Final

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

21 August 2013, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Restoration Program Manager's (RPM) meeting on 21 August 2013 at 0930 hours, at Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Glenn Anderson	Travis AFB
• Gregory Parrott	Travis AFB
• Dave Leeson (via phone)	AFCEC/ERC
• William Hall (via phone)	AFCEC/CZRW
• Dezso Linbrunner	USACE-Omaha
• Adriana Constantinescu	California Regional Water Quality Control Board (RWQCB)
• Jose Salcedo	California Department of Toxic Substances Control (DTSC)
• Nadia Hollan Burke	United States Environmental Protection Agency (USEPA)
• Wilson Clayton	Trihydro Corp.
• Glenn Leong	Trihydro Corp.
• Tony Chakurian	CH2M HILL
• Loren Krook	CH2M HILL
• Ashley Shaddy	CH2M HILL
• Mike Wray	CH2M HILL

Handouts distributed at the meeting, and presentations included:

• Attachment 1	Meeting Agenda
• Attachment 2	Master Meeting and Document Schedule
• Attachment 3	SBBGWTP Monthly Data Sheet (July 2013)
• Attachment 4	CGWTP Monthly Data Sheet (July 2013)
• Attachment 5	NGWTP Monthly Data Sheet (July 2013)
• Attachment 6	ST018 Monthly Data Sheet (July 2013)
• Attachment 7	Presentation: LF007C/SS030 Optimizations

- Attachment 8 Presentation: SS029 Pre-Design Site Characterization
- Attachment 9 Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 17 July 2013 RPM meeting minutes were approved and finalized as written.

Mr. Smith introduced Mr. Wilson Clayton, technical advisor with Trihydro.

B. Action Item Review.

Action items from July were reviewed.

Action item 1 still open: Travis AFB to research beneficial reuse of treated water. AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update, 16 January 2013: Mr. Duke said that an Air Force energy reduction contractor is looking into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD. Update, 18 April 2013: Mr. Smith said that they have the attention of Civil Engineering Operations Flight regarding beneficial reuse.

21 August 2013: Mr. Linbrunner inquired if trucks with portable tanks could use the treated water for irrigation in remote areas. Mr. Smith thanked Mr. Linbrunner for the idea, but stated that such trucks on base are owned by the Horizontal Shop and used for very infrequent dust suppression operations. He further stated that they only hold about 2,000 gallons and the shop personnel prefer to fill them faster with our potable water supply.

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 held on 18 September 2013. Mr. Linbrunner announced that the new PBC contract should be awarded at the end of August, and that a kick-off meeting will occur within a day or two around the September RPM meeting. An invitation will go out when a date has been selected that will coordinate with the regulatory agencies schedules.

Travis AFB Master Document Schedule

— Groundwater Record of Decision (ROD): The Draft to Agencies date is highlighted to note when Appendix A was sent to the agencies for review. Appendix A is a compendium of the groundwater conceptual site model information for all sites. Mr. Anderson reminded the agencies that a meeting is scheduled this afternoon and any comments regarding Appendix A can be discussed. Travis AFB will assist in any way to help accelerate the review process by means of weekly teleconferences if needed. Mr. Smith mentioned that, as part of the new PBC contract, periodic updates are to be made to the conceptual site models.

— 3rd Five-Year Review: No change to the schedule. This document is also scheduled to be discussed in the afternoon meeting.

— Potrero Hills Annex: (FS, PP, and ROD): No change to the schedule. Mr. Anderson said the Potrero Hills responsible parties have issued two reports: The Vegetation Investigation Report and The Oxidation Pond Report. Both reports have been submitted to RWQCB. The Oxidation Pond Report investigation concluded that perchlorate was not present in the oxidation pond. The Vegetation Investigation Report that investigated the vegetation and soil samples collected along the hillside between the Annex and Suisun Marsh (soil samples were collected about an inch below the vegetation) identified positive detections of perchlorate in all vegetation and soil samples. The risk evaluation concluded that the concentrations were below perchlorate levels that could pose potential adverse impacts to livestock and humans. The responsible parties believe the concentration levels to be a "non-issue". However, it is up to the RWQCB to make that determination. Ms. Constantinescu asked if the reports draw any correlation of the well that had significant perchlorate levels with the oxidation pond or the vegetation investigation. Mr. Anderson said no and that is why more investigation is needed to define the perchlorate contaminant migration. He added that the next steps taken will be based on the guidance received from the RWQCB.

— Old Skeet Range Action Memorandum: No change to the schedule. This document is also on the schedule to be discussed in the afternoon meeting.

— Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan: The Draft to Agencies date was changed to reflect the actual date the document was submitted. Mr. Chakurian said the document review is important because LF007C is located on a vernal pool and fieldwork needs to be conducted before the rainy season. A presentation will be provided later in this RPM meeting.

— Quarterly Newsletter (July 2013): All new dates need to be populated to reflect the 4th quarter. Topics to include ROD update status, and Old Skeet range.

— Groundwater Remediation Implementation Status Report (GRISR): Agency Comments Due date changed to reflect the date the comments were actually received. No changes made to the rest of the dates.

— Kinder Morgan LF044 Land Use Control Report: Dates are still TBD. Travis AFB is waiting on Kinder Morgan to prepare the report. Mr. Smith said he would make a note to follow up with them tomorrow.

— Pre-Design Site Characterization of SS029 Report: New document, all new dates. A presentation of the report will be made later in this RPM meeting.

— 2012 CAMU Annual Report: Moved to history.

Mr. Smith asked about suggesting a document review priority for the Regulatory Agencies. Mr. Anderson suggested that the document priority be determined in the meeting this afternoon pending agency comments.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke is on leave, and could not attend this meeting, so Ms. Ashley Shaddy (CH2MHILL) reported on the treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 3.8 million gallons of groundwater were extracted and treated during the month of July 2013. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 80.4 gallons per minute (gpm). Electrical power usage was 16,140 kWh and approximately 22,112 pounds of CO_2 were created (based on DOE calculation). Approximately 0.70 pounds of volatile organic compounds (VOCs) were removed in July. The total mass of VOCs removed since startup of the system is 439 pounds.

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

Ms. Shaddy said that all extraction wells are up and running with the exception of EW02x29 which the pump and motor will soon be replaced. Mr. Wray added site SS030 extraction wells have been completely rewired as well as site SS029, save the aforementioned well, and one electrical repair at FT005. No optimizations are planned at this point but will be considered in the future. Mr. Salcedo asked when the bioreactor will be sampled again. Mr. Chakurian said it is scheduled to be sampled in November 2013.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.5 million gallons of groundwater extracted and treated during the

month of July 2013. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 31.4 gpm. Electrical power usage was 2,250 kWh for all equipment connected to the Central plant, and approximately 3,083 pounds of CO_2 were generated. Approximately 3.27 pounds of VOCs were removed from groundwater by the treatment plant in July. The total mass of VOCs removed since the startup of the system is 11,337 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. No additional optimization activities to report for the month of July.

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

North Groundwater Treatment Plant (see Attachment 5)

The North Groundwater Treatment Plant (NGWTP) performed at 100% uptime with approximately 20,240 gallons of groundwater extracted and treated during the month of July 2013. The average flow rate at the NGWTP was 0.17 gpm and electrical power use was 536 kWh for all the equipment connected to the North plant; approximately 734 pounds of CO_2 was generated. Approximately $5.2x10^{-4}$ pounds of VOCs were removed from the groundwater in July. The total mass of VOCs removed since the startup of the system is 174.3 pounds.

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

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

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 91.3% uptime with approximately 214 thousand gallons of groundwater extracted and treated during the month of July 2013. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 4.88 gpm. Electrical power usage for the month was 128 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 175 pounds of CO_2. Approximately 0.32 pounds of BTEX, MTBE and TPH were removed from groundwater in July from the treatment plant. The total BTEX, MTBE and TPH mass removed since the startup of the system is 24.6 pounds.

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

Optimization Activities for ST018: On 5 July 2013 the trip point for the pressure switch on the treatment system was increased from 25 to 35 pounds per square inch. This increased our ability to treat groundwater by three times. See ST018 July monthly report for more details.

Presentations:

LF007C and SS030 Remedial Process Optimizations (see Attachment 7)

Mr. Chakurian and Ms. Shaddy reported on the LF007C and SS030 Remedial Process Optimizations Work Plan. Mr. Chakurian presented the previous and current investigations conducted at these sites, Ms. Shaddy presented on the optimization. See Attachment 7 for details. Highlights included:

Mr. Chakurian gave the presentation on the previous and current investigation conducted at sites LF007C and SS030:

Summary of Subarea LF007C objectives:

- Delineate the horizontal and vertical extent of the VOC plume off-base.
- Evaluate hydraulic connection of the vernal pool with the underlying groundwater.
- Evaluate VOC plume capture scenarios.

Subarea LF007C Previous Investigations:

- Installed 9 temporary piezometers and 4 monitoring wells at LF007C in October and November 2011 to delineate the off-base portion of the TCE plume.
- A groundwater elevation survey was conducted with the LF007C extraction wells were turned off in November 2011 and identified a groundwater trough beneath the TCE plume.
- Review of the lithologic logs of LF007C indentified a bedrock depression in the subsurface beneath the TCE plume. The bedrock depression, low area, causes a directional groundwater flow.
- Performed limited pump tests at the two extraction wells on 30 December 2011, which confirmed that the extraction wells can pump at a higher rate.
- Conducted groundwater modeling for pumping rates needed to achieve plume capture, a combined ‘increased’ extraction rate of 10 gpm for both extraction wells. Note: the two existing extraction wells were the first solar powered wells installed at Travis AFB, and were installed in 2004. The solar panels are small and the pumping rates achieved are <1 gpm per well.
- Results of the investigations concluded the need to delineate the southwestern portion of the TCE plume, an on base portion of the plume, to evaluate if existing extraction wells can achieve plume capture.

Follow-on Investigations (which is part of the initial investigation):

- Conducted continuous groundwater elevation survey inside the off-base portion of the vernal pool area from December 2011 to June 2012 using transducers to evaluate hydraulic connection between groundwater and the vernal pool.

- Installed 2 monitoring wells, converted 1 temporary piezometer into a monitoring well, and as part of the requirements of the biological opinion, Travis AFB abandoned 8 temporary piezometers, which were in the footprint of the vernal pool.

- Conducted groundwater elevation survey with extraction wells pumping to determine if the off-base portion of the TCE plume is captured.

- Performed a follow-up 72 hour pump test at extraction wells EW614x07 and EW615x07.

- Modeled groundwater capture with the maximum sustained pumping rates for the two extraction wells determined from the 72 hour pump test.

Winter 2011-2012 Groundwater Elevation Survey:

- Conducted continuous groundwater elevation surveys at 3 monitoring wells from, December 2011 to June 2012, using transducers to evaluate the connection between the vernal pool and the groundwater aquifer. This occurred during a very dry winter.

- The study results indicate the vernal pool appears to be connected hydraulically to the groundwater aquifer. (see attached maps for the groundwater elevations/contours, placement of the piezometers and monitor wells and TCE concentrations details)

Monitoring Well Installations and Temporary Piezometer Abandonments:

- Installed 2 new monitoring wells to delineate the southwestern portion of the TCE groundwater plume.

- Converted one of the temporary piezometers (in the vernal pool HP2007x07) into monitoring well MW2007x07 which had the highest TCE concentrations, in order to monitor the off-base portion of the TCE plume.

- Abandoned 8 temporary piezometers as required by the USFWS Biological Opinion from August 22 to 24 2012.

- Conducted groundwater elevation survey on 22 August 2012 with extraction well EW614x07 pumping (the 8 piezometers had not yet been removed providing more data points) to determine if the off-base portion of the TCE plume is captured. A groundwater depression was observed from the data, right within the center of the TCE plume.

72-Hour Groundwater Pump Test:

- Conducted a 72 hour groundwater pump test in September 2012.

- Baseline groundwater elevation survey with the two extraction wells turned off showed a groundwater trough beneath the TCE plume.

- The pump test showed maximum sustained pumping rates of 4.7 and 2.5 gpm at wells EW614x07 and EW615x07.

Groundwater Modeling:

- Two groundwater pumping scenarios were modeled.

- Groundwater pumping at 4 gpm in EW614x07 and 1.1 gpm in EW615x07 for 6 months per year does not appear to achieve plume capture.

- Groundwater pumping at 4 gpm in EW614x07, 1.1 gpm in EW615x07, and 4 gpm in a new on-base extraction well appears to achieve capture.

- The plan is to optimize LF007C in 2 phases: Phase 1 – optimize extraction well EW614x07 (i.e., upgrade the solar panels and battery system) and observe for 1 year to see if capture is obtained. Phase 2 – install new on-base extraction well if capture is not obtained. (see attached maps for the different groundwater modeling scenarios details)

Site SS030 Background:

- The existing Site SS030 Groundwater Extraction Treatment System (GETS) has obtained capture of TCE plume and is reducing the plume.

- Groundwater in the western and central portion of the plume has been remediated.

- Highest concentrations of the remaining TCE plume are located about 250 feet east of existing extraction wells.

- Installing an extraction well within the remaining TCE plume will significantly improve the efficiency of the SS030 GETS.

- Mr. Chakurian referred to a map of SS030 that shows Travis AFB base boundary and the plume contours. (see attached maps for details)

Ms. Burke asked if the private property owners have water rights, and do they have production well. Mr. Anderson said yes, one well and the well is about 80 feet deep and is monitored annually. The samples collected have all been non-detect. Mr. Chakurian added there are three extraction wells that help keep the TCE plume inside base easement on the private property.

Ms. Burke wanted guidance in reviewing the report. Specifically, is the focus on capture of the plume or cleanup. Mr. Smith said for off base plumes the goal is cleanup. Mr. Wray added that this plume is getting cleaned up pretty rapidly.

Ms. Shaddy gave the presentation on the optimization portion of the work plan:

Subarea LF007C GETS Optimization:

- Currently a 1 inch piping system connects the extraction wells to the NGWTP by running the groundwater from the extraction wells about 2,600 feet to the treatment plant. Then a transfer pump pushes the treated groundwater back to the Duck Pond. The optimization design is to build a new treatment plant in the vicinity of the extraction wells, install 2 inch piping that will tie into the existing 4 inch piping that goes directly to the Duck Pond. This system optimization will greatly reduce the pump sizing needed to extract groundwater, and push the water through the treatment system, and then to the Duck Pond. (see attached map for details)

- Upgrade the pump and solar panel at EW614x07 to maximize pumping capacity.

- Install an additional extraction well at subarea LF007C after one year of operation if capture has not been obtained.

- Relocate the treatment facility for subarea LF007C to reduce the pump distance and to maximize flow. (see attached map for details)

- The new treatment facility will tie into the existing Duck Pond conveyance line. (see attached that shows the design of the new treatment system)

- The new treatment plant will have a concrete pad, with fencing around it. The pad and fencing are being designed in accordance with Travis AFB architectural requirements.

Site SS030 GETS Optimization:

- The new extraction well will be installed in the lower portion of the plume. Install new power and control conduits and new conveyance pipe. This well will be tied into the SBBGWTP (see attached map for details)

Ms. Burke inquired about the desired work schedule. Mr. Wray said that the drilling companies are booked and to get this work completed this summer Travis AFB had to get on their calendar. The work will begin mid September. Mr. Wray reminded the regulators that these are all just upgrades. Mr. Smith said he will contact the landowners to notify them about when the work will be conducted.

SS029 Pre-Design Site Characterization Report (see Attachment 8)

Mr. Anderson gave a brief introduction on how this presentation ties into the previous presentation and also ties into the ROD. Currently the ROD states SS029 is a pump-and-treat site. This report is designed to assist the contractor who wins the new PBC contract to look at ways of optimizing cleanup; similar to the work plan presented on site SS030 and LF007C. Site SS029 is the most challenging plume on base due to its connection with site SS016. This site characterization was conducted to look at alternative ways of cleaning up the southern portion of the base. The South Base Boundary Groundwater Treatment Plant (SBBGWTP) is old, and in constant need of repair work, rewiring, and replacement of pumps and motors. In

addition, the amount of energy it takes to run the plant is high. Travis AFB wanted to look at alternatives to clean up the groundwater at the southern portion of the base more efficiently.

Mr. Leong gave the presentation on the SS029 Pre-Design Site Characterization Report:

Mr. Leong began by stating the focus on this investigation is to collect enough data for future evaluation for potential optimization "post ROD". The investigation was mainly focused on Site SS029. The draft report was handed out to the agencies during the RPM meeting.

Background:

- Site SS016 and SS029 TCE and cis-1,2-DCE plumes are starting to commingle.
- The investigation of data gaps for evaluation of post-ROD potential remedial process optimization for SS016 and SS029 groundwater plumes.
- Focus was on the SS029 leading edge of the groundwater plume.
- The Final Work Plan was approved in September 2012: Proposed installing 12 groundwater wells; 9 soil borings (indentify competent bedrock, in-situ treatment was an option); chemical, physical, microbiological testing; bench-scale column testing (site groundwater and site soil sent to lab for testing); aquifer testing; initial groundwater modeling was conducted to see how the groundwater would flow with FT005 and SS029 extraction wells turned off separately; and revision of initial groundwater modeling based on investigation.

Field Implementation:

- Installed 10 groundwater wells in July 2012; final depths between 18 to 30 feet; 2 well locations did not yield water and bedrock was encountered at 6 to 8 feet below ground surface (bgs); wells developed in August 2012. (see attached map for well placement locations)
- 9 soil borings completed in July 2012; bedrock encountered in some borings between 6 to 8 feet bgs, some bedrock daylights toward the west (i.e., outcrops); and at other locations bedrock was encountered between 29 to 30 feet.
- Soil and groundwater samples were collected; chemical, physical, microbiological testing; bench scale column testing using zero valent iron and biological amendment.
- Aquifer testing; slug test, step-down test and continuous rate pumping.

Results:

- Groundwater samples for chlorinated solvents similar to current groundwater samples in the area.

- Developed groundwater well boring logs, soil boring logs and used historical boring logs to map competent bedrock. A ridge present along western edge that may affect groundwater flow, regardless of pumping.

- Microbiological testing indicates limited detection of dehalococcoides bacteria. But low chlorinated solvent mass and aerobic conditions at leading edge of SS029 not conducive to dehalogenation via dehalococcoides.

- Column testing using spiked groundwater yielded effective degradation for ZVI and biological treatment to MCLs.

- Revised groundwater modeling incorporated: Soil physical testing results, boring logs and aquifer testing.

- Revised groundwater modeling under various scenarios indicates similar groundwater flow as currently observed with slight widening at the leading edge.

- The data generated and evaluation may be used post-ROD to evaluate potential remedial process optimization.

Mr. Anderson invited the regulatory agencies when reviewing this report to make any recommendations/suggestions for the next PBC contractor.

Mr. Smith thanked the regulatory agencies for allowing Travis AFB to conduct this investigation. Mr. Smith also thanked Trihydro and CH2M HILL for their calibrating efforts in sharing/exchanging data to pull this report together.

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: 2012 CAMU Annual report.

Newly Completed Field Work: Electrical repairs to FT005 extraction system (well EW01x05).

In-Progress Documents: Groundwater Record of Decision, 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.

In-Progress Field Work: Electrical repairs to Site SS029 extraction system. Pump repairs to Site SS016 (well EW610x16).

Upcoming Documents: Kinder Morgan LF044 Land Use Control Report.

Upcoming Field Work: Subsite LF007C optimization upgrades, Site SS030 optimization upgrades, Site ST018 carbon vessel upgrades, SCADA upgrade for CGWTP and SBBGWTP, Wellhead Maintenance (approximately 20 wells).

Mr. Wray said the Perimeter Road is closed due to repaving this month and samples have not been collected at SBBGWTP due to the road closure. If Perimeter Road reopens in August, the confirmation sample data analysis collected for SBBGWTP maybe late for September's RPM meeting.

4. New Action Item Review

Mr. Smith/Travis AFB will contact AMEC to provide an update to regulatory agencies on the LF044 Land Use Control Report.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith said this could be the last RPM meeting held in this conference room. Environmental Restoration is in line to move into a new building, the decision will be finalized in a meeting this afternoon.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Research beneficial reuse of treated water and give update. Update (13 June 2012): AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update (15 August 2012): Mr. Duke reported that irrigation lines were destroyed by a communications contractor and not repaired because the system was inactive. Travis AFB will get the system design information to determine if the trunk line is still intact and repairs can be made to get the system running. Update, 16	TBD	Open

		January 2013: Mr. Duke said that an Air Force energy reduction contractor will look into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD.		
2.	Travis AFB	Smith/Travis AFB will contact AMEC to provide an update to regulatory agencies on the LF044 Land Use Control Report.	TBD	Open