

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

18 June 2008, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 18 June 2008 at 0930 in the Environmental Flight Conference Room, Building 570, Travis AFB, California. Attendees included:

- Mark Smith Travis AFB
- Lonnie Duke Travis AFB
- Glenn Anderson Travis AFB
- Greg Parrott Travis AFB
- 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)
- Tom Barry Shaw Engineering and Infrastructure (Shaw E&I)
- Mary Snow TechLaw
- Mike Wray CH2M Hill
- Allen Mason Environmental Quality Management (EQM)
- Rich Freitas USEPA
- Joe Eidelberg USEPA

Handouts distributed via email prior to the start of the meeting included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting, Teleconference, and Document Schedules
- Attachment 3 SBBGWTP Monthly Data Sheet (May 2008)
- Attachment 4 CGWTP Monthly Data Sheet (May 2008)
- Attachment 5 NGWTP Monthly Data Sheet (May 2008)

1. ADMINISTRATIVE

Mr. Smith introduced Mr. Eidelberg from the EPA.

A. Previous Meeting Minutes

The April 2008 RPM meeting minutes were approved and finalized.

B. Action Item Review

Action Item #1: IRA start dates. Mr. Chang needed to attach actions to specific dates in an EPA database. Not all dates could be resolved. Consider action item closed as Mr. Chang will work directly with Mr. Anderson to resolve.

Action Item #2: Notification of field work. Consider action item closed as agencies have been notified of start date for field work.

C. Meeting Dates and Master 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 23 July at Travis.
- Mr. Smith noted that several teleconference dates have been removed; the next scheduled telecom will be 6 October 2008. Teleconferences can be scheduled as needed.

Travis AFB Master Document Schedule

- Five Year Review: Schedule has been revised to accommodate agency review.
- Soil Remedial Action Report: The document has been sent out for agency review and all dates in the schedule have been revised.
- Groundwater ROD Support Vapor Intrusion Screening Level Assessment Work Plan: The Final of this document was sent out on 11 June 2008.
- POCO MNA Evaluation Report: No changes.
- Guardian quarterly newsletter: The newsletter may not be published this quarter due to workload. Mr. Smith asked for feedback from the managers about not publishing in July. Travis will let group know by 27 June 2008 if Travis AFB will be able to publish the Guardian this quarter.
- CAMU Monitoring and Maintenance Report: No changes.

2. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant sites. Mr. Freitas has comments on the April and May reports, but will bring up later in the meeting in order to stay on schedule.

South Base Boundary Groundwater Treatment Plant

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 May 2008. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 86.1 gallons per minute (gpm) and electrical power usage was 17,424 kWh. Approximately 2.1 pounds of volatile organic compounds (VOCs) was removed during May 2008. The total mass of VOCs removed since the startup of the system is 335.8 pounds (see Attachment 3).

No shutdowns occurred in May 2008.

The extraction wells that are offline were sampled in May as part of the annual GSAP event. No other optimization activities were conducted.

Central Groundwater Treatment Plant

The Central Groundwater Treatment Plant (CGWTP) performed at 99.1% uptime with approximately 3.2 million gallons of groundwater extracted and treated during the month of May 2008. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 71.5 gpm and electrical power usage was 28,347 kWh for all plants. Approximately 13.1 pounds of VOCs were removed from groundwater, and 2.2 pounds from vapor, during May 2008. The total mass of VOCs removed since the startup of the system is 10,769 pounds. (see Attachment 4).

A few short duration shutdowns occurred in May 2008 due to power outages. Additionally, the CGWTP system was shut down on 22 May due to a high amp alarm on UV lamp 3. The lamp is being evaluated for replacement.

No optimization activities were conducted in May 2008.

North Groundwater Treatment Plant

The North Groundwater Treatment Plant (NGWTP) performed at 100% uptime with approximately 330,000 gallons of groundwater extracted and treated during the month of May 2008. All treated water was discharged to the duck pond. The average flow for the NGWTP was 7.5 gpm and electrical power usage was 13,410 kWh. Less than an ounce of VOCs was removed during May 2008. The total mass of VOCs removed since the startup of the system is 5,413.8 pounds (see Attachment 5).

No shutdowns occurred in May 2008.

The extraction wells that are offline were sampled in May as part of the annual GSAP event. No other optimization activities were conducted. Mr. Duke noted that the Influent level of trichloroethene (4.7 ug/L) is below the effluent discharge concentration limit of 5 ug/L.

B. NGWTP Optimization Memorandum

Mr. Duke gave an update on the NGWTP Technical Memo. It does not have the May influent levels. Emphasize influent levels are less than effluent limits. Recommend shut down during wet season. This would reduce power usage and CO2 emissions and wear and tear on equipment. Natural attenuation is being monitored.

Mr. Duke did not ask for comments by certain date. Mr. Friedman asked that the memo be updated to reflect latest groundwater results. Mr. Duke agreed and when sending out memo will give a deadline for a response. Mr. Anderson asked how long the agencies need for review. All agreed to a week after receipt of the memo.

June results may be higher due to LF007 wells back online. LF007 wells were shut off during rainy season, due to the potential adverse impacts on the vernal pools. Mr. Duke would like to match the entire plant operation to the schedule of the LF007 wells. This information will be included in the memo. Ms. Snow asked that the wells in LF007 that are off be listed also. Mr. Duke responded that information from the GSAP is included in the memo; some of the figures were altered to show how plumes are affected by the wells.

C. Petroleum Only Contamination (POCO) Status

Mr. Duke gave an update on the Petroleum Only Contamination (POCO) status.

The draft is done and will be sent to the Water Board for review on Friday. No surprises in the report. Reports will be sent both electronically and in hardcopy.

D. Five Year Review Response to Comments

Mr. Anderson gave an update on the Five Year Review status. Received comments from EPA; WB, DTSC won't reissue comments that have already been issued. Agencies need another week to finish. Therefore, Response to Comments discussion will not occur today; need to reschedule a meeting by phone or email if possible.

TAFB is working on EPA's comments, but need input from all the agencies.

Mr. Chang mentioned he is on leave from 27 June through 11 July. Please communicate directly with Suzette at EPA during this time.

E. Vapor Intrusion Field Work

Mr. Anderson gave an update on the Vapor Intrusion field work. Work is scheduled to start Monday. Not much work will happen that day, though; will have the tailgate meeting and discuss health and safety. Agencies are welcome anytime; TAFB can let them know of a good day to observe the fieldwork. The first day may be spent dealing with permissions to enter buildings, etc. Also, Mr. Wray mentioned it may take all day to get the drill rigs through the South Gate. Due to security reasons all deliveries and equipment must enter through the South Gate and backups occur due to the amount of work and projects happening on-base.

Mr. Eidelberg is interested in the indoor and outdoor air pressure measurements.

Not having a formal kickoff meeting, but a tailgate meeting instead. The intent is to adhere to the work plan as written. It looks that the weather should be good, at least for the first week.

The AFIOH team used SUMMA canisters and badges in limited areas. This upcoming work is on a much larger scale.

Mr. Eidelberg had some issues on the work plan he wanted to mention. The first was on Figure 1-2, which lays out the step by step strategy; seemed too simplistic and did not reflect what was in the text. He felt important detail was not shown, such as if the screening effort is valid or not. Mr. Anderson stated that based on previous comments detail was added to the text. Mr. Eidelberg had expected changes to the flowchart also. Mr. Smith asked if it was meant to include decision loops. Mr. Anderson stated that in general the figures can't have too much information; that is why more detail is included in the text. All previous comments were incorporated into the text, not the figure.

Mr. Anderson stated that he would sit down with Mr. Eidelberg and go over fine details. The technical memo could also include increased detail based on this input.

Mr. Eidelberg went on to second comment on Figure 2-1. By including the utility pipe in the drawing coming into the building it is inferred that problems may come from the utilities. The team may need to add a sample at the entrance of the utility to rule this out. Mr. Eidelberg was curious about relative cost of soil vapor sampling compared to indoor air sampling, doing the modeling compared to directly sampling the buildings. Mr. Smith answered that by performing a screening level assessment, have the best chance of focusing on areas with most likely contamination. Mr. Freitas mentioned that many samples have already been taken and referenced the RI. Mr. Eidelberg asked if it is better to screen instead of sampling. Mr. Wray answered that it isn't cheaper to do that but shows following a pathway from the source to potential receptors. If there is no pathway then there is no reason to sample. It would be difficult to explain results of random sampling. Conservative screenings and sampling to work from the source to the buildings were used to establish the pathway.

Mr. Smith stated that an ATSDR Public Health Assessment had been accomplished in 1998 and found no public health hazards. The focus for this most recent work has been on our ERP sites from a risk assessment perspective rather than an OSHA perspective. Mr. Duke added that indoor air sampling of a building that is using and storing chemicals can skew results and may result in false detections.

In summary, a sample may be taken where a utility line intersects a plume, or where a vacant building is above a plume. Mr. Anderson will look into getting answers on this; he will need to get utility diagrams. It was mentioned that excavation normally does not occur near utilities as the permit usually states this condition. Another solution would be to collect a representative sample, possibly from an unoccupied building so turning off utilities would not be an issue. Mr. Wray will look into utility line locations.

Last comment from Mr. Eidelberg: The new RCRA guidance document on vapor intrusion includes how a large paved surface affects surrounding area, from 100 to 150 feet. Did the assumptions in work plan include consideration if paved or not paved? Mr. Anderson mentioned the cap effect.

It was reiterated that field work begins Monday and the agencies will be kept notified. Mr. Anderson mentioned he would like Mr. Eidelberg present while sampling for his input. Mr. Anderson stated the team will work with the occupants to place the sampler where it won't be interfered with.

F. Remedial Action Report

Mr. Anderson gave an update on the RAR status. The agency comments are due 11 July 2008. WB and DTSC stated comments should be done by that date. EPA is refusing to comment.

Mr. Chang stated that his guidance document points to two goals for an RA completion report: All construction activities are completed and all cleanup goals specified in the ROD have been achieved. With the three sites still pending, can't give total concurrence as not truly completed yet.

Mr. Anderson explained that the decision to write one report for all seven sites was proposed and accepted for the work done in 2007. The problems of waiting for all the work to be done include: 1) using a different contractor, it is difficult to combine work done; 2) possibility of losing contact with original contractor before the final report is complete. The report documents achievements made in 2007. The sediment sites had no work done, and work at FT005 was a pulled AST only. The other sites' cleanup actions were taken to completion. All the CAMU information is in this report, including how it was built and all the lab results. It is true that this report will be used for site closure for some of the sites; it documents all the work that has been completed. There is concern about EPA's view that this is an incomplete report. Mr. Anderson also pointed out that to avoid land use controls, sites were taken to residential levels instead of industrial.

Mr. Smith stated that the base is asking for concurrence at each site though written as one report. Mr. Chang responded that it shouldn't be called a completion report because of the three outstanding sites. Possibly EPA can perform review on four sites where work was completed and make a statement that the NEWIOU ROD goals were not met for the other three sites. Mr. Anderson pointed out that the report is titled Remedial Action Report, not remedial action completion report. There was an error in titling the report in the Master Document Schedule in previous meetings. The base is asking the agencies to comment on each site separately. Mr. Smith asked for a concession from EPA and that they take the report as a whole and concur or don't concur on a site-by-site basis. It is detrimental to the current work flow to break up this report at this time. An agreement had already been made with the agencies to consolidate the 2007 work into one report.

Mr. Chang agreed to go back to management at EPA for an answer.

3. NEW ACTION ITEMS REVIEW

A. GWTP Response to Comments

Mr. Duke thanked Mr. Chang for providing comments to the GWTP reports. This is the first time in the ten years of producing these reports that comments have been made. Mr. Duke asked if there any further comments. Mr. Chang expressed his opinion that the report is a great production report, but could include more analysis of the information. He appreciates the advanced copy of the reports to have time to review. Mr. Smith added that the timing of the RPM meetings usually includes when the reports were completed.

Mr. Freitas had some questions and comments on the GWTP reports in order to better understand the results and information presented. The reports do present discharge results and make it clear that discharge levels are being met. What would be helpful is an explanation of what the system should be doing and what is happening underground; possibly include background information. Some of the wells appear to not be functioning efficiently. Is it the well itself or is could the geology be creating the problem? Mr. Duke answered that the clay lithology does affect the flow rates and wells historically have had low flow rates.

Mr. Freitas noted the high concentrations of trichloroethene in the extraction wells, along with the breakdown products, specifically for EW03x16 (CGWTP). The presence of vinyl chloride in combination with a remedy of natural attenuation could be a problem, as vinyl chloride is a breakdown product of trichloroethene and is potentially more of a concern than trichloroethene. Mr. Duke pointed out that this well has just recently been brought back online after being offline for many years. Mr. Anderson explained that it is a horizontal well that was designed to pull more water out. It was installed on the flight line at a time when the concrete was being replaced in preparation of new C17s. There wasn't time to research the lithology; it was installed while the concrete was out, then a 4-foot thick layer of concrete (for

heavy aircraft) was poured over it. It is on a very busy area of the base and hard to get to. The well has never performed as it should.

Mr. Smith noted that the current work is operating under two IRODs, in which the goal is to go after the contaminant and stop it from exiting the base. This is being done and documented. However, future work will be under the GWROD goals and remedies. Should probably start tailoring the work towards these goals and thinking of what could go into the reports to fulfill the GWROD goals and remedies.

Mr. Chang pointed out that the IROD protectiveness statement is for the short term; will need to address long term goals for protectiveness. Mr. Smith added that when the systems were installed, pump and treat was considered a final remedy. Progress has been made.

Mr. Freitas stated that it is best to find the most productive zones when installing wells. He had a question on the flow rates on various wells; Mr. Wray referred to the Optimization Report and the GSAP for information. Most wells are designed for 1 gpm flow. Mr. Chang added that possible should add text "by design" to clear up any confusion.

Ms. Snow asked for clarification on wells EW01, EW03 and MW02. Report refers to EW02 that doesn't seem to exist in the GSAP. It appears to be a misprint and should be MW02.

There have been four horizontal wells installed on base at different times.

Mr. Freitas noted that the monitoring wells in the North Plant have higher results than the extraction wells; should groundwater be pumped from these wells to maximize the treatment plant? Mr. Wray pointed out that the monitoring wells do not have the design characteristics or appropriate infrastructure allow for groundwater extraction.

Mr. Smith noted that becoming familiar with all the groundwater documents would probably answer most of Mr. Freitas' questions. The GWTP reports are a summary of the months' work. They used to be more extensive but were shortened at the EPA's request. It is more of a snapshot synopsis than a remedy evaluation. All of the supporting information will be included in the Focused Feasibility Study.

Mr. Freitas commented that both the 5 Year Review and GSAP reports are good at stating the remedial goals, but not how the system is designed to meet the goals. Mr. Wray suggested the Remedial Design Reports for this information. Adding text that remedy is functioning as designed would also help.

Mr. Smith wrapped up by asking the agencies to continue to provide comments and that any comments on the May reports will be addressed at the next meeting and be considered for planning purposes.

B. 23 July RPM Meeting Agenda

All agenda items will be kept on the agenda for July's meeting, adding an item for the RPO.

Mr. Salcedo mentioned he will be out of the office on 10-22 July 2008.

4. PROGRAM/ISSUES/UPDATE

A. Groundwater PBC Update

Mr. Smith reported that the draft Request for Proposal (RFP) went out under Multiple Award Remediation Contract and is being managed by the Omaha Office of USACE. It included the draft final SOOs. It is designed to take all groundwater sites to remedy in place (RIP). Comments have been received from four contractors. There is a teleconference scheduled for Friday for revisions to RFP and/or the SOOs.

A contractor site visit is planned for 14-15 July 2008. Bids are due 18 August 2008. Selection by committee is planned the following week, 19-27 August 2008, with contract awarded in September.

Due to the above schedule, discussion was started by Mr. Anderson concerning the printing of the Guardian. TAFB realizes the importance of community involvement, but schedule is impacted by PBC award efforts. Mr. Smith stated that he needs the project managers to be involved in the PBC efforts. Mr. Salcedo asked that if it is not to be published to let the RAB members know. Mr. Chang asked that Mr. Cooper be notified also.

Mr. Freitas asked about the Focused Feasibility Study. Mr. Smith stated it is part of the PBC. In January 2007 the Air Force did a summary of work anticipated for each groundwater site and asked EPA to review the summary. The Air Force looked at the schedule to meet RIP by 2012, and the decision was made to fund the work more robustly and create the PBC to include a FFS. Additionally, the schedule has the Basewide GW ROD draft being completed by June of 2009. The contractor that is awarded the PBC must agree to the schedule and have a plan for completion. Mr. Smith agrees it will be tight to have the final ROD in place by 2010 but that is the goal.

5. Action Items

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	Interim Remedial Action start dates to EPA.	--	CLOSED
2.	Air Force	Notify regulatory agencies when the Vapor Intrusion field work commences	June 2008	CLOSED
3.	Air Force	Update NGWTP Tech Memo for latest GW results	July 2008	Open
4.	EPA	Accept RAR report as written and concur/don't concur on site-by-site basis	July 2008	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
18 June 2008, 9:30 A.M.
AGENDA

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

2. CURRENT PROJECTS
 - A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)
 - B. NGWTP OPTIMIZATION MEMORANDUM (LONNIE)
 - C. PETROLEUM ONLY CONTAMINATION (POCO) STATUS (LONNIE)
 - D. 5 YEAR REVIEW RESPONSE TO COMMENTS (GLENN)
 - E. VAPOR INTRUSION FIELD WORK (GLENN)
 - F. REMEDIAL ACTION REPORT (GLENN)

3. NEW ACTION ITEM REVIEW
 - A. GWTP RESPONSE TO COMMENTS
 - B. 23 JULY RPM MEETING AGENDA

4. PROGRAM/ISSUES/UPDATE
 - A. GROUNDWATER PBC UPDATE

Travis AFB Master Meeting and 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.)
1-22-08	1-23-08	1-7-08*	—
2-26-08	2-27-08	2-4-08	—
3-18-08	3-19-08 #	—	—
4-22-08	4-23-08	4-7-08	4-24-08
5-20-08	5-21-08	5-5-08	—
6-17-08	6-18-08	—	—
7-22-08	7-23-08	—	—
8-26-08	8-27-08	—	—
9-23-08	9-24-08	—	—
10-21-08	10-22-08	10-6-08	10-23-08
—	—	11-10-08	—
12-09-08	12-10-08	—	—

*During the 7 Jan teleconference an additional meeting with EPA was scheduled for 9-10 Jan to discuss past GSAP issues in preparation for moving ahead with the current GSAP and the upcoming Groundwater Performance Based Contract (PBC).

**Holiday Weekend

Teleconference for the 3/19/08 meeting at **0800**

**Travis AFB Master Document Schedule
(continued)**

	PRIMARY DOCUMENTS			
	Basewide Travis, Glenn Anderson	Potrero Hills Annex Travis, Glenn Anderson	Five Year Review Travis, Glenn Anderson	Soil Remedial Action Report Travis, Glenn Anderson
Life Cycle	Groundwater ROD	Potrero Hills ROD		FT003, FT004, LF007E, SD045
Scoping Meeting	1-24-07	180 days after Water Board Order Rescinded	01-23-08	NA
Predraft to AF/Service Center	2-01-09	+ 360 days	03-11-08	01-29-08
AF/Service Center Comments Due	4-01-09	+ 420 days	03-26-08	02-13-08
Draft to Agencies	6-15-09	+ 480 days	04-10-08	05-09-08
Draft to RAB	6-15-09	+ 480 days	04-10-08	05-09-08
Agency Comments Due	8-15-09	+ 540 days	06-11-08	07-11-08
Response to Comments Meeting	9-01-09	+ 555 days	06-18-08	07-23-08
Agency Concurrence with Remedy	9-15-09	+ 570 days	NA	NA
Draft Proposed Plan to Agencies	12-01-09	+ 600 days	NA	NA
Issue Proposed Plan	1-15-10	+ 615 days	NA	NA
Public Comment Period	1-15-10 to 2-15-10	+ 615 to 645 days	NA	NA
Public Meeting	1-28-10	+ 625 days	NA	NA
Response to Comments Due	3-01-10	+ 640 days	07-02-08	08-08-08
Draft Final Due	3-01-10	+ 640 days	07-02-08	08-08-08
Final Due	5-01-10	+ 700 days	08-06-08	09-10-08

as of June 2008

**Travis AFB Master Document Schedule
(Continued)**

SECONDARY DOCUMENTS		
Life Cycle	GW ROD Support Vapor Intrusion Screening Level Assessment Travis, Glenn Anderson; CH2M Hill, Mike Wray	POCO Evaluation of Monitored Natural Attenuation Travis, Lonnie Duke; CH2M Hill, Mike Wray
Scoping Meeting	NA	NA
Predraft to AF/Service Center	01-18-08	05-23-08
AF/Service Center Comments Due	02-08-08	06-06-08
Draft to Agencies	02-15-08	06-20-08
Draft to RAB	02-15-08	06-20-08
Agency Comments Due	03-14-08 *	07-18-08
Response to Comments Meeting	04-23-08	08-01-08
Response to Comments Due	06-12-08	08-22-08
Draft Final Due	NA	NA
Final Due	06-12-08	08-22-08
Public Comment Period	NA	NA
Public Meeting	NA	NA

* received comments on 4/14/08

**Travis AFB Master Document Schedule
(Continued)**

INFORMATIONAL DOCUMENTS		
Life Cycle	Quarterly Newsletters (July 2008) Travis, Mark Smith	CAMU Monitoring & Maintenance Report Travis, Lonnie Duke
Scoping Meeting	NA	NA
Predraft to AF/Service Center	NA	08-15-08
AF/Service Center Comments Due	NA	08-30-08
Draft to Agencies	6-27-2008	NA
Draft to RAB	NA	NA
Agency Comments Due	7-11-2008	NA
Response to Comments Meeting	TBD	NA
Response to Comments Due	7-18-2008	NA
Draft Final Due	TBD	NA
Final Due	7-22-2008	09-12-08
Public Comment Period	NA	NA
Public Meeting	NA	NA

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 94

Reporting Period: 1 – 31 May 2008

Date Submitted: 12 June 2008

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 – May 2008

Operating Time: **744 hours**

Percent Uptime: 100%

Electrical Power Usage: 17,424 kWh

Gallons Treated: **3.8 million gallons**

Gallons Treated Since July 1998: **605 million gallons**

Volume Discharged to Union Creek: **3.8 million gallons**

Volume Used for Dust Suppression: **0 gallons**

VOC Mass Removed: **2.1 pounds^a**

VOC Mass Removed Since July 1998: **335.8 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: \$4,014^b

Monthly Cost per Pound of Mass Removed: \$2,757^b

^a Calculated using May 2008 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.

Flow Rates

Average Groundwater Total Flow Rate: **86.1^a**

Average Flow Rate (gpm) ^b							
FT005				SS029		SS030	
EW01x05	1.1	EW736x05	3.9	EW01x29	5.0	EW01x30	4.7
EW02x05	2.0	EW737x05	Off line ^c	EW02x29	9.9	EW02x30	2.8
EW03x05	4.2	EW742x05	Off line ^c	EW03x29	Off line ^e	EW03x30	Off line ^e
EW731x05	Off line ^c	EW743x05	Off line ^c	EW04x29	11.1	EW04x30	20.0
EW732x05	Off line ^c	EW744x05	Off line ^c	EW05x29	1.5	EW05x30	11.9
EW733x05	Off line ^c	EW745x05	Off line ^c	EW06x29	6.9 ^d	EW06x30	3.2 ^d
EW734x05	13.1 ^d	EW746x05	Off line ^c	EW07x29	6.5	EW711x30	3.5
EW735x05	3.8						
FT005 Total:		28.1		SS029 Total:		40.9	
				SS030 Total:		46.1	

^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 well's operating time.

^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 Extraction well was pumping for less than 10% of the operating time.

^e Extraction well was 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 May 2008
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 May 2008. Sample results are presented in Table 1. The total VOC concentration (64.2 µg/L) in the influent sample has increased slightly since the April 2008 sample (61.2 µg/L). The total influent VOC concentrations have generally been increasing since 2006. VOCs were not detected in the effluent sample.

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 extraction wells will remain off-line for one year. These wells were sampled in May 2008 as part of the annual GSAP event. At the end of the rebound period, in December 2008, the groundwater extraction wells will be sampled to assess rebound and plume stability. No other optimization activities were conducted in May 2008.

Table 1

Summary of Groundwater Analytical Data for May 2008 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 May 2008 (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	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	3.2	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND
Trichloroethene	5.0	0.16 – 0.64	0	61	ND
Vinyl Chloride	0.5	0.40	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	0.19 - 0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	5.0 J
Total Petroleum Hydrocarbons – Diesel	50	33	0	NM	ND
Total Suspended Solids (mg/L)	NE	1.1	0	ND	NM
^a In accordance with Appendix B of the <i>Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual</i> (CH2M HILL, 2004).					
J	=	analyte concentration is considered an estimated value			
mg/L	=	milligrams per liter			
NA	=	not available			
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: 106

Reporting Period: 1 – 31 May 2008

Date Submitted: 12 June 2008

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 – May 2008

Operating Time:	Percent Uptime:	Electrical Power Usage:
CGWTP: 737 hours	CGWTP: 99.1%	CGWTP: 8,310 kWh
WTTP: Water: 725 hours	WTTP: Water: 97.4%	WTTP: 20,037 kWh
Vapor: 724.5 hours	Vapor: 97.4%	
ThOx: 737 hours	ThOx: 99.1%	ThOx: 15,968 kWh
Gallons Treated: 3.2 million gallons	Gallons Treated Since January 1996: 382.5 million gallons	
VOC Mass Removed:	VOC Mass Removed Since January 1996:	
13.1 lbs (groundwater only)^a	2,303 lbs from groundwater	
2.2 lbs (vapor only)^b	8,466 lbs from vapor	
UV/Ox DRE: 100%	ThOx DRE: 92.4 %	
Rolling 12-Month Cost per Pound of Mass Removed: \$850 ^c		
Monthly Cost per Pound of Mass Removed: \$746 ^c		
^a Calculated using May 2008 EPA Method SW8260B analytical results.		
^b Total VOC vapor mass removed was calculated using March 2008 EPA Method TO-14 analytical results for the WTTP system, WTTP extraction wells, and the ThOx system.		
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.		
DRE = destruction removal efficiency		UV/Ox = ultraviolet oxidation

Flow Rates

Average Groundwater Flow Rate: **71.5 gpm^a**

Location	Average Flow Rate	
	Groundwater (gpm) ^b	Soil Vapor (scfm)
EW01x16	23.9	NA
EW02x16	Off line ^c	NA
EW03x16	0.5 ^d	NA ^g
EW605x16	4.32 ^e	NA ^g
EW610x16	3.4	NA ^g
WTTP	27.4 ^f	137
ThOx	NA	59.4

^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 turned off line in early April 2008 because the pump failed.

^d EW03x16 (water) was restarted on 19 March 2008.

^e the flow meter for EW605x16 may need to be replaced as noted on the 23 May 2008 monitoring form.

^f as measured by the effluent groundwater pumped to the CGWTP divided by the operating time.

^g vapor extraction is present at these wells; however, the vapor flow rates are not available.

gpm = gallons per minute

NA = not applicable/not available

scfm = standard cubic feet per minute

Flow Rates

Flow Rate from the WIOU and DP039 Extraction Wells on 30 May 2008 (gpm)							
SD037/SS041/SD043				LF008/SD033/SD034		SD036/ DP039	
EW599x37	5.1	EW706x37	0.5	EW719x08	3.0	EW593x36	2.5
EW700x37	5.0	EW707x37	0.5	EW720x08	2.7	EW594x36	0.8
EW701x37	1.0	EW510x37	4.5	EW721x08	3.2	EW595x36	5.4
EW702x37	2.4	EW511x37	1.7	EW501x33	0.4	EW563x39	0.9
EW703x37	1.4	EW542x41	Off line	EW503x33	0.0	EW782x39	1.4
EW704x37	0.2	EW555x43	0.0	EW01x34	0.5		
EW705x37	2.9			EW02x34	0.0		

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater):					
CGWTP	22 May 2008	06:30	22 May 2008	13:15	UV Lamp 3 high amp alarm
WTPP (Groundwater):					
WTPP	6 May 2008	05:15	6 May 2008	08:30	Power outage
WTPP	7 May 2008	05:45	7 May 2008	15:00	Power outage
WTPP	22 May 2008	06:30	22 May 2008	13:15	CGWTP was off line
WTPP (Vapor):					
WTPP	6 May 2008	05:15	6 May 2008	08:30	Power outage
WTPP	7 May 2008	05:45	7 May 2008	15:00	Power outage
WTPP	22 May 2008	06:30	22 May 2008	13:45	CGWTP was off line
ThOx (vapor):					
ThOx	22 May 2008	06:30	22 May 2008	13:15	CGWTP was off line
CGWTP = Central Groundwater Treatment Plant ThOx = Thermal Oxidation System WTPP = West Treatment and Transfer Plant					

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP was performed on 1 May 2008. Sample results are summarized in Table 1. The total VOC concentration (496.7 µg/L) in the May 2008 CGWTP influent groundwater sample increased since the April 2008 sampling (439.6 µg/L). Chloroform, cis-1,2-dichloroethene (DCE), and trichloroethene (TCE) were present in trace amounts in the samples from the granular activated carbon (GAC) sample points. The VOCs were also detected in the system effluent, but at concentrations less than their respective instantaneous maximum effluent limits. The detections in these samples may be attributed to desorption from the GAC.

In April 2008, carbon disulfide was present in groundwater samples from the GAC sample points. However, carbon disulfide was not detected in any of the May 2008 samples. Carbon disulfide concentrations and the system performance will continue to be monitored.

The CGWTP was shutdown on 22 May 2008 due to the UV Lamp 3 high amp alarm. The lamp 3 usage is nearing 3,000 hours and may need to be replaced.

The flow meter or totalizer for EW605x16 may be malfunctioning and may need to be replaced. The SCADA shows the flow rate to be approximately 13.0 gpm. However, the calculated flow rate based on the totalizer shows the flow rate to be approximately 4.3 gpm.

The ThOx system continues to treat soil vapor from the 2-Phase® well (TPE-W). The ThOx system began treating soil vapor from EW03x16, EW605x16, and EW610x16 in March 2008. Vapor extraction will continue at these three extraction wells until July 2008. The wells will be shut down for 1 month, and then vapor rebound samples will be collected from the wells. After the samples have been collected, the wells will be turned back on.

The WTTP SVE system continued to treat soil vapor from Site DP039 and the WIOU. On 28 March 2008, vapor extraction from 8 WIOU wells (EW593x36, EW594x36, EW595x36, EW599x37, EW700x37, EW704x37, EW707x37, and EW510x37) was turned off to facilitate the collection of rebound soil gas samples. On 29 and 30 April 2008, soil gas samples were collected from the 8 wells and vapor extraction was restarted. TCE was detected at elevated concentrations in EW594x36, EW595x36, EW599x37, and EW707x37. The soil gas sampling results are presented in Table 2.

Optimization Activities

No optimization activities were conducted in May 2008.

Table 1

Summary of Groundwater Analytical Data for May 2008 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 May 2008 (µg/L)					
				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	ND	ND	ND	ND	ND	ND
Carbon Disulfide	NA	0.45	0	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.16	0	0.28 J	0.26 J	0.31 J	0.28 J	0.29 J	0.21 J
Dibromochloromethane	5.0	0.17	0	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.13	0	0.32 J	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.16	0	0.21 J	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.16	0	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.14	0	2.1	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15 – 1.5	0	78	ND	0.54	0.70	0.64 J	0.44 J
trans-1,2-Dichloroethene	5.0	0.15	0	3.4	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	0.93	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.16 – 1.60	0	410	ND	2.8	2.0	1.1	0.79
Vinyl Chloride	0.5	0.40	0	1.5	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics									
Benzene	1.0	0.16	0	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.17	0	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.19 – 0.34	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
- NA = not available
- N/C = number of samples out of compliance with discharge limits
- ND = not detected
- NS = not sampled
- µg/L = micrograms per liter

TABLE 2

Soil Vapor Analytical Data for April 2008 – WIOU Wells

Constituent	29 April 2008	29 April 2008	29 April 2008	30 April 2008				
	(ppbv)							
	EW593x36	EW594x36	EW595x36	EW599x37	EW700x37	EW704x37	EW707x37	EW510x37
Halogenated Volatile Organics								
Benzene	ND (0.98)	ND (54)	ND (41)	5 J	15 J	2.8 J	ND (6.7)	4.8 J
Carbon Tetrachloride	ND (0.66)	ND (37)	ND (28)	ND (2.6)	ND (5.0)	1.2 J	1,900	ND (2.9)
Chloromethane	ND (2.8)	ND (160)	ND (120)	ND (11)	ND (21)	ND (3.9)	ND (19)	ND (12)
cis-1,2-Dichloroethene	17	370	95 J	820	300	130	110	200
1,2-Dichlorobenzene	ND (1.2)	ND (68)	ND (51)	ND (4.8)	ND (9.3)	ND (1.7)	ND (8.4)	ND (5.4)
1,3-Dichlorobenzene	ND (1.1)	ND (63)	ND (48)	ND (4.5)	ND (8.6)	ND (1.6)	ND (7.8)	ND (5.0)
1,4-Dichlorobenzene	ND (1.1)	ND (62)	ND (47)	ND (4.4)	ND (8.5)	ND (1.6)	ND (7.6)	ND (5.0)
1,2-Dichloroethane	ND (0.82)	ND (46)	ND (34)	ND (3.2)	ND (6.2)	ND (1.2)	ND (5.6)	ND (3.6)
1,1-Dichloroethene	1.1 J	160 J	34 J	350	21 J	170	38	1,800
Ethylbenzene	ND (1.2)	ND (66)	ND (50)	ND (4.7)	ND (9.0)	ND (1.7)	ND (8.1)	ND (5.3)
Freon 11	ND (0.42)	ND (23)	ND (18)	ND (1.7)	ND (3.2)	0.74 J	3.4 J	3.0 J
Freon 12	1.8 J	ND (66)	ND (50)	ND (4.7)	ND (9.0)	ND (1.7)	11 J	ND (5.3)
Freon 113	ND (0.54)	ND (30)	ND (23)	ND (2.1)	ND (4.1)	ND (0.76)	8.5 J	ND (2.4)
Methylene Chloride	ND (0.79)	ND (44)	ND (33)	ND (14)	ND (6.0)	ND (1.1)	ND (5.4)	ND (3.5)
Methyl Ethyl Ketone (2-Butanone)	5.5 J	ND (190)	ND (150)	ND (3.1)	ND (26)	ND (4.9)	ND (24)	ND (15)
Tetrachloroethene	3.4 J	94 J	59 J	19	44	9.0	200	26
Toluene	ND (0.94)	ND (52)	ND (40)	ND (3.7)	ND (7.1)	ND (1.3)	ND (6.5)	ND (4.2)
trans-1,2-Dichloroethene	3.3 J	74 J	ND (37)	490	140	31	18 J	17
1,1,1-Trichloroethane	ND (0.52)	ND (29)	ND (22)	ND (2.1)	ND (4.0)	ND (0.74)	ND (3.6)	ND (2.3)
1,2,4-Trimethylbenzene	ND (1.1)	ND (61)	ND (46)	ND (4.3)	ND (8.3)	ND (1.5)	ND (7.5)	ND (4.9)
1,3,5-Trimethylbenzene	ND (1.1)	ND (63)	ND (48)	ND (4.5)	ND (8.6)	ND (1.6)	ND (7.8)	ND (5.0)
Trichloroethene	670	23,000	16,000	22,000	5,500	2,200	29,000	3,700
Vinyl Chloride	ND (1.2)	ND (69)	ND (52)	21	12 J	3.8 J	ND (8.5)	9.7 J
Xylenes, m,p-	ND (2.1)	ND (120)	ND (88)	ND (4.2)	ND (16)	ND (2.9)	ND (14)	ND (9.3)
Xylene, o-	ND (1.1)	ND (59)	ND (45)	ND (8.3)	ND (8.1)	ND (1.5)	ND (7.3)	ND (4.7)

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

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 96

Reporting Period: 1 – 31 May 2008

Date Submitted: 12 June 2008

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 – May 2008

Operating Time: **Water:** 744 hours

Percent Uptime: **Water:** 100%

Electrical Power Usage: **13,410 kWh**

Gallons Treated: **0.33 million gallons**

Gallons Treated Since March 2000: **79.5 million gallons**

Volume Discharged to Duck Pond: **0.33 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:

0.01 lbs (groundwater only)^a

173.8 lbs from groundwater

0 lbs (vapor only)^b

5,240 lbs from vapor^c

Rolling 12-Month Cost per Pound of Mass Removed: \$110,470^{de}

Monthly Cost per Pound of Mass Removed: \$366,287^d

^a Calculated using May 2008 EPA Method SW8260B analytical results.

^b The SVE system was shut down in December 2007 in accordance with the *Work Plan for Remedial Process Optimization (RPO) Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007).

^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: **7.5 gpm^a**

Location	Groundwater Flow Rate on 30 May 2008 (gpm)
EW565x31	Off line ^b
EW566x31	Off line ^b
EW567x31	Off line ^b
EW576x04	1.9
EW577x04	1.1
EW578x04	Off line ^b
EW579x04	Off line ^b
EW580x04	Off line ^b
EW621x04	3.2
EW622x04	1.3
EW623x04	1.0
EW614x07	0.9 ^c
EW615x07	1.1 ^c

^a The flow rate was calculated using the effluent discharge totalizer divided by the operating time of the plant.

^b 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).

^c LF007 extraction wells were turned on for the dry season on 30 April 2008.

gpm = gallons 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 May 2008
NA = not applicable NGWTP = North Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 1 May 2008. Sample results are presented in Table 1. The total VOC concentration (4.7 µg/L) in the influent sample has decreased since the April 2008 sample (7.5 µg/L). TCE was the only VOC detected in the influent sample. Since the SD031 extraction wells were shut down, the indicator chemical for the site, 1,1-DCE, was not detected in the system influent. There were no detections of VOCs in the effluent sample.

The LF007C solar extraction wells (EW614x07 and EW615x07) were turned on for the dry season on 30 April 2008. Rechargeable batteries were installed at each well, and therefore, the well can operate 24 hours a day.

Optimization Activities

On 4 December 2007, six extraction wells (EW565x31, EW566x31, EW567x31, EW578x04, EW579x04, and EW580x04) were shut down for rebound testing. These extraction wells will remain off-line for one year. These wells were sampled in May 2008 as part of the annual GSAP event. At the end of the rebound period, in December 2008, the groundwater extraction wells will be sampled to assess rebound and plume stability. No other optimization activities were conducted in May 2008.

Table 1

Summary of Groundwater Analytical Data for May 2008 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 May 2008 (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	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND
Trichloroethene	5.0	0.16	0	4.7	ND
Vinyl Chloride	0.5	0.40	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	0.19 – 0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	5.5 J
Total Petroleum Hydrocarbons – Diesel	50	33	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