

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

22 May 2013, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Restoration Program Manager's (RPM) meeting on 22 May 2013 at 0930 hours, at Travis AFB, California. Attendees included:

- Mark Smith Travis AFB
- Glenn Anderson Travis AFB
- Lonnie Duke Travis AFB
- Gregory Parrott Travis AFB
- Merrie Schilter-Lowe Travis AFB
- Adriana Constantinescu California Regional Water Quality Control Board (RWQCB)
- David Elias 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)
- Mike Wray CH2M HILL
- Loren Krook CH2M HILL
- Ashley Shaddy 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 (April 2013)
- Attachment 4 CGWTP Monthly Data Sheet (April 2013)
- Attachment 5 ST018 Monthly Data Sheet (April 2013)
- Attachment 6 Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 18 April 2013 RPM meeting minutes were approved and finalized as written.

Mr. Smith welcomed David Elias from RWQCB, Ms. Constantinescu's Supervisor, and Ashley Shaddy from CH2M HILL.

B. Action Item Review.

Action items from April were reviewed.

Action item 1 still open: Travis AFB to research beneficial reuse of treated water. AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update, 16 January 2013: Mr. Duke said that an Air Force energy reduction contractor is looking into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD. Update, 18 April 2013: Mr. Smith said that they have the attention of Civil Engineering Operations Flight regarding beneficial reuse.

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 scheduled for 19 June 2013 has been cancelled due to conflicting schedules. The July RPM meeting will be held on 17 July 2013. Ms. Constantinescu said that she might not be able to make the 18 September RPM meeting and that Mr. Elias would be able to attend in her absence.

Travis AFB Master Document Schedule

- Groundwater Record of Decision (ROD): Agency Comments Due date changed to 22 May 2013; the remaining due dates did not change.
- 3rd Five-Year Review: The Draft to Agencies date changed to 21 May 2013 to reflect the actual date the document was submitted to the Agencies; the remaining due dates were changed accordingly.
- Potrero Hills Annex: (FS, PP, and ROD): No change to schedule. Mr. Anderson gave Mr. Elias/CRWQCB a brief history on Potrero Hills Annex. The property is currently under regulatory oversight by California Regional Water Quality Control Board (CRWQCB), and will stay under their oversight until the site has been cleaned up. Kent Aue with CRWQCB expects the responsible parties to investigate the extent of the contamination. A field investigation was conducted that shows perchlorate is present in soil and groundwater at concentrations that are ten times higher than originally thought. Travis AFB reviews and comments on the documents for the responsible parties and they make any necessary edits before it is submitted to the CRWQCB. Travis AFB keeps this document on the schedule to maintain supervisory control.

- Old Skeet Range Action Memorandum: The Agency Comments Due date was changed to 22 May 2013. Ms. Burke/EPA has all her comments in draft and is consulting EPAs legal team. The rest of the dates are subject to change.
- Quarterly Newsletter (July 2013): Dates have been populated to reflect the Q313 schedule.
- Groundwater Remediation Implementation Status Report: No change to schedule.
- Kinder Morgan LF044 Land Use Control Report: Dates are still TBD.
- 2012 CAMU Annual Report: No changes to schedule. Travis AFB is reviewing the EPA comments. Mr. Salcedo/DTSC sent an email stating his agency has no additional comments. Ms. Constantinescu/RQWCB said she had no further 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 2.8 million gallons of groundwater were extracted and treated during the month of April 2013. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 80.8 gallons per minute (gpm). Electrical power usage was 5,820 kWh and approximately 7,973 pounds of CO₂ were created (based on DOE calculation). Approximately 0.34 pounds of volatile organic compounds (VOCs) were removed in April. The total mass of VOCs removed since startup of the system is 438 pounds.

Optimization Activities: No optimization activities are reported for the month of April.

Mr. Smith questioned how the average monthly flow is calculated; monthly flow is 63.6 gpm, yet the SS030 total flow is 80.8 gpm. Ms. Shaddy explained that flow data is measured at the individual extraction wells at SS029 and SS030, which is an instantaneous measurement. The monthly data is measured at a flow totalizing meter at the treatment plant, which averages the flow over the entire month. These measurements are rarely the same, and can be significantly different depending on the operation of the various wells during the month. Mr. Salcedo asked why the drop in influent VOC's in April. Mr. Duke said Site SS029 began experiencing malfunctions in February 2013, troubleshooting activities indentified wiring issues. The system was shut down, which significantly dropped the influent VOC measurement. The wiring repairs are scheduled to be conducted this month.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 96.5% uptime with approximately 1.5 million gallons of groundwater extracted and treated during the month of April 2013. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 35gpm. Electrical power usage was 2,483 kWh for all equipment connected to the Central plant, and approximately 3,402 pounds of CO₂ were generated. Approximately 4.13 pounds of VOCs were removed from groundwater by the treatment plant in April. The total mass of VOCs removed since the startup of the system is 11,326 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 April.

Optimization Activities for CGWTP: No optimization activities are reported for the month of April.

North Groundwater Treatment Plant: The North plant was turned on 4 April 2013 and remains in operation at a very low flow. The groundwater extracted will remain in a holding tank until the validated analytical results have been received, and are verified to be within discharge limits.

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

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 60% uptime with approximately 110 thousand gallons of groundwater extracted and treated during the month of April 2013. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 4.23 gpm. Electrical power usage for the month was 79 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 108 pounds of CO₂. Approximately 0.31 pounds of BTEX, MTBE and TPH were removed from groundwater in April from the treatment plant. The total BTEX, MTBE and TPH mass removed since the startup of the system is 23.6 pounds.

Groundwater samples collected at S18GWTP on 2 April 2013, the laboratory data (not yet validated) received on 19 April 2013 indicated a concentration of TPH-g (120 µg/L) in the effluent sample, which is in excess of the effluent limitation. Confirmation samples were collected on 19 April 2013 at the effluent and outfall sample locations. The treatment plant was taken off line right after the samples were collected in accordance with the NPDES permit. A report was prepared for the CRWQCB to provide notification of the potential effluent violation and submitted 25 April 2013. The confirmation sample was validated on 23 April 2013 and the laboratory detection of TPH-g in the system was qualified as a non-detect. On 23 April 2013 analytical data from the monthly sampling event, collected on 2 April 2013, was validated and the laboratory detection of the TPH-g of (120 µg/L) was qualified as a non-detect, a “false positive”. Mr. Elias questioned if it is not TPH-g then it could be some other hydrocarbon. Mr. Duke said it was a “single small peak”

and there was non-detect in the effluent and in carbon vessel two, and no detection in the trip blank.

Mr. Smith commented that the monthly cost per pound seemed high and asked if that is calculated on just the kWh hours. Ms. Shaddy said it does include electricity use costs, but also includes costs for the new solar batteries, operations and maintenance, reporting, etc.

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

Optimization Activities for ST018: Based on the increased run time associated with an upgraded battery bank at EW2019x18, EW2014x18 and EW2016x18, the average flow rates achieved at each of these extraction wells nearly doubled this month compared to flow rates in March. The upgraded battery banks are expected to improve the 24-hour run time at each extraction well.

Program Update: Activities Completed, In Progress and Upcoming (see Attachment 6)

Mr. Wray reported on the status of field work and documents which are completed, in progress, and upcoming. Updates from the briefing this month included:

Newly Completed Documents: None.

Newly Completed Field Work: Replaced battery banks at ST018 Groundwater Treatment Plant, Annual Groundwater Remediation Implementation Program (GRIP) Sampling event.

In-Progress Documents: Groundwater Record of Decision, Old Skeet Range Action Memorandum. 2012 CAMU Annual Report, 3rd Five-Year Review, 2012 Annual Groundwater Remediation Implementation Status Report (GRISR)

In-Progress Field Work: Electrical repairs to Site SS029 extraction system, Well Decommissioning.

Upcoming Documents: 3rd Five-Year Review, 2012 Annual Groundwater Remediation Implementation Status Report (GRISR), 2012 CAMU Annual Report, Kinder Morgan LF044 Land Use Control Report. LF007C Extraction System Optimization Work plan.

Completed Fieldwork: Replace battery banks at ST018 Groundwater Treatment Plant, Annual Groundwater Remediation Implementation Program (GRIP) Sampling Event (April), Well Decommissioning.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith said a site walk of Travis AFB was conducted last week with the contractors that have been pre-selected to bid for the upcoming performance-based contract. Three different contractors attended for the site walk. The contractor's proposals are due 5 June 2013.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Research beneficial reuse of treated water and give update. Update (13 June 2012): AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update (15 August 2012): Mr. Duke reported that irrigation lines were destroyed by a communications contractor and not repaired because the system was inactive. Travis AFB will get the system design information to determine if the trunk line is still intact and repairs can be made to get the system running. Update, 16 January 2013: Mr. Duke said that an Air Force energy reduction contractor will look into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD.	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING
BLDG 570, Main Conference Room
22 May 2013, 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. PRESENTATION
 - A. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING
4. NEW ACTION ITEM REVIEW
5. PROGRAM/ISSUES/UPDATE

NOTES: AFTER THE RPM MEETING WE WILL HOLD A SEPARATE MEETING TO DISCUSS REGULATORY COMMENTS ON THE DRAFT GROUNDWATER RECORD OF DECISION AND APPROACHES TO FACILITATE THEIR RESOLUTION. ALL PARTICIPANTS ARE WELCOME TO ATTEND.

(2013)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting¹ (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 10:00 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-16-13	—	—
02-20-13	—	—
03-20-13 ²	—	—
04-18-13 (Thur 2:00 PM)	—	04-18-13
05-22-13	—	—
Cancelled	—	—
07-17-13	—	—
08-21-13	—	—
09-18-13	—	—
10-17-13 (Thur 2:00 PM)	—	10-17-13
11-20-13	—	—
—	—	—

¹ Note: Meetings will be held the third Wednesday of each month unless otherwise noted.

² Note: Meetings will alternate between face to face and teleconferences after the GW ROD is final.

PRIMARY DOCUMENTS		
Life Cycle	Groundwater Record of Decision Travis, Glenn Anderson CH2M HILL, Leah Waller	3rd Five-Year Review Travis AFB, Glenn Anderson J.C. Palomar, Chris Bason
Scoping Meeting	01-24-07 (11-30-11)	10-31-12
Predraft to AF/Service Center	11-28-12	03-08-13
AF/Service Center Comments Due	12-12-12	03-27-13
Draft to Agencies	01-02-13	05-21-13
Draft to RAB	01-02-13	05-21-13
Agency Comments Due	03-03-13 (04-05-13)	06-21-13
Response to Comments Meeting	05-22-13	07-17-13
Public Comment Period	NA	NA
Public Meeting	NA	NA
Response to Comments Due	06-05-13	07-26-13
Draft Final Due	06-05-13	07-26-13
Final Due	07-10-13	08-26-13

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Potrero Hills Annex Travis, Glenn Anderson		
	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	MMRP Old Skeet Range Action Memorandum Travis AFB, Glenn Anderson Baywest, Steve Thornton
Scoping Meeting	NA
Predraft to AF/Service Center	01-10-13
AF/Service Center Comments Due	01-28-13
Draft to Agencies	02-20-13
Draft to RAB	02-20-13
Agency Comments Due	03-22-13 (04-08-13)
Response to Comments Meeting	05-22-13
Response to Comments Due	05-30-13
Draft Final Due	NA
Final Due	05-30-13
Public Comment Period	NA
Public Meeting	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS				
Life Cycle	Quarterly Newsletters (July 2013) Travis, Glenn Anderson	Groundwater Remediation Implementation Status Report Travis AFB, Lonnie Duke CH2M HILL, Royer/Berwick	Kinder Morgan LF044 Land Use Control Report Travis AFB, Glenn Anderson Kinder Morgan, Nick Ricono	2012 CAMU Annual Report Travis AFB, Lonnie Duke ITSI, Rachel Hess
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	NA	03-28-13	TBD	03-25-13
AF/Service Center Comments Due	NA	04-11-13 (04-18-13)	TBD	04-01-13
Draft to Agencies	06-25-13	05-14-13	TBD	04-15-13
Draft to RAB	NA	05-14-13	TBD	04-15-13
Agency Comments Due	07-08-13	06-13-13	TBD	05-15-13
Response to Comments Meeting	TBD	07-17-13	TBD	05-22-13
Response to Comments Due	07-11-13	07-31-13	TBD	05-31-13
Draft Final Due	NA	NA	NA	NA
Final Due	07-11-13	07-31-13	TBD	05-31-13
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 152

Reporting Period: 1 April 2013 – 1 May 2013

Date Submitted: 16 May 2013

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 April 2013 reporting period.

Table 1 – Operations Summary – April 2013

Operating Time: SBBGWTP: 720 hours	Percent Uptime: SBBGWTP: 100 %	Electrical Power Usage: SBBGWTP: 5,820 kWh (7,973 lbs CO₂ generated^a)
Gallons Treated: 2.8 million gallons	Gallons Treated Since July 1998: 820 million gallons	
Volume Discharged to Union Creek: 2.8 million gallons		
VOC Mass Removed: 0.34 lbs^b	VOC Mass Removed Since July 1998: 438 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$6,097 ^c		
Monthly Cost per Pound of Mass Removed: \$18,161		

lbs = pounds

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

^b Calculated using April 2013 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	Offline	EW736x05	Offline	EW01x29	1.8	EW01x30	10.6
EW02x05	2.2	EW737x05	Offline	EW02x29	Offline	EW02x30	4.8
EW03x05	Offline	EW742x05	Offline	EW03x29	3.9	EW03x30	2.6
EW731x05	Offline	EW743x05	Offline	EW04x29	Offline	EW04x30	24.1
EW732x05	Offline	EW744x05	Offline	EW05x29	Offline	EW05x30	21.4
EW733x05	Offline	EW745x05	Offline	EW06x29	0.6	EW06x30	Dry
EW734x05	Offline	EW746x05	Offline	EW07x29	Offline	EW711x30	17.3
EW735x05	Offline						
FT005 Total:		2.2		SS029 Total:		6.3	
				SS030 Total:		80.8	
SBBGWTP Average Monthly Flow^c: 63.6 gpm							
^a Extraction well flow rates are based on the average of instantaneous weekly readings. ^b Most extraction wells at FT005 were taken offline in accordance with the <i>2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant</i> . ^c 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							

There were no system shutdowns during the monthly reporting period.

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 4 April 2013. Sample results are presented in Table 4. The total VOC concentration (14.8 µg/L) in the influent sample has decreased since the March 2013 sample (63.8 µg /L) was collected. TCE (14.8 µg/L) was the only contaminant detected at the influent sample location in April 2013. No contaminants were detected at the midpoint or effluent sampling locations.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. The decrease in influent concentration this month is likely the result of extraction wells EW02x29 and EW04x29 being offline. These extraction wells typically produce groundwater with very high TCE concentrations relative to others that contribute to the SBBGWTP.

Three (3) of the Site SS029 extraction wells, EW02x29, EW04x29, and EW07x29, began experiencing malfunctions in February 2013 and remained offline during April 2013. Troubleshooting activities at Site SS029 indentified similar wiring issues to those that previously occurred at Site SS030. Power wiring to the Site SS029 extraction wells will be replaced in May 2013. Any additional equipment replacements (VFDs, for example) will also be replaced as needed during the power wiring replacement activities.

Optimization Activities

No optimization activities were performed in April 2013.

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 7,973 pounds of GHG during April 2013. GHG production has decreased (from 10,028 pounds) since March 2013 due to a decreased period of operation and groundwater volume treated during the month. 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 April 2013 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 April 2013 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	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	ND	ND	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	14.8	ND	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	17 J	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 and Average Flowrate
Twelve Month History
Travis Air Force Base, California

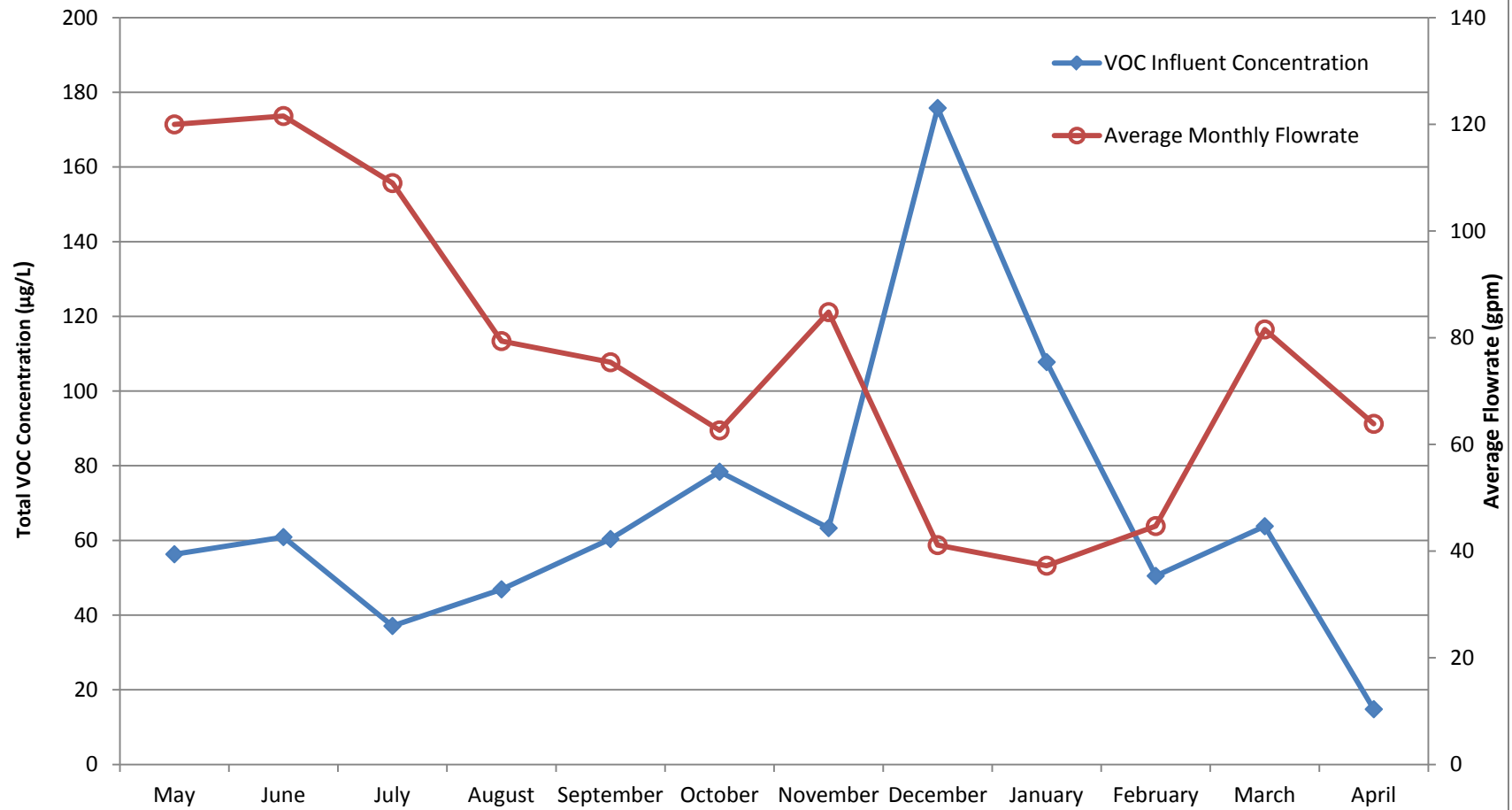
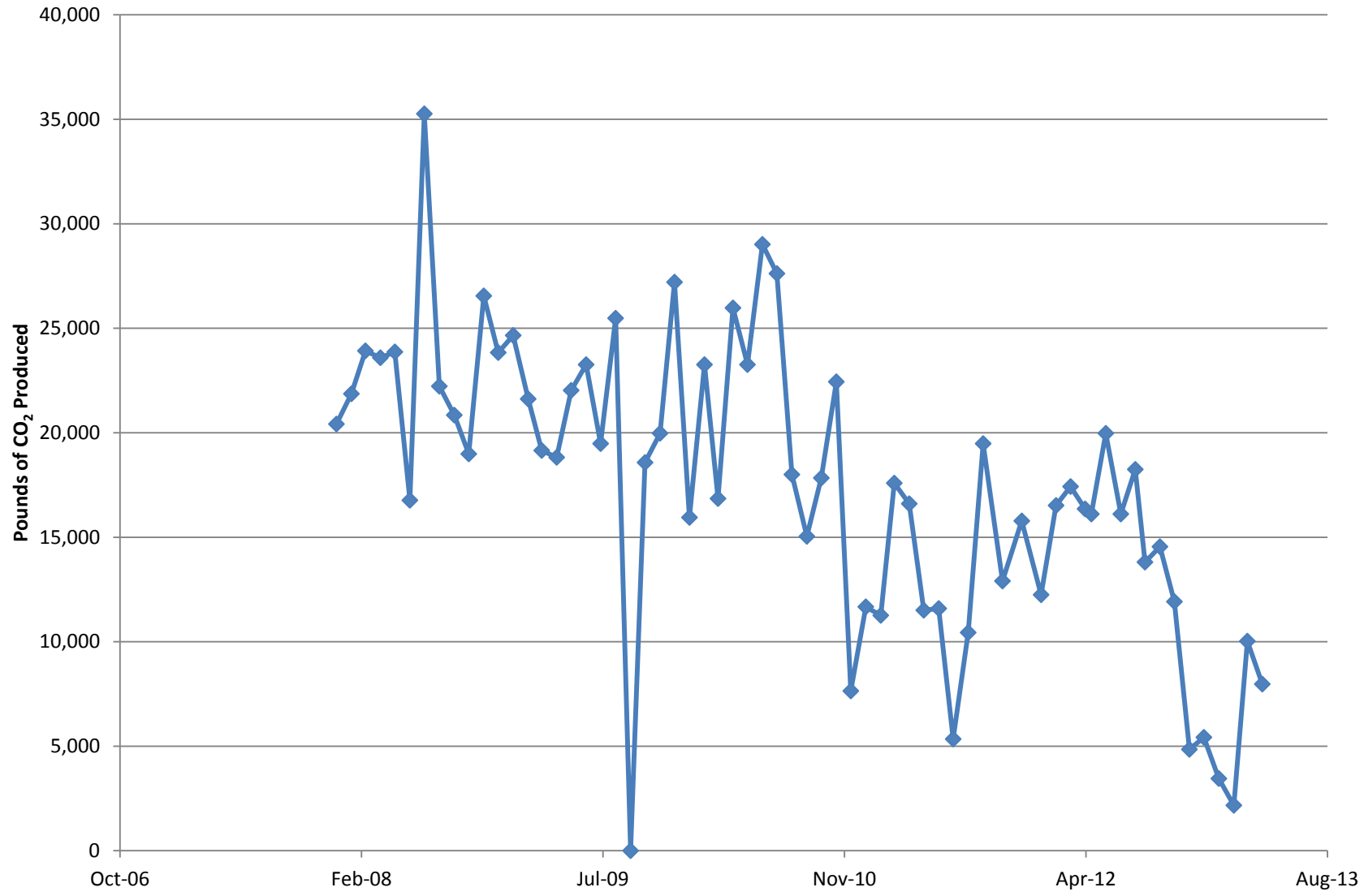


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 165

Reporting Period: 1 April 2013 – 1 May 2013

Date Submitted: 16 May 2013

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 April 2013 reporting period.

Table 1 – Operations Summary – April 2013		
Operating Time:	Percent Uptime:	Electrical Power Usage:
CGWTP: 695 hours	CGWTP: 96.5%	CGWTP: 2,483 kWh (3,402 lbs CO ₂ generated ^a)
WTP: Water: 0 hours Vapor: 0 hours	WTP: Water: 0% Vapor: 0%	WTP: 0 kWh
Gallons Treated: 1.5 million gallons	Gallons Treated Since January 1996: 479 million gallons	
VOC Mass Removed:	VOC Mass Removed Since January 1996:	
4.13 lbs^b (groundwater only) 0 lbs (vapor only)	2,640 lbs from groundwater 8,686 lbs from vapor	
Rolling 12-Month Cost per Pound of Mass Removed: \$2,785 ^c		
Monthly Cost per Pound of Mass Removed: \$1,439		
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG. ^b Calculated using April 2013 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 and are reported based on the calendar month.		

Table 2 presents individual extraction well flow rates during the monthly reporting period.

Table 2 – CGWTP Average Flow Rates ^a		
Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) ^b
EW01x16	20.7	Offline
EW02x16	7.0	Offline
EW03x16	0.2 ^c	Offline
EW605x16	8.2	Offline
EW610x16	2.8	Offline
CGWTP	35.0	--
WTPP	-- ^b	Offline
^a Flow rates calculated by dividing total gallons processed by system operating time for the month. ^b No soil vapor was treated in April 2013. ^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 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)					
	28 April 2013	14:15	29 April 2013	15:15	Shutdown for base scheduled power outage.
WTTP					
	None	NA			
CGWTP = Central Groundwater Treatment Plant WTTP = West Transfer Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 4 April 2013. Sample results are presented in Table 4. The total VOC concentration (340.03 µg/L) in the influent sample has decreased slightly since the March 2013 sample (350.14 µg/L) was collected. Concentrations of 1,1-Dichloroethene (0.93 µg/L), cis-1,2-DCE (69.8 µg/L), trans-1,2-Dichloroethene (4.3 µg/L), and TCE (265 µg/L) were detected at the influent sampling location. Vinyl chloride was not detected in the influent stream.

No contaminants were detected at the midpoint and effluent sampling locations. Travis Air Force Base will continue to monitor contaminant concentrations at the CGWTP for breakthrough in the primary vessel.

Figure 1 presents a plot of influent concentrations (total VOCs) and the influent flow rate at the CGWTP versus time for the past twelve (12) months. The average flow rate through the treatment plant has decreased by approximately 5 gpm since May 2012. However, this decrease is consistent with historical fluctuations.

The Site DP039 bioreactor has transitioned to a “pulsed mode” operation in order to improve the rate of remediation and to preserve the amount of total organic carbon being produced within the bioreactor. The “pulsed mode” operation continued on a two (2) week transition schedule in April 2013. When the bioreactor was taken offline on 26 April 2013, damage to the above ground discharge piping feeding the bioreactor was observed. No leak occurred as a result of this damage. The damage will be repaired prior to the next scheduled restart on 10 May 2013.

Optimization Activities

No optimization activities occurred at CGWTP in April 2013.

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 3,402 pounds of GHG during April 2013. This is a decrease from the amount

produced in March 2013 (approximately 4,009 pounds) and can be attributed to a decrease in the number of gallons treated.

TABLE 4
Summary of Groundwater Analytical Data for April 2013 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 April 2013 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	69.8	ND	ND	ND
1,1-Dichloroethane	5.0	0.5	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	0.93	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	ND
Trichloroethene	5.0	0.19	0	265	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	4.3	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND	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	738	NM

* In accordance with Appendix G of the *Travis 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 a twelve month summary of 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	27 April 2012	11 May 2012
	11 June 2012	25 June 2012
	20 July 2012	3 August 2012
MW750x39	5 September 2012	16 September 2012
	28 September 2012	13 October 2012
	29 October 2012	9 November 2012
	21 November 2012	7 December 2012
	21 December 2012	4 January 2013
	18 January 2013	4 February 2013
	15 February 2013	1 March 2013
	15 March 2013	29 March 2013
12 April 2013	26 April 2013*	

* Damage to the above ground discharge pipe feeding the bioreactor was observed at shutdown. The piping will be repaired prior to restart.
 CGWTP = Central Groundwater Treatment Plant
 EW = Extraction Well

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

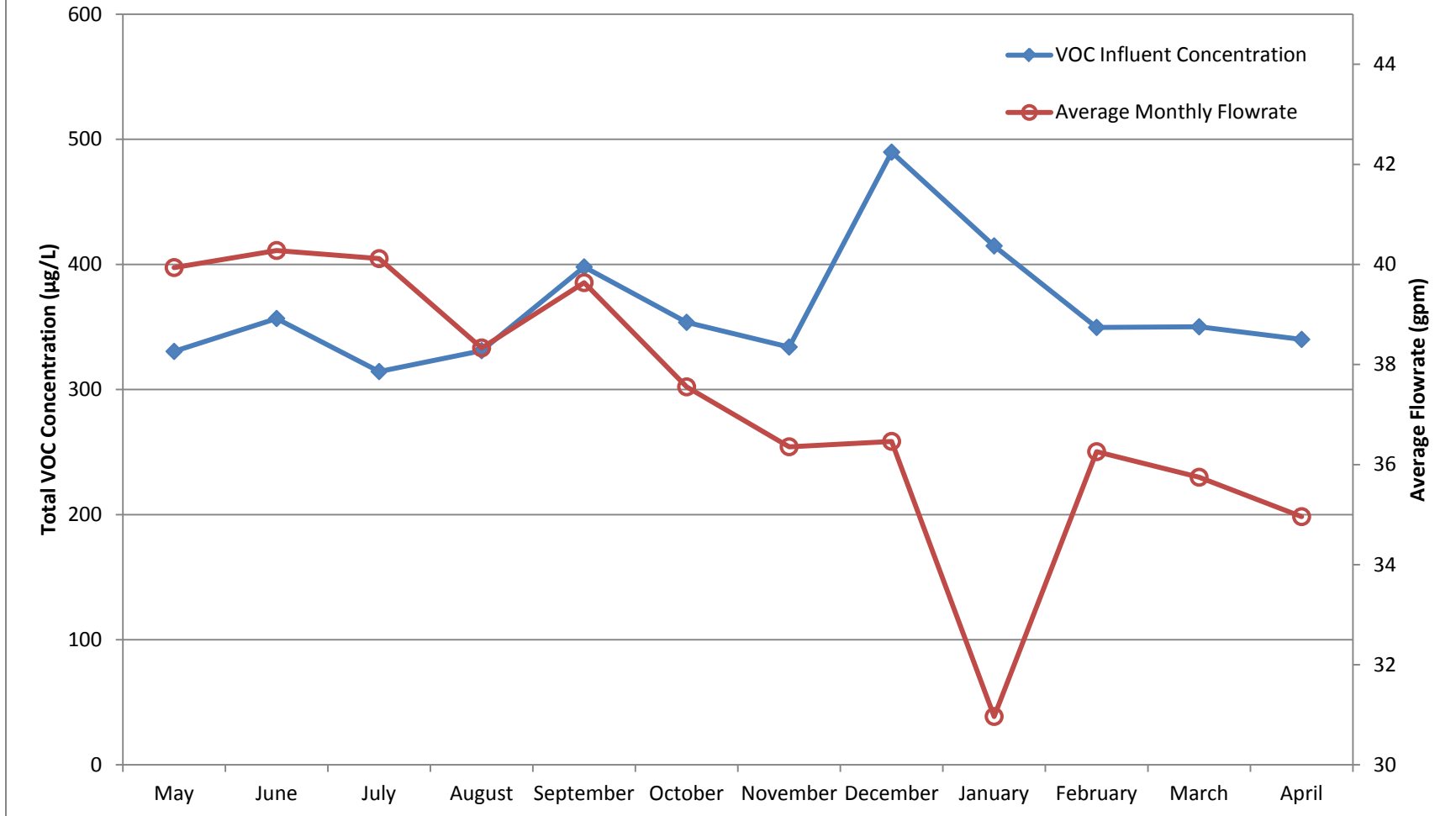
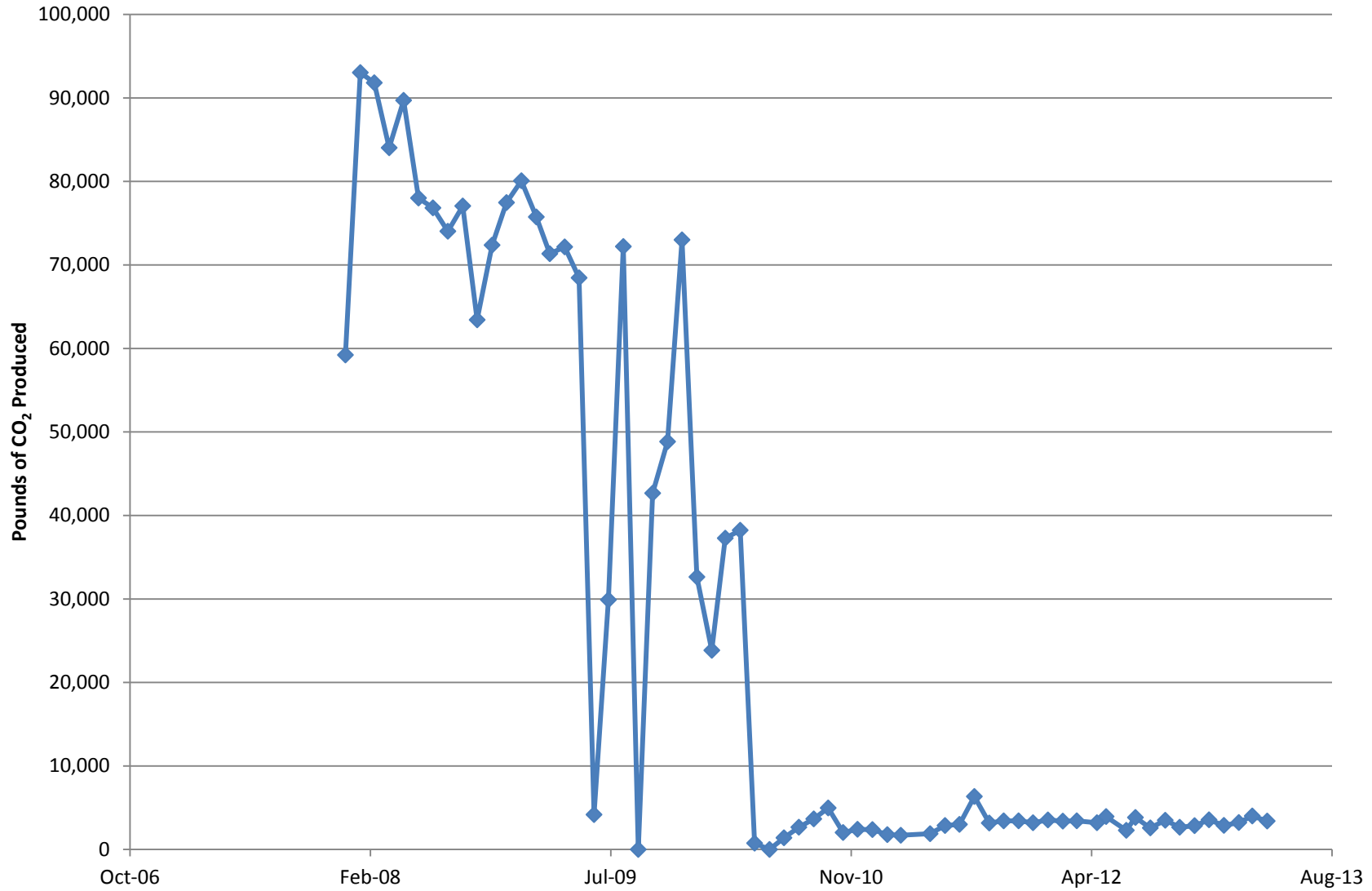


Figure 2
Equivalent Pounds of CO₂ Produced by the Central Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 026

Reporting Period: 1 April 2013 – 1 May 2013

Date Submitted: 16 May 2013

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (ST18GWTP).

System Metrics

Table 1 presents operation data from the April 2013 reporting period.

Table 1 – Operations Summary – April 2013		
Operating Time: ST018GWTP: 432 hours	Percent Uptime: ST018GWTP: 60.0%	Electrical Power Usage: ST018GWTP: 79 kWh (108 lbs CO₂ generated^a)
Gallons Treated: 110 thousand gallons	Gallons Treated Since March 2011: 3.77 million gallons	
Volume Discharged to Union Creek: 110 thousand gallons		
BTEX, MTBE, TPH Mass Removed: 0.31 lbs^b	BTEX, MTBE, TPH Mass Removed Since March 2011: 23.6 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$10,886 ^c		
Monthly Cost per Pound of Mass Removed: \$29,339		
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.		
^b Calculated using April 2013 (influent) and April 2013 (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.		
lbs = pounds		

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	1.51
EW2016x18	1.22
EW2019x18	1.68
Site ST018 GWTP	4.23
^a Flow rates calculated by dividing total gallons processed, from the totalizer at each location, by system operating time for the month.	
gpm = gallons per minute	
S18GWTP = Site ST018 Groundwater Treatment Plant	

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

Table 3 – Summary of System Shutdowns					
Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
S18GWTP	19 April 2013	17:15	None	NA	Shut down for TPH-G confirmation sampling.
^a Shutdown times are estimated based on the start of the day. S18GWTP = Site ST018 Groundwater Treatment Plant					

Summary of O&M Activities

Groundwater samples were collected at the S18GWTP on 2 April 2013. Sample results from the April sampling event are presented in Table 4. Laboratory data received on 19 April 2013 indicated a concentration of TPH-G (120 µg/L) in the effluent sample in excess of the effluent limitation. Confirmation samples were collected on 19 April 2013 at the effluent and outfall sample locations. The treatment plant was taken off line while waiting for the confirmation sample results. In accordance with the NPDES permit, a report was prepared for the Water Board in notification of the potential effluent violation and submitted on 25 April, 2013.

On 23 April 2013, analytical data from the monthly sampling event was validated, and the laboratory detection of TPH-g in the system effluent (120 µg/L) was qualified as a non-detect. TPH-g was not detected in any of the confirmation samples. The ST018 groundwater treatment plant was brought back on line on 8 May, 2013. No other contaminant concentrations were measured at the effluent sampling location in April 2013.

The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (2Q13) influent sample was 340 µg/L, which is a decrease from the previous (1Q13) influent concentration of 699 µg/L. Figure 1 presents a plot of influent quarterly total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the S18GWTP versus time. The concentration of MTBE increased since January 2013 to 155 µg/L, up from 135 µg/L.

Optimization Activities

Based on the increased run time associated with the upgraded battery bank at EW2019x18, both the EW2014x18 and EW2016x18 battery banks were upgraded on 9 April 2013. The average flow rates achieved at extraction wells EW2014x19 and EW2016x18 each increased by nearly double this month compared to flow rates in March. This is especially significant since the calculated flow rates for April 2013 included significant system downtime due to confirmation sampling. The upgraded battery banks are expected to allow for 24-hour run time at each extraction well.

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.

The S18GWTP produced approximately 78 pounds of GHG during April 2013. This is a decrease from March 2013 (156 pounds) due to the system being off line for confirmation sampling from 19 April 2013 through the end of the month. Figure 2 presents the historical GHG production from the S18GWTP. 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 April 2013 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	2 April 2013 (µg/L)			
				Influent ^b	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	5	0.5	0	155	NM	ND	ND
Benzene	5	0.17	0	3.4	NM	ND	ND
Ethylbenzene	5	0.22	0	0.8	NM	ND	ND
Toluene	5	0.14	0	0.18 J	NM	ND	ND
Total Xylenes	5	0.23 – 0.5	0	0.62	NM	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	ND	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	ND	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	180 J	ND	NM	ND

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

^b Values taken from April 2013 (2Q13) sample data. Influent sampling is conducted on a quarterly basis.

µg/L = micrograms per liter

J = analyte concentration is considered an estimated value

ND = not detected above method detection limit

NM = not measured this month

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

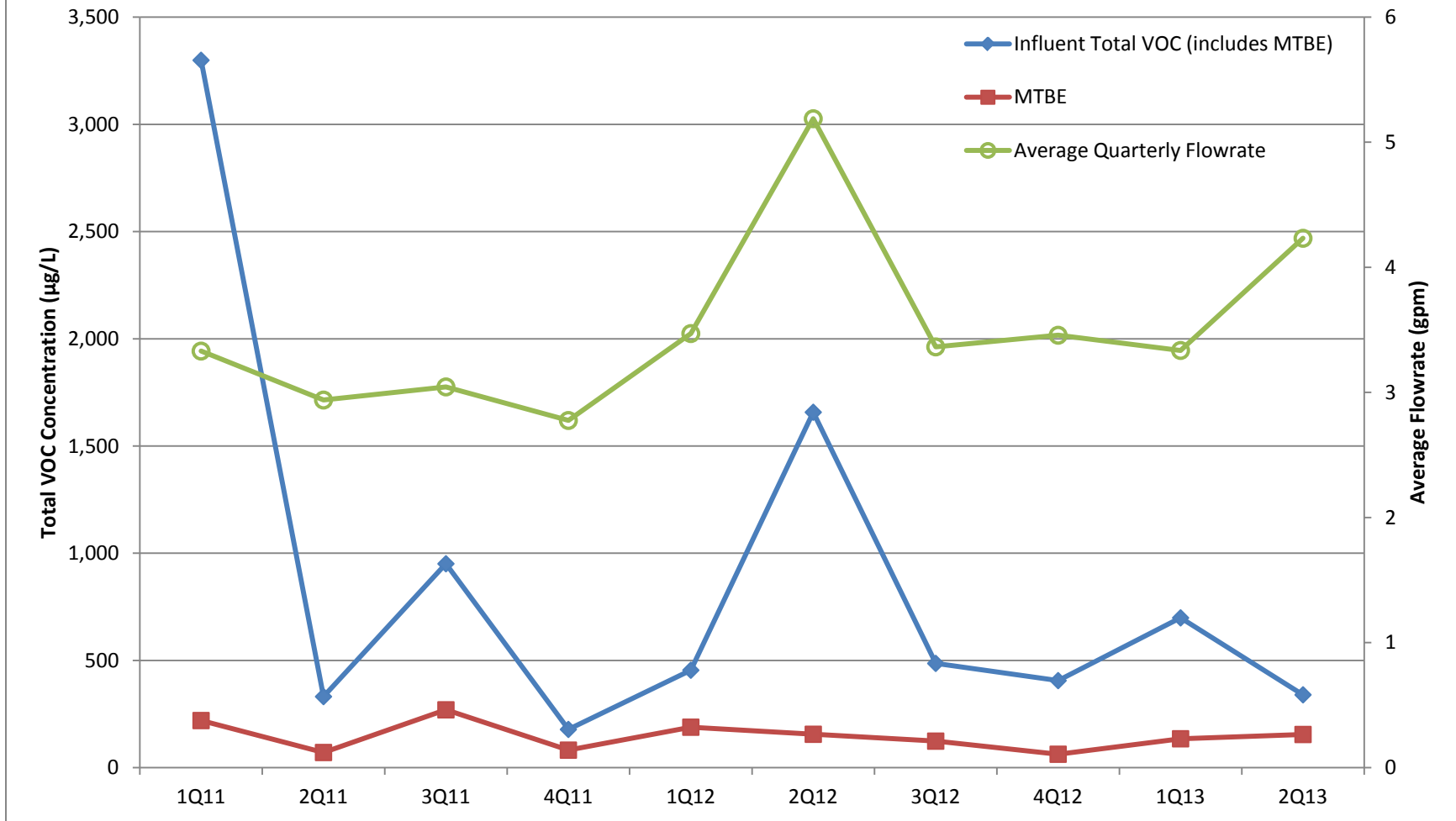
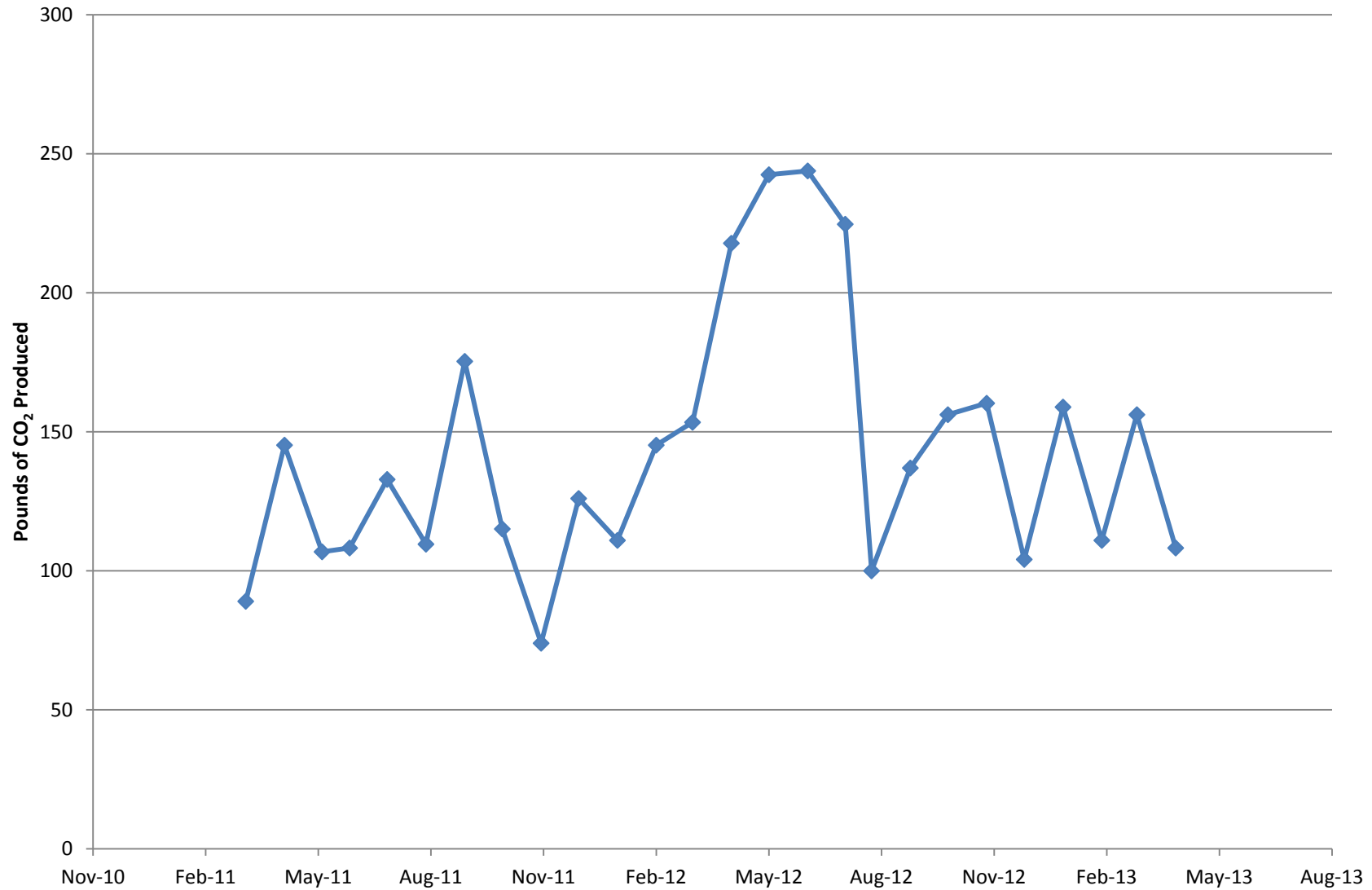


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB Restoration Program

Program Overview

RPM Meeting

May 22, 2013

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
- CAMU 2008-2009 Monitoring Annual Report

Completed Documents (cont'd)

- 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)
- Work Plan for RPO of Sites SS016 and SS029
- Site LF007C Data Gaps Investigation Technical Memorandum
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Groundwater Proposed Plan (PP)
- FT005 Remedial Action Completion Report
- 2012 GSAP Technical Memorandum

3

Completed Documents (cont'd)

- Vapor Intrusion Assessment Update Technical Memorandum

4

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

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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 (4th Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- 2012 Annual GSAP Sampling
- CAMU Lysimeter Removal
- LF007C GET System Optimization
- SS029/SS016 System Optimization Analysis
- GSAP Semiannual Sampling Event
- Replace electrical wiring for well field at Site SS030

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Completed Field Work (cont'd)

- Replace battery banks at ST018 Groundwater Treatment Plant
- **Annual Groundwater Remediation Implementation Program (GRIP) Sampling event**

7

In-Progress Documents & Field Work

Documents

- Groundwater Record of Decision (ROD)
- Old Skeet Range Action Memorandum
- 2012 CAMU Annual Report
- **3rd Five-Year Review**
- **2012 Annual Groundwater Remediation Implementation Status Report (GRISR)**

Field Work

- **Electrical repairs to Site SS029 extraction system**
- **Well Decommissioning**

8

Upcoming Documents & Field Work

Documents

- Kinder Morgan LF044 Land Use Control Report TBD
- ***LF007C Extraction System Optimization Workplan*** ***TBD***

Field Work

- None

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