Final

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

4 April 2007, 1330 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Managers ' (RPM) Partnering meeting held on 4 April 2007 at 1330 in the Environmental Conference Room, Building 570, Travis AFB, California, via teleconference. Attendees included:

• Mark Smith	Travis AFB
• Gregory Parrott	Travis AFB
• Wilford Day	Travis AFB
• Tom Sreenivasan	Travis AFB
• Lonnie Duke	Travis AFB
• Kerry Settle	Air Mobility Command/A7VR
• Jose Salcedo	Department of Toxic Substance Control
• Glenn Kistner	U.S. Environmental Protection Agency (U.S.EPA)
• Alan Friedman	California Regional Water Quality Control Board (CRWQCB)
• Mike Wray	CH2M Hill
• Leslie Royer	CH2M Hill
• Chuck Elliott	CH2M Hill
• Tom Barry	Shaw Engineering and Infrastructure (Shaw E&I)
• Bob Hulet	Shaw Engineering and Infrastructure (Shaw E&I)
• Allen Mason	EQM
• Dan Welch	Tetra Tech, Inc.

Handouts distributed throughout the meeting included:

• Attachment 1	Meeting Agenda
• Attachment 2	Master Meeting, Teleconference, and Document Schedules
• Attachment 3	SBBGWTP Monthly Data Sheet (March 2007 – Not available)
• Attachment 4	CGWTP Monthly Data Sheet (March 2007 – Not available)
• Attachment 5	NGWTP Monthly Data Sheet (March 2007 – Not available)

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The March 2007 RPM meeting minutes were not available at this date but will be approved and finalized by email by the 25 April Teleconference.

B. Master Meeting and Document Schedule

The revised Travis AFB Master Meeting, Teleconference, and Document Schedules were distributed by email previously (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

— Page 1, the Monthly RPM Teleconference meeting dates were updated.

Travis AFB Master Document Schedule

— Page 3, U.S. EPA reiterated their concern of having the Draft Proposed Plan after the Draft to the Agencies.

— Page 4, the 2006 GSAP Annual Report schedule was sent to history.

2. OPERABLE UNIT UPDATE

A. North, East, West Industrial Operable Unit (NEWIOU) Soil Remedial Designs

Mr. Salcedo provided one comment that can be made to the Draft Final SD001 and SD033 Soil Remedial Design packages and should still be able to go final 13 April 2007. This handout also included the response to comments.

Mr. Salcedo stated that he had no comments to the LF007 Soil Remedial Design package submitted 30 January 2007. A response to comments meeting will not be necessary.

3. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance

1. South Base Boundary Groundwater Treatment Plant

Mr. Sreenivasan reported that the South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100 % uptime, and 3.8 million gallons of groundwater were extracted and treated during the month of February 2007. The average flow rate for the SBBGWTP was 94.5 gallons per minute (gpm). Approximately 1.7 pound of volatile organic compounds (VOCs) was removed during February 2007. The total mass of VOCs removed since the startup of the system is 303 pounds (see Attachment 3).

There were no shutdowns during the month of February 2007.

No construction water was processed at this plant during February 2007.

No optimization activities were planned or performed at this plant during February 2007.

2. Central Groundwater Treatment Plant

Mr. Sreenivasan reported that the Central Groundwater Treatment Plant (CGWTP) performed at 99.7% uptime with approximately 2.3 million gallons of groundwater extracted and treated during the month of February 2007. The average flow rate for the CGWTP was 56 gpm. Approximately 8 pounds of VOCs were removed during February 2007. The total mass of VOCs removed since the startup of the system is 10,481 pounds. (see Attachment 4).

There were no plant shutdowns in February 2007.

The thermal oxidation (Th/Ox) system was down for the installation of the new vacuum system and the components.

All treated water from this plant is being diverted to the storm drain.

Optimization activities were performed at site DP039 for the newly installed extraction wells and monitoring wells system during February 2007.

3. North Groundwater Treatment Plant

Mr. Sreenivasan reported that the North Groundwater Treatment Plant (NGWTP) performed at 100% uptime with approximately one million gallons of groundwater extracted and treated during the month of February 2007. The average flow for the NGWTP was 25.5 gpm. Less than a pound of VOCs was removed during February 2007, which was from groundwater and vapor. The total mass of VOCs removed since the startup of the system is 5,420 pounds (see Attachment 5).

The plant experienced no shutdowns during February 2007.

The soil vapor extraction system is off due to high water levels at the extraction wells. This is normal during the rainy season.

All the treated groundwater from the plant was sent to the duck pond for beneficial use.

B. DP039 Field Work

Mr. Smith stated that the DP039 field work report was issued 30 March as an informational document and that comments are requested by 27 April.

C. Military Munitions Response Program Comprehensive Site Evaluation Review

Mr. Smith stated that DTSC did not have any comments on the Military Munitions Response Program Comprehensive Site Evaluation, and that EPA's comments have been submitted in their entirety to Air Mobility Command.

D. Petroleum Only Contamination (POCO) Sites

Mr. Day gave a presentation on the Petroleum Only Contamination (POCO) Sites

Currently, 14 new wells have been installed and work is continuing.

E. Free Product

No update

4. PROGRAM ISSUES UPDATE

A. No updates provided.

5. SPLINTER MEETING ON GROUNDWATER ISSUES

Travis prepared a GW Site Status Work Sheet as a continuation of the GW ROD Scoping meetings that began on 24 Jan 2007. The intent was to discuss the most likely remedial alternatives for each site, base upon the most recent GSAP data and cleanup trends. Site description, background, remediation history, expressed regulatory concerns, GSAP conclusions and recommendations and proposed remedies were presented. The intent of discussing the remedies, was to allow Travis to establish a basis for cost estimates and determine program budget for the out years that included regulatory input.

EPA preferred not to discuss remedies until presented with a focused feasibility study, site conceptual model changes, ARARs, cleanup levels, issues such as vapor intrusion, and the removal of sites from institutional controls implemented by vapor intrusion, had been discussed. EPA also stated that if Travis is proposing MNA as a remedy, that MNA studies have to have been conducted.

Travis agreed to not discuss the remedies at this time, and to revisit past Feasibility Studies from the two IRODs, prepare ARARs, and to review the natural attenuation assessments that have been conducted on our sites. Travis will continue work towards the PP and GW ROD, invite regulatory discussion during the process, work with the agencies to develop a draft GW ROD, and hold a PP meeting prior to officially releasing the draft ROD to the agencies.

ACTION ITEM LIST

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	To review the perchlorate guidance as it applies to the EOD range, discuss this issue with compliance to determine what and what cannot be accomplished.	4-11-07	Travis review of DOD and AF policy on sampling for perchlorate is ongoing. EPA stated that they had the right, under the FFA, to take split samples and test for anything they wanted.
2.	Air Force/ U.S. EPA	To review the GSAP response to comments table and discuss groundwater issues as applicable to the groundwater ROD and schedule a teleconference with the remaining regulatory agencies.	4-11-07	Ongoing.
3.	Air Force	To schedule a performance base acquisition briefing by the Corps of Engineers.	4-11-07	Pending ACOE availability. Delayed until sometime after the 1st of May.
4.	U.S. EPA	To review performance base acquisition experience.	4-11-07	Closed
5.				

ATTACHMENT 1

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S
PARTNERING MEETING
4 April, 1:30 – 4:30 P.M.
(Building 570, CEV Conference Room; Teleconference (707) 424-8811)
AGENDA

1. ADMINISTRATIVE

   A. PREVIOUS MEETING MINUTES (ALL)
   B. ACTION ITEM REVIEW (ALL)
   C. MEETING DATES AND MASTER DOCUMENT SCHEDULE REVIEW (ALL)

2. OPERABLE UNIT UPDATE

   A. NEWIOU SOIL REMEDIAL DESIGNS (MARK/JOSE)

3. CURRENT PROJECTS

   A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (TOM)
   B. DP039 FIELD WORK (MARK)
   C. MILITARY MUNITIONS RESPONSE PROGRAM CSE REVIEW (MARK)
   D. PETROLEUM ONLY CONTAMINATION (POCO) STATUS (WILFORD)
   E. APR07 DRAFT GUARDIAN STATUS (MARK)

4. PROGRAM/ISSUES/UPDATE
   A. NONE

5. NEW ACTION ITEM REVIEW

6. REGULATORY REVIEW PERIOD FOR GW ROD SITES
   A. SUGGESTED REMEDIAL ALTERNATIVES
   B. CHARACTERIZATION ISSUES

ATTACHMENT 2

2007

Travis AFB Annual Meeting and Teleconference Schedule

Suppliers Teleconference (8:30 a.m. - 10:00 a.m.)	Monthly RPM Meeting (Begins at 9:30 a.m.)	Monthly RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 6:30 p.m.)
1-23-07	1-24-07[1]	1-10-07	—
2-6-07	2-7-07	2-21-07	—
3-13-07	3-14-07	3-28-07	—
~~4-10-07~~ (Cancelled)	4-4-07	4-25-07 (Mark out)	4-19-07
5-8-07	5-9-07	5-23-07	—
6-12-07	6-13-07	6-27-07 (EPA out)	—
7-17-07	7-18-07 (Alan out)	7-25-07 (Alan out)	Base Tour
8-14-07	8-15-07	8-29-07	—
9-11-07	9-12-07	9-26-07	—
10-16-07	10-17-07	—	10-25-07
—	—	11-7-07	—
12-11-07	12-12-07	—	—

[1] – RPM meeting on the 24th of Jan will be followed by a Groundwater ROD scoping meeting from 1pm to 4pm with the regulatory agencies.

Travis AFB Master Document Schedule
(Continued)

	PRIMARY DOCUMENTS					
	Remedial Design Travis, Glenn Anderson; URS, Adam Harvey	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; CH2M Hill, Mike Wray**
Life Cycle	**SD001**	**SD033**	**FT003**	**FT004**	**FT005**	**LF007**
Scoping Meeting	**8-23-06**	**8-23-06**	**5-07-04**	**5-10-06**	**6-01-06**	**9-28-06**
Predraft to AF/Service Center	11-15-06	11-15-06	5-28-04	5-31-06	7-03-06	10-30-06
AF/Service Center Comments Due	12-08-06	12-08-06	6-25-04	6-20-06	7-31-06	11-27-06
Draft to Agencies	12-22-06	12-22-06	7-16-04	9-29-06	11-24-06	01-30-07
Draft to RAB	12-22-06	12-22-06	7-16-04	9-29-06	11-24-06	01-30-07
Agency Comments Due	2-02-07	2-02-07	8-16-04	10-30-06	12-29-06	3-01-07
Response to Comments Meeting	**2-14-07**	**2-14-07**	**8-23-04**	**11-08-06**	**1-10-07**	**3-7-07**
Response to Comments Due	2-28-07	2-28-07	9-29-04	NA**	NA**	3-23-07
Draft Final Due	2-28-07	2-28-07	9-29-04	NA**	NA**	3-23-07
Final Due	3-30-07	3-30-07	9-21-06*	11-13-06	1-16-07	4-23-07
Public Comment Period	NA	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA	NA

* The FT003 Soil Remedial Design Package was produced in 2004 and finalized after the NEWIOU Soil, Sediment and Surface Water ROD was signed.

** These design packages were not produced as Draft Final, because their regulatory agency reviews did not result in comments and requested revisions to the Draft version.

Travis AFB Master Document Schedule
(Continued)

	PRIMARY DOCUMENTS	
	Basewide Travis, Glenn Anderson	**Potrero Hills Annex Travis, Glenn Anderson**
Life Cycle	**Groundwater ROD**	**Potrero Hills ROD**
Scoping Meeting	**1-24-07**	**180 days after Water Board Order Rescinded**
Predraft to AF/Service Center	2-01-09	+ 360 days
AF/Service Center Comments Due	4-01-09	+ 420 days
Draft to Agencies	6-15-09	+ 480 days
Draft to RAB	6-15-09	+ 480 days
Agency Comments Due	8-15-09	+ 540 days
Response to Comments Meeting	**9-01-09**	**+ 555 days**
Agency Concurrence with Remedy	9-15-09	+ 570 days
Draft Proposed Plan to Agencies	12-01-09	+ 600 days
Issue Proposed Plan	1-15-10	+ 615 days
Public Comment Period	1-15-10 to 2-15-10	+ 615 to 645 days
Public Meeting	**1-28-10**	**+ 625 days**
Response to Comments Due	3-01-10	+ 640 days
Draft Final Due	3-01-10	+ 640 days
Final Due	5-01-10	+ 700 days

Travis AFB Master Document Schedule
(Continued)

SECONDARY DOCUMENTS	
Life Cycle	**2006 GSAP Annual Report Travis, Tom Sreenivasan; CH2M Hill, Mike Wray**
Scoping Meeting	**NA**
Predraft to AF/Service Center	10-13-06
AF/Service Center Comments Due	10-30-06
Draft to Agencies	11-13-06
Draft to RAB	11-13-06
Agency Comments Due	01-19-07
Response to Comments Meeting	**02-21-07**
Response to Comments Due	03-07-07
Draft Final Due	03-07-07
Final Due	03-30-07
Public Comment Period	NA
Public Meeting	NA

Travis AFB Master Document Schedule
(Continued)

INFORMATIONAL DOCUMENTS	
Life Cycle	**Quarterly Newsletters (April 2007) Travis, Mark Smith**
Scoping Meeting	NA
Predraft to AF/Service Center	NA
AF/Service Center Comments Due	NA
Draft to Agencies	3-15-07
Draft to RAB	NA
Agency Comments Due	3-29-07
Response to Comments Meeting	**TBD**
Response to Comments Due	4-12-07
Draft Final Due	TBD
Final Due	4 -12-07
Public Meeting	NA

Travis AFB Master Document Schedule
(Continued)

INFORMATIONAL DOCUMENTS				
	Groundwater Treatment Plant O&M Reports **Travis, Tom Sreenivasan;** **CH2M Hill, Mike Wray**			
Life Cycle	**Groundwater Treatment Plants Annual Reports Fiscal Year 2006**	**Groundwater Treatment Plants First Quarter Report Fiscal Year 2007**	**Groundwater Treatment Plants Second Quarter Report Fiscal Year 2007**	**Groundwater Treatment Plants Third Quarter Report Fiscal Year 2007**
Scoping Meeting	**NA**	**NA**	**NA**	**NA**
Predraft to AF/Service Center	1-22-07	4-13-07	7-13-07	10-12-07
AF/Service Center Comments Due	1-26-07	4-20-07	7-20-07	10-19-07
Draft to Agencies	NA	NA	NA	NA
Draft to RAB	NA	NA	NA	NA
Agency Comments Due	NA	NA	NA	NA
Response to Comments Meeting	**NA**	**NA**	**NA**	**NA**
Response to Comments Due	NA	NA	NA	NA
Draft Final Due	NA	NA	NA	NA
Final Due	1-31-07	4-27-07	7-27-07	10-26-07
Public Comment Period	NA	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**	**NA**

ATTACHMENT 3

South Base Boundary Groundwater Treatment Plant
Monthly Data Sheet

Report Number: 80 **Reporting Period: 1 – 31 March 2007** **Date Submitted: 9 April 2007**

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 – March 2007

Operating Time: **744 hours**

Percent Uptime: **100%**

Gallons Treated: **5.4 million gallons**

Gallons Treated Since July 1998: **553 million gallons**

Volume Discharged to Union Creek: **5.4 million gallons**

Percentage of Treated Water to Beneficial Use: **0%**

VOC Mass Removed: **3.3 pounds**[a]

VOC Mass Removed Since July 1998: **304.6 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: $8,020[b]

Monthly Cost per Pound of Mass Removed: $1,854[b]

[a] Calculated using March 2007 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. High costs are due to low influent concentrations and low flow rate.

Flow Rates

Average Groundwater Total Flow Rate: **125.2**[a]

Average Flow Rate from SCADA (gpm)[b]							
FT005				**SS029**		**SS030**	
EW01x05	4.3	EW736x05	Off line[c]	EW01x29	8.0	EW01x30	9.5
EW02x05	2.3	EW737x05	5.5	EW02x29	5.7	EW02x30	2.4
EW03x05	2.8	EW742x05	5.7	EW03x29	Off line[d]	EW03x30	Off line[d]
EW731x05	0.9	EW743x05	Off line[c]	EW04x29	8.4	EW04x30	18.4
EW732x05	5.0	EW744x05	5.0	EW05x29	9.6	EW05x30	7.4
EW733x05	0.5	EW745x05	6.1	EW06x29	9.2	EW06x30	0.3
EW734x05	6.5	EW746x05	6.0	EW07x29	Off line[d]	EW711x30	4.6
EW735x05	4.9						
FT005 Total:	**55.5**			**SS029 Total:**	**40.9**	**SS030 Total:**	**42.6**

[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] Average extraction well flow rates measured by each extraction well totalizer divided by the operating time.
[c] Extraction well was off line during March 2007 due to pump malfunction.
[d] Extraction well is off line due to low VOC concentrations.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP (water)	NA	NA	NA	NA	No shutdowns during the month of March 2007

NA = not applicable
SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater sampling at the SBBGWTP was performed on 1 March 2007. Sample results are presented in Table 1. The total VOC concentration (73.4 µg/L) in the influent sample has increased since the February 2007 sample (54.2 µg/L). 1,2-Dichloroethane (DCA), cis-1,2-dichloroethene (DCE), and trichloroethene (TCE) were detected in the effluent sample. Although 1,2-DCA and TCE concentrations were reported less than the instantaneous maximums, the concentrations were slightly elevated. 1,2-DCA, cis-1,2-DCE, and TCE will be closely monitored. In addition, the air stripper and associated piping will be acid washed to remove any calcium carbonate buildup in April 2007.

The extraction well pump was replaced for EW04x30. In addition, the water level indicator was repaired on the SCADA system.

Optimization Activities

There were no optimization activities conducted at the SBBGWTP during March 2007. System optimization recommendations were included in the 2006 Annual O&M Report.

Table 1
Summary of Groundwater Analytical Data for March 2007 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	1 March 2007 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	0.5	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND
Chloroform	5	0.16	0	ND	ND
Dibromochloromethane	0.5	0.17	0	ND	ND
1,1-Dichloroethane	5	0.16	0	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	0.19 J
1,1-Dichloroethene	5	0.14	0	ND	ND
cis-1,2-Dichloroethene	5	0.15	0	4.4	0.46 J
trans-1,2-Dichloroethene	5	0.15	0	ND	ND
Methylene Chloride	5	0.32	0	ND	ND
Tetrachloroethene	5	0.20	0	ND	ND
1,1,1-Trichloroethane	5	0.16	0	ND	ND
1,1,2-Trichloroethane	5	0.32	0	ND	ND
Trichloroethene	5	0.16 – 0.32	0	69	4.1
Vinyl Chloride	0.5	0.38	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.16	0	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND
Toluene	5.0	0.17	0	ND	ND
Xylenes	5.0	0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	32	0	NM	ND
Total Suspended Solids (mg/L)	NE	1.1	0	4.8	NM

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

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

ATTACHMENT 4

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 93 **Reporting Period: 1 – 31 March 2007** **Date Submitted: 9 April 2007**

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.

Operations Summary – March 2007

Operating Time:

CGWTP:	744 hours	
WTTP:	Water: 744 hours	Vapor: 743 hours
ThOx:	633 hours	

Percent Uptime:

CGWTP:	100%	
WTTP:	Water: 100%	Vapor: 99.9%
ThOx:	85.1%	

Gallons Treated: 3.3 million gallons

Gallons Treated Since January 1996: 341 million gallons

VOC Mass Removed:

12.1 lbs (groundwater only)[a]

1.8 lbs (vapor only)[b]

VOC Mass Removed Since January 1996:

2,164.6 lbs from groundwater

8,312 lbs from vapor

UV/Ox DRE: 100%

ThOx DRE: NA[c]

Rolling 12-Month Cost per Pound of Mass Removed: $375[d]

Monthly Cost per Pound of Mass Removed: $864[d]

[a] Calculated using March 2007 EPA Method SW8260B analytical results.
[b] Total VOC vapor mass removed was calculated using March 2007 EPA Method TO-14 analytical results for the DP039 extraction well and the ThOx.
[c] Due to the very low influent VOC concentrations, the destruction removal efficiency was not calculated.
[d] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. High monthly cost per pound of mass removed are due to low influent vapor concentration and low flow rates.

DRE = destruction removal efficiency UV/Ox = ultraviolet oxidation

Flow Rates

Average Groundwater Flow Rate: **77.5 gpm**[a]

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm)
EW01x16	29.3[b]	NA
EW02x16	Off line[c]	NA
EW03x16	Off line[d]	NA
EW605x16	13.0[b]	NA
EW610x16	5.0	NA
WTTP	30.2[f]	83.7[g]
ThOx	NA	55.6[g]

[a] as measured by the effluent discharge to the storm drain divided by the operating time.
[b] as measured by extraction well totalizer divided by the operating time.
[c] EW02x16 (water) was taken off line due to pump failure.
[d] EW03x16 (water) was taken off line in September 2002 due to a significant decrease in flow rates.
[e] extraction well pump was replaced on 15 March 2007
[f] as measured by the effluent groundwater pumped to the CGWTP divided by the operating time.
[g] flow rate measured using pitot tube

gpm = gallons per minute
scfm = standard cubic feet per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
Th-Ox (vapor)	5 March 2007	9:30	5 March 2007	16:00	Installed drip legs on outlet side of vacuum pumps for draining condensation in pipes. Also the air flow switch was replaced.
Th-Ox (vapor)	14 March 2007	15:00	14 March 2007	15:15	Low natural gas pressure alarm. The gas was shut off due to construction in the area.
Th-Ox (vapor)	17 March 2007	10:00	17 March 2007	18:00	Low natural gas pressure alarm. The natural gas supply valve was closed due to leaks.
WTTP (vapor)	30 March 2007	11:00	30 March 2007	11:45	High vapor temperature alarm.

ThOx = Thermal Oxidation System
WTTP = West Treatment and Transfer Plant

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP and quarterly groundwater sampling at the ThOx and WTTP were performed on 1 March 2007. Groundwater sample results are summarized in Table 1. In addition, quarterly vapor samples were collected at the ThOx unit and the WTTP SVE system on 1 March 2007. Vapor results are presented in Tables 2 and 3.

The total VOC concentration (436 µg/L) in the March 2007 influent groundwater sample has increased since the February 2007 sample (405 µg/L). Chloroform, cis-1,2-dichloroethene (DCE), and trichloroethene (TCE) were present in low concentrations in groundwater samples downstream of the UV-Ox system, but within the carbon treatment system. TCE was completely treated by the carbon system and was not detected in the system effluent. The chloroform and cis-1,2-DCE were detected in the system effluent, but at concentrations much lower than the effluent limits. The detections in these samples may be attributed to desorption from the granular activated carbon (GAC). The system performance will continue to be monitored in the upcoming months.

On 8 March 2007, water was pumped out of the oil spill area (OSA) vault box, and the corroded terminals were cleaned. EW605x16 was returned to normal operations. In March 2007, the extraction well pump, flow meter, flow meter housing, and flow meter transmitter were replaced for EW610x16. On 15 March 2007, EW610x16 was restarted.

The ThOx system continues to treat soil vapor from the 2-Phase® well (TPE-W) as part of SS016 focused vapor extraction activities. Quarterly vapor samples collected in March 2007 indicated a continued decrease in total VOC concentrations from 102.6 ppbv in January 2007 to 3.6 ppbv in March 2007. Vapor results are shown in Table 2.

The WTTP SVE system continued to treat soil vapor from the EW563x39. The SVE system also began treating soil vapor from the newly installed duel-phase extraction (DPE) well, EW782x39. In addition, several WIOU wellhead vapor control valves were opened temporarily to check the vapor conveyance lines for condensate. Quarterly vapor samples collected in March 2007 indicated a decrease in total VOC concentrations from 3,835 ppbv in January 2007 to 1,578 ppbv in March 2007. Vapor results are shown in Table 3.

Optimization Activities

On 26 January 2007, the initial start up and testing of EW782x39 was completed, and the WTTP SVE system was turned off-line for rebound analysis. On 27 January 2007, a combined DP039 and WIOU SVE startup test was started. However, some of the WIOU extraction well screens were submerged below the water table, and vacuum could not be detected in the other WIOU extraction wells. Therefore, on February 28, vapor extraction from the WIOU extraction wells was shut off, and the WTTP SVE system only treated vapor from the DP039 wells (EW563x39 and EW782x39). On 3 March 2007, the startup test was completed and on 13 and 27 March 2007, follow-up vapor samples were collected from the WTTP SVE system.

The table below summarizes current optimization activities associated with CGWTP.

Activity	Status	Comments
26 January to 26 February 2007 Rebound analysis for WTTP SVE system	Completed.	The WTTP SVE system was shutdown for rebound analysis after the initial startup and testing of EW782x39 was completed.
27 February to 3 March 2007 Combined DP039 and WIOU SVE startup test	Completed.	The WTTP SVE system was restarted and the system was treating vapor from both DP039 and WIOU extraction wells. There was no flow detected from the WIOU extraction wells; therefore, the WIOU extraction wells were shut off. The startup test continued for the DP039 wells for 104 hours.

Table 1
Summary of Groundwater Analytical Data for March 2007 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	1 March 2007 (µg/L) WTTP Effluent	TPE Effluent	Influent	After UV/OX	After Carbon 1 Effluent	After Carbon 2 Effluent	After Carbon 3 Effluent	System Effluent
Halogenated Volatile Organics											
Bromodichloromethane	5.0	0.17 – 0.34	0	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.19 – 0.38	0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.16 – 0.32	0	0.39 J	ND	ND	0.20 J	0.21 J	0.29 J	0.28 J	0.25 J
Dibromochloromethane	5.0	0.17 – 0.34	0	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.13 – 0.26	0	ND	0.71	0.32 J	ND	ND	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.16 – 0.32	0	ND	0.36 J	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16 – 0.32	0	ND	0.44 J	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.16 – 0.32	0	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.13 – 0.26	0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.14 – 0.28	0	2.1	ND	1.8	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15 – 0.30	0	11	48	70	ND	1.2	1.6	0.77	0.62
trans-1,2-Dichloroethene	5.0	0.15 – 0.30	0	1.3	ND	2.9	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.32 – 0.64	0	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone (2-Butanone)	5.0	1.8 – 12	0	ND	250 J	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20 – 0.40	0	1.1	0.45 J	0.89 J	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.16- 0.32	0	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.32 – 0.64	0	ND	0.55 J	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.16 – 3.2	0	250	220	360	ND	4.9	0.84	ND	ND
Vinyl Chloride	0.5	0.17 – 0.34	0	ND	ND	ND	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics											
Benzene	1.0	0.16 – 0.32	0	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.16 – 0.32	0	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.17 – 0.34	0	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.19 – 6.8	0	ND	ND	ND	ND	ND	ND	ND	ND
Other											
Total Dissolved Solids (mg/L)	NE	4.7	0	NM	NM	NM	NM	NM	NM	790	NM

[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
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

TABLE 2
Soil Vapor Analytical Data for March 2007 – Central Groundwater Treatment Plant

Constituent	1 March 2007 (ppbv)	
	ThOx Influent	ThOx Effluent
Volatile Organics		
Benzene	0.29	0.13 J
Carbon Tetrachloride	0.069 J	ND (0.36)
Chloromethane	0.55	ND (0.17)
cis-1,2-Dichloroethene	ND (0.11)	ND (0.11)
1,2-Dichlorobenzene	ND (0.063)	ND (0.063)
1,3-Dichlorobenzene	ND (0.063)	ND (0.063)
1,4-Dichlorobenzene	ND (0.054)	ND (0.054)
1,2-Dichloroethane	ND (0.057)	ND (0.057)
Ethylbenzene	0.12 J	0.38
Freon 11	0.20	ND (0.031)
Freon 12	0.49	ND (0.036)
Freon 22	0.20	ND (0.053)
Freon 113	0.077 J	ND (0.024)
Methylene Chloride	ND (0.03)	ND (0.03)
Methyl Ethyl Ketone (2-Butanone)	0.65 J	3.3
Tetrachloroethene	ND (0.032)	ND (0.032)
Toluene	0.39	1.2
trans-1,2-Dichloroethene	ND (0.14)	ND (0.14)
1,2,4-Trimethylbenzene	0.19 J	0.14 J
1,3,5-Trimethylbenzene	0.057 J	0.10 J
Trichloroethene	ND (0.033)	0.18 J
Vinyl Chloride	ND (0.051)	ND (0.051)
Xylenes, m,p-	0.40	1.8
Xylene, o-	0.17 J	0.55

J = analyte concentration is considered an estimated value
ND = not detected
ppbv = parts per billion by volume
ThOx = thermal oxidation system
( ) = detection limit

Table 3
Soil Vapor Analytical Data for March 2007 – West Transfer and Treatment Plant

Constituent	1 March 2007 (ppbv)		
	SVE Influent	SVE Mid-Treatment	SVE Effluent
Volatile Organics			
Benzene	ND (1.5)	0.096 J	0.072 J
Bromodichloromethane	ND (1.1)	ND (0.036)	ND (0.036)
Chloroform	2.7 J	ND (0.049)	ND (0.049)
Chloromethane	ND (5.2)	0.58	0.68
cis-1,2-Dichloroethene	73	ND (0.11)	ND (0.11)
1,1-Dichloroethane	5.8 J	ND (0.056)	ND (0.056)
1,1-Dichloroethene	260	3.3	ND (0.084)
Ethylbenzene	ND (1.8)	ND (0.059)	ND (0.059)
Freon 11	ND (0.95)	0.063 J	ND (0.31)
Freon 12	ND (1.1)	0.96	0.60
Freon 22	ND (1.6)	0.25	0.30
Methylene Chloride	ND (0.92)	ND (0.03)	ND (0.03)
Methyl Ethyl Ketone (2-Butanone)	6.8 J	1.6	0.80 J
Tetrachloroethene	2.0 J	ND (0.032)	ND (0.032)
Toluene	ND (1.6)	0.089 J	0.12 J
1,1,1-Trichloroethane	28	ND (0.038)	ND (0.038)
1,1,2-Trichloroethane	ND (1.5)	ND (0.049)	ND (0.049)
Trichloroethene	1,200	0.33	0.22
Vinyl Chloride	ND (1.6)	ND (0.051)	ND (0.051)
Xylenes, m,p-	ND (1.6)	ND (0.053)	0.076 J
Xylene, o-	ND (1.5)	ND (0.048)	ND (0.048)

J = analyte concentration is considered an estimated value
ND = not detected
ppbv = parts per billion by volume
SVE = soil vapor extraction
( ) = detection limit

ATTACHMENT 5

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 82 **Reporting Period: 1 – 31 March 2007** **Date Submitted: 9 April 2007**

This data sheet includes the following: results for the operation of the groundwater extraction and soil vapor extraction (SVE) 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 – March 2007

Operating Time: **Water:** 744 hours
Vapor: 0[a]

Percent Uptime: **Water:** 100%
Vapor: 0%[a]

Gallons Treated: 0.74 million gallons

Gallons Treated Since March 2000: 73.1 million gallons

Volume Discharged to Storm Drain: 0 gallons

Volume Discharged to Duck Pond: 0.74 million gallons

Percentage of Treated Water to Beneficial Use: 100%

VOC Mass Removed:
0.32 lbs (groundwater only)[b]
0 lbs (vapor only)[a]

VOC Mass Removed Since March 2000:
172.5 lbs from groundwater
5,240 lbs from vapor[c]

VGAC Removal Efficiency: **NA**

Rolling 12-Month Cost per Pound of Mass Removed: $31,147[de]

Monthly Cost per Pound of Mass Removed: $15,850[d]

[a] The SVE system was shut down on 12 October 2006 due to low vapor VOC concentrations.
[b] Calculated using March 2007 EPA Method SW8260B analytical results.
[c] Cumulative total VOC vapor mass removed includes 4,860 pounds of petroleum hydrocarbon VOC mass removed and treated by a portable catalytic oxidizer system between 15 July and 17 September 2003.
[d] 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.
[e] The rolling 12-month cost per pound of mass removed is calculated by the sum of the monthly cost over the past 12 months divided by the sum of pounds removed during the same period.

Flow Rates

Average Groundwater Total Flow Rate: **17.1 gpm**[a]

Location	Flow Rate on 30 March 2007	
	Groundwater (gpm)	Soil Vapor (scfm)[b]
EW565x31	2.0	Off line
EW566x31	1.6	Off line
EW567x31	2.7	NA
EW576x04	1.5	Off line
EW577x04	1.9	Off line
EW578x04	2.1	Off line
EW579x04	0.5	NA
EW580x04	2.9	NA
EW621x04	1.7	NA
EW622x04	2.0	NA
EW623x04	1.0	NA
EW614x07	Off line[c]	NA
EW615x07	Off line[c]	NA
SVE System	NA	Off line

[a] The flow rate was calculated using the effluent discharge totalizer divided by the operating time of the plant.
[b] The SVE system was shut down on 12 October 2006 due to low vapor VOC concentrations.
[c] LF007 wells were turned off for the wet season on 15 November 2006. During the dry season, these submersible pumps are solar powered, and only operate during day light hours.

gpm = gallons per minute
scfm = standard cubic feet per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
NGWTP (water)	NA	NA	NA	NA	No shutdowns during the month of March 2007

NA = not applicable
NGWTP = North Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 1 March 2007. Sample results are presented in Table 1. The total VOC concentration (52.36 µg/L) in the influent sample has remained relatively steady since the February 2007 sample (52.8 µg/L). In February 2007, methyl ethyl ketone (2-butanone) was detected in the effluent sample due to the glue used to attach a new effluent sample port. In the March 2007 effluent sample, methyl ethyl ketone was not detected. There were no VOCs detected in the effluent sample.

Optimization Activities

There were no optimization activities conducted at the NGWTP during March 2007. System optimization recommendations were included in the 2006 Annual O&M Report.

Table 1
Summary of Groundwater Analytical Data for March 2007 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	1 March 2007 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	0.5	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND
Chloroform	5.0	0.16	0	ND	ND
Dibromochloromethane	0.5	0.17	0	ND	ND
1,1-Dichloroethane	5.0	0.16	0	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	ND
1,1-Dichloroethene	5.0	0.14	0	3.2	ND
cis-1,2-Dichloroethene	5.0	0.15	0	0.36 J	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND
Methyl Ethyl Ketone (2-Butanone)	5.0	1.8	0	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	4.8	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND
Trichloroethene	5.0	0.16	0	44	ND
Vinyl Chloride	0.5	0.38	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.16	0	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND
Toluene	5.0	0.17	0	ND	ND
Xylenes	5.0	0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	32	0	NM	ND
Total Dissolved Solids (mg/L)	NE	4.7	0	NM	1,200

[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
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