Revised Final

Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
21 June 2017, 0930 Hours

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Section (ISS) conducted the Restoration Program Manager's (RPM) face-to-face meeting on 21 June 2017 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
Monika O'Sullivan	AFCEC/CZOW
William Hall	AFCEC/CZR
Dezso Linbrunner	USACE-Omaha
Adriana Constantinescu (via telephone)	RWQCB
Allison Matthews (via telephone)	RWQCB
Ben Fries	DTSC
Nadia Hollan Burke	USEPA
Indira Balkissoon	Techlaw, Inc.
Jeff Gamlin (via telephone)	CH2M
Doug Berwick	CH2M
Jill Dunphy	CH2M

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 (May 2017)
Attachment 4	CGWTP Monthly Data Sheet (May 2017)
Attachment 5	ST018 Monthly Data Sheet (May 2017)
Attachment 6	Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 17 May 2017 RPM meeting minutes were approved and finalized as written, with the following exceptions:

Ms. Constantinescu requested the following changes: Technology Demonstrations, Site SS014, second bullet should be changed to "Installation was completed in November 2016"; the sentence at the end of the Technology Demonstrations section should read "Ms. Constantinescu asked what the frequency of groundwater sampling at Site SS014 will be after the installation of the SBGR."

Ms. Balkissoon requested the following be added: Scheduled a call to discuss questions that Techlaw raised regarding the nanoEVO smaller droplet size.

B. Action Item Review.

Action items from March 2017 were reviewed.

Action item 1 is ongoing: Ms. O'Sullivan to provide updates on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). 21 June 2017: Ms. O'Sullivan said that they received comments on the Travis AFB site-specific QAPP, and should have responses to those comments ready early next week.

Action Item 2 is closed: Mr. Wray to provide an explanation on how we calculated the volume of water released in a remote, unpopulated area from a worn PVC pipe at site SS029. 21 June 2017: Mr. Berwick explained that the calculations were done the same way as EPA, but the result differed because CH2M used a 0.3 factor, whereas EPA used 0.333. He used 0.3 for 4 inches, because the 4 inch depth quoted for the PVC pipe was not consistent. The resulting quantity is still well below the 100-pound reportable quantity for TCE.

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, which will be held on Wednesday, 19 July 2017, at 0930 hours.

— Community Relations Plan (CRP): No change was made to the schedule. Mr. Anderson noted the title change to "Community Relations Plan" per Department of Defense policy, to ensure continuity in similar plans across the DoD. The frequently updated technical material will be moved to a website; and the static elements of community relations, which includes community involvement opportunities, will remain in a hard copy document. This is to address RAB comments on the Draft CRP. The EPA stated that their preference is to use the word 'Involvement' in the document title rather than 'Relations," per EPA guidance, the EPA Community Involvement Handbook. The EPA expressed concern for the schedule and timing of the CRP document and website updates. The team agreed to discuss this outside of the meeting.

— Work Plan for the Fourth Five-year Review: No change was made to the schedule. The Work Plan is anticipated to be submitted to the regulators for review in 2017, with the actual Five-Year Review following in 2018.

— Potrero Hills Annex (FS, PP, and ROD): No change was made to the schedule. The responsible parties are working on responses to Regional Water Quality Control Board (RWQCB) comments on the Draft Offsite Perchlorate Investigation Program Data Gap Investigation Work Plan.

— Site LF044 Investigation Work Plan: Response to Comments and Final due date was changed to 31 May 2017 to reflect the actual date.

— Data Gap Investigation Results Technical Memorandum for Soil Sites SD033, SD043, and SS046: The CH2M Task Lead was changed to Leslie Royer. Predraft to AF/Service Center date was changed to 28 June 2017. The rest of the dates were changed accordingly.

— Site SS016 Data Gap Investigation Technical Memorandum: No change was made to the schedule.

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

— Quarterly Newsletters (July 2017): No change was made to the schedule.

— 2016 Annual GRISR: No change was made to the schedule.

— 2016 Annual CAMU Monitoring Report: Draft to Agencies date was changed to 30 June 2017, the rest of the dates were changed accordingly. EPA requested that DTSC review this document.

— Site SD034 Technology Demonstration Construction Completion Report: No change was made to the schedule. EPA comments have been received. DTSC will confirm if they will have any comments. RWQCB will not have comments on this document.

— POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW051, OW053, and OW054: No change was made to the schedule. Mr. Berwick noted that they have responded to comments provided, but the team is adding more information for the next draft. Once the language is approved, it will be applied to other oil-water separator

documents as appropriate. Mr. Hall suggested submitting the draft-final with a redline correction, and to add a note to review added material only for ease of review and approval.

— POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW052, OW055, and OW057. No change was made to the schedule.

— Site SS014 Subsite 1 POCO Technology Demonstration Construction Completion Report: Agency comments due date was updated to 2 June 2017, to reflect the actual date. The rest of the dates were changed accordingly. The final document has been submitted.

— Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum: No change was made to the schedule. Mr. Anderson said that the changes made to Site ST028 Technical Memorandum will be incorporated into this Site ST032 document.

Ms. Burke indicated that EPA would like the annual Land Use Control (LUC) Report included in the MMDS. Mr. Anderson informed the team that this document is not a reviewable document, as stated in the soil ROD, and is therefore not included in the MMDS. Mr. Anderson said that he will email the regulators next year to let them know when to expect the annual LUC Report.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, May 2017 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 4.4 million gallons of groundwater were extracted and treated during the month of May 2017. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 104.2 gallons per minute (gpm). Electrical power usage was 13,107 kWh, and approximately 10,499 pounds of CO_2 were created (based on DOE calculation). Approximately 1.21 pounds of volatile organic compounds (VOCs) was removed in May. The total mass of VOCs removed since startup of the system is 487.0 pounds.

Optimization Activities for SBBGWTP: No optimization activities are reported for the month of May 2017.

Central Groundwater Treatment Plant, May 2017 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 22.8% uptime with approximately 378,800 gallons of groundwater extracted and treated during the month of May 2017. All treated water was discharged to the storm sewer system. The average flow rate for the CGWTP was 39.4 gpm. Electrical power usage was 713 kWh for all equipment connected to the Central Plant, and approximately 1,416 pounds of CO_2 were generated. Approximately 0.73 pounds of VOCs were removed from groundwater

by the treatment plant in May. The total mass of VOCs removed since the startup of the system is 11,464 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of May 2017.

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

The LF007C Groundwater Treatment Plant has been offline since 16 December 2016, in accordance with the US Fish and Wildlife Service requirements, due to the presence of standing water in the associated vernal pools.

ST018 Groundwater (MTBE) Treatment Plant, May 2017 (see Attachment 5)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 90.8% uptime with approximately 282,240 gallons of groundwater extracted and treated during the month of May 2017. All treated water was discharged to the sanitary sewer system. The average flow rate for the ST018 GWTP was 7.4 gpm. Electrical power usage for the month was 166 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 123 pounds. Approximately 0.07 pound of BTEX, MTBE and TPH was removed in May by the treatment plant, and approximately 0.02 pound of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 41.6 pounds, and the total MTBE mass removed since startup of the system is 10.2 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 ST018 GWTP: No optimization activities to report for the month of May 2017.

Mr. Duke noted that the Fairfield Sanitary Sewer District (FSSD) approved bypassing the carbon vessels during treatment of the influent within the treatment system. It was decided to continue using the carbon vessels to treat the groundwater until the carbon is spent. The carbon vessels were originally installed, because the system operated under a NPDES permit.

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

Mr. Berwick 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: Site SS014 POCO Technology Demonstration Construction Completion Report; Site LF044 Investigation Work Plan.

Newly Completed Fieldwork: Site OW055 Sidewalk Repairs; Site SD031 Finish Soil Delineation (NE portion of site); 2Q 2017 GRIP Sampling Event; Site SS015 Optimization; Injection Well Installation; Site DP039 Down-gradient Monitoring Well Installation (First Round); Site SD036 Optimization; Injection Well Installation; Site SD031 Optimization; Injection Well Installation.

In-Progress Documents (CERCLA): Community Relations Plan; Site SD034 Technology Demonstration Construction Completion Report; 2016 Annual GRISR.

In-Progress Documents (POCO): POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054; Site FT004 POCO Soil Data Gap Investigation Work Plan

In-Progress Fieldwork (CERCLA): Site FT004 EVO Optimization; Site TS060 Removal Action; Site SS015 EVO Optimization.

In-Progress Fieldwork (POCO): Site OW056 Excavation/Closure.

Planned Documents (CERCLA): 2016 Annual CAMU Monitoring Report (June); Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, and SS046 (July); Site SS016 Data Gap Investigation Technical Memorandum (TBD); Work Plan for Fourth Five-year Review (TBD).

Planned Documents (POCO): POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW052, OW055, and OW057 (TBD); Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum (TBD).

Fieldwork Planned (CERCLA): Site SD036 EVO Optimization (July); Site DP039 Install down-gradient monitoring wells (2^{nd} round) (July); Well Development (July): Site SD034 Install bollards around SBGR (July); Site DP039 Repair SBGR distribution headers (July); Site SD031 EVO Optimization (August); Site LF044 Sediment Sampling (2017).

Fieldwork Planned (POCO): Site FT004 POCO Soil Data Gaps Investigation (Sept).

Mr. Gamlin reported on the Technology Demonstration Projects:

- Site SS014: Recycled Drywall Subgrade Biochemical Reactor “SBGR”.

  - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater.
  - Installation was completed November 2016.
  - First Quarter performance results:
    - TPH-G: 99% reduction in source area (1,900 to 14 J mg/L), 18% for remaining 7 site wells
    - TPH-D: 98% reduction in source area (5,500 to 130 J mg/L), 33% for remaining 7 site wells
    - Benzene: 98% reduction (22 to <0.4 mg/L), 49% for remaining 7 site wells
- 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 were completed (Nov 2016).
  - Limited TOC dispersal at Site SD036, so install additional injection wells and reinject with nanoEVO in 2017.
  - Too early to evaluate performance data.
- Site SD034: Washboard SBGR.
  - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater.
  - Installation was completed November 2016.
  - Installed six (6) SBGR trenches.
  - Too early to evaluate performance data.
- Site 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.
  - Slightly elevated TOC and reduced COC concentrations in the north, but too early to evaluate performance data.
  - May evaluate optimization of the GET in southern portion of site.
- Site 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.
  - Limited TOC dispersal, additional EVO injection underway with nanoEVO to determine if this can enhance TOC dispersal.
  - COC concentrations have declined
    - ~50% total molar reduction plume-wide through first year
    - Max monitoring well TCE concentration reduced from 560 to 140 mg/L
  -
- Site 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.
    - Recirculation through chimneys has been successful relative to our design assumptions.
    - 1,1-DCE (primary COC) concentrations have reduced by 93% (sum of key wells within TD area, excluding two (2) wells to SW that increased).
    - Total Molar concentration (sum of CVOCs) has reduced by 84% (sum of key wells within TD area, excluding two (2) wells to SW that increased).
    - Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this area).

EPA Reported on Greener Cleanups:

Ms. Burke presented the Greener Cleanups national workgroup spreadsheet with the intent of standardizing and tracking monthly greener cleanup metrics. The EPA is looking for feedback on its usefulness. She noted that this is not a requirement; if this proves easy to use, it may be required in the future. She noted that it might be useful to track how much a particular remedy saved compared to a baseline, compare sites, and track progress.

Mr. Duke stated that most of the sites at Travis AFB are beyond the baseline phase, but Mr. Gamlin commented that he's seen the spreadsheet and might be able to use sites where we do have the baseline data; perhaps Site DP039.

Mr. Hall noted that this is outside of the scope of the PBC, so participation at this time would be voluntary. Mr. Gamlin responded that he would talk to Mr. Wray and see if this could be funded internally, due to the emphasis on sustainability.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

Mr. Fries said that he will be on vacation the month of July returning on 7 August 2017. Mr. Fries will email Mr. Duke and cc Ms. Cumberland with the DTSC point of contact (POC) in his absence. He added that someone will be tasked with reviewing the 2016 Annual GRISR in his absence. Mr. Fries said he will be calling in to the July RPM meeting.

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

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

The RPM face-to-face meeting is scheduled for 9:30 PM PST on 21 June, 2017. **The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then #.**

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

   B. EPA GREENER CLEANUP METRICS

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

   MEETING SCHEDULE

NOTES: AFTER THE RPM MEETING, 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.

(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 Relations Plan Travis AFB, Glenn Anderson CH2M, Jill Dunphy**	**Work Plan for the Fourth Five-year Review Travis AFB, Glenn Anderson Tetratech, Joachim Eberharter**
Scoping Meeting	**NA**	**06-02-17**
Predraft to AF/Service Center	08-23-16	TBD
AF/Service Center Comments Due	09-07-16	TBD
Draft to Agencies	09-28-16	TBD
Draft to RAB	09-28-16	TBD
Agency Comments Due	10-28-16 (11-28-16)	TBD
Response to Comments Meeting	**TBD**	**TBD**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	TBD	TBD
Draft Final Due	TBD	TBD
Final Due	TBD	TBD

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 LF044 Investigation Work Plan Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald	Data Gap Investigation Results Technical Memorandum for Soil Sites SD033, SD043, and SS046 Travis AFB, Glenn Anderson CH2M, Leslie Royer	Site SS016 Data Gap Investigation Technical Memorandum Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	04-26-16	06-28-17	TBD
AF/Service Center Comments Due	05-10-16	07-13-17	TBD
Draft to Agencies	06-27-16	07-27-17	TBD
Draft to RAB	06-27-16	07-27-17	TBD
Agency Comments Due	07-28-16	08-28-17	TBD
Response to Comments Meeting	**08-17-16**	**09-20-17**	**TBD**
Response to Comments Due	08-31-16 (05-31-17)	10-04-17	TBD
Draft Final Due	NA	NA	NA
Final Due	08-31-16 (05-31-17)	10-04-17	TBD
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

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, Doug Berwick** **CAPE, Meg Greenwald**
Scoping Meeting	**NA**
Predraft to AF/Service Center	06-03-16
AF/Service Center Comments Due	06-17-16
Draft to Agencies	07-19-16
Draft to RAB	07-19-16
Agency Comments Due	08-19-16
Response to Comments Meeting	**09-21-16**
Response to Comments Due	10-06-16 (05-05-17)
Draft Final Due	NA
Final Due	10-06-16 (05-05-17)
Public Comment Period	NA
Public Meeting	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**Quarterly Newsletters (July 2017) Travis, Glenn Anderson**	**2016 Annual GRISR Travis AFB, Glenn Anderson CH2M, Leslie Royer**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	NA	04-21-17
AF/Service Center Comments Due	NA	05-22-17
Draft to Agencies	07-05-17	06-07-17
Draft to RAB	NA	06-07-17
Agency Comments Due	07-17-17	07-10-17
Response to Comments Meeting	**TBD**	**07-19-17**
Response to Comments Due	07-18-17	08-02-17
Draft Final Due	NA	NA
Final Due	07-18-17	08-02-17
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**2016 Annual CAMU Monitoring Report Travis AFB, Glenn Anderson CH2M, Levi Pratt**	**Site SD034 Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M, Levi Pratt**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	02-09-17	03-23-17
AF/Service Center Comments Due	02-24-17	04-06-17
Draft to Agencies	06-30-17	05-02-17
Draft to RAB	06-30-17	05-02-17
Agency Comments Due	07-31-17	06-02-17
Response to Comments Meeting	**08-16-17**	**06-21-17**
Response to Comments Due	08-30-17	07-06-17
Draft Final Due	NA	NA
Final Due	08-30-17	07-06-17
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL POCO DOCUMENTS		
Life Cycle	**POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW051, OW053, and OW054** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick**	**POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW052, OW055, and OW057** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	11-07-16	02-01-17
AF/Service Center Comments Due	11-21-16	02-15-17
Draft to Agencies	01-19-17	TBD
Draft to RAB	01-19-17	TBD
Agency Comments Due	02-21-17	TBD
Response to Comments Meeting	**03-15-17**	**TBD**
Response to Comments Due	TBD	TBD
Draft Final Due	NA	NA
Final Due	TBD	TBD
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL POCO DOCUMENTS		
Life Cycle	**Site SS014 Subsite 1 POCO Technology Demonstration Construction Completion Report** **Travis AFB, Glenn Anderson** **CH2M, Levi Pratt**	**Site ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	03-01-17	04-25-17
AF/Service Center Comments Due	03-15-17	05-09-17
Draft to Agencies	04-12-17	TBD
Draft to RAB	04-12-17	TBD
Agency Comments Due	05-12-17 (06-02-17)	TBD
Response to Comments Meeting	**05-17-17**	**TBD**
Response to Comments Due	06-15-17 (06-16-17)	TBD
Draft Final Due	NA	NA
Final Due	06-15-17 (06-16-17)	TBD
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 199 **Reporting Period: 2 May 2017 – 31 May 2017** **Date Submitted: 16 June 2017**

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 May 2017 reporting period.

Table 1 – Operations Summary – May 2017

Initial Data Collection:	5/2/2017 07:40	**Final Data Collection:**	5/31/2017 15:30
Operating Time:	Percent Uptime:	Electrical Power Usage:	
SBBGWTP: 704 hours	**SBBGWTP:** 100%	**SBBGWTP:**	13,107 kWh (10,499 lbs CO_2 generated[a])
Gallons Treated: **4.4 million gallons**		Gallons Treated Since July 1998: **975 million gallons**	
Volume Discharged to Union Creek: **4.4 million gallons**		Gallons Treat From Other Sources: **0 gallons**	
VOC Mass Removed: **1.21 lbs**[b]		VOC Mass Removed Since July 1998: **487.0 lbs**	
Rolling 12-Month Cost per Pound of Mass Removed: $12,780[c]			
Monthly Cost per Pound of Mass Removed: $6,824[c]			

lbs = pounds

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 800 pounds of GHG from GAC change out.

[b] Calculated using May 2017 EPA Method SW8260C 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] – May 2017

FT005[b]				SS029		SS030	
EW01x05	Offline	EW736x05	Offline	EW01x29	1.6	EW01x30	15.1
EW02x05	Offline	EW737x05	Offline	EW02x29	3.6	EW02x30	3.1
EW03x05	Offline	EW742x05	Offline	EW03x29	3.6	EW03x30	16.2
EW731x05	5.4	EW743x05	5.8	EW04x29	Offline[c]	EW04x30	23.9
EW732x05	Offline	EW744x05	4.6	EW05x29	6.7	EW05x30	17.0
EW733x05	Offline	EW745x05	Offline[c]	EW06x29	0.5	EW2174x30	10.5
EW734x05	Offline[c]	EW746x05	Offline	EW07x29	0.1	EW711x30	1.6
EW735x05	1.2	EW2291x05	10.2				
FT005 Total: 27.2				**SS029 Total: 16.1**		**SS030 Total: 87.4**	

SBBGWTP Average Monthly Flow[d]: 104.2 gpm

[a] Flow rates presented are instantaneous measurements taken at the end of the reporting period.
[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] These extraction wells are offline due to pump or other malfunction.
[d] The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time the system was operational.

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

-- = Time not recorded
[a] Shutdown and restart times estimated based on field notes
SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 3 May 2017 sampling event are presented in Table 4. The total VOC concentration (32.92 µg/L) in the influent sample has increased from the April 2017 sample results (16.27 µg/L). TCE (30.9 µg/L), cis-1,2-DCE (1.78 µg/L), and chloroform (0.24 J µg/L) were detected at the influent sampling location. No VOCs were detected at the midpoint and effluent sampling locations.

On 31 May, the FT005 extraction wells were shut down in preparation for the aquifer test scheduled to begin on 5 June.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall decrease in the VOC influent concentration has been observed in the past twelve months; however, the flow rate shows an increasing trend.

On 4 May 2017, the ground surrounding EW01x29 (approximately 50 feet by 20 feet area, approximately 3 to 4 inches deep) was found wet due to a leak in the wellhead piping. The leak was caused by a cracked pipe fitting. Based on the estimated wet area, approximately 2,250 gallons of water may have been discharged to the surface from the leak (50 feet * 20 feet * 0.3 feet * 7.48 gallons per cubic feet = 2,244 gallons). Based on recent groundwater samples from EW01x29 (53 µg/L of TCE), approximately 0.00099 pounds of TCE was discharged as part of this leak (2,244 gallons * 3.89 liter per gal * 53 µg per liter * 2.2E-09 pounds per µg = 0.00099 pounds). Upon discovery, the well was shut down, and the fitting was replaced. Travis AFB will continue to monitor this and other monitoring wells for proper operation and required maintenance.

Optimization Activities

No optimization activities occurred at the SBBGWTP in May 2017.

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. In May 2017, the SBBGWTP produced approximately 10,499 pounds of GHG, which includes approximately 800 pounds of GHG generated from changing out the GAC.

TABLE 4
Summary of Groundwater Analytical Data For May 2017 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	3 May 2017 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Acetone	NA	1.0	0	ND	ND	ND
Bromodichloromethane	NA	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	0.24 J	ND	ND
Chloromethane	NA	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	1.78	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	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	30.9	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 Petroleum Hydrocarbons – Gasoline	50	35	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	24	0	ND	NM	ND

* 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
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

Figure 1

SBBGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

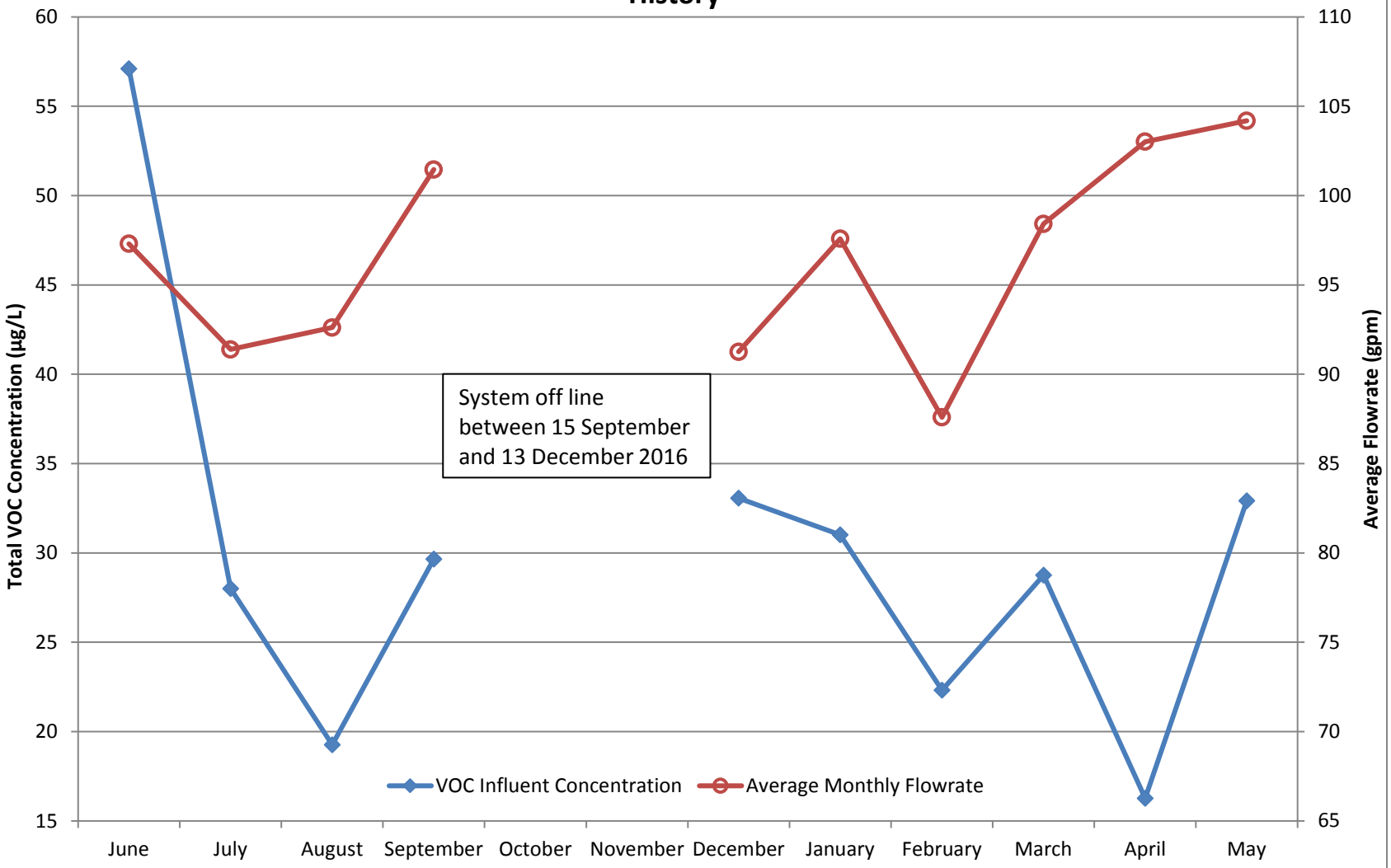
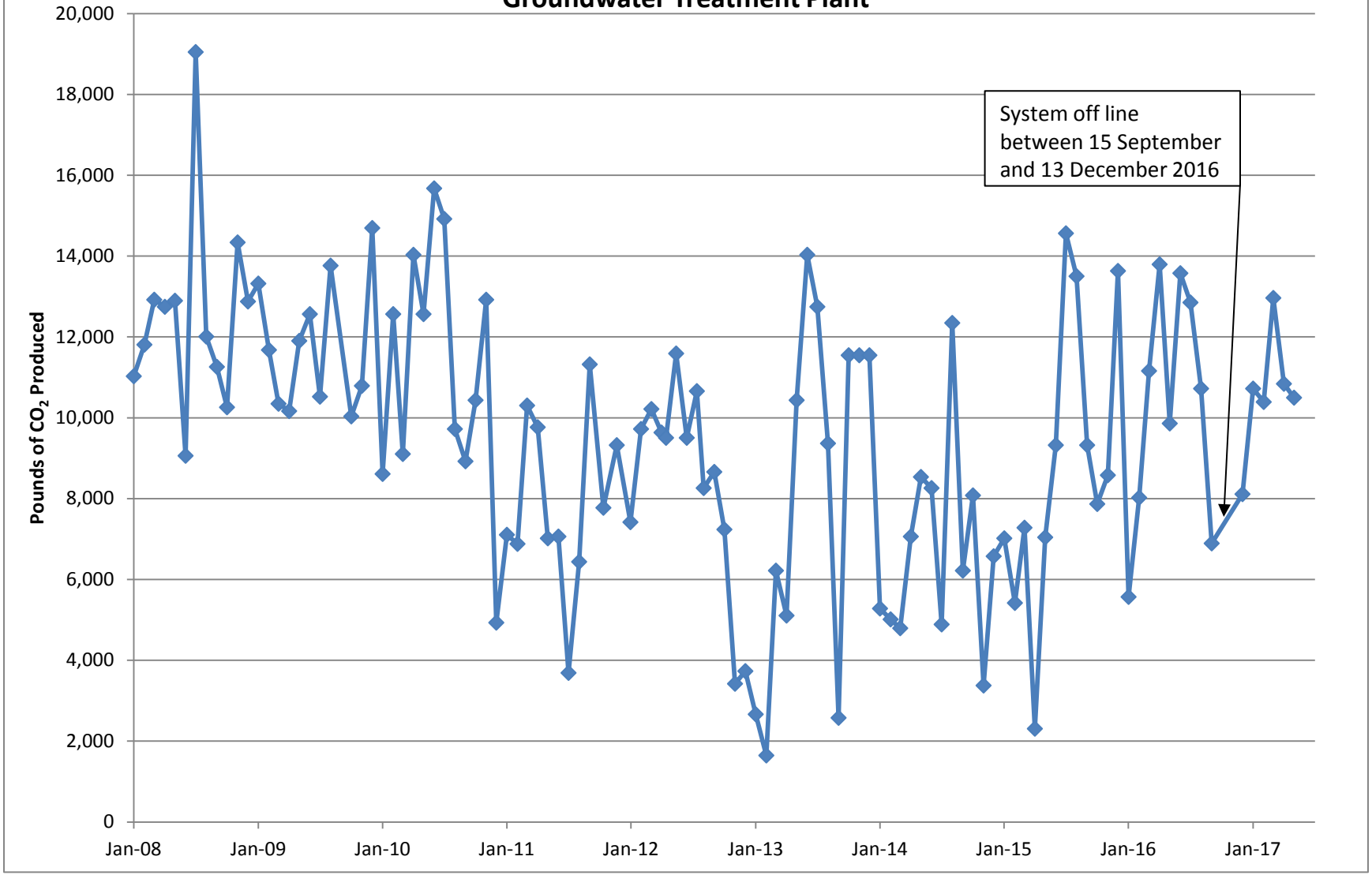


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 214 **Reporting Period: 2 May 2017 – 31 May 2017** **Date Submitted: 16 June 2017**

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 May 2017 reporting period.

Table 1 – Operations Summary – May 2017

Initial Data Collection:	5/2/2017 10:00		**Final Data Collection:**	5/31/2017 16:40	
Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	160 hours	**CGWTP:**	22.8%	**CGWTP:**	713 kWh (1,416 lbs CO_2 generated[a])

Gallons Treated (discharge to storm sewer): **378,800 gallons**

Gallons Treated Since January 1996: **540.5 million gallons**

VOC Mass Removed from groundwater: **0.73 lbs**[b]

VOC Mass Removed Since January 1996: **2,778 lbs from groundwater**; **8,686 lbs from vapor**

Rolling 12-Month Cost per Pound of Mass Removed: $2,203[c]

Monthly Cost per Pound of Mass Removed: $4,540[c]

[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] Calculated using May 2017 EPA Method SW8260C 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 during the monthly reporting period.

Table 2 – CGWTP Average Flow Rates[a] – May 2017

Location	Average Flow Rate Groundwater (gpm)
EW001x16	14.4
EW002x16	11.4
EW003x16	0.1 [b]
EW605x16	6.9
EW610x16	2.9
CGWTP	39.4

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
[b] Flow rate estimated. No gallons recorded during May 2017.
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	Various	--	Various	--	Intermittent shutdowns due to influent and effluent tank high level conditions.
CGWTP	25 May 2017	07:30	25 May 2017	15:45	Troubleshoot the float switch issues in the influent and effluent tanks.

-- = 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 3 May 2017. Sample results are presented in Table 4. The total VOC concentration (230.64 µg/L) in the May 2017 influent sample has decreased from the April 2017 sample (259.32 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 199 µg/L. Cis-1,2-DCE (6.81 µg/L) and vinyl chloride (0.21 J µg/L) were detected in the sample collected after the first carbon vessel. No VOC constituents were detected in the sample collected after the second carbon vessel or in the 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 May 2017.

In May 2017, the CGWTP continued to have float switch issues on the influent tank that caused frequent system shut downs. In the influent tank, the high-high water level alarm was randomly triggered along with the low-low float switch. In each case, the treatment plant was reset and the CGWTP was restarted without issue. On 25 May 2017, the CGWTP was shut down to troubleshoot the float switch issues. A blown fuse was identified and replaced on the influent tank that affected the high-high water alarm. Troubleshooting activities at the CGWTP will continue in June 2017. It is estimated that the treatment plant was shut down for 535 hours during these intermittent outages.

The totalizer for extraction well EW003x16 did not show any flow during May 2017. Troubleshooting to identify any problems with this well and the Site SS016 subgrade biogeochemical reactor (SBGR) will continue in June 2017.

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 a slightly decreasing trend over the past year. However, the overall flow rate through the treatment plant has increased over the past 12 months.

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 four 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 5 April, the bioreactor began the second round of the four-week operational cycle (four weeks on, four weeks off, four weeks on). The bioreactor remained on line for four weeks before groundwater samples were

collected from several DP039 monitoring wells in May 2017. The bioreactor remained operational following the sampling event.

Optimization Activities

No optimization activities occurred at the CGWTP in May 2017. As discussed above, the Site DP039 bioreactor is undergoing an optimization effort to determine the most effective pulse mode duration to optimize distribution of TOC in the subsurface. The data gathered during the optimization effort will be analyzed in June and July 2017.

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 1,416 pounds of GHG during May 2017. This is a decrease from the April 2017 amount of 2,183 pounds because of the decreased operational uptime.

TABLE 4
Summary of Groundwater Analytical Data for May 2017 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	3 May 2017 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Acetone	NA	1.0	0	ND	ND	ND	ND
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	28.3	6.81	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.25 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.29 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	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	0.43 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	0.43 J	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	1.94	ND	ND	ND
Trichloroethene	5.0	0.15 – 1.5	0	199	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	0.21 J	ND	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 Petroleum Hydrocarbons – Gasoline	50	35	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	24	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50 (trigger)	24	0	ND	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	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
	29 November 2016	13 December 2016
	27 December 2016	10 January 2017
	7 February 2017	7 March 2017
	5 April 2017	

MW = Monitoring Well

Figure 1

CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

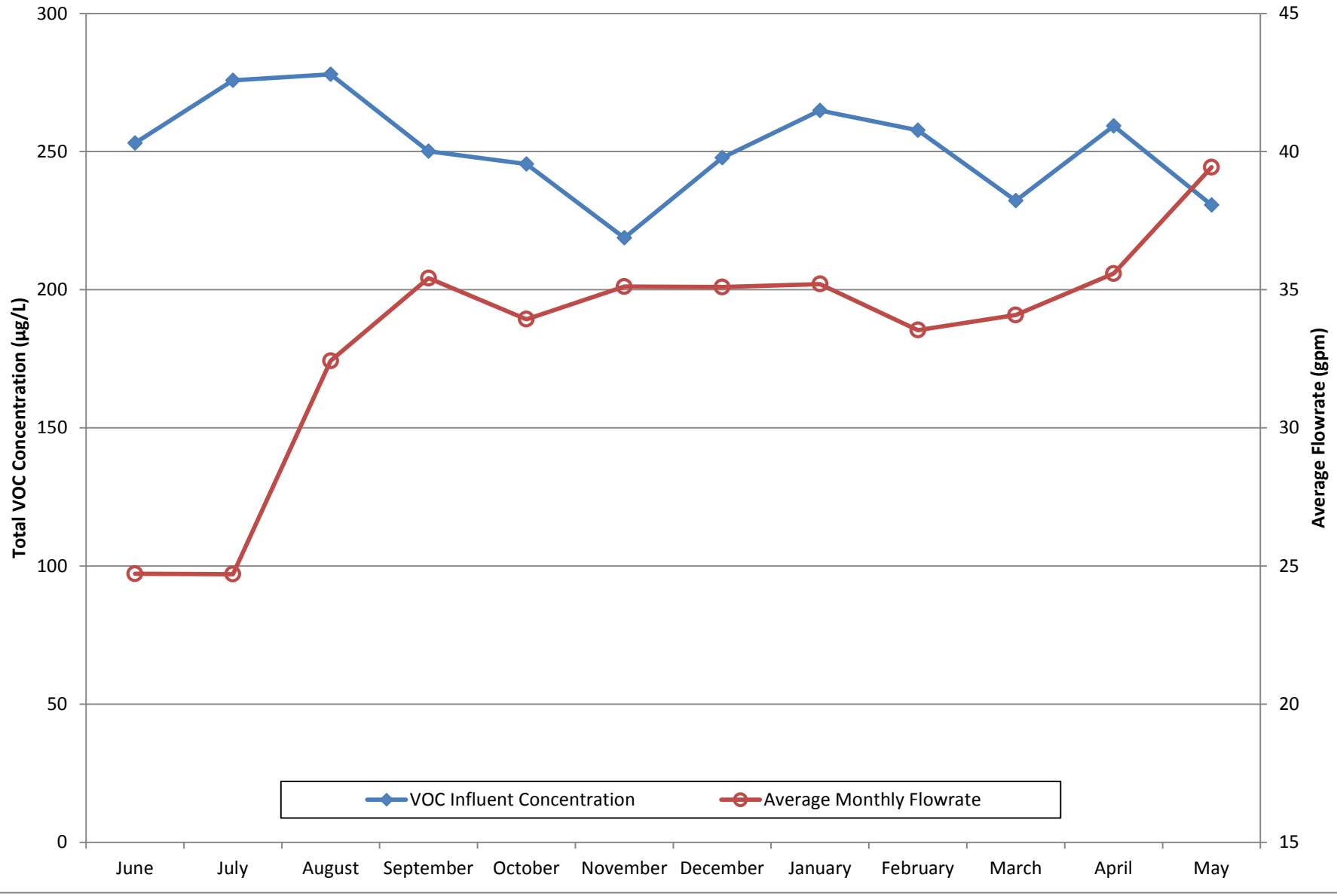
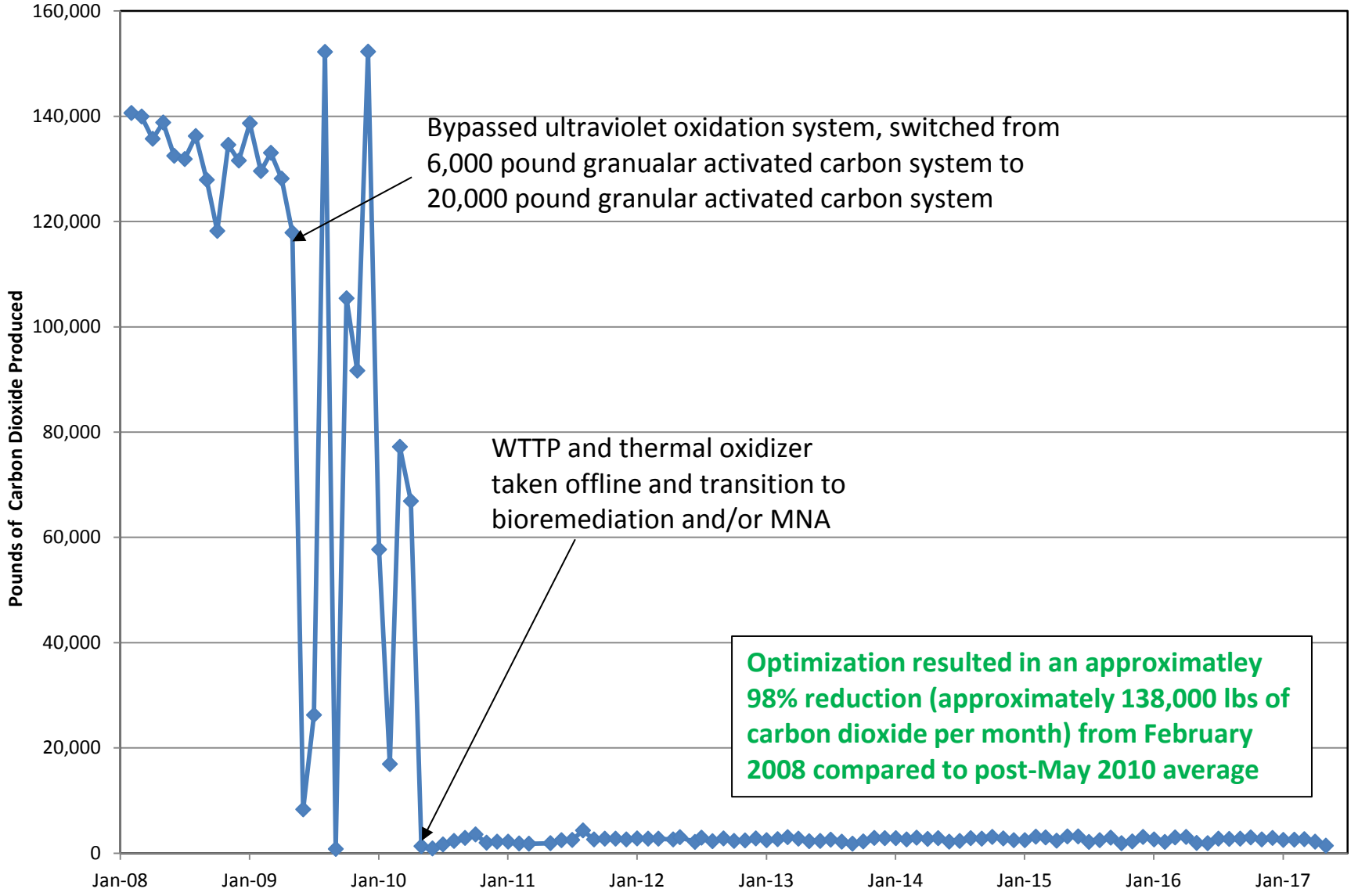


Figure 2

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



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 075 **Reporting Period: 2 May 2017 – 31 May 2017** **Date Submitted: 16 June 2017**

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

System Metrics

Table 1 presents operation data from the May 2017 reporting period.

Table 1 – Operations Summary – May 2017

Initial Data Collection:	5/2/2017 8:55	**Final Data Collection:**	5/31/2017 13:00
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 635 hours		**ST018GWTP: 90.8**%	**ST018GWTP:** 166 kWh (123 lbs CO_2 generated[a])
Gallons Treated: **282,240 gallons**		Gallons Treated Since March 2011: **12.7 million gallons**	
Volume Discharged to Sanitary Sewer: **282,240 gallons**		Final Totalizer Reading: **12,695,759 gallons**	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: **6,199,585 gallons**			
MTBE, BTEX, VOC, TPH Mass Removed: **0.07 lbs**[b]		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: **41.6 lbs**	
MTBE (Only) Removed: **0.02 lbs**[b]		MTBE (Only) Mass Removed Since March 2011: **10.2 lbs**	
Rolling 12-Month Cost per Total Pounds of Mass Removed: $16,891[bc]			
Monthly Cost per Pound of Mass Removed: $43,651[bc]			

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG.
[b] Calculated using May 2017 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 – May 2017

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	1.5	483
EW2016x18	1.4	631
EW2019x18	2.0	631
EW2333x18	2.0	631
Site ST018 GWTP	7.4	635

[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	Various	--	Various	--	Two unknown intermittent shutdowns.

-- = 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 3 May 2017. Results are presented in Table 4. The complete May 2017 laboratory data report is available upon request. The influent concentration for MTBE during the May 2017 sampling event was 9.14 µg/L, which is a decrease from the April 2017 sample result of 52.0 J µg/L. TPH-d and 1,2-DCA were also detected in the influent sample. MTBE was detected in the system effluent sampling location at a concentration of 2.25 µg/L.

All 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 influent and effluent contaminant concentrations to maintain compliance with the Fairfield-Suisun Sewer District discharge permit.

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 steadily decreased between July 2016 and January 2017; however, flow rates began to increase in February 2017 and have remained elevated since March 2017. The total influent concentrations has generally been decreasing over the past 12 months with the exception of April 2017. The decrease was largely due to the decrease in TPH-g concentrations. The influent MTBE concentration has also generally been decreasing over the past 12 months.

In May 2017, the ST018GWTP was shut down twice between 11 May and 25 May, possibly due to power outages. The system was off line for a combined 65 hours. In both instances, the system automatically restarted; therefore, it is unknown exactly when the ST018GWTP shut down. In addition, EW2014x18 was off line from 5 May to 11 May, likely due to a load controller lockout. Travis AFB will continue to monitor the ST018GWTP for proper operation.

Optimization Activities

No optimization activities occurred at the ST018GWTP in May 2017.

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 123 pounds of GHG during May 2017 and treated 282,240 gallons of water, which was a slight increase from April 2017 (121 pounds, treating 261,430 gallons). The amount of GHG produced is directly attributed to the amount of water treated through the system because the only line-power electrical use is for a transfer pump through the GAC system.

TABLE 4
Summary Of Groundwater Analytical Data for May 2017– Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	3 May 2017 (µg/L)	
				Influent	System Effluent
Fuel Related Constituents					
Methyl tert-Butyl Ether	6,400	0.15	0	9.14	2.25
Benzene	25,000[a]	0.15	0	ND	ND
Ethylbenzene	25,000[a]	0.15	0	ND	ND
Toluene	25,000[a]	0.15	0	ND	ND
Total Xylenes	25,000[a]	0.15 – 0.30	0	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50,000[b]	35	0	ND	ND
Total Petroleum Hydrocarbons – Diesel	50,000[b]	24	0	24.7 J	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	24	0	ND	ND
Other					
Acetone	NA	1.0	0	ND	ND
1,2-Dichloroethane	20	0.15	0	0.21 J	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
NA = not applicable
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

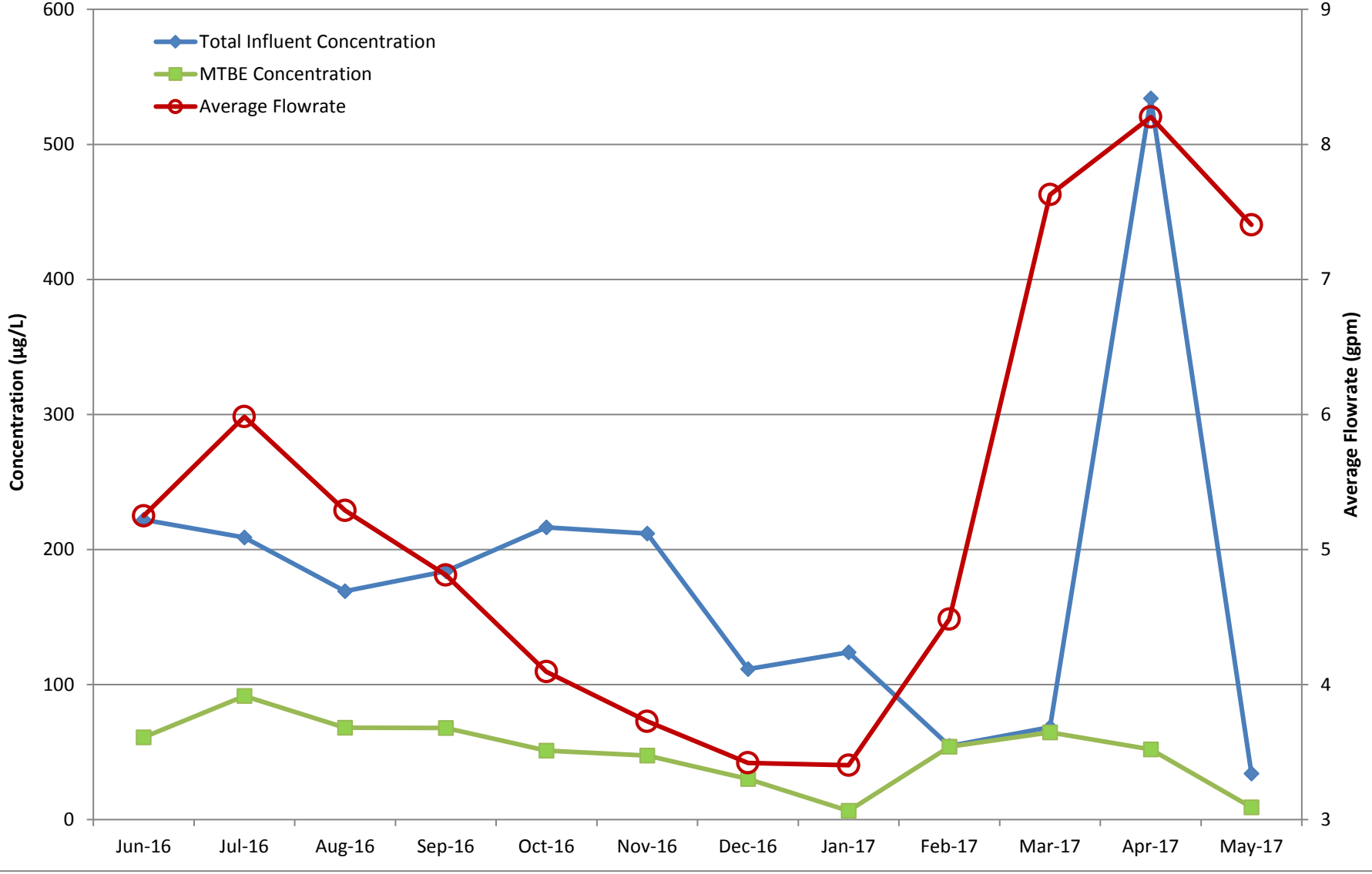
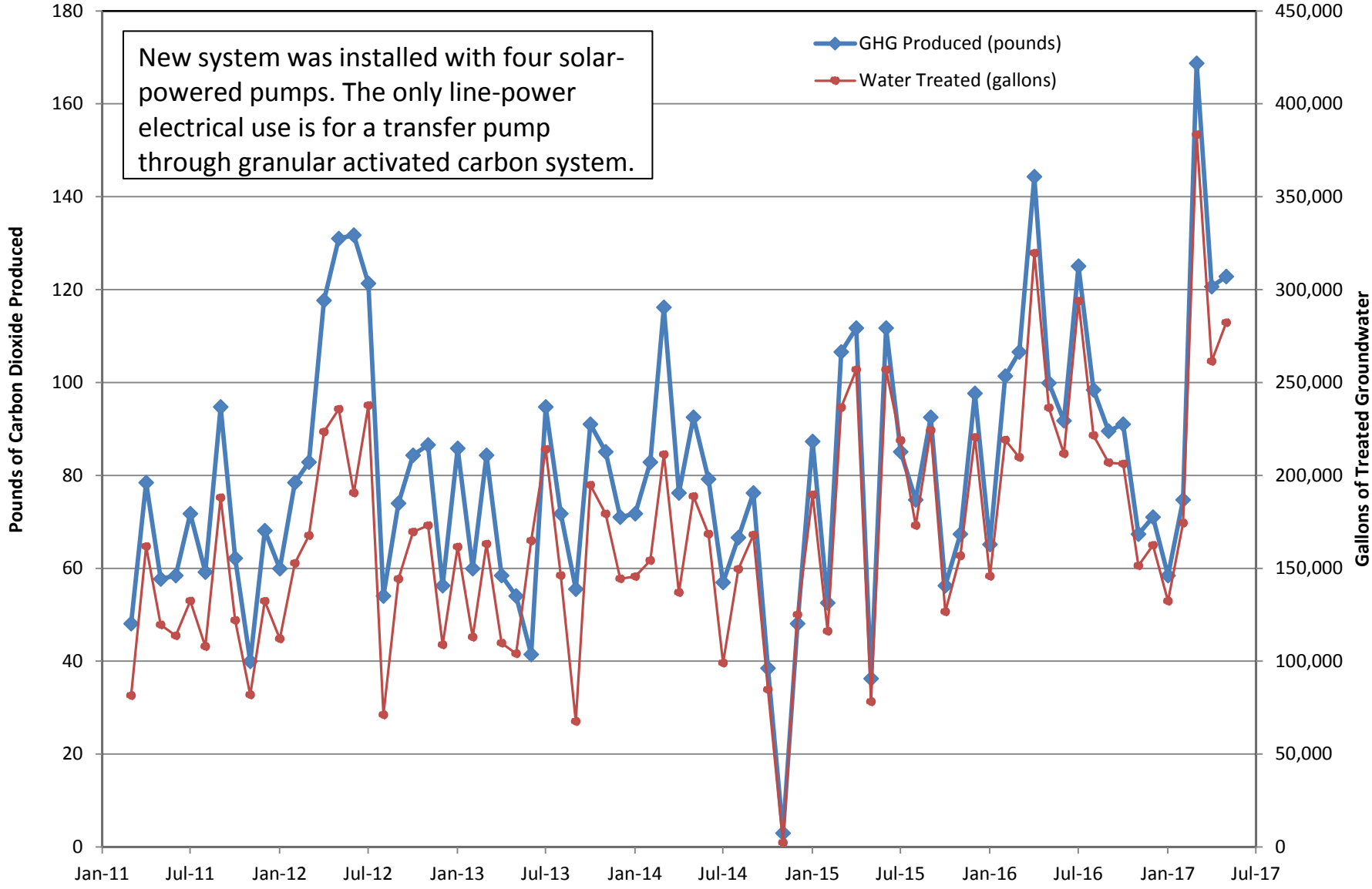


Figure 2

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



Travis AFB
Restoration Program

Program Update

RPM Meeting

June 21, 2017

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
- FT005 Technology Demonstration Construction Completion Report
- Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum
- Site DP039 Remedial Action Construction Completion Report
- ST028 POCO Well Decommissioning/Site Closeout Technical Memorandum
- Site TS060 Removal Action Work Plan

Completed Documents (4)

- Multisite Technology Demonstration Construction Completion Report
- ***SS014 POCO Technology Demonstration Construction Completion Report***
- ***Site LF044 Investigation Work Plan***

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
- Multi-site Bioaugmentation & EVO Injection
- SD034 Technology Demonstration Bioreactor Installation
- OW050 Soil Sampling at Former Location of OWS
- ***OW055 Sidewalk Repairs***
- ***SD031 Finish Soil Delineation (NE portion of site)***
- ***Q2 2017 GRIP Sampling Event***
- ***SS015 Optimization: Injection Well Installation***
- ***DP039 Down-gradient Monitoring Well Installation (1st round)***
- ***SD036 Optimization: Injection Well Installation***
- ***SD031 Optimization: Injection Well Installation***

Documents In-Progress

CERCLA

- Community Involvement Plan
- SD034 Technology Demonstration Construction Completion Report
- ***2016 Annual GRISR***

POCO

- POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054
- Site FT004 POCO Soil Data Gap Investigation Work Plan

Field Work In-Progress

CERCLA

- ***FT004 EVO Optimization***
- ***TS060 Removal Action***
- ***SS015 EVO Optimization***

POCO

- ***OW056 Site Excavation/Closure***

Documents Planned

CERCLA

- 2016 Annual CAMU Monitoring Report — Jun
- Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, SS046 — Jul
- Site SS016 Data Gap Investigation Technical Memorandum — TBD
- Work Plan for Fourth Five-year Review — TBD

POCO

- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW052, OW055, and OW057 — TBD
- ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum — TBD

Field Work Planned

CERCLA

- SD036 EVO Optimization Jul
- ***DP039 Install downgradient monitoring wells (2nd round)*** ***Jul***
- ***Well Development*** ***Jul***
- ***SD034 Install bollards around SBGR*** ***Jul***
- ***DP039 Repair SBGR distribution headers*** ***Jul***
- SD031 EVO Optimization Aug
- LF044 Sediment Sampling 2017

POCO

- FT004 POCO Soil Data Gaps Investigation Sep

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 was completed November 2016
  - First quarter performance results
    - TPH-G: 99% reduction in source area (1,900 to 14 J μg/L), 18% for remaining 7 site wells
    - TPH-D: 98% reduction in source area (5,500 to 130 J μg/L), 33% for remaining 7 site wells
    - Benzene: 98% reduction (22 to <0.4 μg/L), 49% for remaining 7 site wells
- 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 were completed (Nov 2016)
  - Limited TOC dispersal at SD036, so install additional injection wells and reinject with nanoEVO in 2017
  - Too early to evaluate performance data

* SBGR = Subgrade Biogeochemical Reactor

Technology Demonstration Projects (2)

- SD034: Washboard SBGR
  - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater
  - Installation was completed November 2016
  - Installed six (6) SBGR trenches.
  - 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
  - Slightly elevated TOC and reduced COC concentrations in the north, but too early to evaluate performance data
  - May evaluate optimization of GETs in southern portion of site

Technology Demonstration Projects (3)

- 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
  - Limited TOC dispersal, additional EVO injection underway with nanoEVO to determine if this can enhance TOC dispersal
  - COC concentrations have declined
    - ~50% total molar reduction plume-wide through first year
    - Max monitoring well TCE concentration reduced from 560 to 140 μg/L

Technology Demonstration Projects (4)

- 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
    - Recirculation through chimneys has been successful relative to our design assumptions
    - 1,1-DCE (primary COC) concentrations have reduced by 93% (sum of key wells within TD area, excluding 2 wells to SW that increased)
    - Total Molar concentration (sum of CVOCs) has reduced by 84% (sum of key wells within TD area, excluding 2 wells to SW that increased)
    - Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this area)

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