Final

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

18 April 2013, 1400 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Restoration Program Manager's (RPM) meeting on 18 April 2013 at 1400 hours, at Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Glenn Anderson	Travis AFB
• Lonnie Duke	Travis AFB
• Gregory Parrott	Travis AFB
• Dezso Linbrunner	United States Army Corp of Engineers (USACE) Omaha District
• Adriana Constantinescu	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

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 (March 2013)
• Attachment 4	CGWTP Monthly Data Sheet (March 2013)
• Attachment 5	ST018 Monthly Data Sheet (March 2013)
• Attachment 6	Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 20 March 2013 RPM meeting minutes were approved and finalized as written.

B. Action Item Review.

Action items from March 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 will be held on 22 May 2013 at 0930 hours. The 19 June 2013 RPM meeting will be canceled due to conflicting schedules. Mr. Anderson suggested a June teleconference for ROD comments in lieu of the RPM meeting. Mr. Duke said we could set time aside in the afternoon after the 22 May 2013 meeting, and schedule a ROD teleconference the last week of June if needed.

Travis AFB Master Document Schedule

— Groundwater Record of Decision (ROD): Agency Comments Due date was changed to 04 April 2013; the remaining due dates were changed accordingly. Ms. Burke did request, in writing, additional review time. Travis AFB will respond, if required, in writing to acknowledge the additional review time was received and recorded.

— 3rd Five-Year Review: The Draft to Agencies date changed to 03 May 2013; the remaining due dates were changed accordingly.

— Potrero Hills Annex: (FS, PP, and ROD): No change to the schedule. Mr. Anderson said that the responsible parties provided two Work Plans (WPs) to the California Regional Water Quality Control Board (CRWQCB). One WP supports the investigation of the vegetation to determine the distribution of higher perchlorate concentrations in the surface soil. The second WP investigation focuses on a sewage oxidation pond; the oxidation pond received sewage from the former NIKE missile facility. CRWQCB is still reviewing the WPs.

— Old Skeet Range Action Memorandum: The Agency Comments Due date was changed to 08 April 2013 to reflect when the comments were received. The

Response to Comments Meeting date is no longer needed. The USACE is reviewing the comments and will provide their responses to Travis AFB. The rest of the dates are subject to change.

— Quarterly Newsletter (April 2013): No change. The Quarterly Newsletter went out as scheduled.

— Groundwater Remediation Implementation Status Report: The due date for the AF/Service Center Comments on the pre-draft was changed to 18 April 2013. Mr. Duke said the schedule is subject to change as he is still reviewing the report. Mr. Wray stated this is another document that should be made available as part of the Performance-Based Contract (PBC) Request for Proposals (RFP) as it reflects site conditions as of 2012.

— Kinder Morgan LF044 Land Use Control Report: Dates are still TBD. Mr. Anderson said the document is still in a pre-draft stage. Travis AFB has received some figures from the contractor. The document needs to identify where the Land Use Control (LUC) areas associated with Site LF044 are, and the controlled area where the new fuel tanks are located. The document outlines the environmental work that was conducted to support the construction of the tanks and demonstrates compliance with LUCs. Mr. Smith said that this document needs to be available to the contractors bidding on the PBC RFP, even if it is in a pre-draft form. Mr. Smith said Travis AFB needs to give this document to Mr. Linbrunner as soon as possible to include in the RFP. Mr. Linbrunner said the RFP is going out next week; however, he can have contracting specialists send an email with the pre-draft report as attachments to the potential bidders.

— 2012 CAMU Annual Report: No changes to dates. Draft to Agencies went out as scheduled.

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 4.0 million gallons of groundwater were extracted and treated during the month of March 2013. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 81.6 gallons per minute (gpm). Electrical power usage was 7,320 kWh and approximately 10,028 pounds of CO_2 were created (based on DOE calculation). Approximately 2.12 pounds of volatile organic compounds (VOCs) were removed in March. 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 March.

Mr. Smith commented that 4.0 million gallons treating 2.12 lbs of VOC mass at the South Plant while the Central Plant treated only 1.7 million gallons but removed 5.11 lbs of VOC mass. Mr. Wray stated that the Central Plant treats groundwater from Site SS016 which has higher VOC concentrations while the flow rates at SS030 remain high to help pull back the off base portion of the plume.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.7 million gallons of groundwater extracted and treated during the month of March 2013. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 35.7 gpm. Electrical power usage was 2,926 kWh for all equipment connected to the Central plant, and approximately 4,009 pounds of CO_2 were generated. Approximately 5.11 pounds of VOCs were removed from groundwater by the treatment plant in March. The total mass of VOCs removed since the startup of the system is 11,322 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 March.

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

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

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 163 thousand gallons of groundwater extracted and treated during the month of March 2013. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 3.22 gpm. Electrical power usage for the month was 114 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 156 pounds of CO_2. Approximately 0.95 pounds of BTEX, MTBE and TPH were removed from groundwater in March from the treatment plant. The total BTEX, MTBE and TPH mass removed since the startup of the system is 23.2 pounds.

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, both EW2014x18 and EW2016x18 battery banks will be upgraded with the same batteries as EW2019x18. The new batteries have been purchased and installation will occur in April 2013. 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: None.

In-Progress Documents: Groundwater Record of Decision, Old Skeet Range Action Memorandum.

In-Progress Field Work: None.

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.

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

Mr. Salcedo asked which wells will be decommissioned. Mr. Duke said about twenty wells which are listed in last year's GSAP report. The new GRISR report will show the wells that have been decommissioned and the ones that can be decommissioned. Ms. Burke asked what is removed when you decommission a well. Mr. Duke said that the top five feet of well casing and hardware above the surface is removed; it is as if the well was never there. All active, inactive, and decommissioned wells are listed in an environmental database, known as the Environmental Restoration Program Information Management System (ERPIMS).

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith said the PBC RFP will be emailed next week to the contractors that have been pre-selected to bid for the work.

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
18 April 2013, 2:00 P.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: PRIOR TO THE RPM MEETING, WE WILL HOLD A SEPARATE MEETING AT 9:30 A.M. TO DISCUSS EPA TECHNICAL 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 Meeting[1] (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	—	—
06-19-13	—	—
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	05-03-13
Draft to RAB	01-02-13	05-03-13
Agency Comments Due	03-03-13 (04-05-13)	06-03-13
Response to Comments Meeting	**04-18-13**	**06-19-13**
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	06-05-13	06-28-13
Draft Final Due	06-05-13	06-28-13
Final Due	07-10-13	07-29-13

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	**04-18-13**
Response to Comments Due	04-30-13
Draft Final Due	**NA**
Final Due	04-30-13
Public Comment Period	NA
Public Meeting	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS				
Life Cycle	**Quarterly Newsletters (April 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, Heidi Sickler**	**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	03-25-13	05-03-13	TBD	04-15-13
Draft to RAB	NA	05-03-13	TBD	04-15-13
Agency Comments Due	04-08-13	06-03-13	TBD	05-15-13
Response to Comments Meeting	**TBD**	**06-19-13**	**TBD**	**05-22-13**
Response to Comments Due	04-11-13	06-27-13	TBD	05-31-13
Draft Final Due	NA	NA	NA	NA
Final Due	04-11-13	06-27-13	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: 151 **Reporting Period: 26 February 2013 – 1 April 2013** **Date Submitted: 12 April 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 March 2013 reporting period.

Table 1 – Operations Summary – March 2013

Operating Time:	Percent Uptime:	Electrical Power Usage:
SBBGWTP: 816 hours	**SBBGWTP:** 100 %	**SBBGWTP:** 7,320 kWh (10,028 lbs CO_2 generated[a])

Gallons Treated: **4.0 million gallons**

Gallons Treated Since July 1998: **818 million gallons**

Volume Discharged to Union Creek: **4.0 million gallons**

VOC Mass Removed: **2.12 lbs**[b]

VOC Mass Removed Since July 1998: **438 lbs**

Rolling 12-Month Cost per Pound of Mass Removed: $5,808[c]

Monthly Cost per Pound of Mass Removed: $5,930

lbs = pounds

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

[b] Calculated using March 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	2.8	EW01x30	10.8
EW02x05	2.1	EW737x05	Offline	EW02x29	Offline	EW02x30	4.8
EW03x05	Offline	EW742x05	Offline	EW03x29	3.4	EW03x30	6.6
EW731x05	Offline	EW743x05	Offline	EW04x29	Offline	EW04x30	24.1
EW732x05	Offline	EW744x05	Offline	EW05x29	8.5	EW05x30	15.2
EW733x05	Offline	EW745x05	Offline	EW06x29	12.6	EW06x30	Dry
EW734x05	Offline	EW746x05	Offline	EW07x29	Offline	EW711x30	18.2
EW735x05	Offline						
FT005 Total:	**2.1**			**SS029 Total:**	**27.3**	**SS030 Total:**	**79.7**
SBBGWTP Average Monthly Flow[c]: 81.6 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 *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*
[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 14 March 2013. Sample results are presented in Table 4. The total VOC concentration (63.8 µg/L) in the influent sample has increased since the February 2013 sample (50.5 µg /L) was collected. Concentrations of cis-1,2-DCE (3.2 µg/L) and TCE (60.6 µg/L) were detected at the influent sample location in March 2013. No contaminants were detected at the midpoint or effluent sampling locations.

Figure 1 presents a plot of influent concentrations at the SBBGWTP over the past twelve (12) months. The average system flow rate decreased over the course of the past year going from approximately 120 gpm in May and June 2012 to approximately 40 gpm in January 2013. The flow rate has since increased through March 2013 to approximately 80 gpm, though this is expected to increase further when the Site SS029 extraction wells are all brought back on line following power line replacement work. The decrease in flow over the past year can be attributed to Site SS030 being brought off line to replace power wiring. In addition, three Site SS029 wells are currently off line, and the southern-most Site FT005 extraction wells EW734x05 and EW735x05 were taken off line in November 2012.

Coinciding with the decrease in overall system flow rate was an increase in VOC concentration in the SBBGWTP influent process stream. This was most noticeable in December 2012 and was a result of focused extraction at Site SS029 while Site SS030 was off line. Since the Site SS030 wells are back on line, the influent stream VOC concentrations have dropped.

Work to reconnect the replacement wiring in the extraction well network at Site SS030 was completed on 11 February 2013. A pump failure was identified at EW05x30 in February 2013 and the pump was replaced on March 7, 2013. All of the monitoring wells at Site SS030 are now online.

Three (3) of the Site SS029 extraction wells began experiencing malfunctions in February 2013 and were not operational during March 2013. Extraction wells EW02x29, EW04x29, and EW07x29 are all experiencing variably frequency drive (VFD) faults that prevent the pumps from running. These common faults may be due to power line shorts. Troubleshooting activities at Site SS029 indentified similar wiring issues to those that occurred at Site SS030. Power wiring to the Site SS029 extraction wells will be replaced in April and May 2013. Any additional equipment replacements (VFDs, for example) will also be replaced as needed during the power wiring replacement activities. All Site SS029 wells are expected to be brought back on line by April 2013.

Optimization Activities

No optimization activities were performed in March 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 10,028 pounds of GHG during March 2013. GHG production has increased (from 2,171 pounds) since February 2013 due to increased extraction well operations with more than double the groundwater volume treated in February this 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 March 2013 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	14 March 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	3.2	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	60.6	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	3 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

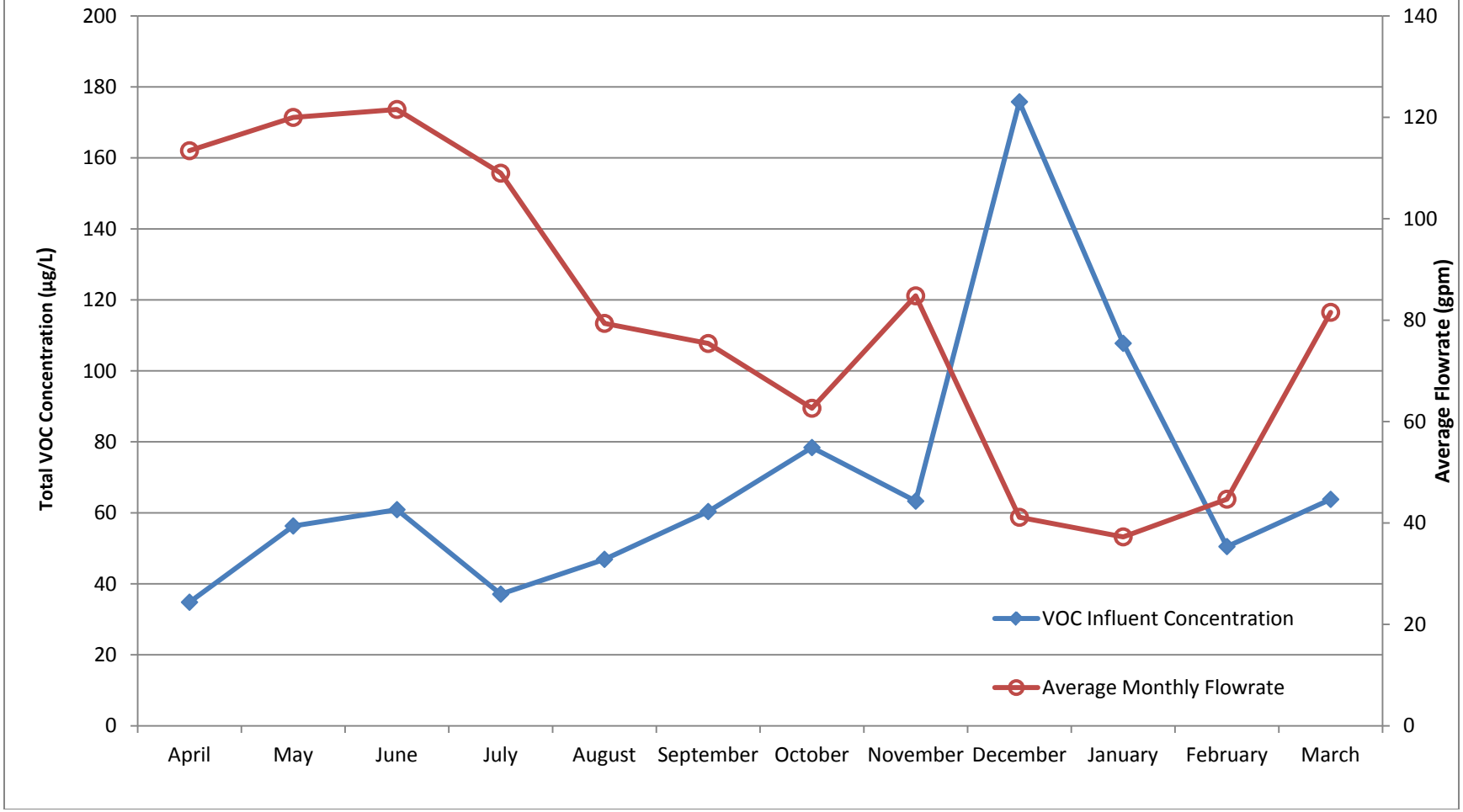
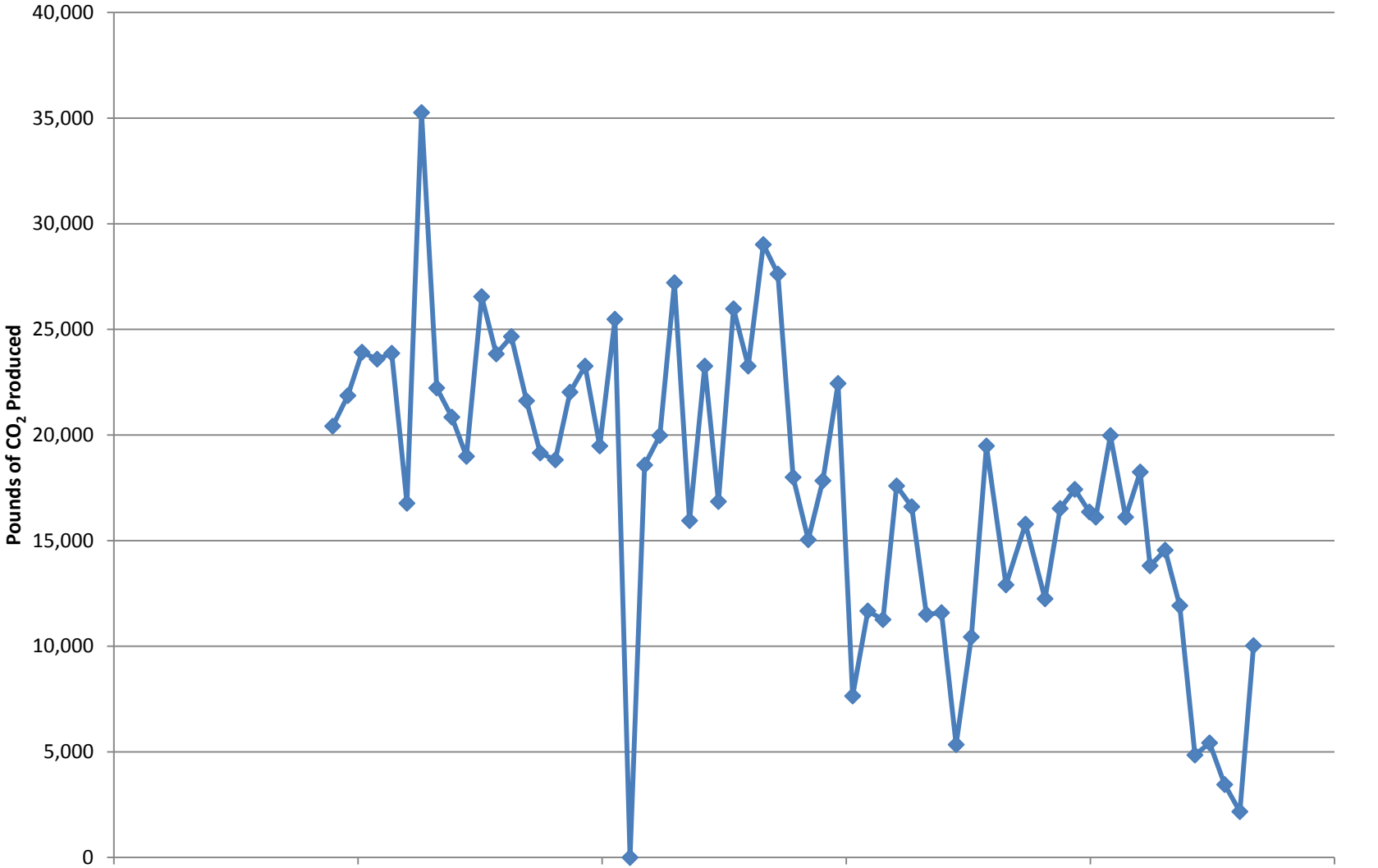


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 164 **Reporting Period: 26 February 2013 –1 April 2013** **Date Submitted: 12 April 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 March 2013 reporting period.

Table 1 – Operations Summary – March 2013

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	816 hours	**CGWTP:**	100%	**CGWTP:**	2,926 kWh (4,009 lbs CO_2 generated[a])
WTTP:	Water: 0 hours	**WTTP:**	Water: 0%	**WTTP:**	0 kWh
	Vapor: 0 hours		Vapor: 0%		

Gallons Treated: **1.7 million gallons**

Gallons Treated Since January 1996: **477 million gallons**

VOC Mass Removed:

5.11 lbs[b] (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,636 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: $2,755[c]

Monthly Cost per Pound of Mass Removed: $2,406

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using March 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	21.9	Offline
EW02x16	7.3	Offline
EW03x16	0.2[c]	Offline
EW605x16	7.1	Offline
EW610x16	3.1	Offline
CGWTP	35.7	--
WTTP	--[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 March 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

There were no system shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater)					
	None	NA			
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 14 March 2013. Sample results are presented in Table 4. The total VOC concentration (350.14 µg/L) in the influent sample has remained stable since the February 2013 sample (349.61 µg/L) was collected. Concentrations of 1,1-Dichloroethene (1 µg/L), cis-1,2-DCE (71.8 µg/L), trans-1,2-Dichloroethene (4.5 µg/L), Tetrachloroethene (0.84 µg/L), and TCE (272 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. In general, the influent concentration has remained consistent during the past year, while the flow rate has decreased slightly (around 40 gpm in June and July 2012 to approximately 36 gpm from November 2012 through March 2013). The variation in flow during January 2013 was due to approximately 80 hours of system downtime during that monitoring month.

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 March 2013.

Optimization Activities

No optimization activities occurred at CGWTP in March 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 4,009 pounds of GHG during March 2013. This is an increase from the amount

produced in February 2013 (approximately 3,226 pounds) and can be attributed to an increase in the number of gallons treated.

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

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	14 March 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	71.8	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	1	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	0.84	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	272	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	4.5	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	804	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
	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

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

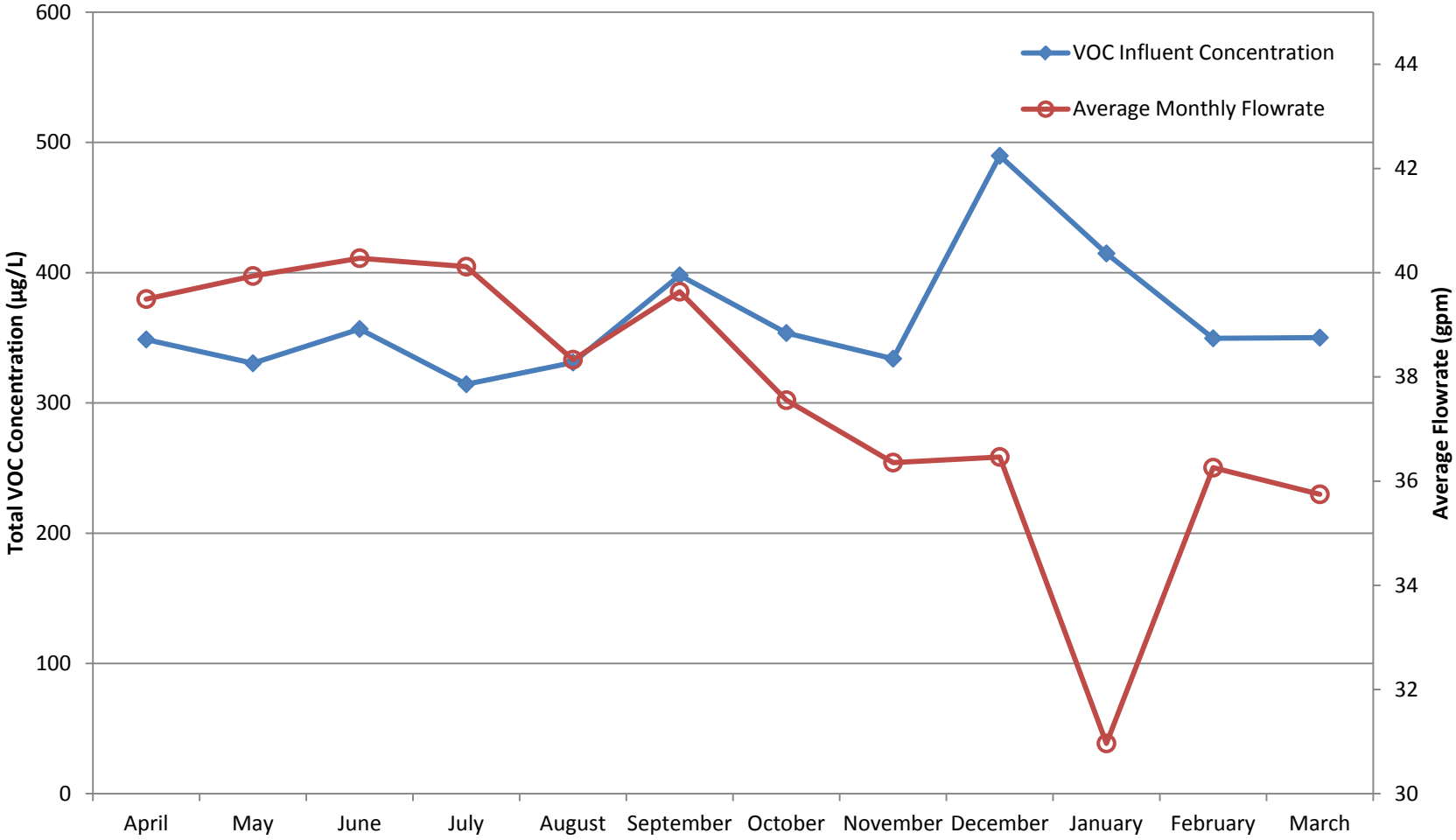
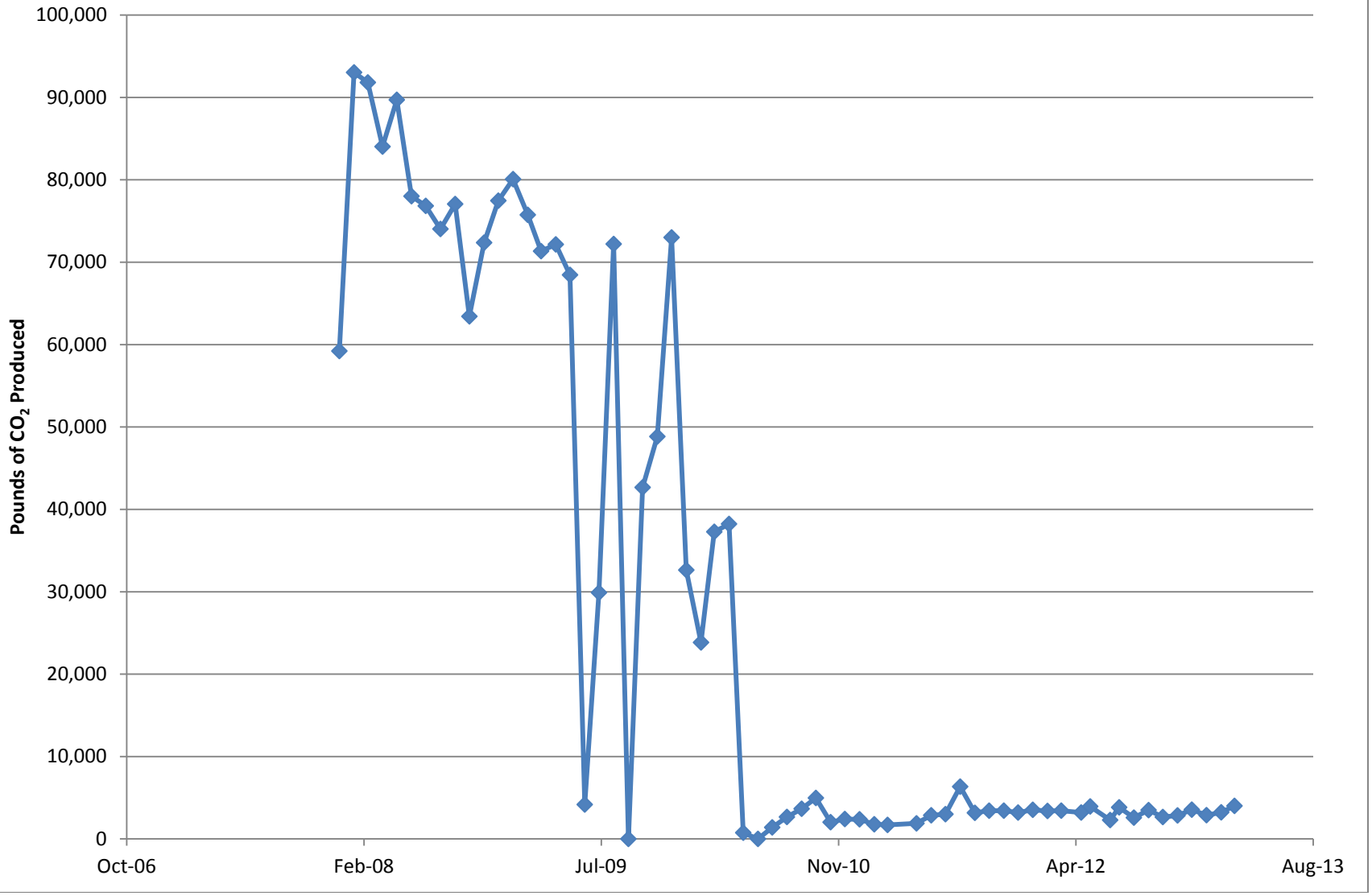


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 025 **Reporting Period: 25 February 2013 – 1 April 2013** **Date Submitted: 12 April 2013**

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

System Metrics

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

Table 1 – Operations Summary – March 2013

Operating Time:	Percent Uptime:	Electrical Power Usage:
ST018GWTP: 840 hours	**ST018GWTP:** 100%	**ST018GWTP:** 114 kWh (156 lbs CO_2 generated[a])

Gallons Treated: **163 thousand gallons**

Gallons Treated Since March 2011: **3.67 million gallons**

Volume Discharged to Union Creek: **163 thousand gallons**

BTEX, MTBE, TPH Mass Removed: **0.95 lbs**[b]

BTEX, MTBE, TPH Mass Removed Since March 2011: **23.2 lbs**

Rolling 12-Month Cost per Total Pounds of Mass Removed: $8,961 [c]

Monthly Cost per Pound of Mass Removed: $26,240[d]

The operating time for the ST018GWTP is greater than that of the CGWTP and SBBGWTP since the monitoring period for March 2013 included one (1) additional day of monitoring (24 hours).

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

[b] Calculated using January 2013 (influent) and March 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. The monthly cost is higher due to the battery bank upgrade work at EW2019x18.

[d]

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	0.62
EW2016x18	0.69
EW2019x18	1.67
Site ST018 GWTP	3.22

[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

There were no system shutdowns during the monthly reporting period.

Summary of O&M Activities

Groundwater samples were collected at the S18GWTP on 14 March 2013. Sample results from the March sampling event are presented in Table 4. No contaminant concentrations were measured at the effluent sampling location in March 2013.

The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (1Q13) influent sample was 699 µg/L, which is an increase from the previous (4Q12) influent concentration of 406 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. Generally, MTBE concentrations have remained consistent throughout the operational lifetime of the ST018GWTP (since March 2011). The spike in influent concentration seen in the sample collected during 2Q12 was the result of increased extraction at extraction well EW2014x18 coupled with down time at the other extraction wells during that same time period.

A trigger study began in January 2013 in response to trigger exceedances of benzo(a)pyrene and ideno(1,2,3-cd)pyrene in the system effluent during the November 2012 sampling event. The results of the study are presented in Table 5. No trigger exceedances occurred in March 2013. The March 2013 sampling event concluded the trigger study for benzo(a)pyrene and ideno(1,2,3-cd)pyrene. Neither contaminant was detected in the influent or effluent sampling locations during the trigger study. Based on the results of the trigger study, the sampling program will return to the standard schedule as outlined in the NPDES permit CAG912002.

Optimization Activities

Based on the increased run time associated with an upgraded battery bank at EW2019x18, both the EW2014x18 and EW2016x18 battery banks will be upgraded with the same batteries as EW2019x18. The new batteries were purchased on 21 March 2013 and installation will occur in April 2013. 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 156 pounds of GHG during March 2013. This is an increase from February 2013 (111 pounds). This is due to an increased number of gallons treated in March 2013 compared to February 2013. 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 March 2013 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	14 March 2013 (µg/L)			
				Influent[b]	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	5	0.5	0	135	NM	0.6 J	ND
Benzene	5	0.17	0	17.9	NM	ND	ND
Ethylbenzene	5	0.22	0	26	NM	ND	ND
Toluene	5	0.14	0	1.7	NM	ND	ND
Total Xylenes	5	0.23 – 0.5	0	38.2	NM	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	480	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	ND	74 J	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	ND	190 J	NM	ND

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

[b] Values taken from January 2013 (1Q13) 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

Table 5
Summary of Quarterly Trigger Study Analytical Data – Site ST018 Groundwater Treatment Plant

Constituent	Trigger Limit[a] (µg/L)	10 January 2013 (µg/L)		13 February 2013 (µg/L)		14 March 2013 (µg/L)	
		Influent	Effluent	Influent	Effluent	Influent	Effluent
Benzo(a)pyrene	0.0044	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	0.0044	ND	ND	ND	ND	ND	ND

[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

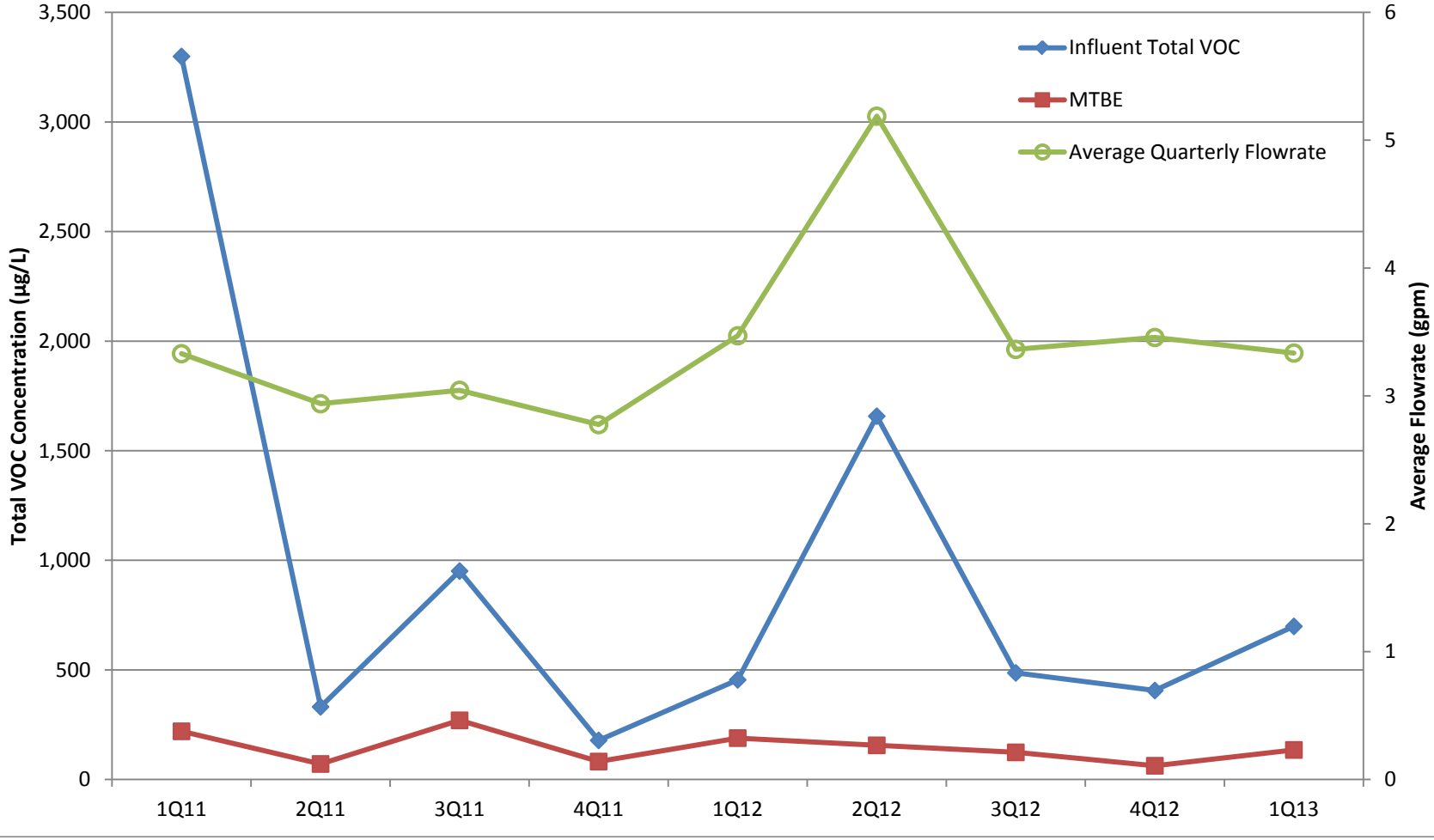
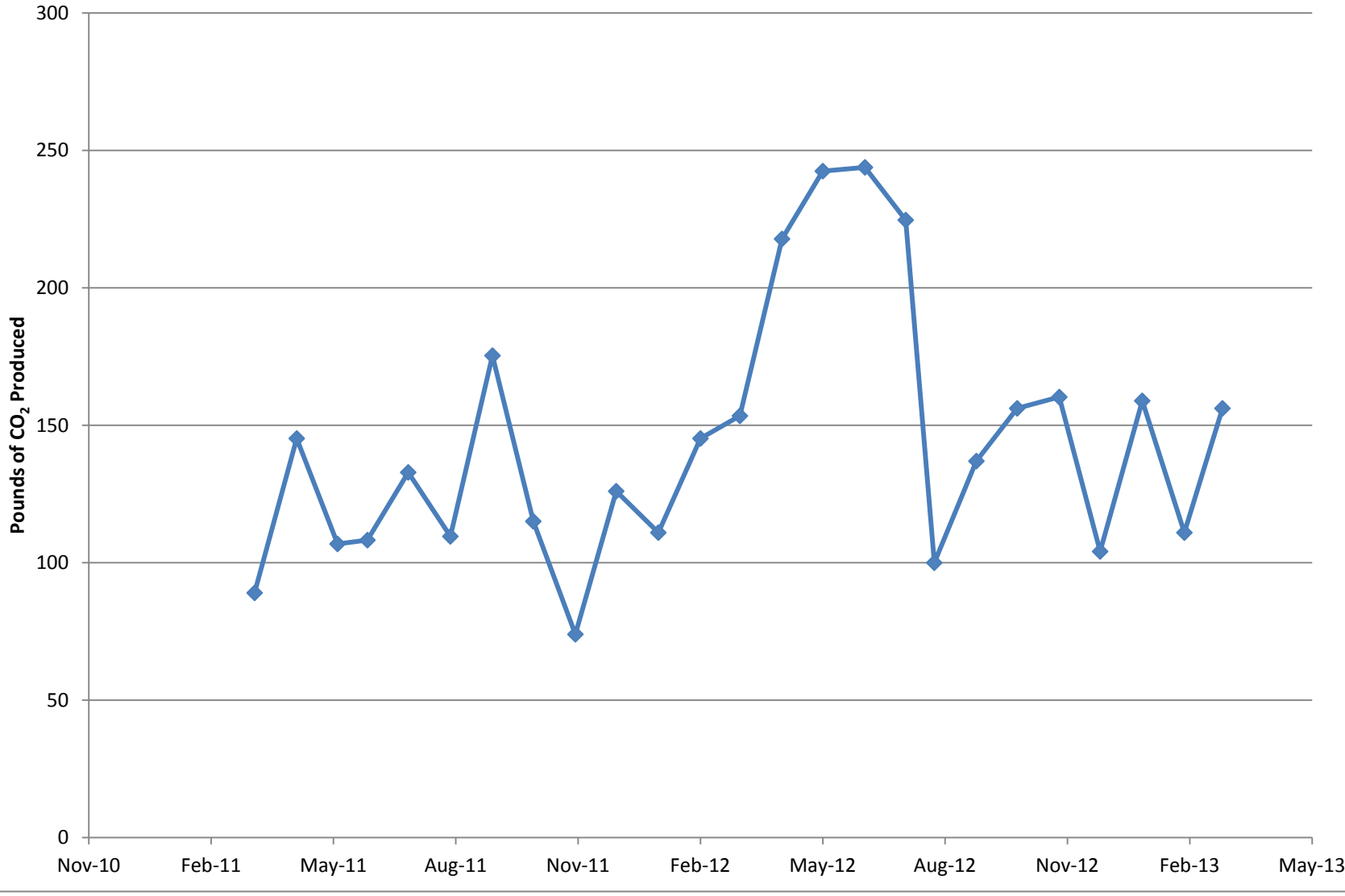


Figure 2

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



Travis AFB
Restoration Program

Program Overview

RPM Meeting
April 18, 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

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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

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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***

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In-Progress Documents & Field Work

Documents

- Groundwater Record of Decision (ROD)
- Old Skeet Range Action Memorandum
- 2012 CAMU Annual Report

Field Work

- Annual Groundwater Remediation Implementation Program (GRIP) Sampling event

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Upcoming Documents & Field Work

Documents

- 3rd Five-Year Review — May
- 2012 Annual Groundwater Remediation Implementation Status Report (GRISR) — May
- Kinder Morgan LF044 Land Use Control Report — TBD

Field Work

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

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

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