

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

23 October 2014, 1400 Hours

Mr. Mark Smith, of the Air Force Civil Engineer Center (AFCEC) Restoration Support Team, conducted the Restoration Program Manager's (RPM) meeting, on 23 October 2014 at 1400 hours, in Building 248 at Travis AFB, California. Attendees included:

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

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 (September 2014)
- Attachment 4 CGWTP Monthly Data Sheet (September 2014)
- Attachment 5 NGWTP Monthly Data Sheet (September 2014)
- Attachment 6 ST018 Monthly Data Sheet (September 2014)
- Attachment 7 Impact of FY14 Accelerated Funding
- Attachment 8 Site CG508 POCO Investigation Summary

- Attachment 9 Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 17 September 2014 RPM teleconference meeting minutes were approved and finalized as written. Mr. Smith welcomed Mr. Jeff Gamlin, a scientist with CH2M HILL. Mr. Gamlin works closely with Mr. Doug Downey, and is the Senior Technical Consultant to the PBC-13 project at Travis AFB.

B. Action Item Review.

Action items from September were reviewed.

Action item 1 will remain open: AFCEC's Travis Restoration Support Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. AFCEC is in agreement with using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero energy policy" for the Air Force for the beneficial reuse of treated groundwater. Current possibilities include: Rerouting treated water from the central plant to the duck pond or as irrigation as an energy reduction project with the intent of reducing on-base water usage. Due date will remain TBD to ensure this action item remains visible. Update: 20 September 2014, Mr. Smith contacted the Base Civil Engineer (BCE) as a reminder that the treated water is still available for beneficial reuse. The BCE later confirmed with Mr. Duke that the treated water is suitable for irrigation use.

Action item 2 is closed.

Master Meeting and Document Schedule Review (see Attachment 2)

The Travis AFB Master Meeting and Document Schedule (MMDS) was discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

The next RPM meeting will be a teleconference meeting held on Wednesday, 19 November 2014 at 10:00. Travis AFB proposed a new 2015 RPM schedule and asked the regulators to notify Travis AFB of any scheduling conflicts to let Travis AFB know as soon as possible.

Travis AFB Master Document Schedule

- Travis Air Force Base Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP): The response to comments meeting was updated to 23 October 2014, the rest of

the dates were changed accordingly. This document is schedule to be discussed this afternoon.

- Site SD037 GW Remedial Design/Remedial Action Work Plan: Response to comments (RTC) due date was changed to 13 November 2014, rest of the dates were changed accordingly. Travis AFB sent responses to EPA's comments on 22 October 2014.
- Site SD036 Remedial Design/Remedial Action Work Plan: The draft to agencies date was changed to 20 November 2014, the rest of the dates were changed accordingly. The dates were pushed back to incorporate any changes that were made to the SD037 RD/RA work plan since the SD036 RD/RA work plan is very similar. Travis AFB thought this would help with the documentation review.
- Site SS016 GW Remedial Design/Remedial Action Work Plan: No changes to the schedule.
- Site SS015 GW Remedial Design/Remedial Action Work Plan: Draft to agencies date was changed to 05 January 2015 and the rest of the dates have changed accordingly. The dates have been moved up to align with the EVO injection schedule.
- Community Involvement Plan: No change to the schedule.
- Proposed Plan for the Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision (ROD): No change to the schedule. The ROD amendment document schedule is designed so that the public meeting coincides with the April 2015 RAB meeting.
- Amendment to the NEWIOU Soil, Sediment, and Surface Water Record of Decision: No changes to the schedule.
- Proposed Plan for the Amendment to the Soil Record of Decision for the WABOU: No changes to the schedule.
- Amendment to the Soil Record of Decision for the WABOU: No changes to the schedule.
- Potrero Hills Annex (FS, PP, and ROD): No change to the schedule. Ms. Constantinescu said, as the new project manager on this project, she wanted to schedule a meeting with the entire team. The attendees: an Autoliv Environmental Engineer by telephone, an Autoliv consultant, Travis AFB, and RWQCB engineers. The RWQCB knows that there has not been enough delineation for the perchlorate contamination and migration, and that there needs to be a more aggressive site characterization and cleanup schedule. This project was transferred from the Toxics Division to the Groundwater Division. The new project manager is a perchlorate specialist and will be an asset to this project. Ms. Constantinescu said that Potrero Hills Annex will be transferred to the new project manager sometime in November 2014 due to her workload. The RWQCB decided after the meeting that they will work directly with the attorneys and the consultant from Autoliv.
- Site FT004 Technology Demonstration Work Plan: The Response to Comments Due was updated to 29 September 2014, and the Final due date was changed to 29 September 2014 to reflect the actual dates.

- Site DP039 Lead Excavation Technical Memorandum: The RTC meeting was updated to 23 September 2014. The rest of the dates were changed accordingly. Travis AFB sent responses to EPA comments on 22 October 2014.
- Site TA500 Investigation Work Plan: The Final due date was changed to 3 November 2014. Travis AFB received EPA's comments and is working on responses. The RTC meeting will be revised.
- Site SD031 Technology Demonstration Work Plan: The RTC meeting was updated to 23 October 2014. This document is scheduled to be discussed this afternoon.
- Site ST018 POCO Work Plan Addendum: The RTC meeting was changed to 19 November 2014.
- Site SD034 Data Gap Investigation: The Predraft to AF/Service center and AF/Service Center comments due were updated to reflect the actual dates. This work identifies the plan for delineating the extent of Stoddard Solvent that remains in the soil and groundwater at Site SD034. The Stoddard Solvent will also be characterized during the data gap investigation to confirm its constituents and whether or not there is a potential ongoing source.
- Site SS014 Technology Demonstration Work Plan: The Predraft to AF/Service Center date was changed to 25 November 2014. The rest of the dates were changed accordingly.
- Quarterly Newsletter (October 2014): The RTC and final due dates have been changed to 10 October 2014 to reflect the actual dates.
- Kinder Morgan LF044 Land Use Control Report: Final Due date was changed to 25 September 2014 to reflect the actual date.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 2.4 million gallons of groundwater were extracted and treated during the month of September 2014. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 63.95 gallons per minute (gpm). Electrical power usage was 7,320 kWh, and approximately 10,028 pounds of CO₂ were created (based on DOE calculation). Approximately 2.4 pounds of volatile organic compounds (VOCs) were removed in September. The total mass of VOCs removed since startup of the system is 452 pounds.

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

Note: the output from the electrical meter is still questionable, and we are working with the Base to troubleshoot the electric meter at the plant. The Base Civil Engineer, the electrical department, and the contractors are scheduled to come out next week to troubleshoot why the electrical meter results are fluctuating.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.16 million gallons of groundwater extracted and treated during the month of September 2014. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 26.8 gpm. Electrical power usage was 2,493 kWh for all equipment connected to the Central Plant, and approximately 3,415 pounds of CO₂ were generated. Approximately 2.46 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 11,381 pounds.

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

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

North/LF007 Groundwater Treatment Plant (see Attachment 5)

The North Groundwater Treatment Plant (NGWTP) performed at 100% uptime with approximately 218,400 gallons of groundwater extracted and treated during the month of September 2014. The average flow rate at the NGWTP was 4.8 gpm, and electrical power use was 0 kWh for all the equipment connected to the North plant; and 0 pounds of CO₂ was generated; this system is 100 percent off of the power grid. Approximately 6.68×10^{-3} pounds of VOCs were removed from the groundwater in September. The total mass of VOCs removed since the startup of the system is 174.31 pounds.

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

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

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 168,000 gallons of groundwater extracted and treated during the month of September 2014. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 3.77 gpm. Electrical power usage for the month was 103 kWh for all equipment connected to the ST018 GWTP, which equates

to the creation of approximately 141 pounds of CO₂. Approximately 0.20 pounds of BTEX, MTBE and TPH were removed from groundwater in September from the treatment plant. Approximately 0.11 pounds of MTBE were removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 30.8 pounds. And the total MTBE mass removed since startup of the system is 6.6 pounds.

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

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

Travis AFB received authorization from Fairfield-Suisun Sewer District (FSSD) to discharge the treated groundwater to FSSD under the Travis AFB Waste Water Discharge permit. This change was made with the concurrence of the RWQCB and a Notice of Termination of the NPDES permit was submitted and approved.

Discussions:

Impact of FY14 Accelerated Funding PBC-13 (see Attachment 7)

Mr. Wray reported on the impact of FY14 accelerated funding on the PCB-13 project. (see attachment 7 for details)

Mr. Wray provided the results of the accelerated funding awards, and thanked Mr. Hall and Mr. Linbrunner for their efforts in being instrumental in obtaining the additional funding.

Original funding schedule: Awards were structured to be awarded each fiscal year. The funding was to be completed in FY18. The biggest funding year was scheduled in FY16. Mr. Wray said the funding allowed the work plans (WPs) to be written, but the way the funding was initially structured it would not allow CH2M HILL to conduct any substantial fieldwork until about 2016.

Accelerated Awards were allocated on: 02 June, 15 August, 29 August, and 30 September in 2014. At this point approximately 60% of the contract has been awarded.

The accelerated funding allows Travis AFB to move up the project schedule, and permit CH2M HILL to start conducting work on most of the sites. (see attachment for site details).

Presentations:

CG508 – POCO Investigation Summary (see Attachment 8 for detail and map of site location)

Mr. Gamlin reported on CG508, POCO Investigation Summary. Highlights included:

CG508 is a petroleum, oil and lubricants (POL) site with a groundwater plume composed primarily of TPH-MRO. This plume has an unknown size and unknown source.

The site was discovered in 2002 during removal of underground storage tank (UST) 1947. The UST was an ERP site known as Site RW012 and was associated with building 903, which was used for nuclear component maintenance from 1953 to 1962. Previous investigations indicate UST 1947 was never used for storage of fuels or other TPH products. Mr. Anderson said that the piping from the UST lead to the floor drains so when the walls, floors and ceiling were washed down, any low level radioactive residue would drain into the UST.

A no further action (NFA) consensus statement for site RW012 was issued by Travis AFB and signed by the U.S. Air Force, EPA, Water Board, and DTSC on 24 April 1996, for the closure of site RW012 with regard to radioactive materials.

Soil sample results during the excavation confirmed that the source of the TPH impacted groundwater was not from the UST 1947.

Solano County Department of Resource Management, Environmental Health Division (SCDRMEHD), regulatory agent for the Water Board, issued an NFA for UST 1947 on 27 March 2013 – the UST was closed for TPH and other compounds.

The source of the TPH impacted groundwater associated with Site CG508 was not investigated following closure of UST 1947. TPH-MRO in the groundwater near UST was as high as 1,000 µg/L.

Travis AFB conducted a three phase investigation, using the triad-like approach:

Phase 1: Sampled groundwater from five existing wells/piezometers for TPH-GRO, TPH-DRO, TPH-MRO, VOCs and alkalinity. Alkalinity was analyzed because it is an overall indicator of biodegradation to see if there were any trespass plumes. The findings indicated low level TPH-MRO in all of the wells.

Phase 2: Soil borings and groundwater sampling. Drilled and collected grab groundwater samples from 14 borings. Also collected samples from three existing wells and one newly installed well for; TPH-GRO, TPH-DRO, TPH-MRO, VOCs, and alkalinity. TPH-DRO and TPH-MRO analyzed using the shaker table silica gel cleanup (SGC) method. According to literature, the shaker table is about 50% efficient in pulling out polar compounds.

Phase 3: Soil boring and groundwater sampling. Drilled and installed five new soil borings and collected soil samples every 5 feet for TPH-GRO, TPH-DRO. TPH-MRO was analyzed using the SGC cleanup method. The soil borings were converted to monitoring wells. Sampled the five newly installed wells, and 2 existing wells, and analyzed for the same constituents as in phase 1 and phase 2. TPH-DRO and TPH-MRO were analyzed for using the column silica gel method which, according to the literature, is about 90% efficient at pulling out polar compounds.

No staining or odors were observed in the soil borings.

For a petroleum release there would be positive detections of BTEX and PAHs. BTEX was not detected and historically PAHs were not detected at the UST site, only naphthalene at 6.8 µg/L which is very low. Results to date are not indicative of a typical diesel or motor oil release. No soil source for the TPH was found. There was also a lack of characteristic VOC/PAH compounds, wide spread low level TPH-MRO detections in groundwater, fluctuations in detections, and indications of biogenic TPH in chromatograms.

The map presented on Slide 8 illustrates the CG508 groundwater summary, identifying TPH concentrations and the old sewer line which was installed circa 1940.

Evaluation of biogenic sources of TPH: SGC methods are not always reliable at removing polar compounds (non-petroleum) prior to TPH analysis. Researchers in Canada have been studying biogenic hydrocarbon sources that cause 'false positives' for TPH-DRO and TPH-MRO. "Soil and sediment with high organic content, such as peat may exceed the capacity of the silica gel to remove non petroleum hydrocarbons."

Slides 10 through 14 demonstrate the chromatograms and the similarity of peat and engine oil. Sewage, manure (see slide 8 and location of the sewer line), even a decomposed worm mixed with soil, can give hits of TPH up to 1,000 µg/L.

2014 POCO investigation conclusions: No source of soil contamination was identified and no staining was observed. It appears that TPH detections in groundwater above environmental screening levels (ESL) are biased by biogenic sources, across the board.

The remaining data gap is whether PAHs are present in the groundwater. If PAH results are non-detect or very low, then it provides further evidence that TPH results are not caused by a petroleum release. If PAHs are substantially absent, this will demonstrate a lack of risk and it will be recommended that this be considered a non-site. If PAH results indicate motor oil is present then we expect to recommend this site to be considered for a low threat closure.

Ms. Constantinescu said that the RWQCB does not make decisions regarding site closure based on data using TPH with SGC and asked if the site was analyzed for TPH without SGC. Mr. Gamlin said that the first round of samples was analyzed for TPH without SGC. Ms. Burke asked if TPH hits have any relation to the EVO injections. Mr. Gamlin said that the injections were too far upgradient, at least 100 ft. away, that the EVO radius of influence is only 15 to 20 ft., and that EVO does not move that fast.

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

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

Newly Completed Documents: FT004 Technology Demonstration Work Plan. Kinder Morgan LF044 Land Use Control Report.

Newly Completed Field Work: None.

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

In-Progress Field Work: 4Q14 Semiannual GRIP Sampling Event.

Upcoming Documents (CERCLA): SD036 RD/RA Work Plan, SD034 Data Gap Investigation Work Plan, Proposed Plan for the Amendment to WABOU Soil ROD, Proposed Plan for the Amendment to NEWIOU Soil, Sediment, & Surface Water ROD, SS016 GW RD/RA Work Plan, Community Involvement Plan, SS015 GW RD/RA Work Plan, Amendment to WABOU Soil ROD, Amendment to NEWIOU Soil, Sediment, and Surface Water ROD.

Upcoming Documents (POCO): SS014 POCO Technology Demonstration Work Plan.

Upcoming Field Work: SD031 Technology Demonstration.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

None.

6. Action Items

| Item # | Responsible | Action Item Description | Due Date | Status |
|--------|-------------|---|----------|--------|
| 1. | Travis AFB | AFCEC's Travis Restoration Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. AFCEC is in agreement with using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero energy policy" for the Air Force for the beneficial reuse of treated groundwater. Current possibilities include: Rerouting treated | TBD | Open |

| | | | | |
|----|--------------------------------|---|--------------|---------|
| | | water from the central plant to the duck pond or as irrigation as an energy reduction project with the intent of reducing on-base water usage. Due date will remain TBD to ensure this action item remains visible. | | |
| 2. | Travis AFB and CH2M HILL | Provide Ms. Constantinescu/RWQCB with an electronic copy of the original 2010 Site ST018 Work Plan with the submittal of the draft Site ST018 POCO Work Plan Addendum. | 16 Oct. 2014 | Closed. |

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING
BLDG 248 Conference Room
23 October 2014, 2:00 P.M.
AGENDA

1. ADMINISTRATIVE
 - A. PREVIOUS MEETING MINUTES
 - B. ACTION ITEM REVIEW
 - C. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS
 - A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE

3. DISCUSSION
 - A. IMPACT OF FY14 ACCELERATED FUNDING

4. PRESENTATION
 - A. SITE CG508 POCO INVESTIGATION SUMMARY
 - B. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

5. NEW ACTION ITEM REVIEW

6. PROGRAM/ISSUES/UPDATE

NOTES: AFTER THE RPM MEETING WE WILL HOLD A SEPARATE MEETING TO DISCUSS THE RESPONSES TO AGENCY COMMENTS ON THE DRAFT UNIFORM FEDERAL POLICY – QUALITY ASSURANCE PROJECT PLAN, THE DRAFT DP039 LEAD EXCAVATION TECHNICAL MEMORANDUM, AND THE DRAFT SD031 TECHNOLOGY DEMONSTRATION WORK PLAN. ALL PARTICIPANTS ARE WELCOME TO ATTEND.

(2014)
Annual Meeting and Teleconference Schedule

| Monthly RPM Meeting ¹ (Begins at 9:30 a.m.) | RPM Teleconference (Begins at 10:00 a.m.) | Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.) |
|---|--|--|
| 01-22-14 | — | — |
| 02-19-14 | — | — |
| 03-19-14 | — | — |
| 04-16-14 | — | 04-17-14 ² |
| 05-14-14 | — | — |
| 06-18-14 | — | — |
| 07-23-14 | — | — |
| 08-20-14 | — | — |
| — | 09-17-14 (9:00 AM) | — |
| 10-23-14 (Thur 2:00 PM) | — | 10-23-14 |
| — | 11-19-14 | — |
| — | — | — |

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

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

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

| PRIMARY DOCUMENTS | | | |
|-------------------------------------|---|---|---|
| Life Cycle | Site SS016 GW Remedial Design/Remedial Action Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer | Site SS015 GW Remedial Design/Remedial Action Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer | Community Involvement Plan Travis AFB, Mark Smith CH2M HILL, Tricia Carter |
| Scoping Meeting | NA | NA | NA |
| Predraft to AF/Service Center | 10-24-14 | 11-20-14 | 12-01-14 |
| AF/Service Center Comments Due | 11-06-14 | 12-04-14 | 12-15-14 |
| Draft to Agencies | 12-05-14 | 01-05-15 | 01-05-15 |
| Draft to RAB | 12-05-14 | 01-05-15 | 01-05-15 |
| Agency Comments Due | 01-03-15 | 02-04-15 | 02-04-15 |
| Response to Comments Meeting | 01-21-15 | 02-18-15 | 02-18-15 |
| Agency Concurrence with Remedy | NA | NA | NA |
| Public Comment Period | NA | NA | NA |
| Public Meeting | NA | NA | NA |
| Response to Comments Due | 02-02-15 | 03-04-15 | 02-27-15 |
| Draft Final Due | 02-02-15 | 03-04-15 | 02-27-15 |
| Final Due | 03-04-15 | 04-03-15 | 03-31-15 |

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

| SECONDARY DOCUMENTS | | | | |
|-------------------------------------|---|--|---|---|
| Life Cycle | Site FT004 Technology Demonstration Work Plan Travis AFB, Glenn Anderson CH2M HILL, Tony Chakurian | Site DP039 Lead Excavation Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Loren Krook | Site TA500 Data Gap Investigation Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer | Site SD031 Technology Demonstration Work Plan Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer |
| Scoping Meeting | NA | NA | NA | NA |
| Predraft to AF/Service Center | 04-21-14 | 06-02-14 | 07-23-14 | 07-11-14 |
| AF/Service Center Comments Due | 05-21-14 | 06-16-14 | 08-05-14 | 07-25-14 |
| Draft to Agencies | 06-28-14 | 07-01-14 | 08-20-14 | 09-02-14 |
| Draft to RAB | 06-28-14 | 07-01-14 | 08-20-14 | 09-02-14 |
| Agency Comments Due | 07-28-14 | 07-31-14 | 09-19-14 | 10-02-14 |
| Response to Comments Meeting | 09-17-14 | 10-23-14 | 10-02-14 | 10-23-14 |
| Response to Comments Due | 09-29-14 | 11-14-14 | 11-03-14 | 10-24-14 |
| Draft Final Due | NA | NA | NA | NA |
| Final Due | 09-29-14 | 11-14-14 | 11-03-14 | 10-24-14 |
| Public Comment Period | NA | NA | NA | NA |
| Public Meeting | NA | NA | NA | NA |

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

| INFORMATIONAL DOCUMENTS | | |
|-------------------------------------|--|--|
| Life Cycle | Quarterly Newsletters (October 2014) Travis, Glenn Anderson | Kinder Morgan Site LF044 Land Use Control Report Travis AFB, Glenn Anderson AMEC, Nick Ricono |
| Scoping Meeting | NA | NA |
| Predraft to AF/Service Center | NA | NA |
| AF/Service Center Comments Due | NA | NA |
| Draft to Agencies | 09-23-14 | 09-18-13 |
| Draft to RAB | NA | 09-18-13 |
| Agency Comments Due | 10-07-14 | 10-18-13 |
| Response to Comments Meeting | TBD | 06-18-14 |
| Response to Comments Due | 10-10-14 | 06-25-14 |
| Draft Final Due | NA | NA |
| Final Due | 10-10-14 | 09-25-14 |
| Public Comment Period | NA | NA |
| Public Meeting | NA | NA |

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 169

Reporting Period: 29 August 2014 – 29 September 2014

Date Submitted: 17 October 2014

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the September 2014 reporting period.

| Table 1 – Operations Summary – September 2014 | | | |
|--|----------------------|--|-----------------|
| Initial Data Collection: | 8/29/2014 17:30 | Final Data Collection: | 9/29/2014 16:30 |
| Operating Time: | Percent Uptime: | Electrical Power Usage: | |
| SBBGWTP: 743 hours | SBBGWTP: 100% | SBBGWTP: 7,320 kWh (10,028 lbs CO ₂ generated ^a) | |
| Gallons Treated: 2.4 million gallons | | Gallons Treated Since July 1998: 870 million gallons | |
| Volume Discharged to Union Creek: 2.4 million gallons | | | |
| VOC Mass Removed: 1.32 lbs^b | | VOC Mass Removed Since July 1998: 452 lbs | |
| Rolling 12-Month Cost per Pound of Mass Removed: \$7,029 ^c | | | |
| Monthly Cost per Pound of Mass Removed: \$2,147 | | | |
| lbs = pounds | | | |
| ^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG. | | | |
| ^b Calculated using September 2014 EPA Method SW8260B analytical results. | | | |
| ^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. | | | |

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

| Table 2 – SBBGWTP Average Flow Rate (gpm)^{a,b} | | | | | | | |
|---|---------|----------|---------|--------------------------|------|--------------------------|------|
| FT005^c | | | | SS029 | | SS030 | |
| EW01x05 | 1.1 | EW736x05 | Offline | EW01x29 | NR | EW01x30 | NR |
| EW02x05 | 0.3 | EW737x05 | Offline | EW02x29 | 5.2 | EW02x30 | 2.9 |
| EW03x05 | Offline | EW742x05 | Offline | EW03x29 | 1.6 | EW03x30 | 2.0 |
| EW731x05 | Offline | EW743x05 | Offline | EW04x29 | 8.6 | EW04x30 | 35.4 |
| EW732x05 | Offline | EW744x05 | Offline | EW05x29 | 11.9 | EW05x30 | 1.8 |
| EW733x05 | Offline | EW745x05 | Offline | EW06x29 | 5.0 | EW06x30 | Dry |
| EW734x05 | NR | EW746x05 | Offline | EW07x29 | 5.4 | EW711x30 | 8.2 |
| EW735x05 | NR | | | | | | |
| FT005 Total: 1.4 | | | | SS029 Total: 37.7 | | SS030 Total: 50.4 | |
| SBBGWTP Average Monthly Flow^c: 63.95 gpm | | | | | | | |
| ^a Extraction well flow rates are based on instantaneous weekly readings collected at the end of the month. ^b Most extraction wells at FT005 were taken offline in accordance with the <i>2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.</i> ^c The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time in the reporting period. NR – not recorded; no readout available on SCADA system, but the well is online gpm – gallons per minute SBBGWTP – South Base Boundary Groundwater Treatment Plant | | | | | | | |

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

| Table 3 – Summary of System Shutdowns | | | | | |
|--|-------------------|-------------|-------------------|-------------|---|
| Location | Shutdown | | Restart | | Cause |
| | Date | Time | Date | Time | |
| Site SS030 Extraction Wells | 01 September 2014 | -- | 30 September 2014 | -- | EW01x30, EW02x30, EW03x30, EW04x30, EW05x30, EW06x30 were offline until a blown fuse in the power supply could be replaced. |
| -- = Time not recorded | | | | | |

Summary of O&M Activities

Monthly groundwater samples were collected at the SBBGWTP on 8 September 2014. Sample results are presented in Table 4. The total VOC concentration (66.72 J- $\mu\text{g/L}$) in the influent sample increased from the August sample results (42.7 $\mu\text{g/L}$). 1,2-DCA (0.72 J- $\mu\text{g/L}$), cis-1,2-DCE (4.3 J- $\mu\text{g/L}$), and TCE (61.7 J- $\mu\text{g/L}$) were detected at the influent sampling location. 1,2-DCA (0.37 J- $\mu\text{g/L}$) and cis-1,2-DCE (0.25 J- $\mu\text{g/L}$) were detected at the midpoint sampling location. No analytes were detected at the effluent sample location. Due to delayed express delivery of the samples to the laboratory, the samples were above the standard temperature for analysis. The results have been flagged accordingly (see Table 4), but the values are consistent with what is normally seen at the treatment system.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. The average flow rate at the SBBGWTP decreased in September 2014 to 63.95 gpm from 76.4 gpm in August.

On 1 September 2014, a fuse for the 24 volt power supply failed resulting in the shutdown of all of the Site SS030 extraction wells with the exception of EW711x30. The blown fuse wasn't immediately detected since the last-read values for Site SS030 pump operation, including flow rates, were "frozen" to the SCADA interface screen. It therefore appeared that all SS030 pumps were operating normally. Upon discovery of the blown fuse, a new fuse was installed and the Site SS030 pumps were restarted. The replacement fuse also blew, approximately one day after it was replaced. A new 24V DC power supply was ordered and installed in the Site SS030 control panel on 30 September 2014. All Site SS030 wells were brought back on line following the power supply replacement. Extraction well EW711x30, which was added separately to the Site SS030 wellfield when initially installed, was not affected by the blown fuse and remained on line throughout September 2014. The extraction wells at Sites FT005 and SS029 remained online.

On 12 September 2014, fourteen empty 55-gallon high-density polyethylene (HDPE) drums were rinsed and disposed of at a recycle facility off-base. On 30 September 2014, the SBBGWTP containment pad was cleaned and a bag filter was changed as a part of routine system maintenance.

Optimization Activities

No optimization activities were performed in September 2014.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as taking extraction pumps off line that are no longer necessary for contaminant plume capture.

Figure 2 presents the historical GHG production from the SBBGWTP. The SBBGWTP produced approximately 10,028 pounds of GHG during September 2014. This is a decrease from a peak in usage measured during August 2014. GHG production at the SBBGWTP during September 2014 is consistent with expected monthly usage based on historical variability at the SBBGWTP.

TABLE 4

Summary of Groundwater Analytical Data for September 2014 – South Base Boundary Groundwater Treatment Plant

| Constituent | Instantaneous Maximum ^a (µg/L) | Detection Limit (µg/L) | N/C | 8 September 2014 (µg/L) | | |
|--|--|---------------------------|-----|----------------------------|----------|----------|
| | | | | Influent | Midpoint | Effluent |
| Halogenated Volatile Organics | | | | | | |
| Carbon Tetrachloride | 0.5 | 0.14 | 0 | ND | ND | ND |
| Chloroform | 5.0 | 0.16 | 0 | ND | ND | ND |
| 1,1-Dichloroethane | 5.0 | 0.50 | 0 | ND | ND | ND |
| 1,2-Dichloroethane | 0.5 | 0.15 | 0 | 0.72 J- | 0.37 J- | ND |
| 1,1-Dichloroethene | 5.0 | 0.19 | 0 | ND | ND | ND |
| cis-1,2-Dichloroethene | 5.0 | 0.19 | 0 | 4.3 J- | 0.25 J- | ND |
| trans-1,2-Dichloroethene | 5.0 | 0.33 | 0 | ND | ND | ND |
| Methylene Chloride | 5.0 | 0.66 | 0 | ND | ND | ND |
| Tetrachloroethene | 5.0 | 0.21 | 0 | ND | ND | ND |
| 1,1,1-Trichloroethane | 5.0 | 0.14 | 0 | ND | ND | ND |
| 1,1,2-Trichloroethane | 5.0 | 0.20 | 0 | ND | ND | ND |
| Trichloroethene | 5.0 | 0.19 | 0 | 61.7 J- | ND | ND |
| Vinyl Chloride | 0.5 | 0.18 | 0 | ND | ND | ND |
| Non-Halogenated Volatile Organics | | | | | | |
| Benzene | 1.0 | 0.17 | 0 | ND | ND | ND |
| Ethylbenzene | 5.0 | 0.22 | 0 | ND | ND | ND |
| Toluene | 5.0 | 0.14 | 0 | ND | ND | ND |
| Xylenes | 5.0 | 0.23 – 0.5 | 0 | ND | ND | ND |
| Other | | | | | | |
| Total Petroleum Hydrocarbons – Gasoline | 50 | 8.5 | 0 | NM | NM | ND |
| Total Petroleum Hydrocarbons – Diesel | 50 | 50 | 0 | NM | NM | ND |
| Total Suspended Solids (mg/L) | NE | 1.0 | 0 | 49 J- | NM | NM |

^a In accordance with Appendix B of the Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual (CH2M HILL, 2004).

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

J- = positive results for affected samples where the temperature upon receipt at the laboratory exceeded ideal analysis conditions

mg/L = milligrams per liter

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

ND = not detected

NE = not established

NM = not measured

µg/L = micrograms per liter

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

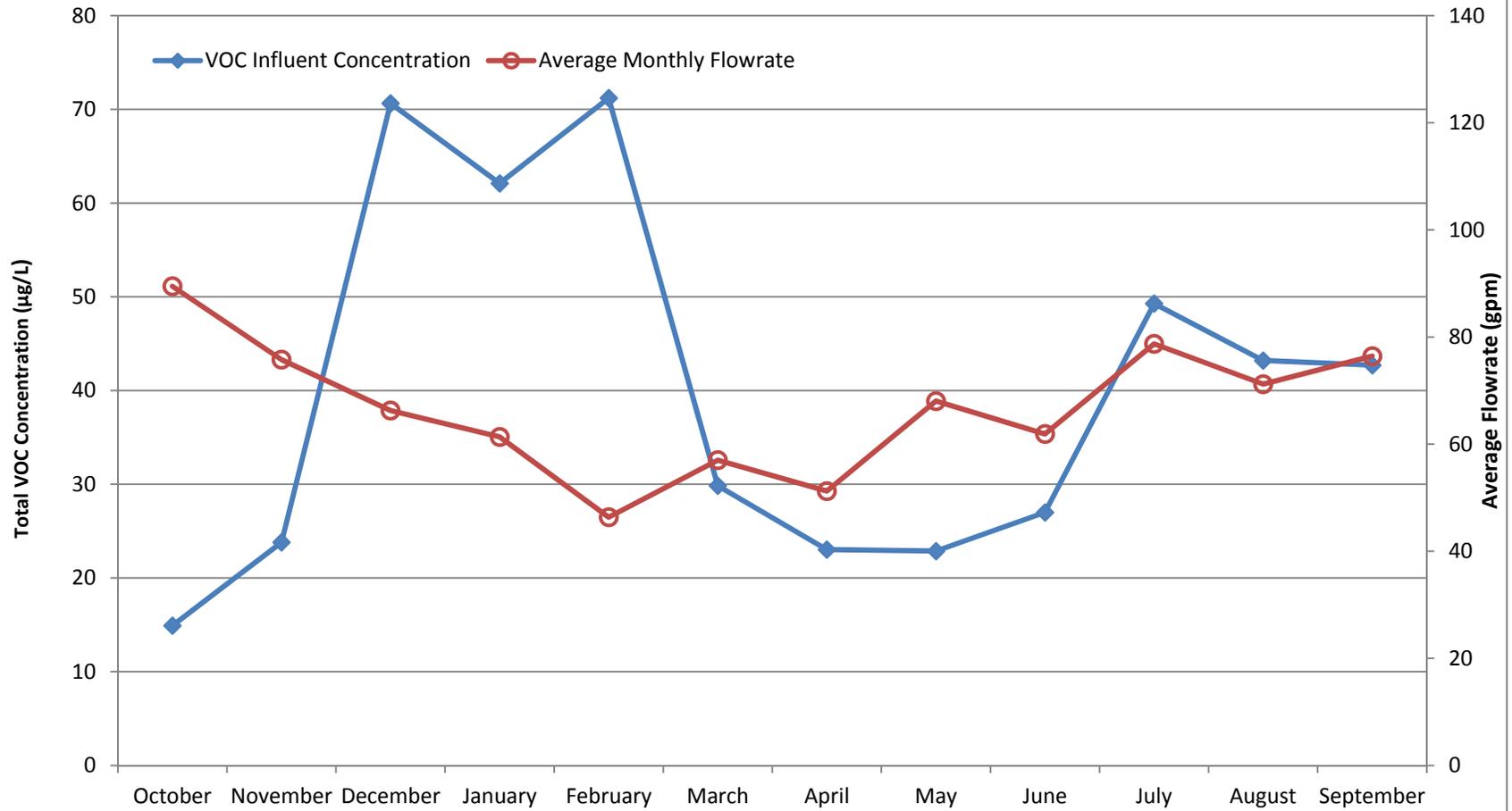
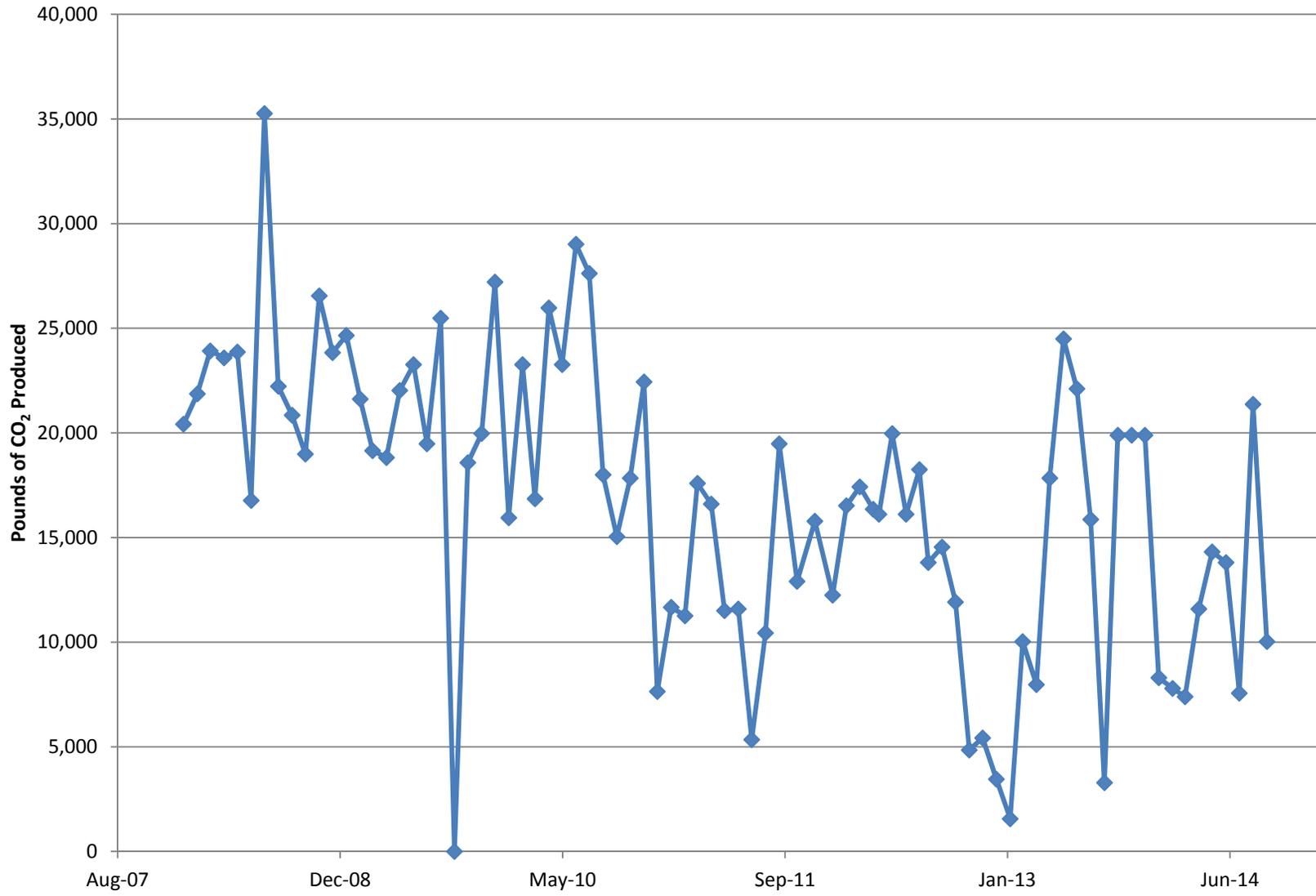


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 182

Reporting Period: 29 August 2014 – 28 September 2014

Date Submitted: 17 October 2014

This monthly data sheet presents information regarding the Central Groundwater Treatment Plant (CGWTP) and its associated technology demonstrations. The ongoing technology demonstrations related to the CGWTP include various emulsified vegetable oil (EVO) injections, two (2) bioreactor treatability studies, and various rebound studies.

System Metrics

Table 1 presents operational data from the September 2014 reporting period.

| Table 1 – Operations Summary – September 2014 | | | |
|--|--|--------------------------------------|---|
| Initial Data Collection: | 8/29/2014 17:00 | Final Data Collection: | 9/29/2014 16:00 |
| Operating Time: | | Percent Uptime: | Electrical Power Usage: |
| CGWTP: | 719 hours | CGWTP: | 100% |
| WTTP: | Water: 0 hours Vapor: 0 hours | WTTP: | Water: 0% Vapor: 0% |
| | | CGWTP: | 2,493 kWh (3,415 lbs CO ₂ generated ^a) |
| | | WTTP: | 0 kWh |
| Gallons Treated: | 1.16 million gallons | Gallons Treated Since January 1996: | 501 million gallons |
| VOC Mass Removed: | | VOC Mass Removed Since January 1996: | |
| | 2.46 lbs^b (groundwater only) | | 2,695 lbs from groundwater |
| | 0 lbs (vapor only) | | 8,686 lbs from vapor |
| Rolling 12-Month Cost per Pound of Mass Removed: | \$2,115 ^c | | |
| Monthly Cost per Pound of Mass Removed: | \$1,014 | | |
| ^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG. ^b Calculated using September 2014 EPA Method SW8260B analytical results. ^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP and are reported based on the calendar month. | | | |

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

| Table 2 – CGWTP Average Flow Rates ^a | | |
|---|-------------------|--------------------------------|
| Location | Average Flow Rate | |
| | Groundwater (gpm) | Soil Vapor (scfm) ^b |
| EW01x16 | 19.0 ^c | Offline |
| EW02x16 | 7.0 ^c | Offline |
| EW03x16 | 0.1 | Offline |
| EW605x16 | 7.3 | Offline |
| EW610x16 | 2.8 | Offline |
| CGWTP | 26.8 | -- |
| WTTP | -- ^b | Offline |

^a Flow rates calculated by dividing total gallons processed by system operating time for the month.
^b No soil vapor was treated in September 2014.
^c Flow rate based on instantaneous, end of the month reading for September 2014.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

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

| Table 3 – Summary of System Shutdowns | | | | | |
|---------------------------------------|----------|------|---------|------|-------|
| Location | Shutdown | | Restart | | Cause |
| | Date | Time | Date | Time | |
| CGWTP (Groundwater) | | | | | |
| CGWTP | None | NA | | | |
| WTTP | | | | | |
| | None | NA | | | |

CGWTP = Central Groundwater Treatment Plant
WTTP = West Transfer Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 8 September 2014. Sample results are presented in Table 4. The total VOC concentration (255.39 µg/L) in the September 2014 influent sample has decreased slightly since the August 2014 sample (265.83 µg/L) was collected. Concentrations of 1,1-DCE (0.52 J- µg/L), 1,2-Dichlorobenzene (DCB) (0.34 J- µg/L), 1,3-DCB (0.41 J- µg/L), 1,4-DCB (0.2 J- µg/L), cis-1,2-DCE (62.2 J- µg/L), PCE (0.52 J- µg/L), trans-1,2-DCE (3 J- µg/L), and TCE (188 J- µg/L) were detected at the influent sampling location. None of these constituents were detected at the midpoint or effluent sampling locations. Due to delayed express delivery, the samples were received at the laboratory above the standard temperature for analysis. The results have been flagged accordingly (see Table 4), but the values are consistent with what is normally seen at the treatment system.

Vinyl chloride was detected at the influent sampling location (0.2 J- µg/L), after the Carbon 1 vessel (0.39 J- µg/L), and after the Carbon 2 vessel (0.27 J- µg/L). Vinyl chloride was not detected at the effluent sampling location. Travis Air Force Base will continue to monitor contaminant concentrations at the CGWTP for breakthrough in the primary vessel.

Figure 1 presents a plot of influent concentrations (total VOCs) and the influent flow rate at the CGWTP versus time for the past twelve (12) months. The average flow rate through the treatment plant decreased in September 2014 from the flow rate measured in August 2014.

The Site DP039 bioreactor continues to operate in a “pulsed mode” in order to improve the rate of remediation and to preserve the amount of total organic carbon being produced within the bioreactor. The typical two (2) week transition schedule of the “pulsed mode” operation was delayed in September 2014, due to a pinhole leak in a bioreactor hose. When the pump was turned on, a small mist of water was noticed by the field technician and the pump was immediately shut off; no measureable amount of water was released. The DP039 bioreactor will remain off until after the pinhole leak is repaired; the system is scheduled to be repaired and turned back on by 24 October 2014.

Optimization Activities

No optimization activities occurred at the CGWTP in September 2014.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 3,415 pounds of GHG during September 2014. This is a decrease from the amount produced in August 2014 (approximately 3,598 pounds) which is the result of less uptime and fewer gallons treated in September than in the previous month.

TABLE 4

Summary of Groundwater Analytical Data for September 2014 – Central Groundwater Treatment Plant

| Constituent | Instantaneous Maximum* (µg/L) | Detection Limit (µg/L) | N/C | 8 September 2014 (µg/L) | | | |
|--|-------------------------------------|------------------------------|-----|----------------------------|-------------------------------|-------------------------------|--------------------|
| | | | | Influent | After Carbon 1 Effluent | After Carbon 2 Effluent | System Effluent |
| Halogenated Volatile Organics | | | | | | | |
| Carbon Tetrachloride | 0.5 | 0.14 | 0 | ND | ND | ND | ND |
| Chloroform | 5.0 | 0.16 | 0 | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 5.0 | 0.19 | 0 | 62.2 J- | ND | ND | ND |
| 1,1-Dichloroethane | 5.0 | 0.5 | 0 | ND | ND | ND | ND |
| 1,2-Dichloroethane | 0.5 | 0.15 | 0 | ND | ND | ND | ND |
| 1,1-Dichloroethene | 5.0 | 0.19 | 0 | 0.52 J- | ND | ND | ND |
| Methylene Chloride | 5.0 | 0.66 | 0 | ND | ND | ND | ND |
| MTBE | 1.0 | 0.5 | 0 | ND | ND | ND | ND |
| Tetrachloroethene | 5.0 | 0.21 | 0 | 0.52 J- | ND | ND | ND |
| 1,1,1-Trichloroethane | 5.0 | 0.14 | 0 | ND | ND | ND | ND |
| 1,1,2-Trichloroethane | 5.0 | 0.2 | 0 | ND | ND | ND | ND |
| Trichloroethene | 5.0 | 0.19 | 0 | 188 J- | ND | ND | ND |
| trans-1,2-Dichloroethene | 5.0 | 0.33 | 0 | 3 J- | ND | ND | ND |
| Vinyl Chloride | 0.5 | 0.18 | 0 | 0.2 J- | 0.39 J- | 0.27 J- | ND |
| Non-Halogenated Volatile Organics | | | | | | | |
| Benzene | 1.0 | 0.17 | 0 | ND | ND | ND | ND |
| Ethylbenzene | 5.0 | 0.22 | 0 | ND | ND | ND | ND |
| Toluene | 5.0 | 0.14 | 0 | ND | ND | ND | ND |
| Total Xylenes | 5.0 | 0.23 – 0.5 | 0 | ND | ND | ND | ND |
| Other | | | | | | | |
| Total Dissolved Solids (mg/L) | NA | 10 | 0 | NM | NM | 804 J- | ND |

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

Notes:

J- = positive results for affected samples where the temperature upon receipt at the laboratory exceeded ideal analysis conditions

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

ND = not detected

µg/L = micrograms per liter

mg/L = milligrams per liter

Table 5 presents a twelve month summary of the Site DP039 bioreactor recirculation well pulsing dates.

| Table 5 – Summary of DP039 Bioreactor “Pulsed Mode” Operations | | |
|---|--------------------------------|-----------------------------|
| Location | Pulse On Start Date | Pulse Off Start Date |
| MW750x39 | 27 September 2013 | 11 October 2013 |
| | 25 October 2013 | 8 November 2013 |
| | 22 November 2013 | 5 December 2013 |
| | 20 December 2013 | 3 January 2014 |
| | 17 January 2014 | 31 January 2014 |
| | 18 February 2014 | 28 February 2014 |
| | 14 March 2014 | 28 March 2014 |
| | 22 April 2014 | 28 April 2014 |
| | 12 May 2014 | 12 May 2014 |
| | 6 June 2014 | 20 June 2014 |
| | 3 July 2014 | 24 July 2014 |
| | 01 August 2014 | 15 August 2014 |
| | 01 September 2014 | 12 September 2014 |
| 26 September 2014 | 30 September 2014 ^a | |

^a = DP039 Bioreactor turned off on 30 September 2014 to replace hose.
 CGWTP = Central Groundwater Treatment Plant
 EW = Extraction Well

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

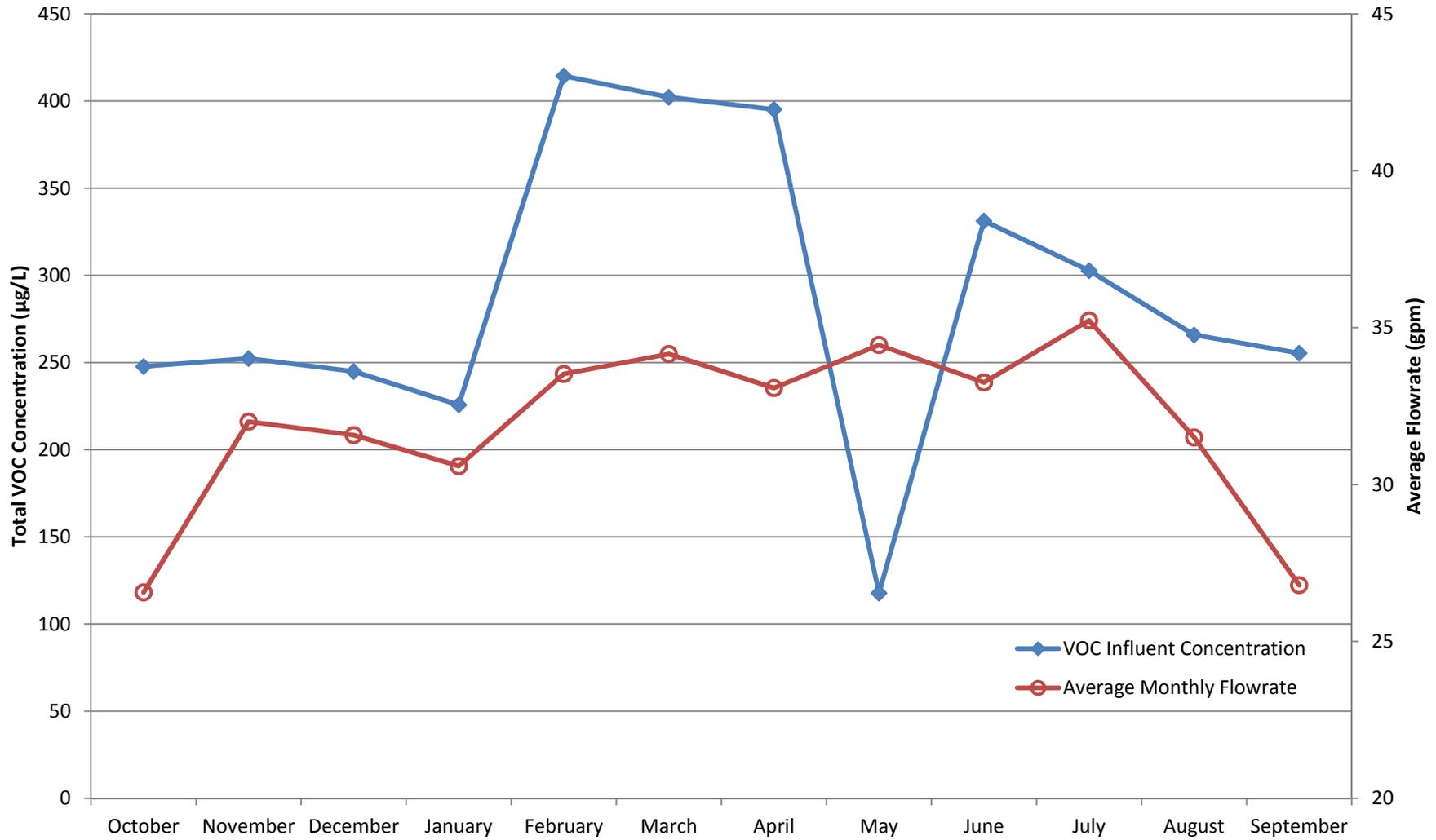
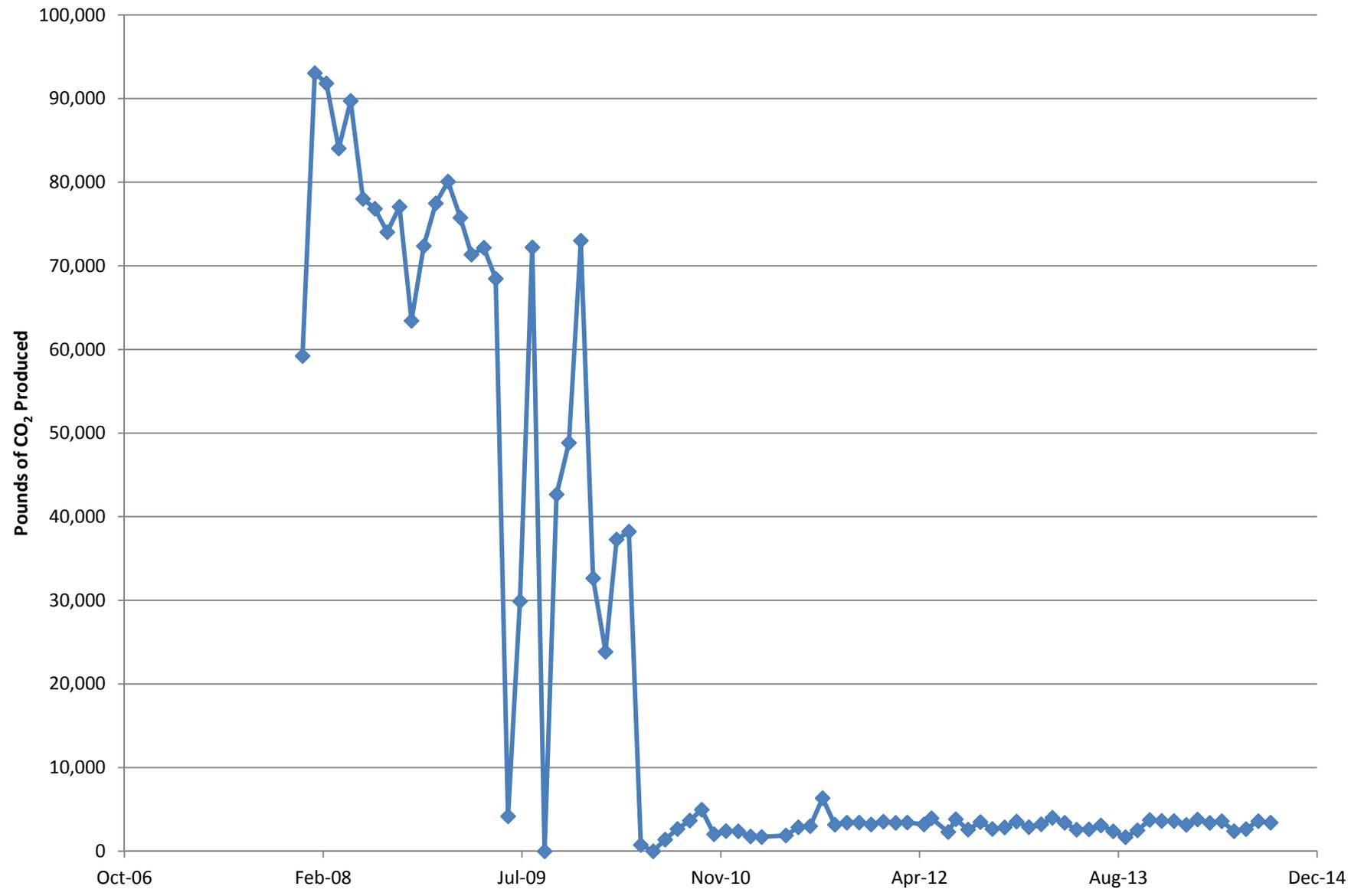


Figure 2
Equivalent Pounds of CO₂ Produced by the Central Groundwater Treatment Plant



North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 142

Reporting Period: 29 August – 30 September 2014

Date Submitted: 17 October 2014

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

System Metrics

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

| Table 1 – Operations Summary – September 2014 | | | |
|--|--------------------|---|----------------|
| Initial Data Collection: | 8/29/2014 17:15 | Final Data Collection: | 9/30/2014 8:30 |
| Operating Time: | Percent Uptime: | Electrical Power Usage ^a : | |
| NGWTP: 759 hours | NGWTP: 100% | NGWTP: 0 kWh | |
| Gallons Treated: 218,400 gallons | | Gallons Treated Since March 2000: 83.9 million gallons | |
| Volume Discharged to Duck Pond: 218,400 gallons | | Volume Discharge to Storm Drain: 0 gallons | |
| VOC Mass Removed: 6.68 x 10⁻³ pounds^b | | VOC Mass Removed Since March 2000: 174.31 pounds (Groundwater) | |
| Rolling 12-Month Cost per Pound of Mass Removed: Not Measured^c | | | |
| Monthly Cost per Pound of Mass Removed: Not Measured^c | | | |
| ^a The NGWTP operates on solar power only. ^b VOCs from September 2014 influent sample detected by EPA Method SW8260B. ^c Value not calculated since measurement does not accurately represent the cost effectiveness of the system. | | | |

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

| Table 2 – NGWTP Average and Total Flow Rates – September 2014 | | |
|--|--|--|
| Location | Average Flow Rate (gpm)^a | Total Gallons Processed (gallons)^b |
| EW614x07 | 4.4 | 198,640 |
| EW615x07 ^c | 0 | 0 |
| NGWTP | 4.8 | 218,400 |

^a Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the hours recorded by the system hour meter.
^b A discrepancy in totalizer values was recorded in June and troubleshooting of the meters continued until 3 September.
^c Extraction well currently offline due to bad batteries.
gpm = gallons per minute

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

| Table 3 – Summary of System Shutdowns | | | | | |
|--|-----------------|-------------|----------------|-------------|--------------|
| Location | Shutdown | | Restart | | Cause |
| | Date | Time | Date | Time | |
| None | NA | NA | | | |

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

Summary of O&M Activities

Analytical data from the 8 September 2014 sampling event are presented in Table 4. Cis-1,2-DCE (0.27 J- µg/L) and TCE (3.4 J- µg/L) were detected at the influent sample location. Neither contaminant was detected at the midpoint or effluent sampling locations. Concentrations will continue to be monitored for breakthrough conditions. Due to delayed express delivery, the samples were received at the laboratory above the standard temperature for analysis. The results have been flagged accordingly (see Table 4), but the values are consistent with what is normally seen at the treatment system.

Figure 1 presents a chart of influent concentrations (total VOCs) at the NGWTP versus time for the past twelve (12) months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC drums online.

The average flow rate through the NGWTP in September 2014 (4.8 gpm) increased from the average flow rate measured in August 2014 (4.4 gpm). Troubleshooting continued in September to try and identify the source of the discrepancy between the totalizer readings at the extraction wells and the effluent. An air release valve was installed on the top of the bag filter in the treatment compound on 3 September 2014 to reduce the pressure and potentially increased flow measurements by the totalizer due to the presence of air in the system. The NGWTP effluent totalizer has routinely measured greater flow and gallons than the combined extraction well totalizers. Totalizer readings will continue to be monitored for discrepancies in October and additional work will be performed to try and eliminate air intake at the extraction wells.

On 14 August 2014, repairs were made to a weld joint in the piping at extraction well EW615x07. Extraction well EW615x07 will remain off line until work can be completed to bypass the existing batteries, which are no longer functional. During the piping repairs in August, a check valve and a ball valve were also installed at extraction well EW614x07 to prevent back flow to EW615x07 when it is not online.

Optimization Activities

No optimization activities were performed during September 2014.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the system.

Figure 2 presents the historical GHG production from the systems associated with the NGWTP. The NGWTP is taken off line when the vernal pools at Site LF007C contain standing water. The NGWTP is now a solar-only operated treatment system.

TABLE 4

Summary of Groundwater Analytical Data for September 2014 – North Groundwater Treatment Plant

| Constituent | Instantaneous Maximum* (µg/L) | Detection Limit (µg/L) | N/C | 8 September 2014 (µg/L) | | |
|--|-------------------------------------|------------------------------|-----|----------------------------|----------------|----------|
| | | | | Influent | After Carbon 1 | Effluent |
| Halogenated Volatile Organics | | | | | | |
| Bromodichloromethane | 5.0 | 0.15 | 0 | ND | ND | ND |
| Bromoform | 5.0 | 0.19 | 0 | ND | ND | ND |
| Carbon Tetrachloride | 0.5 | 0.14 | 0 | ND | ND | ND |
| Chloroform | 5.0 | 0.16 | 0 | ND | ND | ND |
| Dibromochloromethane | 5.0 | 0.13 | 0 | ND | ND | ND |
| 1,3-Dichlorobenzene | 5.0 | 0.15 | 0 | ND | ND | ND |
| 1,4-Dichlorobenzene | 5.0 | 0.15 | 0 | ND | ND | ND |
| 1,1-Dichloroethane | 5.0 | 0.15 | 0 | ND | ND | ND |
| 1,2-Dichloroethane | 0.5 | 0.15 | 0 | ND | ND | ND |
| 1,1-Dichloroethene | 5.0 | 0.19 | 0 | ND | ND | ND |
| cis-1,2-Dichloroethene | 5.0 | 0.19 | 0 | 0.27 J- | ND | ND |
| trans-1,2-Dichloroethene | 5.0 | 0.33 | 0 | ND | ND | ND |
| Methylene Chloride | 5.0 | 0.66 | 0 | ND | ND | ND |
| Tetrachloroethene | 5.0 | 0.21 | 0 | ND | ND | ND |
| 1,1,1-Trichloroethane | 5.0 | 0.14 | 0 | ND | ND | ND |
| 1,1,2-Trichloroethane | 5.0 | 0.2 | 0 | ND | ND | ND |
| Trichloroethene | 5.0 | 0.19 | 0 | 3.4 J- | ND | ND |
| Vinyl Chloride | 0.5 | 0.18 | 0 | ND | ND | ND |
| Non-Halogenated Volatile Organics | | | | | | |
| Benzene | 1.0 | 0.17 | 0 | ND | ND | ND |
| Ethylbenzene | 5.0 | 0.22 | 0 | ND | ND | ND |
| Toluene | 5.0 | 0.14 | 0 | ND | ND | ND |
| Xylenes | 5.0 | 0.23 – 0.5 | 0 | ND | ND | ND |
| Other | | | | | | |
| Total Petroleum Hydrocarbons – Gasoline | 50 | 8.5 | 0 | NM | NM | ND |
| Total Petroleum Hydrocarbons – Diesel | 50 | 50 | 0 | NM | NM | ND |
| Total Dissolved Solids (mg/L) | NA | 10 | 0 | NM | NM | 2,670 J- |

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

Notes:

J- = positive results for affected samples where the temperature upon receipt at the laboratory exceeded ideal analysis conditions

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

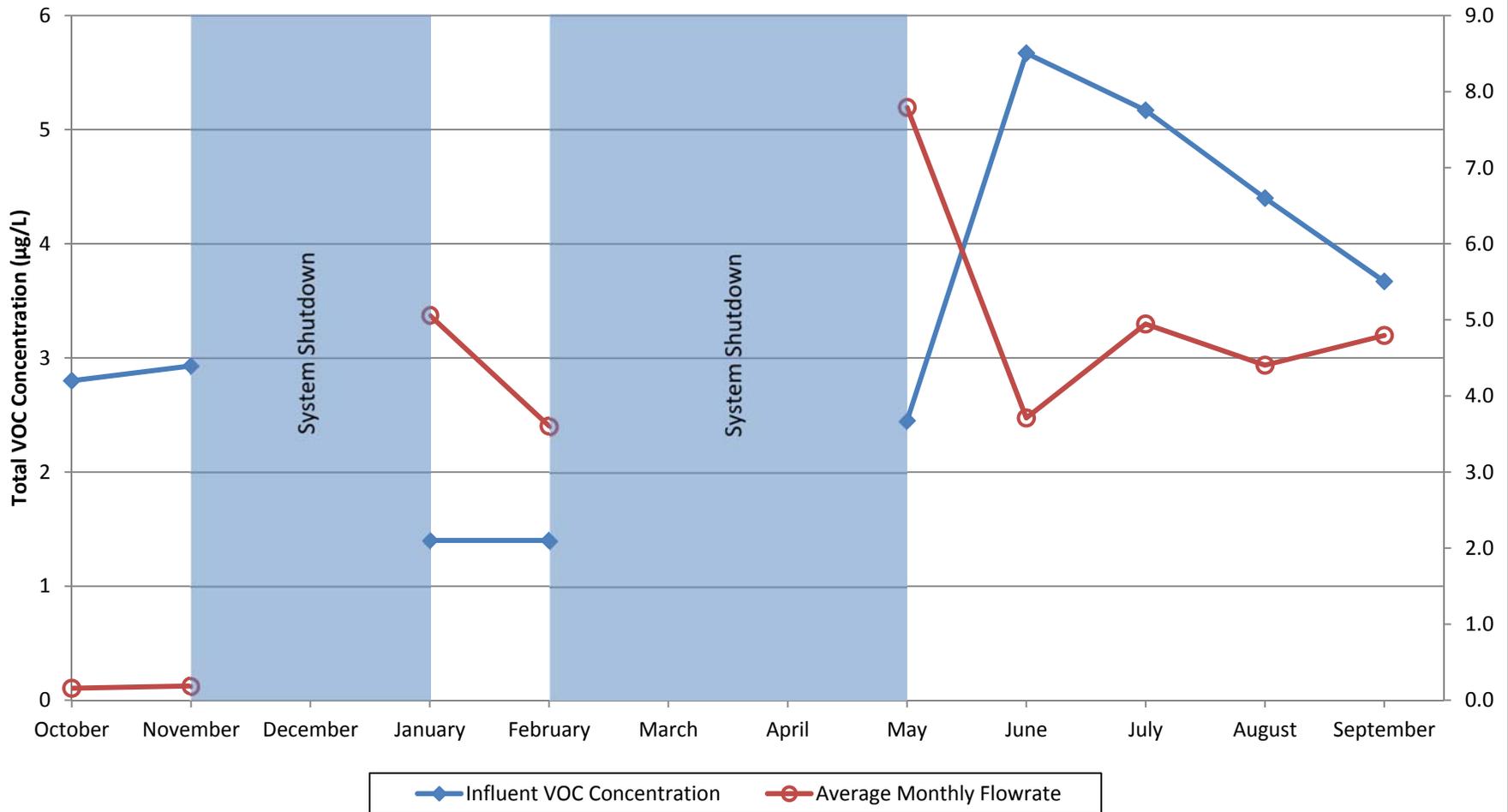
ND = not detected

NM = not measured

µg/L = micrograms per liter

mg/L = milligrams per liter

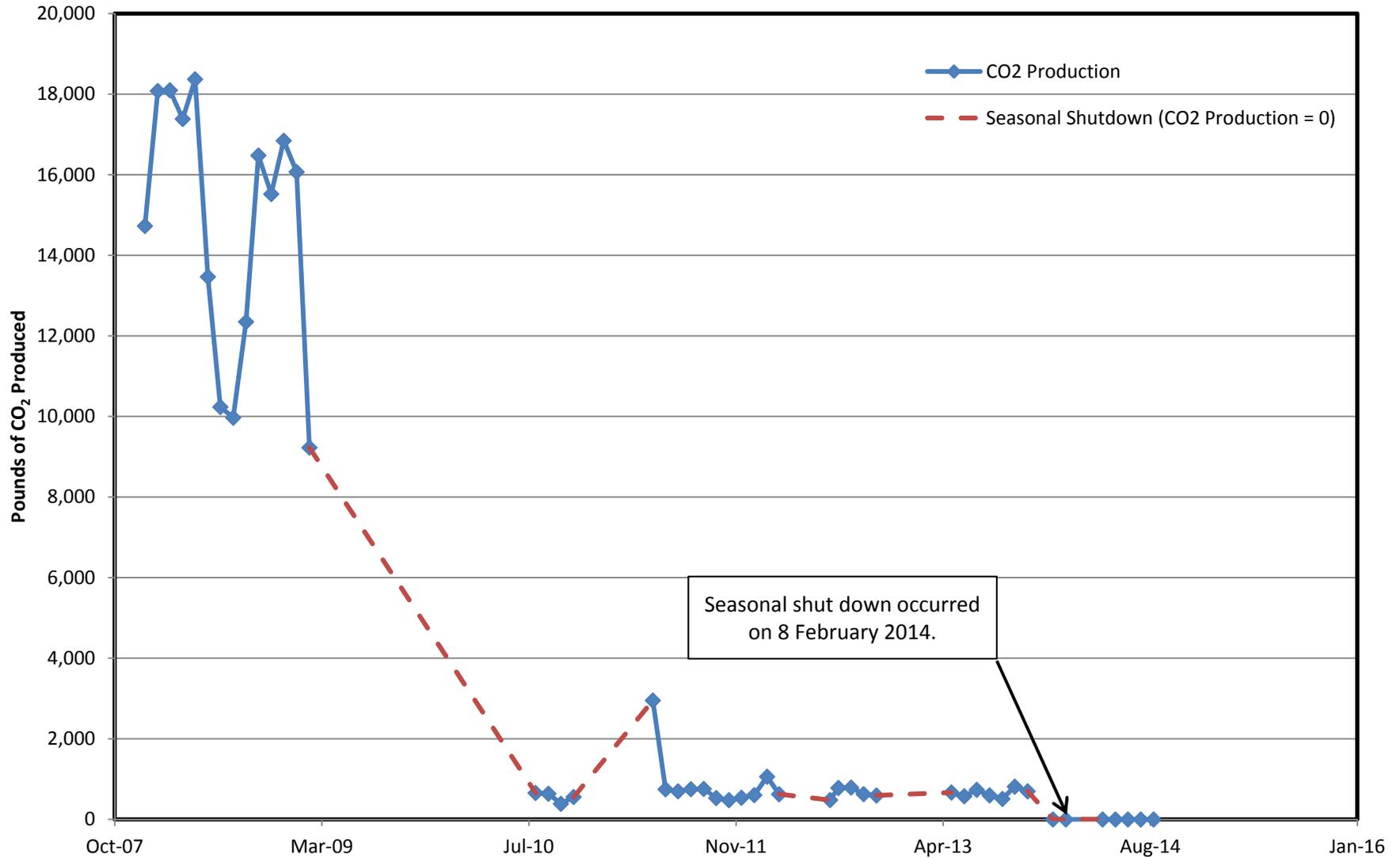
Figure 1
NGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California



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

Figure 2

Equivalent Pounds of CO₂ Produced by the North Groundwater Treatment Plant



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

Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 043

Reporting Period: 29 August 2014 – 29 September 2014

Date Submitted: 17 October 2014

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

System Metrics

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

| Table 1 – Operations Summary – September 2014 | | | |
|--|------------------------|--|-----------------|
| Initial Data Collection: | 8/29/2014 17:00 | Final Data Collection: | 9/29/2014 16:00 |
| Operating Time: | Percent Uptime: | Electrical Power Usage: | |
| ST018GWTP: 744 hours | ST018GWTP: 100% | ST018GWTP: 103 kWh (141 lbs CO₂ generated^a) | |
| Gallons Treated: 168 thousand gallons | | Gallons Treated Since March 2011: 6.41 million gallons | |
| Volume Discharged to Union Creek: 168 thousand gallons | | | |
| BTEX, MTBE, TPH Mass Removed: 0.20 lbs^b | | BTEX, MTBE, TPH Mass Removed Since March 2011: 30.8 lbs | |
| MTBE (Only) Removed: 0.11 lbs^b | | MTBE (Only) Mass Removed Since March 2011: 6.6 lbs | |
| Rolling 12-Month Cost per Total Pounds of Mass Removed: \$12,965 ^c | | | |
| Monthly Cost per Pound of Mass Removed: \$11,424 | | | |
| ^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG. ^b Calculated using July 2014 (quarterly) influent and September 2014 effluent EPA Method SW8260B analytical results. ^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. lbs = pounds | | | |

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

| Table 2 – ST018GWTP Average Flow Rates | | |
|--|--|--------------------|
| Location | Average Flow Rate Groundwater (gpm) ^a | Hours of Operation |
| EW2014x18 | 1.61 | 744 |
| EW2016x18 | 1.32 | 744 |
| EW2019x18 | 1.31 | 744 |
| Site ST018 GWTP | 3.77 | 744 |

^a Flow rates calculated by dividing total gallons processed by the hours of operation, from the totalizer and hour meter at each location.
gpm = gallons per minute
ST018GWTP = Site ST018 Groundwater Treatment Plant

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

| Table 3 – Summary of System Shutdowns | | | | | |
|---------------------------------------|----------|------|---------|------|-------|
| Location | Shutdown | | Restart | | Cause |
| | Date | Time | Date | Time | |
| None | NA | NA | | | |

ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the ST018GWTP from the midpoint and effluent sampling locations on 8 September 2014. Influent sampling is performed on a quarterly basis, in accordance with the National Pollutant Discharge Elimination System (NPDES) permit, and was last completed in July 2014. The results from the monthly sampling event are presented in Table 4, along with the results of quarterly influent sampling.

The third quarter 2014 influent concentration of MTBE was 78 µg/L during the most recent quarterly influent sampling event completed in July 2014. TPH-g was also detected in the influent sample at a concentration of 67 µg/L during this same quarterly sampling event in July 2014. No contaminants were detected at the midpoint or effluent sampling locations during the monthly sampling event in September 2014.

Figure 1 presents plots of flow rate and influent total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the ST018GWTP versus time. Optimization of the battery banks in April 2013 resulted in an increased average flowrate at the ST018GWTP. As a result, the increased flowrate produced an increase in MTBE mass removal; this removal rate is greatly influenced by the average flowrate.

As shown on Figure 1, the average flow rate through the ST018GWTP has been seasonally variable with a slight increasing trend since the battery upgrade in 2013. TPH was detected in the influent sample for the first time in several quarters during the April 2014 sampling event. Influent concentrations of TPH-g, TPH-d, and TPH-mo were 740 µg/L, 52 J µg/L, and 170 J µg/L, respectively, which caused a spike in the influent concentration during the second quarter of 2014. The influent concentration of TPH-g in the third quarter, 2014, was 67 µg/L, whereas TPH-d and TPH-mo were not detected.

Optimization Activities

No optimization activities were performed in September 2014.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the ST018GWTP system.

The ST018GWTP produced approximately 141 pounds of GHG during September 2014. This is an increase from August 2014 (123 pounds of GHG produced) and is the result of greater hours of operation and gallons having been treated from the previous month. Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation is increasing slightly, but remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays. The increasing GHG production reflects the past optimization efforts to increase the flow rate from the extraction wells.

TABLE 4

Summary of Groundwater Analytical Data for September 2014 – Site ST018 Groundwater Treatment Plant

| Constituent | Instantaneous Maximum ^a (µg/L) | Detection Limit (µg/L) | N/C | 8 September 2014 (µg/L) | | | |
|--|--|---------------------------|-----|----------------------------|----------------|----------------|-----------------|
| | | | | Influent ^b | After Carbon 1 | After Carbon 2 | System Effluent |
| Fuel Related Constituents | | | | | | | |
| MTBE | 5 | 0.5 | 0 | 78 | NM | ND | ND |
| Benzene | 5 | 0.17 | 0 | 0.51 | NM | ND | ND |
| Ethylbenzene | 5 | 0.22 | 0 | ND | NM | ND | ND |
| Toluene | 5 | 0.14 | 0 | ND | NM | ND | ND |
| Total Xylenes | 5 | 0.23 – 0.5 | 0 | ND | NM | ND | ND |
| Total Petroleum Hydrocarbons – Gasoline | 50 | 8.5 | 0 | 67 | ND | NM | ND |
| Total Petroleum Hydrocarbons – Diesel | 50 | 50 | 0 | ND | ND | NM | ND |
| Total Petroleum Hydrocarbons – Motor Oil | -- | 160 | -- | ND | ND | NM | ND |

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

µg/L = micrograms per liter

^b Influent samples are collected on a quarterly basis. Results presented from 8 July 2014.

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

ND = not detected above method detection limit

NM = not measured this month

Figure 1
S18GWTP Total VOC and MTBE Influent Concentrations
Quarterly History
Travis Air Force Base, California

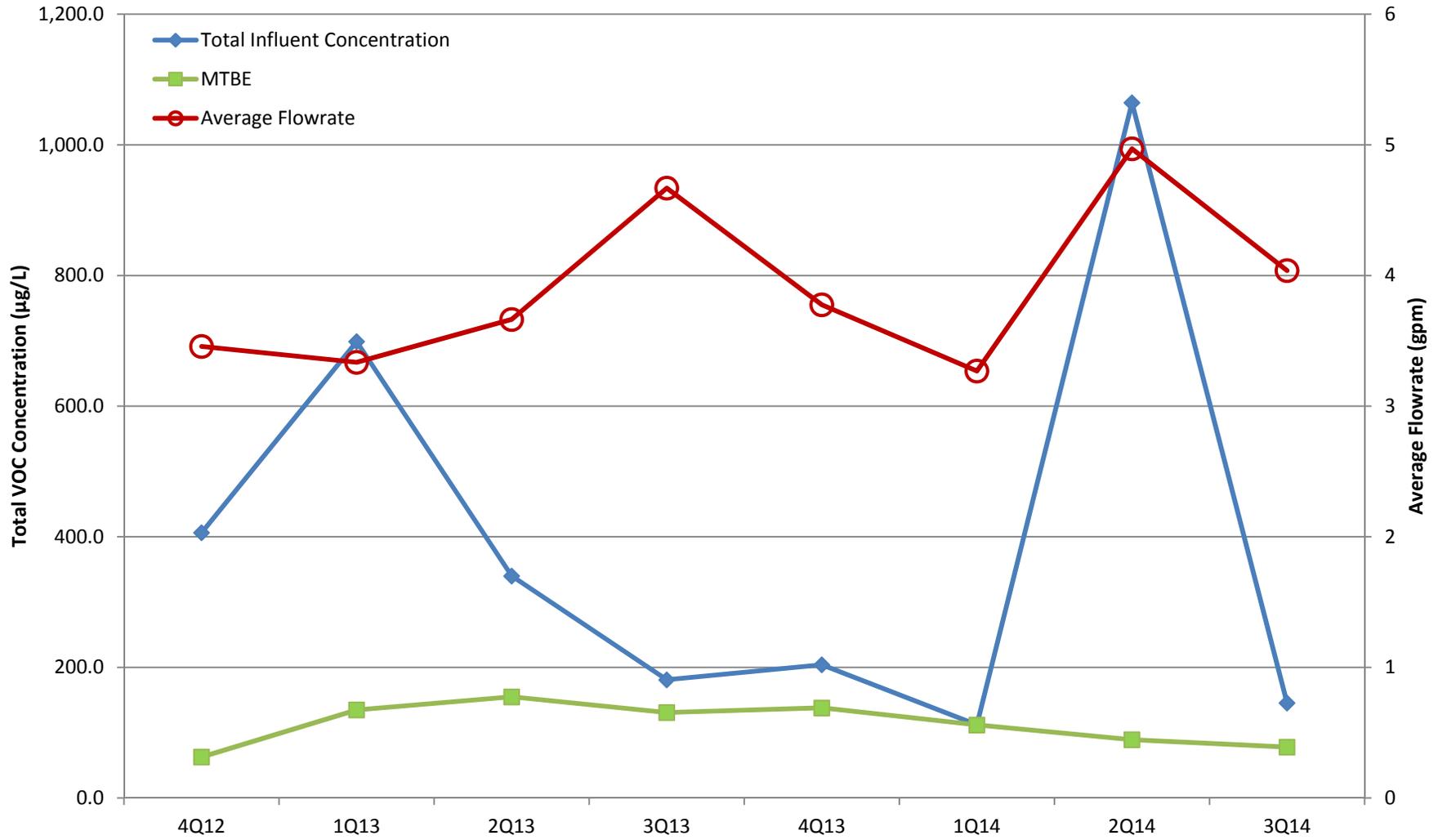
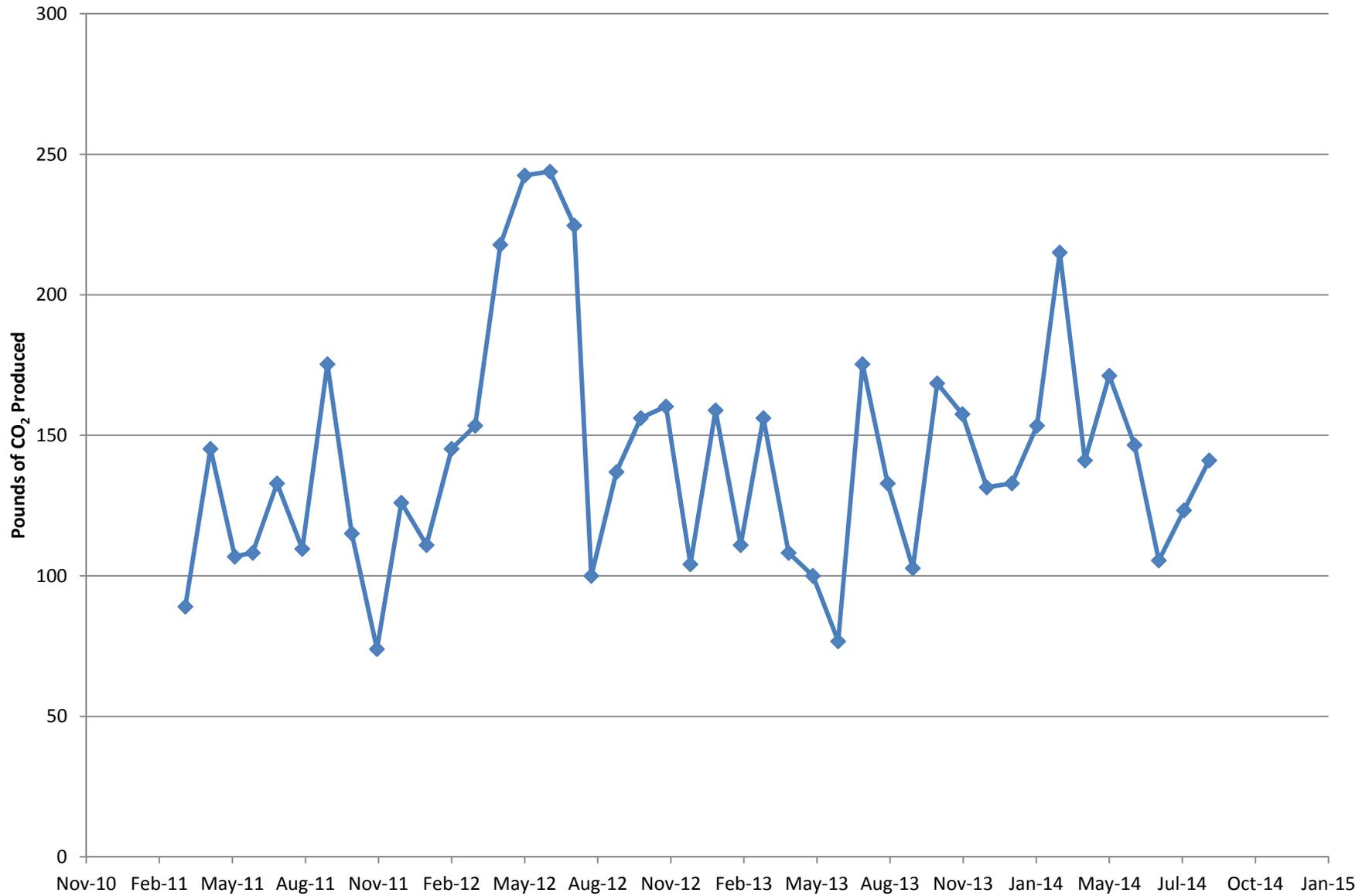


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB
Impact of
FY14 Accelerated Funding
PBC-13

RPM Meeting
October 23, 2014

Accelerated Funding Awards

- The PBC-13 project was programmed to be awarded selected tasks annually
- New award each fiscal year
- Awards were be awarded in FY13, FY14, FY15, FY16, FY17, and FY18
- Funding to be complete by FY18
- The biggest funding year was scheduled to be FY16

FY14 Award Summary

1. Initial project award (FY13 Award) – 9/30/2013
2. FY14 Award (Mod 1) – 12/20/2013
3. FY14 Accelerated Award (Mod 2) – 6/2/2014
4. FY14 Accelerated Award (Mod 3) – 8/15/2014
5. FY14 Accelerated Award (Mod 4) – 8/29/2014
6. FY14 Accelerated Award (Mod 5) – 9/30/2014

At this point, about 60% of the contract has been awarded

Accelerated Tasks (Impact of new funding)

The following tasks (including associated tasks) have been moved up on the project schedule due to early funding:

1. SS014 Investigation
2. SS016 Soil excavation/EVO injection
3. ST018 Install new extraction well
4. ST028 Soil excavation/sparge system
5. ST032 Soil excavation
6. SD034 Data gap investigation
7. SD036 EVO injection

Accelerated Tasks (Impact of new funding)

- | | | |
|-----|-----------|--|
| 8. | SD037 | EVO injection |
| 9. | DP039 | EVO biobarriers installation |
| 10. | OWSs (12) | Investigation/Removal |
| 11. | SS015 | EVO injection |
| 12. | SD043 | Soil Excavation |
| 13. | SS046 | Soil Excavation |
| 14. | TA500 | Data gap investigation/soil excavation |

CG508 - POCO Investigation Summary

Travis AFB, California

October 23, 2014

CG508 Background

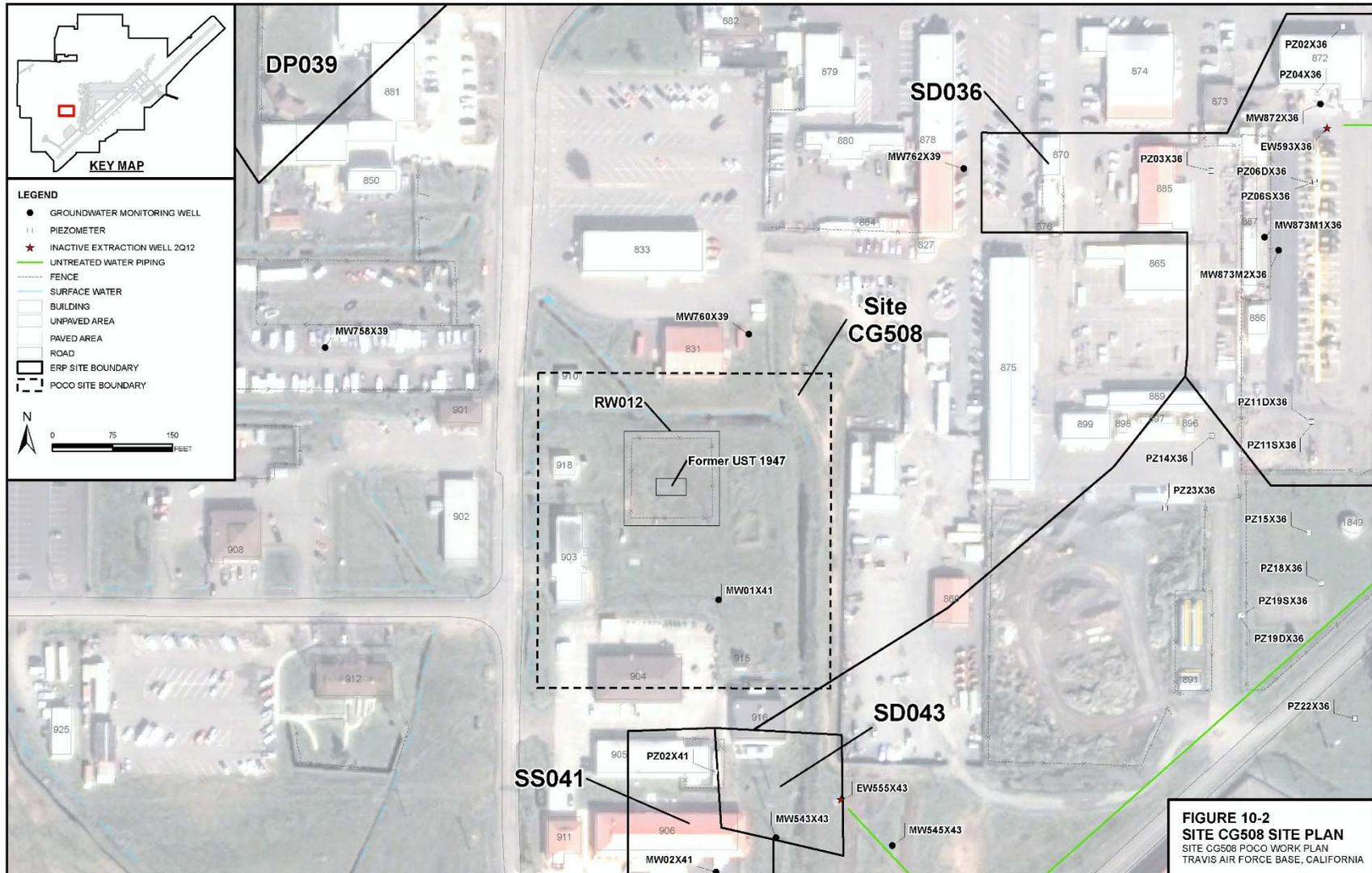
- POL site with groundwater plume (primarily TPH-MRO) of previously unknown size and unknown source

- Site discovered in 2002 during removal of UST 1947
 - UST 1947 was known as ERP Site RW012 and was associated with Building 903, which was used for nuclear weapons maintenance from 1953 to 1962
 - Previous investigations indicate UST 1947 was never used for storage of fuels or other TPH products
 - NFA Consensus Statement for Site RW012 (Travis AFB, 1996) was issued by Travis AFB and signed by the U.S. Air Force, the EPA, the Water Board, and the DTSC on April 24, 1996, for the closure of Site RW012 with regard to radioactive materials

CG508 Background (continued)

- Soil sample results from the UST 1947 excavation confirmed that the source of the TPH-impacted groundwater was not UST 1947
 - Non-detectable concentrations of TPH-MRO and concentrations of TPH-DRO only as high as 1.2 mg/kg
- Solano County Department of Resource Management, Environmental Health Division (SCDRMEHD - the regulatory agent for the Water Board) issued an NFA for UST 1947 (SCDRMEHD, 2013) on March 27, 2013
 - UST was closed for TPH and other compounds
- The source of the TPH-impacted groundwater associated with Site CG508 was not investigated following closure of UST 1947
 - TPH-MRO in groundwater near UST was as high as 1,000 µg/L

CG508 Site Plan



\\BALDWIN\PROJ\TRAVIS\482386_CG508\POCO\WORKPLAN_2014\MAPFILES\FIGURE10-2_SITEPLAN_POCCO_WP_CG508.MXD MCLAYWAR 2/17/2014

2014 POCO Investigation Activities

- Phase I groundwater sampling
 - Sampled 5 existing wells/piezometers for TPH-GRO, TPH-DRO, TPH-MRO, VOCs, and alkalinity

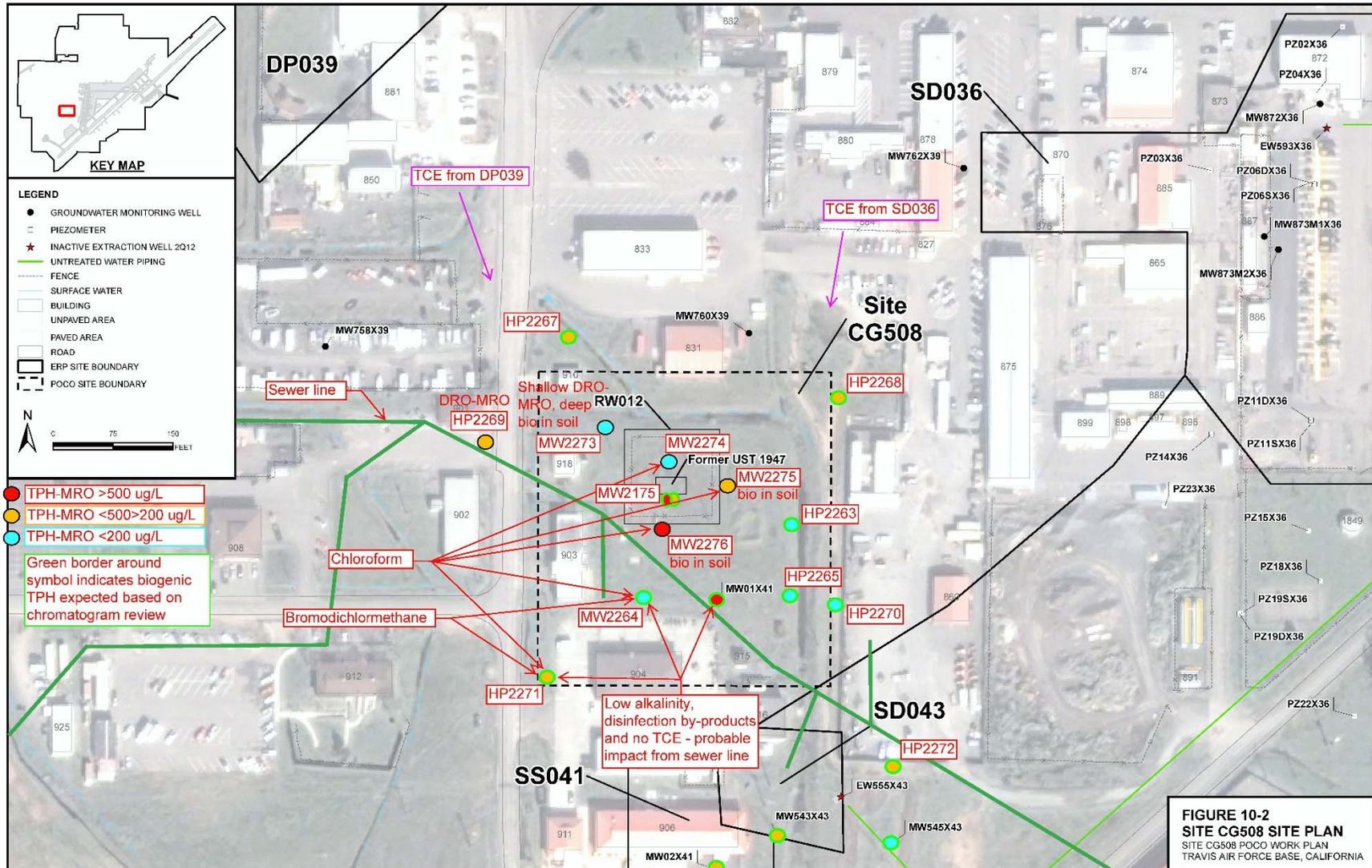
- Phase II soil borings and groundwater sampling
 - Drilled and collected grab groundwater samples from 14 borings, 3 existing MWs, and 1 new MW for TPH-GRO, TPH-DRO, TPH-MRO, VOCs, and alkalinity. TPH-DRO and TPH-MRO analyzed using the shaker table silica gel cleanup method

- Phase III soil borings and groundwater sampling
 - Drilled and installed 5 new soil borings and sampled soil every 5 feet for TPH-GRO, TPH-DRO, TPH-MRO, and VOCs. TPH-DRO and TPH-MRO analyzed using the column silica gel cleanup method. Soil borings were converted to MWs
 - Sampled the 5 new MWs (MW2264x508, MW2273x508, MW2274x508, MW2275x508, and MW2276x508) and 2 existing MWs (MW01x41 and MW2175x508) for TPH-DRO, TPH-MRO, VOCs, and alkalinity. TPH-DRO and TPH-MRO analyzed using the column silica gel cleanup method

2014 POCO Investigation Results

- Soil
 - No soil source was identified (no staining observed and low concentrations)
- Groundwater
 - For a petroleum release we would expect to see positive detections of BTEX and PAHs
 - BTEX was not detected and historically PAHs were not detected at the UST (only naphthalene at 6.8 ug/L)
- Results to date are not indicative of a typical diesel or motor oil release
 - No soil source was found, lack of characteristic VOC/PAH compounds, wide-spread low-level TPH-MRO detections in groundwater only, fluctuations in detections, and indications of biogenic TPH in chromatograms

CG508 Groundwater Summary



\\BALDUR\PROJ\TRAVIS\42365_CG508\POCO\WORKPLAN_2014\MAPP\FILES\FIGURE10_2_SITEPLAN_POCO_WP_CG508.MXD MCLAYWR 2/17/2014

Evaluation of Biogenic Sources of TPH

- Silica gel cleanup methods are not always reliable at removing polar compounds (non-petroleum) prior to TPH analysis

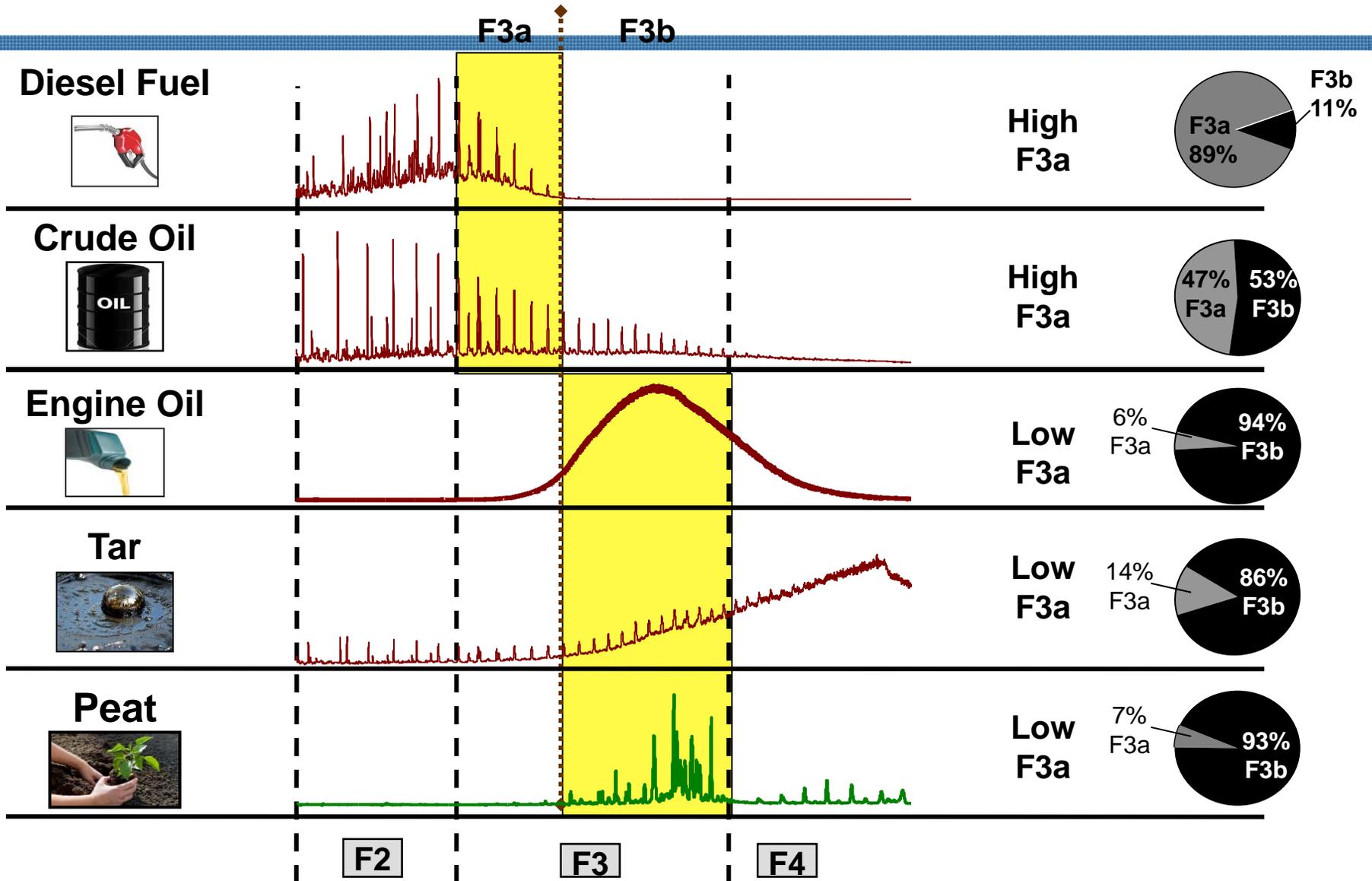
“Soils and sediment with high organic content, such as peat may exceed the capacity of the silica gel to remove non petroleum hydrocarbons.”

Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act PIBS 4696e01

- Researchers in Canada have been studying biogenic hydrocarbon sources that cause “false positives” for TPH-DRO and TPH-MRO
 - Based on review of chromatograms

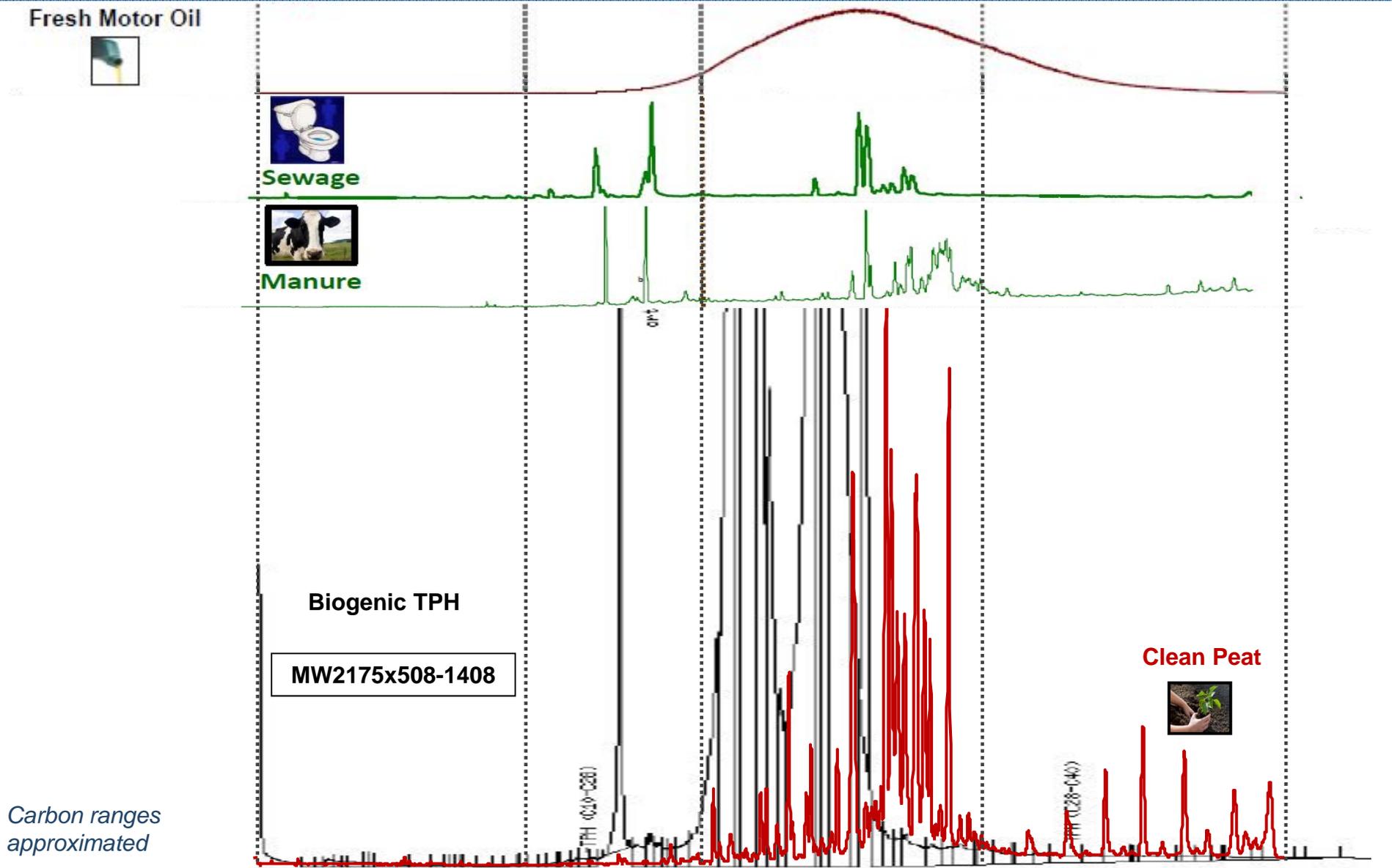
Limitations of F2:F3b Ratio and BOC-adjusted PHC Calculation

Light PHCs have high %F3a; Heavy PHCs have low %F3a

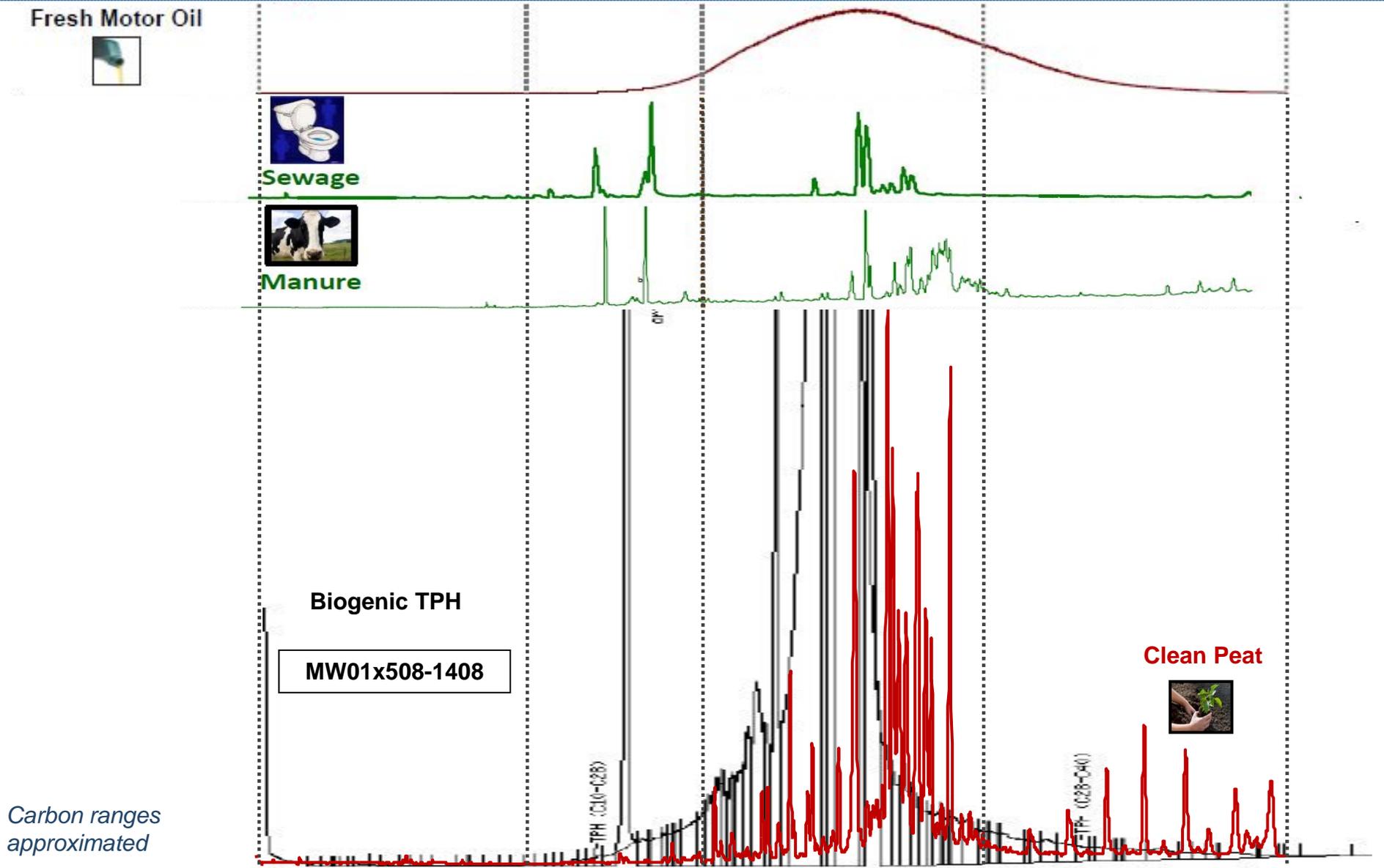


From: Francine Kelly-Hooper, PhD

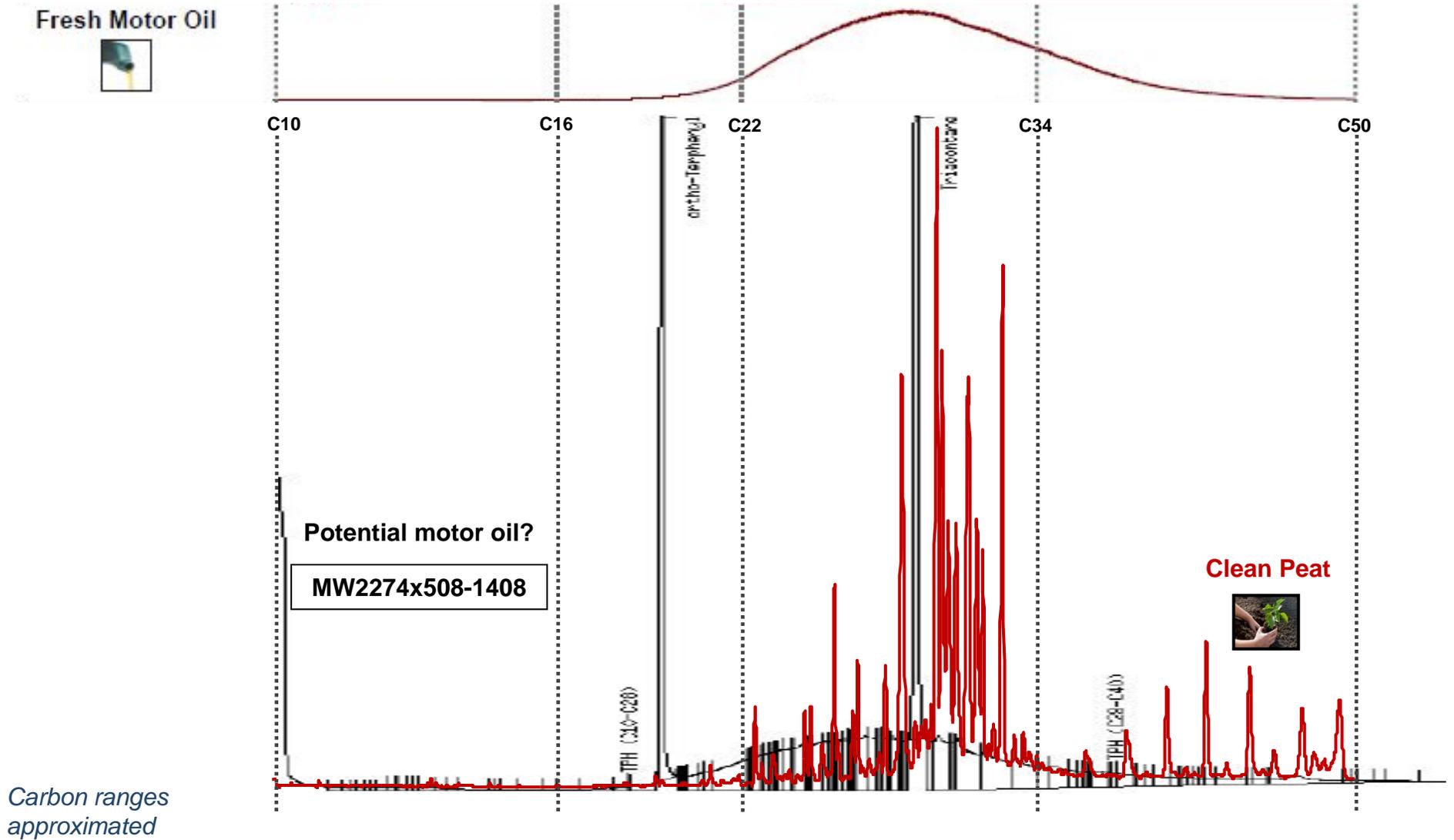
Comparison of Biogenic Samples to MW2175x508



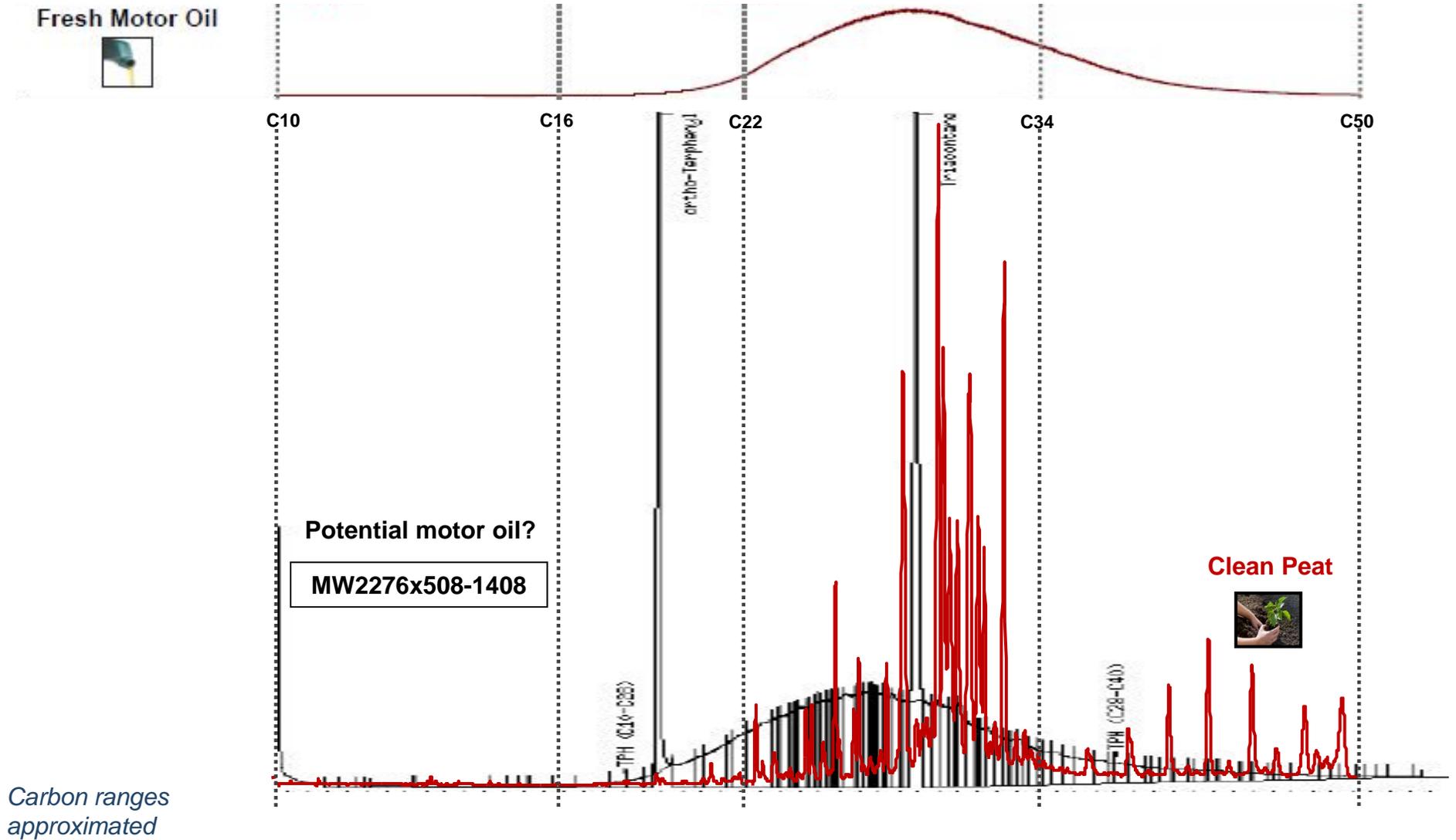
Comparison of Biogenic Samples to MW01x508



Comparison of Clean Peat and MRO to MW2274x508



Comparison of Clean Peat and MRO to MW2276x508



2014 POCO Investigation Conclusions

- No soil source of contamination was identified

- TPH detections in groundwater above the 100 µg/L TPH-residual fuel ESL are biased by biogenic sources

- Remaining Data Gap: Are PAHs present in groundwater?
 - If PAH results are non-detect or very low then:
 - Provides further evidence that TPH results are not caused by a “petroleum” release
 - Will demonstrate a lack of risk
 - We expect to recommend this be considered a “non-site”

 - If PAH results indicate motor oil is present then:
 - We expect to recommend this site be considered for “low-threat closure”

Travis AFB Restoration Program

Program Overview

RPM Meeting

October 23, 2014

Completed Documents

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

Completed Field Work

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

Documents & Field Work In-Progress

Documents

- ***ST018 POCO Work Plan Addendum***
- SD031 Technology Demonstration Work Plan
- TA500 Data Gap Investigation Work Plan
- SD037 GW RD/RA Work Plan
- Travis AFB UFP-QAPP
- DP039 Lead Excavation Technical Memo

Field Work

- ***4Q Semiannual GRIP Sampling Event***

Documents Planned (CERCLA)

- SD036 RD/RA Work Plan Nov
- SD034 Data Gap Investigation Work Plan Nov
- Proposed Plan for the ROD Amendment to WABOU
Soil ROD Dec
- Proposed Plan for the ROD Amendment to NEWIOU
Soil, Sediment, & Surface Water ROD Dec
- SS016 GW RD/RA Work Plan Dec
- Community Involvement Plan Jan
- SS015 GW RD/RA Work Plan Jan
- ROD Amendment to WABOU Soil ROD Jul
- ROD Amendment to NEWIOU Soil, Sediment, & Surface
Water ROD Jul

Documents Planned (POCO)

- SS014 POCO Technology Demonstration Work Plan Dec

Field Work Planned

- SD031 Technology Demonstration

Nov

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

Completed Documents (Historical1)

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second, & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan
- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report
- CAMU 2008-2009 Monitoring Annual Report

Completed Documents (Historical 2)

- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- Focused Feasibility Study (FFS)
- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- 2010/2011 Annual GSAP Report
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- 2011 CAMU Annual Report
- Technical and Economic Feasibility Analysis (TEFA)
- Work Plan for RPO of Sites SS016 and SS029
- Site LF007C Data Gaps Investigation Technical Memorandum
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Groundwater Proposed Plan (PP)
- FT005 Remedial Action Completion Report
- 2012 GSAP Technical Memorandum 9

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