

II. Approval of minutes from last meeting

The previous meeting minutes were approved as written.

III. Additional Agenda Items and Questions

Mr. Smith asked if there were any questions about the agenda or if anyone had any additional items not already on the agenda. He stated that there will also be an opportunity at the end of the meeting to add agenda items or ask questions. There are many topics to be presented at tonight's meeting. Very little field work was done in 2008 as the focus was on awarding the PBC, but that is not the case for this summer.

IV. Discussion Topics**a) Bioreactor Demonstration Project**

Mr. Anderson presented information on bioreactor demonstration project. The bioreactor was covered extensively in the January edition of the Guardian. Information was presented on why the bioreactor concept is a good choice and how the one at Travis was built.

The challenges at the site are how to remove low concentration levels of solvent from the clay subsurface and how to keep costs down. Previous technology used at the site has been dual phase extraction, in which a vacuum is created to draw groundwater out of the well, which is then treated. This system is very efficient for high concentrations of contaminants, but not as efficient as the levels of contamination decrease, especially in the clay soil at Travis. It also uses a lot of electricity to run. Mr. Velez asked to what depth were the wells installed. The wells run about 25-35 feet in depth.

A potential solution researched was the sustainable in situ bioreactor. It is solar powered, and designed to treat groundwater contamination in place. Installation at Travis required that the old concrete vault had to first be removed. Then the area of contamination was over-excavated to the top of the water table. The size of the resulting pit was 20x20x20 cubic feet. The original extraction well remained in place and was put to use. A trench box around the well was used for worker safety. The mulch and gravel was mixed together. The mulch came from on base – green waste consisting of eucalyptus tree cuttings. This saved money for the project and guaranteed the right type of organic material was used. Vegetable oil was sprayed over the fill to kick start the reaction. Mr. Foster commented that the vegetable oil wasn't there when the group visited the site. Mr. Anderson replied that standard salad oil was used. A picture of the completed bioreactor was presented.

A system of PVC pipes was installed to spread water evenly over the bioreactor. The system was overlaid with mulch, and now looks like a mound. This is expected to flatten over time as the mulch decomposes. The solar panels that provide power to

the well pump are each 50 watts. A picture of the valve to see when the pump is running was shown. Lt Col Lawrence asked if measurements are being taken to calculate average flow rate. Initially it was, but not anymore, since the flow rate is not expected to change a lot over time. Other measurement tests are being conducted, such as pH and oxidation reduction potential readings. These present evidence of reductive dechlorination, along with the presence of TCE breakdown products. Additionally, monitoring wells in the vicinity are also regularly tested, and we hope to see more dissolved organic carbon downstream.

Mr. Cooper asked if the project is being tracked by the Air Force. Yes, AFCEE is funding the project and providing the technical support. This type of bioreactor has been demonstrated in Altus AFB. Hickam is being considered for it also. Mr. Anderson added that acceptance by the regulatory agencies was key to getting the project going.

Lt Col Lawrence mentioned the upcoming DOD conference. The bioreactor will be presented at the Environmental, Energy, and Sustainability Symposium (E2S2) which is open to the entire DOD. A positive article on the bioreactor has been printed in the Fairfield Daily Republic newspaper. Mr. Reagan asked if any press has been given outside of DOD. Not yet, but Mr. Anderson anticipates more interest will be generated once there are positive results to review.

b) Vapor Intrusion Studies

Mr. Anderson presented the overview of the vapor intrusion studies. There were articles in the July 2008 and April 2009 Guardians on this study. The migration of volatile organic compounds from subsurface soil or groundwater into the buildings above is the focus of this study. There is a potential for vapor contamination, intruding where it shouldn't be. There are many variables that impact the potential for vapor intrusion, including wind, which creates positive or negative pressure in buildings which will push out or draw in air.

The process to evaluate the potential for vapor intrusion is a challenge. Evaluating whether vapor exposure poses an immediate risk to building occupants, conducting a screening assessment and a site-specific pathway evaluation are all steps in the process. Vapor intrusion studies are emphasized by the EPA, and results of the studies will support the development of the groundwater Record of Decision.

Independent vapor intrusion studies will benefit both Travis and the environmental scientific community. Two groups are funding two studies: Environmental Security Technology Certification Program (ESTCP) Grant, a joint DOD and EPA project; and United States Air Force School of Aerospace Medicine (USAFSAM). Mr. Velez asked where USAFSAM was located. It is in Brook City Base in Texas.

A building was located in the western part of the West Industrial Operable Unit area that was scheduled for demolition. It was over a solvent plume. Travis was fortunate to make the building available to both groups for the VI evaluations.

For the ESTCP project, new field procedures were tested that may cost effectively screen out sites from further VI assessments. Probes were installed both inside and outside the building. Inside, holes were drilled into the foundation. Outside, nested monitoring probes were installed. The permeability of the subsurface was measured. Soil gas samples were collected in SUMMA canisters. A tracer gas was used to track air movement in the building. Tests were performed to create negative and positive pressure in the building using a fan.

The USAFSAM project was more of a traditional VI evaluation, with the objective to identify reasons why analytical data from the assessment did not agree with VI prediction models. The SUMMA canisters used had a long tube to collect air samples from the breathing zone.

Draft reports from both research groups will undergo peer review by subject matter experts. It will be interesting to see whether the results will promote our understanding of how vapor intrusion works at Travis. Some of the data may support the groundwater remedy selection process.

c) Treatment Plant Optimization

Mr. Duke presented information on the groundwater treatment plant remedial process optimization. The goals for the optimization are to reduce CO₂ emissions and improve sustainability of treatment options. The present treatment plants have done a great job; however, they are energy intensive and were designed for higher flow rates and greater contaminant concentrations than what is being found today.

Green sustainable remediation (GSR) projects at Travis include solar powered pumps at LF007, phytostabilization (trees) at DP039 and the solar powered bioreactor at DP039.

RPO actions at the Central GWTP include replacing UV-Ox system with Granular Activated Carbon (GAC) and transitioning to a pulse-mode operation of the Thermal-Oxidation unit. The GAC will be just as effective with the lower contamination levels but use less electricity. Running the Therm-Ox in pulse mode allows the vapor to build up, so higher concentrations of contaminated soil gas are treated while reducing the demand for natural gas.

RPO actions at the South GWTP include turning off FT005 extraction wells with no contaminant detections or with concentrations below maximum contamination levels (MCLs) for a rebound study; if no rebound occurs the wells will be left off. Monitoring will continue.

RPO actions at the North GWTP include leaving wells off at FT004 and SD031 that showed no rebound; monitoring will continue. It is also being considered to treat LF007 locally, using solar power, and leaving the North GWTP off.

Mr. Reagan asked about the possibility of holding a media event to declare victory on the groundwater issues. Mr. Smith responded that the word is getting out, through RAB participation and meetings, the Guardian and the Travis Public Website. A victory can be declared once the regulatory agencies and the AF have signed the ROD. Mr. Kaiser pointed out that at the Central GWTP, GAC was not used originally as the primary method for contaminant removal because the levels of contamination were too high. Mr. Smith agreed and stated that at the time, UV-Ox was the more cost effective treatment to use, as changing the GAC vessels often would have been costly. The carbon should last about a year at the levels currently being seen.

d) 2009 Summer Fieldwork Schedule

Mr. Duke presented the summer field work schedule and stated that it is going to be a busy summer. A quick run through of each site was discussed.

ST027B access requires closure of Taxiway November and coordination with the Airfield Manager. Work at this site is ongoing; groundwater and soil gas samples have been collected and the team will return on Memorial Day weekend for a third round.

SS014-POCO site is a collection of small sites. More wells may be installed. Work will be done in the May-June timeframe. Vapor Intrusion field work and groundwater sampling for the GSAP will also occur at this time.

SS030 site may need further characterization and more wells installed. Work is anticipated to occur in June-July. Sampling at ST032-POCO is also scheduled in July; this site is located between two runways.

Site LF007 will require collection of samples and installation of wells as needed. The groundwater flow needs to be verified. Also considering installing a small treatment plant for this site only. Work is scheduled in June-July.

SS016 work includes the installation of additional wells and monitoring of in situ bioremediation using Edible Oil Substrate (EOS), similar to the bioreactor, and will occur in June-July timeframe.

SD001 and SD033 sites involve the cleanup of contaminated sediment in Union Creek. The creek needs to be diverted for access to the contaminants. RAB members are invited to view the field work, which should occur in August.

Site DP039 has work scheduled in October for installation of wells at the tail end of the plume for site characterization and monitoring of in situ bioremediation using EOS.

SD036 and SD037 sites has work scheduled in August for installation of wells at hot spots for site characterization and monitoring of in situ bioremediation using EOS.

ST018-POCO site work includes installation of extraction wells and a treatment system for MTBE which was released from the old AAFES fuel tanks. . This work is scheduled for October.

Looking ahead, data collected for a Focused Feasibility Study (FFS) will determine remedial action alternatives and is scheduled for October 2009. The FFS feeds into the Proposed Plan (PP) to obtain community input on the Air Force preferred remedy for each site; the PP is scheduled for May 2010. The PP feeds into the development of the ROD which is scheduled for August 2010. This is an aggressive schedule to attain the Air Force goal of Remedy in Place (RIP) by 2012. Ms. Hess pointed out that the sediment cleanup at sites SD001 and SD033 is the remedy selected in the SSSW; the site should be ready for closure at the end of the Remedial Action (RA).

V. Cleanup Program Status

Mr. Smith presented information on the overall cleanup program status, and the impact that the performance-based contract (PBC) has had on program cost. AMC approached Travis in early 2006 about using PBC to meet the Air Force RIP goal. This provides for the best chance for each site to achieve RIP, by making the best use and expertise of the contractor. At the time, pump and treat was considered to become the final remedy, but methods and technologies have improved. Before PBC, the yearly fiscal outlook was about two million dollars per year and pump and treat would continue on for many years; after the PBC was awarded the initial costs are higher than the \$2M per year, but the long term operating costs won't continue as long as they would if pump and treat were to continue. Looking at the chart, the post-PBC fiscal projection is an additional two million dollars over the seven year period. However, now Travis has a better chance of reaching AF goal of RIP by 2012, saves on future operational and remedial costs, and has better opportunities for site closure. Frontloaded costs saves on future RA-O costs but produces a lot of documents at a much faster pace than before for regulatory review. To assist with this process, presentations are given at RPM meetings prior to the issue of draft documents for regulatory review, to provide the regulatory agencies with information on what is coming and allow Travis to respond to their questions and concerns. This creates an environment for streamlined review and approval for documents and plans.

The remaining soil sites were discussed. SD033 has sediment and groundwater issues; SD001 is sediment only. Not much field work is planned for FT005 this summer; focus will be on documentation and planning.

An older map was presented which showed the contaminated groundwater plumes which have shrunk significantly. Mr. Velez asked what the total acreage at Travis is. Travis is about 6,380 acres.

VI. Regulatory Agency Reports

DTSC: Not present.

EPA: Excited and happy with progress of projects. EPA is very interested in the data collected from new technologies, and to see the current contour maps.

WB: Good to see innovative approaches to groundwater cleanup. WB is encouraged to see Travis coming up with optimal ways to deal with contamination. No significant outcome from the non-degradation policy meetings.

Mr. Cooper added that VI issues can sneak up on you, especially in areas with shallow soil gas or contaminated groundwater. He has seen other sites where it has become a significant problem. It is good to see Travis being diligent on this issue. Mr. Smith commented that Travis has a very shallow groundwater zone, and it has been evident that most of the solvents in the soil have volatilized and assumed that any vapors in the soil are transient and emanate from existing groundwater plumes; this has been discussed previously with EPA. A section on VI will be included in the GW ROD. Mr. Duke added that any new building being constructed has a passive ventilation system in the sub slab. It is a minimal cost to address the issue.

VII. Focus Group Reports

The Technical focus group provided review and comments on four documents: 2008 GWTP RPM Annual Report, LF008 Rebound Study Tech Memo, ST032 Tech Memo and PDB Tech Memo. Mr. Foster and Ms Gavlak (not present) performed the reviews. Also, the Phytostabilization Work Plan was sent out for review, and returned in 24 hours. Mr. Foster mentioned that he prefers receiving the documents in an email rather than a hardcopy. He also commented that he has noticed an improvement in the technical writing, and the documents are easier and quicker to read and review.

VIII. RAB/Public Questions

Mr. Velez asked when the next tour would be. Mr. Smith answered that in August the field work for the sediment sites should be starting. Ms. Hess added that the permits, waivers and paper work would need to be completed first. The phytostabilization study would also be a good time to visit, but may not coincide with the sediment work.

IX. Set Time and Place for Next RAB Meeting

The next RAB meeting is scheduled for **22 October 2009** at the Northern Solano County Association of Realtors in Fairfield.

X. Adjournment

Mr. Smith adjourned the meeting at **8:40 pm**.

Minutes submitted by: Leticia Sangalang, Synectics

Minutes approved by: Mark Smith