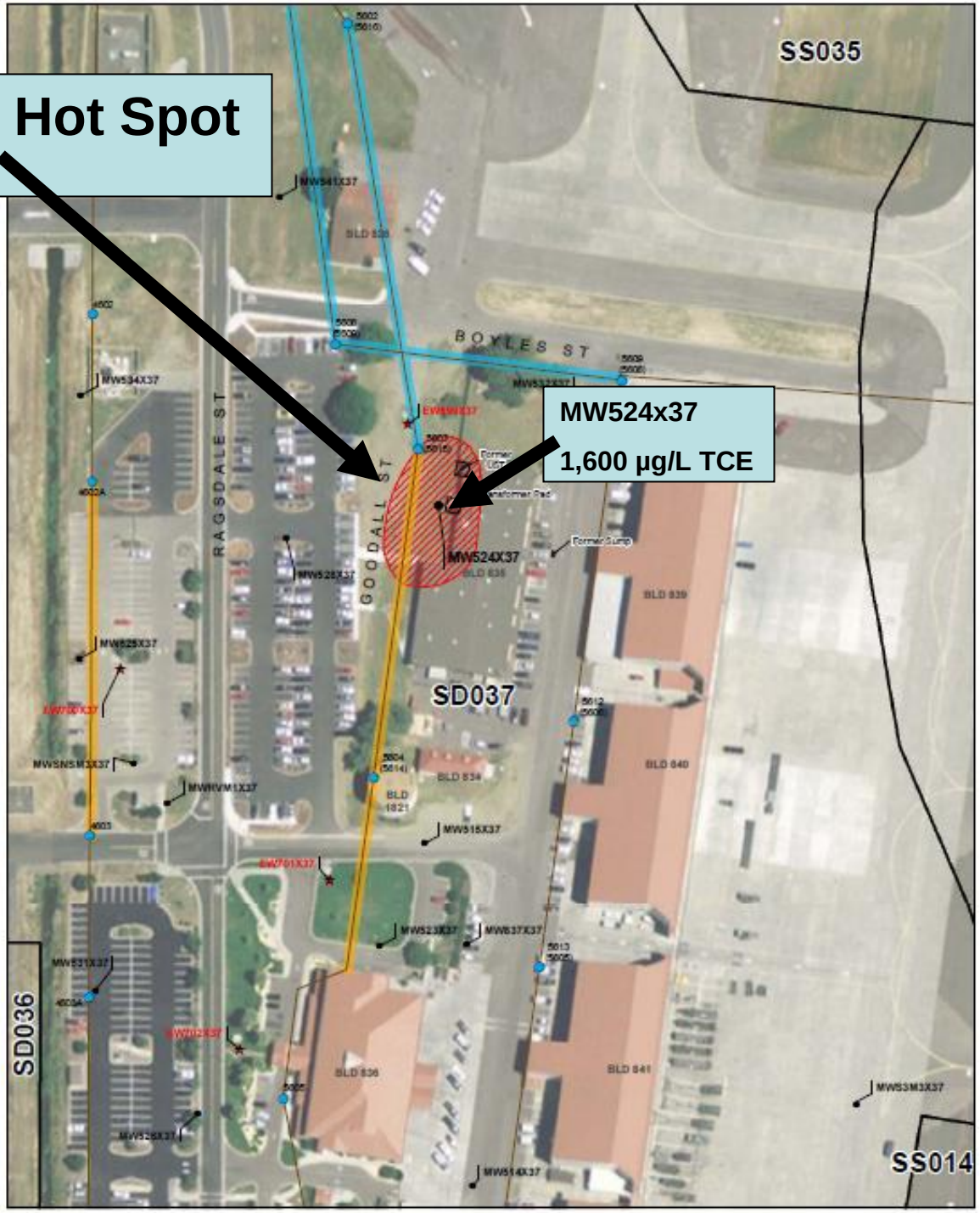
Site SD036 and SD037 Description

- Located in the WIOU in the western portion of the base
- Hot spot (>1,000 µg/L) of trichloroethene (TCE) concentrated in one small area near sanitary sewer line at each site
- Existing remedial processes in the area include both groundwater and soil vapor extraction and treatment


KEY MAP
Site SD036 Area of Interest
Site SD037 Area of Interest
SD033
SD034
SD037
SS014
SD036
SD043
SS041
RW013
SD033
SD037


Site SD036
Hot Spot
PZ07Sx36
1,200 µg/L
TCE
SD036
SD037
4623
(2-9)
4624
(2-3)
MW761X39
BLD 872
MW872X36
(W0872M01)
EW593X36
BLD
873
Radial Crack <1/2"W, <1'L - Broken Joint, Heavy
Radial Crack <1/2"W, <1'L - Broken Joint, Light
EW702X37
BLD
5605
BLD 871
4625
(2-4)
4643
MW526X37
Misaligned Joint, Drp Jt > 90% Clear
MW873M1X36
(W0873M01)
BLD 887
MW873M2X36
(W0873M02)
EW594X36
BLD 886
Radial Crack <1/2"W, <1'L - Broken Joint, Medium
EW596X36
Alignment, Begin Standing Water
MWRVM2X37
4626
(2-5)
Radial Crack <1/2"W <1'L
4604
EW704X37
EW703X37
MW527X37
4642
BLD 1849

Site SD037 Hot Spot



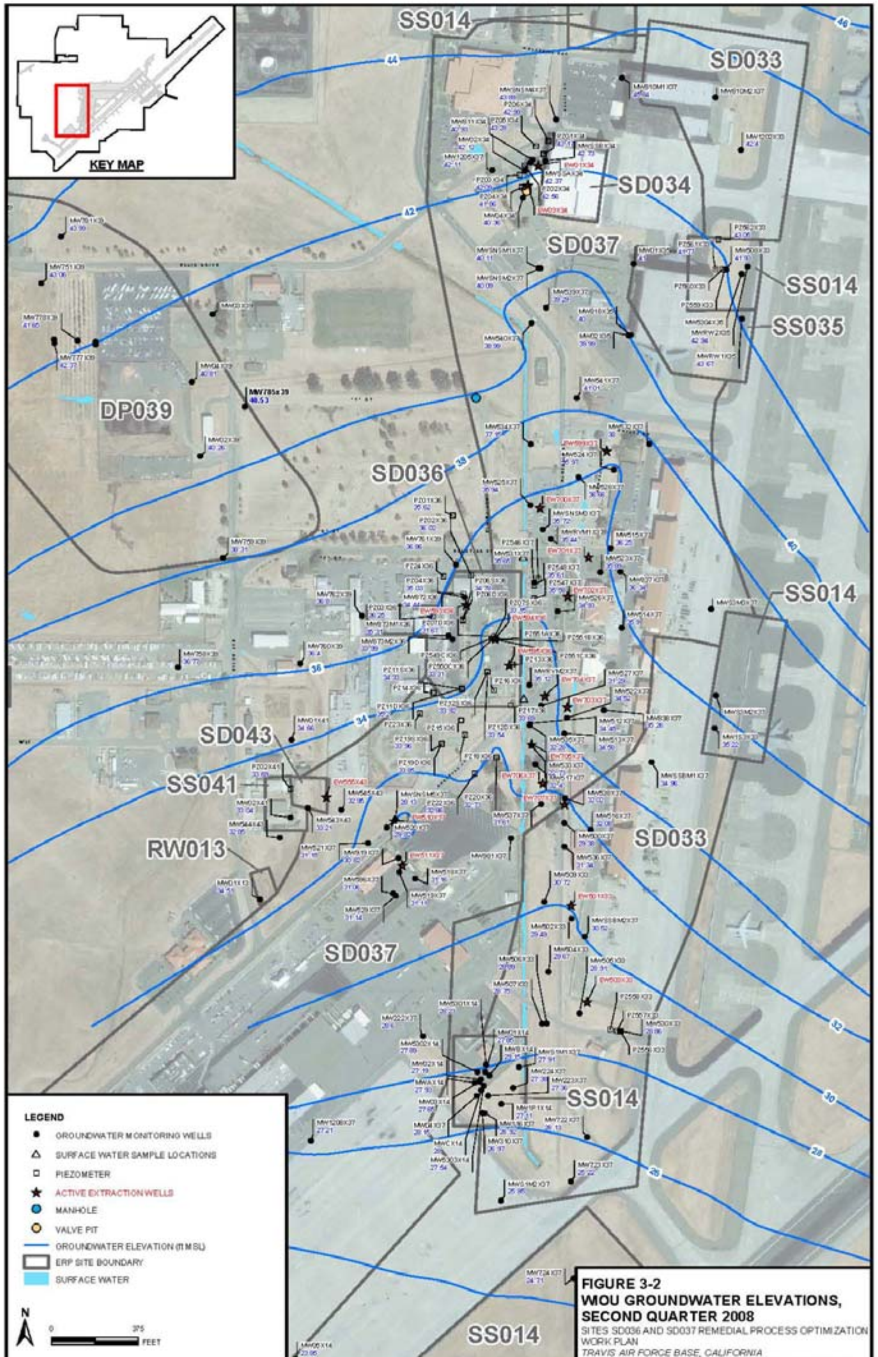
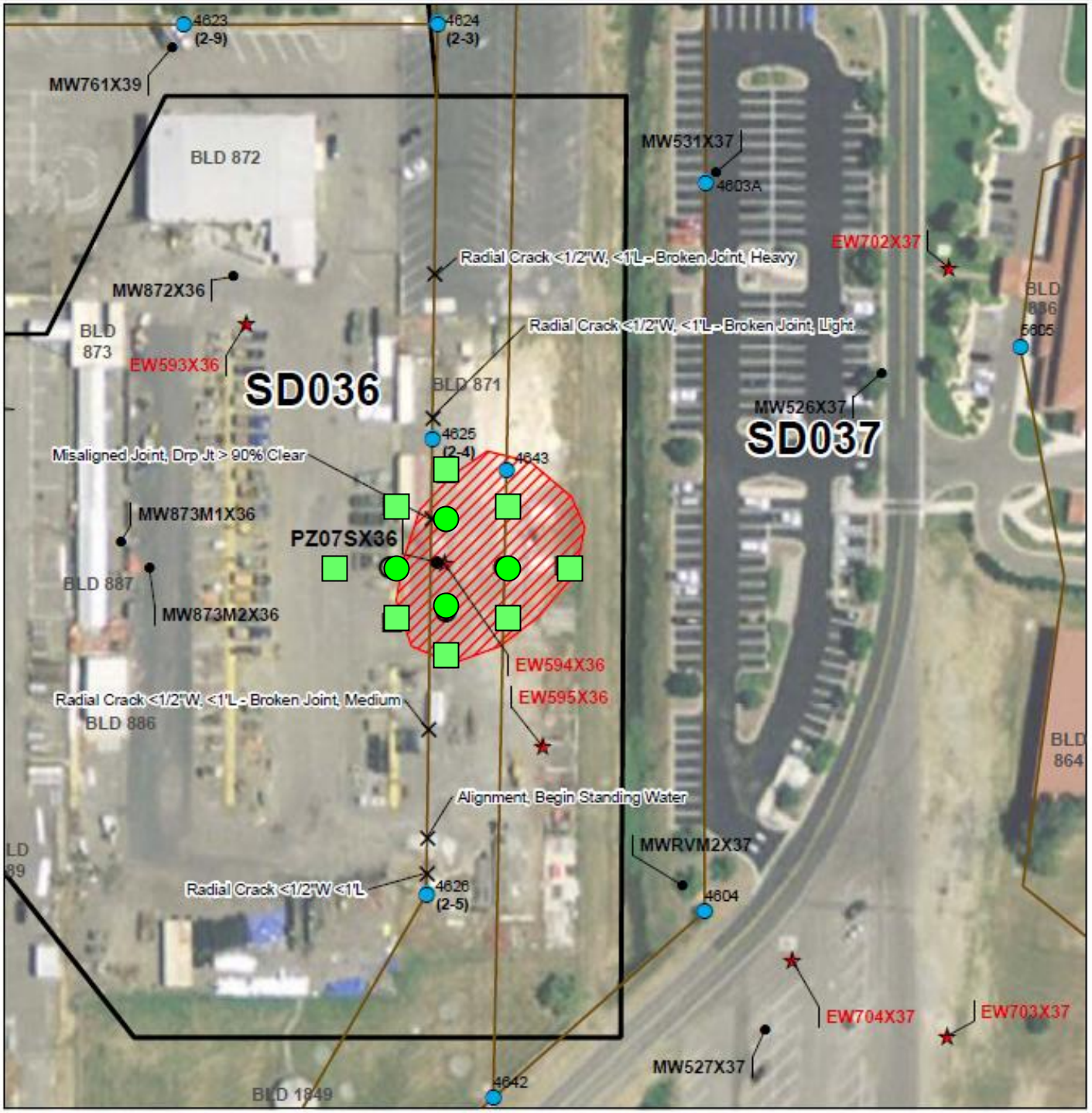
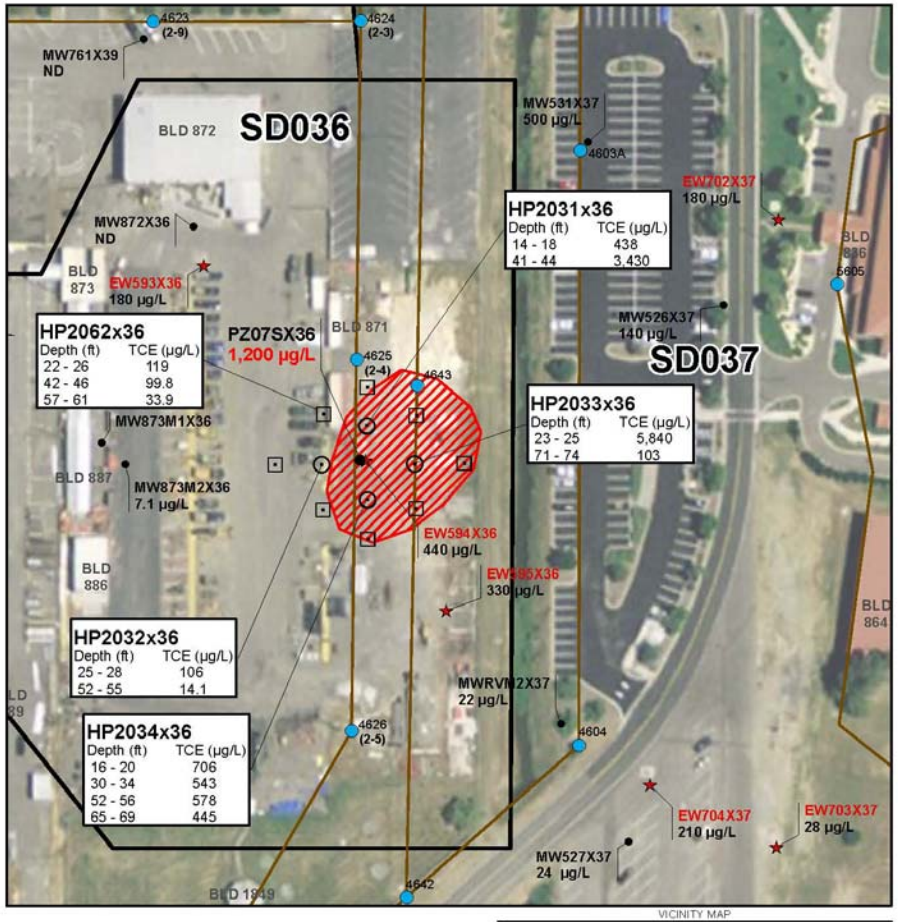
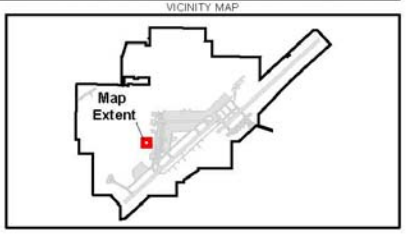


FIGURE 3-2
WIOU GROUNDWATER ELEVATIONS, SECOND QUARTER 2008
SITES SD036 AND SD037 REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA


4623
(2-9)
4624
(2-3)
MW761X39
BLD 872
MW531X37
4603A
EW702X37
Radial Crack <1/2"W, <1'L - Broken Joint, Heavy
MW872X36
BLD
873
EW593X36
SD036
Radial Crack <1/2"W, <1'L - Broken Joint, Light
BLD 871
BLD
886
5605
MW526X37
SD037
4625
(2-4)
4643
Misaligned Joint, Drp Jt > 90% Clear
MW873M1X36
PZ07SX36
BLD 887
MW873M2X36
EW594X36
EW595X36
Radial Crack <1/2"W, <1'L - Broken Joint, Medium
BLD 886
BLD
864
Alignment, Begin Standing Water
MWRVM2X37
LD
89
Radial Crack <1/2"W <1'L
4626
(2-5)
4604
EW704X37
EW703X37
MW527X37
BLD 1849
4642



VICINITY MAP



LEGEND

- PZ07SX36 LOCATION
- GROUNDWATER MONITORING WELLS
- ACTIVE EXTRACTION WELLS
- ROUND 1 SAMPLE LOCATIONS
- ROUND 2 SAMPLE LOCATIONS
- MANHOLE[1]
- MAIN WASTEWATER LINE
- HOTSPOT
- ERP SITE BOUNDARY

N

0 50 100
Feet

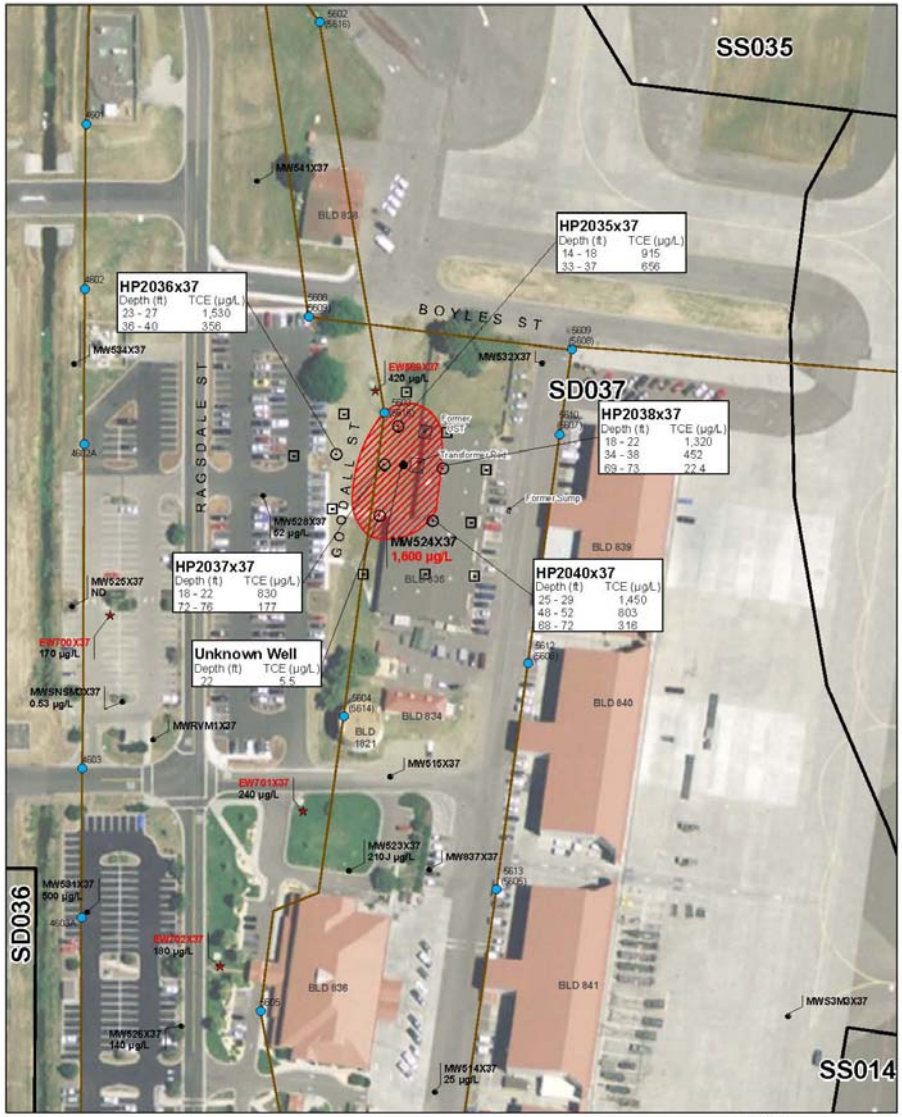
Notes:
1. Manhole ID's based on 2000 Survey (CH2M HILL)
2. Manhole ID's in parentheses based on 1994 Survey (Radian)

FIGURE 4-1
SITE SD036 HOT SPOT
PLUME DELINEATION
SAMPLE LOCATIONS
TRAVIS AIR FORCE BASE, CALIFORNIA

SD036—Next Steps

- Hot spot is bounded on the south and west
- Need to step out to the north and east
- After hot spot is defined, optimize the EVO injection design
- Prepare technical memo summarizing the existing data, and identifying locations of EVO injection points and monitoring wells
- Prepare completion report after EVO injection is accomplished
- Evaluate ongoing progress in GSAP reports


SS035
SD037
5602
(5616)
4601
MW541X37
BLD 828
4602
5608
(5609)
BOYLES ST
5609
(5608)
MW534X37
MW532X37
EW699X37
RAGSDALE ST
GOODALL ST
5610
(5607)
4602A
Transformer Pad
Former Sump
MW524X37
MW528X37
BLD 835
BLD 839
MW525X37
EW700X37
5612
(5606)
MWSNSM3X37
5604
BLD 840



LEGEND

- MW524X37 LOCATION
- GROUNDWATER MONITORING WELLS
- ACTIVE EXTRACTION WELLS
- ROUND 1 SAMPLE LOCATIONS
- ROUND 2 SAMPLE LOCATIONS
- MANHOLE[1]
- MAIN WASTEWATER LINE
- HOTSPOT
- ERP SITE BOUNDARY

Notes:
1. Manhole ID's based on 2000 Survey (CH2M HILL)
2. Manhole ID's in parentheses based on 1991 Survey (James M. Montgomery)

0 50 100
Feet

VICINITY MAP

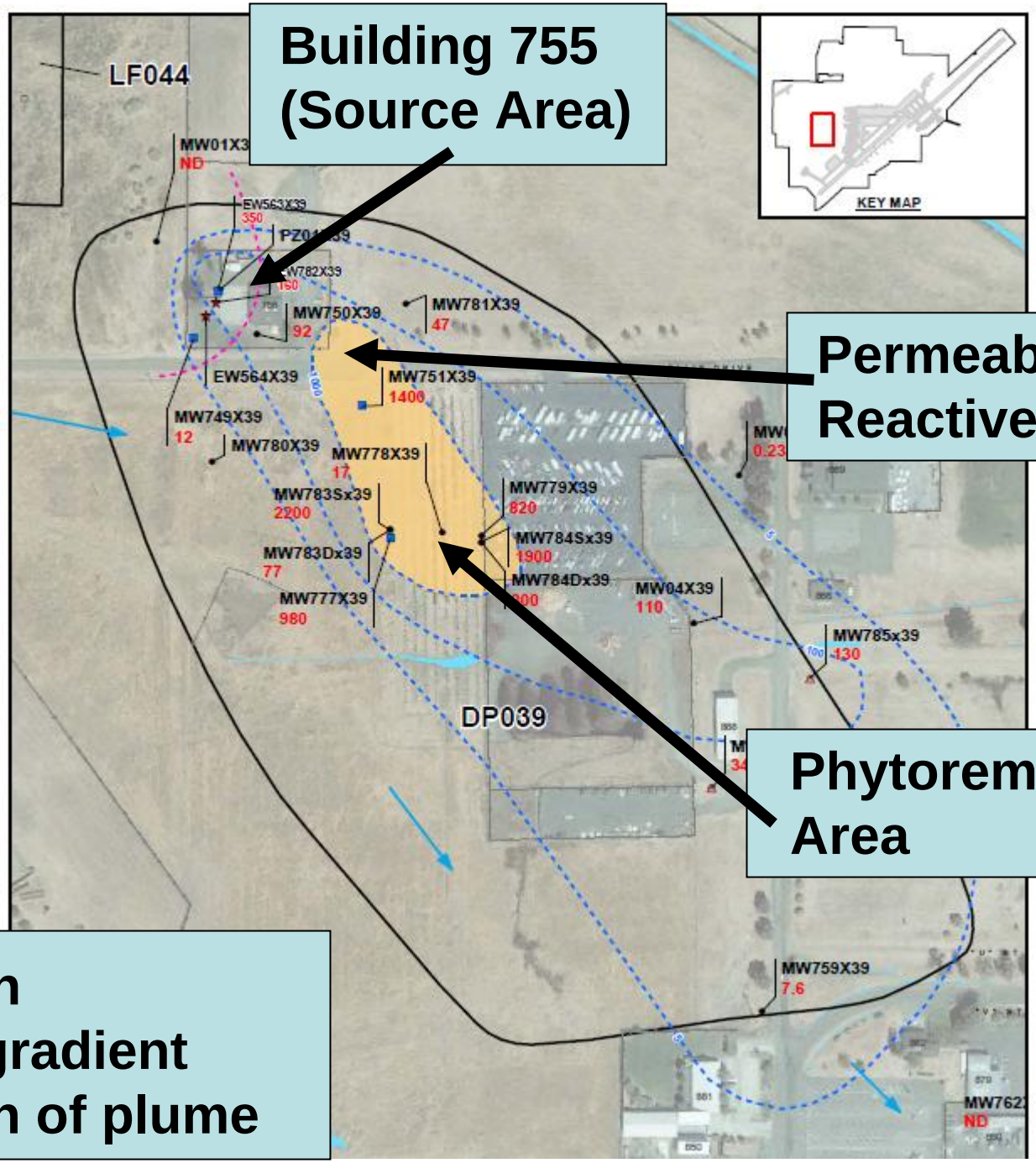
FIGURE 4-2
SITE SD037 HOT SPOT PLUME DELINEATION SAMPLE LOCATIONS
TRAVIS AIR FORCE BASE, CALIFORNIA

Site SD037—Next Steps

- Hot spot is bounded on the west and north
- Need to confirm low contamination at unknown well in the south
- Try to step out to the east (if possible)
- After the hot spot is defined, optimize the EVO injection design
- Prepare technical memo identifying locations of EVO injection points and monitoring wells
- Prepare completion report after EVO injection is accomplished
- Evaluate ongoing progress in GSAP reports

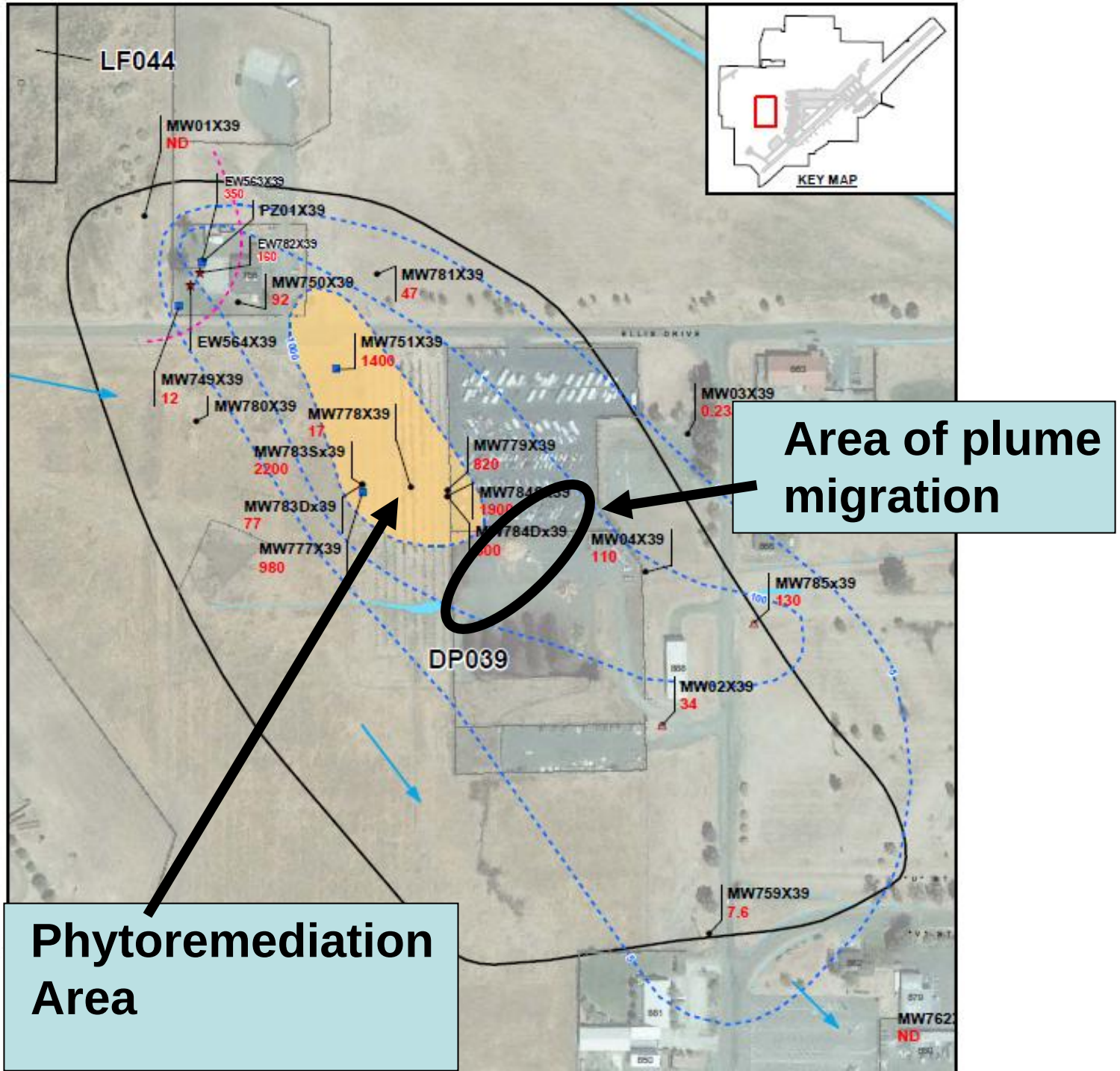
Site DP039 Description

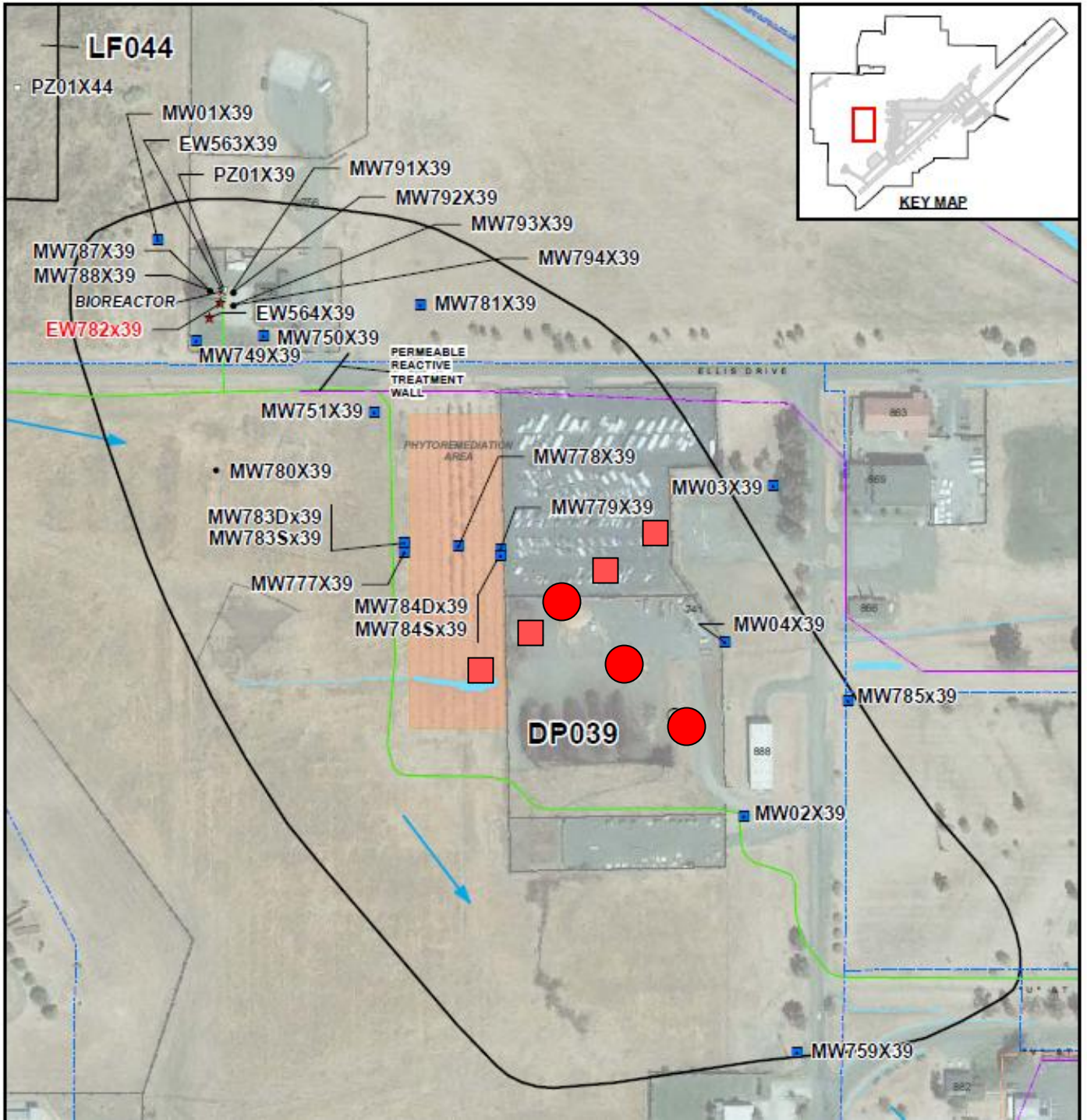
- Located in the WABOU
- Contaminant plume of TCE originates near Building 755
- Remedial processes in the area have included a bioreactor, permeable reactive barrier, phytoremediation, SVE, GET, and MNA


Building 755
(Source Area)
Permeable
Reactive Barrier
Phytoremediation
Area
MNA in
downgradient
portion of plume
LF044
KEY MAP
DP039
MW01X3
ND
EW563X39
350
PZ04
W782X39
150
MW750X39
92
MW781X39
47
EW564X39
MW751X39
1400
MW749X39
12
MW780X39
MW778X39
17
MW783Sx39
2200
MW783Dx39
77
MW777X39
980
MW779X39
820
MW784Sx39
1900
MW784Dx39
MW04X39
110
MW785x39
130
MW759X39
7.6
MW762
ND

Remediation Efforts (continued)

- Bioreactor installed in source area (fourth quarter 2008) to replace GET and DPE
- Phytoremediation evaluation ongoing
- MNA assessment is ongoing
- Evidence of plume migration in the central part of the plume, east of the phytoremediation area—could someday threaten the effectiveness of MNA in the downgradient portion of the plume
- This area of plume migration will be addressed via EVO injected as a biobarrier


LF044
MW01X39
ND
EW563X39
350
PZ01X39
EW782X39
160
MW750X39
92
MW781X39
47
EW564X39
MW751X39
1400
MW749X39
12
MW780X39
MW778X39
17
MW783Sx39
2200
MW783Dx39
77
MW777X39
980
MW779X39
820
MW784Dx39
MW03X39
0.23
MW04X39
110
MW785x39
130
DP039
MW02X39
34
MW759X39
7.6
MW762
ND
KEY MAP
Area of plume migration
Phytoremediation Area


LF044
PZ01X44
MW01X39
EW563X39
PZ01X39
MW791X39
MW792X39
MW793X39
MW794X39
MW787X39
MW788X39
BIOREACTOR
EW782x39
EW564X39
MW781X39
MW750X39
MW749X39
PERMEABLE REACTIVE TREATMENT WALL
ELLIS DRIVE
MW751X39
PHYTOREMEDIATION AREA
MW778X39
MW780X39
MW03X39
MW783Dx39
MW783Sx39
MW779X39
MW777X39
MW784Dx39
MW784Sx39
MW04X39
MW785x39
DP039
MW02X39
MW759X39
KEY MAP

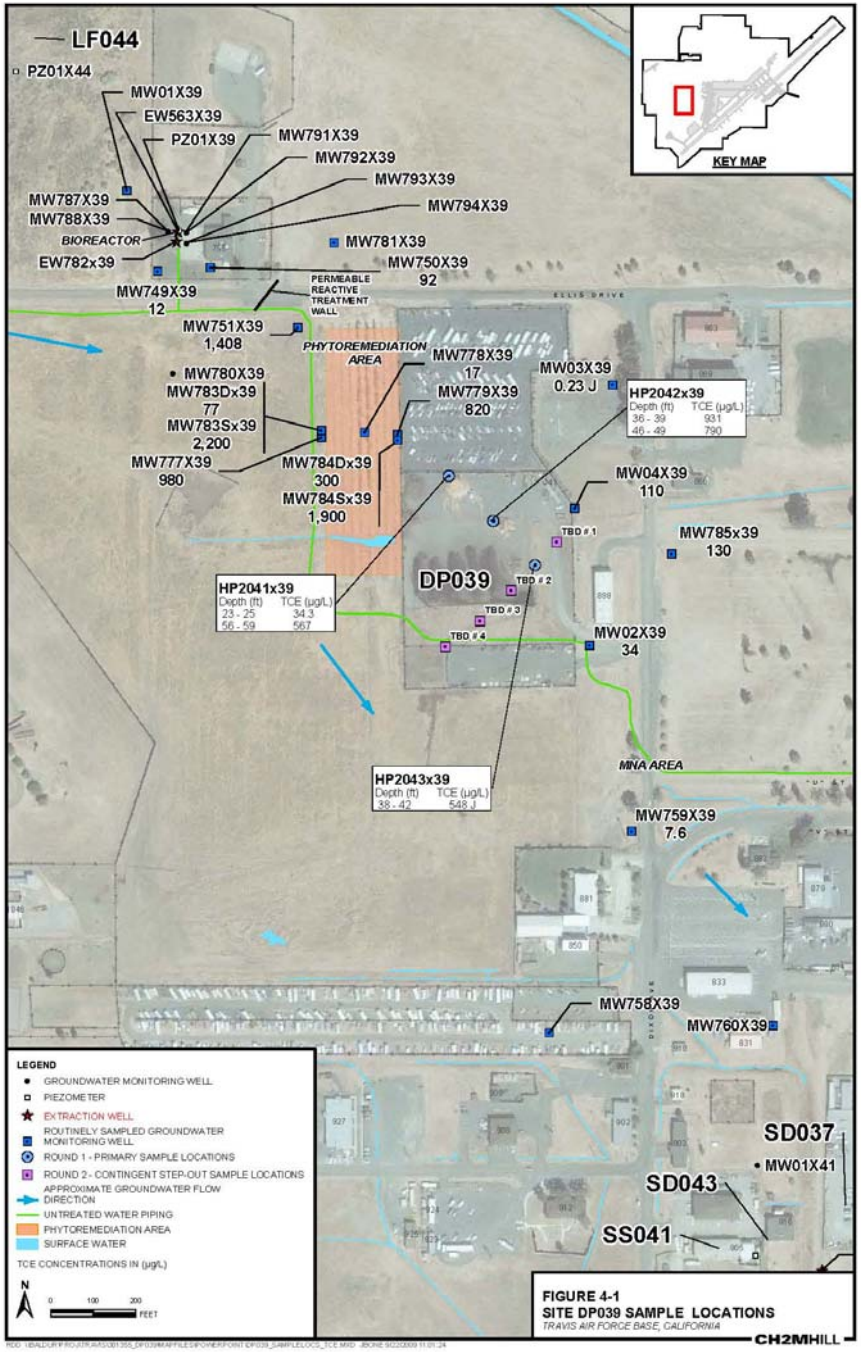


FIGURE 4-1
SITE DP039 SAMPLE LOCATIONS
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

Site DP039—Next Steps

- After the hot spot is defined, optimize the EVO barrier design
- Prepare a technical memo identifying locations of EVO injection points and monitoring wells
- Prepare a completion report after EVO injection is finished
- Evaluate ongoing progress in GSAP reports

Other Upcoming Field Work

- Site ST018—started yesterday (09/22)
- Site ST027—09/28 through 10/05 during shutdown of runway
- Site SS014
- Site SS030—after access agreement is finalized

Questions/Comments?

Travis AFB
Groundwater Program

Management Overview Briefing

RPM Meeting

September 23, 2009

Completed Documents & Field Work

Documents

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation WP
- ST027B Site Characterization WP
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation WP
- Phytostabilization Demonstration Tech Memo

Field Work

- ST027B Gore Sorber Survey – Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event
- SS030 Site Characterization – Phase 1

In-Progress Documents & Field Work

Documents

- Comprehensive Site Evaluation Phase II (Draft)
- Field Sampling Plan (FSP) (Draft)
- SS016 RPO Work Plan (Draft)
- Natural Attenuation Assessment Report (NAAR) (Draft)
- Model QAPP (Draft-Final)
- ***SD036/SD037 RPO Work Plan (Pre-draft)***
- ***ST018 RA Work Plan (Draft)***
- ***DP039 RPO Work Plan (Pre-draft)***
- ***LF008 Rebound Study Tech Memo (Draft)***

Field Work

- SS016 Site Characterization (source area)
- DP039 Site Characterization (down gradient)
- ***SD036/SD037 Site Characterization (hot spots)***
- ***ST018 Site Characterization (& Remedy Installation)***
- ***SD001/SD033 Sediment RA***

Upcoming Documents & Field Work

Documents

• Focused Feasibility Study	***January***
• 2008/2009 GSAP Annual Report	November
• ST027B Site Characterization Report	December
• Phases 1, 2 and 3 Vapor Intrusion Report	TBD

Field Work

• LF007C Site Characterization (Wetlands)	TBD
• SS030 Site Characterization (Phase 2)	Sept/October
• ***ST027 Site Characterization (Phase 3)***	***Sept/Oct***
• ***ST014 Monitor Well Install (Site 3)***	***September***

Field Work Schedule

AS OF: SEPTEMBER 23, 2009

Site	21-Sep	28-Sep	5-Oct	12-Oct	19-Oct
SS016	Phase 2				
SD036		Phase 2			
SD037			Phase 2 (Drill on weekend only)		
SS030				Phase 2 (Depends on Right-of-Entry)	
ST027		Phase 3 & 4	(Including weekend of 10/3 & 10/4)		
DP039			Phase 2		
ST018	Phase 1			Phase 2	
ST014				Phase 2	

Note: Drill dates are estimates and depend on field conditions