Final

Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
16 November, 0930 Hours

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Team (IST) conducted the Restoration Program Manager's (RPM) teleconference meeting on 16 November 2016 at 0930 hours in Building 248 at Travis AFB, California. Attendees included:

Lonnie Duke	AFCEC/CZOW
Glenn Anderson	AFCEC/CZOW
Angel Santiago Jr.	AFCEC/CZOW
Milton 'Gene' Clare	AFCEC/CZOW
William Hall (via telephone)	AFCEC/CZR
Merrie Schilter-Lowe	Travis AFB 60 AMW/PA
Monika O'Sullivan	AFCEC/CZOW
Adriana Constantinescu (via telephone)	California Regional Water Quality Control Board (RWQCB)
Ben Fries (via telephone)	DTSC
Nadia Hollan Burke (via telephone)	USEPA
Indira Balkissoon (via telephone)	Techlaw, Inc.
Mike Wray	CH2M

Handouts distributed at the meeting, discussions and presentations included:

Attachment 1	Meeting Agenda
Attachment 2	Master Meeting and Document Schedule
Attachment 3	CGWTP Monthly Data Sheet (October 2016)
Attachment 4	LF007C Monthly Data Sheet (October 2016)
Attachment 5	ST018 Monthly Data Sheet (October 2016)
Attachment 6	Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 20 October 2016 RPM meeting minutes were approved and finalized as written.

B. Action Item Review.

Action items from October 2016 were reviewed.

Action item 1 is ongoing: Ms. O'Sullivan to provide updates on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). 16 November 2016: No updates.

Action item 2 is closed: Mr. Duke to provide a copy of the Biological Assessment/Biological Opinion (BA/BO) and fieldwork extension letter to the regulators by 16 November 2016.

Action item 3 is closed: Ms. Cumberland to reserve the real estate classroom for the RAB Meeting scheduled for April 2017.

Action item 4 is closed: Mr. Duke to add a technology demonstration status report as an ongoing presentation for future RPM meetings, to keep the regulatory agencies informed on the progress of the technology demonstration projects.

Action item 5 is open: Mr. Duke to notify the regulatory agencies when SBBGWTP is back online. 16 November 2016: No updates.

C. 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 teleconference meeting, which will be held on Wednesday, 18 January 2017, at 0930 hours.

Travis AFB Master Document Schedule

— Community Involvement Plan (CIP): The Agency Comments due date was changed to 28 November 2016. The rest of the dates were changed accordingly.

— Action Memorandum Non-Time Critical Removal Action at Site TS060 (Old Skeet Range): Document went final and will be moved to history.

— Potrero Hills Annex (FS, PP, and ROD): No change to the schedule. Mr. Anderson said that he reviewed the most recent Groundwater Report and that there are not a lot of changes to report. However, the report indicates that solvent looks to be migrating to an adjacent property. Mr. Anderson said this was the first time he had noticed the solvent migration but didn't get a chance to review previous reports to see if it had been reported, or if different methods were used for this sample event.

— Site TS060 Removal Action Work Plan: No change was made to the schedule.

— Site LF044 Investigation Work Plan: No change was made to the schedule.

— Site SS016 Risk Assessment Technical Memorandum: New document: Predraft to AF/Service Center scheduled for 20 December 2016, the rest of the dates are populated accordingly.

— Sites SD033, SD032, and SS046 Risk Assessment Technical Memorandum: New document: all dates are to be determined (TBD).

— Site FT004 POCO Soil Data Gap Investigation Work Plan: No change made to the schedule. Travis AFB is working on the responses to comments (RTCs).

— Sites POCO ST028 and ST032 Well Decommissioning Work Plan: Document went final and will be moved to history.

— Quarterly Newsletter (January 2017): New dates to support the first quarter of 2017.

— 2015 Annual GRISR: Document went final and will be moved to history.

— Site FT005 Technology Demonstration Construction Completion Report: Document went final and will be moved to history.

— Site DP039 Remedial Action Construction Completion Report: No change was made to the schedule. Mr. Anderson is reviewing EPAs RTCs.

— Multi-Site Technology Demonstration Construction Completion Report: New document populated with all new dates.

— Site SD034 Technology Demonstration Construction Completion Report: New document populated with all new dates.

— Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum: Response to Comments Due and Final Due dates were changed to 14 November 2016 to reflect the date the document went final.

— Sites OW051, OW053, and OW054 POCO Evaluation/Closure Report: Predraft to AF/Service Center and AF/Service Center Comments Due dates were changed to 7 November and 21 November 2016, respectively.

— Site ST028 POCO Well Decommissioning and Site Closeout Technical Memorandum: New document.

— Site SS014 POCO Technology Demonstration Construction Completion Report: New document.

— Multi-Site Bioaugmentation Technology Demonstration Work Plan: Moved to history.

— Site SS016 Soil Data Gap Investigation Work Plan: Moved to history.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, October 2016

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) was shut down on 15 September 2016 due to evidence of breakthrough at the midpoint and effluent and is waiting for a carbon change-out.

Optimization Activities for SBBGWTP: No optimization activities are reported for the month of October 2016.

Mr. Duke will notify the regulators when the treatment plant is back online.

Central Groundwater Treatment Plant, October 2016 (see Attachment 3)

The Central Groundwater Treatment Plant (CGWTP) performed at 98.6% uptime with approximately 1,705,540 gallons of groundwater extracted and treated during the month of October 2016. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 33.9 gpm. Electrical power usage was 2,850 kWh for all equipment connected to the Central Plant, and approximately 2,997 pounds of CO_2 were generated. Approximately 3.45 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 11,447 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of October 2016.

Note: The Site DP039 bioreactor is currently undergoing an optimization effort to determine the most effective pulse mode duration to optimize distribution of TOC in the subsurface.

LF007C Groundwater Treatment Plant, September 2016 (see Attachment 4)

Subarea LF007C Treatment Plant (LF007CGWTP) performed at 58.3% uptime with approximately 56,370 gallons of groundwater extracted and treated during the month of October 2016. The average flow rate at the LF007C was 1.9 gpm, and electrical power use was 0 kWh for all the equipment connected to the LF007C plant; and 0 pounds of CO_2 was generated; this system is 100 percent off the power grid. Approximately 1.93×10^{-4} pounds of VOCs were removed from the groundwater in October. The total mass of VOCs removed since the startup of the system is 174.36 pounds.

Optimization Activities for LF007CGWTP: No optimization activities are reported for the month of October 2016.

Ms. Burke questioned the total petroleum hydrocarbon/motor oil (TPH-D/MO) breakthrough detection in the effluent. Mr. Wray said that this is not a TPH-D/MO site and that the detection is biological, most likely coming from the carbon. Pointing out that there was no TPH-D/MO detection in the influent, adding that the silica gel cleanup (SGC) was not checked on the chain of custody (COC) this month which gave the sample a false-hit. Ms. Constantinescu said that she would like to have a discussion regarding the SGC method; stating that the Water Board, Region 2, does not agree with the use of this methodology for testing the treated water. The SGC method removes both biogenic organic compounds and petroleum metabolites, and does not distinguish between the two. In additional, the SGC method is an additional cost to the extractable analysis.

Mr. Wray will investigate why this treatment plant, known for not being a TPH-D/MO site, is getting TPH-D detections when not using the SGC method.

ST018 Groundwater (MTBE) Treatment Plant, October 2016 (see Attachment 5)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 206,210 gallons of groundwater extracted and treated during the month of October 2016. All treated water was discharged to the sanitary sewer. The average flow rate for the ST018 GWTP was 4.1 gpm. Electrical power usage for the month was 123 kWh for all equipment connected to the ST018 GWTP. The total CO_2 equivalent, including an estimate for the carbon change-out, equates to approximately 491 pounds. Approximately 0.37 pound of BTEX, MTBE and TPH was removed in October by the treatment plant and approximately 0.08 pound of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 39.7 pounds, and the total MTBE mass removed since startup of the system is 9.7 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 four groundwater extraction pumps in the system are all solar powered.

Optimization Activities for ST018GWTP: No optimization activities to report for the month of October 2016.

Presentation:

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

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

Newly Completed Documents: Sites ST028 and ST032 POCO Well Decommissioning Work Plan; Site TS060 Action Memorandum; 2015 Annual GRISR.

Newly Completed Fieldwork: OW055 Close-in-place; Q4 2016 GRIP Sampling; OW040 Soil Excavation/Surface Restoration; OW057 Soil Excavation/Surface Restoration.

In-Progress Documents (CERCLA): Community Involvement Plan; Site DP039 Remedial Action Construction Completion Report; Site TS060 Removal Action Work Plan; Site LF044 Investigation Work Plan.

In-Progress Documents (POCO): Site FT004 POCO Soil Data Gap Investigation Work Plan; Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum.

In-Progress Fieldwork (CERCLA): Multi-site bioaugmentation and EVO injection; Site SD034 technology demonstration bioreactor installation.

In-Progress Fieldwork (POCO): None.

Planned Documents (CERCLA): Sites SD033, SD043, and SS046 Risk Assessment Technical Memorandum (December); Site SD031 Remedial Investigation Report (January); Multi-site Technology Demonstration Construction Completion Report (January); SD034 Technology Demonstration Construction Completion Report (February).

Planned Documents (POCO): Sites OW051 OW053, and OW054 POCO Evaluation/Closeout Report (December); Site ST028 POCO Well Decommissioning/Site Closeout Report (December); Site SS014 POCO Completion Report (January).

Fieldwork Planned (CERCLA): Site LF044 Sediment Sampling (TBD); Site TS060 Removal Action (TBD); DP039 Installation of Down-gradient Monitoring Wells (TBD).

Fieldwork Planned (POCO): Site FT004 POCO Soil Data Gap Investigation (TBD); OW050 Site Excavation/Closure (TBD); OW055 Sidewalk Repairs (TBD); OW056 Site Excavation/Closure (TBD).

Technology Demonstration Projects:

- SS014: Recycled Drywall SBGR.
  - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater.
  - Installation to be completed November 2016.
  - Too early to evaluate performance data.
- Multisite Bioaugmentation: EVO and KB-1 Plus.
  - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation.
  - Injections not complete yet (est. late Nov 2016).
  - Too early to evaluate performance data.
- SD034: Washboard SBGR.
  - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater.
  - Installation to be completed November 2016.
  - Too early to evaluate performance data.
- FT005: Distribution of EVO and KB-1 Plus.
  - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater.
  - Installation completed May 2016.
  - Too early to evaluate performance data.
- FT004: Distribution of EVO via SBGR and/or Groundwater Extraction.
  - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction.
  - Installation completed April 2016.
  - Too early to evaluate performance data.
- SD031: EVO distribution via Gravel Chimneys.
  - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE).
  - Installation completed in April 2015.
  - Early indications:
  - Reducing conditions have initiated as expected throughout the TD area and are supporting anaerobic degradation.
  - TOC concentrations are increasing at several wells.
  - 1,1-DCE (primary COC) concentrations have reduced by 57% (sum of key wells within TD area).
  - Total Molar concentration (sum of CVOCs) has reduced by 49% (sum of key wells within TD area).
  - Recirculation through chimneys has been successful relative to our design assumptions.

4. New Action Item Review

— Mr. Wray will investigate why LF007CGWTP, known for not being a TPHd/MO site, is getting TPHd detection when not using the SGC method.

5. PROGRAM/ISSUES/UPDATE

None.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Monika O'Sullivan	Ms. O'Sullivan to provide updates on PFOS and PFOA as she becomes aware of them.	Ongoing	Open
2.	Lonnie Duke	Mr. Duke to notify the regulatory agencies when SBBGWTP is back online.	TBD (dependent on carbon vendor schedule)	Open
3.	Mike Wray	Mr. Wray will investigate why LF007CGWTP, known for not being a TPHd/MO site, is getting TPHd detections when not using the SGC method.	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING

The RPM Teleconference is scheduled for 9:30 AM PST on 16 November 2016. **The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then enter #.**

AGENDA

1. ADMINISTRATIVE

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

2. CURRENT PROJECTS

   A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE

3. PRESENTATIONS

   A. PROGRAM UPDATE:
      DOCUMENTS & ACTIVITIES COMPLETED, IN PROGRESS AND PLANNED

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

   A. MEETING SCHEDULE

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

(2016)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-20-16	—
02-17-16	—	—
—	03-16-16	—
04-21-16 (Thursday 2:00 PM)	—	04-21-16
—	05-18-16	—
06-15-16	—	—
—	07-20-16	—
08-17-16	—	—
—	09-21-16	—
10-20-16 (Thursday 2:00 PM)	—	10-20-16[2]
—	11-16-16	—
—	—	—

[1] Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

[2] Note: RAB tour in lieu of RAB meeting (10:00 to 12:00).

(2017)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-18-17	—
02-15-17	—	—
—	03-15-17	—
04-20-17 (Thursday 2:00 PM)	—	04-20-17
—	05-17-17	—
06-21-17	—	—
—	07-19-17	—
08-16-17	—	—
—	09-20-17	—
10-19-17 (Thursday 2:00 PM)	—	10-19-17[2]
—	11-15-17	—
—	—	—

[1] Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

[2] Note: Tentative RAB tour date in lieu of RAB meeting.

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
Life Cycle	**Community Involvement Plan Travis AFB, Glenn Anderson CH2M HILL, Jill Dunphy**	**Action Memorandum for Non-Time Critical Removal Action at Site TS060 (Old Skeet Range) Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	08-23-16	03-30-16
AF/Service Center Comments Due	09-07-16	04-13-16
Draft to Agencies	09-28-16	05-16-16
Draft to RAB	09-28-16	05-16-16
Agency Comments Due	10-28-16 (11-28-16)	06-27-16
Response to Comments Meeting	**01-18-17**	**07-20-16**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	7-7-16 to 8-7-16
Public Meeting	**NA**	**NA**
Response to Comments Due	02-03-17	09-01-16 (10-13-16)
Draft Final Due	02-03-17	09-01-16 (10-13-16)
Final Due	03-07-17	10-03-16 (11-14-16)

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS				
Life Cycle	**Site TS060 Removal Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick** **CAPE, Meg Greenwald**	**Site LF044 Investigation Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick** **CAPE, Meg Greenwald**	**Site SS016 Risk Assessment Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M HILL, Tony Chakurian**	**Sites SD033, SD043, and SS046 Risk Assessment Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M HILL, Tony Chakurian**
Scoping Meeting	**NA**	**NA**	**NA**	**TBD**
Predraft to AF/Service Center	04-14-16	04-26-16	12-30-16	TBD
AF/Service Center Comments Due	04-28-16	05-10-16	01-17-17	TBD
Draft to Agencies	06-20-16	06-27-16	01-31-17	TBD
Draft to RAB	06-20-16	06-27-16	01-31-17	TBD
Agency Comments Due	07-27-16	07-28-16	03-03-17	TBD
Response to Comments Meeting	**08-17-16**	**08-17-16**	**03-15-17**	**TBD**
Response to Comments Due	08-31-16 (12-20-16)	08-31-16 (02-22-17)	04-03-17	TBD
Draft Final Due	NA	NA	NA	TBD
Final Due	08-31-16 (12-20-16)	08-31-16 (02-22-17)	04-03-17	TBD
Public Comment Period	NA	NA	NA	TBD
Public Meeting	**NA**	**NA**	**NA**	**TBD**

Travis AFB Master Meeting and Document Schedule

SECONDARY POCO DOCUMENTS		
Life Cycle	**Site FT004 POCO Soil Data Gap Investigation Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick** **CAPE, Meg Greenwald**	**Sites ST028 and ST032 POCO Well Decommissioning Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick** **CAPE, Meg Greenwald**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	06-03-16	09-01-16
AF/Service Center Comments Due	06-17-16	09-15-16
Draft to Agencies	07-19-16	09-29-16
Draft to RAB	07-19-16	09-29-16
Agency Comments Due	08-19-16	10-31-16
Response to Comments Meeting	**09-21-16**	**11-16-16**
Response to Comments Due	10-06-16 (01-19-17)	11-30-16 (10-21-16)
Draft Final Due	NA	NA
Final Due	10-06-16 (01-19-17)	11-30-16 (10-21-16)
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**Quarterly Newsletters (January 2017) Travis, Glenn Anderson**	**2015 Annual GRISR Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	NA	05-03-16
AF/Service Center Comments Due	NA	06-03-16
Draft to Agencies	01-05-17	07-07-16
Draft to RAB	NA	07-07-16
Agency Comments Due	01-19-17	08-29-16
Response to Comments Meeting	**TBD**	**09-21-16**
Response to Comments Due	01-20-17	11-09-16
Draft Final Due	NA	NA
Final Due	01-20-17	11-09-16
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS				
Life Cycle	Site FT005 Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt	Site DP039 Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt	Multi-Site Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt	Site SD034 Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt
Scoping Meeting	**NA**	**NA**	**TBD**	**NA**
Predraft to AF/Service Center	06-30-16	08-05-16	12-15-16	01-05-17
AF/Service Center Comments Due	07-15-16	08-19-16	12-30-16	01-19-17
Draft to Agencies	08-19-16	09-30-16	01-17-17	02-02-17
Draft to RAB	08-19-16	09-30-16	01-17-17	02-02-17
Agency Comments Due	09-19-16	10-31-16	02-16-17	03-06-17
Response to Comments Meeting	**10-20-16**	**11-16-16**	**03-15-17**	**03-15-17**
Response to Comments Due	11-03-16	12-01-16	03-29-17	03-31-17
Draft Final Due	NA	NA	TBD	NA
Final Due	11-03-16	12-01-16	03-29-17	03-31-17
Public Comment Period	NA	NA	TBD	NA
Public Meeting	**NA**	**NA**	**TBD**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL POCO DOCUMENTS				
Life Cycle	Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Tony Chakurian	Sites OW051, OW053, and OW054 POCO Evaluation/Closure Report Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick	Site ST028 POCO Well Decommissioning and Site Closeout Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick	Site SS014 POCO Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt
Scoping Meeting	**NA**	**NA**	**NA**	**NA**
Predraft to AF/Service Center	09-20-16	11-07-16	11-11-16	12-20-16
AF/Service Center Comments Due	10-04-16	11-21-16	11-28-16	01-05-17
Draft to Agencies	10-05-16	12-06-16	12-13-16	01-19-17
Draft to RAB	10-05-16	12-06-16	12-13-16	01-19-17
Agency Comments Due	11-04-16	01-09-17	01-16-17	02-21-17
Response to Comments Meeting	**11-16-16**	**01-18-17**	**01-18-17**	**03-15-17**
Response to Comments Due	12-01-16 (11-14-16)	02-01-17	02-07-17	03-29-17
Draft Final Due	NA	NA	NA	NA
Final Due	12-01-16 (11-14-16)	02-01-17	02-07-17	03-29-17
Public Comment Period	NA	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

HISTORY		
Life Cycle	**Multi-Site Bioaugmentation Technology Demonstration Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Levi Pratt**	**Site SS016 Soil Data Gap Investigation Work Plan** **Travis AFB, Glenn Anderson** **CH2M HILL, Doug Berwick** **CAPE, Meg Greenwald**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	05-06-16	03-24-16
AF/Service Center Comments Due	05-20-16	04-07-16
Draft to Agencies	06-23-16	05-11-16
Draft to RAB	06-23-16	05-11-16
Agency Comments Due	07-25-16	06-13-16
Response to Comments Meeting	**08-17-16**	**06-15-16**
Response to Comments Due	09-09-16 (09-22-16)	07-01-16 (09-23-16)
Draft Final Due	NA	NA
Final Due	09-09-16 (09-22-16)	07-01-16 (09-23-16)
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 207 **Reporting Period: 30 September 2016 – 4 November 2016** **Date Submitted: 11 November 2016**

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 and two (2) bioreactor treatability studies.

System Metrics

Table 1 presents operational data from the October 2016 reporting period.

Table 1 – Operations Summary – October 2016

Initial Data Collection:	9/30/2016 09:30	**Final Data Collection:**	11/4/2016 08:50		
Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	828 hours	**CGWTP:**	98.6%	**CGWTP:**	2,850 kWh (2,997 lbs CO_2 generated[a])
Gallons Treated (discharge to storm sewer): **1,705,540 gallons[b]**		Gallons Treated Since January 1996: **532.1 million gallons**			
VOC Mass Removed from groundwater:		VOC Mass Removed Since January 1996:			
3.45 lbs[c]		**2,761 lbs from groundwater**			
		8,686 lbs from vapor			
Rolling 12-Month Cost per Pound of Mass Removed: $2,426[d]					
Monthly Cost per Pound of Mass Removed: $1,664[d]					

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 888 pounds of GHG from GAC change out.
[b] Volume includes 140 gallons of groundwater collected during the groundwater sampling event and 20,000 gallons of stormwater from dewatering the 400 Ramp Phase I area.
[c] Calculated using October 2016 EPA Method SW8260C analytical results.
[d] 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 during the monthly reporting period.

Table 2 – CGWTP Average Flow Rates[a] – October 2016

Location	Average Flow Rate Groundwater (gpm)
EW001x16	14.6
EW002x16	7.5
EW003x16	0.1
EW605x16	6.5
EW610x16	2.9
CGWTP	33.9

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
gpm = gallons per minute

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

Table 3 – Summary of System Shutdowns

Location	Shutdown[a]		Restart		Cause
	Date	Time	Date	Time	
CGWTP	19 October 2016	22:00	20 October 2016	09:30	Influent tank high level alarm.

-- = Time not recorded
[a] Shutdown and restart times estimated based on field notes
CGWTP = Central Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 4 October 2016. Sample results are presented in Table 4. The total VOC concentration (245.54 µg/L) in the October 2016 influent sample has decreased slightly from the September 2016 sample (250.09 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 188 µg/L. Cis-1,2-DCE and vinyl chloride were detected at low concentrations in the sample collected after the first carbon vessel, and vinyl chloride was detected in the sample collected after second carbon vessel. No VOC constituents were detected in the system effluent sample. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in October 2016.

A bioassay test was also completed on the system effluent sample in October 2016, with 100 percent passing rate.

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 influent concentration has displayed an increasing trend over the past year. The overall flow rate through the treatment plant has increased over the past 12 months.

On 19 October, the CGWTP was shut down because of a high level alarm in the influent tank. This alarm was caused by clogged bag filters. On 20 October, the bag filters were replaced, and the CGWTP was restarted without issue.

The Site DP039 subgrade biogeochemical reactor (SBGR), also known as a bioreactor, continued to operate in a "pulsed mode" in an effort to optimize distribution of total organic carbon (TOC). During this optimization effort, the pulsed mode operation will consist of three (3) different time scales: one week, two week, and three week pulsed modes. Samples will be collected after each round of pulsed mode operation. This will help determine which duration of each pulsed mode cycle of the bioreactor is most effective.

On 8 September, the bioreactor was taken off line and remained offline until 10 October. After being off line for over four (4) weeks, baseline samples were collected from monitoring wells surrounding the bioreactor. The Site DP039 bioreactor was brought on line following baseline sample collection. Between 10 October and 2 November, the bioreactor operated in a one-week cycle for three (3) weeks (one week on, one week off, one week on) before additional samples were collected on 1 and 2 November. As of 2 November, the bioreactor will remain off line for four (4) weeks before starting the next time scale of two-week operational cycle.

Optimization Activities

No optimization activities occurred at the CGWTP in October 2016. As discussed above, the Site DP039 bioreactor is currently undergoing an optimization effort to determine the most effective pulse mode duration to optimize distribution of TOC in the subsurface.

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 2,997 pounds of GHG during October 2016. This is an increase from the September 2016 amount of 2,724 pounds.

TABLE 4
Summary of Groundwater Analytical Data for October 2016 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 October 2016 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND	ND
Chloromethane	NA	0.15	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	52.2	1.35	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.41 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.68	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.33 J	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.15	0	0.20 J	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND	ND
Methyl tert-Butyl Ether	1.0	0.15	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	0.63	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.48	ND	ND	ND
Trichloroethene	5.0	0.15 – 1.5	0	188	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	0.26 J	0.20 J	0.26 J	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.15	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND	ND
Total Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND	ND
Other							
Total Suspended Solids (mg/L)	NA	0.6	0	1.4 J	NM	NM	NM
1,4-Dioxane	NA	0.081	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Gasoline	50	30	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50 (trigger)	25	0	NM	NM	NM	ND

* 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

NA = not applicable

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 Date	Pulse-off Date
MW750x39	23 October 2015	6 November 2015
	20 November 2015	8 December 2015
	21 December 2015	31 December 2015
	15 January 2016	1 February 2016
	12 February 2016	26 February 2016
	11 March 2016	28 March 2016
	8 April 2016	22 April 2016
	4 May 2016	13 May 2016
	27 May 2016	17 June 2016
	1 July 2016	19 July 2016
	2 August 2016	12 August 2016
	26 August 2016	8 September 2016
	10 October 2016	17 October 2016
	25 October 2016	2 November 2016

MW = Monitoring Well

Figure 1

CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

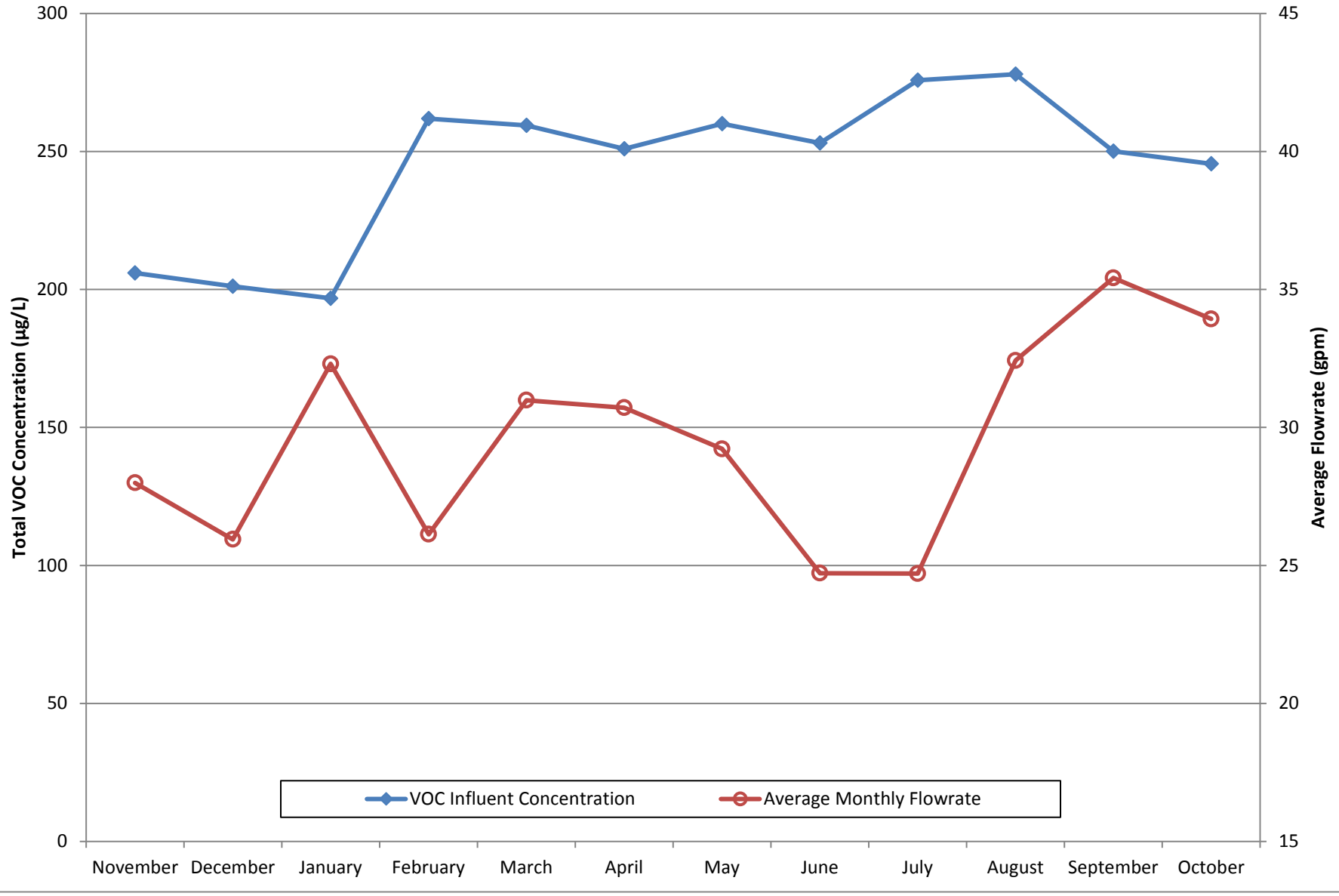
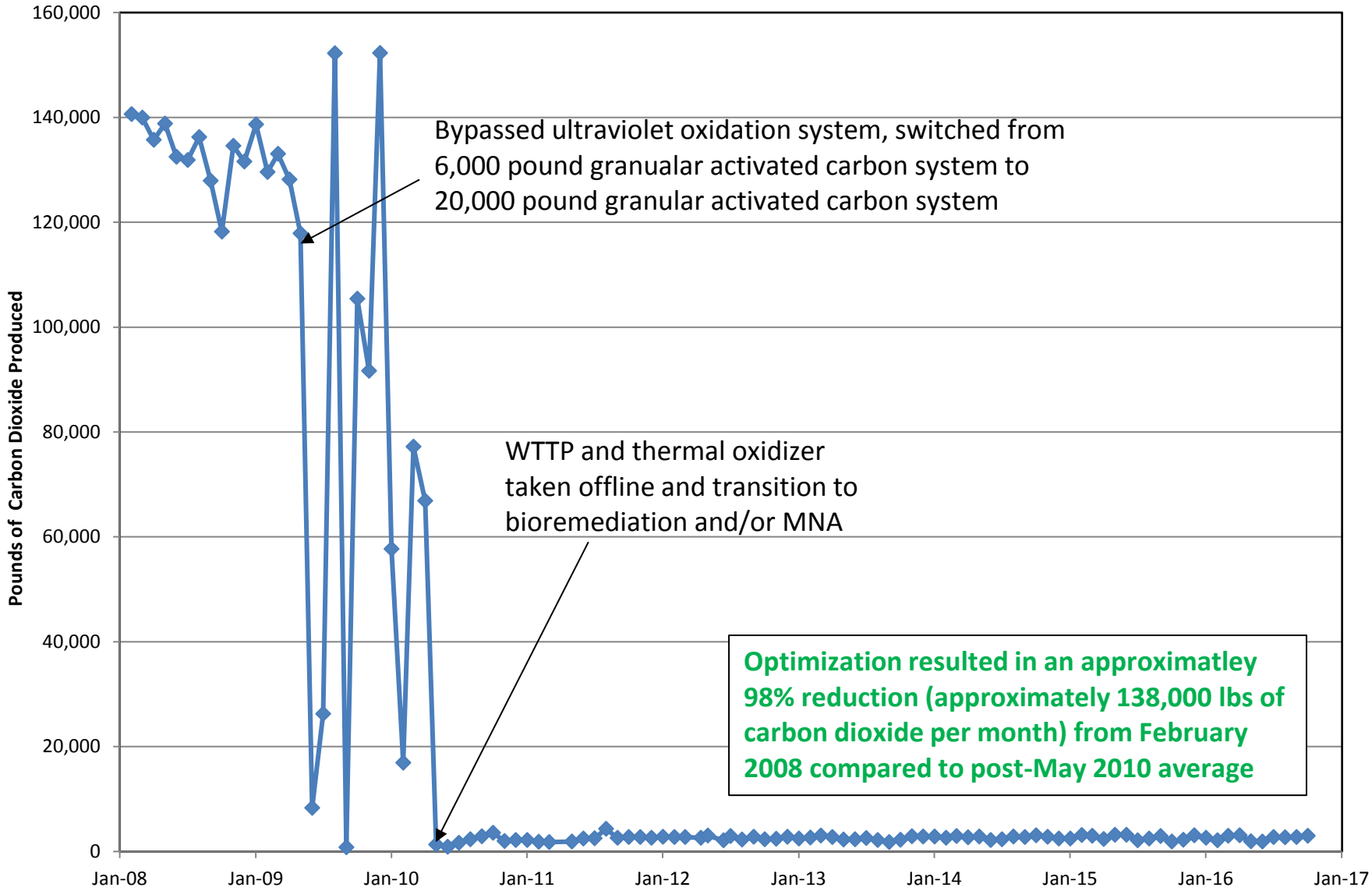


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Central Groundwater Treatment Plant



Subarea LF007C Groundwater Treatment Plant Monthly Data Sheet

Report Number: 156 **Reporting Period: 30 September 2016 – 4 November 2016** **Date Submitted: 11 November 2016**

This monthly data sheet presents information regarding the Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the October 2016 reporting period:

Table 1 – Operations Summary – October 2016

Initial Data Collection:	9/30/2016 11:45		**Final Data Collection:**	11/4/2016 10:45	
Operating Time:		Percent Uptime:	Electrical Power Usage[a]:		
LF007C GWTP:	489 hours	**LF007C GWTP**	58.3%	**LF007C GWTP:**	0 kWh
Gallons Treated: **56,370 gallons**			Gallons Treated Since March 2000: **85.6 million gallons**		
Volume Discharged to Duck Pond: **56,370 gallons**					
VOC Mass Removed: **1.93 x 10^{-4} pounds**[b]			VOC Mass Removed Since March 2000: **174.36 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 LF007C GWTP operates on solar power only.
[b] VOCs from October 2016 influent sample detected by EPA Method SW8260C.
[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 – LF007C GWTP Average and Total Flow Rates – October 2016

Location	Average Flow Rate (gpm)[a]	Total Gallons Processed (gallons)
EW614x07	1.4	41,081
EW615x07	0.5	15,066
LF007C GWTP	**1.9**	**56,370**

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
gpm = gallons per minute

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

Table 3 – Summary of System Shutdowns

Location	Shutdown[a]		Restart[a]		Cause
	Date	Time	Date	Time	
LF007C GWTP	15 October 2016	18:17	25 October 2016	15:20	Treatment pad flooded with rainwater.
LF007C GWTP	27 October 2016	21:44	1 November 2016	14:30	Treatment pad flooded with rainwater.

-- = Time not recorded
[a] Shutdown and restart times estimated based on field notes
LF007C GWTP = Subarea LF007C Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 4 October 2016 sampling event are presented in Table 4. The only compound detected was TCE (0.41 J µg/L), which was detected at the influent sample location. No VOCs were detected at the midpoint or effluent sampling locations. However, TPH-diesel and TPH-motor oil were detected at concentrations of 46.3 J µg/L and 45.6 J µg/L, respectively, which are less than their instantaneous maximum discharge limits. These detections may be a result of biological interference since TPH is not a chemical of concern at Subarea LF007C. Silica gel cleanup will be performed by the laboratory on future samples to help minimize the effect of biological interference. Analytical data continue to indicate effective treatment of the influent process stream.

A bioassay test was also completed on the system effluent sample in October 2016, with 100 percent passing rate.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve months. VOC concentrations, primarily TCE, have generally continued to decrease over the last twelve months. The average flow rate through the LF007C GWTP in October 2016 (1.92 gpm) decreased slightly from the flow rate measured in September 2016 (3.45 gpm). The decrease in flow from EW614x07 may be a result of continued pumping from EW615x07, and also the prolonged period of dry weather.

In October 2016, the LF007C GWTP system was shut down for a total of approximately 14.5 days because the treatment pad flooded with rainwater on two (2) occasions. The rainwater was pumped out of the pad, and the system was restarted without issue.

Optimization Activities

No optimization activities occurred at the LF007C GWTP in October 2016.

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 and LF007C GWTP. The LF007C GWTP is now a solar-only operated treatment system and no longer generates GHG, with exception of a small amount of GHG generated from changing out the GAC.

TABLE 4
Summary of Groundwater Analytical Data For October 2016 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (μg/L)	Detection Limit (μg/L)	N/C	4 October 2016 (μg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND
Dibromochloromethane	5.0	0.15	0	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
2-Hexanone	NA	0.50	0	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND
Trichloroethene	5.0	0.15	0	0.41 J	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.15	0	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND
Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND
Other						
Total Suspended Solids (mg/L)	NA	0.6	0	1.8 J	NM	NM
Total Petroleum Hydrocarbons – Gasoline	50	30	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	24	0	ND	NM	46.3 J
Total Petroleum Hydrocarbons – Motor Oil	100	24	0	ND	NM	45.6 J

* 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).

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
NA = not applicable
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

LF007CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

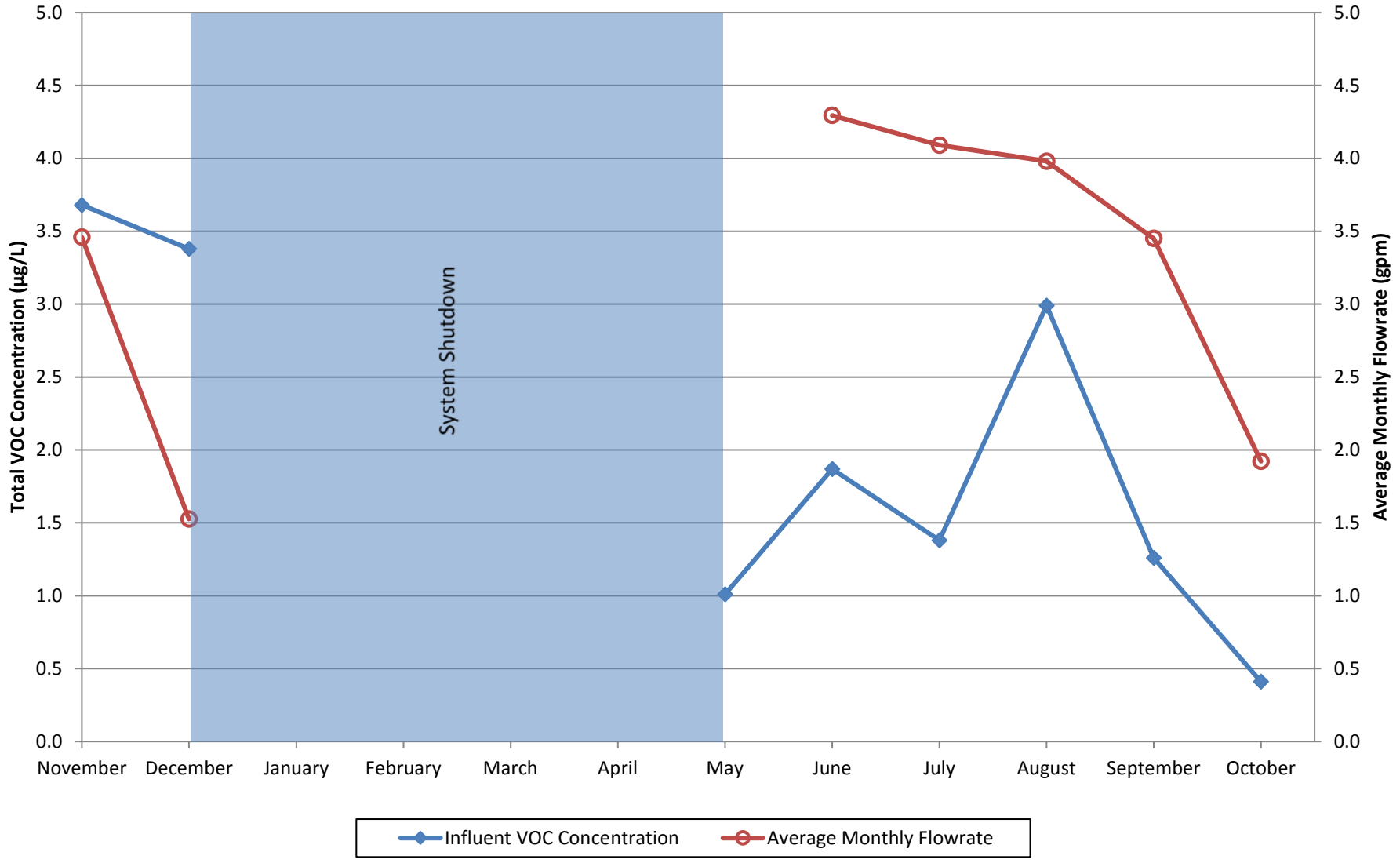
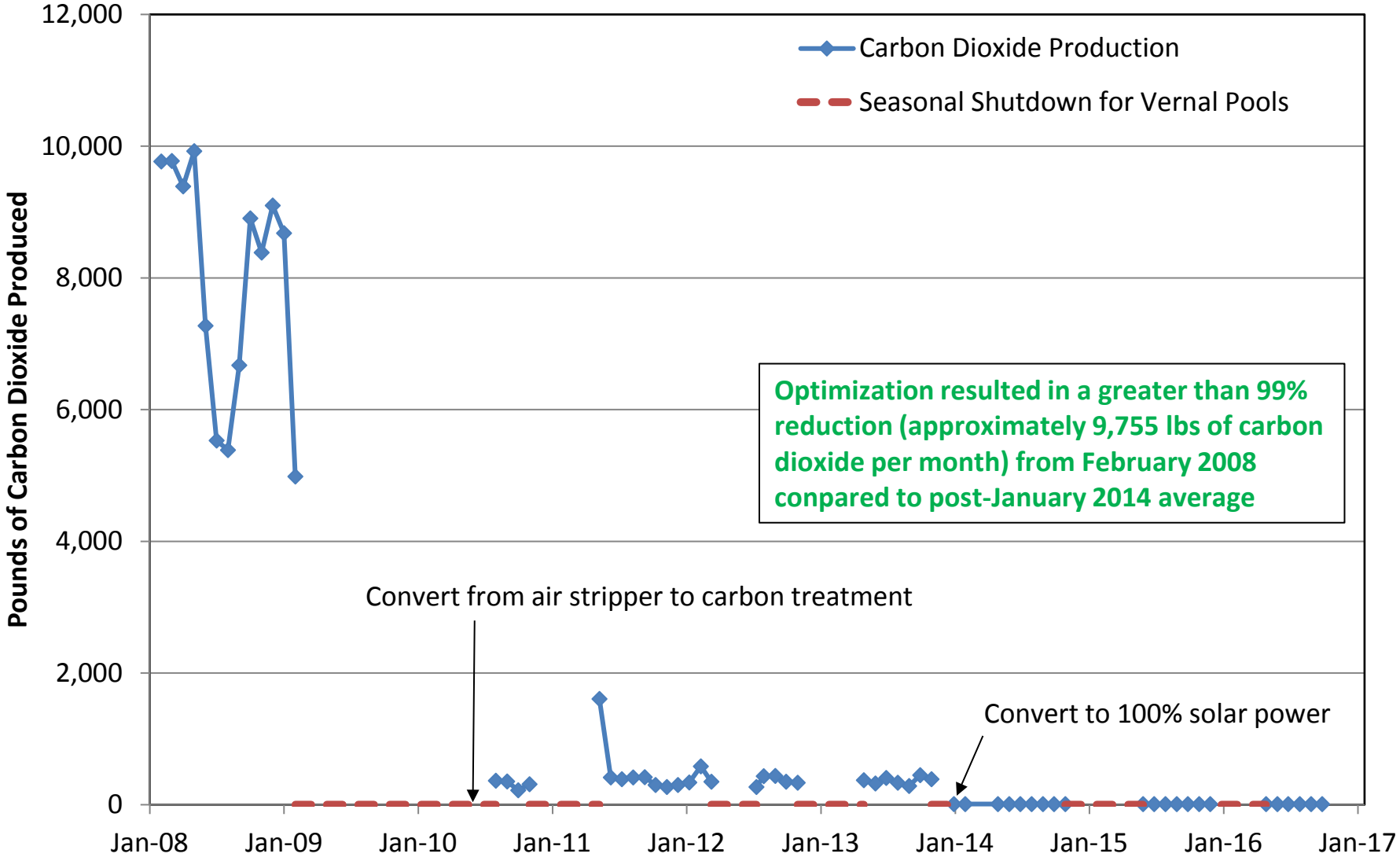


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the NGWTP/LF007C Groundwater Treatment Plant



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

Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 068 **Reporting Period: 30 September 2016 – 4 November 2016** **Date Submitted: 11 November 2016**

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

System Metrics

Table 1 presents operation data from the October 2016 reporting period.

Table 1 – Operations Summary – October 2016

Initial Data Collection:	9/30/2016 09:55	**Final Data Collection:**	11/4/2016 9:20
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 839 hours		**ST018GWTP:** 100%	**ST018GWTP:** 123 kWh (491 lbs CO_2 generated[a])
Gallons Treated: **206,210 gallons**		Gallons Treated Since March 2011: **11.1 million gallons**	
Volume Discharged to Sanitary Sewer: **206,210 gallons**		Final Totalizer Reading: **11,148,214 gallons**	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: **4,652,040 gallons**			
MTBE, BTEX, VOC, TPH Mass Removed: **0.37 lbs**[b]		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: **39.7 lbs**	
MTBE (Only) Removed: **0.08 lbs**[b]		MTBE (Only) Mass Removed Since March 2011: **9.7 lbs**	
Rolling 12-Month Cost per Total Pounds of Mass Removed: $10,985[bc]			
Monthly Cost per Pound of Mass Removed: $15,105[bc]			

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 400 pounds of GHG from GAC change out.
[b] Calculated using October 2016 EPA Method SW8260C and SW8015B analytical results.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.
kWh = kilowatt hour
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 – September 2016

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	0.7	839
EW2016x18	0.9	839
EW2019x18	0.8	839
EW2333x18	1.2	839
Site ST018 GWTP	4.1	839

[a] Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system.

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[a]		Restart[a]		Cause
	Date	Time	Date	Time	
ST018GWTP	None.	--		--	None.

-- = Time not recorded

[a] Shutdown and restart times estimated based on field notes
ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the ST018GWTP on 4 October 2016. Results are presented in Table 4. The complete October 2016 laboratory data report is available upon request. The influent concentration for MTBE during the October 2016 sampling event was 51.0 µg/L, which is a decrease from the September 2016 sample result of 67.9 µg/L. TPH-g (79.0 J µg/L), TPH-d (51.0 J µg/L), TPH-mo (34.1 J µg/L), benzene (0.21 J µg/L), and 1,2-DCA (1.05 µg/L) were also detected in the influent sample. TPH-mo (41.0 J µg/L) was detected after the first carbon vessel sampling location. MTBE was detected after the second carbon vessel sampling location and in the system effluent sampling location at concentrations of 0.18 J µg/L and ~~3.25~~2.69 µg/L, respectively. All detected concentrations of TPH are well below the Fairfield-Suisun Sewer District effluent limitation of 50,000 µg/L, or 100,000 µg/L for TPH-mo. Additionally, the Fairfield-Suisun Sewer District does not currently have a local limit for MTBE, but a limit of 6,400 µg/L is advised based on worker health and safety. Travis AFB will continue to monitor effluent contaminant concentrations and evaluate the condition of the carbon filter beds.

Figure 1 presents plots of the average flow rate and influent total contaminant (MTBE, TPH-g, TPH-d, TPH-mo, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP over the past twelve (12) months. The average flow rate through the ST018GWTP has been seasonally variable with an increasing trend between January 2016 and April 2016 and a decreasing trend since April 2016. The total influent concentrations have varied considerably throughout the past twelve months, which is due primarily to the TPH-g concentration;

however, overall concentrations have decreased. The MTBE concentration in the system influent has generally been holding steady.

Optimization Activities

No optimization activities occurred at the ST018GWTP in October 2016.

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.

Figure 2 presents the historical GHG production from the ST018GWTP. The ST018GWTP produced 491 pounds of GHG during October 2016 and treated 206,210 gallons of water, which was similar to September 2016 (490 pounds, treating 206,815 gallons). The GHG levels have been increasing over the past approximately 1 ½ years, which is due to the addition of a new extraction well into the groundwater extraction and treatment system.

TABLE 4
Summary Of Groundwater Analytical Data for October 2016 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 October 2016 (µg/L)			
				Influent	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
Methyl tert-Butyl Ether	6,400	0.15	0	51.0	NM	0.18 J	2.69
Benzene	25,000[a]	0.15	0	0.21 J	NM	ND	ND
Ethylbenzene	25,000[a]	0.15	0	ND	NM	ND	ND
Toluene	25,000[a]	0.15	0	ND	NM	ND	ND
Total Xylenes	25,000[a]	0.15 – 0.30	0	ND	NM	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50,000[b]	30	0	79.0 J	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50,000[b]	24 – 25	0	51.0 J	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	24 – 25	0	34.1 J	41.0 J	NM	ND
Other							
1,2-Dichloroethane	20	0.15	0	1.05	NM	ND	ND

* In accordance with the Fairfield-Suisun Sewer District Effluent Limitations

Laboratory data available on request.

a – The limit of 25,000 µg/L is a combined limit for BTEX.

b – The limit of 50,000 µg/L is a combined limit for TPH-g and TPH-d

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

Figure 1

ST018GWTP Total VOC and MTBE Influent Concentrations and Average Flowrate Twelve Month History

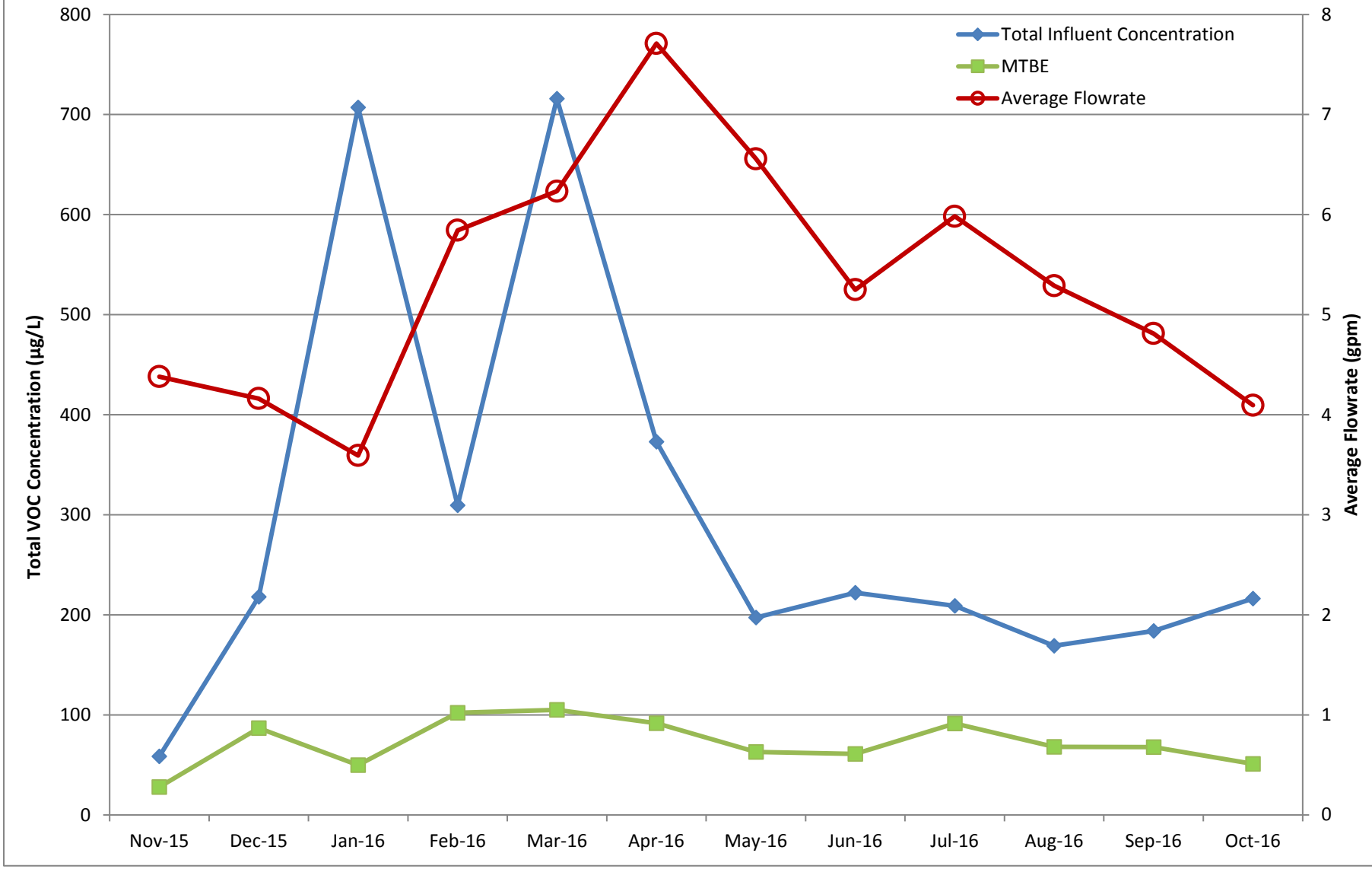
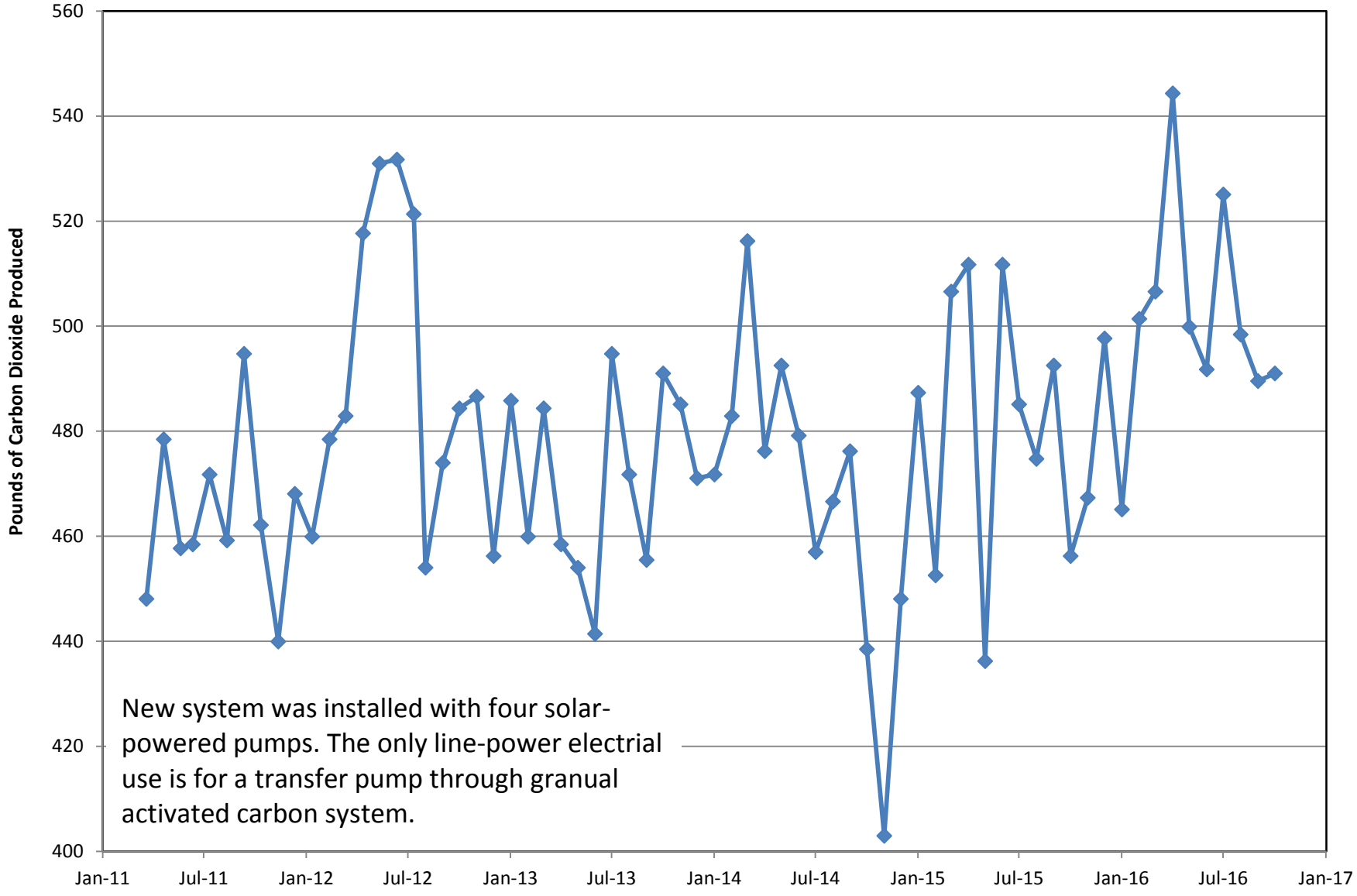


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB
Restoration Program

Program Update

RPM Meeting

November 16, 2016

Completed Documents (1)

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

Completed Documents (2)

- Proposed Plan for ROD Amendment to WABOU Soil ROD
- Proposed Plan for ROD Amendment to NEWIOU Soil, Sediment, & Surface Water ROD
- SD034 Data Gap Investigation Work Plan
- POCO Investigation Work Plan for Oil-Water Separators
- ST032 POCO Soil Excavation Work Plan
- SD036 GW RD/RA Work Plan
- SS016 GW RD/RA Work Plan
- SS015 GW RD/RA Work Plan
- FT005 Technology Demonstration Work Plan
- 2014 Annual CAMU Monitoring Report
- Old Skeet Range PAH Delineation Report
- ST028 POCO Work Plan
- SS014 POCO TD Work Plan
- CG508 Site Investigation/Site Closure Request Report
- 2014 Annual CAMU Monitoring Report
- DP039 GW RD/RA Work Plan
- SD031 TDCCR
- ST018 POCO CCR
- Site SS030 Groundwater RA CCR
- Sites SD036 and SD037 Groundwater RACCR
- Site SS016 Groundwater RACCR
- Site SS015 Groundwater RACCR
- 2014 Annual GRISR
- Site CG508 Well Decommissioning Work Plan

Completed Documents (3)

- Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046
- Site FT004 Technology Demonstration Construction Completion Report
- Site SD031 Soil Remedial Investigation Work Plan
- Corrective Action Plan for DERA-Funded Oil Water Separators
- Site ST032 POCO Completion Report
- Site ST028 POCO Completion Report
- 2015 Annual CAMU Monitoring Report
- Site SD031 Remedial Investigation Work Plan
- Site SD034 Technology Demonstration Work Plan
- Site SS016 Soil Data Gaps Investigation Work Plan
- Multi-Site Bioaugmentation Technology Demonstration Work Plan
- ***Sites ST028 and ST032 POCO Well Decommissioning Work Plan***
- ***Site TS060 Action Memorandum***
- ***2015 Annual GRISR***

Completed Field Work (1)

- 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
- SD031 Technology Demonstration Well Installation
- SD037 Well Installation
- SD031 Trench/Conveyance/Power Installation
- SD031 EVO Injection
- ST018 Well Installation
- SS015 Well Installation
- SS016 Well Installation
- Well Development (SD036, SD037)
- ST018 Trench/Conveyance/Power Installation
- SD036 EVO Injection
- Well Development (SS015, SS016)
- Baseline Sampling (SS015, SS016)
- SS014 Data Gap Investigation
- SS016 EVO Injection
- TA500 Data Gaps Investigation

Completed Field Work (2)

- 2015 Annual GRIP Sampling
- SD037 EVO Injection
- SD034 Data Gaps Investigation
- SS015 EVO Injection
- FT005 Injection Well Installation
- OWS 47, 48, 49 Site Investigations
- SS030 Trench/Conveyance/Power Installation
- FT005 Trench Installation
- FT005 Well Development
- FT004 Well Installation, Well Development, Baseline Sampling
- FT005 Baseline Sampling
- DP039 Well Installation, Well Development, Baseline Sampling
- FT004 EVO Injection
- FT004 Trench/Conveyance/Power Installation
- DP039 Infiltration Trench Installation
- TA500 Groundwater Sampling
- FT005 EVO Injection
- 2016 Q2 GRIP Sampling
- Data Gap Inv. for Soil Sites (SD043, SS046)
- SD031 Remedial Investigation Step-out Sampling (2nd round)
- DP039 EVO Injection
- CG508 Well Decommissioning
- SD033 Soil Sampling
- Multi-site Bioaugmentation Well Installation
- SD034 Technology Demonstration Well Installation
- SS014 Bioreactor Installation
- ST028 & ST032 Well Decommissioning

Completed Field Work (3)

- SS016 Soil Data Gaps Investigation
- SD031 Remedial Investigation Soil Sampling (3rd round)
- Oil Water Separators Step-out Drilling
- ***OW055 Close-in-place***
- ***Q4 2016 GRIP Sampling***
- ***OW040 Soil Excavation/Surface Restoration***
- ***OW057 Soil Excavation/Surface Restoration***

Documents In-Progress

CERCLA

- Community Involvement Plan
- Site DP039 Remedial Action Construction Completion Report
- Site TS060 Removal Action Work Plan
- Site LF044 Investigation Work Plan

Documents In-Progress

POCO

- Site FT004 POCO Soil Data Gap Investigation Work Plan
- Site CG508 POCO Well Decommissioning and
  Site Closeout Technical Memorandum

Field Work In-Progress

CERCLA

- Multi-site Bioaugmentation & EVO Injection
- SD034 Technology Demonstration Bioreactor Installation

POCO

- None

Documents Planned

CERCLA

- SD033, SD043, SS046 Risk Assessment Tech Memo — Dec
- SD031 Remedial Investigation Report — Jan
- ***Multisite Technology Demonstration Construction Completion Report*** — ***Jan***
- ***SD034 Technology Demonstration Construction Completion Report*** — ***Feb***

Documents Planned

POCO

- Sites OW051, OW053, and OW054 POCO Evaluation/Closeout Report — Dec
- ST028 POCO Well Decommissioning/Site Closeout Report — Dec
- SS014 POCO Technology Demonstration Construction Completion Report — Jan

Field Work Planned

CERCLA

- LF044 Sediment Sampling TBD
- TS060 Removal Action TBD
- ***DP039 Installation of Down-gradient Monitoring Wells TBD***

Note: Contact Lonnie Duke if you would like to observe planned field work events

Field Work Planned

POCO

- FT004 POCO Soil Data Gaps Investigation TBD
- ***OW050 Site Excavation/Closure*** ***TBD***
- ***OW055 Sidewalk Repairs*** ***TBD***
- ***OW056 Site Excavation/Closure*** ***TBD***

Note: Contact Lonnie Duke if you would like to observe planned field work events

Technology Demonstration Projects (1)

- SS014: Recycled Drywall SBGR
  - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater
  - Installation to be completed November 2016
  - Too early to evaluate performance data
- Multisite Bioaugmentation: EVO and KB-1 Plus
  - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation
  - Injections not complete yet (est. late Nov 2016)
  - Too early to evaluate performance data
- SD034: Washboard SBGR
  - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater
  - Installation to be completed November 2016
  - Too early to evaluate performance data

* SBGR = Subgrade Biogeochemical Reactor

Technology Demonstration Projects (2)

- FT005: Distribution of EVO and KB-1 Plus
  - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater
  - Installation completed May 2016
  - Too early to evaluate performance data
- FT004: Distribution of EVO via SBGR and/or Groundwater Extraction
  - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction
  - Installation completed April 2016
  - Too early to evaluate performance data

Technology Demonstration Projects (3)

- SD031: EVO distribution via Gravel Chimneys
  - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE)
  - Installation completed in April 2015
  - Early indications:
    - Reducing conditions have initiated as expected throughout the TD area and are supporting anaerobic degradation
    - TOC concentrations are increasing at several wells
    - 1,1-DCE (primary COC) concentrations have reduced by 57% (sum of key wells within TD area)
    - Total Molar concentration (sum of CVOCs) has reduced by 49% (sum of key wells within TD area)
    - Recirculation through chimneys has been successful relative to our design assumptions

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