

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

25 March 2009, 0930 Hours

Mr. Glenn Anderson, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 25 March 2009 at 0930 in the Base Civil Engineer's Conference Room, Building 570, Travis AFB, California. Attendees included:

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| • Glenn Anderson | Travis AFB |
| • Lonnie Duke | Travis AFB |
| • Mary Snow | TechLaw |
| • James Chang | U.S. Environmental Protection Agency (USEPA) |
| • Alan Friedman | California Regional Water Quality Control Board (CRWQCB) |
| • Jose Salcedo | Department of Toxic Substances Control (DTSC) |
| • Dezso Linbrunner | USACE, Omaha District |
| • Mike Wray | CH2M HILL |
| • Chuck Elliott | CH2M HILL |
| • Gavan Heinrich | CH2M HILL |
| • Rachel Hess | Innovative Technical Solutions, Inc. (ITSI) |

Handouts distributed at the meeting and presentations included:

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| • Attachment 1 | Meeting Agenda |
| • Attachment 2 | Master Meeting, Teleconference, and Document Schedules |
| • Attachment 3 | SBBGWTP Monthly Data Sheet (January 2009) |
| • Attachment 4 | CGWTP Monthly Data Sheet (January 2009) |
| • Attachment 5 | NGWTP Monthly Data Sheet (January 2009) |
| • Attachment 6 | Presentation: SS014 Tier 1 POCO Evaluation Work Plan |
| • Attachment 7 | Presentation: Annual GWTP RPO Report |
| • Attachment 8 | Presentation: Program Update |

1. ADMINISTRATIVE

A. Start Teleconference Line for USACE, Deszo Linbrunner

Ms. Hess also called in for today's meeting. Mr. Linbrunner told the group that the funding for the small business Performance-Based Contract had been received from AFCEE. This is the funding to allow ITSI to clean up two sediment sites and also to perform CAMU monitoring and maintenance. The modification should be going out today.

B. Previous Meeting Minutes

The 25 February 2009 RPM meeting minutes were approved and finalized with no changes.

C. Action Item Review

Action Items from February were reviewed.

Action item one is closed.

Action items two and three: Funding has now been received. Due date will be changed to April 2009.

Action item four is closed.

Action item five is still open pending schedule for field work. Once the work plan is in draft, a tentative schedule can be made.

Action item six: The notification email was sent to the agencies. TAFB has received response from EPA. WB has no issues. DTSC will get back to TAFB. Item considered closed.

Action item seven is closed.

D. Master Meeting and Document Schedule Review

The Travis AFB Master Meeting, Teleconference, and Document Schedules were discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

— The next RPM meeting will be 22 April 2009. Mr. Friedman mentioned he will not be able to attend the next RPM meeting and plans on calling in for it.

Travis AFB Master Document Schedule

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

- HSP Update: Move to historical.
- QAPP Update: Draft is out for review. Mr. Chang asked if there was more than one QAPP. Yes, there is the Model QAPP and the RD/RA QAPP. The Model QAPP is more stringent and is used to support Remedial Investigations and site closures. This update is for the RD/RA QAPP, which is the QAPP that will support the upcoming groundwater field work this summer.

The Model QAPP will be updated when sites are getting close to closure. It was last used in 2007 for soil activities. Some methods may be updated when the draft GW ROD is completed.

- Comprehensive Site Evaluation Phase II Work Plan: Not ready for agency review.
- Focused Feasibility Study: Added to schedule. Document will be worked on over the summer while work is being done out in the field.

Mr. Chang commented that the schedule for this report has him questioning the dates. There appears to be a problem with having time to receive sample data to support the bioreactor as a potential remedy. Mr. Anderson added that text will have to be included in the FFS, stating that it is a demonstration project and presenting it as a potential alternative to dual phase extraction (DPE). The nine criteria can still be compared. Mr. Chang is concerned that it can't be presented as a detailed alternative. Mr. Anderson agreed that it will need to be carefully written. Mr. Elliott added that the toolbox approach was also used in the IROD, where several technologies were listed to be applied as needed on a site by site basis. Mr. Anderson said this works for the ROD, but the FFS needs to present a preferred alternative. The schedule is aggressive to meet the 2012 ROD date. The FFS is needed to meet CERCLA requirements.

- Action Plan: No change. WB will have comments by the end of next week (3 April).
- Site ST027B Plume Delineation Work Plan: Date of Final has been changed. Topic will be addressed later in the agenda.
- LF007C Groundwater Work Plan: No change.
- Phases 1 & 2 Vapor Intrusion Report: No change.
- SS016 IRA Work Plan: No change.
- Site ST032 Tech Memo: No change. Response to comment (RTC) meeting at the end of the agenda today.
- Site SS030 Work Plan: No change. RTC meeting today, if needed.
- 2008 Annual GWTP RPO Report: Dates have been updated. This report has been expanded to include optimization opportunities. It is a better document, including rebound studies and proposed changes. Mr. Salcedo

commented this information is better here than in the GSAP reports. Mr. Wray added there will be a presentation today on this report.

- Field Sampling Plan: Dates have been updated.
- SS014 Tier 1 POCO Evaluation Work Plan: Dates have been updated. Presentation on this plan will be given today.
- Natural Attenuation Assessment Report (NAAR): Dates have been updated. This report will support remedy selection at groundwater sites.
- Passive Diffusion Bag (PDB) Tech Memo: Dates have been updated. TAFB would like to push for approval of this sampling technique so it can be used. There will be a presentation next month on results of the study.
- DP039 RPO Work Plan: Added to schedule.
- SD036/SD037 RPO Work Plan: Added to schedule.
- ST018 Remedial Action (RA) Work Plan: Added to schedule.
- Quarterly Newsletter (Guardian): Comments were received from the public participation specialist at DTSC, Marcus Simpson. TAFB appreciated his input. Waiting to hear from the EPA contact, Mr. Cooper, before finalizing this edition. Mr. Anderson is trying to encourage E-Guardian mailing list rather than hardcopy. The E-Guardian is in color!
- 2007/2008 GSAP Annual Report: Move to historical.

Mr. Duke added that with the news about funding for ITSI, they will be working under the approved Shaw Work Plans and writing addenda that mainly have company-specific changes. The addenda will be tracked in the document schedule but will not require much agency review. An ITSI-specific Health and Safety plan will be developed and reviewed by TAFB; it can be provided to the agencies. Both WB and DTSC will pass on reviewing this document. Ms. Hess said she would be in touch with Mr. Duke on the schedule.

Mr. Friedman commented that many, many due dates are coming up. Mr. Anderson said a fair number of these documents are small in length. Mr. Wray said that sampling at the bioreactor is scheduled for April, but may be pushed to May, so the first round of data should be back before the draft FFS is submitted, which may give enough information for that report and spread out the work load. Email comments are great; they make it easier to maintain the admin record.

Back to the FFS, Mr. Chang commented to go ahead and start the process, however, if there is no data to evaluate alternatives at the draft final stage, Travis needs to stop and get that information. Ms. Snow added that the information would be needed to address short term effectiveness; the base probably won't be able to address long term effectiveness or the reduction of toxicity, mobility and volume (TMV). Mr. Elliott pointed out that the final remedy won't be chosen, just presenting options in the FFS. Both Ms. Snow and Mr. Chang pointed out that this is on-the-edge technology, not just evaluating an accepted remedy. Data is needed to back it up.

Mr. Anderson appreciates hearing about agency concerns now rather than after submitting the document. Mr. Chang suggested looking at Altus AFB that has a bioreactor in place.

2. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant status. The GWTP RPO report will have a synopsis of the rebound studies that are in progress (presentation today). Mr. Anderson added that the CO₂ generation by the plants would be a good topic to bring up in a future Guardian.

South Base Boundary Groundwater Treatment Plant

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.4% uptime, and 2.9 million gallons of groundwater were extracted and treated during the month of February 2009. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 71.7 gallons per minute (gpm) and electrical power usage was 15,660 kWh; 21,454 pounds of CO₂ was created (based on DOE calculation). Approximately 1.6 pounds of volatile organic compounds (VOCs) were removed in February. The total mass of VOCs removed since the startup of the system is 359 pounds (see Attachment 3).

One shutdown occurred in February to install an hour meter on the air stripper. Total VOC concentrations fell from January totals.

No optimization activities were conducted during February.

Central Groundwater Treatment Plant

The Central Groundwater Treatment Plant (CGWTP) performed at 99.9% uptime with approximately 2.8 million gallons of groundwater extracted and treated during the month of February 2009. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 69.6 gpm and electrical power usage was 34,485 kWh for all plants; 47,244 pounds of CO₂ was created. Natural gas usage for the ThOx was 2,494 therms. Approximately 6.7 pounds of VOCs were removed from groundwater, and 5.2 pounds from vapor, in February. The total mass of VOCs removed since the startup of the system is 11,028 pounds (see Attachment 4).

No shutdowns occurred in February.

North Groundwater Treatment Plant

The North Groundwater Treatment Plant (NGWTP) performed at 54.9% uptime with approximately 130,000 gallons of groundwater extracted and treated during the month of February 2009. All treated water was discharged to the duck pond. The average flow for the NGWTP was 5.9 gpm and electrical power usage was 6,339

kWh; 8,684 pounds of CO₂ was created. Approximately a half ounce of VOCs was removed in February. The total mass of VOCs removed since the startup of the system is 5,414.3 pounds (see Attachment 5).

Plant was shut off on 17 February 2009 due to standing water forming in the vernal pools.

No optimization activities were conducted during February.

B. ST027B Field Effort

Mr. Duke gave an update on the field work at ST027C. Three monitoring well locations have been established after review of the Gore-Sorber results. Next is getting the Air Force waiver to access the taxiway, as monitoring well installation requires closure of the taxiway. In the future, Mr. Duke is putting together one large waiver to streamline the process. It would last for 12 months and be re-evaluated on an annual basis.

C. LF044 Potential Construction Project

Mr. Anderson gave an update on LF044. An email has been sent out to the agencies concerning a proposed fuel AST construction project that would require most of the LF044 acreage. Comments on the proposal have been received from EPA. WB has no comments. DTSC will have comments by the end of the week.

D. Vapor Intrusion Assessment Status

Mr. Anderson gave an update on the VI Assessment status. TAFB is planning a meeting with CH2M HILL and EPA to work out the details of the Phase 3 VI approach before going out into the field. Meeting participants can discuss RTC on the draft Phase 1 and 2 report at that time. Mr. Chang mentioned one of the main issues to discuss is preferential pathways.

E. Phyto Area Study Schedule

Mr. Anderson reported on the phyto area study schedule. Schedule is not yet available. There are still decisions to make on how the study will be conducted. The focus of the study will be on transpiration, not so much on groundwater. There is already a contract in place to sample and analyze groundwater to support the phytostabilization evaluation.

Questions to be answered involve the ability of the trees to transpire or absorb solvents. The focus will be on vapor, qualitatively and quantitatively. This information is not included in the GSAP reports. The team for this study is scheduled to come out twice, most likely in July and September. Schedule for the phytostabilization work plan should be set by the April RPM meeting. The work plan will read more like a technical memorandum.

The same Utah state professor that was involved with the project ten years ago will be on the team, along with the same personnel from Parsons. Five years ago was the last time samples were taken. RPM and RAB members are encouraged to watch the transpiration sampling this summer.

3. PRESENTATIONS

A. SS014 Tier 1 POCO Evaluation Work Plan

Mr. Heinrich gave a presentation on the SS014 Work Plan (see Attachment 6). The purple areas on the base map show where the individual locations that make up SS014 are located. Mr. Heinrich presented a brief description of the areas detailed on the slides.

The nature and extent of contamination was presented by location. Two wells, 224x37 and 223x37, have no data posted as the last samples taken at these sites were collected in the mid-1990s.

Conclusions were presented, along with the next steps to take. Conclusion at sites 4 and 5 was that there was not a significant source of contamination. The steps to take for sites 1, 2, and 3 were presented as phases: 1. Define extent (may need to install additional wells); 2. Evaluate suitability of monitored natural attenuation (MNA); and 3. Prepare RA report to document results. Sampling is scheduled to begin in April.

B. Annual GWTP RPO Report

Mr. Elliott presented the annual GWTP RPO report (see Attachment 7). The report summarizes 2008 data. Mr. Elliott presented information concerning each treatment plant, highlighting certain areas within each plant's operation.

The 20,000 pound carbon vessels at the Central Plant will be changed out in the next few weeks. Very expensive to do, but worth the savings in operation costs in the long run. The vernal pools in the North area dry up sometime after the last rainfall; the soil has to be dry before fieldwork can start. It may be July or August before it is dry enough for heavy equipment.

C. Program Update, Management Overview Briefing

Mr. Wray gave an update on activities completed, in progress and upcoming (see Attachment 8). In keeping with the triad approach to the project, this presentation is given to keep everyone informed on what's been done and what's upcoming. The dates shown are for the pre-draft versions.

Mr. Salcedo asked for a copy of the presentation for planning purposes. Once again, it was brought up that the agencies review the PDB Tech Memo as quickly as

possible. Mr. Chang also asked for a copy of the field schedule, to aid in planning for someone to come out from EPA.

4. NEW ACTION ITEM REVIEW

None.

5. PROGRAM/ISSUES/UPDATE

There was discussion at the meeting concerning the digital signature on all the emails from TAFB. DTSC has trouble opening those emails. Mr. Anderson will look into other ways to send emails without the digital signature.

Mr. Anderson mentioned the funding for ITSI that Mr. Linbrunner brought up earlier.

6. POTENTIAL RESPONSE TO COMMENTS MEETINGS

A. Vapor Intrusion Report

Group will meet on Monday, 30 March 2009.

B. ST032 Tech Memo

No comments need to be discussed.

C. SS030 Work Plan

EPA is fine with the responses received.

General Discussion

Mr. Anderson brought up the subject of Potrero Hills. TAFB is interested in what EPA wants to see happen there in support of the upcoming Land Use Control (LUC) ROD, when the site is put back into CERCLA. It would be helpful if EPA could provide detail on the type of data needed to support the LUC ROD. First of all, contacting the WB representative (Mr. Kent Aue) and discussing the work is important. Also EPA and Travis AFB need to keep Mr. Friedman in the loop. Mr. Chang explained he doesn't need extensive details, but something in writing for the record. He has not received information on what is going on at this site. It appears that when the PM changed at the WB, the other agencies fell off the email list. Both EPA and DTSC asked to be kept in the loop for Potrero Hills. Mr. Chang recommended that TAFB send him information about the project status and future

activities; he will send a list of broad categories he would like to see addressed and keep as a memorandum for record.

Mr. Duke asked Mr. Salcedo if he would be interested in giving a presentation of TerraDex at an upcoming meeting. Mr. Salcedo said yes, especially if the internet is available for him to use, he could do it at the next RPM meeting.

5. Action Items

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	Update document schedule to include dates for Work Plan for Sediment Sites	Apr 2009	Open
2.	Air Force	Update document schedule to include dates for interim plans for FT005	Apr 2009	Open
3.	Air Force	Coordinate site visit of sediment excavations with RAB members	TBD	Open
4.—	Air Force	Notification to agencies about upcoming work at LF044	March 2009	Closed
5.—	Air Force	Changing March RPM meeting to teleconference	March 2009	Closed

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

1. ADMINISTRATIVE

- A. START TELECONFERENCE LINE FOR USACE, DESZO LINBRUNNER ,
CALL IN NUMBER IS (707) 424-8811
- B. PREVIOUS MEETING MINUTES
- C. ACTION ITEM REVIEW
- D. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS

- A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)
- B. ST027C FIELD EFFORT (LONNIE)
- C. LF044 POTENTIAL CONSTRUCTION PROJECT (GLENN)
- D. VAPOR INTRUSION ASSESSMENT STATUS (GLENN)
- E. PHYTO AREA STUDY SCHEDULE (GLENN)

3. PRESENTATIONS

- A. SS014 TIER 1 POCO EVALUATION WORK PLAN
- B. ANNUAL GWTP RPO REPORT
- C. PROGRAM UPDATE; ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

6. POTENTIAL RESPONSE TO COMMENTS MEETINGS

- A. VI REPORT (WILL ALSO BE DISCUSSED WITH EPA AT MARCH 30 MEETING)
- B. ST032 TECH MEMO
- C. SS030 WORK PLAN

Travis AFB Master Document Schedule

Annual Meeting and Teleconference Schedule

Suppliers Teleconference (8:30 a.m. - 10:00 a.m.)	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.)
1-27-09	1-28-09		—
2-24-09	2-25-09		—
3-24-09	3-25-09		—
4-21-09	4-22-09		4-23-09
5-19-09	5-20-09		—
6-23-09	6-24-09		—
7-21-09	7-22-09		—
8-25-09	8-26-09		—
9-22-09	9-23-09		—
10-20-09	10-21-09		10-22-09
—	—	11-16-09	—
12-08-09	12-09-09		—

Travis AFB Master Document Schedule

PRIMARY DOCUMENTS				
Life Cycle	Basewide Groundwater Travis, Glenn Anderson		Potrero Hills Annex Travis, Glenn Anderson	HSP Update Travis, Glenn Anderson CH2M Hill, Stephanie DeWitt
	Proposed Plan	ROD	ROD	Plan
Scoping Meeting	NA	1-24-07	180 days after Water Board Order Rescinded	NA
Predraft to AF/Service Center	12-04-09	3-26-10	+ 360 days	11-12-08
AF/Service Center Comments Due	12-28-10	4-28-10	+ 420 days	11-26-08
Draft to Agencies	1-08-10	5-28-10	+ 480 days	12-22-08
Draft to RAB	1-08-10	5-28-10	+ 480 days	12-22-08
Agency Comments Due	2-17-10	7-30-10	+ 540 days	1-20-09
Response to Comments Meeting	2-24-10	8-13-10	+ 555 days	NA
Agency Concurrence with Remedy	3-08-10	NA	+ 570 days	NA
Public Comment Period	4-14-10/05-14-10	NA	+ 615 to 645 days	NA
Public Meeting	4-22-10	NA	+ 625 days	NA
Response to Comments Due	3-08-10	8-30-10	+ 640 days	2-23-09
Draft Final Due	3-08-10	8-30-10	+ 640 days	NA
Final Due	4-07-10	9-30-10	+ 700 days	2-23-09

PRIMARY DOCUMENTS			
	QAPP Update Travis, Glenn Anderson CH2M Hill, Mark Fesler	Comprehensive Site Evaluation Phase II Travis, Glenn Anderson Sky Research, John Maus	Focus Feasibility Study Travis, Glenn Anderson CH2M Hill, Loren Krook
Life Cycle	Plan	Work Plan	FFS
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	12-18-08	01-15-09	5-13-09
AF/Service Center Comments Due	1-09-09	02-12-09	5-27-09
Draft to Agencies	2-06-09	03-05-09	6-10-09
Draft to RAB	2-06-09	03-05-09	6-10-09
Agency Comments Due	4-10-09	04-09-09	8-12-09
Response to Comments Meeting	4-22-09	04-22-09	8-26-09
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA
Response to Comments Due	05-20-09	04-29-09	9-29-09
Draft Final Due	NA	04-29-09	9-29-09
Final Due	05-20-09	05-29-09	10-29-09

SECONDARY DOCUMENTS					
Life Cycle	Action Plan Travis, Glenn Anderson CH2M HILL, Chuck Elliott	Site ST027 Plume Delineation Work Plan Travis, Lonnie Duke CH2M HILL, Gavin Heinrich	LF007C RPO Work Plan Travis, Glenn Anderson CH2M Hill, Loren Krook	Phases 1 and 2 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	NA	NA	NA
Predraft to AF/Service Center	11-21-08	11-21-08	11-28-08	12-8-08	4-17-09
AF/Service Center Comments Due	1-09-09	11-28-08	12-5-08	12-15-08	5-1-09
Draft to Agencies	1-28-09	12-9-08	12-10-08	1-12-09	5-15-09
Draft to RAB	1-28-09	12-9-08	12-10-08	1-12-09	5-15-09
Agency Comments Due	3-26-09	2-11-09	2-11-09	2-17-09	6-15-09
Response to Comments Meeting	4-9-09	1-25-09	2-25-09	2-25-09	6-17-09
Response to Comments Due	4-30-09	4-3-09	3-10-09	3-25-09	7-1-09
Draft Final Due	NA	NA	NA	NA	NA
Final Due	4-30-09	4-3-09	3-10-09	3-25-09	7-1-09
Public Comment Period	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA

*Will reschedule when all comments are received.

SECONDARY DOCUMENTS

	ST032 Tech Memo Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	SS030 RPO Work Plan Travis, Lonnie Duke CH2M HILL, Loren Krook	2008 Annual GWTP RPO Report Travis AFB, Lonnie Duke CH2M HILL, Daniel Chern	Field Sampling Plan Addendum Travis AFB, Glenn Anderson CH2M HILL, Loren Krook	SS014 Tier 1 POCO Evaluation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich
Life Cycle					
Scoping Meeting	NA	NA	NA	NA	NA
Predraft to AF/Service Center	1-23-09	1-08-09	3-25-09	4-02-09	3-18-09
AF/Service Center Comments Due	2-06-09	1-15-09	4-01-09	4-09-09	3-25-09
Draft to Agencies	2-19-09	2-09-09	4-08-09	4-16-09	4-01-09
Draft to RAB	2-19-09	2-09-09	4-08-09	4-16-09	4-01-09
Agency Comments Due	3-23-09	3-11-09	5-06-09	5-18-09	4-29-09
Response to Comments Meeting	3-25-09	3-25-09	5-20-09	5-20-09	5-4-09
Response to Comments Due	4-03-09	4-08-09	5-27-09	6-18-09	5-11-09
Draft Final Due	NA	NA	NA	NA	NA
Final Due	4-03-09	4-08-09	5-27-09	6-18-09	5-11-09
Public Comment Period	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA

SECONDARY DOCUMENTS

Life Cycle	Natural Attenuation Assessment Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Passive Diffusion Bag (PDB) Tech Memo Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	DP039 RPO Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick	SD036/SD037 RPO Work Plan Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick	ST018 Remedial Action Work Plan Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich
Scoping Meeting	NA	NA	NA	NA	NA
Predraft to AF/Service Center	4-15-09	4-01-09	5-08-09	5-22-09	6-12-09
AF/Service Center Comments Due	4-22-09	4-08-09	5-15-09	5-29-09	6-19-09
Draft to Agencies	4-29-09	4-15-09	5-22-09	6-19-09	7-10-09
Draft to RAB	4-29-09	4-15-09	5-22-09	6-19-09	7-10-09
Agency Comments Due	5-29-09	5-15-09	6-19-09	7-17-09	8-07-09
Response to Comments Meeting	6-24-09	5-20-09	6-24-09	7-24-09	8-26-09
Response to Comments Due	7-01-09	6-19-09	8-14-09	9-11-09	9-11-09
Draft Final Due	NA	NA	NA	NA	NA
Final Due	7-01-09	6-19-09	8-14-09	9-11-09	9-11-09
Public Comment Period	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA

INFORMATIONAL DOCUMENTS		
Life Cycle	Quarterly Newsletters (Apr 2009) Travis, Glenn Anderson	2007/2008 GSAP Annual Report Travis, Lonnie Duke CH2M HILL, Leslie Royer
Scoping Meeting	NA	NA
Predraft to AF/Service Center	NA	10-22-08
AF/Service Center Comments Due	NA	11-05-08
Draft to Agencies	3-19-2009	12-01-08
Draft to RAB	NA	12-01-08
Agency Comments Due	4-2-2009	02-02-09
Response to Comments Meeting	TBD	2-25-09
Response to Comments Due	4-6-2009	3-16-09
Draft Final Due	NA	NA
Final Due	4-13-2009	3-16-09
Public Comment Period	NA	NA
Public Meeting	NA	NA

South Base Boundary Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 103

Reporting Period: 1 – 28 February 2009

Date Submitted: 18 March 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 – February 2009

Operating Time: **668 hours**

Percent Uptime: 99.4%

Electrical Power Usage: 15,660 kWh

Gallons Treated: **2.9 million gallons**

Gallons Treated Since July 1998: **642 million gallons**

Volume Discharged to Union Creek: **2.9 million gallons**

VOC Mass Removed: **1.6 pounds^a**

VOC Mass Removed Since July 1998: **359 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: \$3,139^b

Monthly Cost per Pound of Mass Removed: \$5,049^{bc}

^a Calculated using February 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.

^c Monthly cost per pound of mass removed has increased due to a decrease in groundwater extraction flow rate.

Flow Rates

Average Groundwater Total Flow Rate: 71.7 gpm^a

Average Flow Rate (gpm) ^b							
FT005				SS029		SS030	
EW01x05	3.3	EW736x05	3.8	EW01x29	1.0	EW01x30	10.2
EW02x05	1.8	EW737x05	Off line ^c	EW02x29	9.8	EW02x30	5.7
EW03x05	4.5	EW742x05	Off line ^c	EW03x29	Off line ^d	EW03x30	Off line ^d
EW731x05	Off line ^c	EW743x05	Off line ^d	EW04x29	9.0	EW04x30	Off line ^e
EW732x05	Off line ^c	EW744x05	Off line ^c	EW05x29	1.1	EW05x30	11.7
EW733x05	Off line ^c	EW745x05	Off line ^c	EW06x29	14.6	EW06x30	Off line ^f
EW734x05	Off line ^e	EW746x05	Off line ^c	EW07x29	Off line ^e	EW711x30	Off line ^e
EW735x05	3.6						
FT005 Total:		17.0		SS029 Total:		35.5	SS030 Total: 27.6

^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 February 2009 due to malfunctioning equipment.

^f Extraction well was not operational at time of measurement due to recharging well.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP (water)	9 February 2009	11:00	9 February 2009	15:15	Installed an hour meter on the air stripper.
SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 2 February 2009. Sample results are presented in Table 1. The total VOC concentration (66.9 µg/L) in the influent sample has decreased since the January 2009 sample (83.5 µg/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.

EW734x05 was off line in February 2009 because of severe buildup on the pressure transmitter housing and sensor ports. In addition, a problem was traced to the wire terminal at the fused connection for the transmitter. The pressure transmitter is currently being evaluated, and EW734x05 is expected to be back online in March 2009.

EW07x29, EW04x30, and EW711x30 were off line in February 2009 due to malfunctioning equipment. The pump in EW07x29 was cycling on and off; the variable frequency drive (VFD) will be replaced to resolve the issue. The pump for EW04x30 was not pumping water because the splines were likely stripped; therefore, the pump motor will be replaced or repaired. EW711x30 has stripped splines and a faulty water level transmitter. The pump motor and transmitter will be replaced.

An hour meter was installed at the air stripper blower to more accurately record the operating time at the SBBGWTP. The tubing for the metering pump was also repaired.

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 were sampled in second quarter and fourth quarter 2008 as part of the annual and semi-annual GSAP events. The extraction wells are currently being assessed for rebound and plume stability at Site FT005. An evaluation of the rebound study will be presented in the *South Base Boundary Groundwater Treatment Plant 2008 Annual Remedial Process Optimization Report* (CH2M HILL, 2009, in progress).

No other optimization activities were conducted in February 2009.

Table 1

Summary of Groundwater Analytical Data for February 2009 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	2 February 2009 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.18	0	ND	ND
Carbon Tetrachloride	0.5	0.22	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.10	0	ND	ND
1,1-Dichloroethane	5.0	0.19	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	0.16	0	3.9	ND
trans-1,2-Dichloroethene	5.0	0.21	0	ND	ND
Methylene Chloride	5.0	0.27	0	ND	ND
Tetrachloroethene	5.0	0.16	0	ND	ND
1,1,1-Trichloroethane	5.0	0.20	0	ND	ND
1,1,2-Trichloroethane	5.0	0.14	0	ND	ND
Trichloroethene	5.0	0.50	0	63	ND
Vinyl Chloride	0.5	0.19	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.12	0	ND	ND
Ethylbenzene	5.0	0.10	0	ND	ND
Toluene	5.0	0.14	0	ND	ND
Xylenes	5.0	0.10 - 0.21	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	50	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	90	0	NM	ND
Total Suspended Solids (mg/L)	NE	4.0	0	ND	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: 115

Reporting Period: 1 – 28 February 2009

Date Submitted: 18 March 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 – February 2009

Operating Time:

CGWTP: 671 hours

WTTP: Water: 671 hours

Vapor: 651 hours

ThOx: 652 hours

ThOx: Natural Gas Usage: 2,494 therms

Percent Uptime:

CGWTP: 99.9%

WTTP: Water: 99.9%

Vapor: 96.9%

ThOx: 97.0%

Electrical Power Usage:

CGWTP: 7,470 kWh

WTTP: 18,677 kWh

ThOx: 8,338 kWh

Gallons Treated: **2.8 million gallons**

Gallons Treated Since January 1996: **406 million gallons**

VOC Mass Removed:

6.7 lbs (groundwater only)^a

5.2 lbs (vapor only)^b

VOC Mass Removed Since January 1996:

2,418 lbs from groundwater

8,610 lbs from vapor

UV/Ox DRE: 99.9%

ThOx DRE: 100%

Rolling 12-Month Cost per Pound of Mass Removed: \$665^c

Monthly Cost per Pound of Mass Removed: \$1,267^{cd}

^a Calculated using February 2009 EPA Method SW8260B analytical results.

^b Total VOC vapor mass removed was calculated using December 2008 EPA Method TO-14 analytical results for the ThOx system and January 2009 EPA Method TO-14 analytical results for the WTTP SVE system.

^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and electric and natural gas costs related to operation of the system.

^d Higher monthly cost per pound of mass removed is due to a decrease in vapor mass removed.

DRE = destruction removal efficiency

UV/Ox = ultraviolet oxidation

Flow Rates

Average Groundwater Flow Rate: **69.6 gpm^a**

Location	Average Flow Rate	
	Groundwater (gpm) ^b	Soil Vapor (scfm)
EW01x16	23.4	NA
EW02x16	7.2	NA
EW03x16	1.0	NA ^c
EW605x16	14.1	NA ^c
EW610x16	5.1 ^d	NA ^c
WTTP	23.2 ^e	152
ThOx	<0.1 ^e	55.5

^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 the extraction well was restarted on 18 February 2009; flow rate is based on the average of the weekly readings.

^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	3.9	EW705x37	1.2	EW501x33	1.0	EW719x08	Off line ^c
EW700x37	4.5	EW706x37	0.6	EW503x33	1.4	EW720x08	Off line ^c
EW701x37	1.2	EW707x37	0.9	EW01x34	0.3	EW721x08	Off line ^c
EW702x37	0.8	EW510x37	3.9	EW03x34	1.0	EW593x36	2.1
EW703x37	0.8	EW511x37	1.5	EW563x39	Off line ^b	EW594x36	0.9
EW704x37	1.9	EW555x43	0.4	EW782x39	Off line ^b	EW595x36	0.4
gpm—gallons per minute							
^a Extraction well flow rates are based on the average of the weekly readings.							
^b Extraction wells were shut off to facilitate the Bioreactor Sustainability Study at Site DP039.							
^c Extraction wells were shut off to support a rebound study at Site LF008.							

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater):					
CGWTP	27 February 2009	13:00	27 February 2009	14:00	Test backwash system at CGWTP
WTTP (Groundwater):					
WTTP	27 February 2009	13:00	27 February 2009	14:00	CGWTP was shutdown (see above)
WTTP (Vapor):					
WTTP	5 February 2009	19:30	6 February 2009	08:30	Electrical power surge/voltage spike
WTTP	27 February 2009	13:00	27 February 2009	14:00	CGWTP was shutdown (see above)
ThOx (Vapor):					
ThOx	5 February 2009	19:30	6 February 2009	14:30	Electrical power surge/voltage spike
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 2 February 2009. Groundwater sample results are summarized in Table 1. The total VOC concentration (286.8 µg/L) in the February 2009 CGWTP influent groundwater sample has decreased since the January 2009 sampling (326.2 µg/L). TCE, cis-1,2-DCE, trans-1,2-DCE, PCE, and 1,1-DCE (J-flagged) were detected in the system influent. There were no detections of these contaminants after treatment by UV-Ox. However, a trace amount of chloroform was detected after the UV-Ox treatment. Cis-1,2-dichloroethene, chloroform, and trichloroethene were present after treatment by the granular activated carbon (GAC) sample points. Cis-1,2-dichloroethene and trichloroethene were also detected in the system effluent; however, concentrations are less than their respective effluent limits. The detections in these samples may be attributed to desorption from the GAC.

In September 2008, the extraction well pump for EW610x16 began to malfunction, and its pumping rate decreased. The extraction pump and pressure transmitter was removed and inspected on 18 February 2009 after construction activities had subsided, and access to the well vault was achieved. After inspection, it was determined that the pump failure was caused by a combination of stripped splines between the pump motor and centrifugal stages, and a fouled pressure transmitter. The pump was repaired and placed back into the well. The pressure transmitter in well EW610x16 is currently being repaired and is expected to be fixed in March 2009. Water level information in well EW610x16 is obtained by the pressure transmitter and used to control operation of the extraction pump. With the pressure transmitter in place, the extraction pump is turned off before the water level within the well drops below the pump, thus preventing dry operation. Since the pressure transmitter is not currently in place, the extraction well is only online when the operator is on-site and able to visually ensure that the pump will not run dry. Fully automatic operation of EW610x16 is expected to resume in March 2009.

Several other maintenance activities were performed in February 2009, including: the flow meter LCD screen for EW01x16 was replaced; the bag filter-house seal fittings were repaired; anti-siphon valves were installed; and the backwash system was tested at the CGWTP.

Optimization Activities

No optimization activities were conducted in February 2009.

Table 1

Summary of Groundwater Analytical Data for February 2009 – Central Groundwater Treatment Plant

				2 February 2009 (µg/L)					
				Influent	After UV/OX	After Carbon 1 Effluent	After Carbon 2 Effluent	After Carbon 3 Effluent	System Effluent
Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C						
Halogenated Volatile Organics									
Bromodichloromethane	5.0	0.18 – 0.36	0	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.22 – 0.44	0	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.17 – 0.34	0	ND	0.17 J	0.20 J	0.17 J	0.22 J	ND
1,2-Dichlorobenzene	5.0	0.16 – 0.32	0	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.13 – 0.26	0	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.10 – 0.20	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.19 – 0.38	0	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.22 – 0.44	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.24 – 0.48	0	0.81 J	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.16 – 0.32	0	52	ND	0.30 J	0.44 J	0.49 J	0.40 J
trans-1,2-Dichloroethene	5.0	0.21 – 0.42	0	2.9	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.27 – 0.54	0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.16 – 0.32	0	1.1	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.20 – 0.40	0	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.14 – 0.28	0	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.50 – 1.0	0	230	ND	2.5	2.3	2.1	1.6
Vinyl Chloride	0.5	0.19 – 0.38	0	ND	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics									
Benzene	1.0	0.12 – 0.24	0	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.10 – 0.20	0	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.14 – 0.28	0	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.10 - 0.42	0	ND	ND	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

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 105

Reporting Period: 1 – 28 February 2009

Date Submitted: 18 March 2009

This data sheet includes the following: results for the operation of the groundwater extraction systems; a summary of flow rates for the individual extraction wells; a brief description of any shutdowns or significant events related to the systems; and a summary of analytical results for selected samples collected.

Operations Summary – February 2009

Operating Time: **Water:** 369 hours^a

Percent Uptime: **Water:** 54.9%

Electrical Power Usage: **6,339 kWh**

Gallons Treated: **0.13 million gallons**

Gallons Treated Since March 2000: **82.5 million gallons**

Volume Discharged to Duck Pond: **0.13 million gallons**

Volume Discharged to Storm Drain: **0 gallons**

Percentage of Treated Water to Beneficial Use: **100%**

VOC Mass Removed:

VOC Mass Removed Since March 2000:

0.03 lbs (groundwater only)^b

174.3 lbs from groundwater

Rolling 12-Month Cost per Pound of Mass Removed: \$141,517^c

Monthly Cost per Pound of Mass Removed: \$111,092^c

^a NGWTP was shut down on 17 February 2009 due to standing water forming in vernal pools at Site LF007C.

^b Calculated using February 2009 EPA Method SW8260B analytical results.

^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. High costs are due to low influent groundwater concentrations and low flow rates.

Flow Rates

Average Groundwater Total Flow Rate: **5.9 gpm^a**

Location	Average Flow Rate (gpm) ^b
EW565x31	Off line ^c
EW566x31	Off line ^c
EW567x31	Off line ^c
EW576x04	2.2
EW577x04	1.8
EW578x04	Off line ^c
EW579x04	Off line ^c
EW580x04	Off line ^c
EW621x04	3.2
EW622x04	1.8
EW623x04	1.1
EW614x07	0.0 ^d
EW615x07	0.0 ^d

^a The flow rate was calculated using the effluent discharge totalizer divided 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 shutdown for a one-year rebound study in December 2007 based on the *Work Plan for RPO Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007).

^d LF007 extraction wells were recharging at time of measurement. Note: the well pumps were turned off for the rainy season on 17 February 2009.

gpm = gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
NGWTP (water)	16 February 2009	09:45			Air stripper sump high level alarm.
NGWTP (water)	17 February 2009	13:00			NGWTP was shutdown due to standing water forming in the vernal pools at Site LF007C.
NGWTP = North Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 2 February 2009. Sample results are presented in Table 1. The total VOC concentration (28.6 µg/L) in the influent sample is essentially the same as the January 2009 influent sample (29.0 µg/L). Cis-1,2-dichloroethene (0.55 µg/L) and trichloroethene (28 µg/L) were detected in the influent sample..

VOCs were not detected in the effluent sample. TPH-G was detected at a concentration of 69 J µg/L in the effluent sample, which exceeds the instantaneous maximum discharge limit of 50 µg/L. Although this result is J-flagged, the potentially higher concentration in the effluent is likely due to the air stripper becoming scaled up from the process water stream. Prior to sample collection, the back pressure on the stripper had been increasing, which is indicative of scaling.

The NGWTP is currently offline due to standing water forming in the vernal pools in the vicinity of FT004 and LF007C. Prior to restarting the NGWTP, the air stripper will be acid washed and an effluent confirmation sample will be collected.

On 17 February 2009, the solar wells at Site LF007C (EW614x07 and EW615x07) were shut down for the rainy season. In addition, the NGWTP was shut down as proposed in the *Technical Memorandum for the Remedial Process Optimization (RPO) at Sites SD031, FT004, and LF007C* (Travis AFB, 10 June 2008), in conjunction with shutting down extraction at Site LF007C for the wet season.

Optimization Activities

On 4 December 2007, six extraction wells (EW565x31, EW566x31, EW567x31, EW578x04, EW579x04, and EW580x04) were shut down as part of a rebound study. These wells were sampled in second quarter and fourth quarter 2008 as part of the annual and semi-annual GSAP events. The extraction wells are currently being assessed for rebound and plume stability at Sites FT004 and SD031. An evaluation of the rebound study will be presented in the *North Groundwater Treatment Plant 2008 Annual Remedial Process Optimization Report* (CH2M HILL, 2009, in progress).

No other optimization activities were conducted in February 2009.

Table 1

Summary of Groundwater Analytical Data for February 2009 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	2 February 2009 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.18	0	ND	ND
Bromoform	5.0	0.10	0	ND	ND
Carbon Tetrachloride	0.5	0.22	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.10	0	ND	ND
1,3-Dichlorobenzene	5.0	0.13	0	ND	ND
1,4-Dichlorobenzene	5.0	0.10	0	ND	ND
1,1-Dichloroethane	5.0	0.19	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	0.16	0	0.55	ND
trans-1,2-Dichloroethene	5.0	0.21	0	ND	ND
Methylene Chloride	5.0	0.27	0	ND	ND
Tetrachloroethene	5.0	0.16	0	ND	ND
1,1,1-Trichloroethane	5.0	0.20	0	ND	ND
1,1,2-Trichloroethane	5.0	0.14	0	ND	ND
Trichloroethene	5.0	0.50	0	28	ND
Vinyl Chloride	0.5	0.19	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.12	0	ND	ND
Ethylbenzene	5.0	0.10	0	ND	ND
Toluene	5.0	0.14	0	ND	ND
Xylenes	5.0	0.10 – 0.21	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	50	0	NM	69 J
Total Petroleum Hydrocarbons – Diesel	50	100	0	NM	ND

^a In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

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

Site SS014 Tier 1 POCO Evaluation and MNA Assessment

Travis Air Force Base
California

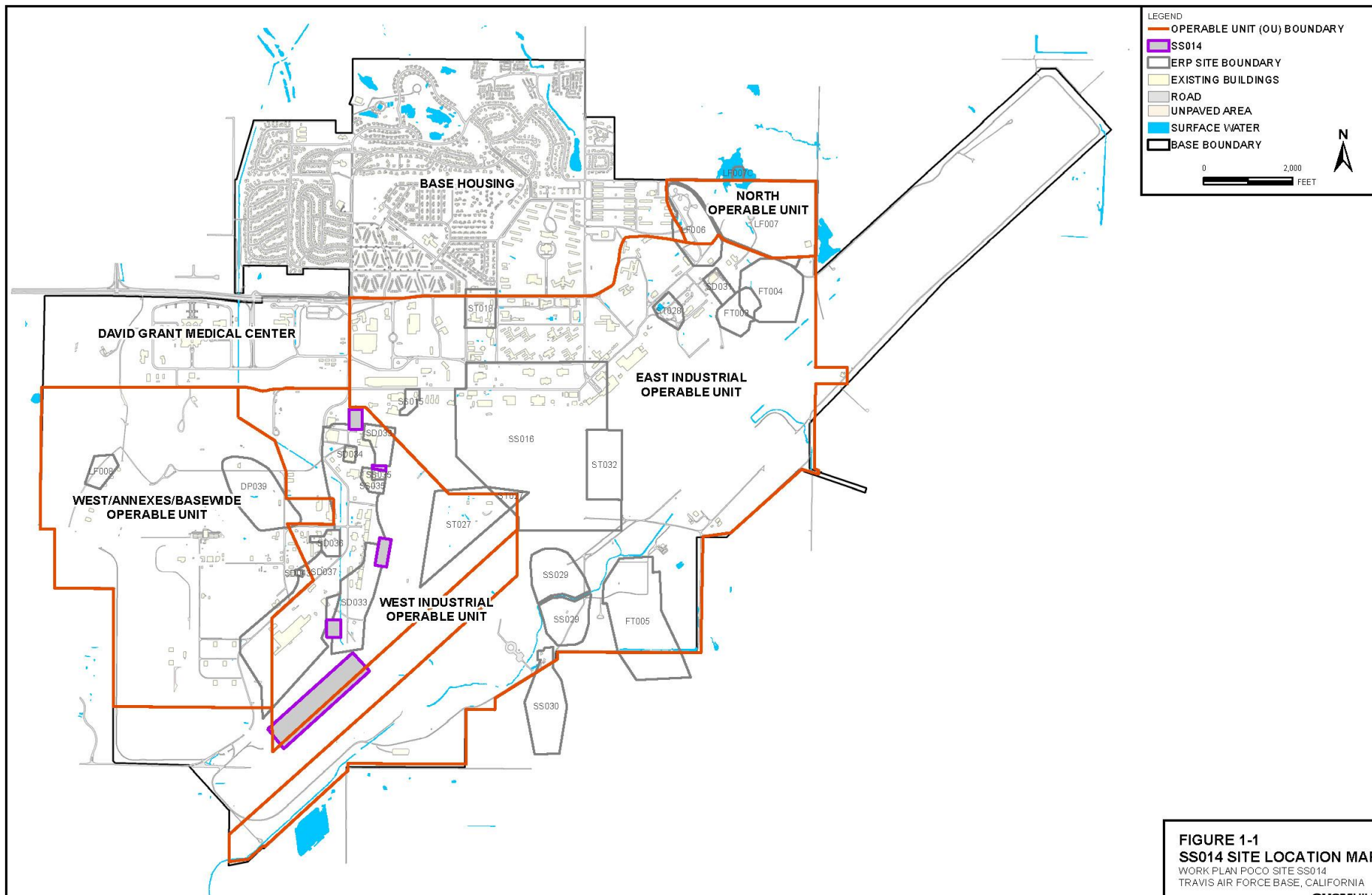
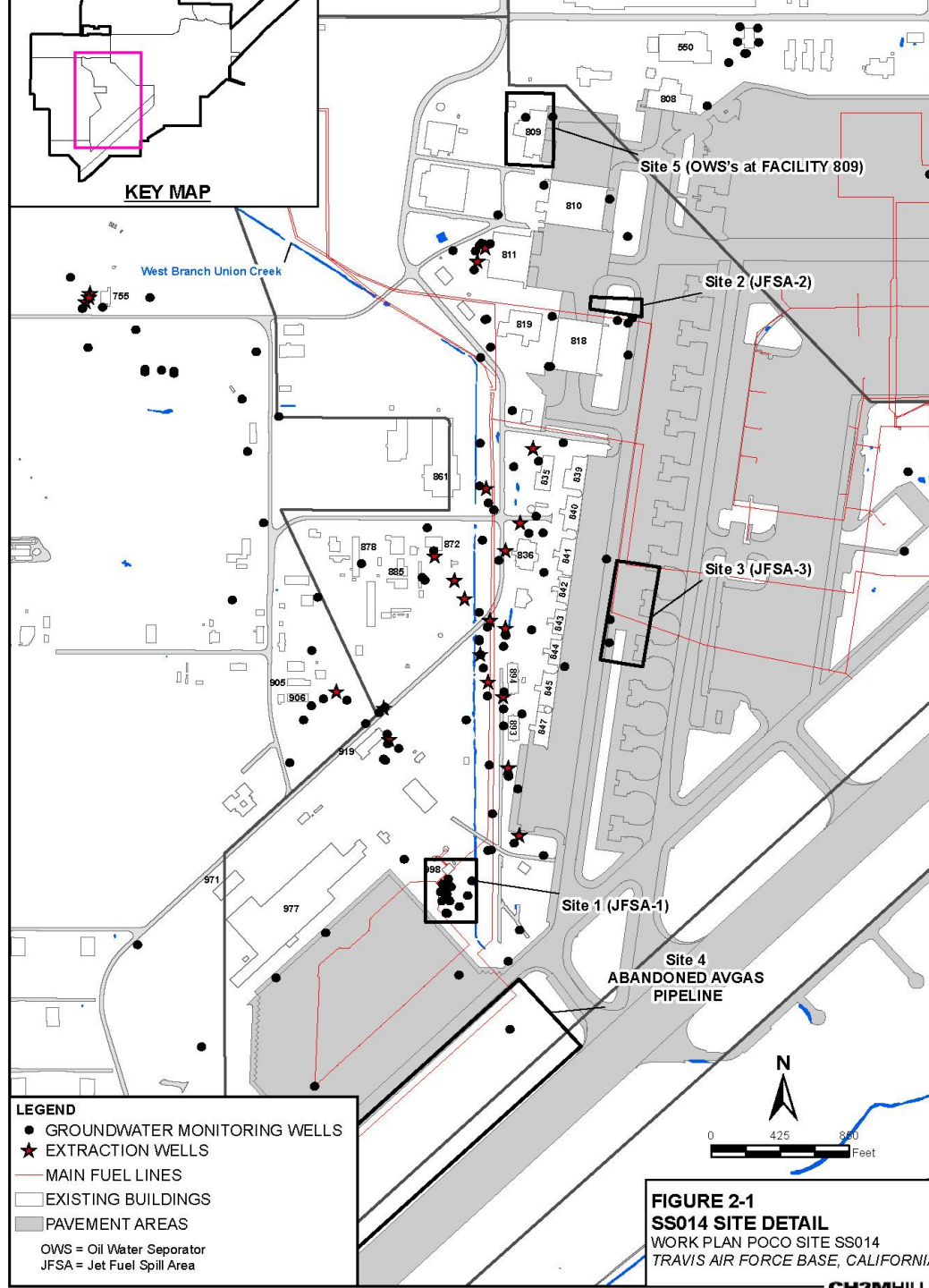


FIGURE 1-1
SS014 SITE LOCATION MAP
 WORK PLAN POCO SITE SS014
 TRAVIS AIR FORCE BASE, CALIFORNIA

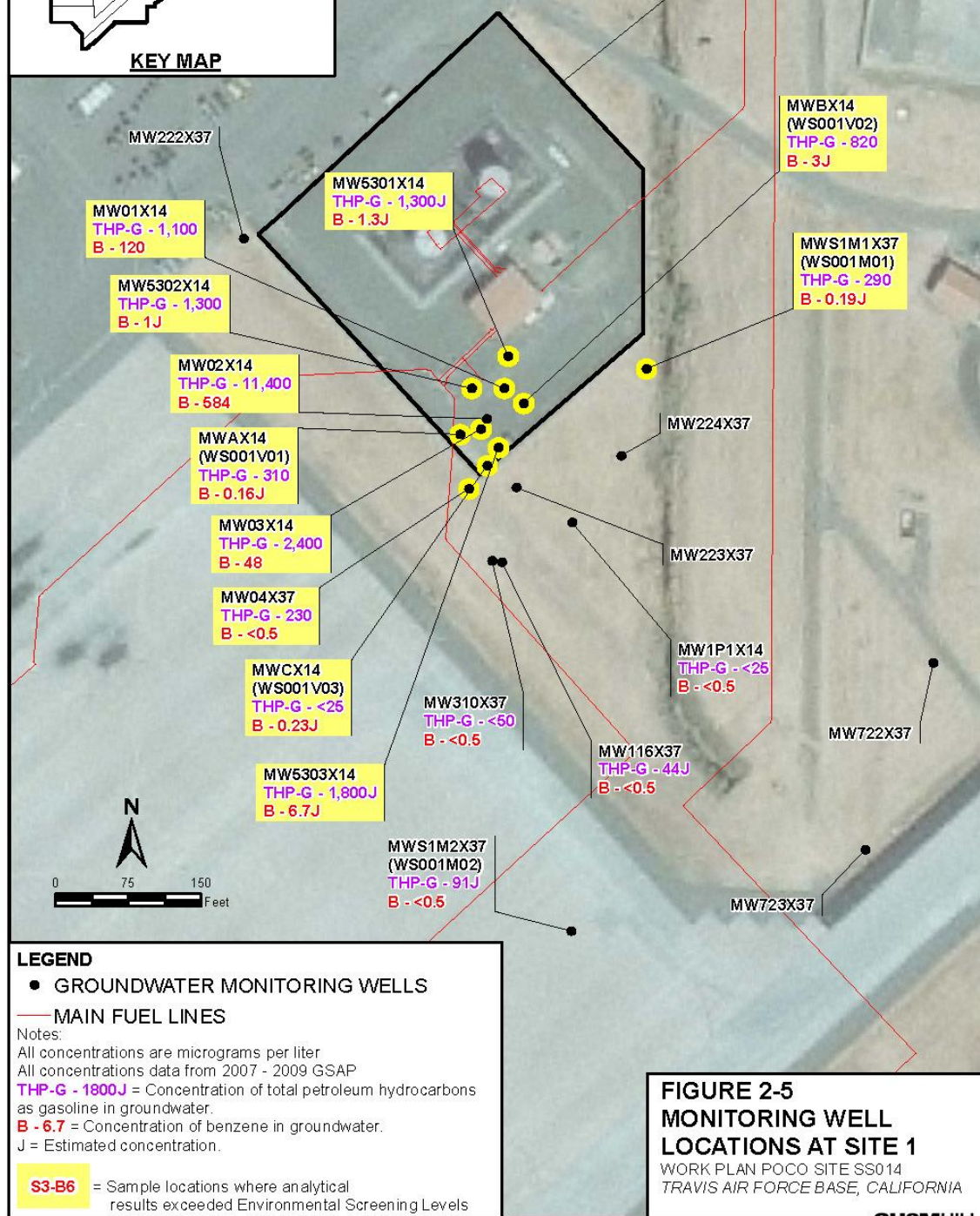
SS014 Site Description

- Five non-contiguous sites located in WIOU:
 - **Jet Fuel Spill Area (JFSA) -1:** 15,000 gallons of jet fuel (JP-4) released from JP-4 pipeline in 1978. Approximately 6,000 gallons were recovered.
 - **JFSA-2:** 18,000 gallons of JP-4 released from JP-4 pipeline in 1984. Approximately 17,000 gallons were recovered.
 - **JFSA-3:** Undocumented quantity of JP-4 released from JP-4 pipeline in 1990. Approximately 5,000 gallons were recovered.
 - **Abandoned Aviation Gas (AVGAS) Pipeline:** No evidence of releases from AVGAS pipeline
 - **Oil Water Separators (OWS) at Building 809:** two OWS's were replaced in 1994. Potential for releases based on condition of OWS's and maintenance records



Nature and Extent of Contamination

- Site 1 (JFSA-1)
 - JP-4 Removal Investigation (1993) and WIOU RI (1996) - Soil contamination from LNAPL smear zone
 - Periodic LNAPL recovery between 1993 and 2005
 - GSAP (2007 to 2008)
 - LNAPL no longer present in site-related wells
 - Dissolved TPH and BTEX plume extends approximately 150 feet downgradient of source area (Fuel Storage Area G)
 - TPH and BTEX concentrations elevated in in source area monitoring wells and monitoring well MWS1M1X37 (southwest of source area)
 - Contamination only partially defined south of source area monitoring wells and MWS1M1X37

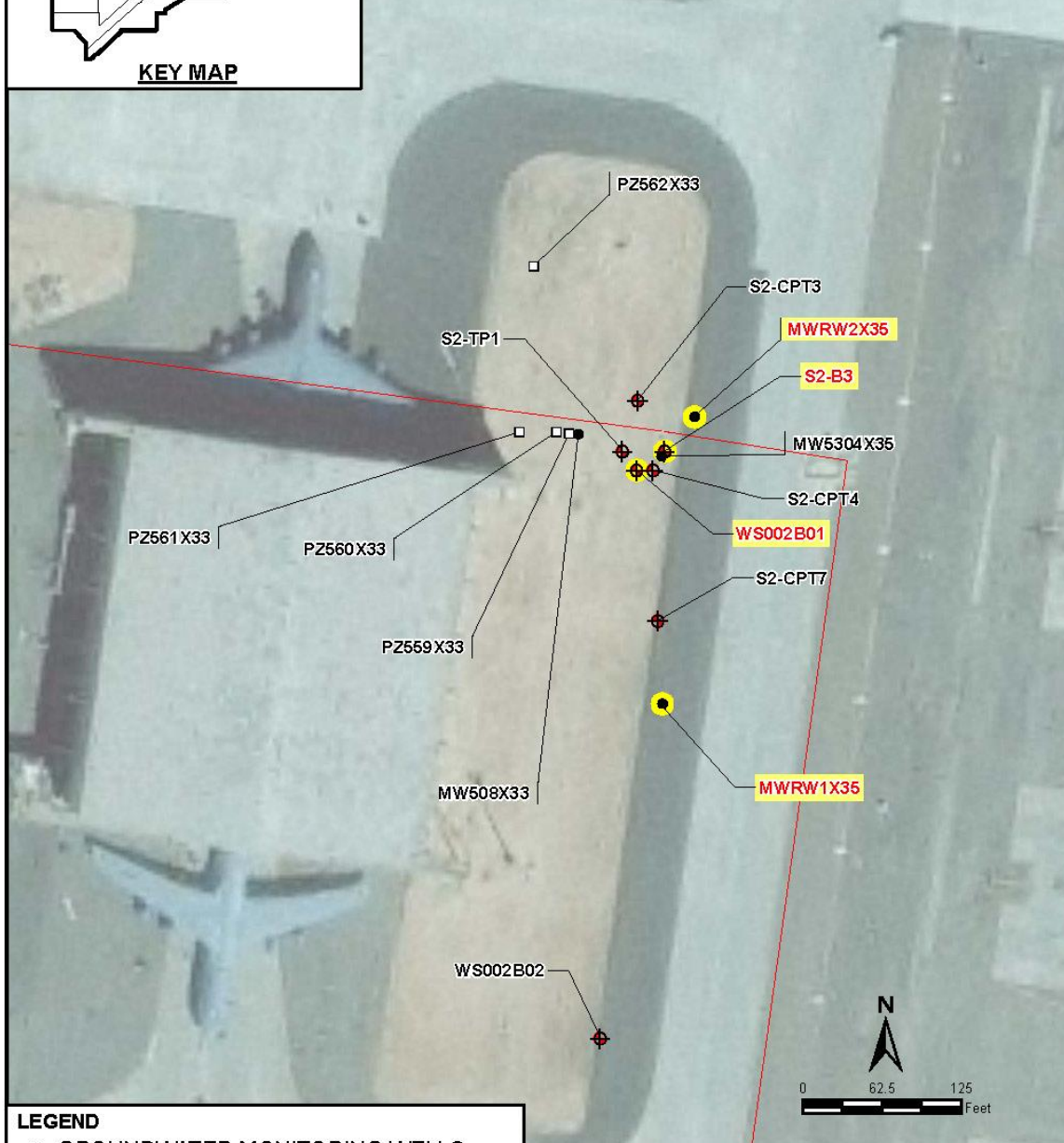


Nature and Extent of Contamination Continued

- Site 2 (JFSA-2):
 - JP-4 Removal Investigation (1993) and WIOU RI (1996) - Soil contamination from LNAPL smear zone.
 - GSAP
 - Site-related monitoring wells have not been sampled since 1999 but wells are gauged routinely during GSAP
 - No evidence of LNAPL in sampling data collected in 1999 or recent (2007-2008) depth to water data.
 - Elevated fuel hydrocarbon concentrations in most recent sample from source area well MWS3M2X37 (1999).



KEY MAP



LEGEND

- GROUNDWATER MONITORING WELLS
- PIEZOMETER
- ⊕ SOIL SAMPLE LOCATIONS
- MAIN FUEL LINES

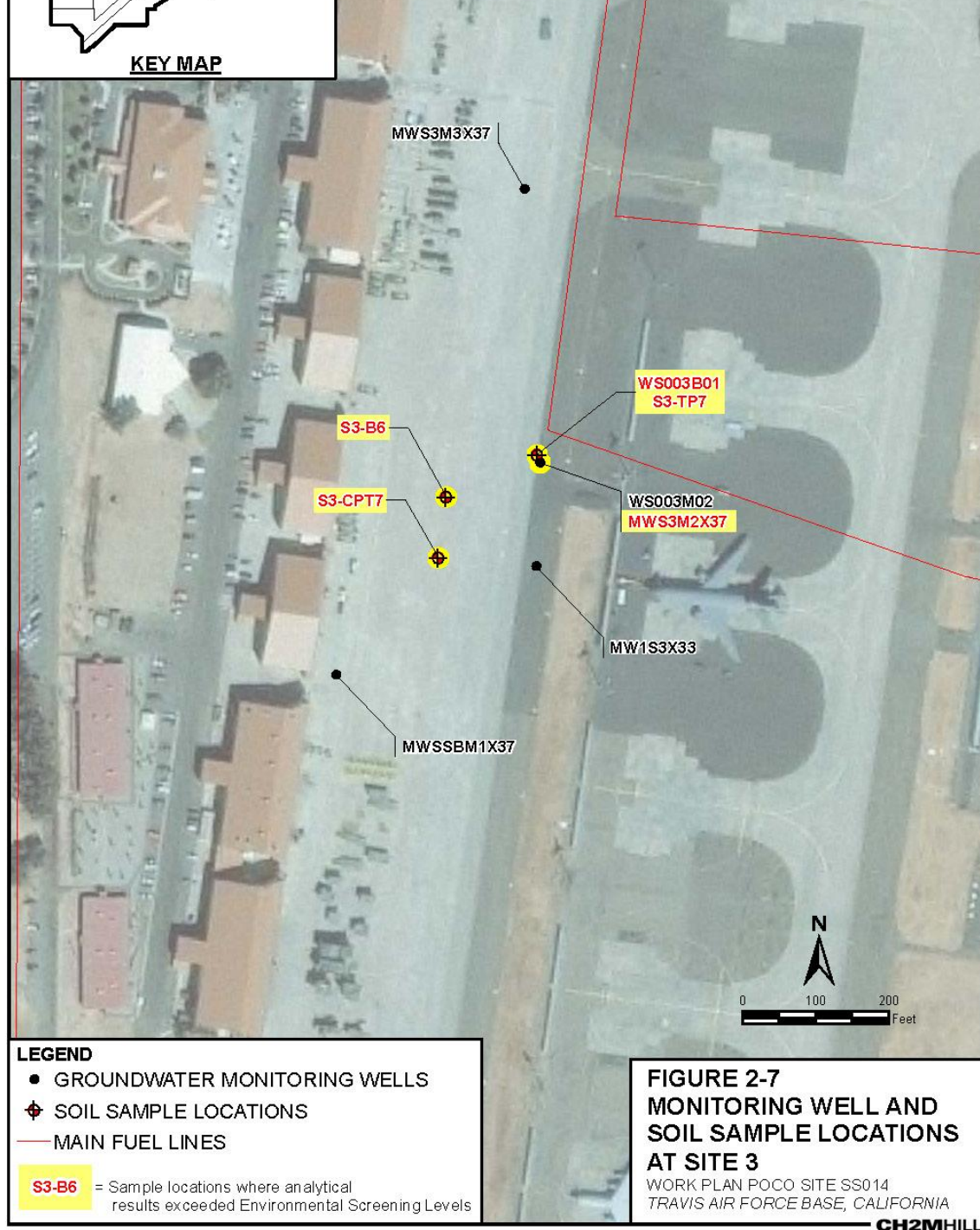
S2-B3 = Sample locations where analytical results exceeded Environmental Screening Levels

FIGURE 2-6
MONITORING WELL AND
SOIL SAMPLE LOCATIONS
AT SITE 2

WORK PLAN POCO SITE SS014
TRAVIS AIR FORCE BASE, CALIFORNIA

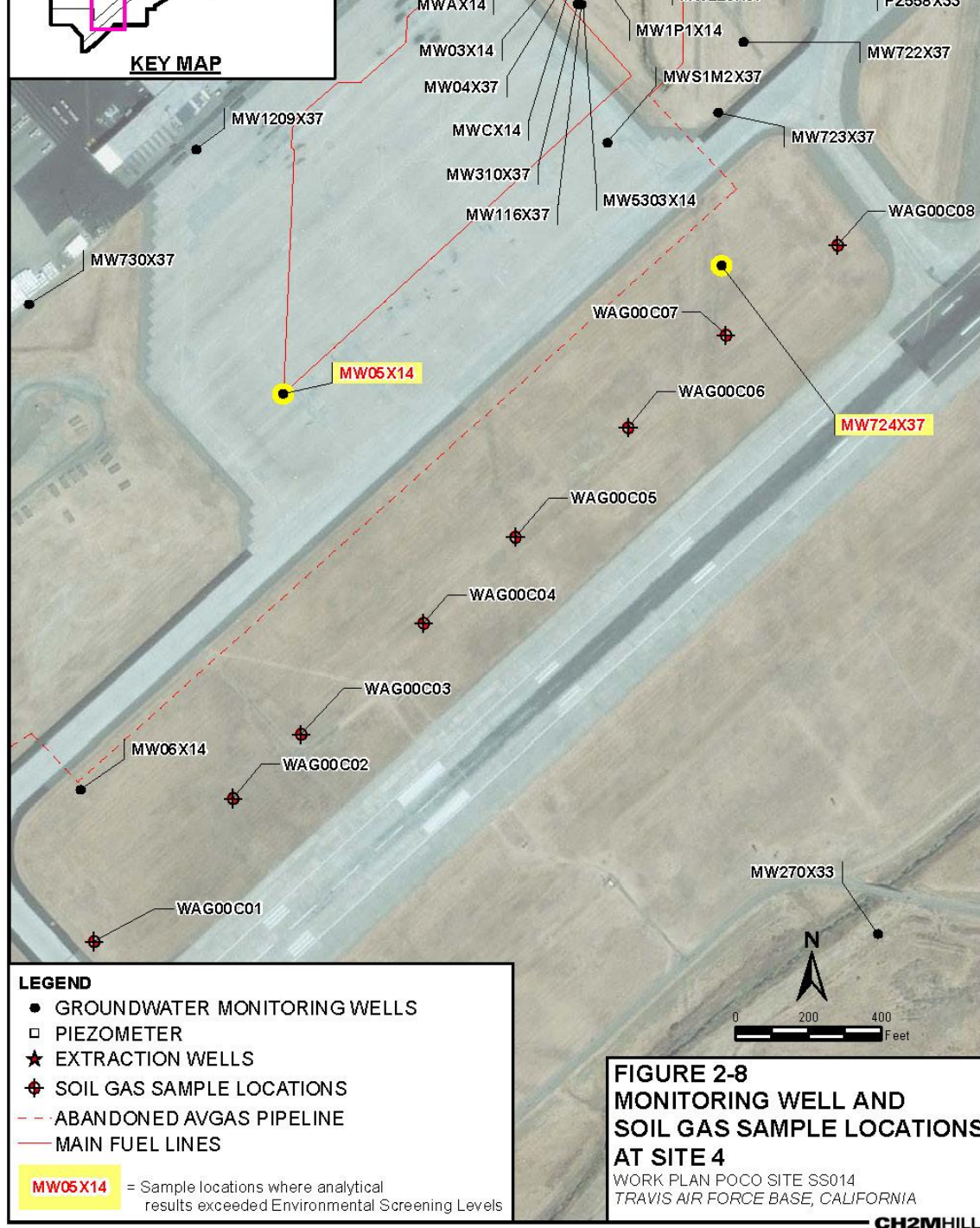
Nature and Extent of Contamination Continued

- Site 3 (JFSA-3):
 - JP-4 Removal Investigation (1993) and WIOU RI (1996) - Smear zone contamination in soil but no significant LNAPL detected.
 - GSAP
 - Site related monitoring wells have not been sampled since 1999 but wells are gauged routinely during GSAP.
 - No evidence of LNAPL in sampling data collected in 1999 or recent (2007-2008) depth to water data.
 - Elevated fuel hydrocarbon concentrations in most recent samples from site related wells (1998).



Nature and Extent of Contamination Continued

- Site 4 (Abandoned AVGAS Pipeline):
 - WIOU RI (1993):
 - Trace levels of BTEX detected only at one location.
 - GSAP (2007 to 2008)
 - No evidence of LNAPL in site related wells
 - TPH elevated in upgradient well MW05x14 but contamination not derived from AVGAS pipeline



Nature and Extent of Contamination Continued

- Site 5 (OWSs at Building 809)
 - WIOU RI (1996):
 - Trace concentrations of TPH detected in only one soil sample
 - No significant soil contamination identified
 - GSAP
 - MW08X14 last sampled in 2007 – no fuel constituents detected
 - MW07X14 last sampled in 1998 - no fuel constituents detected
 - Downgradient well MW810M1X37 last sampled in 1999 – Fuel hydrocarbon concentrations were low to non-detectable



KEY MAP



LEGEND

- GROUNDWATER MONITORING WELLS
- ⊕ SOIL SAMPLE LOCATIONS
- OWS

W0809B04 = Sample locations where analytical results exceeded Environmental Screening Levels

**FIGURE 2-9
MONITORING WELL AND
SOIL SAMPLE LOCATIONS
AT SITE 5**

WORK PLAN POCO SITE SS014
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

Conclusions

- No significant residual (vadose zone) contamination
 - Smear zone impacts at Sites 1, 2, and 3 (from LNAPL)
 - No significant soil impacts at Sites 4 and 5
- No evidence that LNAPL is still present at Sites 1, 2, and 3.
- Extent of dissolved groundwater contamination downgradient of Site 1 source area is not fully defined.

Conclusions (continued)

- Dissolved groundwater contamination (if present) at Sites 2 and 3 is undefined
- AVGAS pipeline at Site 4 and OWSs at Site 5 were not a significant source of contamination

Recommendations

- Phase 1 - Define the extent groundwater contamination at Sites 1, 2, and 3
 - Sample existing monitoring wells that have not been sampled since the 1990s
 - Site 1: MW222x37, MW223x37
 - Site 2: MW508x33, MW5304x35, MWRW1x35
 - Site 3: MW1S3x33, MWS3M2x37
 - As needed, drill step-out borings and collect in situ groundwater samples to define the downgradient extent of groundwater contamination
 - If needed, install additional monitoring wells to evaluate plume stability and effectiveness of MNA

Recommendations (continued)

- Phase 2 – Evaluate the suitability of MNA for addressing fuel hydrocarbons in groundwater at Sites 1, 2, and 3.
 - Identify an MNA well network
 - Implement an MNA assessment sampling program
 - Evaluate plume stability - Sample all wells for fuel constituents during four consecutive quarterly events
 - Evaluate intrinsic biodegradation - Sample all wells for indicators of intrinsic biodegradation during the first quarterly event

Recommendations (continued)

- Phase 3 – Document results of Phases 1 and 2 in a Remedial Action (RA) Report. The RA Report will:
 - Provide an updated Tier 1 POCO evaluation for SS014
 - Select MNA or another suitable remedy to address remaining groundwater contamination at Sites 1, 2, and 3

2009 Optimization Activities

2008 Groundwater Treatment
Plant RPO Annual Report
Travis AFB, California

2008 Groundwater Treatment Plant RPO Annual Report

- Summarizes 2008 data
- Provides graphical displays of progress against performance metrics
 - meeting cleanup goals
 - reducing operating costs
 - reducing cleanup time
- Evaluates whether meeting IRAOs (source control, migration control, cleanup, etc.)
- Recommends optimization activities

Central Groundwater Treatment Plant (CGWTP)

- West Area
 - Site LF008
 - Site DP039
 - West Industrial Operable Unit (WIOU)
 - West Transfer and Treatment Plant (WTTP)
- Site SS016 Area
 - Oil Spill Area (OSA) Source Area Treatability Study
 - Thermal Ox Unit
 - CGWTP

West Area

LF008 Rebound Study

- Study period runs through the GSAP Annual Event (2Q09)
- Evaluate analytical data from LF008 wells after 2Q09 sampling event
- Prepare technical memorandum with recommendations:
 - Continue the rebound evaluation during the interim period
 - Start pumping again—all wells? some wells? pulsing?

West Area

DP039

- Continue to operate the bioreactor at DP039 and evaluate its effectiveness
- Assess the performance of the phytoremediation system
- Characterize the distribution of VOC contamination downgradient of the phytoremediation system
- Design and install a biobarrier system to achieve cleanup and migration control downgradient of the phytoremediation system

West Area

WIOU Treatability Study

- Groundwater contamination above 1,000 µg/L is now restricted to two hot spots (one each at SD036 and SD037)
- Prepare Treatability Study Work Plan
- Perform additional site characterization
- Implement edible oil injection in the two hot spots

West Area

WIOU GET/SVE

- Evaluate the extraction wells in the WIOU
 - Sample groundwater and DPE wells
 - Review historical data
- Prepare technical memorandum with recommendations for both vapor and groundwater rebound studies
- Implement rebound studies for selected wells during the remainder of the interim period
- Continue to monitor, turn on/off as needed

WIOU

West Transfer and Treatment Plant

- Now that the DP039 SVE system is off line, influent vapor concentrations at the WTTP are low (less than 100 ppbv)
- Optimize SVE in the WIOU
- Work to disconnect the vapor granular activated carbon (VGAC) units and discharge the vapor to the air in accordance with discharge limits
- Continue to monitor the influent process stream to ensure consistently low VOC contamination

Site SS016 Area

OSA Source Area Treatability Study

- Prepare a Treatability Study Work Plan
- Perform additional site characterization
- Inject edible oil in the source area to optimize mass removal
- Monitor and evaluate

Site SS016 Area

Thermal Oxidation Unit

- Decreasing VOC concentrations in the influent process stream
- Collect vapor samples from the DPE wells
- Prepare technical memorandum—recommend shutting down vapor extraction from low concentration wells (e.g., EW605x16 or EW610x16)
- Alternatively—recommend operating in pulsed mode
 - One month of operation per quarter
 - Two months of shutdown per quarter

Site SS016 Area

Central Plant (CGWTP)

- Replace carbon in both 20,000-pound carbon vessels at the CGWTP
- Bypass and shut down the UV/Ox portion of the treatment process stream
- Conduct regular sampling and monitoring activities to ensure complete remediation without UV/Ox

North Area

Site LF007C

- Continue to operate the two solar extraction wells currently installed at LF007C (after vernal pools dry up)
- Further characterize the off-base extent of the LF007C plume
- Perform groundwater modeling
- Possibly increase the number of extraction wells and monitoring wells
- Treat the groundwater on-site (skid-mounted carbon unit?)

North Area

Sites FT004 and SD031

- Rebound study performed during 2008
- Results indicate stable or decreasing COC concentrations at each site
- Recommendations:
 - Continue rebound study through the interim period
 - SD031—keep all three extraction wells off line
 - FT004—expand the rebound study to include all eight (i.e., five additional) extraction wells
 - Collect groundwater samples semi-annually; review; and report

North Area

North Plant (NGWTP)

- NGWTP is currently shut down for the rainy season
- Recommend continuing shutdown through the interim period
 - Treat LF007C water locally
 - Continue rebound evaluation at FT004 and SD031
- Leave the system in place in case it's needed

South Area

Site FT005

- Rebound study performed during 2008
- Results indicate decreasing 1,2-DCA concentrations at all but one well, stable concentrations in that one well
- Positive impact on groundwater capture at adjacent Site SS030
- Recommendations:
 - Continue rebound study through the interim period
 - Expand the study to include all fifteen extraction wells
 - Monitor semi-annually; evaluate; report

South Area

Site SS030

- Continue to extract and treat groundwater as before
- Further characterize the eastern extent of contamination in the off-base SS030 plume
- Perform groundwater modeling
- Possibly increase the number of extraction wells and monitoring wells

South Area

South Plant (SBBGWTP)

- No changes to Site SS029
- Continue to operate the SBBGWTP as always, and look for optimization opportunities

Questions?

Travis AFB Groundwater Program

Management Overview Briefing

RPM Meeting
March 25, 2009

Documents & Tasks Completed

- Basewide Health & Safety Plan
- LF008 Rebound Study Work Plan
- DP039 Bioreactor Work Plan
- LF007C RPO Work Plan
- 2007/2008 Annual GSAP Report

- ST027B Gore Sorber Survey
- GSAP 2008 Semi-annual Event

Documents & Tasks In Progress

- Action Plan (Draft)
- RD/RA QAPP Update (Draft)
- ST027B Site Characterization WP (Draft)
- SS030 RPO Work Plan (Draft)
- ST032 POCO Technical Memo (Draft)
- Phases 1 and 2 Vapor Intrusion Rpt (Draft)
- SS014 Tier 1 POCO Evaluation WP (Pre-draft)

Documents & Tasks

Upcoming

- | | |
|---|-------|
| • 2008 Annual LTO RPO Report | March |
| • Field Sampling Plan (FSP) | April |
| • Natural Attenuation Assessment Report (NAAR) | April |
| • Passive Diffusion Bag (PDB) Technical Memo | April |
| • Phytostabilization Demonstration Technical Memo | April |
| • Focused Feasibility Study | May |
| • DP039 RPO Work Plan | May |
| • SD036/SD037 RPO Work Plan | May |
| • ST018 RA Work Plan | June |
| | |
| • ST027 Installation of Wells – Phase 1 | April |
| • GSAP Annual Sampling Event | May |
| • SS030 Site Characterization | May |
| • SS014 Site Characterization | May |