Final

Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
22 October 2020, 1300 Hours

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Section (ISS) conducted the Restoration Program Manager's (RPM) teleconference on 22 October 2020 at 1300 hours.

Effective 1 June 2020, the 60 AMW/CC at Travis AFB directed Health Protection Condition (HPCON) Bravo (changed from HPCON Charlie) in response to the evolving COVID-19 public health situation in the local area. The base has cancelled all on-base gatherings of more than 10 people, and continues to encourage teleworking and virtual meetings in place of in-person meetings.

All attendees participated via telephone or Microsoft TEAMS due to increased teleworking measures meant to reduce the number of employees on the base at one time. Attendees included:

Lonnie Duke	AFCEC/CZOW
Glenn Anderson	AFCEC/CZOW
Chet Storrs	AFCEC/CZOW
Gene Clare	AFCEC/CZOW
Kurt Grunawalt	Travis AFB/Legal
Lou Briscese	Travis AFB/PA
Dave Leeson	AFCEC/CZRW
Sarah Miller	USACE-Omaha
Brian Boccellato	USACE-Omaha
Paul Gedbaw	USACE-Omaha
Nadia Hollan Burke	EPA
Adriana Constantinescu	RWQCB
Kimiye Touchi	DTSC
Li Wang	DTSC
Mike Wray	CH2M/Jacobs
Leslie Royer	CH2M/Jacobs
Jeff Gamlin	CH2M/Jacobs
Jill Dunphy	CH2M/Jacobs

Handouts distributed prior to the meeting included:

Attachment 1	Meeting Agenda
Attachment 2	Master Meeting and Document Schedule
Attachment 3	SBBGWTP Monthly Data Sheet (September 2020)
Attachment 4	CGWTP Monthly Data Sheet (September 2020)
Attachment 5	LF007C Monthly Data Sheet (September 2020)
Attachment 6	ST018 Monthly Data Sheet (September 2020)
Attachment 7	Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

There were no agency comments on the September 2020 RPM Meeting Minutes; they will be finalized as is.

B. Action Item Review

Action items from September 2020 were reviewed.

Action Item 1 is ongoing: Include the progress of the optimized Emulsified Vegetable Oil (EVO) delivery via solar-powered organic carbon (SPOC) injection system pilot test at Site SS015 during future monthly program updates. October 2020 update: The SPOC has been moved to Site DP039 and is utilizing the new solar panels. Baseline samples have been collected and the system seems to be working well at this new location. This action item remains open.

Action Item 2 is ongoing: Ms. Constantinescu to confer with her SMEs on whether TPH-D detected in the LF007C groundwater extraction treatment system is naturally occurring rather than petroleum based. The decision will be made based on data collected by Jacobs in the July 2020 O&M sampling event (total bacteria count, matrix spike/matrix spike duplicate, and current and historical chromatograms). Ms. Royer will provide this data to the Water Board when it is available. October 2020 update: Based on the data, the TPH reported in samples from this treatment plant is from biogenic rather than petroleum-based sources; the Water Board has concurred that it is acceptable to stop analyzing Site LF007 groundwater samples for TPH. This action item is now closed.

Action Item 3: Mr. Duke will elevate the agencies' request for PFOS/PFOA data from the 6 residential well tests, and will inquire about the timing of the fact sheet. October 2020 update: Mr. Duke provided the validated laboratory results to the agency representatives as requested. This action item is now closed.

Action Item 4: Ms. Touchi will confer with Mr. Forrester if he concurs with the new LUC Maintenance approach at Site SD037, and if documenting DTSC concurrence via the meeting minutes is acceptable. October 2020 update: Mr. Forrester concurred with the approach as well as documenting the concurrence in the September 2020 RPM Meeting Minutes. This action item is now closed.

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

Mr. Anderson reminded everyone that all upcoming meetings will be held as MS Teams teleconferences until California meets the requirements for the "green phase" of COVID-19 reopening; however, the MMDS (which lists in-person meetings and teleconferences) will remain the same. Teammates will be notified if we will resume in-person meetings, but he anticipates that the remainder of meetings in 2020 will be held virtually, and possibly into 2021.

The next RPM meeting is scheduled for 0930 on Wednesday, 18 November 2020, via MS Teams. This will be the final RPM meeting of 2020.

Mr. Anderson briefed the team on the upcoming RAB meeting which will be held virtually starting later in the evening on 22 October. Due to technological challenges and time constraints for planning, this RAB meeting is a prerecorded, Section 508-compliant, PowerPoint presentation uploaded to YouTube. It will be "live" until 30 October, and comments and questions will be accepted via email through that day. Mr. Anderson and Mr. Duke will prepare a summary of the questions and comments by 13 November to include in the meeting minutes. Mr. Duke added that he sent an email to the agency representatives in early September asking for agency feedback to include in the prerecorded presentation, but received no replies. Mr. Duke and Mr. Anderson hope that this is a 'bridge to something better' with respect to the likely need for a virtual meeting in April 2021, and potentially beyond.

Travis AFB Master Document Schedule

There is limited capability for producing document hard copies and CDs due to ongoing COVID-19 restrictions. For now, electronic versions of small documents will be emailed, and larger versions will be distributed via DOD SAFE. Hard copies and CDs cannot be made at the present time due to the CH2M/Jacobs offices being closed for COVID-19, with no access to reproduction equipment.

Ms. Miller emphasized that the Performance Based Remediation Contract ends in September 2021 and cannot be extended to accommodate delayed documents; therefore, timely reviews and on-time submittals are crucial. She acknowledged that several reviews will be occurring around the holidays and asked everyone to do their best to adhere to the schedule. Mr. Duke and Mr. Anderson said they will plan the schedule for remaining documents so that nothing is cutting too close to the end of the contract.

— Community Relations Plan Update (CRP): There was no change to the schedule. Mr. Anderson and Mr. Duke noted that the document was already shifting to include increased web-based access for multiple reasons. Because of the COVID-19 pandemic, there is increased need for additional online access to documents, and now must include considerations for virtual meetings. Because of the uncertainty around COVID, virtual meetings will be needed in the near future and possibly in tandem with in-person meetings in the long-term. Recognizing that rushing to finalize the draft last updated in 2018 will result in an outdated document, Mr. Anderson and Mr. Duke asked the agency representatives if it would be acceptable to move this document to the forthcoming ORC. The agencies agreed. ACTION: Mr. Duke will add a footnote to the November 2020 version of the MMDS indicating that the CRP Update will be finalized as a high priority document under the ORC.

— Site SD031 Soil Remedial Investigation/Feasibility Study (RI/FS): There was no change to the schedule. The Water Board and DTSC submitted comments and approved Air Force responses. The EPA would like their legal team to discuss two comments with the Air Force legal team. Ms. Burke sent Mr. Anderson an email regarding her attorney's availability so a meeting can be set up.

— Quarterly Newsletter (October 2020): The October 2020 newsletter was published on 8 October 2020. This item will be updated next month for the April 2021 newsletter, which will discuss the transition between the Performance Based Remediation (PBR) contract and the ORC.

— 2019 Annual Groundwater Remediation Implementation Status Report (GRISR): The Response to Comments and Final due dates were changed to 22 October 2020 to reflect actual submittal date. This document will be moved to the History section next month.

— 2019 Annual Corrective Action Management Unit (CAMU) Monitoring Report: There were no changes to the schedule. DTSC would like to discuss the Air Force's responses to their comments after today's RPM meeting.

— Site SS016 Soil Remedial Action Completion Report: There were no changes to the schedule. The Air Force has received comments from all agencies and are working on responses to DTSC and EPA comments. The Water Board has accepted the Air Force's responses to their comments.

— Site LF008 Remedial Infrastructure Decommissioning Technical Memorandum: There was no change to the schedule.

— Addendum to the Initial Passive Vent Systems Sampling Work Plan Technical Memorandum: This is a new document; the Travis AFB document lead will be Mr. Anderson; the CH2M document lead will be Ms. Stephanie Curtis. The Predraft to Air Force/Service Center was assigned a due date of 28 October 2020; all other dates were assigned accordingly. The summer sampling event is complete; two more sampling events plus a report on the data must be complete before the contract end date of September 2021. The Air Force and USACE will expedite their review of the Predraft so that the Draft can be submitted for regulatory review earlier than shown on the schedule to allow for the Thanksgiving holiday. In order to get the winter sampling event complete by February 2021, the Air Force proposed possibly gaining regulatory approval for the field work upon acceptance of the Draft and Responses to Comments. The agencies were agreeable to the suggested approach.

— Site FT004 POCO Soil Corrective Action Completion Report: This is a new document; the Travis AFB document lead will be Mr. Anderson; the CH2M document lead will be Mr. Doug Berwick, and the CAPE document lead will be Ms. Meg Greenwald. The Predraft to Air Force/Service Center was assigned a due date of 4 November 2020; all other dates were assigned accordingly. Ms. Constantinescu noted that the Water Board may consider this a primary document, and receiving the document just before the holidays may lead to challenges in completing the review by the scheduled date.

— Technology Demonstration Technical Memorandum: This is a new document; the Travis AFB document lead will be Mr. Anderson; the CH2M document lead will be Mr. Tony Chakurian. All dates are TBD until other documents are finalized. This will be a document covering the technology demonstrations at Travis AFB over the past several years. It will be an important resource for the ORC.

— Potrero Hills Annex (FS, PP, and ROD): There were no updates to the schedule or status of outstanding documents. Mr. Duke noted that the Base Commander has signed the letter requesting permission to sample the old well that used to supply drinking water at the Potrero Hills facility.

— MOVED TO HISTORY:

None

2. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, September 2020 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.455 million gallons of groundwater were extracted and treated in September 2020. All treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 135.7 gallons per minute (gpm). Electrical power usage was 15,248 kilowatt hours (kWh), and approximately 12,884 pounds of CO_2 were created (based on DOE calculation). Approximately 1.04 pounds of volatile organic compounds (VOCs) were removed in September. The total mass of VOCs removed since startup of the system is 530.8 pounds.

Troubleshooting was performed on eight extraction wells in September 2020; details can be found in Attachment 3.

No optimization activities were conducted in September 2020.

Central Groundwater Treatment Plant, September 2020 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 976,360 gallons of groundwater extracted and treated in September 2020. All treated water was discharged to the storm sewer system which discharges to Union Creek. The average flow rate for the CGWTP was 24.4 gpm. Electrical power usage was 1,020 kWh for all equipment connected to the Central Plant, and approximately 1,643 pounds of CO_2 were generated. Approximately 1.63 pounds of VOCs were removed from groundwater by the treatment plant in September. The total mass of VOCs removed since the startup of the system is 11,554 pounds.

The Site SS016 subgrade biogeochemical reactor (SBGR) and the Site DP039 SBGR continued operating in September 2020. After approximately one month of operation with the new infiltration trench at Site DP039, the water inside the new trench is close to the ground surface. On 2 September, the two downgradient DP039 extraction wells were temporarily turned off to allow the water to infiltrate in the trench. On 8 September, extraction well EW2782x39 was restarted; extraction well EW2783x39 remained offline.

Extraction well EW2782x39 was offline from 15 September to 16 September to allow for redevelopment and submersible pump replacement. Extraction well EW2783x39 is offline due to green waste debris that had inadvertently been piled over the well vault; it will remain offline until the debris is cleared, and normal operation can be verified.

No optimization activities were conducted in September 2020.

LF007C Groundwater Treatment Plant, September 2020 (Attachment 5)

The Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) performed at 100% uptime with approximately 113,747 gallons of groundwater extracted and treated in September 2020. All treated water was discharged to the Duck Pond for beneficial reuse. The average flow rate was 2.8 gpm. Approximately 9.48×10^{-4} of a pound of VOCs was removed from groundwater by the treatment plant in September 2020. The total mass of VOCs removed since the startup of the system is 174.4 pounds. There was no electrical power usage statistics, because this plant operates on solar power only.

No optimization activities were conducted in September 2020.

ST018 Groundwater (MTBE) Treatment Plant, September 2020 (see Attachment 6)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 75,535 gallons of groundwater extracted in September 2020. All groundwater was discharged to the Fairfield – Suisun Sewer District. The average flow rate for the ST018 GWTP was 1.9 gpm. Electrical power usage for the month was 44 kWh for all equipment connected to the ST018 GWTP. The total CO_2 discharge equivalent equates to approximately 33 pounds. Approximately 0.02 of a pound of MTBE, BTEX, VOCs, and TPH was removed in September by the treatment plant, and no MTBE-only was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 49.4 pounds, and the total MTBE mass removed since startup of the system is 12.1 pounds.

Note: Electrical power use at the ST018 GWTP is only for the alarm system and a pump that pushes influent tank water to the Fairfield-Suisun Sanitary Sewer line. The four groundwater extraction pumps in the system are all solar powered.

Two extraction wells were shut down for well development and were offline for 6 days, they were developed and restarted with no issue. The total reported flow from the system was lower than the sum of the extraction wells in September 2020. Troubleshooting of the flow meters will be conducted in October.

No optimization activities were conducted in September 2020.

B. Land Use Control Sites, September 2020

Site SS016 KC-46 Hangar

Two extraction wells temporarily powered by a portable generator are now permanently hardwired to the grid and running. The schedule for hangar construction is changing due to unexpected design issues. Currently, installation of the horizontal well is anticipated to start at the end of November, with a 60-day construction period.

Site SD037 Cargo Facility

Once finalized, the September 2020 RPM Meeting minutes concurring with the LUC Maintenance approach will be forwarded to the Travis AFB Civil Engineering department. The meeting minutes will document that the regulatory agencies were informed of planned construction activities in an area where soil LUCs are in place and the agencies concur with the planned construction activities being performed in compliance with the soil LUCs.

C. PFOS/PFOA Program Status, September 2020

- Six additional off-base properties have been identified for PFOS/PFOA sampling and have been sent letters requesting access and permission. Responses are expected in the coming weeks; sampling can begin starting in early-to-mid November.
- The Relative Risk Site Evaluation (RRSE) is out for public review and accepting comments and questions.
- The details of the upcoming Remedial Investigation (RI) are being worked out and will be ready for further discussion with regulators during the January 2021 RPM meeting; the first likely step is to collect samples from existing wells to guide where to collect additional samples.
- The contract for this work was awarded in late August to Sustainment and Restoration Systems (SRS), which includes 7 companies in the contract. A schedule is currently being developed and will be shared with the team once finalized.

3. Presentations:

A. Program Update: Activities Completed, In Progress, and Upcoming (see Attachment 7)

Ms. Royer reported on the status of fieldwork and documents that have been completed, are in progress, or are upcoming. Please refer to Attachment 7 for the full briefing.

Since the passive vent system sampling work is time-critical, Ms. Burke asked if the Air Force could include a presentation on the proposed work during the November 2020 RPM Meeting. The group agreed this would be beneficial to expediting approval of the work plan. Mr. Duke agreed to add this to the agenda for the November 2020 RPM Meeting.

B. Presentation: PFOS/PFOA Treatability Study

Jeff Gamlin presented a video documenting construction of a pilot test for PFAS bioremediation. He noted that there is a need for sustainable remediation approaches that are less expensive and also work to clean up sites more quickly than what is currently available. This is the same kind of path that the industry was on with respect to bioremediation of chlorinated solvents. The pilot test will look at the effect of three different treatment trains on a range of PFAS concentrations in groundwater. The pilot test will run for approximately 10 months before the direction of research and development of the best approach can be determined. The draft video presented will eventually be available for public viewing once approval from all pilot test participants is received. The regulatory agency representatives voiced their support for the pilot test and indicated that they are very interested in the results.

4. New Action Item Review

1. Mr. Duke will add a footnote to the November 2020 version of the MMDS indicating that the CRP Update will be finalized as a high priority document under the ORC.

2. Mr. Duke will add the Initial Passive Vent System Sampling Work Plan to the presentation list on the November 2020 RPM Meeting agenda.

5. PROGRAM ISSUES/UPDATE

None

6. ACTION ITEMS

Item #	Responsible	Action Item Description	Due Date	Status
1.	Mr. Wray and Ms. Royer	Mr. Wray or Ms. Royer to include the progress of the optimized EVO delivery via solar-powered organic carbon (SPOC) injection system pilot test at Site SS015 during future monthly program updates.	Ongoing	Open
2.	Mr. Duke	Mr. Duke will add a footnote to the November 2020 version of the MMDS indicating that the CRP Update will be finalized as a high priority document under the ORC.	18 November 2020	Open
3.	Mr. Duke	Mr. Duke will add the Initial Passive Vent System Sampling Work Plan to the presentation list on the November 2020 RPM Meeting agenda.	18 November 2020	Open

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

The RPM Teleconference is scheduled for 1:00 PM PST on 22 October 2020. **The call-in number will be provided in the MS Teams meeting invite and also in the same email that the meeting materials are provided in. If you are able to participate via MS Teams meeting, you will see the shared documents that will be viewable by all participants.**

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

   B. LAND USE CONTROL SITES

   C. PFOS/PFOA

      1. ESI
      2. RRSE
      3. RI

3. PRESENTATIONS

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

   B. PFOS/PFOA TREATABILITY STUDY

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

   TRIAD DISCUSSION: LF007C TPH REVIEW

NOTES: AFTER THE RPM TELECONFERENCE, BASED ON THE DISCUSSION DURING THE REVIEW OF THE MASTER MEETING AND DOCUMENT SCHEDULE, WE WILL 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.

(2020)
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.)
—	01-15-20	—
02-19-20	—	—
—	03-18-20	—
04-16-20 (Thursday 1:00 PM)	—	~~04-16-20~~
—	05-20-20	—
06-17-20	—	—
—	07-15-20	—
~~08-26-20~~	08-19-20	—
—	09-16-20	—
10-22-20 (Thursday 1:00 PM)	—	10-22-20
—	11-18-20	—
—	—	—

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

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
Life Cycle	**Community Relations Plan Update Travis AFB, Glenn Anderson CH2M, Jill Dunphy**	**Site SD031 Soil Remedial Investigation/Feasibility Study Travis AFB, Glenn Anderson CH2M, Rick Sturm**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	08-23-16	05-24-19
AF/Service Center Comments Due	09-07-16	06-10-19
Draft to Agencies / RAB	09-28-16 (03-22-18)	09-12-19
Agency Comments Due	10-28-16 (04-27-18)	11-12-19 (01-14-20)
Response to Comments Meeting	**TBD**	**08-19-20**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	TBD	08-31-20 (09-01-20)
Draft Final Due	TBD	08-31-20 (09-01-20)
Final Due	TBD	09-30-20

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**Quarterly Newsletter (October 2020) Travis, Glenn Anderson**	**2019 Annual GRISR Travis AFB, Glenn Anderson CH2M, Levi Pratt**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	09-08-20	05-04-20
AF/Service Center Comments Due	NA	06-04-20
Draft to Agencies / RAB	09-15-20	06-25-20
Agency Comments Due	09-29-20	07-27-20 (08-07-20)
Response to Comments Meeting	**10-01-20**	**08-05-20 (08-21-20)**
Response to Comments Due	10-06-20	08-21-20 (10-22-20)
Draft Final Due	NA	NA
Final Due	10-08-20	08-21-20 (10-22-20)
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**2019 Annual CAMU Monitoring Report** **Travis AFB, Gene Clare** **CH2M HILL, Levi Pratt**	**Site SS016 Soil Remedial Action Completion Report** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick** **CAPE, Meg Greenwald**	**Site LF008 Remedial Infrastructure Decommissioning Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M, Mike Wray**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	07-22-20	06-17-20	10-02-20
AF/Service Center Comments Due	08-21-20	07-20-20	11-02-20
Draft to Agencies / RAB	09-09-20	08-14-20	11-16-20
Agency Comments Due	10-09-20	09-14-20	12-17-20
Response to Comments Meeting	**10-22-20**	10-22-20	**01-20-21**
Response to Comments Due	11-05-20	11-05-20	02-03-21
Draft Final Due	NA	NA	NA
Final Due	11-05-20	11-05-20	02-03-21
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Addendum to the Initial Passive Vent Systems Sampling Work Plan Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M, Stephanie Curtis**	**Site FT004 Soil Remedial Action Completion Report** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick** **CAPE, Meg Greenwald**	**Technology Demonstration Technical Memorandum** **Travis AFB, Glenn Anderson** **CH2M, Tony Chakurian**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	10-28-20	11-04-20	TBD
AF/Service Center Comments Due	11-11-20	12-07-20	TBD
Draft to Agencies / RAB	11-25-20	12-22-20	TBD
Agency Comments Due	12-28-20	01-25-21	TBD
Response to Comments Meeting	01-13-21	02-17-21	TBD
Response to Comments Due	01-27-21	03-03-21	TBD
Draft Final Due	NA	NA	NA
Final Due	01-27-21	03-03-21	TBD
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

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

https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL20299915

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 239 **Reporting Period: 2 September 2020 – 30 September 2020** **Date Submitted: 16 October 2020**

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 September 2020 reporting period.

Table 1 – Operations Summary – September 2020

Initial Data Collection:	9/2/2020 13:00	**Final Data Collection:**	9/30/2020 11:00
Operating Time:		Percent Uptime:	
SBBGWTP:	670 hours	**SBBGWTP:**	100%
Electrical Power Usage:			
SBBGWTP:	15,248 kWh (12,884 lbs CO_2 generated[a])		
Gallons Treated: **5.455 million gallons**		Gallons Treated Since July 1998: **1.220 billion gallons**	
Volume Discharged to Union Creek: **5.455 million gallons**		Gallons Treated from Other Sources: **0 gallons**	
VOC Mass Removed: **1.04 lbs**[b]		VOC Mass Removed Since July 1998: **530.8 lbs**	
Rolling 12-Month Cost per Pound of Mass Removed: **$22,366**[c]			
Monthly Cost per Pound of Mass Removed: **$15,924**[c]			

lbs = pounds
[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 1,600 pounds of GHG from GAC change out services averaged to a per month basis.
[b] Calculated using September 2020 EPA Method SW8260C analytical results.
[c] Costs include operations and maintenance, carbon change out, 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] – September 2020

FT005[b]				SS029		SS030	
EW01x05	Offline	EW743x05	Offline	EW01x29	Offline[c]	EW01x30	12.8
EW02x05	Offline	EW744x05	Offline[e]	EW02x29	Offline[c]	EW02x30	Offline[d]
EW03x05	Offline	EW745x05	7.3	EW03x29	25.0	EW03x30	11.7
EW731x05	7.2	EW746x05	Offline	EW04x29	1.7	EW04x30	14.2
EW732x05	Offline	EW2291x05	6.5	EW05x29	5.4	EW05x30	6.3
EW733x05	Offline	EW2782x05	5.7	EW06x29	14.4	EW2174x30	3.7
EW734x05	Offline[d]	EW2783x05	4.6	EW07x29	11.5	EW711x30	3.9
EW735x05	Offline[e]	EW2784x05	10.6			MW269x30	0.5
EW736x05	Offline	EW2785x05	8.0				
EW737x05	Offline	EW2786x05	16.0				
EW742x05	Offline						
FT005 Total: 65.9				**SS029 Total: 58.0**		**SS030 Total: 53.1**	

SBBGWTP Average Monthly Flow[f]: 135.7 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] Extraction wells taken off line because of persistent fouling of the well pumps and associated discharge piping.
[d] Extraction wells were operational; however, well was recharging.
[e] Extraction wells were off line for maintenance and repairs.
[f] 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	--	--	--	

[a] Shutdown and restart times estimated based on field notes
SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the SBBGWTP on 2 September 2020. Sample results are presented in Table 4. The total VOC concentration (23.0 µg/L) in the influent sample increased from the August 2020 sample results (20.8 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 21 µg/L. Cis-1,2-DCE and chloroform were detected in the midpoint sampling location, and no VOCs were detected in the effluent sample. No TPH was detected in the influent and effluent samples.

Figure 1 presents a plot of influent VOC concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall increasing trend was observed for the VOC influent concentrations in the past 12 months. An overall decreasing flow rate trend was also observed in the past 12 months.

In September 2020 troubleshooting was performed on eight extraction wells. The following list presents the maintenance activities and status of those extraction wells:

- EW734x05 – The pump was cleaned, and the well was re-developed. The totalizer was replaced. Well is currently on line.
- EW744x05 – The totalizer and flowmeter were replaced; however, flow rates are still erratic. Well is currently off line. Troubleshooting will continue in October 2020.
- EW2782x05 – The pump was cleaned, and the well was re-developed. Well is currently on line.
- EW2783x05 – The pump was cleaned, and the well was re-developed. Well is currently on line.
- EW2784x05 – The pump was cleaned, and the well was re-developed. Well is currently on line.
- EW2786x05 – The flow meter cartridge was replaced. Well is currently on line.
- EW03x29 – The old galvanized pipe manifold was replaced with Schedule 80 PVC pipe, fittings, and valves. Well is currently on line.
- EW02x30 - The pump was cleaned, and the well was re-developed. Well is currently on line.

Optimization Activities

No optimization activities occurred at the SBBGWTP in September 2020.

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 September 2020, the SBBGWTP produced approximately 12,884 pounds of GHG, which includes approximately 1,600 pounds of GHG generated from GAC change out services averaged to a per month basis.

TABLE 4
Summary of Groundwater Analytical Data for September 2020 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	2 September 2020 (µg/L)		
				Influent	Midpoint	Effluent[b]
Halogenated Volatile Organics						
Acetone	NA	1.9	0	ND	ND	ND
Bromodichloromethane	NA	0.17	0	ND	ND	ND
Chloroform	1.9	0.16	0	ND	0.17 J	ND
Chloromethane	NA	0.30	0	ND	ND	ND
1,1-Dichloroethane	0.50	0.22	0	ND	ND	ND
1,2-Dichloroethane	0.50	0.13	0	0.55 J	ND	ND
1,1-Dichloroethene	0.50	0.23	0	ND	ND	ND
cis-1,2-Dichloroethene	0.50	0.15	0	1.4	1.6	ND
trans-1,2-Dichloroethene	0.50	0.11	0	ND	ND	ND
Dichlorodifluoromethane	NA	0.31	0	ND	ND	ND
Tetrachloroethene	0.50	0.20	0	ND	ND	ND
1,1,1-Trichloroethane	0.50	0.16	0	ND	ND	ND
1,1,2-Trichloroethane	0.50	0.27	0	ND	ND	ND
Trichloroethene	0.65	0.16	0	21	ND	ND
Vinyl Chloride	0.90	0.10	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	0.50	0.13	0	ND	ND	ND
Ethylbenzene	0.50	0.15	0	ND	ND	ND
Toluene	0.50	0.25	0	ND	ND	ND
Xylenes	0.50	0.10 – 0.18	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	10	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	26	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100	32	0	ND	NM	ND

[a] In accordance with current National Pollutant Discharge Elimination System permit number CAG912002, Order number R2-2017-0048.

[b] Concentrations in **bold** exceeded discharge limits.

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

Figure 1

SBBGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

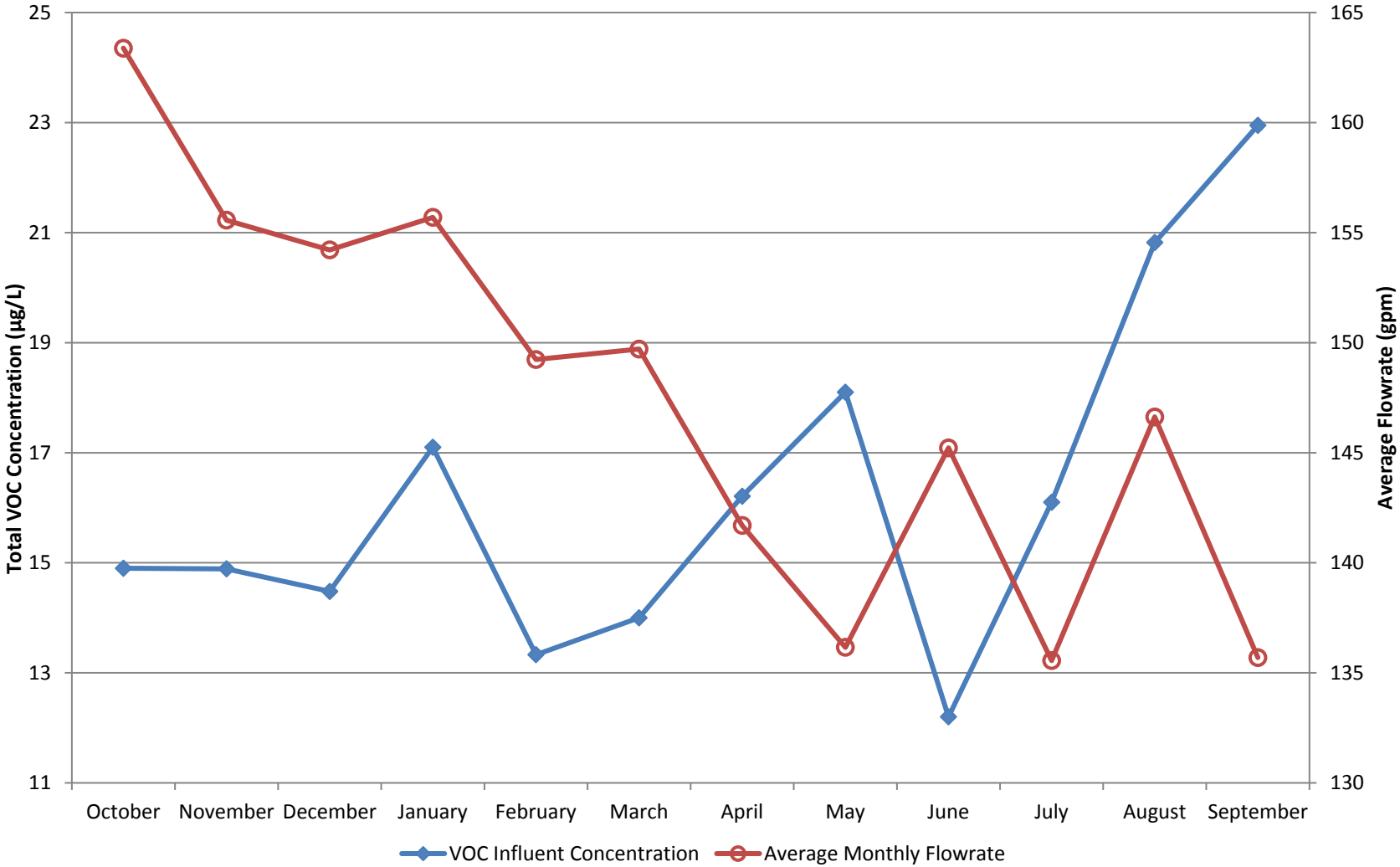
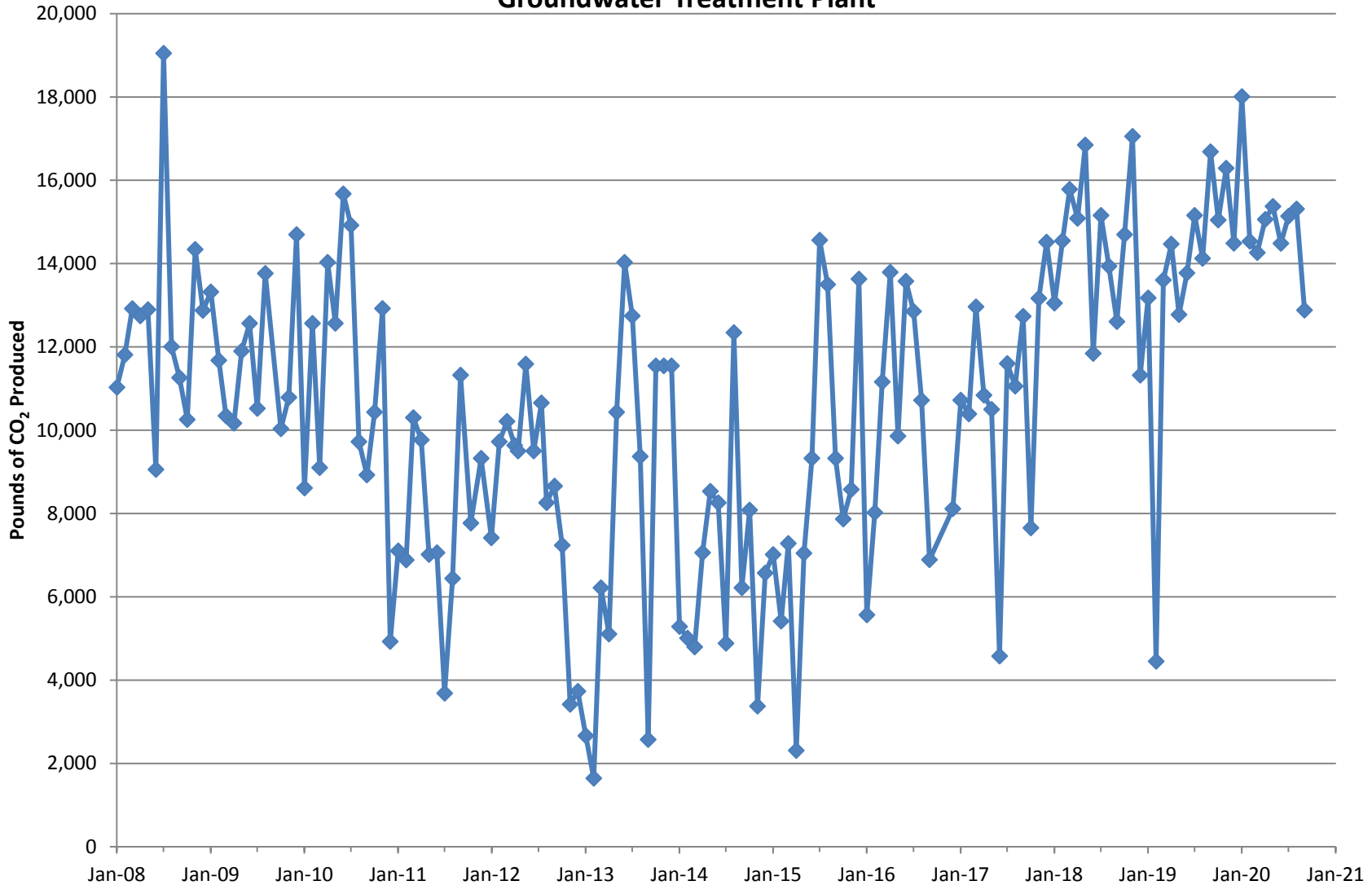


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 254 **Reporting Period: 2 September 2020 – 30 September 2020** **Date Submitted: 16 October 2020**

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 September 2020 reporting period.

Table 1 – Operations Summary – September 2020

Initial Data Collection:	9/2/20 15:00		**Final Data Collection:**	9/30/20 9:45	
Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	667 hours	**CGWTP:**	100%	**CGWTP:**	1,020 kWh (1,643 lbs CO_2 generated[a])

Gallons Treated (discharge to storm sewer): **976,360 gallons**

Gallons Treated Since January 1996: **586.5 million gallons**

VOC Mass Removed from groundwater: **1.63 lbs**[b]

VOC Mass Removed Since January 1996: **2,868 lbs from groundwater**; **8,686 lbs from vapor**

Rolling 12-Month Cost per Pound of Mass Removed: $2,717[c]

Monthly Cost per Pound of Mass Removed: $2,981[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 services averaged to a per month basis.
[b] Calculated using September 2020 EPA Method SW8260C analytical results.
[c] Costs include operations and maintenance, carbon change out, 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] – September 2020

Location	Average Flow Rate Groundwater (gpm)
EW001x16	10.9
EW002x16	6.9
EW003x16[b]	0.1
EW605x16[c]	5.3
EW610x16[c]	1.7
CGWTP	24.4

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
[b] Extracted groundwater from EW003x16 is treated in Site SS016 bioreactor.
[c] Extraction wells EW605x16 and EW610x16 may intermittently be taken off line for short periods during construction activities in the OSA.
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	None	--	--	--	

-- = Date/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 treatment samples were collected at the CGWTP on 2 September 2020. Sample results are presented in Table 4. The total VOC concentration (199.89 µg/L) in the September 2020 influent sample has decreased from the August 2020 sample (211.35 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 140 µg/L. Vinyl chloride was detected in the sample collected after the first carbon vessel, and bromomethane was detected in the sample collected after the second carbon vessel. No VOCs were detected in the effluent sample.

The influent and effluent samples were also analyzed for TPH-g, TPH-d, and TPH-mo. TPH was not detected in samples collected at either location. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough.

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 concentrations show a decreasing trend over the past 12 months along with a decreasing trend for the flow rate through the treatment plant. This pattern of decreasing well yield and VOC concentrations is typical for this time in the dry season.

The Site SS016 subgrade biogeochemical reactor (SBGR), also known as the bioreactor and the Site DP039 bioreactor, continued operating in September 2020.

After approximately a month of operation with the new infiltration trench, the water inside the new trench is close to the ground surface. On 2 September 2020, DP039 extraction wells were temporarily turned off to allow the water to infiltrate. On 8 September, EW2782x39 was restarted, and EW2783x39 remained off line.

On 14 September 2020, the submersible pump was taken off line and removed from EW2782x39 to allow the well to be redeveloped. The well was redeveloped on 15 September 2020. The pump was reinstalled on 16 September 2020 and brought back on line the same day. EW2783x39 remained off line due to a large amount of debris located on top of the well vault. This well will remain off line until the debris can be moved and proper operation of the well can be verified.

Optimization Activities

No optimization activities occurred at the CGWTP in September 2020.

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 1,643 pounds of GHG during September 2020.

TABLE 4
Summary of Groundwater Analytical Data for September 2020 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	2 September 2020 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent[b]
Halogenated Volatile Organics							
Acetone	NA	1.9 – 3.8	0	ND	ND	ND	ND
Bromomethane	5.0	0.21 – 0.42	0	ND	ND	0.45 J	ND
Carbon disulfide	5.0	0.17	0	ND	ND	ND	ND
Chloroform	1.9	0.16 – 0.32	0	ND	ND	ND	ND
Chloromethane	NA	0.30 – 0.60	0	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.15 – 0.30	0	0.43 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.13 – 0.26	0	0.61 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16 – 0.32	0	ND	ND	ND	ND
1,1-Dichloroethane	0.50	0.22 – 0.44	0	ND	ND	ND	ND
1,2-Dichloroethane	0.50	0.13 – 0.26	0	ND	ND	ND	ND
1,1-Dichloroethene	0.50	0.23 – 0.46	0	0.46 J	ND	ND	ND
cis-1,2-Dichloroethene	0.50	0.15 – 0.30	0	53	ND	ND	ND
trans-1,2-Dichloroethene	0.50	0.15 – 0.30	0	3.3	ND	ND	ND
Tetrachloroethene	0.50	0.20 – 0.40	0	0.59 J	ND	ND	ND
1,1,1-Trichloroethane	0.50	0.16 – 0.32	0	ND	ND	ND	ND
1,1,2-Trichloroethane	0.50	0.27 – 0.54	0	ND	ND	ND	ND
Trichloroethene	0.65	0.16 – 0.32	0	140	ND	ND	ND
Vinyl Chloride	0.90	0.10 – 0.20	0	1.5	0.76 J	ND	ND
Non-Halogenated Volatile Organics							
Benzene	0.50	0.16 – 0.32	0	ND	ND	ND	ND
Ethylbenzene	0.50	0.16 – 0.32	0	ND	ND	ND	ND
Toluene	0.50	0.17 – 0.34	0	ND	ND	ND	ND
Total Xylenes	0.50	0.15 – 0.38	0	ND	ND	ND	ND
Other							
Total Petroleum Hydrocarbons – Gasoline (C6 – C10)	50	10	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel (C10 – C28)	50	25	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Motor Oil (C28 – C40)	100	32	0	ND	NM	NM	ND

[a] In accordance with current National Pollutant Discharge Elimination System permit number CAG912002, Order number R2-2017-0048.

[b] Concentrations in **bold** exceeded discharge limits

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

NM = not measured

N/C = number of samples out of compliance with discharge limits.

µg/L = micrograms per liter

ND = not detected

Figure 1

CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

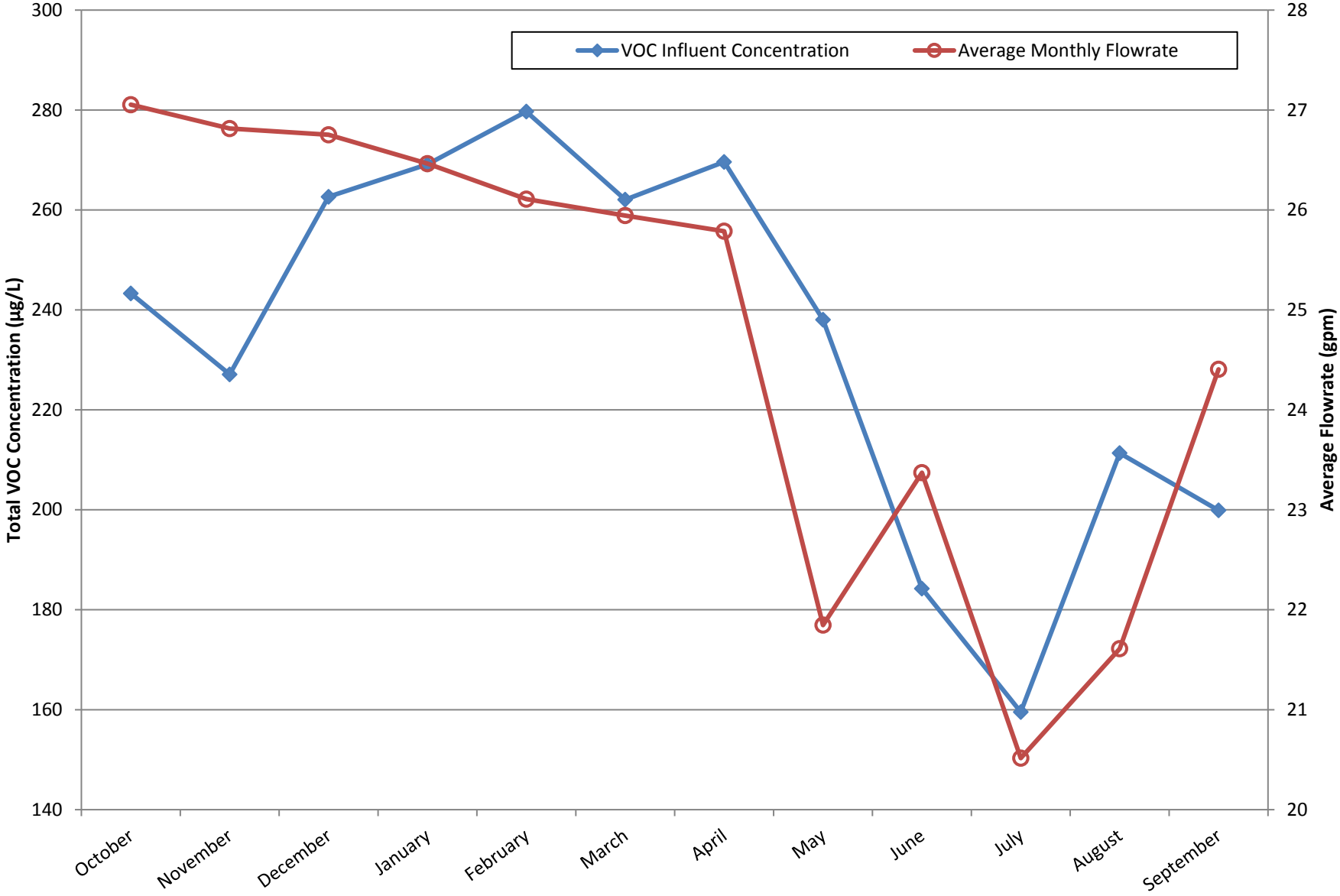
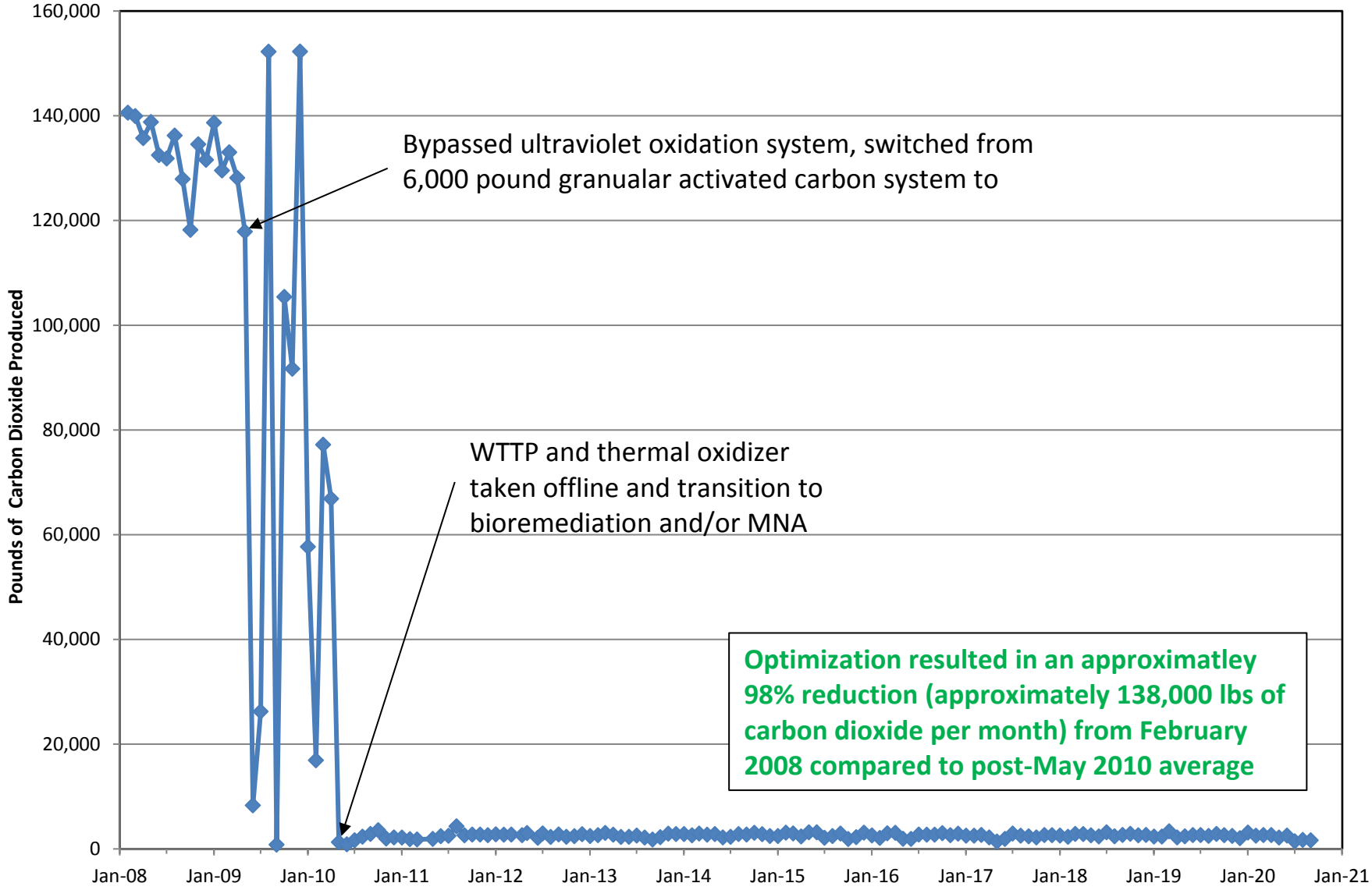


Figure 2

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



Subarea LF007C Groundwater Treatment Plant Monthly Data Sheet

Report Number: 193 **Reporting Period: 2 September 2020 – 30 September 2020** **Date Submitted: 16 October 2020**

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 September 2020 reporting period:

Table 1 – Operations Summary – September 2020

Initial Data Collection:	9/2/2020 14:00		**Final Data Collection:**	9/30/2020 9:00	
Operating Time:		Percent Uptime:	Electrical Power Usage[a]:		
LF007C GWTP:	667 hours	**LF007C GWTP**	100%	**LF007C GWTP:**	0 kWh
Gallons Treated: **113,747 gallons**			Gallons Treated Since March 2000: **90.8 million gallons**		
Volume Discharged to Duck Pond: **113,747 gallons**					
VOC Mass Removed: **9.48×10^{-4} pounds**[b]			VOC Mass Removed Since March 2000: **174.4 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 September 2020 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 – September 2020

Location	Average Flow Rate (gpm)[a]	Total Gallons Processed (gallons)
EW614x07	2.6	104,612[b]
EW615x07	0.4	17,021
LF007C GWTP	**2.8**	**113,747**

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
[b] The extraction pump takes in air from the subsurface, which alters the flow and totalizer. An air-release valve was installed on 12 November 2019 to help minimize the effects on the system.
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	None	--	--	--	

-- = 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

Monthly groundwater samples were collected at the LF007C GWTP on 2 September 2020. Sample results are presented in Table 4. The total VOC concentration in the September 2020 influent sample was 1.0 µg/L. TCE was the only VOC detected at the influent sample location. No VOCs were detected in the midpoint and effluent sample locations. In addition, there were no detections of TPH in the influent or effluent samples.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve (12) months. VOC concentrations, primarily TCE, have been seasonally variable; however, over the last 12 months the trend has decreased. The average flow rate through the LF007C GWTP has slightly decreased over the last 12 months.

Optimization Activities

No optimization activities occurred at the LF007C GWTP in September 2020.

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 a solar-only operated treatment system and does not generate GHG, with exception of a small amount of GHG generated from changing out the GAC averaged to a per month basis.

TABLE 4
Summary of Groundwater Analytical Data for September 2020 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	2 September 2020 (µg/L)		
				Influent	After Carbon 1	Effluent[b]
Halogenated Volatile Organics						
Acetone	NA	2.1	0	ND	ND	ND
Bromodichloromethane	5.0	0.29	0	ND	ND	ND
Bromoform	5.0	0.10	0	ND	ND	ND
2-Butanone	5.0	0.35	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	1.9	0.12	0	ND	ND	ND
Chloromethane	NA	0.30	0	ND	ND	ND
Dibromochloromethane	5.0	0.13	0	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.11	0	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.13	0	ND	ND	ND
1,1-Dichloroethane	0.50	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.50	0.22	0	ND	ND	ND
1,1-Dichloroethene	0.50	0.14	0	ND	ND	ND
cis-1,2-Dichloroethene	0.50	0.10	0	ND	ND	ND
trans-1,2-Dichloroethene	0.50	0.11	0	ND	ND	ND
Methylene Chloride	5.0	0.35	0	ND	ND	ND
Tetrachloroethene	0.50	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	0.50	0.19	0	ND	ND	ND
1,1,2-Trichloroethane	0.50	0.31	0	ND	ND	ND
Trichloroethene	0.65	0.13	0	1.0	ND	ND
Vinyl Chloride	0.90	0.22	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	0.50	0.13	0	ND	ND	ND
Ethylbenzene	0.50	0.15	0	ND	ND	ND
Toluene	0.50	0.25	0	ND	ND	ND
Xylenes	0.50	0.10 – 0.18	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	10	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	5.5	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100	32	0	ND	NM	ND

[a] In accordance with current National Pollutant Discharge Elimination System permit number CAG912002, Order number R2-2017-0048.
[b] Concentrations in **bold** exceeded discharge limits

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

Figure 1

LF007CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

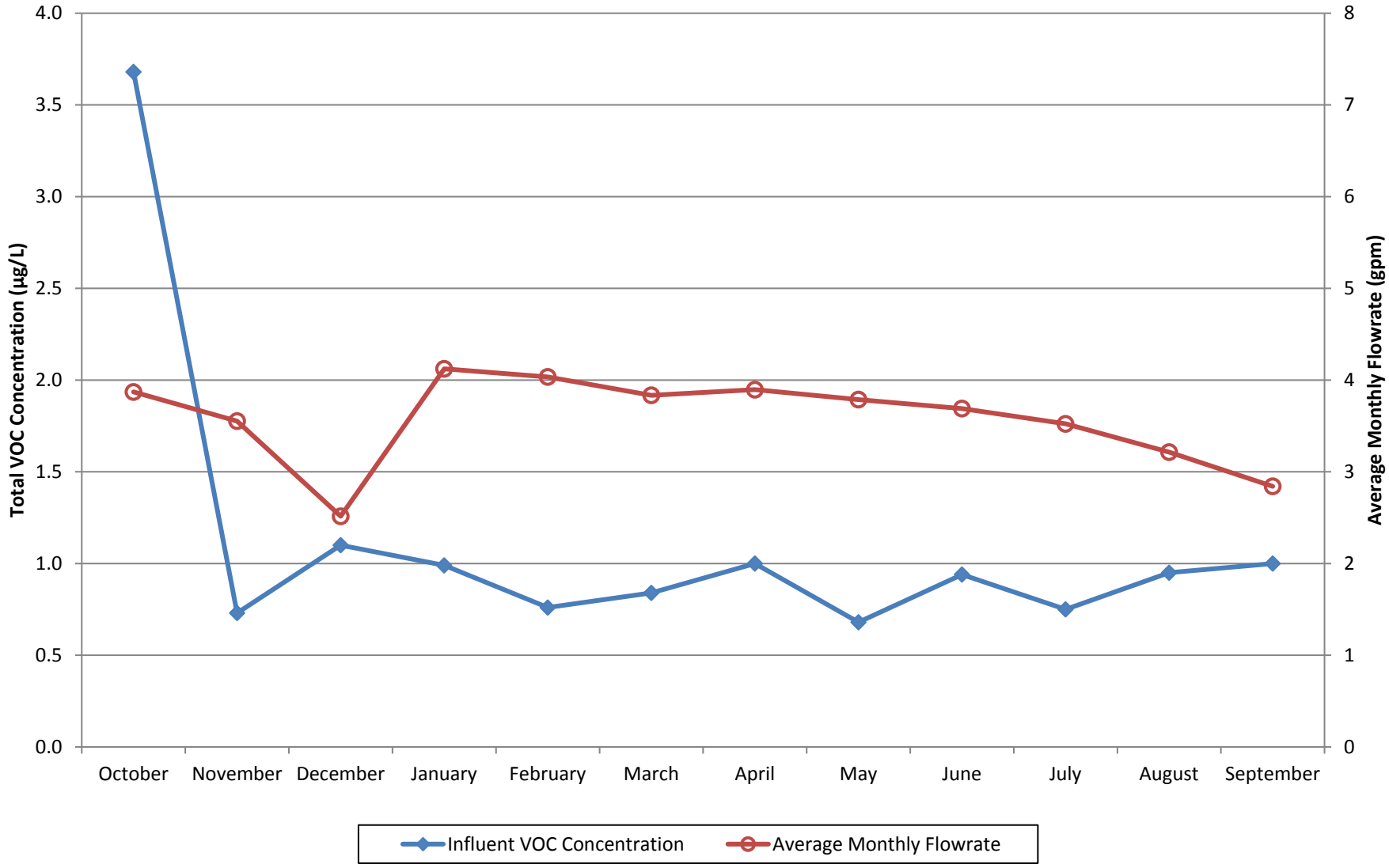
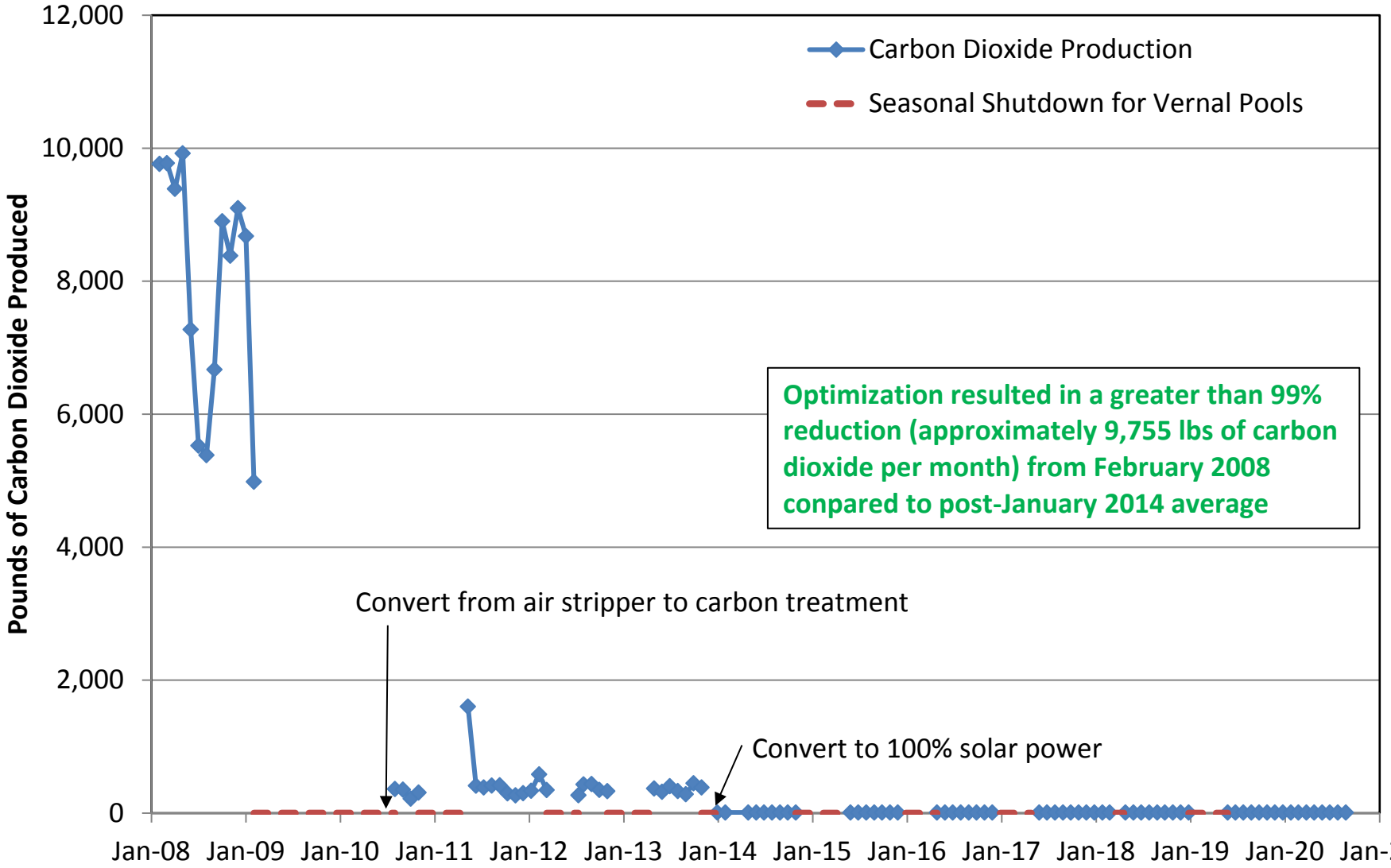


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the NGWTP/LF007C GWTP



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: 115 **Reporting Period: 2 September 2020 – 30 September 2020** **Date Submitted: 16 October 2020**

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

System Metrics

Table 1 presents operation data from the September 2020 reporting period.

Table 1 – Operations Summary – September 2020

Initial Data Collection: 9/2/2020 14:00	**Final Data Collection:** 9/30/2020 9:30
Operating Time:	Percent Uptime:	Electrical Power Usage:
ST018GWTP: 667.5 hours	**ST018GWTP: 100**%	**ST018GWTP:** 44 kWh (33 lbs CO_2 generated[a])
Gallons Extracted: **75,535 gallons**	Gallons Extracted Since March 2011: **19.6 million gallons**
Volume Discharged to Sanitary Sewer: **75,535 gallons**	Final Totalizer Reading: **19,565,094 gallons**
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: **13.1 million gallons**	
MTBE, BTEX, VOC, TPH Mass Removed: **0.02 lbs**[b]	MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: **49.4 lbs**
MTBE (Only) Removed: **0.00 lbs**[b]	MTBE (Only) Mass Removed Since March 2011: **12.1 lbs**
Rolling 12-Month Cost per Total Pounds of Mass Removed: $63,430[bc]	
Monthly Cost per Pound of Mass Removed: $224,970[bc]	

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG.
[b] Calculated using September 2020 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 2020

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	1.2	541
EW2016x18	0.9	541
EW2019x18	0.0	Offline[b]
EW2333x18	2.0	667
ST018GWTP	1.9	667

[a] Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system. The extraction pumps take in air from the subsurface, which alters the flow and totalizer.
[b] Extraction well was turned off with regulatory approval on 25 November 2019 because of low MTBE concentrations.

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	
ST018	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 discharge samples were collected at the ST018GWTP on 2 September 2020. Because the extracted groundwater is no longer treated with carbon prior to discharge to the sanitary sewer, only discharge samples are now collected, rather than influent and effluent samples. Results are presented in Table 4. The complete September 2020 laboratory data report is available upon request. The MTBE discharge concentration during the September 2020 sampling event was 1.8 J µg/L, which is a decrease from the August 2020 sample result of 19 µg/L. A number of other fuel-related constituents were also detected in the system discharge sample and are listed in Table 4.

The Fairfield-Suisun Sewer District does not currently have a discharge 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 discharge contaminant concentrations to maintain compliance with the Fairfield-Suisun Sewer District discharge permit.

Extraction wells EW2014x18 and EW2016x18 were shut down on 16 September 2020 in preparation for well development. Following the well development, the pumps were placed back into the wells on 21 September, and the wells were restarted without issue.

Figure 1 presents plots of the average flow rate and total extracted contaminants (MTBE, TPH-g, TPH-d, TPH-mo, BTEX, and VOCs) and extracted MTBE concentrations at the ST018GWTP over the past twelve (12) months. The average flow rate through the ST018GWTP has been cyclical with typical flow rates decreasing during the dry season (summer and fall) and increasing during the rainy season (winter and spring). The overall average flow rates in the past 12 months show a decreasing trend, which is partially attributed to the shutdown of EW2019x18 in November 2019. The extracted MTBE concentrations and extracted total concentrations have exhibited overall decreasing trends over the past 12 months.

The total reported flow for the system was lower than the sum of the extraction wells in September 2020. This could be due to air in the lines for each operating extraction well or fouling of the system totalizer. Troubleshooting will be completed in October 2020 to help determine the cause of the discrepancy.

Optimization Activities

No optimization activities occurred at the ST018GWTP in September 2020.

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 a majority of the ST018GWTP system.

Figure 2 presents the historical GHG production from the ST018GWTP. The ST018GWTP produced 33 pounds of GHG during September 2020 and removed 75,535 gallons of water. The amount of GHG produced is directly attributed to the amount of water removed through the system because the only line-power electrical use is for a transfer pump to push the water from the system to the sanitary sewer.

TABLE 4
Summary of Groundwater Analytical Data for September 2020 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	2 September 2020 (µg/L)
				System Discharge[b]
Fuel Related Constituents				
Methyl tert-Butyl Ether	6,400	0.25	0	1.8 J
Benzene	25,000[c]	0.16	0	ND
Ethylbenzene	25,000[c]	0.16	0	ND
Toluene	25,000[c]	0.17	0	ND
Total Xylenes	25,000[c]	0.19 – 0.34	0	ND
Total Petroleum Hydrocarbons – Gasoline	50,000[d]	10	0	ND
Total Petroleum Hydrocarbons – Diesel	50,000[d]	15	0	22 J
Total Petroleum Hydrocarbons – Motor Oil	100,000	160	0	ND
Other				
Acetone	NA	1.9	0	ND
2-Butanone (MEK)	NA	2.0	0	7.2
1,2-Dichloroethane	20	0.13	0	ND
Isopropylbenzene	NA	0.19	0	ND
Naphthalene	NA	0.22	0	ND
N-Propylbenzene	NA	0.16	0	ND

[a] In accordance with the Fairfield-Suisun Sewer District Discharge Limitations

[b] Concentrations in **bold** exceeded discharge limits

[c] The limit of 25,000 µg/L is a combined limit for BTEX.

[d] 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.

Figure 1

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

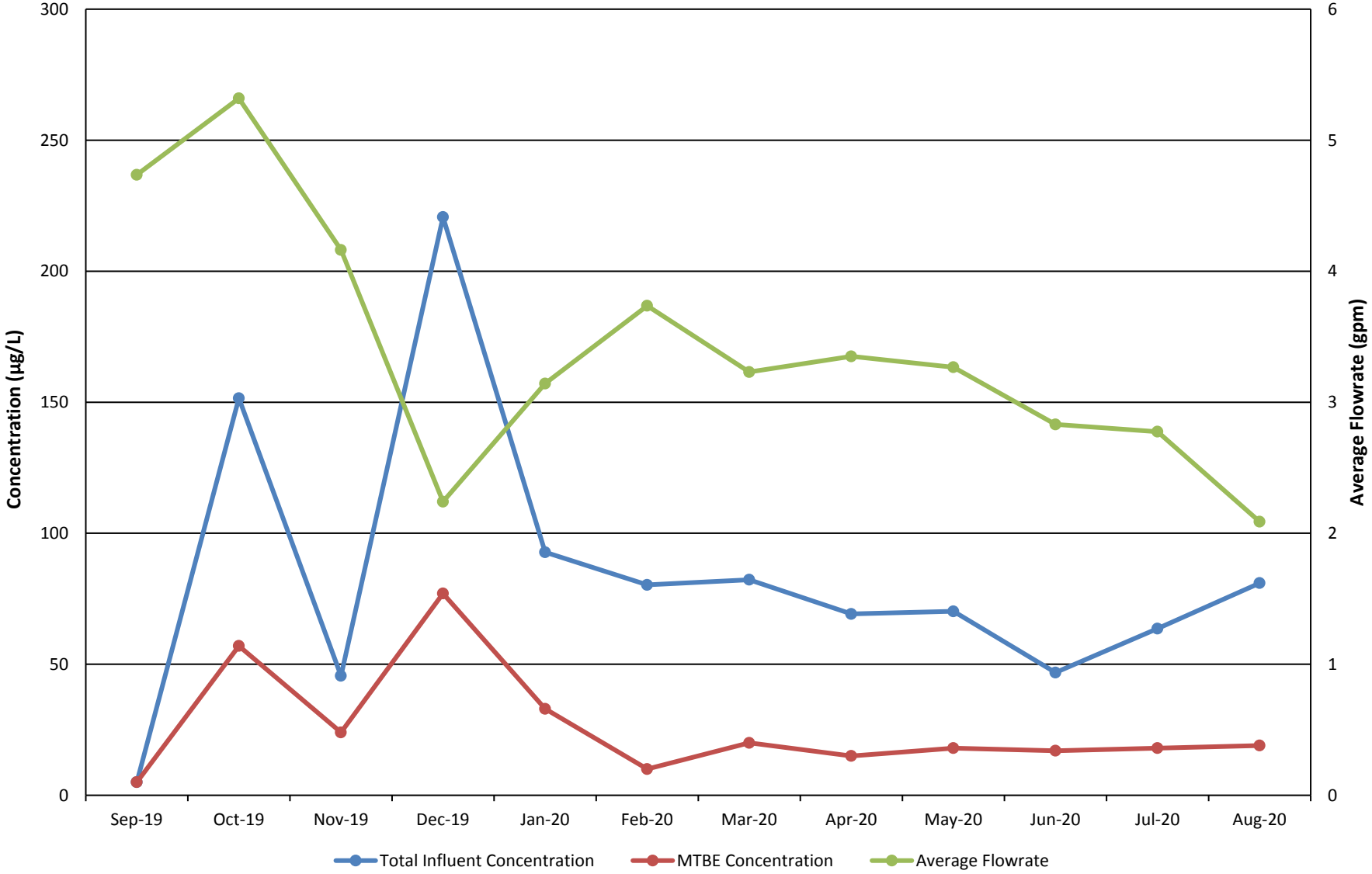
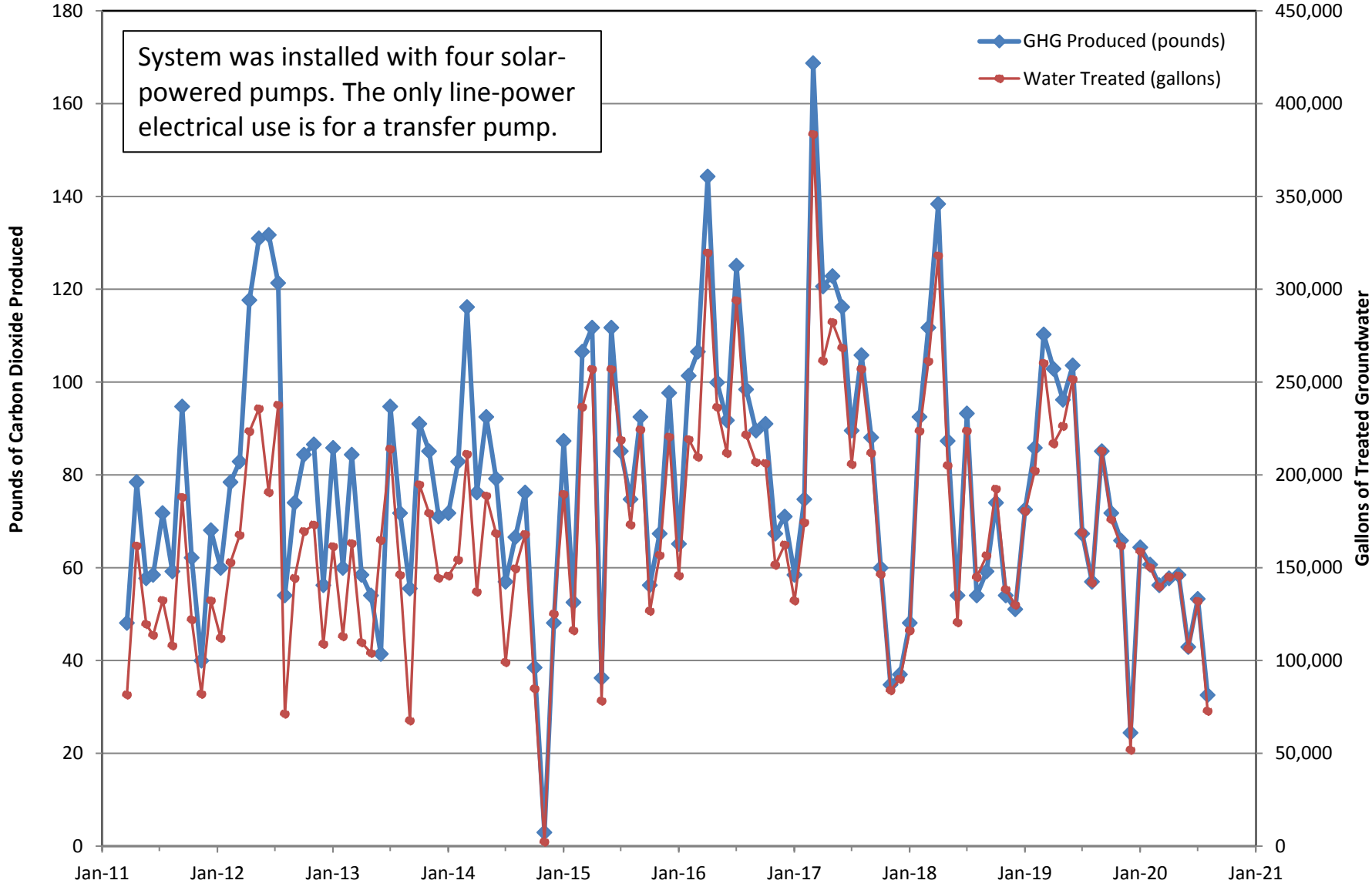


Figure 2

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



Travis AFB
Restoration Program

Program Update

RPM Meeting October 22, 2020

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
- Site FT004 POCO Soil Data Gap Investigation Work Plan
- SD034 Technology Demonstration Construction Completion Report
- POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054
- ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum
- 2016 Annual CAMU Monitoring Report
- Work Plan for Fourth Five-year Review
- 2016 Annual GRISR
- Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, SS046
- TS060 Removal Action Completion Report
- SS035 Site Closure Report
- AOC TA500 Data Gaps Investigation and Closure Report
- Site TS060 No Further Action Proposed Plan
- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057

Completed Documents (5)

- Data Gap Investigation Results, Technical Memorandum for Soil Site SS016
- LF006, SS030, SD031 Aquifer Test Activities Technical Memorandum
- SS015 Soil Sampling Plan
- Monitoring Well Installation Tech Memo for Site DP039, Addendum to the RACCR
- FT005 Extraction System Optimiz-ation Tech Memo
- 2017 Annual CAMU Monitoring Report
- LF044 Sediment Sampling Report
- SD043 RD/RA Work Plan
- SS046 RD/RA Work Plan
- Amendment to the WABOU Soil ROD for sites DP039, SD043, and SS046
- EVO Sites FT004, SS015, SD031, & SD036 Optimization Injections Tech Memo
- LF006 Technology Demonstration Work Plan
- AOC TA500 Well Decommissioning and Site Closeout Tech Memo
- SS015 Soil Sampling Results Tech Memo
- LF006 Technology Demonstration Construction Completion Report
- Subarea LF007C TPH Chromatogram Review TM
- 2017 Annual GRISR
- SS014 POCO Subsites 2, 4, and 5 Closure Evaluation Report
- Addendum to the Site SS016 Groundwater RD/RA Work Plan

Completed Documents (6)

- SD043 Remedial Action Completion Report
- NFA ROD for Old Skeet Range (TS060/TS060A MRA)
- 2018 Annual GRISR
- SS046 Remedial Action Completion Report and Well Decommissioning Work Plan
- 2018 LF007 CAMU Inspection, Monitoring, and Maintenance Report
- Amendment to the NEWIOU Soil ROD for Sites SS016 and SD033
- SS016 RD/RA Work Plan
- 4th Five Year Review Report for Multiple Groundwater, Soil, and Sediment Sites
- SD043 Site Closure Report
- SS046 Well Decommissioning and Site Closeout Tech Memo
- LF008 Remedial Action Evaluation Report
- SD031B POCO Additional Site Investigation Work Plan
- Initial Passive Vent Systems Sampling Work Plan Tech Memo
- Optimization Activities Tech Memo for SD034 and SD037
- SD043 Well Decommissioning and Site Closeout Tech Memo
- FT004 POCO Corrective Action 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
- OW056 Site Excavation/Closure
- Well Re-development
- TS060 Removal Action

Completed Field Work (4)

- FT004 POCO Soil Data Gaps Investigation
- LF044 Sediment Sampling
- FT004 EVO Optimization
- DP039 Install downgradient monitoring wells (2nd round)
- FT005 – Install Extraction Wells
- DP039 Repair SBGR distribution headers
- Q4 2017 GRIP Sampling
- SD036 EVO Optimization
- SS015 EVO Optimization
- SD031 EVO Optimization
- FT005 Installation of Pumps and Controls in 5 New Extraction Wells
- Q1 2018 GRIP Sampling
- SD037 EVO reinjection
- Q2 2018 GRIP Sampling
- SS015 Soil sampling
- TA500 Well Decommissioning
- FT005 EVO injection
- FT004 POCO Soil Investigation
- 3Q 2018 GRIP Sampling
- LF006 Well Installations and Injections
- 4Q 2018 GRIP Sampling
- SD043 Soil excavation
- 1Q 2019 GRIP Sampling
- 2019 Annual LUC Inspections
- SS046 Soil excavation
- 2Q 2019 GRIP Sampling Event
- Well Re-development (11 wells)
- SD037 Injection Well Installation
- SS046 Well Decommissioning

Completed Field Work (5)

- 3rd Quarter 2019 GRIP Sampling
- SD034 O_2 Enhancement
- SS016 SBGR Repairs
- SD037 EVO Re-injection
- 4th Quarter 2019 GRIP Sampling
- SD031B POCO Additional Investigation (Gore Sorber Round 1)
- SD043 Well and GETS Decommissioning
- SS016 Soil excavation
- SS015 SPOC system installation
- SD031B POCO Additional Investigation (Gore Sorber Round 2)
- Annual CAMU Gas Monitoring
- SS015 SPOC Sampling
- 2Q20 GRIP Sampling
- DP039 Bioreactor Rejuvenation
- SD031B Phase 2 Soil, Vapor, & Groundwater Sampling
- DP039 Phytoremediation Trench extension
- Sampling Offbase LF007C wells
- LF008 Well Decommissioning
- Passive Vent Systems Sampling
- FT004 Soil Excavation
- ***SD031B Phase 3 MW Installation & GW Sampling***
- ***PFAS Pilot Test***

Documents In-Progress

CERCLA

- Community Relations Plan Update (revised draft)
- SD031 Soil RI/FS
- 2019 GRISR
- SS016 Soil RACR
- 2019 CAMU Monitoring Report

POCO

None

Field Work In-Progress

CERCLA

- ***4Q20 GRIP***

POCO

None

Documents Planned

CERCLA

- Site LF008 Remedial Infrastructure Decommissioning TM Nov
- ***Addendum to the Initial Passive Vent System Sampling Work Plan*** ***Nov***
- ***Technology Demonstration TM*** ***TBD***

POCO

- ***Site FT004 Soil Remedial Action Completion Report*** ***Dec***

Field Work Planned

CERCLA

- CAMU Topographic Survey Nov

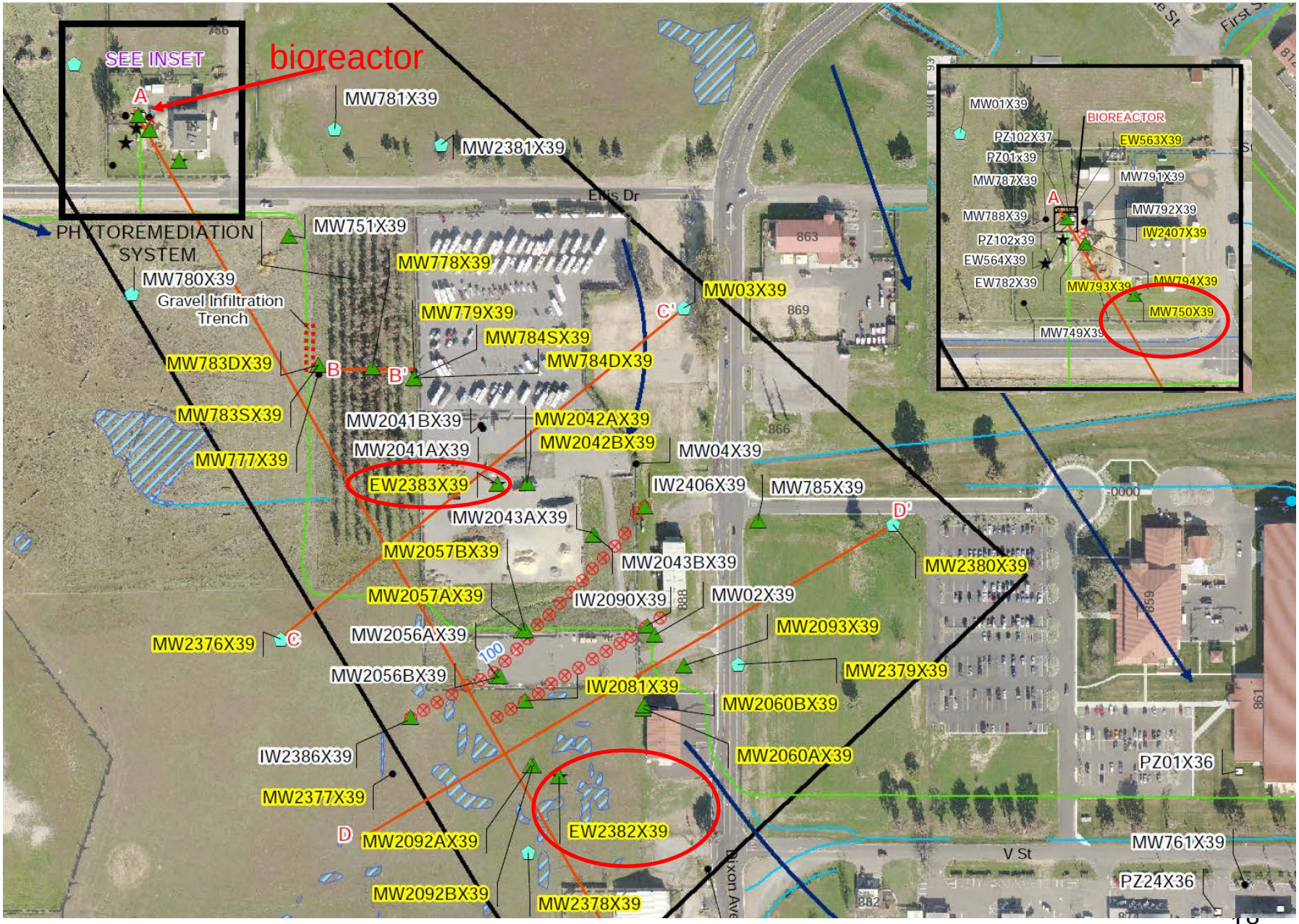
POCO

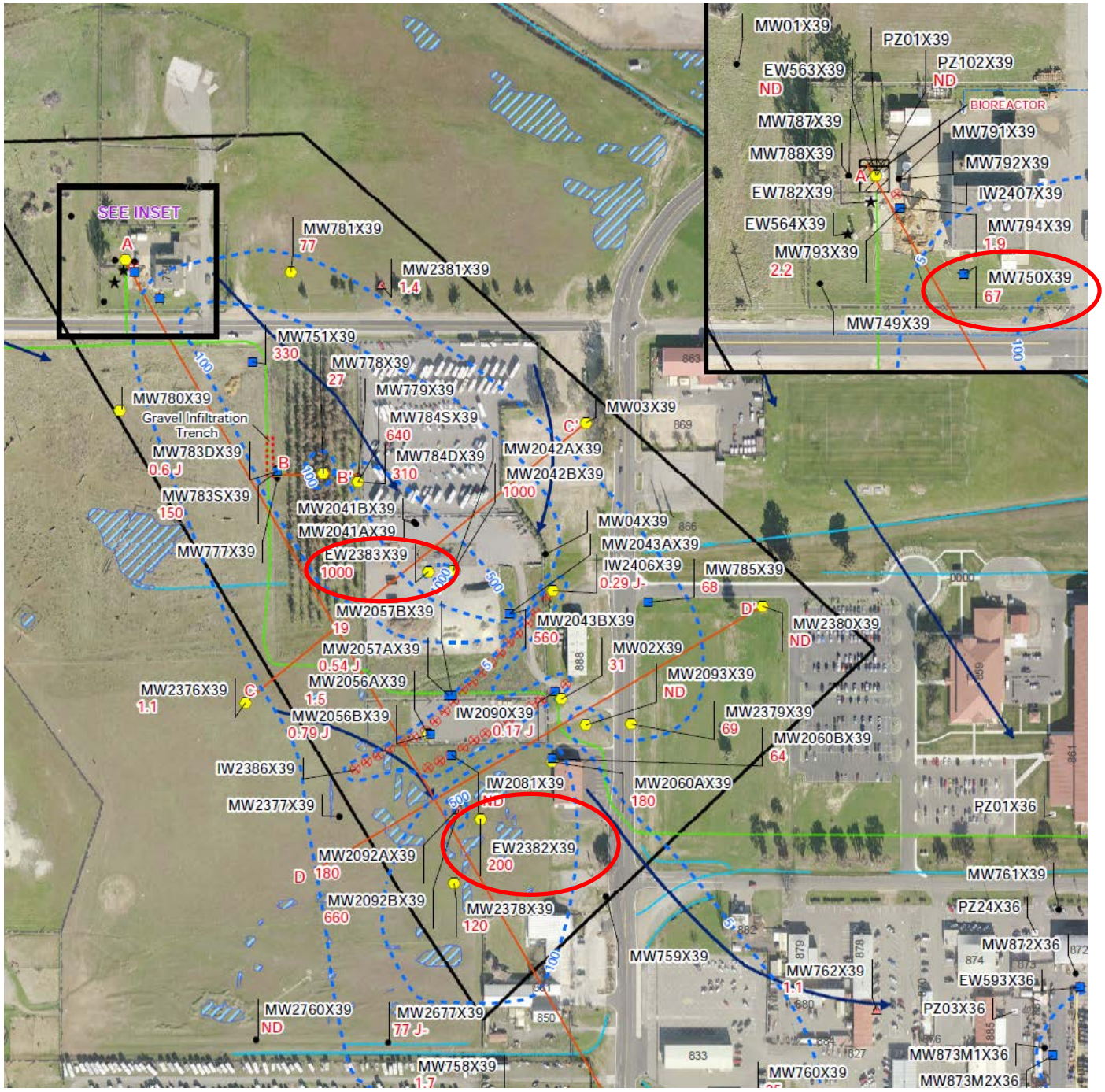
None

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

DP039 PICARD Update

- When bioreactor initiated in 2010, TCE exceeding 1,000 µg/L was treated with minimal VC accumulation
- By 2019, area immediately surrounding bioreactor was below MCLs, and bioreactor treating low (less than 100 µg/L) TCE concentrations
- In 2019, added higher TCE concentration groundwater (1,000 µg/L) to bioreactor; resulted in greater VC accumulation than historically occurred
- VC is expected as part of biological degradation, but we want to limit VC production to the extent possible


SEE INSET
bioreactor
A
MW781X39
MW2381X39
Ellis Dr
PHYTOREMEDIATION SYSTEM
MW751X39
MW778X39
MW780X39
Gravel Infiltration Trench
MW03X39
C'
MW779X39
MW784SX39
MW783DX39
B
B'
MW784DX39
MW783SX39
MW2041BX39
MW2042AX39
MW2041AX39
MW2042BX39
MW04X39
MW777X39
EW2383X39
IW2406X39
MW785X39
MW2043AX39
D'
MW2057BX39
MW2043BX39
MW2380X39
MW2057AX39
IW2090X39
MW02X39
MW2376X39
C
MW2056AX39
MW2093X39
MW2056BX39
IW2081X39
MW2379X39
MW2060BX39
IW2386X39
MW2060AX39
PZ01X36
MW2377X39
D
MW2092AX39
EW2382X39
MW761X39
V St
PZ24X36
MW2092BX39
MW2378X39
Buxton Ave
MW01X39
BIOREACTOR
PZ102X37
EW563X39
PZ01x39
MW787X39
MW791X39
MW788X39
MW792X39
IW2407X39
PZ102x39
EW564X39
EW782X39
MW793X39
MW794X39
MW750X39
MW749X39


SEE INSET
MW01X39
PZ01X39
EW563X39
ND
PZ102X39
ND
BIOREACTOR
MW787X39
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MW788X39
MW792X39
EW782X39
IW2407X39
EW564X39
MW794X39
1.9
MW793X39
2.2
MW750X39
67
MW749X39
MW781X39
77
MW2381X39
1.4
MW751X39
330
MW778X39
27
MW779X39
MW780X39
Gravel Infiltration Trench
MW784SX39
640
MW784DX39
310
MW03X39
MW2042AX39
MW2042BX39
1000
MW783DX39
0.6 J
MW783SX39
150
MW2041BX39
MW2041AX39
MW777X39
EW2383X39
1000
MW04X39
MW2043AX39
IW2406X39
0.29 J-
MW785X39
68
MW2057BX39
19
MW2043BX39
560
MW2380X39
ND
MW2057AX39
0.54 J
MW02X39
31
MW2376X39
1.1
MW2056AX39
1.5
MW2093X39
ND
MW2056BX39
0.79 J
IW2090X39
0.17 J
MW2379X39
69
MW2060BX39
64
IW2386X39
IW2081X39
ND
MW2060AX39
180
MW2377X39
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EW2382X39
200
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180
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660
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120
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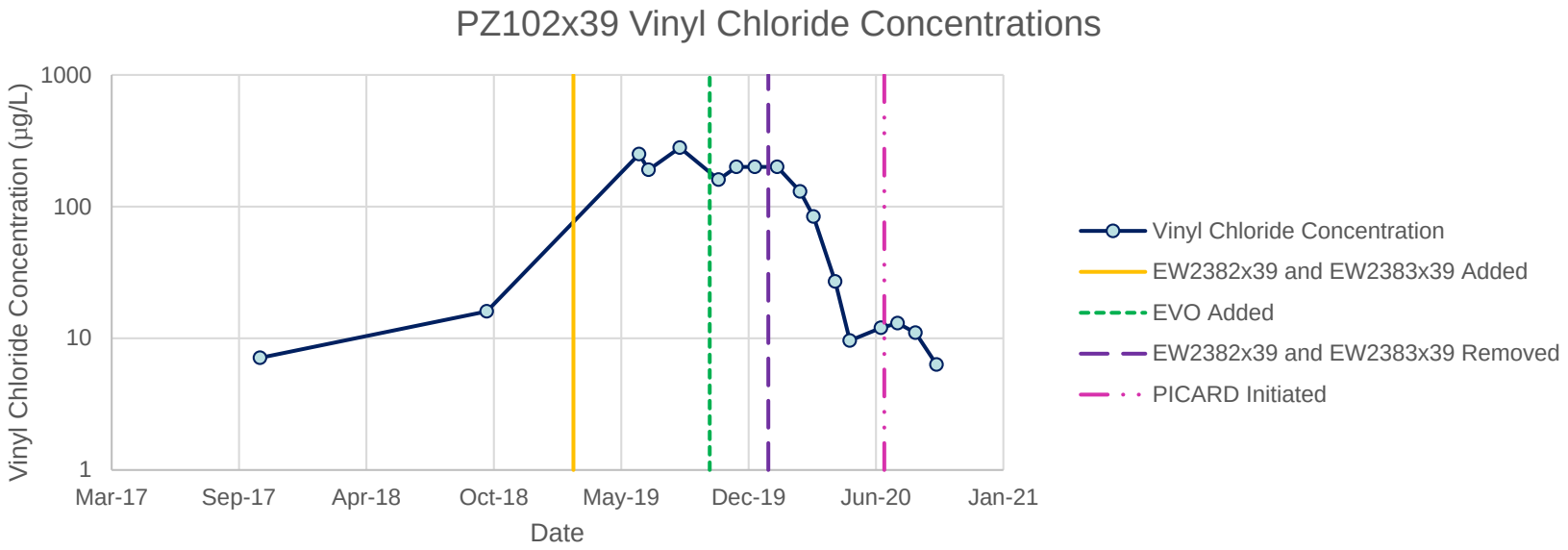
MW762X39
1.1
EW593X36
PZ03X36
MW2760X39
ND
MW2677X39
77 J-
MW873M1X36
MW758X39
1.7
MW760X39
MW873M2X36

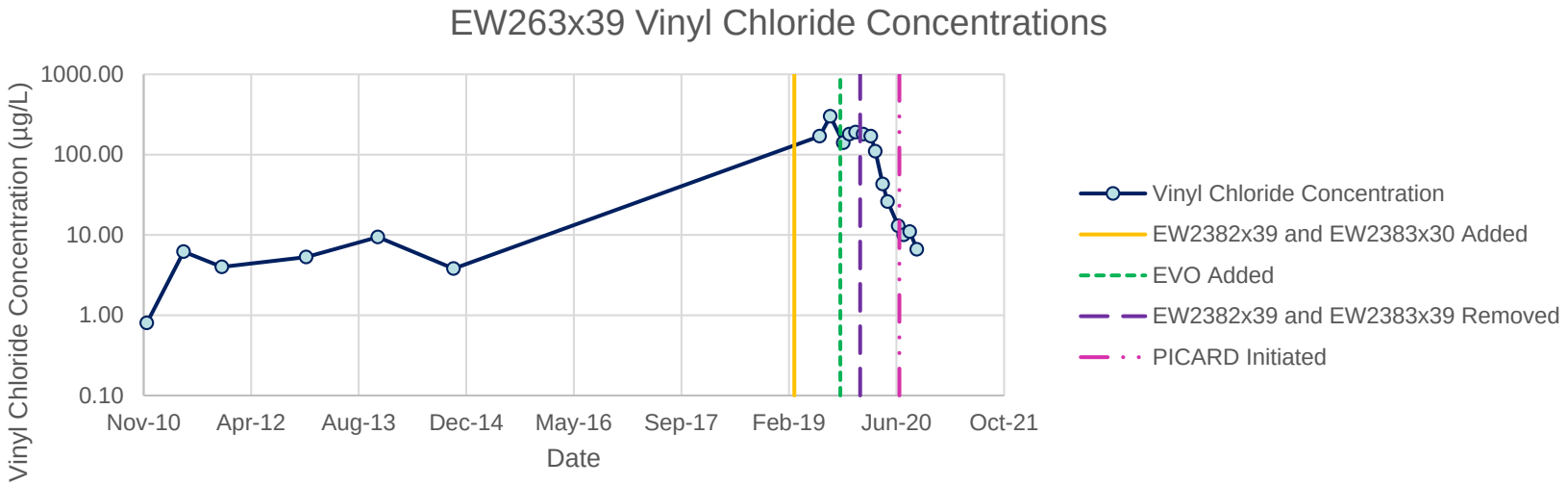
DP039 PICARD Update, Cont

- In Oct 2019, added EVO to bioreactor to increase available TOC; minimal effect on VC concentrations
- In Jan 2020, removed high TCE concentration influent from bioreactor, significant decrease in VC concentrations occurred

DP039 PICARD Update, Cont

- In July 2020, added PICARD (passive injection carbon amendment recirculation device)
- By Sept 2020,VC concentrations declined to historical range when bioreactor first began operation


PZ102x39 Vinyl Chloride Concentrations
Vinyl Chloride Concentration (µg/L)
1000
100
10
1
Mar-17
Sep-17
Apr-18
Oct-18
May-19
Dec-19
Jun-20
Jan-21
Date
Vinyl Chloride Concentration
EW2382x39 and EW2383x39 Added
EVO Added
EW2382x39 and EW2383x39 Removed
PICARD Initiated


EW263x39 Vinyl Chloride Concentrations
Vinyl Chloride Concentration (µg/L)
1000.00
100.00
10.00
1.00
0.10
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Jun-20
Oct-21
Date
Vinyl Chloride Concentration
EW2382x39 and EW2383x30 Added
EVO Added
EW2382x39 and EW2383x39 Removed
PICARD Initiated

DP039 PICARD Update, Cont

- Plan on adding influent from high TCE concentration areas back to bioreactor and confirm effectiveness of PICARD bioreactor rejuvenation
- Will monitor for VC accumulation
- Our overall objective is to accelerate cleanup effort as a whole, so treatment of DG groundwater in bioreactor is a priority

Completed Documents (Historical 1)

- 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 (Historical 1)

- 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