Final

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

19 November 2014, 1000 Hours

Mr. Mark Smith, of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Team (IST), conducted the Restoration Program Manager's (RPM) teleconference meeting, on 19 November 2014 at 1000 hours, in Building 248 at Travis AFB, California. Attendees included:

• Mark Smith	AFCEC/CZOW
• Glenn Anderson	AFCEC/CZOW
• Lonnie Duke	AFCEC/CZOW
• Erin Hernandez	Travis AFB 60 AMW/JA
• William Hall	AFCEC/CZRW
• Dezso Linbrunner	USACE-Omaha
• Adriana Constantinescu (via telephone)	California Regional Water Quality Control Board (RWQCB)
• Ben Fries (via telephone)	California Department of Toxic Substances Control (DTSC)
• Nadia Hollan Burke (via telephone)	United States Environmental Protection Agency (USEPA)
• Indira Balkissoon (via telephone)	Techlaw, Inc
• Mike Wray	CH2M HILL
• Loren Krook (via telephone)	CH2M HILL
• Tony Chakurian	CH2M HILL

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Handouts distributed at the meeting, discussions and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting and Document Schedule
- Attachment 3 SBBGWTP Monthly Data Sheet (October 2014)
- Attachment 4 CGWTP Monthly Data Sheet (October 2014)
- Attachment 5 NGWTP Monthly Data Sheet (October 2014)
- Attachment 6 ST018 Monthly Data Sheet (October 2014)

- Attachment 7 Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 23 October 2014 RPM teleconference meeting minutes were approved and finalized as written. Mr. Smith asked if the start time of 1000 hours for the RPM teleconference meetings worked with everyone's schedule. All agreed. Ms. Burke added as long as the meetings do not go past 1200 hours.

B. Action Item Review.

Action items from October were reviewed.

Action item 1 will remain open: AFCEC's Travis Restoration Support Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. AFCEC is in agreement with using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero energy policy" for the Air Force for the beneficial reuse of treated groundwater. Current possibilities include: Rerouting treated water from the central plant to the duck pond or as irrigation as an energy reduction project with the intent of reducing on-base water usage. Due date will remain TBD to ensure this action item remains visible. 23 October 2014: No updates.

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 a face to face held on 21 January 2015 at 9:30.

Travis AFB Master Document Schedule

— Travis Air Force Base Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP): The response to comments (RTC) meeting was updated to 14 November 2014 to reflect the actual date, the rest of the dates were changed accordingly. Mr. Anderson asked Ms. Burke if it is still her intention to use the RTC table that addressed all of her questions/comments to forward the Draft Final to EPA QA for an official approval. Ms. Burke said that was her intent however, Travis AFB needs to make a small correction to the agency name on the signature page (page 6).

— Site SD037 GW Remedial Design/Remedial Action Work Plan: RTC due date was changed to 24 November 2014, rest of the dates were changed accordingly. EPA is reviewing Travis AFB responses to their comments. Mr. Anderson said that Travis AFB is hoping to have the document go final on 24 December 2014. Ms. Burke said that date should work.

— Site SD036 Remedial Design/Remedial Action Work Plan: The draft to agencies date was changed to 01 December 2014, the rest of the dates were changed accordingly. The dates were pushed back to incorporate any changes that were made to the SD037 RD/RA work plan since the SD036 RD/RA work plan is very similar. Travis AFB thought this would help with the documentation review.

— Site SS016 GW Remedial Design/Remedial Action Work Plan: Predraft to AF/Service Center and AF/Services Center Comments Due were changed to reflect the actual date. No other changes were made to the schedule.

— Site SS015 GW Remedial Design/Remedial Action Work Plan: No changes to the schedule.

— Community Involvement Plan: No changes to the schedule.

— Site DP039 Remedial Design/Remedial Action Work Plan: New document, populated with new dates.

— Proposed Plan for the Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision (ROD): No change to the schedule. The Proposed Plan document schedule is designed so that the public meeting coincides with the April 2015 RAB meeting.

— Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision: No changes to the schedule.

— Proposed Plan for the Amendment to the Soil Record of Decision for the WABOU: No changes to the schedule.

— Amendment to the Soil Record of Decision for the WABOU: No changes to the schedule.

— Potrero Hills Annex (FS, PP, and ROD): No change to the schedule. Mr. Anderson said that Travis AFB received the 2014 Annual Groundwater Monitoring Report last month. Ms. Constantinescu said that the RQWCB also received that report and that all responsible parties: Autoliv, UTC Aero Space Systems, and Travis AFB will be receiving one Notice of Violation (NOV) because of the following two reasons: 1) The report was received late, and 2) The document is not of acceptable quality. Mr. Smith said Travis AFB is not programming any projects or funding this site until the RWQCB is satisfied with the cleanup efforts and Potrero Hills Annex is placed back into the Travis AFB Environmental Restoration Program. Mr. Smith added that Travis AFB is willing to assist as necessary.

— Site DP039 Lead Excavation Technical Memorandum: The RTC date was changed to 21 November 2014. Travis AFB received EPA's comments and is working on responses. Ms. Burke asked when EPA might be receiving RTCs. Mr. Krook said they are working

on getting additional laboratory data and recommended changing the RTC date to 5 December 2014.

— Site TA500 Investigation Work Plan: The Final due date was changed to 17 November 2014 to reflect the actual date.

— Site SD031 Technology Demonstration Work Plan: The Final due date was changed to 17 November 2014 to reflect the actual date.

— Site ST018 POCO Work Plan Addendum: No change to the schedule. RWQCB will provide comments on 20 November 2014.

— Site SD034 Data Gap Investigation: No change to the schedule. Ms. Burke questioned if this document should be moved to the primary document section as it sounds more like a remedial investigation (RI). Mr. Anderson said that following the data gap investigation there will be an RD/RA work plan submitted in accordance with the Travis AFB Groundwater ROD, so this data gap investigation work plan is more of a feeder document.

— Site SS014 POCO Technology Demonstration Work Plan: No changes to the schedule.

— Quarterly Newsletter (October 2014): Draft to agencies date was changed to 23 December 2014. The rest of the dates were changed accordingly.

— Site FT004 Technology Demonstration Work Plan: Moved to History

— Kinder Morgan LF044 Land Use Control Report: Moved to History.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 3.3 million gallons of groundwater were extracted and treated during the month of October 2014. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 64.7 gallons per minute (gpm). Electrical power usage was 9,840 kWh, and approximately 13,481 pounds of CO_2 were created (based on DOE calculation). Approximately 1.02 pounds of volatile organic compounds (VOCs) were removed in October. The total mass of VOCs removed since startup of the system is 453 pounds.

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

Update on the questionable electrical meter: A base electrician discovered that the treatment plant is sharing power with a transformer (connected to communications equipment) that is causing the erratic readings. Now that the issue has been identified

Travis AFB is looking into how to accurately measure the electricity used at the SBBGWTP.

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 October 2014. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 34.3 gpm. Electrical power usage was 2,969 kWh for all equipment connected to the Central Plant, and approximately 4,068 pounds of CO_2 were generated. Approximately 3.29 pounds of VOCs were removed from groundwater by the treatment plant in October. The total mass of VOCs removed since the startup of the system is 11,384 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. The rebound study was concluded with the signing of the Groundwater ROD in August. No additional optimization activities to report for the month of October.

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

North/LF007 Groundwater Treatment Plant (see Attachment 5)

The North/LF007 Groundwater Treatment Plant (NGWTP) performed at 83% uptime with approximately 151,930 gallons of groundwater extracted and treated during the month of October 2014. The average flow rate at the NGWTP was 4.8 gpm, and electrical power use was 0 kWh for all the equipment connected to the North plant; and 0 pounds of CO_2 was generated; this system is 100 percent off of the power grid. Approximately 4.08×10^{-3} pounds of VOCs were removed from the groundwater in October. The total mass of VOCs removed since the startup of the system is 174.31 pounds.

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

Site ST018 Groundwater (MTBE) Treatment Plant (see Attachment 6)

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 50% uptime with approximately 84,700 gallons of groundwater extracted and treated during the month of October 2014. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 3.67 gpm. Electrical power usage for the month was 52 kWh for all equipment connected to the ST018 GWTP, which equates to the creation of approximately 71 pounds of CO_2. Approximately 0.04 pounds of BTEX, MTBE and TPH were removed from groundwater in October from the

treatment plant. Approximately 0.04 pounds of MTBE were removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 30.9 pounds. And the total MTBE mass removed since startup of the system is 6.6 pounds.

Note: Electrical power use at the ST018 GWTP is only for the alarm system and a pump that pushes water through the GAC vessels for treatment. The extraction pumps in the system are all solar powered.

Optimization Activities for ST018: No optimization activities to report for the month of October.

ST018 GWTP was taken offline on 15 October 2014 in order to reroute the treatment plant discharge line from the storm drain to the sanitary sewer, so the NPDES permit is no longer required to operate the plant. Monitoring requirements will be based on sewer district guidelines.

Discussions:

Site SD031 Technology Demonstration Update:

Mr. Anderson gave an update for Site SD031 Technology Demonstration.

Mr. Anderson gave a brief status report on the work that was conducted in October:

- The Demonstration started by completing all the base notification requirements.
- The field team and drillers were mobilized to the site. The drillers used air knifing equipment to check for shallow buried utilities at 16 boring locations; 7 for gravel chimneys, and 9 for injection wells. Air knifing is a safe form of potholing that uses high pressure air that will not damage underground utilities that are not initially identified on the utility maps.
- In thirteen out of the sixteen borings, the field team noticed staining and odor. The PID air monitoring readings ranged from 15 to 1,100 PPM within those thirteen borings. The staining was observed at various depths from 2 to 5 ½ feet bgs. In one of the gravel chimney locations stained and odor bearing concrete debris from 4 to 5 feet bgs.

The fieldwork was stopped, because Travis AFB was not aware of the soil staining and odor when designing the technology demonstration. There is no reference of soil contamination at this site in the NEWIOU Soil Sediment and Surface Water ROD. Due to the unforeseen staining and odor, and the fact that the health and safety plan did not address these conditions, and that the drillers were on a very tight schedule, it was decided to release the drillers before the construction of technology demonstration infrastructure was completed.

The current Performance Based Contract (PBC) does not allow the flexibility to carry out soil investigation work at this site. However, the Air Force will request additional funding to investigate the observed soil conditions. After reviewing SD031 groundwater data from the past

five (5) years, it was concluded that the soil contamination should not impact the groundwater project, so the technology demonstration has been rescheduled to start in early January 2015. Mr. Smith is working with AFCEC to obtain the funds and acquire contracting services regarding the stained soil area.

Ms. Burke requested notification in writing and requested to be notified when Travis AFB finds these kinds of things in the future as she believes it is indicated in the work plans (WPs). Mr. Anderson asked if an email would suffice. Ms. Burke said yes, for now. Mr. Smith said the draft WP states that Travis AFB would notify the regulatory agencies if there were any modifications to the injection events and will seek concurrence in RPM meetings or teleconferences. Mr. Anderson went on to say that Travis AFB wanted to use the RPM meeting format, because it would allow an open discussion on our current understanding of site conditions and the actions that the Air Force needs to take.

Presentations:

Program Update: Activities Completed, In Progress and Upcoming (see Attachment 9)

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: SD031 Technology Demonstration Work Plan, and TA500 Data Gap Investigation Work Plan.

Newly Completed Field Work: 4Q14 Semiannual GRIP Sampling Event.

In-Progress Documents: ST018 POCO Work Plan Addendum, SD031 Technology Demonstration Work Plan, TA500 Investigation Work Plan, SD037 RD/RA Work Plan, Travis AFB UFP-QAPP, and DP039 Lead Excavation Technical Memorandum.

In-Progress Field Work: SD031 Technology Demonstration.

Upcoming Documents (CERCLA): SD036 RD/RA Work Plan, SS016 GW RD/RA Work Plan, Proposed Plan for the Amendment to WABOU Soil ROD, Proposed Plan for the Amendment to NEWIOU Soil, Sediment, & Surface Water ROD, Community Involvement Plan, SS015 GW RD/RA Work Plan, and DP039 RD/RA Work Plan.

Upcoming Documents (POCO): SS014 POCO Technology Demonstration Work Plan, and Oil-Water Separators POCO Evaluation Work Plan.

Field Work Planned: SD031 Well/Trench Installation (January), SD031 EVO Injection (February), SD036 Well Installation (March), SD037 Well Installation (March), SD034 Site Investigation (April), SD036 EVO Injection (April), SD037 EVO Injection (April), SS016 Well Installation (April), ST018 Well/Trench Installation (April), and SS014 Site Investigation (April).

4. New Action Item Review

Mr. Smith to provide a status update on programming efforts for soil characterization at site SD031.

5. PROGRAM/ISSUES/UPDATE

None.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	AFCEC's Travis Restoration Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. AFCEC is in agreement with using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero energy policy" for the Air Force for the beneficial reuse of treated groundwater. Current possibilities include: Rerouting treated water from the central plant to the duck pond or as irrigation as an energy reduction project with the intent of reducing on-base water usage. Due date will remain TBD to ensure this action item remains visible.	TBD	Open
2.	Mark Smith	Mr. Smith to provide a status update on programming efforts for soil characterization at site SD031	21 Jan 2015	New

TRAVIS AFB RPM TELECONFERENCE AGENDA
19 November 2014, 10:00 A.M.

To:	EPA	Nadia Burke
	DTSC	Ben Fries
	RWQCB	Adriana Constantinescu
	CH2M Hill	Mike Wray
	AFCEC	William Hall
	USACE	Deszo Linbrunner

The RPM teleconference is scheduled for 10:00 am on 19 Nov 2014. **The call-in number is 1-866-203-7023** and the **Participation code is 5978-75-9736 then enter #.**

Topics for the teleconference include:

- Previous Meeting Minutes (All)
- Action Item Review (All)
- Master Meeting and Document Schedule Review (Mark, Glenn, Lonnie)
- Site SD031 Technology Demonstration Update (Glenn)
- Treatment Plant Operation and Maintenance Update (Lonnie)
- Program Update (Mike)
- New Action Item Review (All)

Participants:

TRAVIS	ERP Staff	(707) 424-3062
DTSC	Ben Fries	(916) 255-3667
RWQCB	Adriana Constantinescu	(510) 622-2352
EPA	Nadia Burke	(415) 972-3187
USACE	Dezso Linbrunner	(402) 238-8846
CH2M HILL	Mike Wray	(916) 715-0949
AFCEC	William Hall	(210) 395-8557

NOTES: AFTER THE RPM TELECONFERENCE, BASED ON THE DISCUSSION DURING THE REVIEW OF THE MASTER MEETING AND DOCUMENT SCHEDULE, WE WILL HOLD A SEPARATE TELECONFERENCE TO DISCUSS THE RESPONSES TO AGENCY COMMENTS ON THOSE DOCUMENTS THAT ARE IN PROGRESS, IF NEEDED. ALL PARTICIPANTS ARE WELCOME TO PARTICIPATE.

(2014)
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.)
01-22-14	—	—
02-19-14	—	—
03-19-14	—	—
04-16-14	—	04-17-14[2]
05-14-14	—	—
06-18-14	—	—
07-23-14	—	—
08-20-14	—	—
—	09-17-14 (9:00 AM)	—
10-23-14 (Thur 2:00 PM)	—	10-23-14
—	11-19-14	—
—	—	—

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

[2] Note: Replaced with post-ROD base visit on 25 July 2014.

(2015)
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.)
01-21-15	—	—
02-18-15	—	—
—	03-18-15	—
04-23-15 (Thursday 2:00 PM)	—	04-23-15
—	05-27-15	—
06-17-15	—	—
—	07-15-15	—
08-19-15	—	—
—	09-16-15	—
10-22-15 (Thursday 2:00 PM)	—	10-22-15
—	11-18-15	—
—	—	—

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

As of: 11-19-2014

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	**Travis Air Force Base Uniform Federal Policy-Quality Assurance Project Plan** **Travis, Glenn Anderson** **CH2M HILL, Bernice Kidd**	**Site SD037 GW Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**Site SD036 Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**
Scoping Meeting	**NA**	**NA**	NA
Predraft to AF/Service Center	**05-30-14**	04-25-14	08-23-14
AF/Service Center Comments Due	06-13-14	**05-08-14**	09-05-14
Draft to Agencies	07-22-14	08-13-14	12-01-14
Draft to RAB	07-22-14	08-13-14	12-01-14
Agency Comments Due	08-20-14	09-12-14	01-05-15
Response to Comments Meeting	**10-23-14**	**09-17-14**	**01-21-15**
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	**NA**	NA
Public Meeting	**NA**	**NA**	**NA**
Response to Comments Due	11-14-14	11-24-14	02-04-15
Draft Final Due	11-14-14	11-24-14	02-04-15
Final Due	12-15-14	12-24-14	03-04-15

PRIMARY DOCUMENTS				
Life Cycle	**Site SS016 GW Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**Site SS015 GW Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**Community Involvement Plan** **Travis AFB, Mark Smith** **CH2M HILL, Tricia Carter**	**Site DP039 Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**
Scoping Meeting	**NA**	**NA**	**NA**	**NA**
Predraft to AF/Service Center	10-31-14	11-20-14	12-01-14	12-22-14
AF/Service Center Comments Due	11-17-14	12-04-14	12-15-14	01-05-15
Draft to Agencies	12-05-14	01-05-15	01-05-15	02-09-15
Draft to RAB	12-05-14	01-05-15	01-05-15	02-09-15
Agency Comments Due	01-03-15	02-04-15	02-04-15	03-11-15
Response to Comments Meeting	**01-21-15**	**02-18-15**	**02-18-15**	**03-18-15**
Agency Concurrence with Remedy	NA	NA	NA	NA
Public Comment Period	NA	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**	**NA**
Response to Comments Due	02-02-15	03-04-15	02-27-15	04-07-15
Draft Final Due	02-02-15	03-04-15	02-27-15	04-07-15
Final Due	03-04-15	04-03-15	03-31-15	05-07-15

PRIMARY DOCUMENTS				
Life Cycle	Proposed Plan for the Record of Decision Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision Travis AFB, Glenn Anderson CH2M HILL, Tricia Carter	Record of Decision Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision Travis AFB, Glenn Anderson CH2M HILL, Loren Krook	Proposed Plan for the Record of Decision Amendment to the Soil Record of Decision for the WABOU Travis AFB, Glenn Anderson CH2M HILL, Tricia Carter	Record of Decision Amendment to the Soil Record of Decision for the WABOU Travis AFB, Glenn Anderson CH2M HILL, Loren Krook
Scoping Meeting	**NA**	**TBD**	**NA**	**TBD**
Predraft to AF/Service Center	11-05-14	05-25-15	11-05-14	05-25-15
AF/Service Center Comments Due	11-26-14	06-24-15	11-26-14	06-24-15
Draft to Agencies	12-19-14	07-08-15	12-19-14	07-08-15
Draft to RAB	12-19-14	07-08-15	12-19-14	07-08-15
Agency Comments Due	01-19-15	08-07-15	01-19-15	08-07-15
Response to Comments Meeting	**01-21-15**	**08-19-15**	**01-21-15**	**08-19-15**
Agency Concurrence with Remedy	NA	10-02-15	NA	10-02-15
Public Comment Period	4-15-15 to 5-15-15	NA	4-15-15 to 5-15-15	NA
Public Meeting	**4-23-15**	**NA**	**4-23-15**	**NA**
Response to Comments Due	02-17-15	09-02-15	02-17-15	09-02-15
Draft Final Due	02-28-15	09-02-15	02-28-15	09-02-15
Final Due	03-30-15	10-02-15	03-30-15	10-02-15

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

SECONDARY DOCUMENTS			
Life Cycle	Site DP039 Lead Excavation Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Loren Krook	Site TA500 Data Gap Investigation Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Site SD031 Technology Demonstration Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	06-02-14	07-23-14	07-11-14
AF/Service Center Comments Due	06-16-14	08-05-14	07-25-14
Draft to Agencies	07-01-14	08-20-14	09-02-14
Draft to RAB	07-01-14	08-20-14	09-02-14
Agency Comments Due	07-31-14	09-19-14	10-02-14
Response to Comments Meeting	**10-23-14**	**10-02-14**	**10-23-14**
Response to Comments Due	11-21-14	11-17-14	11-17-14
Draft Final Due	NA	NA	NA
Final Due	11-21-14	11-17-14	11-17-14
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

SECONDARY DOCUMENTS			
Life Cycle	Site ST018 POCO Work Plan Addendum Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	Site SD034 Data Gap Investigation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	Site SS014 POCO Technology Demonstration Work Plan Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	09-09-14	10-01-14	11-25-14
AF/Service Center Comments Due	09-23-14	10-15-14	12-09-14
Draft to Agencies	10-16-14	11-06-14	12-23-14
Draft to RAB	10-16-14	11-06-14	12-23-14
Agency Comments Due	11-14-14	12-05-14	01-30-15
Response to Comments Meeting	**11-19-14**	**12-19-14**	**02-18-15**
Response to Comments Due	12-15-14	01-05-15	03-04-15
Draft Final Due	NA	NA	NA
Final Due	12-15-14	01-05-15	03-04-15
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

INFORMATIONAL DOCUMENTS	
Life Cycle	**Quarterly Newsletters (January 2015) Travis, Glenn Anderson**
Scoping Meeting	**NA**
Predraft to AF/Service Center	NA
AF/Service Center Comments Due	NA
Draft to Agencies	12-23-14
Draft to RAB	NA
Agency Comments Due	01-13-15
Response to Comments Meeting	**TBD**
Response to Comments Due	01-16-15
Draft Final Due	NA
Final Due	01-20-15
Public Comment Period	NA
Public Meeting	**NA**

HISTORY		
Life Cycle	**Site FT004 Technology Demonstration Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Tony Chakurian**	**Kinder Morgan Site LF044 Land Use Control Report** **Travis AFB, Glenn Anderson** **AMEC, Nick Ricono**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	04-21-14	NA
AF/Service Center Comments Due	05-21-14	NA
Draft to Agencies	06-28-14	09-18-13
Draft to RAB	06-28-14	09-18-13
Agency Comments Due	07-28-14	10-18-13
Response to Comments Meeting	**09-17-14**	**06-18-14**
Response to Comments Due	09-29-14	06-25-14
Draft Final Due	NA	NA
Final Due	09-29-14	09-25-14
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 170 **Reporting Period: 29 September – 27 October 2014** **Date Submitted: 17 November 2014**

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 operational data from the October 2014 reporting period.

Table 1 – Operations Summary – October 2014

Initial Data Collection:	9/29/2014 16:30	**Final Data Collection:**	10/27/2014 15:45
Operating Time: **SBBGWTP:**	647 hours	Percent Uptime: **SBBGWTP:**	100%
Electrical Power Usage: **SBBGWTP:**	9,840 kWh (13,481 lbs CO_2 generated[a])		
Gallons Treated: **3.3 million gallons**		Gallons Treated Since July 1998: **873 million gallons**	
Volume Discharged to Union Creek: **3.3 million gallons**			
VOC Mass Removed: **1.02 lbs**[b]		VOC Mass Removed Since July 1998: **453 lbs**	
Rolling 12-Month Cost per Pound of Mass Removed: $6,631[c]			
Monthly Cost per Pound of Mass Removed: $3,287			

lbs = pounds

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

[b] Calculated using October 2014 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,b]

FT005[c]				SS029		SS030	
EW01x05	1.5	EW736x05	Offline	EW01x29	2.3	EW01x30	Offline
EW02x05	1.5	EW737x05	Offline	EW02x29	2.2	EW02x30	0.2
EW03x05	Offline	EW742x05	Offline	EW03x29	1.7	EW03x30	2.1
EW731x05	Offline	EW743x05	Offline	EW04x29	8.2	EW04x30	33.3
EW732x05	Offline	EW744x05	Offline	EW05x29	11.8	EW05x30	1.5
EW733x05	Offline	EW745x05	Offline	EW06x29	3.9	EW06x30	Dry
EW734x05	Offline	EW746x05	Offline	EW07x29	1.7	EW711x30	7.7
EW735x05	1.3						
FT005 Total:	**4.3**			**SS029 Total:**	**31.8**	**SS030 Total:**	**44.8**

SBBGWTP Average Monthly Flow[c]: 64.67 gpm

[a] Extraction well flow rates are based on instantaneous weekly readings collected at the end of the month.
[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 SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time in the reporting period.
gpm – gallons per minute
SBBGWTP – South Base Boundary Groundwater Treatment Plant

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP	27 October 2014	16:30	--	--	Shut down for effluent confirmation sampling of TPH.

-- = Time not recorded

Summary of O&M Activities

Monthly groundwater samples were collected at the SBBGWTP on 8 October 2014. Sample results are presented in Table 4. The total VOC concentration (36.5 µg/L) in the influent sample decreased from the September sample results (66.72 µg/L). 1,2-DCA (0.5 µg/L), cis-1,2-DCE (2.2 µg/L), and TCE (33.8 µg/L) were detected at the influent sampling location. 1,2-DCA (0.51 µg/L) and cis-1,2-DCE (0.49 J µg/L) were detected at the midpoint sampling location. TPH-d (92 J µg/L) and arsenic (0.0122 µg/L) were detected at the effluent sample location; no other contaminants were detected at the effluent sample.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. The average flow rate at the SBBGWTP increased in October 2014 to 64.67 gpm from the September flow rate of 63.81 gpm.

A trigger study began in October 2014 in response to arsenic exceeding its respective inorganics effluent limitation of 3 grams per day (g/day) during the August 2014 sampling event. Trigger studies for the SBBGWTP are mandated by the Plant O&M Manual (CH2M HILL, 2004), which follows the Interim Record of Decision (IROD) (Travis AFB, 1997) and NPDES permit No. CAG912003. The IROD has since been superseded by the ROD (CH2M HILL, 2014), so effluent limitations based on the IROD are no longer valid. Instead, the sampling schedule and discharge limitations are based on the current NPDES permit No. CAG912002, Order No. R2-2012-0012 (March 2012). The inorganic effluent limitation concentration for arsenic in this current NPDES permit for arsenic is 10 µg/L. The results of the study are presented in Table 5, which shows both the previous and current effluent limitations. The arsenic trigger study will not continue since concentrations detected in the August and October 2014 effluent samples do not exceed the trigger value of 10 µg/L.

The 8 October 2014 sample results showed detections of TPH-d in the effluent sample (92 J µg/L). Confirmation resamples were collected on 27 October 2014 with a 24-hour turnaround laboratory processing time. These confirmation samples also showed detections of TPH-d, with a detection also in the receiving water samples, which are collected upstream (R-1) and downstream (R-2) of the SBBGWTP Union Creek outfall location. A second set of confirmation samples will be collected on 5 November 2014 with split effluent samples sent to an additional laboratory for processing. These secondary confirmation sample results will be reported in the November 2014 Monthly Data Sheet. The SBBGWTP system was shut down on 27 October pending sampling results, and will be brought back on line on 12 November 2014.

On 14 October 2014, it was discovered that the shaft on the pump for EW01x29 had sheared apart; however, the pump motor was in working condition. A replacement shaft was installed on 15 October and the pump was brought back online. On 17 October 2014, the 24 volt power supply for Site SS030 extraction wells failed and was replaced with a temporary one-amp power supply while a new power supply was ordered. Site SS030 well EW01x30 and Site FT005 extraction well EW734x05 were offline for the month of October 2014 due to the circuit breaker tripping and shutting the pumps off. The flow meter for EW734x05 was not registering a flow rate on the SCADA system, and was cleaned out on 20 October 2014. After cleaning, the flow rate was measured at 1.4 gpm, which is typical for this extraction well. The level transducer was replaced at extraction well EW01x30 because the old unit had an internal short which caused it to overheat.

Optimization Activities

No optimization activities were performed in October 2014.

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 taking extraction pumps off line that are no longer necessary for contaminant plume capture.

Figure 2 presents the historical GHG production from the SBBGWTP. The SBBGWTP produced approximately 13,481 pounds of GHG during October 2014. This is an increase from the usage measured during September 2014. GHG production at the SBBGWTP during October 2014 is consistent with expected monthly usage based on historical variability at the SBBGWTP.

TABLE 4

Summary of Groundwater Analytical Data For October 2014 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	8 October 2014 (µg/L)			27 October 2014 (µg/L)		
				Influent	Midpoint	Effluent	R-1	R-2	Effluent
Halogenated Volatile Organics									
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	NM	NM	NM
Chloroform	5.0	0.16	0	ND	ND	ND	NM	NM	NM
1,1-Dichloroethane	5.0	0.50	0	ND	ND	ND	NM	NM	NM
1,2-Dichloroethane	0.5	0.15	0	0.5	0.51	ND	NM	NM	NM
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND	NM	NM	NM
cis-1,2-Dichloroethene	5.0	0.19	0	2.2	0.49 J	ND	NM	NM	NM
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND	NM	NM	NM
Methylene Chloride	5.0	0.66	0	ND	ND	ND	NM	NM	NM
Tetrachloroethene	5.0	0.21	0	ND	ND	ND	NM	NM	NM
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	NM	NM	NM
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND	NM	NM	NM
Trichloroethene	5.0	0.19	0	33.8	ND	ND	NM	NM	NM
Vinyl Chloride	0.5	0.18	0	ND	ND	ND	NM	NM	NM
Non-Halogenated Volatile Organics									
Benzene	1.0	0.17	0	ND	ND	ND	NM	NM	NM
Ethylbenzene	5.0	0.22	0	ND	ND	ND	NM	NM	NM
Toluene	5.0	0.14	0	ND	ND	ND	NM	NM	NM
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	NM	NM	NM
Other									
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND	NM	NM	NM
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	92 J	250	110 J	110 J
Total Suspended Solids (mg/L)	NE	1.0	0	23	NM	NM	NM	NM	NM

[a] 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 due to a detected concentration value between the reporting limit and method detection limit for the contaminant
mg/L = milligrams per liter
N/C = number of samples out of compliance with discharge limits
ND = not detected
NE = not established
NM = not measured
µg/L = micrograms per liter

Table 5

Summary of October 2014 Arsenic Analytical Data - SBBGWTP

Constituent	Trigger Limit[a] (g/day)	Trigger Limit[b] (µg/L)	4 August 2014 (g/day)	4 August 2014 (µg/L)	8 October 2014 (g/day)	8 October 2014 (µg/L)
			Effluent	Effluent	Effluent	Effluent
Arsenic	3	10	3.84	0.0099 J	4.3	0.0122

[a] Effluent limitation provided as mass limit (g/day) based on the average effluent flow rate for the last 12 months. Values provided for the 10 - 100 gallons per minute range.
[b] Effluent limitation provided as concentration limit (µg/L) based on current NPDES permit No. CAG912002, Order No. R2-2012-0012 (March 2012).
Notes:
g/day = grams per day
µg/L = micrograms per liter

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

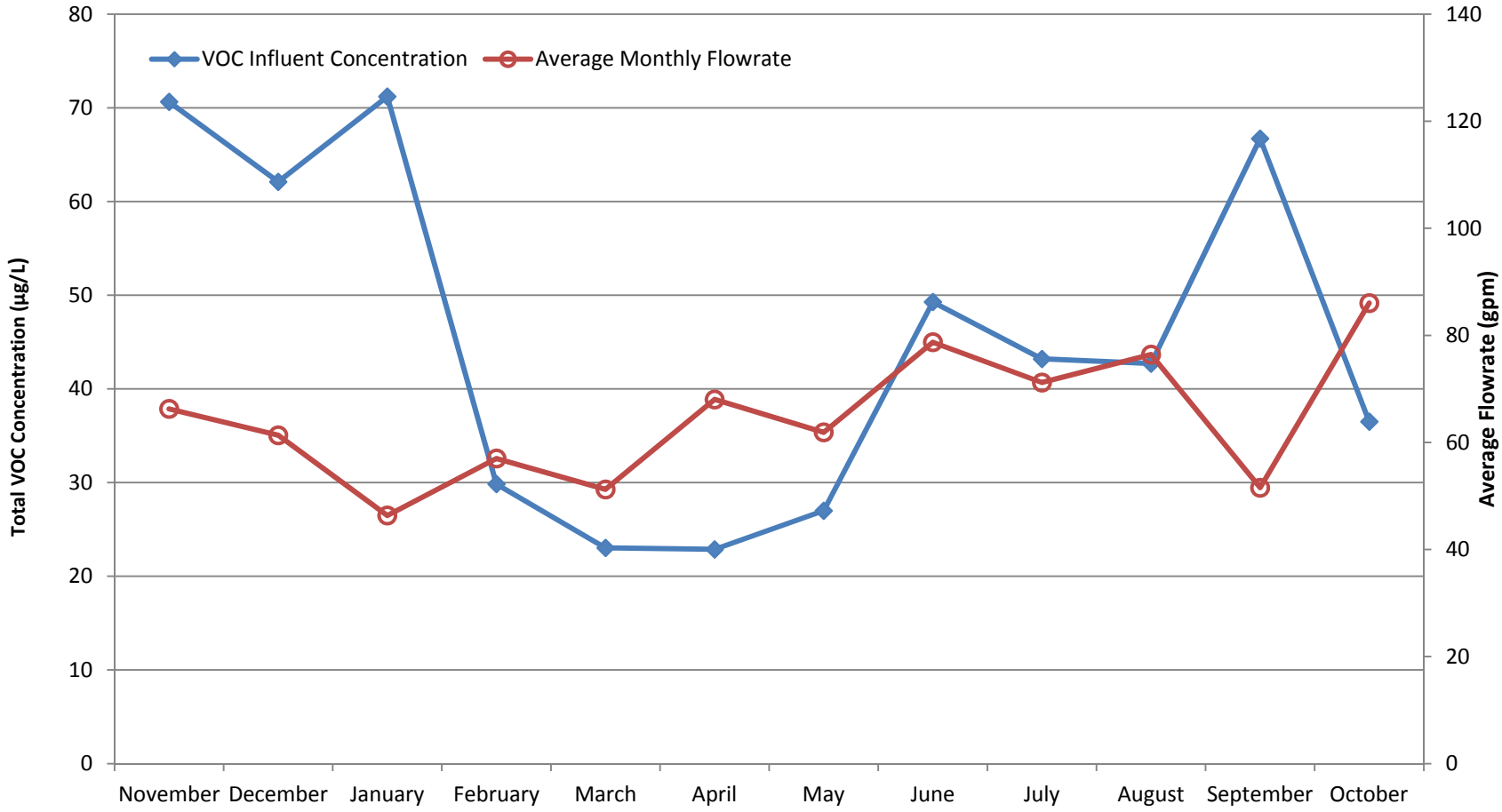
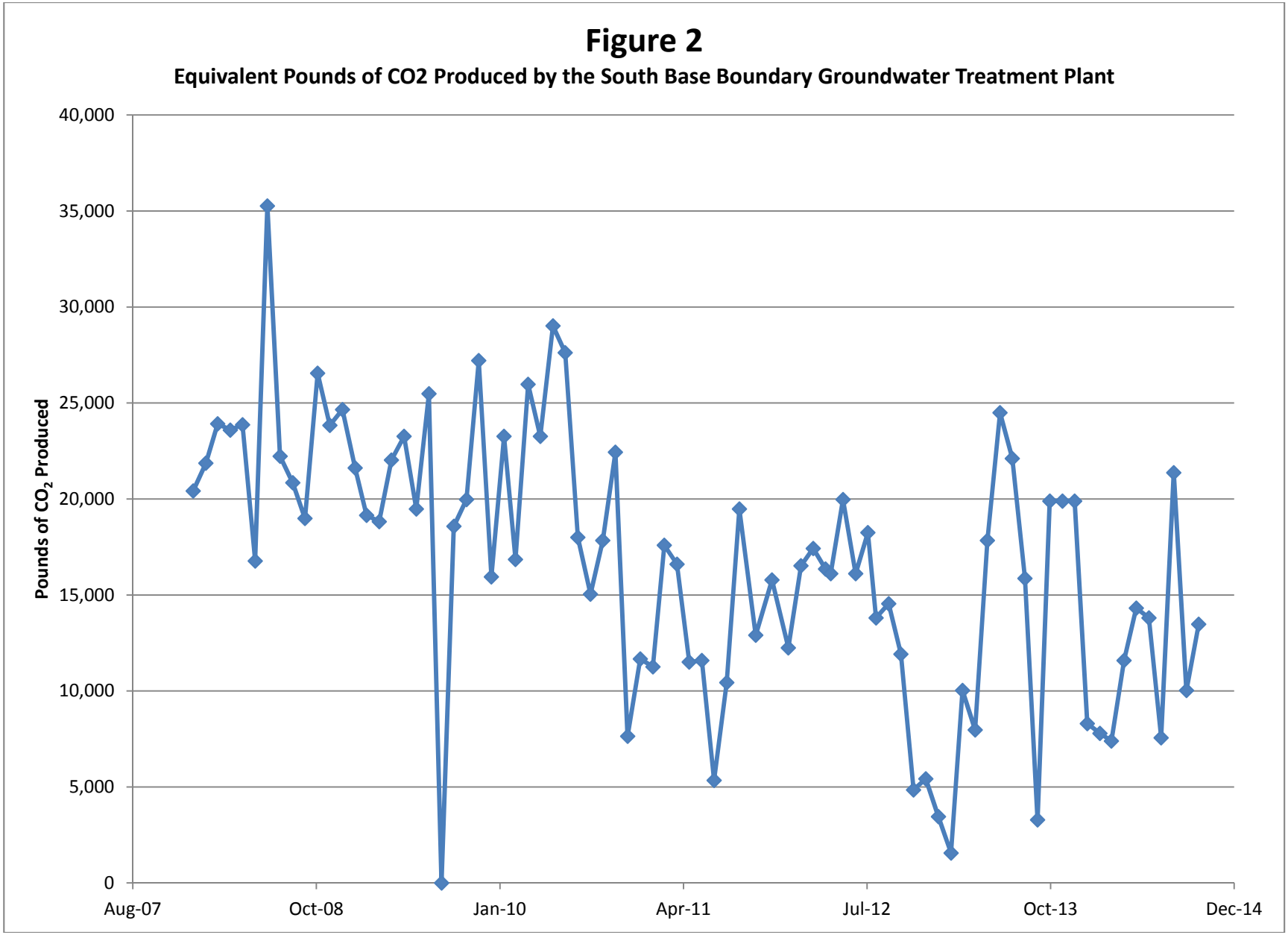


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 183 **Reporting Period: 29 September – 3 November 2014** **Date Submitted: 17 November 2014**

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 October 2014 reporting period.

Table 1 – Operations Summary – October 2014

Initial Data Collection: 9/29/2014 16:00 **Final Data Collection:** 11/3/2014 16:15

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	840 hours	**CGWTP:**	100%	**CGWTP:**	2,969 kWh (4,068 lbs CO_2 generated[a])
WTTP:	Water: 0 hours Vapor: 0 hours	**WTTP:**	Water: 0% Vapor: 0%	**WTTP:**	0 kWh

Gallons Treated: **1.7 million gallons**

Gallons Treated Since January 1996: **502 million gallons**

VOC Mass Removed:

3.29 lbs[b] (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,698 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: $1,986[c]

Monthly Cost per Pound of Mass Removed: $869

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using October 2014 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	18.3[c]	Offline
EW02x16	6.9[c]	Offline
EW03x16	1.0[d]	Offline
EW605x16	6.8	Offline
EW610x16	2.9	Offline
CGWTP	34.3	--
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 October 2014.
[c] Flow rate based on instantaneous, end of the month reading for October 2014.
[d] Flow rate based on instantaneous, beginning of the month reading for October 2014.
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)					
CGWTP	30 October 2014	16:15	31 October 2014	13:45	UPS[a] backup battery failure
WTTP					
	None	NA			

[a] UPS = uninterruptible power supply, an electrical apparatus that provides emergency power to a load when the input power source fails
CGWTP = Central Groundwater Treatment Plant
WTTP = West Transfer Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 8 October 2014. Sample results are presented in Table 4. The total VOC concentration (228.82 µg/L) in the October 2014 influent sample has decreased slightly since the September 2014 sample (255.39 µg/L) was collected. Concentrations of 1,1-DCE (0.66 µg/L), cis-1,2-DCE (59.1 µg/L), PCE (0.62 µg/L), trans-1,2-DCE (3.2 µg/L), and TCE (165 µg/L) were detected at the influent sampling location. None of these constituents were detected at the midpoint or effluent sampling locations.

Vinyl chloride was detected at the influent sampling location (0.24 J µg/L), after the first carbon vessel (0.46 J µg/L), and after the second carbon vessel (0.39 J µg/L). Vinyl chloride was not detected at the system effluent sample location. 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 increased in October 2014 from the flow rate measured in September 2014 (from 25.93 gpm to 34.31 gpm).

Due to an uninterruptible power supply (UPS) backup battery failure, the CGWTP shut down at 16:15 on 30 October 2014 and was restarted at 13:45 on 31 October 2014 after it was repaired.

The Site DP039 bioreactor continues to operate in a "pulsed mode" in order to improve the rate of remediation and to preserve the amount of total organic carbon being produced within the bioreactor. The typical two (2) week transition schedule of the "pulsed mode" operation was delayed in September 2014, due to a pinhole leak in a bioreactor hose. The hose was replaced on 17 October 2014 and the DP039 bioreactor was brought back online on 24 October 2014, which was the next scheduled pulse schedule start date. On 27 October 2014, the 0.5-inch PVC cap on the DP039 bioreactor manifold clean-out pipe broke off, but the pipe was replaced with a spare hose. No leaks were observed during this repair.

Optimization Activities

No optimization activities occurred at the CGWTP in October 2014.

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 2,963 pounds of GHG during October 2014. This is a decrease from the amount produced in September 2014 (approximately 3,415 pounds) which is the result of less uptime and fewer gallons treated in October than in the previous month.

TABLE 4
Summary of Groundwater Analytical Data for October 2014 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	8 October 2014 (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	59.1	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	0.66	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	0.62	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	165	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	3.2	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	0.24 J	0.46 J	0.39 J	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND	ND
Total Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	ND
Other							
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	NM	NM

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

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant
N/C = number of samples out of compliance with discharge limits
ND = not detected
NM = not measured
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
MW750x39	25 October 2013	8 November 2013
	22 November 2013	5 December 2013
	20 December 2013	3 January 2014
	17 January 2014	31 January 2014
	18 February 2014	28 February 2014
	14 March 2014	28 March 2014
	22 April 2014	28 April 2014
	12 May 2014	12 May 2014
	6 June 2014	20 June 2014
	3 July 2014	24 July 2014
	01 August 2014	15 August 2014
	01 September 2014	12 September 2014
	26 September 2014	30 September 2014[a]
	24 October 2014	--

[a] = DP039 Bioreactor turned off on 30 September 2014 to replace hose.
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

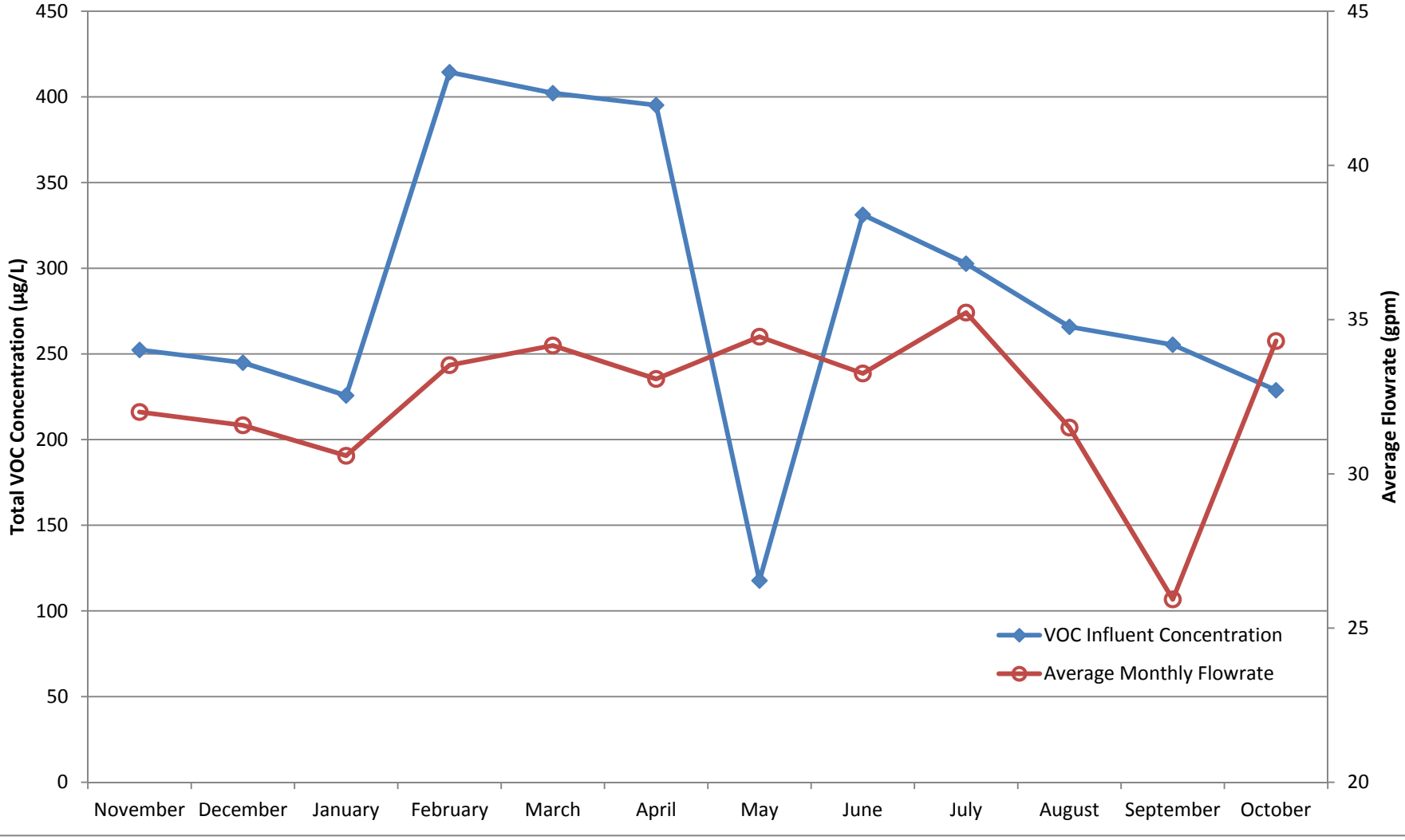
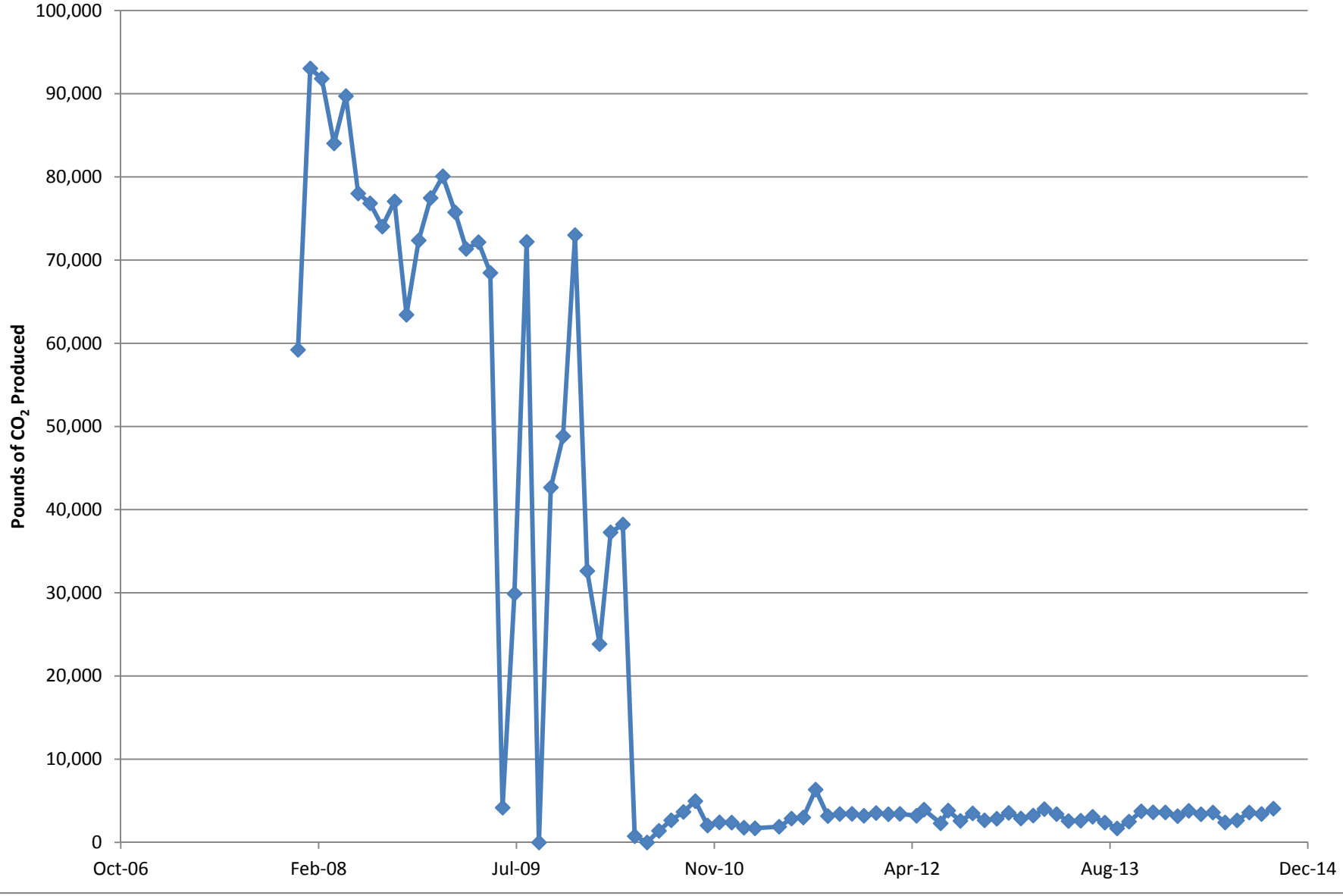


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 143 **Reporting Period: 30 September – 27 October 2014** **Date Submitted: 17 November 2014**

This monthly data sheet presents information regarding the North Groundwater Treatment Plant (NGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the October 2014 reporting period:

Table 1 – Operations Summary – October 2014

Initial Data Collection:	9/30/2014 8:30	**Final Data Collection:**	10/27/2014 10:15
Operating Time:		Percent Uptime:	
NGWTP:	531 hours	**NGWTP:**	83%
Electrical Power Usage[a]:			
NGWTP:	0 kWh		
Gallons Treated: **151,930 gallons**		Gallons Treated Since March 2000: **84.0 million gallons**	
Volume Discharged to Duck Pond: **151,930 gallons**		Volume Discharge to Storm Drain: **0 gallons**	
VOC Mass Removed: **4.08×10^{-3} pounds**[b]		VOC Mass Removed Since March 2000: **174.31 pounds (Groundwater)**	
Rolling 12-Month Cost per Pound of Mass Removed: **Not Measured**[c]			
Monthly Cost per Pound of Mass Removed: **Not Measured**[c]			

[a] The NGWTP operates on solar power only.
[b] VOCs from October 2014 influent sample detected by EPA Method SW8260B.
[c] Value not calculated since measurement does not accurately represent the cost effectiveness of the system.

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

Table 2 – NGWTP Average and Total Flow Rates – October 2014

Location	Average Flow Rate (gpm)[a]	Total Gallons Processed (gallons)[b]
EW614x07	4.4	138,910
EW615x07[c]	0	0
NGWTP	**4.8**	**151,930**

[a] Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the hours recorded by the system hour meter.
[b] A discrepancy in totalizer values was recorded starting June 2014 and troubleshooting of the meters has continued.
[c] Extraction well currently offline due to bad batteries.
gpm = gallons 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	
NGWTP	22 October 2014		27 October 2014	10:15	Change out of the carbon drums.
NGWTP	27 October 2014	15:15	--	--	System offline for confirmation sampling of TPH in effluent.

[a] Shutdown and restart times estimated based on field notes.
NGWTP = North Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 8 October 2014 sampling event are presented in Table 4. Cis-1,2-DCE (0.22 J µg/L) and TCE (3 µg/L) were detected at the influent sample location for a total influent contaminant concentration of 3.22 µg/L. Neither contaminant was detected at the midpoint or effluent sampling locations. TPH-d was detected in the effluent sample at 100 J µg/L. Concentrations will continue to be monitored for breakthrough conditions.

The 8 October 2014 sample results showed detections of TPH-d in the effluent sample. Confirmation resamples were collected on 27 October 2014 with a 24-hour turnaround laboratory processing time. These confirmation samples also showed detections of TPH-d. Additional confirmation samples, including influent and midpoint samples, will be collected in early November 2014. Split effluent samples will be collected at that time and sent to another lab for analysis. Results from this second round of confirmation samples will be presented in the November 2014 Monthly Data Sheet. The NGWTP was shut down on 27 October pending sampling results, and will be brought back online in early November 2014.

Figure 1 presents a chart of influent concentrations (total VOCs) at the NGWTP versus time for the past twelve months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC drums online.

The average flow rate through the NGWTP in October 2014 (4.8 gpm) remained the same as the average flow rate measured in September 2014. The NGWTP effluent totalizer has routinely measured greater flow and gallons than the combined extraction well totalizers. Totalizer readings will continue to be monitored for discrepancies in October and additional work will be performed to try and eliminate air intake at the extraction wells.

The LF007C system was shut down on 22 October 2014 to facilitate change out of the carbon and carbon vessels, which included disconnecting the piping and draining water from the system. New plumbing was installed on the carbon vessels on 24 October 2014 and was left to soak over the weekend before being brought back online.

On 22 October 2014, a recirculation line for extraction well EW614x07 was installed on the pump discharge pipe at the EW614x07 well head; this was installed in an effort to minimize drawdown in the extraction well to the pump intake. A protective cover was also installed over the water level sensor of the pump, since cascading water within the well may have been falsely triggering pump operation when the water level was drawn down near the pump intake. EW614x07 was restarted on 27 October 2014; pumping was observed during drawdown and the sensor correctly turned the pump on and off, based on low water level. The recirculation valve was adjusted to approximately 4.6 gpm to maintain steady water level in the well.

Beginning in August 2014, troubleshooting was performed to identify the source of the discrepancy between the totalizer readings at the extraction wells and the effluent. The NGWTP effluent totalizer has routinely measured greater flow and total gallons than the combined extraction well totalizers, and continued to do so during October 2014. A series of totalizer readings were collected over a period of two days and revealed an approximately 0.2 gpm difference in flow rates collected from the totalizers. Increased pressure due to the presence of air in the bag filter housing at the NGWTP was also observed, which seemed to be affecting the totalizer readings at the plant. An air release valve was installed on the bag filter at the NGWTP in September 2014, which has resulted in less air present in the bag filters (12 pounds per square inch [psi] in September versus 11 psi in October). Totalizer readings will continue to be monitored for discrepancies.

Optimization Activities

No optimization activities were performed during October 2014.

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.

Figure 2 presents the historical GHG production from the systems associated with the NGWTP. The NGWTP is now a solar-only operated treatment system and no longer generates GHG.

TABLE 4
Summary of Groundwater Analytical Data for October 2014 – North Groundwater Treatment Plant

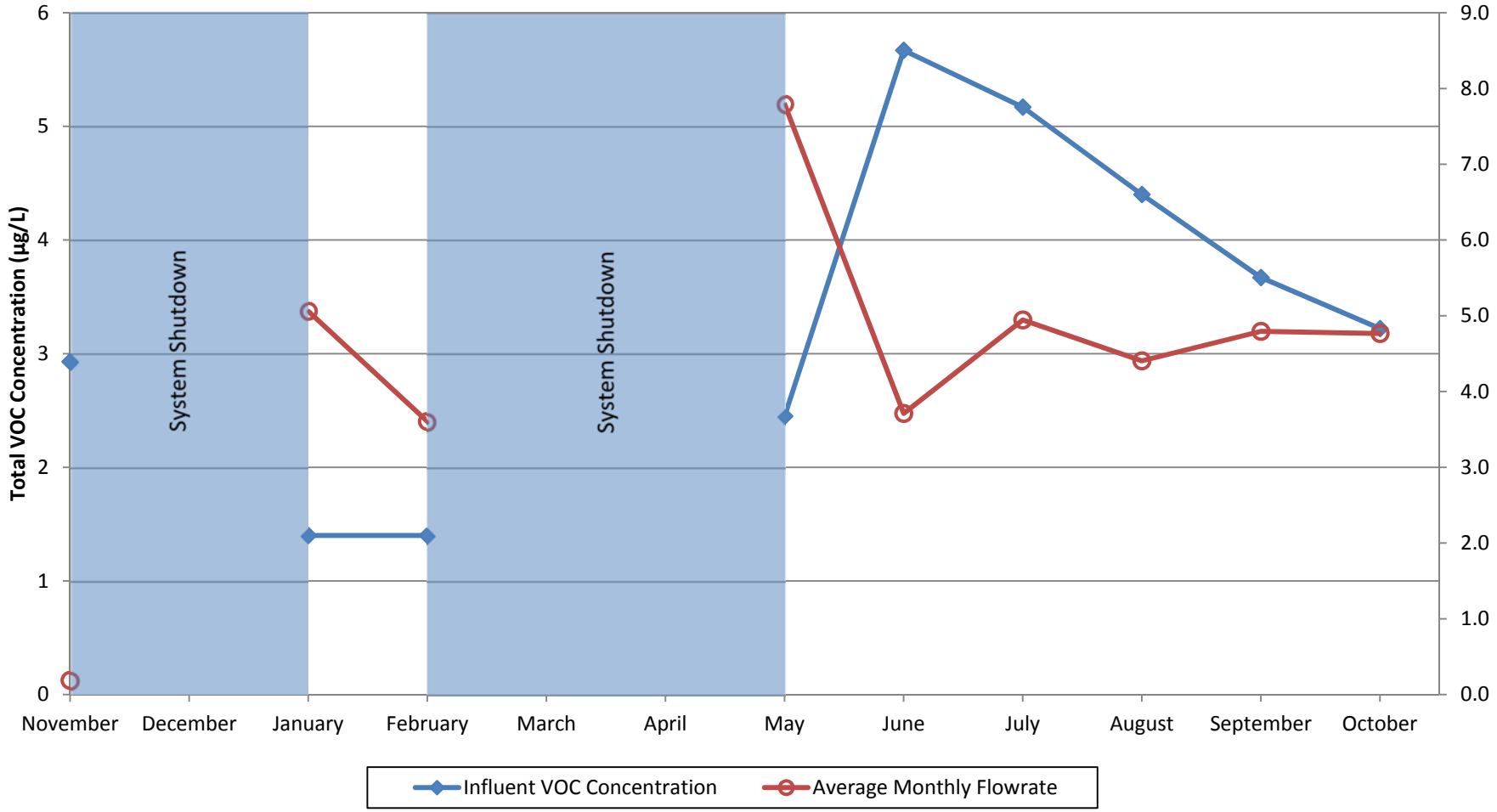
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	8 October 2014 (µg/L)			27 October 2014[a] (µg/L)
				Influent	After Carbon 1	Effluent	Effluent
Halogenated Volatile Organics							
Bromodichloromethane	5.0	0.15	0	ND	ND	ND	NM
Bromoform	5.0	0.19	0	ND	ND	ND	NM
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	NM
Chloroform	5.0	0.16	0	ND	ND	ND	NM
Dibromochloromethane	5.0	0.13	0	ND	ND	ND	NM
1,3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	NM
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	NM
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	NM
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	NM
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND	NM
cis-1,2-Dichloroethene	5.0	0.19	0	0.22 J	ND	ND	NM
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND	NM
Methylene Chloride	5.0	0.66	0	ND	ND	ND	NM
Tetrachloroethene	5.0	0.21	0	ND	ND	ND	NM
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	NM
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	NM
Trichloroethene	5.0	0.19	0	3	ND	ND	NM
Vinyl Chloride	0.5	0.18	0	ND	ND	ND	NM
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	NM
Ethylbenzene	5.0	0.22	0	ND	ND	ND	NM
Toluene	5.0	0.14	0	ND	ND	ND	NM
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	NM
Other							
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND	NM
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	100 J	82 J
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	NM	NM

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

[a] Confirmation sampling results from 27 October 2014.

Notes:
J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant
N/C = number of samples out of compliance with discharge limits
ND = not detected
NM = not measured
µg/L = micrograms per liter
mg/L = milligrams per liter

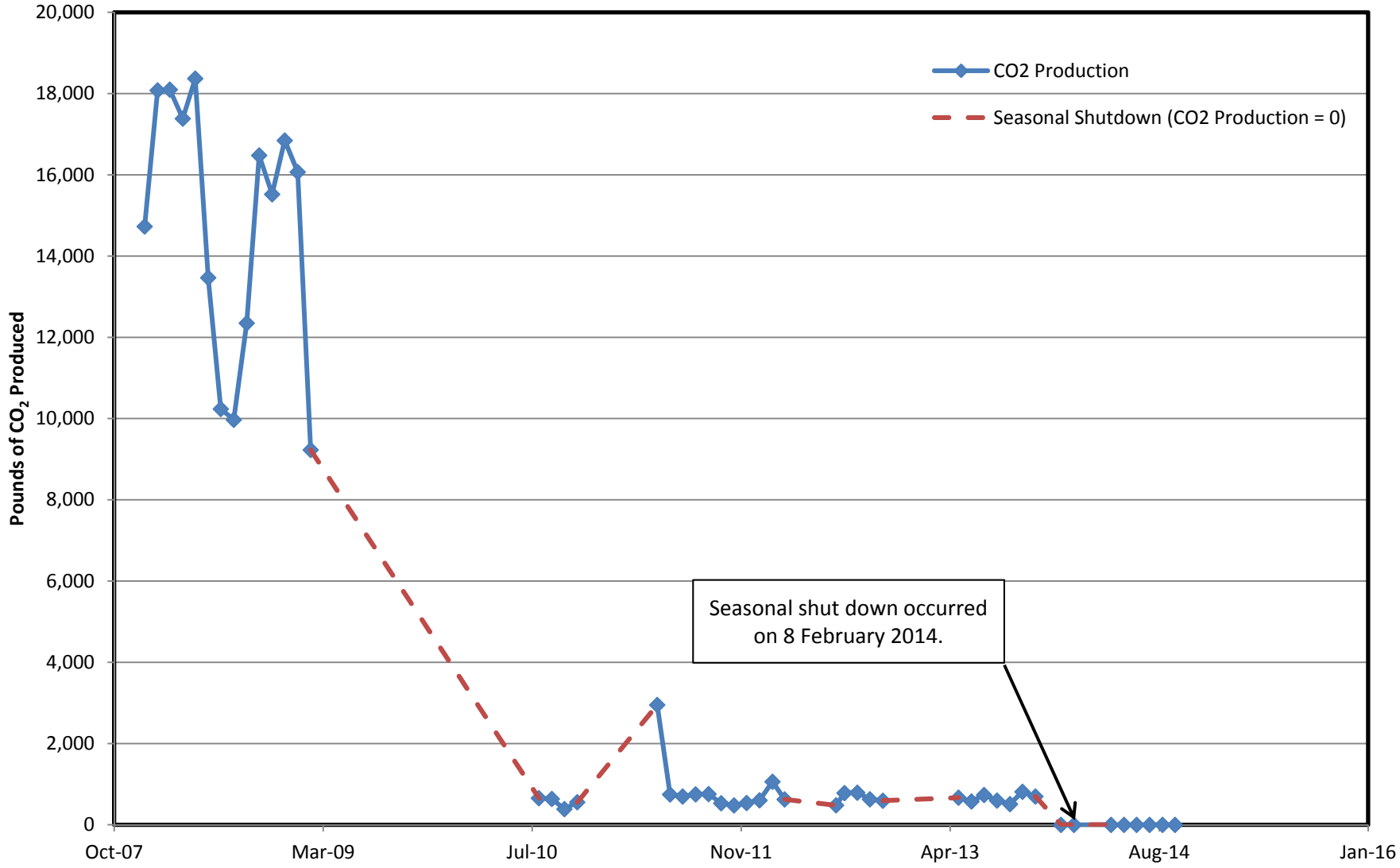
Figure 1
NGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California



*20 January 2014 sample results are shown as an estimation of February influent concentrations due to seasonal shutdown prior to the February monthly sampling event.

Figure 2

Equivalent Pounds of CO2 Produced by the North Groundwater Treatment Plant



Note: Dashed line represents seasonal shutdowns due to the presence of vernal pools at Site LF007C during which no CO2 production occurred.

Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 044 **Reporting Period: 29 September – 31 October 2014** **Date Submitted: 17 November 2014**

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (ST018GWTP).

System Metrics

Table 1 presents operation data from the October 2014 reporting period.

Table 1 – Operations Summary – October 2014

Initial Data Collection: 9/29/2014 16:00	**Final Data Collection:** 10/31/2014 17:00
Operating Time: **ST018GWTP:** 385 hours	Percent Uptime: **ST018GWTP:** 50%
Electrical Power Usage: **ST018GWTP:** 52 kWh (71 lbs CO_2 generated[a])	
Gallons Treated: **84.7 thousand gallons**	Gallons Treated Since March 2011: **6.50 million gallons**
Volume Discharged to Union Creek: **84.7 thousand gallons**	
BTEX, MTBE, TPH Mass Removed: **0.04 lbs**[b]	BTEX, MTBE, TPH Mass Removed Since March 2011: **30.9 lbs**
MTBE (Only) Removed: **0.04 lbs**[b]	MTBE (Only) Mass Removed Since March 2011: **6.6 lbs**
Rolling 12-Month Cost per Total Pounds of Mass Removed: $13,185[c]	
Monthly Cost per Pound of Mass Removed: $73,060[d]	

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using October 2014 (quarterly) influent and October 2014 effluent 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.
[d] Inflated due to a decreased influent concentration in the denominator when determining the cost per pound of mass removed.
lbs = pounds

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

Table 2 – ST018GWTP Average Flow Rates

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	2.16	385
EW2016x18	1.29	385
EW2019x18	1.23	385
Site ST018 GWTP	3.67	385

[a] Flow rates calculated by dividing total gallons processed by the hours of operation, from the totalizer and hour meter at each location.
gpm = gallons per minute
ST018GWTP = 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	
ST018GWTP	15 October 2014	17:00	--	--	System effluent being re-routed from storm drain to sanitary sewer (SS). Waiting for approval to restart system and begin discharge to SS.

ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the ST018GWTP on 9 October 2014. Influent samples are collected quarterly in accordance with the National Pollutant Discharge Elimination System (NPDES) permit; and results from the October quarterly sampling event are presented in Table 4, along with the monthly treatment sample results. The quarterly influent concentration for MTBE during October 2014 was 51.5 µg/L, which reflects an overall decreasing trend in influent concentrations. No other contaminants were detected in the influent sample during this quarterly sampling event.

Figure 1 presents plots of flow rate and influent total VOC (TPH-g, TPH-d, MTBE, and BTEX) and MTBE concentrations at the ST018GWTP versus time. No contaminants were detected at the midpoint or effluent sampling locations in October 2014.

As shown on Figure 1, the average flow rate through the ST018GWTP has been seasonally variable with a slight increasing trend since the battery upgrade in 2013. TPH was detected in the influent sample for the first time in several quarters during the April 2014 sampling event. Influent concentrations of TPH-g, TPH-d, and TPH-mo were 740 µg/L, 52 J µg/L, and 170 J µg/L, respectively, which caused a spike in concentration during 2Q14. TPH-g, TPH-d and TPH-mo were not detected in the influent sample for 4Q14. The 4Q14 sample event had the lowest influent concentrations for the past two years, as shown on Figure 1.

On 15 October 2014, the ST018GWTP system was taken offline in order to reroute the treatment plant discharge line from the storm drain to the sanitary sewer. Because the ST018GWTP will discharge to the sanitary sewer, the NPDES permit no longer applies. Monitoring requirements will be based on sewer district guidelines. The ST018GWTP will resume operation in November 2014. On 29 October 2014, the sanitary sewer manhole sidewall was exposed in preparation of re-routing the discharge piping. On 30 October 2014, a five-inch hole was cored through the manhole sidewall, and discharge piping was installed from the treatment plant to the discharge point within the sanitary sewer manhole. All remaining discharge piping will be plumbed in early November 2014.

Optimization Activities

No optimization activities were performed in October 2014.

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 ST018GWTP system.

The ST018GWTP produced approximately 71 pounds of GHG during October 2014, which was approximately 50 percent of the September production (141 pounds). Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation is increasing slightly, but remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays. The increasing GHG production reflects an inverse relationship between solar exposure in the fall and winter relative to GHG production.

TABLE 4
Summary of Groundwater Analytical Data for October 2014 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	9 October 2014 (µg/L)			
				Influent[b]	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	5	0.5	0	51.5	NM	ND	ND
Benzene	5	0.17	0	ND	NM	ND	ND
Ethylbenzene	5	0.22	0	ND	NM	ND	ND
Toluene	5	0.14	0	ND	NM	ND	ND
Total Xylenes	5	0.23 – 0.5	0	ND	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	--	ND	ND	NM	ND

[a] In accordance with the National Pollutant Discharge Elimination System (NPDES) Effluent Limitations
µg/L = micrograms per liter
[b] Influent samples are collected on a quarterly basis. Results presented from 9 October 2014.
ND = not detected above method detection limit
NM = not measured this month

Figure 1
ST18GWTP Total VOC and MTBE Influent Concentrations
Quarterly History
Travis Air Force Base, California

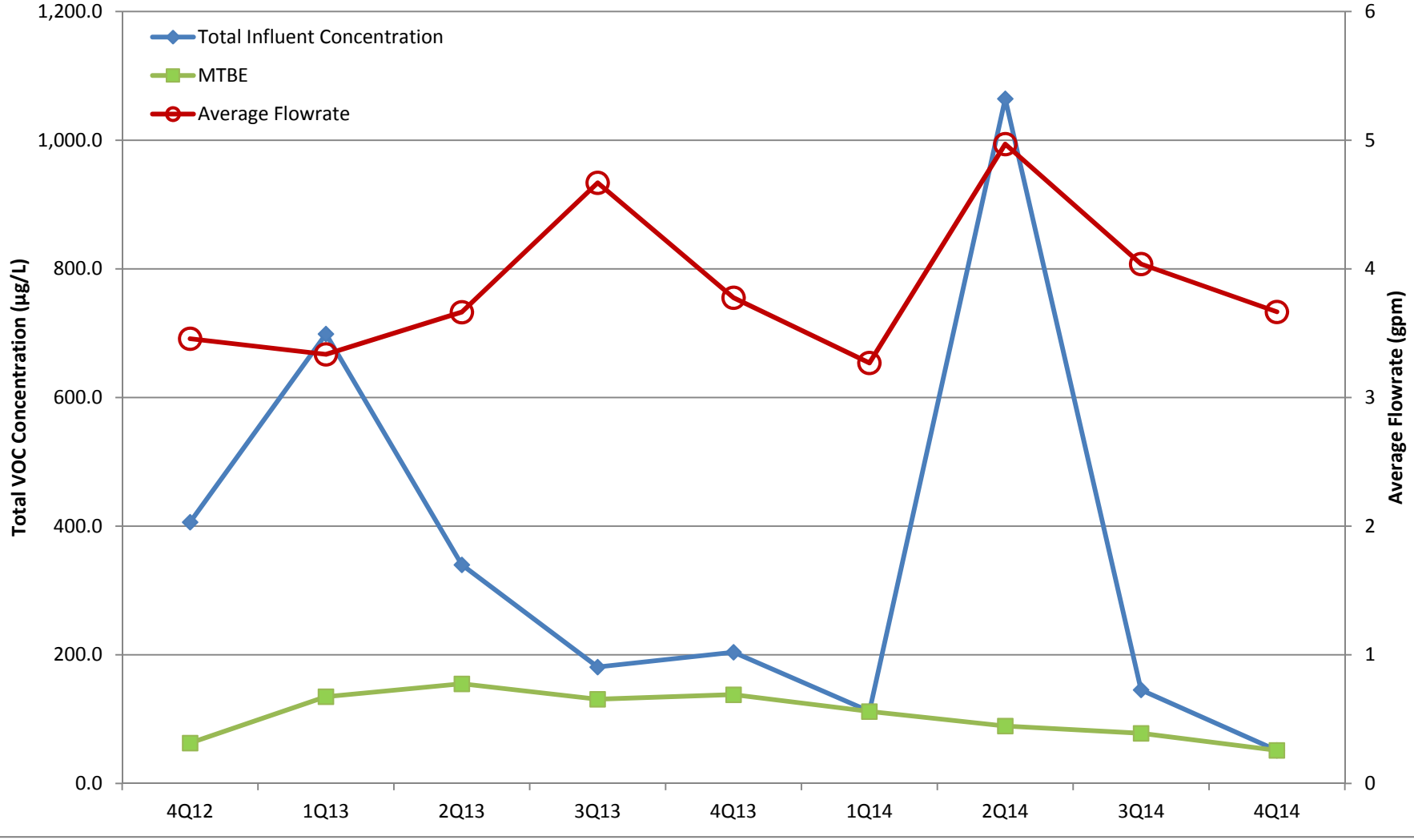
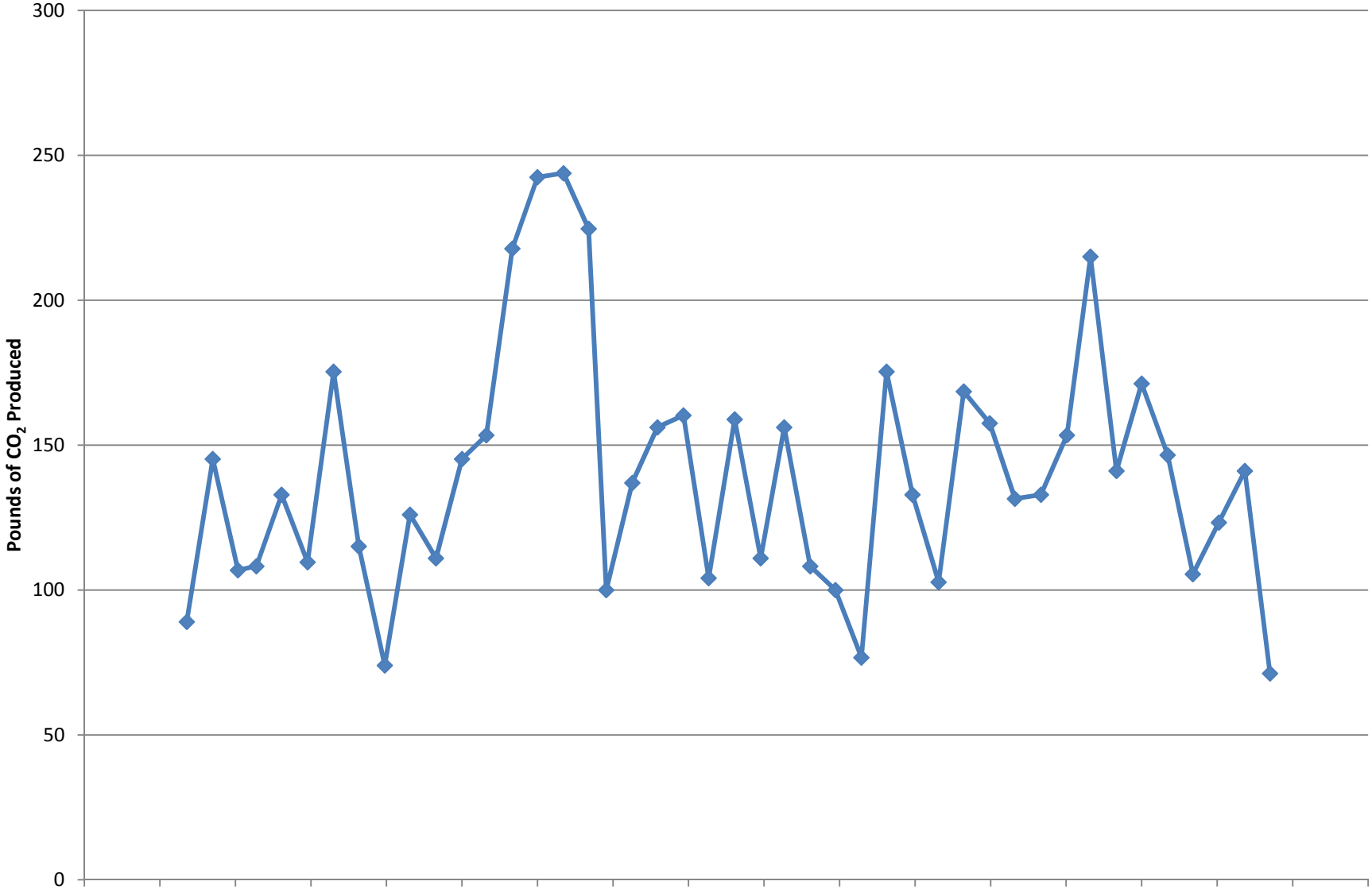


Figure 2

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



Travis AFB
Restoration Program

Program Overview

RPM Meeting

November 19, 2014

Completed Documents

- Vapor Intrusion Assessment Update Technical Memorandum
- 2012 CAMU Annual Report
- Old Skeet Range Action Memorandum
- 3rd Five-Year Review
- 2012 Annual Groundwater Remediation Implementation Status Report (GRISR)
- Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan
- Pre-Design Site Characterization of SS029 Report
- Old Skeet Range Removal Action Work Plan
- 2013 CAMU Inspection Annual Report
- Groundwater Record of Decision (ROD)
- CG508 POCO Work Plan
- 2013 Annual GRISR
- FT004 Technology Demonstration Work Plan
- Kinder Morgan LF044 Land Use Control Report
- ***SD031 Technology Demonstration Work Plan***
- ***TA500 Data Gap Investigation Work Plan***

Completed Field Work

- Replace battery banks at ST018 Groundwater Treatment Plant
- Annual Groundwater Remediation Implementation Program (GRIP) Sampling event
- Well Decommissioning (9 Wells)
- Electrical repairs to FT005 extraction system (well EW01x05)
- Electrical repairs to Site SS029 extraction system
- Site ST018 carbon vessels upgrade
- 2014 GRIP Semiannual Sampling Event
- Pump repairs to Site SS016 well (EW610x16)
- Subsite LF007C optimization upgrades
- 2014 Annual GRIP Sampling Event
- Biological Resource Assessment
- Site CG508 Site Investigation
- Old Skeet Range Characterization Sampling
- ***4Q Semiannual GRIP Sampling Event***

Documents & Field Work In-Progress

Documents

- ST018 POCO Work Plan Addendum
- SD037 GW RD/RA Work Plan
- Travis AFB UFP-QAPP
- DP039 Lead Excavation Technical Memo
- ***SD034 Data Gap Investigation Work Plan***

Field Work

- ***SD031 Technology Demonstration***

Documents Planned (CERCLA)

- SD036 RD/RA Work Plan — Dec
- SS016 GW RD/RA Work Plan — Dec
- Proposed Plan for ROD Amendment to WABOU Soil ROD — Dec
- Proposed Plan for ROD Amendment to NEWIOU Soil, Sediment, & Surface Water ROD — Dec
- Community Involvement Plan — Jan
- SS015 GW RD/RA Work Plan — Jan
- ***DP039 RD/RA Work Plan*** — ***Feb***

Documents
Planned (POCO)

- SS014 POCO Technology Demonstration Work Plan Dec
- ***Oil-Water Separators POCO Evaluation Work Plan*** ***Feb***

Field Work Planned

• ***SD031 Well/Trench Installation***	***Jan***
• ***SD031 EVO Injection***	***Feb***
• ***SD036 Well Installation***	***Mar***
• ***SD037 Well Installation***	***Mar***
• ***SD034 Site Investigation***	***Apr***
• ***SD036 EVO Injection***	***Apr***
• ***SD037 EVO Injection***	***Apr***
• ***SS016 Well Installation***	***Apr***
• ***ST018 Well/Trench Installation***	***Apr***
• ***SS014 Site Investigation***	***Apr***

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

Completed Documents (Historical1)

- 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 (Historical 2)

- 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

Completed Field Work (Historical1)

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

Completed Field Work (Historical 2)

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