Final

Travis Air Force Base
Environmental Restoration Program
Remedial Program Manager's
Meeting Minutes

13 June 2012, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 13 June 2012 at 0930 hours, at Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Glenn Anderson	Travis AFB
• Lonnie Duke	Travis AFB
• Merrie Schilter-Lowe	Travis AFB
• Gregory Parrott	Travis AFB
• Dezso Linbrunner	USACE-Omaha
• Alan Friedman	California Regional Water Quality Control Board (RWQCB)
• Jose Salcedo	California Department of Toxic Substances Control (DTSC)
• Nadia Hollan Burke	United States Environmental Protection Agency (USEPA)
• Mary Snow	Techlaw, Inc
• Rachel Hess	ITSI
• Mike Wray	CH2M HILL
• Loren Krook	CH2M HILL
• Tricia Carter	CH2M HILL
• Leslie Royer	CH2M HILL

Handouts distributed at the meeting and presentations included:

• Attachment 1	Meeting Agenda
• Attachment 2	Master Meeting and Document Schedule
• Attachment 3	SBBGWTP Monthly Data Sheet (May 2012)
• Attachment 4	CGWTP Monthly Data Sheet (May 2012)
• Attachment 5	Site ST018 Monthly Data Sheet (May 2012)
• Attachment 6	Presentation: Site SS030 Groundwater Cleanup Progress Report
• Attachment 7	Presentation: Program Overview

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 16 May 2012 RPM meeting minutes were approved and finalized as written, with the following exceptions:

Mr. Salcedo requested to include "Mr. Smith introduced Ms. Dawn Wright, Public Participation Specialist for DTSC. Ms Wright is replacing Mr. Marcus Simpson.

B. Action Item Review.

Action items from May were reviewed.

Action item one still open: Travis AFB to research beneficial reuse of treated water. Mr. Smith will contact the Project Manager at AFCEE to discuss, and give an update at next RPM meeting. Update: Mr. Smith talked with AFCEE regarding beneficial reuse, AFCEE is looking into it.

Master Meeting and Document Schedule Review (see Attachment 2)

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

Travis AFB Annual Meeting and Teleconference Schedule

— The next RPM meeting will be held on 18 July 2012 at 0930 hours. The 15 August 2012 RPM date is subject to change due to the Proposed Plan (PP) Public Meeting. Mr. Salcedo said the week of 14 August 2012 works best for him. Ms. Burke said the week of 27 August 2012 will not work for her.

Travis AFB Master Document Schedule

— Proposed Plan (PP): No change. Once all the comments have been received and reviewed. Travis AFB will contact The Agencies and CH2M HILL via teleconference and discuss comments. When the text portion is completed, the graphics will be prepared.

— Groundwater Record of Decision (ROD): No change to schedule.

— Potrero Hills Annex: (FS, PP, and ROD): No change to schedule. Mr. Anderson noted that a 6-week extension on the work plan had been requested.

— Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes: No change to schedule.

— Work Plan for Remedial Process Optimization of Sites SS016 and SS029: The Response to Comments Meeting (RTC) was changed to 13 June 2012. Travis AFB has submitted their responses to EPA's comments. Mr. Duke added that the dig permit has been approved and would like to finalize the Work Plan

(WP) as soon as possible. Ms. Burke suggested a working meeting to fast track the document. Mr. Friedman and Mr. Salcedo said they had no comments on the document. Mr. Linbrunner said AFCEE is concerned because the document has been delayed by six months, and the period of performance has been extended to January 2013.

— Technical and Economic Feasibility Analysis (TEFA): No change to schedule. Will be moved to history file next month.

— Site LF007C Data Gaps Investigation Technical Memorandum: No change to schedule.

— FT005 Remedial Action Completion Report: No change to schedule. Mr. Linbrunner commended the contractor on their performance, stating under the original Performance Based Contract (PBC) they were to meet industrial standards with land use controls. But due to the way the cleanup was conducted they were able to almost meet residential cleanup levels, and unrestricted land use. The contractor is waiting for dioxin sample data to be received, and if it comes back under MCL this site will meet the Air Force goals for 2015 of "clean closure". Ms. Hess said they are expecting the un-validated dioxin results on 15 June 2012.

— Quarterly Newsletter (July 2012): No change to schedule. Mr. Anderson said his goal is to promote the PP in this quarterly newsletter, by explaining in greater detail what the PP is. Travis AFB will not prepare a fact sheet. Ms. Burke voiced concerns about not including a fact sheet. Ms. Burke said she will look into the requirements and language.

— 2011 Groundwater Treatment RPO Annual Report: No change to schedule. Travis AFB has received EPA comments and is working on the responses. Mr. Salcedo and Mr. Friedman said they reviewed the document and had no comments.

— 2011 CAMU Annual Report: No change to schedule.

— Old Skeet Range Engineering Evaluation/Cost Analysis: No change to the schedule. Travis AFB has submitted responses to EPA comments.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.8 million gallons of groundwater were extracted and treated during the month of May 2012. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 120 gallons per minute (gpm).

Electrical power usage was 14,580 kWh and approximately 19,975 pounds of CO_2 were created (based on DOE calculation). Approximately 2.7 pounds of volatile organic compounds (VOCs) were removed in May. The total mass of VOCs removed since startup of the system is 421 pounds.

Optimization Activities: Troubleshooting activities indicated that EW01x05 was inoperable due to a pump motor ground short. On 29 May 2012 the EW01x05 level transducer wiring was repaired and the well was brought back on line.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 2.0 million gallons of groundwater extracted and treated during the month of May 2012. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 39.9 gpm. Electrical power usage was 2,876 kWh for all equipment connected to the Central plant, and approximately 3,940 pounds of CO_2 were created. Approximately 5.1 pounds of VOCs were removed from groundwater in May. The total mass of VOCs removed since the startup of the system is 11,283 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. No additional optimization activities to report for the month of May.

Optimization Activities for CGWTP: No optimization activities to report for the month of May.

North Groundwater Treatment Plant (no Attachment)

Mr. Duke said the North Plant is still shut down. NGWTP was turned back on in early June to grab some samples. Once the validated sample results are received, the NGWTP will be turned on.

Site ST018 Groundwater (MTBE) Treatment Plant (see Attachment 5)

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 236 thousand gallons of groundwater extracted and treated during the month of May 2012. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 4.82 gpm. Electrical power usage for the month was 177 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 242 pounds of CO_2. Approximately 2.88 pounds of BTEX, MTBE and TPH were removed from groundwater in May. The total BTEX, MTBE and TPH mass removed since the startup of the system is 14.7 pounds.

Note: electrical power use is for the alarm system and a pump that pushes water through the GAC. The other pumps in the system are all solar powered.

Optimization Activities: No optimization activities to report for the month of May.

3. Presentations

Site SS030 Groundwater Cleanup Progress Report (see Attachment 6)

Ms. Royer reported on Site SS030 Groundwater Cleanup Progress Report. See attachment 6 for details. Highlights included:

Ms. Royer provided a map to show the locations of SS030 and FT005, located in the vicinity of the south base boundary.

Site SS030 Recent History:

- From 2002 through 2008 the data showed increasing TCE concentrations in the easternmost wells of Site SS030 (MW03x30 and MW05x30). The groundwater plume may be migrating eastward toward Site FT005, due to the pumping of fifteen wells at that site.

- In 2009 additional investigation was conducted to define the extent of the TCE contamination on the eastern side of Site SS030. Travis AFB received permission from the landowner to conduct the investigation in the area that extended beyond the easement, so hydropunch samples could be collected; however, permanent monitoring wells could not be installed.

- The investigation found the eastern edge of the SS030 plume (TCE concentrations exceeding MCLs) extended beyond the eastern edge of the easement.

- Based on the results of the hydropunch sample analysis, a well pair was installed (MW2001Ax30 and MW2001Bx30; shallow and deep well screens) as close as possible along the easement boundary.

SS030 Optimization Measures:

- Increased pumping at Site SS030 groundwater extraction wells in 2010 by turning extraction wells EW03x30, EW04x30 and EW711x30 back online.

- Extraction at Site FT005 wells has been significantly reduced since December 2007 to conduct a rebound study, currently only four out of the fifteen wells are operating.

SS030 Optimization Results:

- Improvement in hydraulic capture; from the recent GSAP monitoring and sampling, groundwater elevation contours indicate that capture of the plume exceeding the MCLs has been accomplished, and that TCE concentrations at monitoring wells (MW03x30, MW05x30 and well pair MW2001Ax30/MW2001Bx30) are all decreasing.

- In fact, the TCE plume exceeding MCLs is now contained within the existing easement, indicating that the eastern plume edge has migrated westward.

Ms. Royer provided a graph of the TCE concentration from 4Q07 to 2Q12. See attached for details.

Mr. Anderson commented on the different ways to look at optimization by increasing the pumping to draw the plume back in; verses installing new extraction wells. The decision of increasing the pumping actually looks to be a better decision using less energy in the long run. Mr. Wray added that significant construction costs were saved by not having to install additional extraction wells. Mr. Anderson suggested that the Sustainable Remediation Tool (SRT) could be used to compare carbon footprint and the long term cost of installing new extraction wells.

Program Update: Activities Completed, In Progress and Upcoming (see Attachment 7)

Mr. Wray reported on the status of field work and documents which are completed, in progress, and upcoming. See Attachment 7 for details. Highlights included:

Completed Documents: 2011 CAMU Annual Report, and Technical and Economic Feasibility Analysis (TEFA).

Completed Field Work: 2012 Annual GSAP Sampling.

In-Progress Documents and Field Work: Site LF007C Data Gaps Investigation Technical Memo.

Field Work In Progress: None.

Upcoming Documents include the Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes, FT005 Remedial Action Completion Report, and Basewide Groundwater Record of Decision (ROD).

Upcoming Fieldwork includes SS029/SS016 System Optimization Analysis, CAMU Lysimeter Removal, and LF007C GET System Optimization.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

Document Review Priority for the agencies:

1) Proposed Plan

2) Work Plan for Remedial Process Optimization of Sites SS016 and SS029

3) Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes

4) Site LF007C Data Gaps Investigation Technical Memorandum

5) Old Skeet Range Engineering Evaluation/Cost Analysis

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Research beneficial reuse of treated water and give update. Mr. Smith will contact the Project Manager at AFCEE to discuss this issue, and give an update at the 13 June RPM meeting. Update: Mr. Smith talked with AFCEE regarding beneficial reuse, AFCEE is looking into it.	TBD	Open
2.	EPA & DTSC	Email Travis AFB the person's name and title who will be signing the ROD.	TBD	Open
3.	Travis AFB	Give a Groundwater ROD presentation to EPA.	18 July 2012	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
BLDG 570, Main Conference Room
13 June 2012, 9:30 A.M.
AGENDA

1. ADMINISTRATIVE

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

2. CURRENT PROJECTS

   A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)

3. PRESENTATIONS

   A. SITE SS030 GROUNDWATER CLEANUP PROGRESS REPORT
   B. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

NOTE: ALTHOUGH THE REGULATORY REVIEW PERIOD FOR THE DRAFT GROUNDWATER PROPOSED PLAN (PP) IS NOT OVER, WE HAVE SET ASIDE THE 12:30 TO 2:30 TIMEFRAME AFTER THE RPM MEETING TO DISCUSS ANY REGULATORY COMMENTS ON THE PP THAT HAVE ALREADY BEEN IDENTIFIED AND TO DISCUSS THE RESPONSE TO COMMENTS ON THE SS029/SS016 RPO WP.

Travis AFB Master Meeting and Document Schedule

(2012)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-18-12	—	—
02-22-12	—	—
03-21-12	—	—
04-19-12 (2:00 PM)	—	04-19-12
05-16-12	—	—
06-13-12	—	—
07-18-12	—	—
08-15-12	—	—
09-19-12	—	—
10-18-12 (1:00 PM)	—	10-18-12
11-14-12	—	—
—	—	—

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
	Basewide Groundwater	
Life Cycle	Proposed Plan Travis, Glenn Anderson CH2M HILL, Tricia Carter	Record of Decision Travis, Glenn Anderson CH2M HILL, Leah Waller
Scoping Meeting	**NA**	**01-24-07 (11-30-11)**
Predraft to AF/Service Center	10-06-11	06-04-12
AF/Service Center Comments Due	11-05-11	08-28-12
Draft to Agencies	05-09-12	08-31-12
Draft to RAB	05-09-12	08-31-12
Agency Comments Due	06-15-12	10-30-12
Response to Comments Meeting	***06-18-12**	**11-14-12**
Public Comment Period	08-06-12 to 09-05-12	NA
Public Meeting	**08-15-12**	**NA**
Response to Comments Due	06-20-12	11-28-12
Draft Final Due (CD)	06-27-12	11-28-12
Final Due	07-27-12	12-27-12

* Teleconference if necessary

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
	Potrero Hills Annex Travis, Glenn Anderson		
Life Cycle	FS	**Proposed Plan**	**ROD**
Scoping Meeting	**180 days after Water Board Order Rescinded**	**+470 days**	**+735 days**
Predraft to AF/Service Center	+ 270 days	+530 days	+ 915 days
AF/Service Center Comments Due	+ 300 days	+560 days	+ 975 days
Draft to Agencies	+330 days	+590 days	+ 1035 days
Draft to RAB	+ 330 days	+590 days	+ 1035 days
Agency Comments Due	+390 days	+650 days	+ 1095 days
Response to Comments Meeting	**+ 405 days**	**+665 days**	**+ 1110 days**
Agency Concurrence with Remedy	NA	NA	+ 1130 days
Public Comment Period	NA	+735 to 765 days	NA
Public Meeting	**NA**	**+745 days**	**NA**
Response to Comments Due	+430 days	+695days	+ 1190 days
Draft Final Due	+430 days	+695 days	+ 1190 days
Final Due	+460 days	+725 days	+ 1250 days

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS			
Life Cycle	**Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes at Travis AFB** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**Work Plan for Remedial Process Optimization of Sites SS016 and SS029 at Travis AFB** **Travis AFB, Lonnie Duke** **Tri-Hydro, Glenn Leong**	**Technical and Economic Feasibility Analysis** **Travis AFB, Glenn Anderson** **CH2M HILL, Loren Krook**
Scoping Meeting	**NA**	**NA**	**07-20-11**
Predraft to AF/Service Center	05-18-12	01-06-12	10-13-11
AF/Service Center Comments Due	06-01-12	01-20-12	10-31-11
Draft to Agencies	06-15-12	02-22-12	12-15-11
Draft to RAB	06-15-12	02-22-12	12-15-11
Agency Comments Due	07-16-12	04-02-12	01-30-12
Response to Comments Meeting	**07-18-12**	**06-13-12**	**04-19-12**
Response to Comments Due	08-06-12	06-27-12	05-04-12
Draft Final Due	NA	NA	NA
Final Due	08-06-12	06-27-12	05-31-12
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS		
Life Cycle	**Site LF007C Data Gaps Investigation Technical Memorandum** **Travis AFB, Lonnie Duke** **CH2M HILL, Tony Chakurian**	**FT005 Remedial Action Completion Report** **Travis AFB, Lonnie Duke** **ITSI, Rachel Hess**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	05-03-12	06-04-12
AF/Service Center Comments Due	05-17-12	06-22-12
Draft to Agencies	05-31-12	07-09-12
Draft to RAB	05-31-12	07-09-12
Agency Comments Due	07-02-12	08-10-12
Response to Comments Meeting	**07-18-12**	**08-15-12**
Response to Comments Due	08-01-12	08-24-12
Draft Final Due	NA	NA
Final Due	08-01-12	09-14-12
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Quarterly Newsletters (July 2012) Travis, Glenn Anderson**	**2011 Groundwater Treatment RPO Annual Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick**	**2011 CAMU Annual Report Travis AFB, Lonnie Duke ITSI, Rachel Hess**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	NA	02-22-12	04-06-12
AF/Service Center Comments Due	NA	03-05-12	04-12-12
Draft to Agencies	07-03-12	04-19-12	04-13-12
Draft to RAB	NA	04-19-12	04-13-12
Agency Comments Due	07-17-12	05-21-12	05-14-12
Response to Comments Meeting	**TBD**	**06-13-12**	**05-16-12**
Response to Comments Due	07-24-12	06-27-12	05-18-12
Draft Final Due	NA	NA	NA
Final Due	07-31-12	06-27-12	05-18-12
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS	
Life Cycle	**Old Skeet Range Engineering Evaluation/Cost Analysis** **Travis AFB, Glenn Anderson** **Baywest, Steve Thornton**
Scoping Meeting	**NA**
Predraft to AF/Service Center	07-18-11
AF/Service Center Comments Due	08-03-11
Draft to Agencies	09-29-11
Draft to RAB	09-29-11
Agency Comments Due	10-31-11
Response to Comments Meeting	**TBD (Teleconference)**
Agency Concurrence with Remedy	NA
Public Comment Period	TBD
Public Meeting	**NA**
Response to Comments Due	TBD
Draft Final Due	TBD
Final Due	**TBD**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 141 **Reporting Period: 30 Apr 2012 – 31 May 2012** **Date Submitted: 6 June 2012**

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operation data from the May 2012 reporting period.

Table 1 – Operations Summary – May 2012

Operating Time:	Percent Uptime:	Electrical Power Usage:
SBBGWTP: 812 hours	**SBBGWTP:** 100 %	**SBBGWTP:** 14,580 kWh (19,975 lbs CO_2 generated[a])

Gallons Treated: **5.8 million gallons**

Gallons Treated Since July 1998: **788 million gallons**

Volume Discharged to Union Creek: **5.8 million gallons**

VOC Mass Removed: **2.7 lbs**[b]

VOC Mass Removed Since July 1998: **421 lbs**

Rolling 12-Month Cost per Pound of Mass Removed: $6,901[c]

Monthly Cost per Pound of Mass Removed: $1,578

lbs = pounds

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using May 2012 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.

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – SBBGWTP Average Flow Rate (gpm)[a]

FT005[b]				SS029		SS030	
EW01x05	3.8[c]	EW736x05	Offline	EW01x29	7.8	EW01x30	5.3
EW02x05	1.8	EW737x05	Offline	EW02x29	4.6	EW02x30	0.4
EW03x05	Offline	EW742x05	Offline	EW03x29	2.5	EW03x30	1.6
EW731x05	Offline	EW743x05	Offline	EW04x29	9.7	EW04x30	23.7
EW732x05	Offline	EW744x05	Offline	EW05x29	9.0	EW05x30	11.8
EW733x05	Offline	EW745x05	Offline	EW06x29	20.3	EW06x30	Dry
EW734x05	11.0	EW746x05	Offline	EW07x29	5.2	EW711x30	15.8
EW735x05	6.8						
FT005 Total:	**23.4**			**SS029 Total:**	**59.1**	**SS030 Total:**	**58.6**
SBBGWTP Average Monthly Flow[d]: 120 gpm							

[a] Extraction well flow rates are based on end-of-month readings.
[b] Most extraction wells at FT005 were taken offline in accordance with the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*
[c] Wiring troubleshooting began in March 2012 at EW01x05. The extraction well was brought back on line on 29 May 2012.
[d] The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant. Flow rates listed for each well are instantaneous flow rates and may differ from the average monthly flow due to well recharge.

gpm – gallons per minute
Recharge –not pumping while the well recharges.
SBBGWTP – South Base Boundary Groundwater Treatment Plant

Table 3 presents a summary of system shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
	None		NA		NA

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 15 May 2012. Sample results are presented in Table 4. The total VOC concentration (56.3 µg/L) in the influent sample has increased since the April 2012 sample (34.8 µg /L) was collected. Figure 1 presents a plot of influent concentrations at the SBBGWTP over the past twelve (12) months.

Concentrations of TCE and cis-1,2-DCE were detected at concentrations of 53.1 and 3.2 µg/L at the influent sample location in May 2012. TCE and cis 1,2-DCE were also detected in samples collected at the GAC midpoint sampling location at concentrations of 0.66 and 2.2 µg/L. No contaminants were detected in the effluent process stream. Travis AFB will continue to monitor for evidence of breakthrough of the primary carbon vessel, though the SBBGWTP did recently undergo a carbon change out of one of the vessels (6,000 pounds) in the GAC treatment stream.

Optimization Activities

On 2 March 2012, troubleshooting activities indicated that extraction well EW01x05 was inoperable due to a pump motor ground short. Additional troubleshooting activities continued through the end of May 2012 and on 29 May 2012, the EW01x05 level transducer wiring was repaired and the well was brought back on line. Extraction well EW01x05 was brought back on line in accordance with the 2011 Annual Remedial Process Optimization Report due to persistent TCE concentrations found at that well during GSAP sampling events.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the SBBGWTP. The SBBGWTP produced approximately 19,975 pounds of GHG during May 2012. GHG production has increased (from 16,111 pounds) since April 2012 as a result of increased SBBGWTP operating time. The overall energy consumption levels remain consistent with the general decrease in energy demand since the air stripper was bypassed, and the GAC system was brought online.

TABLE 4
Summary of Groundwater Analytical Data for May 2012 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 May 2012 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND
Dibromochloromethane	5.0	0.13	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.50	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	3.2	2.2	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	53.1	0.66	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Suspended Solids (mg/L)	NE	1.0	0	33	NM	NM

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

Notes:

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

Figure 1
SBBGWTP Total VOC Influent Concentrations - Twelve Month History
Travis Air Force Base, California

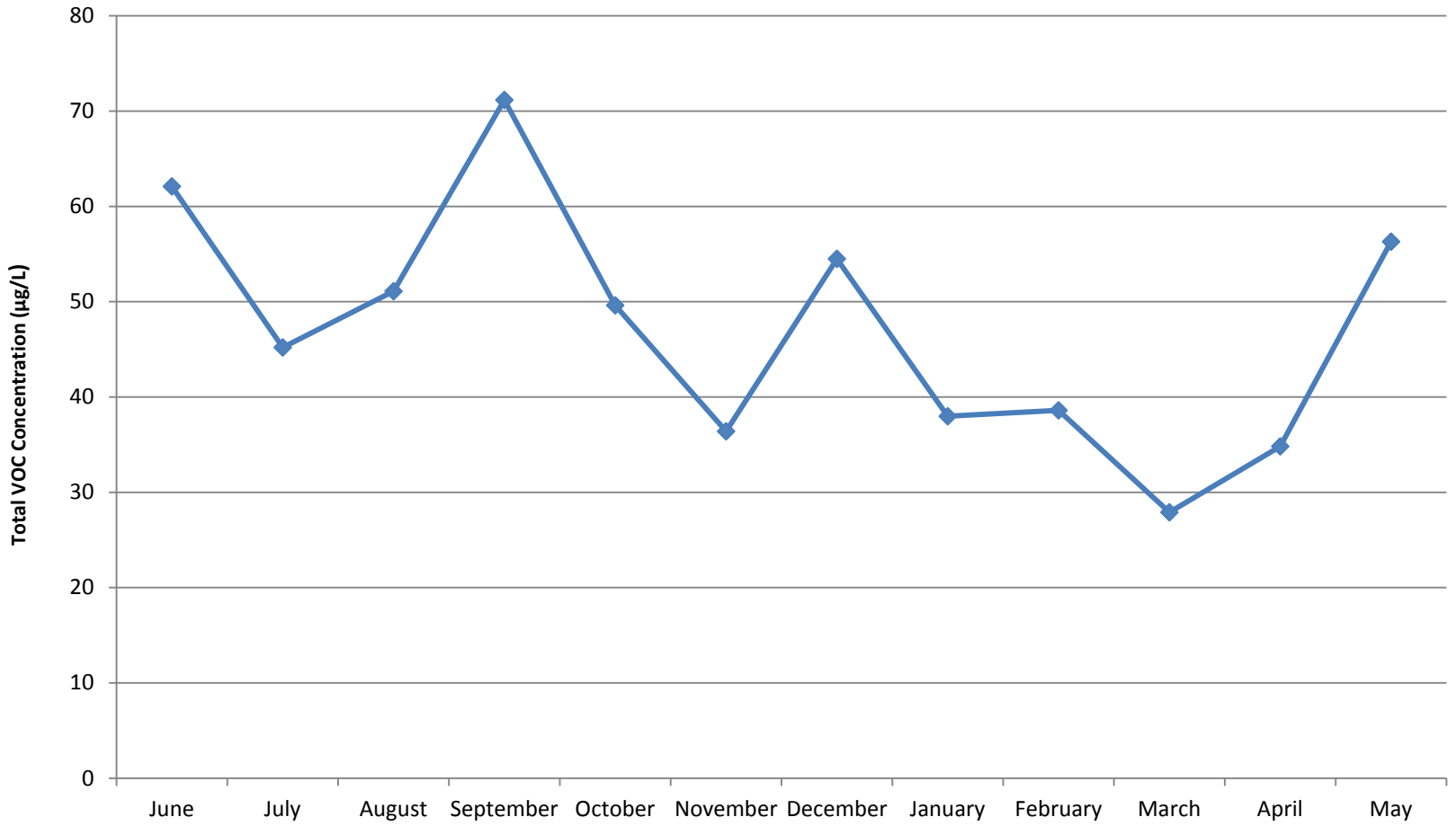
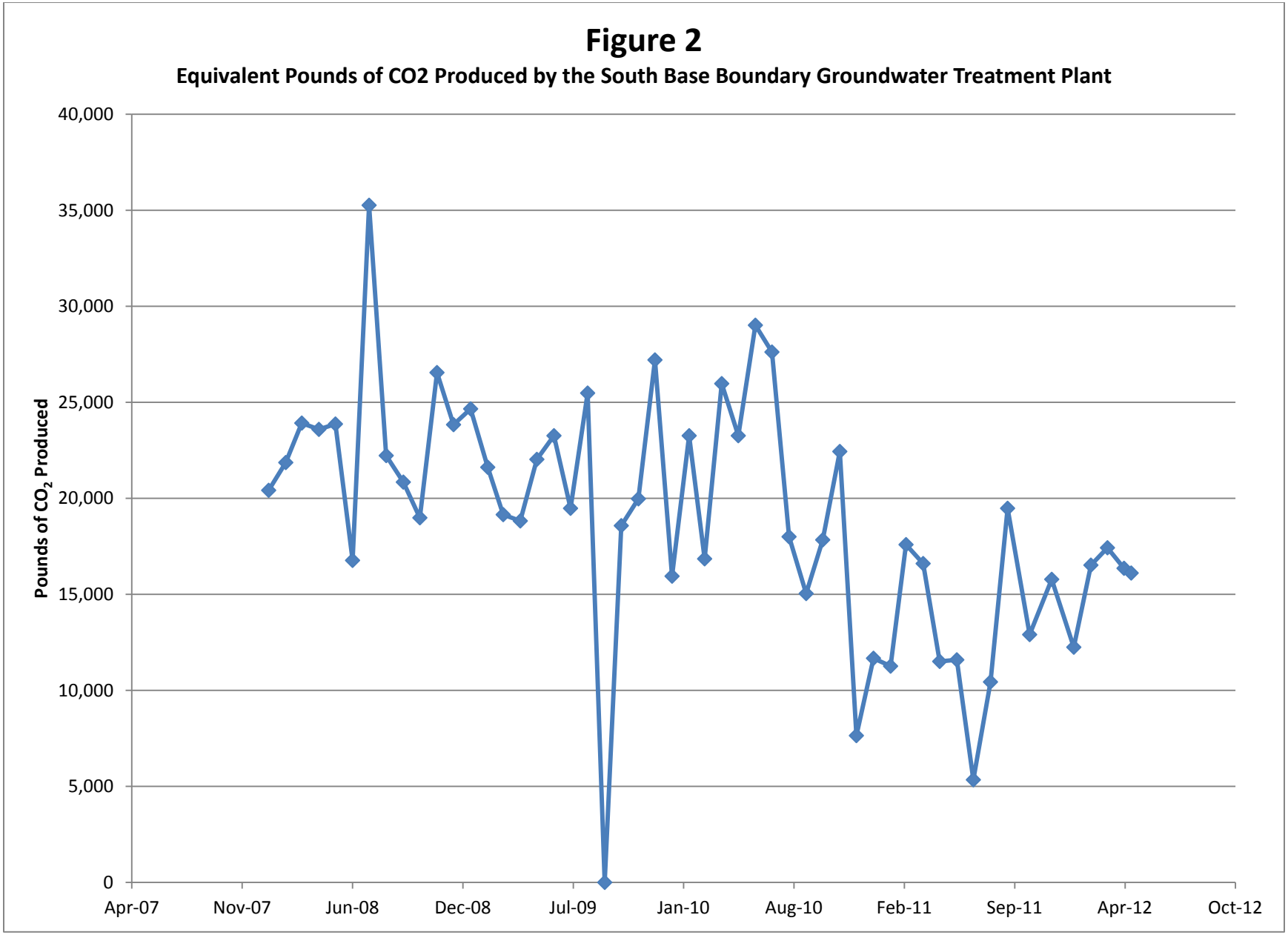


Figure 2

Equivalent Pounds of CO2 Produced by the South Base Boundary Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 154 **Reporting Period: 30 Apr 2012 – 31 May 2012** **Date Submitted: 6 June 2012**

This monthly data sheet presents information regarding the Central Groundwater Treatment Plant (CGWTP) and its associated technology demonstrations. The ongoing technology demonstrations related to the CGWTP include various emulsified vegetable oil (EVO) injections, two (2) bioreactor treatability studies, and various rebound studies.

System Metrics

Table 1 presents operational data from the May 2012 reporting period.

Table 1 – Operations Summary – May 2012

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	817 hours	**CGWTP:**	100%	**CGWTP:**	2,876 kWh (3,940 lbs CO_2 generated[a])
WTTP:	Water: 0 hours Vapor: 0 hours	**WTTP[b]:**	Water: 0% Vapor: 0%	**WTTP:**	0 kWh

Gallons Treated: **2.0 million gallons**

Gallons Treated Since January 1996: **463 million gallons**

VOC Mass Removed:

5.1 lbs[b] (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,597 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: $1,360[c]

Monthly Cost per Pound of Mass Removed: $691

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using May 2012 EPA Method SW8260B analytical results.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP.

Table 2 presents individual extraction well flow rates during the monthly reporting period. All WIOU extraction wells continue to remain off line for the WIOU rebound study.

Table 2 – CGWTP Average Flow Rates[a]

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) [b]
EW01x16	21.1	Offline
EW02x16	7.2	Offline
EW03x16	0.5[c]	Offline
EW605x16	4.8	Offline
EW610x16	4.3	Offline
CGWTP	39.9	--
WTTP	Offline[b]	Offline

[a] All flow rates calculated by dividing total gallons processed by system operating time for the month.
[b] No vapor or groundwater was treated in May 2012.
[c] Water discharged to Site SS016 bioreactor – flow rate taken from wellhead Flow Totalizer divided by operating time during the month.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

Table 3 presents average a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater)					
	None		NA		NA
WTTP					
	System down for rebound study		NA		NA

CGWTP = Central Groundwater Treatment Plant
WTTP = West Transfer Treatment Plant

Summary of O&M Activities

Monthly groundwater samples at the CGWTP were collected on 15 May 2012. Sample results are presented in Table 4. The total VOC concentration (330 µg/L) in the influent sample has decreased slightly since the April 2012 sample (349 µg/L) was collected. Concentrations of 1,1-Dichloroethene (0.65 µg/L), cis-1,2-DCE (73.2 µg/L), trans-1,2-Dichloroethene (3.0 µg/L), Tetrachloroethene (0.61 µg/L), and TCE (252 µg/L) were detected at the influent sampling location.

Vinyl chloride was detected at the influent sampling location, but was not detected at the system effluent sampling location. The vinyl chloride concentration increased slightly through the primary GAC vessel from 0.45 J µg/L to 0.55 µg/L and was measured at 0.25 J µg/L at the sampling location following the secondary GAC vessel. Vinyl chloride was not detected at the effluent sample location. Travis Air Force Base will continue to monitor vinyl chloride and other contaminant concentrations at CGWTP for breakthrough in the primary vessel, as this is the fourth consecutive month that the primary vessel has not significantly reduced the influent vinyl chloride concentration.

The effluent sample contained detectable concentrations of several contaminants that are not typically seen in samples collected from the CGWTP. 1,1,2-trichloroethane, bromomethane, and 4-methyl-2-pentanone were the three (3) constituents detected at the highest concentrations (5, 3, and 7 µg/L, respectively), with estimated (J flag) concentrations of 1,3-dichlorobenzene, 2-hexanone, bromobenzene, bromoform, and trans-1,3-dichloropropene also being detected. A field duplicate sample collected at this same sample location confirmed these detections, and the higher of the two (2) detections between the sample and its field duplicate is reported in Table 4.

None of the eight (8) contaminants detected in the effluent sample were detected in the sample collected from the influent process stream. These same contaminants were, however, detected at similar concentrations in the CGWTP samples collected between the carbon vessels and immediately after the carbon vessels. Since the contaminants detected in the sample collected from the system effluent process stream in May 2012 have not historically been detected at any point in the CGWTP, it is unlikely that these contaminants represent typical characteristics of the CGWTP process stream. No changes to operation have occurred in recent months at the CGWTP, and the system has operated consistently during all of 2012.

As outlined in the CGWTP O&M manual, confirmation samples were collected immediately (within 24 hours) from the system effluent and post-GAC sample locations. These confirmation samples were collected on 4 June, 2012, the same day that the validated analytical data were received. The confirmation samples will be analyzed on a quick turnaround time (24-hour). The CGWTP was taken off line following sample collection, and will resume operation if the confirmation samples indicate effective treatment (i.e., no detection of contaminants in excess of their effluent limitations as defined in the CGWTP O&M manual).

Figure 1 presents a plot of influent concentrations (total VOCs) at the CGWTP versus time for the past twelve (12) months.

The Site DP039 bioreactor has transitioned to a "pulsed mode" operation in order to improve the rate of remediation and within the bioreactor. The bioreactor last ran for two (2) weeks from 27 April 2012 through 11 May 2012. It will remain off line for four (4) weeks. EW782x39 (the Site DP039 bioreactor recirculation well) will be brought back online on 8 June 2012.

Optimization Activities

No optimization activities occurred at CGWTP in May 2012.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 3,940 pounds of GHG during May 2012. This is a slight increase from the amount produced in April 2012 (approximately 3,203 pounds) and can be attributed to increased operation time.

TABLE 4
Summary of Groundwater Analytical Data for May 2012 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 May 2012 (µg/L) Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
1,2-Dibromoethane	5.0	0.11	0	ND	0.14 J	ND	ND
2-Hexanone	5.0	0.48	0	ND	0.93 J	0.68 J	0.84 J
4-Methyl-2-Pentanone	5.0	1.0	1	ND	6.6	6.8	7.5
Bromoform	5.0	0.19	0	ND	0.22 J	ND	0.22 J
MTBE	1.0	0.5	0	0.54 J	ND	ND	ND
Bromobenzene	5.0	0.21	0	ND	ND	0.42 J	0.22 J
1.3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	0.17 J
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	ND
Chloroethane	5.0	0.72	0	ND	ND	0.76 J	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	0.65	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	73.2	1.0	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	3.0	ND	ND	ND
Bromomethane	5.0	0.43	0	ND	3.1	3.3	3.0
Tetrachloroethene	5.0	0.21	0	0.61	ND	ND	ND
trans-1,3-Dichloropropene	5.0	0.3	0	ND	0.96 J	0.84 J	0.93 J
1,1,2-Trichloroethane	5.0	0.2	1	ND	6.8	4.5	6.6
Trichloroethene	5.0	0.19	0	252	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	0.45 J	0.55	0.25 J	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND	ND
Total Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	ND
Other							
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	NM	NM

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

Notes:

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
mg/L = milligrams per liter

Table 5 presents the Site DP039 bioreactor recirculation well pulsing dates.

Table 5 – Summary of DP039 Bioreactor "Pulsed Mode" Operations

Location	Pulse On Start Date	Pulse Off Start Date
EW782x39	20 December 2011	30 December 2011
	30 January 2012	20 February 2012
	20 March 2012	13 April 2012
	27 April 2012	11 May 2012

CGWTP = Central Groundwater Treatment Plant
EW = Extraction Well

Figure 1
CGWTP Total VOC Influent Concentrations - Twelve Month History
Travis Air Force Base, California

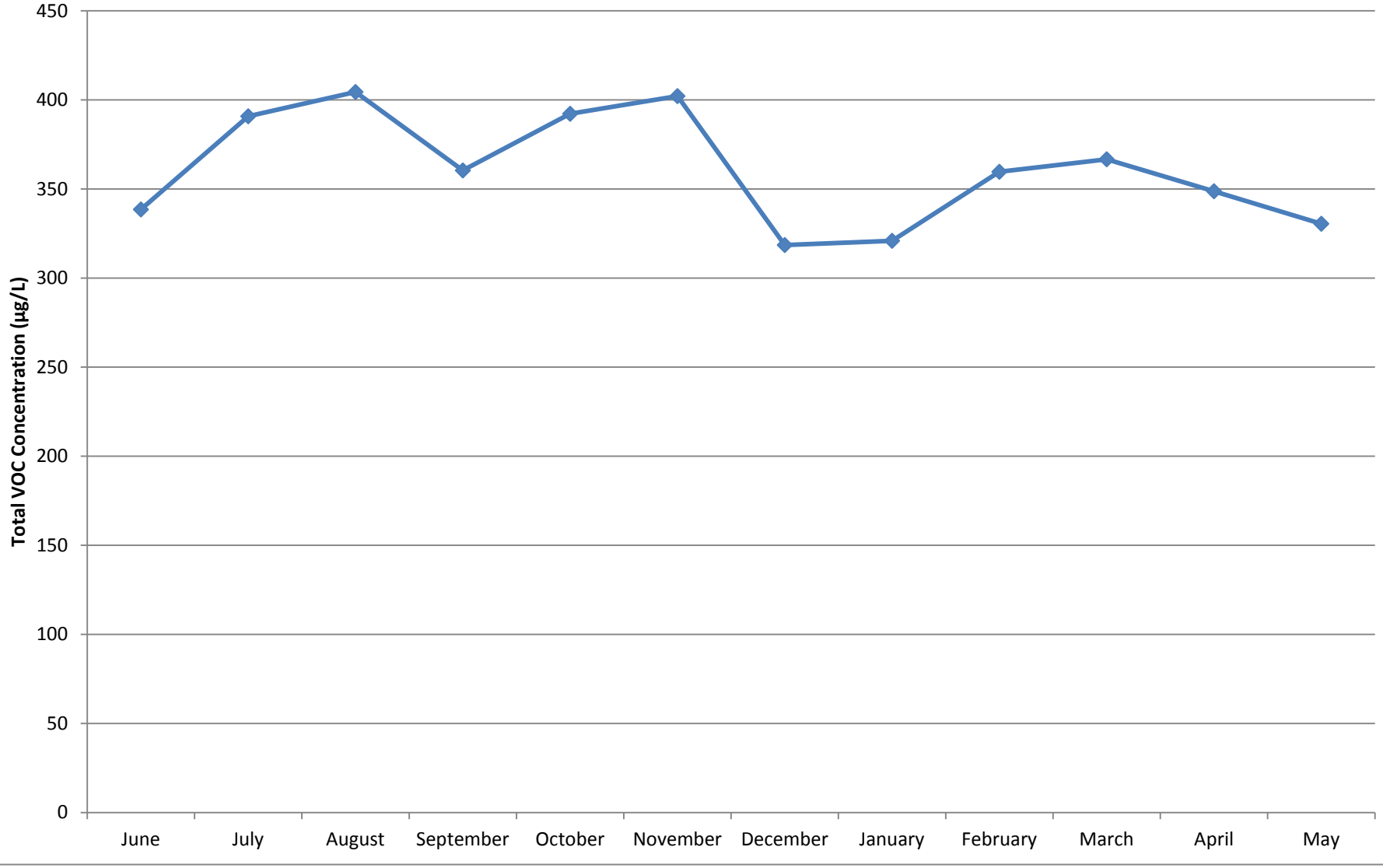
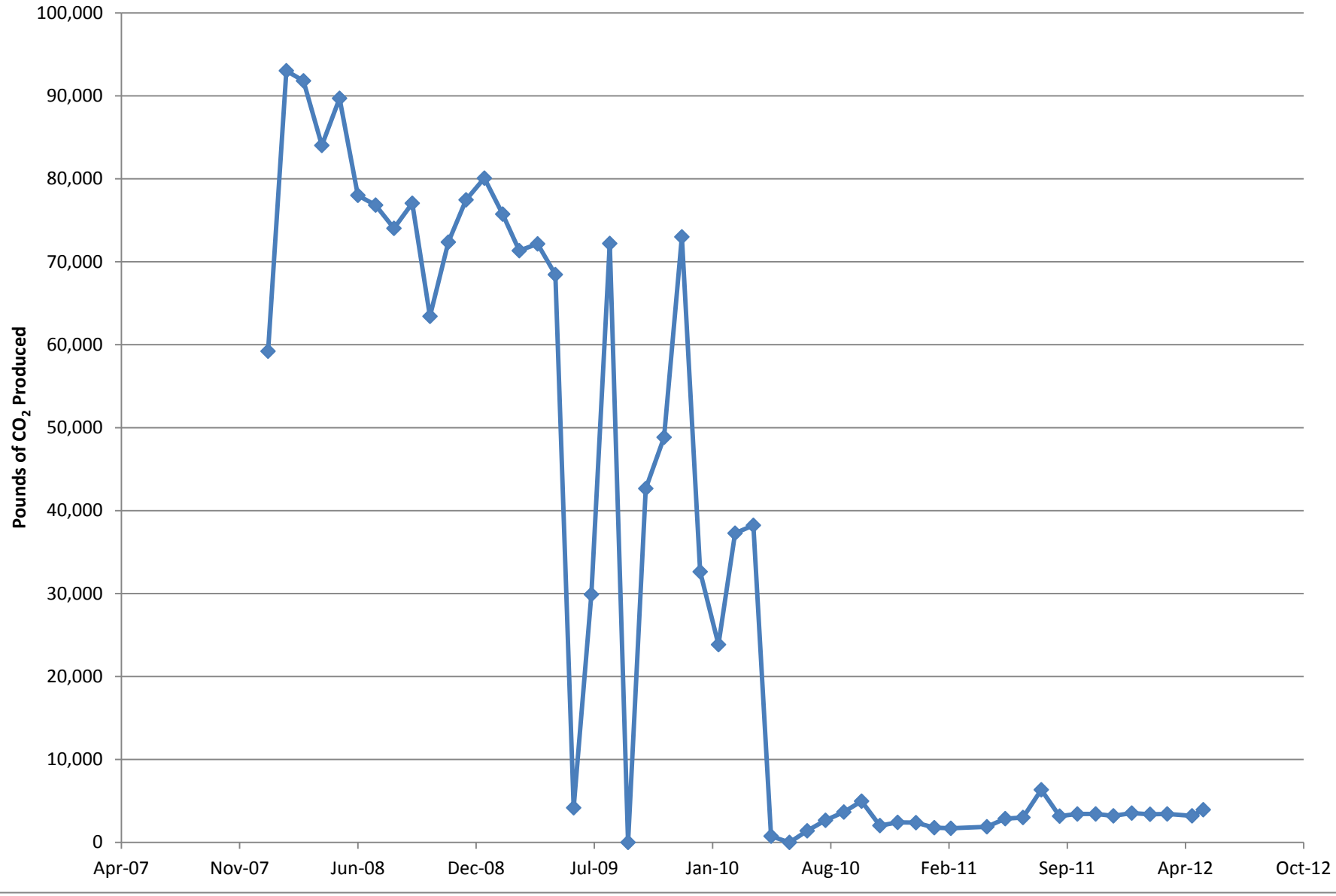


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 015 **Reporting Period: 30 Apr 2012 – 31 May 2012** **Date Submitted: 6 June 2012**

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (S18GWTP).

System Metrics

Table 1 presents operation data from the May 2012 reporting period.

Table 1 – Operations Summary – May 2012

Operating Time:	Percent Uptime:	Electrical Power Usage:
S18GWTP: 815 hours	**S18GWTP:** 100%	**S18GWTP:** 177 kWh (242 lbs CO_2 generated[a])

Gallons Treated: **236 thousand gallons** Gallons Treated Since March 2011: **2.13 million gallons**

Volume Discharged to Union Creek: **236 thousand gallons**

BTEX, MTBE, TPH Mass Removed: **2.88 lbs**[b] BTEX, MTBE, TPH Mass Removed Since March 2011: **14.7 lbs**

Rolling 12-Month Cost per Total Pounds of Mass Removed: $8,043 [c]

Monthly Cost per Pound of Mass Removed: $3,189

Lbs = pounds

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using April 2012 (influent) and May 2012 (effluent) EPA Method SW8260B analytical results. Influent samples are collected on a quarterly basis.

[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – S18GWTP Average Flow Rates[a]

Location	Average Flow Rate Groundwater (gpm)
EW2014x18	1.04
EW2016x18	1.63
EW2019x18	1.99
Site ST018 GWTP	4.82

[a] All flow rates calculated by dividing total gallons processed by system operating time for the month.

gpm = gallons per minute
S18GWTP = Site ST018 Groundwater Treatment Plant

Table 3 presents a summary of system shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
	None		NA		NA

S18GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Groundwater samples were collected at the S18GWTP on 14 May 2012. Sample results from the May sampling event are presented in Table 4. TPH – motor oil was not detected at the influent sampling location, but concentrations were measured at the midpoint (200 µg/L) and effluent (190 J µg/L) sampling locations in May 2012. The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (2Q12) influent sample was 1,658 µg/L, which is a significant increase from the previous (1Q12) influent concentration of 455 µg/L. This increase is likely due to more consistent operation of extraction well EW2014x18, located immediately behind the Base Exchange Service Station. The Site ST018 GWTP was primarily installed to address MTBE contamination at Site ST018, so Figure 1 presents a plot of influent quarterly total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the S18GWTP versus time.

The detection of TPH-mo in the effluent sample is a trigger exceedance, which is not an effluent violation. As with other trigger studies, influent and effluent samples will be collected for a 3-month period as part of a trigger study for TPH-mo. The first sample to be collected as part of the TPH-mo trigger study will be in June 2012.

In January 2012, sample results from the annual S18GWTP sampling event identified trigger compound exceedances for copper, zinc, cadmium, and nickel, and the samples collected in May 2012 represented the final samples of the trigger study for these metals. Analytical results from the samples collected in May 2012 are presented in Table 5. None of the trigger constituents exceeded their respective limits during the May 2012 sampling event.

As required by the Site ST018 NPDES permit, the sampling frequency of copper and zinc will be increased to a quarterly schedule since at least one (1) of the three (3) additional discharge samples (March 2012, see Table 5) showed exceedance of these two trigger compounds. Additionally, as required by the NPDES permit, Travis AFB will investigate the source of the trigger compounds, including an evaluation of background concentrations of these metals in groundwater at the base. The quarterly sampling schedule will begin with the July 2012 sampling event, be reported annually in the Annual Self-Monitoring Reports, and continue until the Executive Officer (Water Board) determines that the triggered pollutants investigation is complete. Full details regarding this trigger study, along with all other sample results will be presented in the next annual S18GWTP report.

Two batteries associated with extraction well EW2019x18 were replaced on 4 May 2012 after low voltages (<10 volts) were measured during inspection on 2 May 2012.

Optimization Activities

No optimization activities were performed in May 2012.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the system.

As a result of the solar arrays at S18GWTP, the system produced approximately 242 pounds of GHG during May 2012. This is an increase from April 2012 (218 pounds) which is primarily due to the increase in gallons treated and a greater operating time. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for May 2012 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	14 May 2012 (µg/L)		
				Influent[b]	After Carbon 2	System Effluent
Fuel Related Constituents						
MTBE	5	0.5	0	156	ND	ND
Benzene	5	0.17	0	20.6	ND	ND
Ethylbenzene	5	0.22	0	37.3	ND	ND
Toluene	5	0.14	0	2.6	ND	ND
Total Xylenes	5	0.23 – 0.5	0	61.1	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	1100	ND	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	280	ND	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	ND	200	190 J

[a] In accordance with the National Pollutant Discharge Elimination System (NPDES) Effluent Limitations

[b] Values taken from April 2012 (2Q12) sample data. Influent sampling is conducted on a quarterly basis.

Notes:

µg/L = micrograms per liter
ND = not detected above method detection limit
NM = not measured this month

Table 5
Summary of Trigger Study Analytical Data From May 2012 – Site ST018 Groundwater Treatment Plant

Constituent	Trigger Limits[a] (µg/L)	22 March 2012 (µg/L)		5 April 2012 (µg/L)		14 May 2012 (µg/L)	
		Influent	Effluent	Influent	Effluent	Influent	Effluent
Cadmium	1.1	0.12 J	0.15 J	0.11 J	0.089 J	0.13 J	0.11 J
Copper	5.9	14	20	5.5	2.5	4.3 J	ND
Nickel	30.0	52	28	49	16	30	19
Zinc	86.0	100	170	79	36	53	65

[a] In accordance with the National Pollutant Discharge Elimination System (NPDES) Effluent Limitations

Notes:

µg/L = micrograms per liter
ND = not detected above method detection limit

Figure 1
S18GWTP Total VOC and MTBE Influent Concentrations
(Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, TPH)
Travis Air Force Base, California

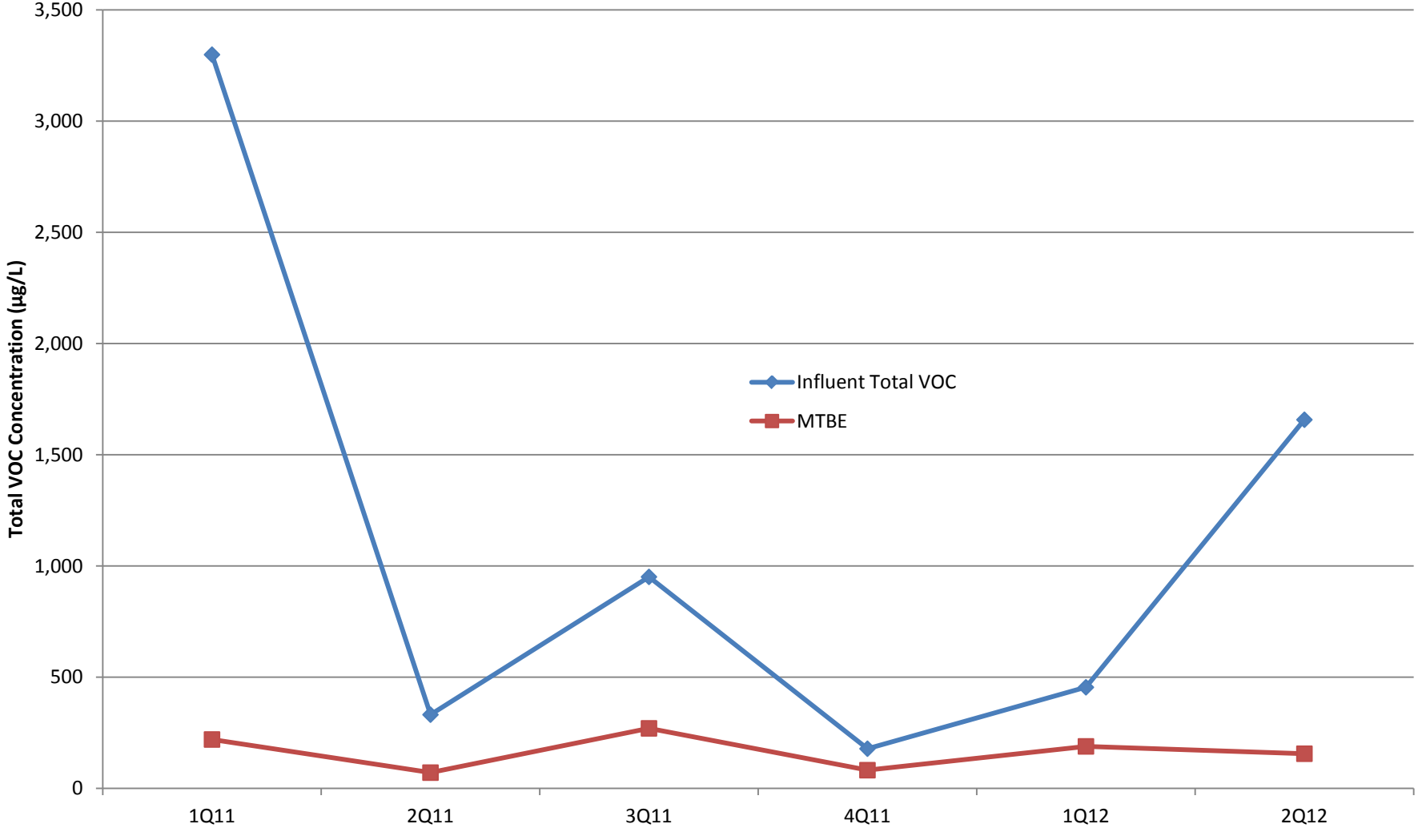
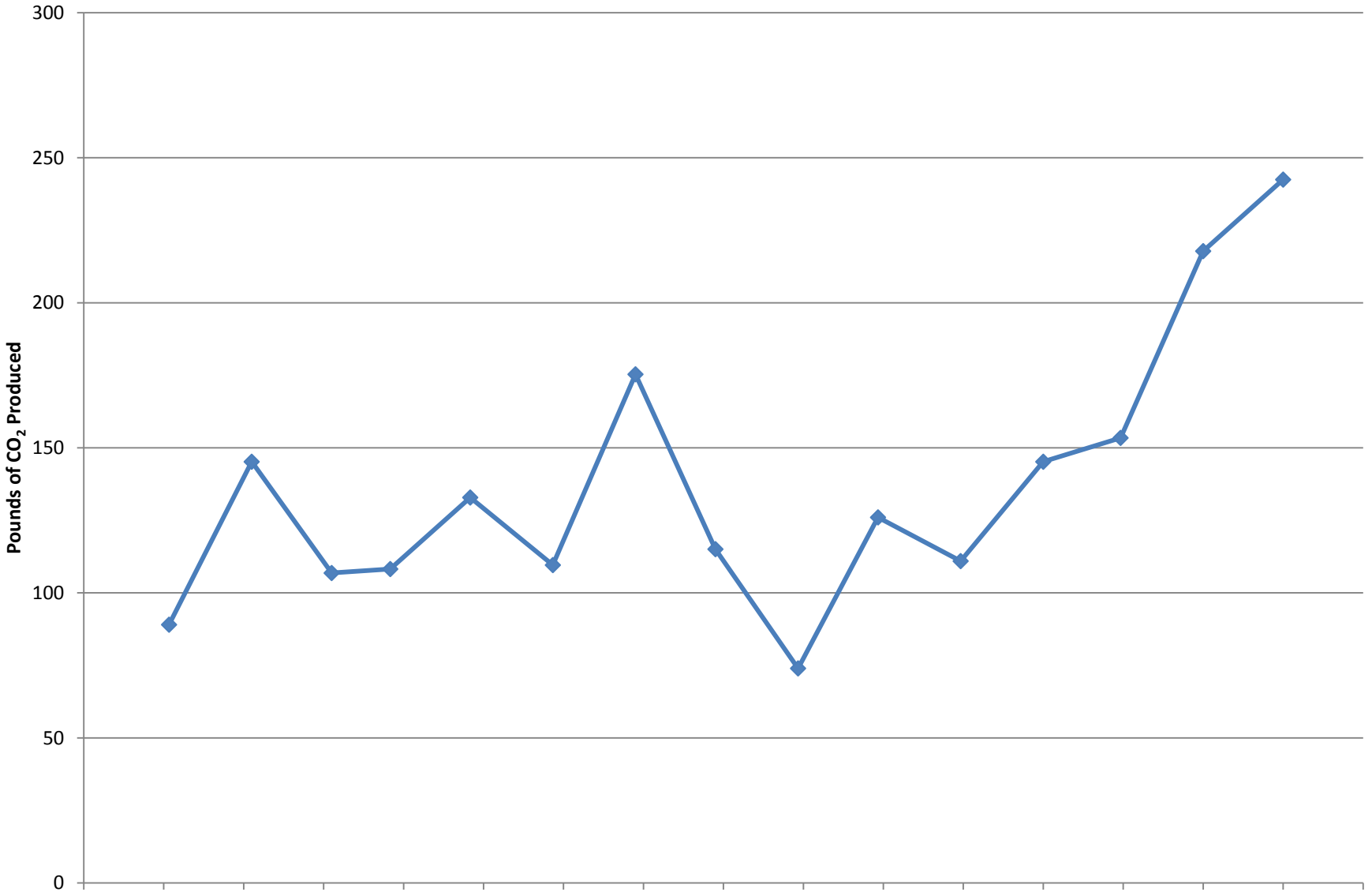


Figure 2

Equivalent Pounds of CO2 Produced by the Site ST018 Groundwater Treatment Plant



Site SS030 GW Cleanup Progress Report

Travis AFB

RPM Meeting

June 13, 2012

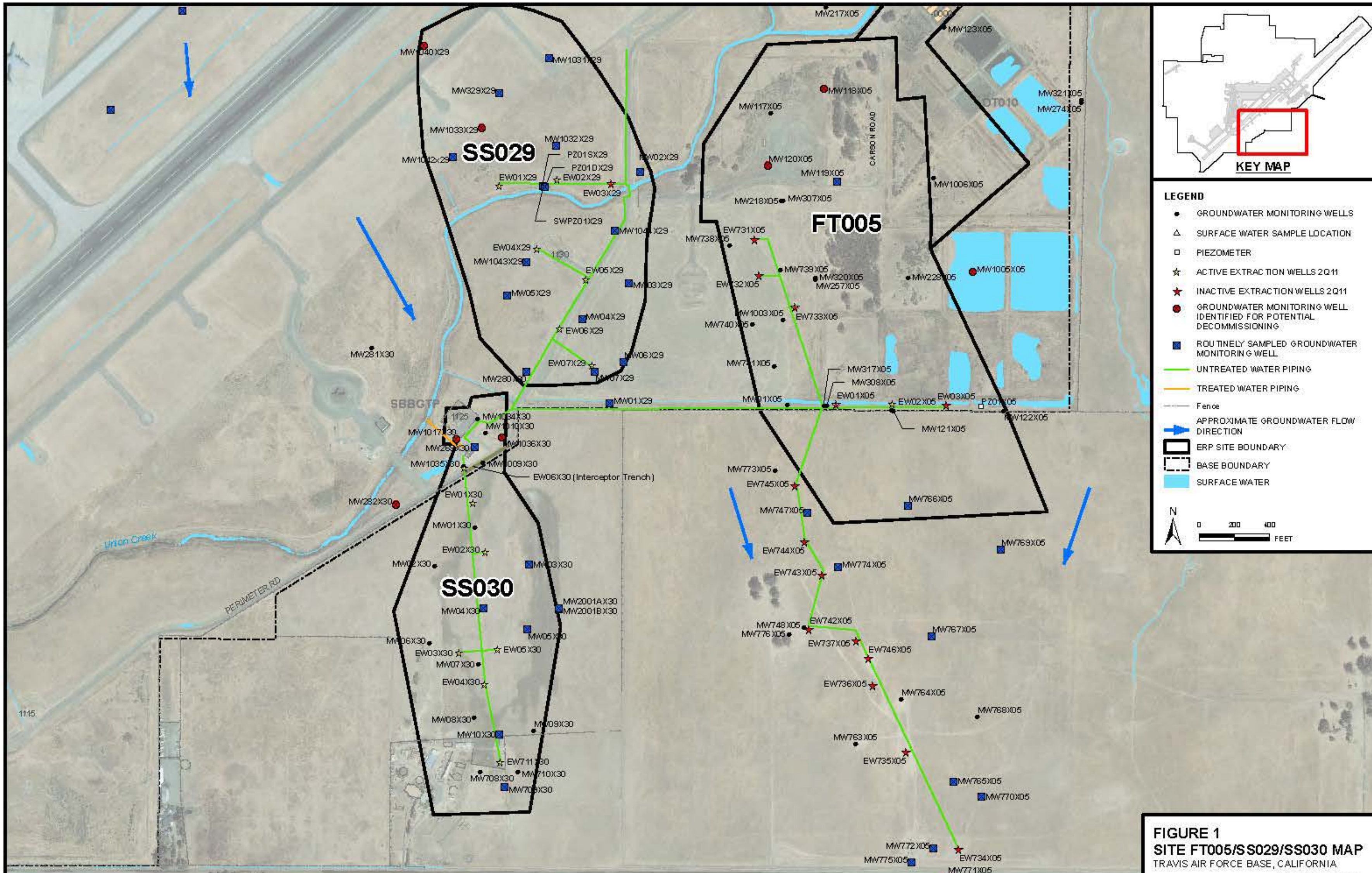
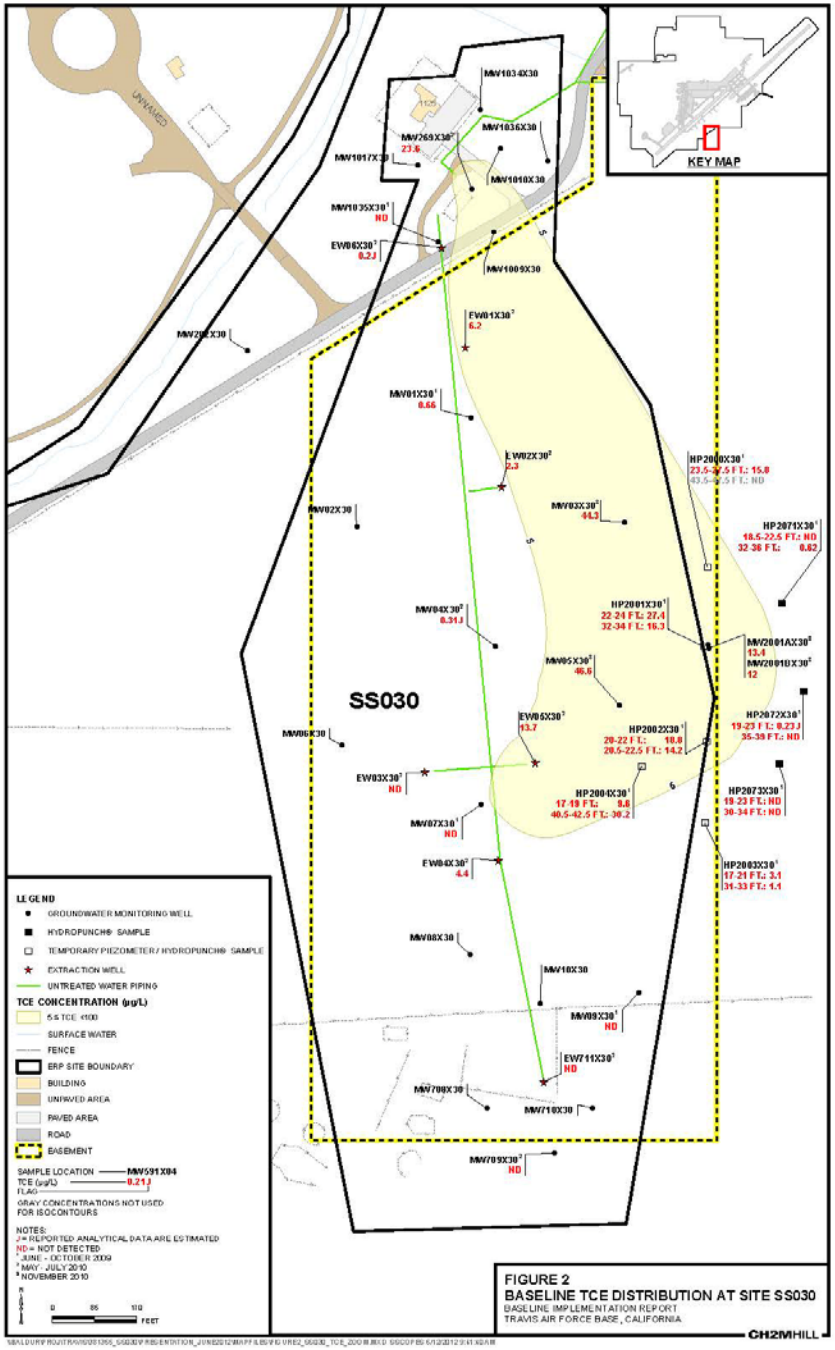


FIGURE 1
SITE FT005/SS029/SS030 MAP
TRAVIS AIR FORCE BASE, CALIFORNIA

SAC \\ZION\SACGIS\PROJ\TRAVIS_AFB\381355_SS030\PRESENTATION_JUNE2012\MAPFILES\FIGURE1_SS030_SITEMAP.MXD SSCOPES 6/12/2012 9:48:58 AM

Site SS030 Recent History

- 2002-2008 increasing concentrations in easternmost wells (MW03x30, MW05x30) indicated groundwater plume maybe migrating eastward towards Site FT005
- Additional investigation to define the eastern extent of contamination performed in 2009
- Investigation results indicated TCE concentrations exceeding MCL extended beyond the easement
- Installed monitoring well pair MW2001A/BMWx30 along easement boundary


KEY MAP
SS030
MW1034X30
MW1036X30
MW269X30 23.6
MW1017X30
MW1010X30
MW1035X30 ND
EW06X30 0.23 J
MW1009X30
EW01X30 6.2
MW01X30 0.66
EW02X30 2.3
MW03X30 44.3
MW02X30
HP2000X30 23.5-27.5 FT.: 15.8
HP2071X30 18.5-22.5 FT.: ND 32-36 FT.: 0.62
MW04X30 0.31 J
HP2001X30 22-24 FT.: 27.4 32-34 FT.: 16.3
MW2001AX30 13.4
MW2001BX30 12
MW05X30 46.6
EW06X30 13.7
HP2002X30 20-22 FT.: 10.8 20.5-22.5 FT.: 14.2
HP2072X30 19-23 FT.: 0.23 J 35-39 FT.: ND
MW06X30
EW03X30 ND
HP2004X30 17-19 FT.: 9.8 40.5-42.5 FT.: 30.2
HP2073X30 19-23 FT.: ND 30-34 FT.: ND
MW07X30 ND
EW04X30 4.4
HP2003X30 17-21 FT.: 3.1 31-33 FT.: 1.1
MW08X30
MW10X30
MW09X30 ND
EW711X30 ND
MW709X30
MW710X30
MW709X30 ND
LEGEND
GROUNDWATER MONITORING WELL
HYDROPUNCH® SAMPLE
TEMPORARY PIEZOMETER / HYDROPUNCH® SAMPLE
EXTRACTION WELL
UNTREATED WATER PIPING
TCE CONCENTRATION (µg/L)
5 & TCE 100
SURFACE WATER
FENCE
ERP SITE BOUNDARY
BUILDING
UNPAVED AREA
PAVED AREA
ROAD
BASEMENT
SAMPLE LOCATION MW591X04
TCE (µg/L) 0.21 J
FLAG
GRAY CONCENTRATIONS NOT USED FOR ISOCONTOURS
NOTES:
J = REPORTED ANALYTICAL DATA ARE ESTIMATED
ND = NOT DETECTED
1 JUNE - OCTOBER 2009
2 MAY - JULY 2010
3 NOVEMBER 2010
0 85 170
FEET
FIGURE 2
BASELINE TCE DISTRIBUTION AT SITE SS030
BASELINE IMPLEMENTATION REPORT
TRAVIS AIR FORCE BASE, CALIFORNIA
CH2MHILL

SS030 Optimization Measures

- Increased Site SS030 groundwater extraction in 2010 by bringing extraction wells EW03x30, EW04x30, and EW711x30 back online
- Extraction at Site FT005 has been significantly reduced since December 2007 due to a rebound study (currently 4 out of the 15 wells are operating)

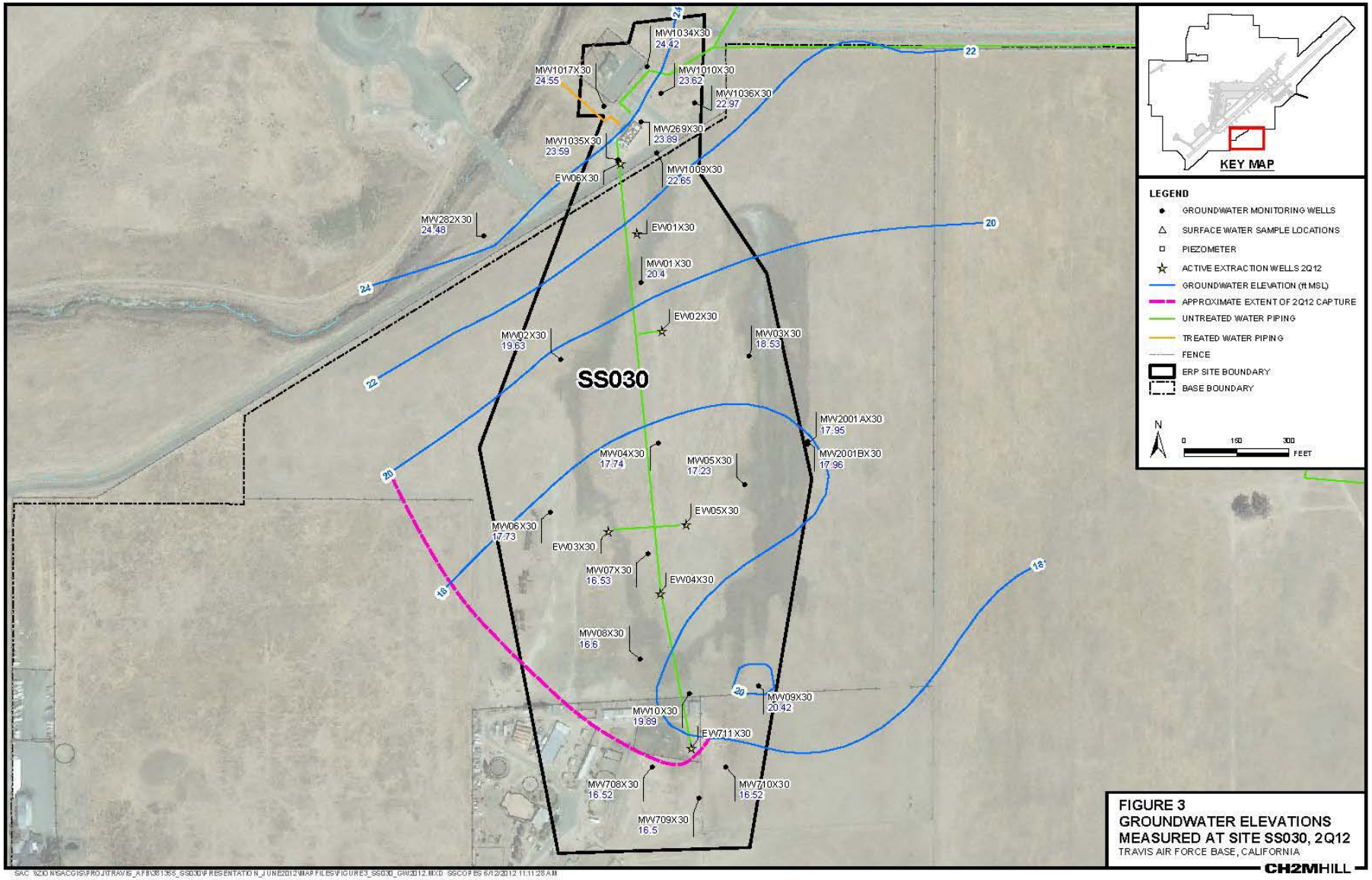


FIGURE 3
GROUNDWATER ELEVATIONS
MEASURED AT SITE SS030, 2Q12
TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

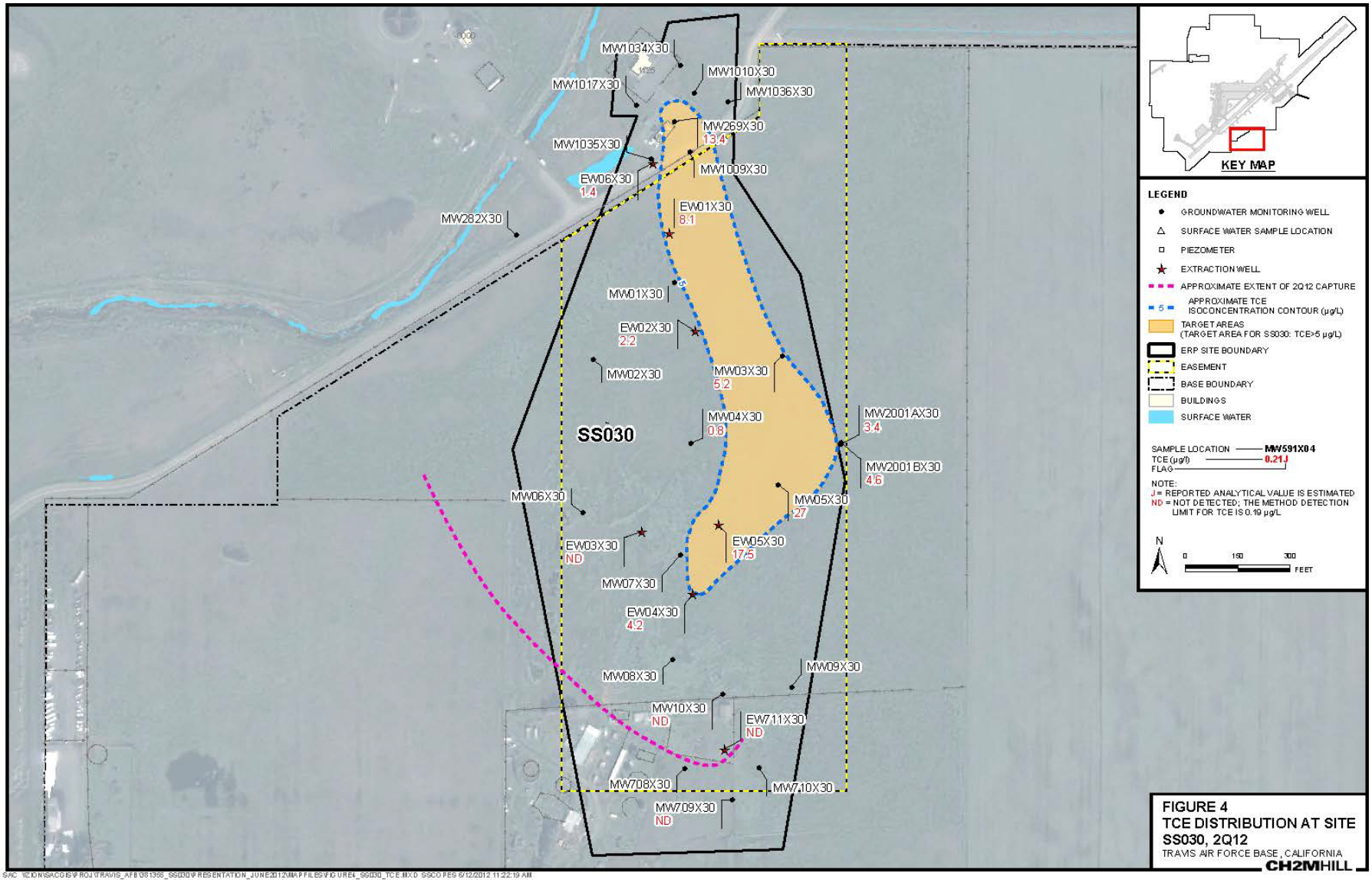
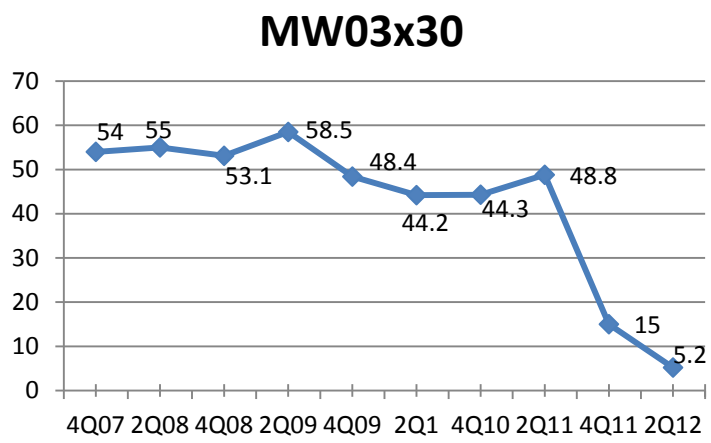


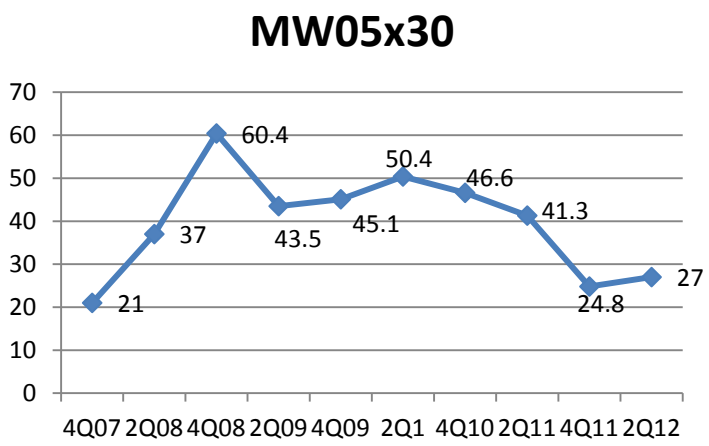
FIGURE 4
TCE DISTRIBUTION AT SITE SS030, 2Q12
TRAVIS AIR FORCE BASE, CALIFORNIA

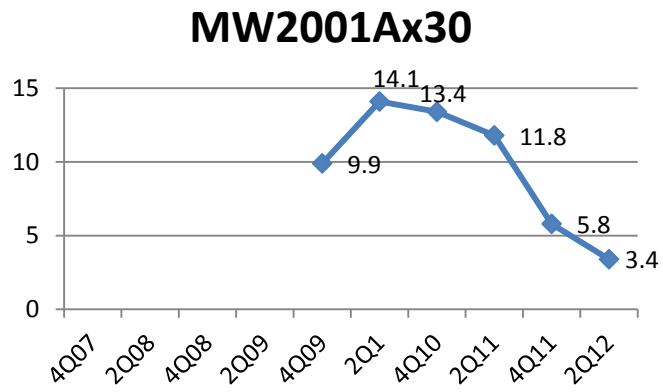
CH2MHILL

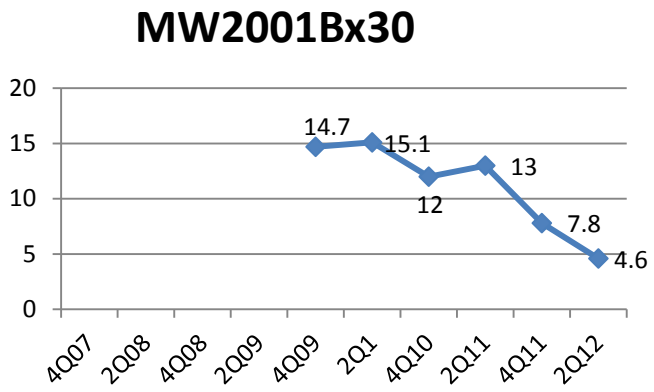
SAC \\ZION\SACGIS\PROJ\TRAVIS_AFB\361365_SS030\PRESENTATION_JUNE2012\MAPFILES\FIGURE4_SS030_TCE.MXD SSCOPES 6/12/2012 11:22:19 AM

TCE Concentrations (µg/L) Over Time









Optimization Results

- Improvement in hydraulic capture
  - Groundwater elevation contours indicate capture of plume exceeding MCL
  - Decreasing TCE concentrations at wells MW03x30, MW05x30, and well pair MW2001A/Bx30
- TCE plume exceeding MCL is contained within existing easement

Travis AFB
Restoration Program

Program Overview

RPM Meeting

June 13, 2012

Completed Documents

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second, & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan
- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report

Completed Documents (cont'd)

- CAMU 2008-2009 Monitoring Annual Report
- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- Focused Feasibility Study (FFS)
- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- 2010/2011 Annual GSAP Report
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- ***2011 CAMU Annual Report***
- ***Technical and Economic Feasibility Analysis (TEFA)***

Completed Field Work

- ST027B Gore Sorber Survey–Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization–Phase 1
- ST027 Site Characterization -Phase 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)
- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2nd of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- SS016 Monitoring Well Installation
- SD037 EVO Injection Well Installation
- DP039 Monitoring Well & Injection Well Installation
- DP039 EVO Injection
- SD037 Monitoring Well Installation
- GSAP 2010 Annual Sampling Event
- SD037 EVO Injection
- SS015 Site Characterization
- South Plant GAC Change-out
- FT005 Data Gap Investigation
- SS016 Position Survey of EW03
- SS016 Bioreactor Installation
- SS016 Bioreactor Baseline Sampling
- DP039 Biobarrier Quarterly Performance Sampling

Completed Field Work (cont'd)

- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 **Bioreactor** Startup
- SD036 Injection Wells Installation
- SS015 Injection Wells Installation
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- Quarterly RPO Performance Monitoring (Nov 2011)
- 2011 Semiannual GSAP Sampling
- LF007C Site Characterization (Wetlands)
- FT005 Soil Remedial Action
- Performance Monitoring SS015 (4^{th} Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- ***2012 Annual GSAP Sampling***

In-Progress Documents & Field Work

Documents

- Work Plan for RPO of Sites SS016 and SS029
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Proposed Plan (PP)
- ***Site LF007C Data Gaps Investigation Technical Memorandum***

Field Work

- None

Upcoming Documents

- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes — Jun
- FT005 Remedial Action Completion Report — Jul
- ***Basewide Groundwater Record of Decision (ROD)*** — ***Aug***

Upcoming Field Work

- SS029/SS016 System Optimization Analysis — Summer 2012
- CAMU Lysimeter Removal — Summer 2012
- LF007C GET System Optimization — Summer 2012

Note: Travis will try to notify regulatory agencies via email approximately one week in advance of planned field work