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

26 January 2011, 0930 Hours

Mr. Glenn Anderson, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 26 January at 0930 in the Main Conference Room, Building 570, Travis AFB, California. Attendees included:

•	Glenn Anderson	Travis AFB
•	Lonnie Duke	Travis AFB
•	Merrie Schilter-Lowe	Travis AFB
•	Gregory Parrott	Travis AFB
•	Dezso Linbrunner	United States Army Corp of Engineers (USACE), Omaha District
•	Alan Friedman	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)
•	Rich Freitas	United States Environmental Protection Agency (USEPA)
•	Mary Snow	Techlaw, Inc
•	Rachel Hess	ITSI
•	Mike Wray	CH2M HILL
•	Loren Krook	CH2M HILL
•	Doug Berwick	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 (November and December 2010)
•	Attachment 4	CGWTP Monthly Data Sheet (November and December 2010)
•	Attachment 5	NGWTP Monthly Data Sheet (November and December 2010)
•	Attachment 6	Presentation: SS015 EVO Injection Update
•	Attachment 7	Presentation: Program Update: Activities Completed, In Progress and Upcoming

• Attachment 8 Presentation: Field Schedule Update

• Attachment 9 Presentation: Focused Feasibility Study Review

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 01 December 2010 RPM meeting minutes were approved and finalized as written. With the following exception: Mr. Linbrunner requested to include the definition of the acronym (ORD) on page three in the ISCO/ERD paragraph, third sentence added: Office of Research and Development.

B. Action Item Review.

Action items from December were reviewed.

Action item one still open. No change.

Action item two still open. No change.

Action item three still open. No change in due date. Travis AFB was added to the 'Responsible' column.

Master Meeting and Document Schedule Review (see Attachment 2)

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

Travis AFB Annual Meeting and Teleconference Schedule

— Mr. Anderson explained to Ms. Burke why the 'RPM Teleconference' column is still listed on the schedule without dates. Teleconferences were originally held to give the regulatory representatives an open forum to discuss any issues candidly with Travis AFB project managers. It was initially beneficial to hold these meetings, but as the field work progressed, there has been less of a need. Travis will keep the 'RPM Teleconference' column on the schedule as it might be needed in the future.

Travis AFB Master Document Schedule

- Focused Feasibility Study (FFS): The response to comments meeting date was changed to coincide with the RPM meeting in April.
- Proposed Plan (PP): Public Comment Period date has been pushed up one week to allow the Proposed Plan recipients time to review the document before the October RAB meeting. The Draft Final and Final dates were changed accordingly.
- Groundwater Record of Decision (ROD): No change.

- Comprehensive Site Evaluation Phase II: Response to Comments (RTC) meeting date was changed. Travis has received comments from EPA and is working with Army Corp of Engineers and their contractor to thoroughly review and respond to EPA comments. The rest of the dates have changed accordingly.
- Potrero Hills Annex: (FFS, PP, and ROD): No change.
- ISCO/ERD Technical Memorandum: The Response to Comments meeting was changed to coincide with the February 2011 RPM meeting. Travis AFB is working on response to comments. The 'Response to Comments Due' and 'Final Due' dates have been changed accordingly.
- Site SS015 Field Implementation Plan: The RTC date was changed. The draft responses to agency will go out next week. The RTC was changed to coincide with the next RPM meeting scheduled in February 2011. The 'Response to Comments Due' and 'Final Due' dates have been changed accordingly.
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report: The Pre-draft date was changed at Mr. Wray's request in the 01 December 2010 RPM meeting. The rest of the dates were changed accordingly.
- Site ST018 POCO Field Implementation Report: The report submittal dates have changed, because the system cannot yet be turned on. Travis is waiting for the NPDES permit approval (expected in February).
- Site SD036 RPO Field Implementation Plan: The 'Draft to Agencies' and 'Draft to RAB' dates were changed to ease the high volume of documents being published. The rest of the dates were changed accordingly.
- 2010 GWTP RPO Annual Report: No change.
- Baseline Implementation Report: New document added.
- Quarterly Newsletter (January 2011): No change.
- 2009/2010 GSAP: The date for the 'Agency Comments Due' has been changed at the request of EPA. Travis is reviewing the EPA comments. The Water Board and DTSC will submit their comments before the 01 February 2011 due date. The remainder of the dates has changed accordingly.
- 2010 CAMU Annual Report: New document added. This informational report documents inspection of the CAMU in 2010.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

November: The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 4.8 million gallons of groundwater were extracted and treated during the month of November 2010. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 88.6 gallons per minute (gpm), and electrical power usage was 16,380 kWh. Approximately 22,441 pounds of CO_2 were created (based on DOE calculation); approximately 1.77 pounds of volatile organic compounds (VOCs) were removed in November. The total mass of VOCs removed since the startup of the system is 390 pounds.

Optimization Activities: None to report for the month of November.

December: The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 91.7% uptime, and 2.3 million gallons of groundwater were extracted and treated during the month of December 2010. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 82.3 gallons per minute (gpm), and electrical power usage was 5,580 kWh. Approximately 7,645 pounds of CO₂ were created (based on DOE calculation); approximately 0.81 pounds of volatile organic compounds (VOCs) were removed in December. The total mass of VOCs removed since the startup of the system is 391 pounds.

Optimization Activities: There were two electrical outages in the month of December both weather/rain related. The electrical power usage still appears to be abnormally high (according to the meter), and is continuing to be investigated.

Central Groundwater Treatment Plant (see Attachment 4)

November: The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.12 million gallons of groundwater extracted and treated during the month of November 2010. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 30.7 gpm, and electrical power usage was 55 kWh for all equipment connected to the Central plant; approximately 75 pounds of CO_2 were created. Approximately 3.10 pounds of VOCs were removed from groundwater in November. The total mass of VOCs removed since the startup of the system is 11,201 pounds.

Optimization Activities: In November 2010, the three 2,000 GAC vessels were removed from the CGWTP and relocated to Site ST018 for use in a new groundwater treatment system.

December: The Central Groundwater Treatment Plant (CGWTP) performed at 99.0% uptime with approximately 1.40 million gallons of groundwater extracted and treated during the month of December 2010. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 28.8 gpm, and electrical power usage was 75 kWh for all equipment connected to the Central plant; approximately 103 pounds of CO_2 were created. Approximately 5.93 pounds of VOCs were removed from groundwater in December. The total mass of VOCs removed since the startup of the system is 11,207 pounds.

Optimization Activities: None to report for the month of November.

Mr. Duke added that a low concentration of MTBE was detected in the influent and there was no detection in the effluent in the November and December sampling results. It appears that MTBE is being detected all over the base and that Travis will continue to watch and investigate.

North Groundwater Treatment Plant (see Attachment 5)

November: The North Groundwater Treatment Plant (NGWTP) performed at 100% uptime with approximately 9.2 gallons of groundwater extracted and treated during the month of November 2010. The average flow rate of the NGWTP was 0.18 gpm, and electrical power use was 406 kWh for all the equipment connected to the North plant; approximately 556 pounds of CO_2 were created. The amount of VOCs removed was very low and consequently difficult to measure. The total mass of VOCs removed since the startup of the system is 656 pounds.

Optimization Activities: The NGWTP was shut down on 10 December 2010 due to the accumulation of seasonal standing water in the vernal pools at Site LF007C. No additional optimization activities to report.

December: The North Groundwater Treatment Plant (NGWTP) was shut down for the wet season. Site LF007C extraction wells will be restarted in 2011 once the vernal pools are dry. Monthly Data Sheets for the North Plant will be suspended until the system is brought back online and treatment resumes.

Optimization Activities: None to report for the month of December.

3. Presentations

SS015 EVO Injection Update (see Attachment 6)

Mr. Berwick gave the presentation on SS015.

The key points made for site SS015 presentation included:

• Injection of EVO started on 13 December 2010, in the three newly installed injection wells. It was a daylight operation to inject EVO and

observe/monitor the surrounding wells.

- In the morning of 14 December 2010 a milky white watery substance (EVO) was discovered in the facility containment basin. The injection activities were halted and the Restoration group was notified. Approximately 250 gallons of EVO had been injected at the point when it was halted.
- The EVO/Water injection mixture had apparently traveled approximately 75 feet below ground to the containment basin from the injection site.
- A vacuum truck and trash pump were used to remove the standing EVO/water mixture that was in the containment basin.
- Injection tests (using only water) were performed to find out how the injected water was getting into the containment basin. Water from a hydrant was injected into IW2126x15, and within about an hour it was breaching the surface concrete pavement at the slab seams. The injected water was also flowing into the containment basin in two drain pipes. Injection well IW2128x15 was tested and water was breaching the storm sewer (manhole) within about 5 minutes.
- At that point it was determined that injection wells IW2126x15 and IW2128x15 were not suitable for further EVO injection.

Mr. Berwick said the next step was to investigate why the water was surfacing. There was a shallow excavation conducted in June and July 2003. Further review of the Administrative Record (AR) indicated that the excavation was only to a depth of about 20 inches. As discussed in previous RPM meetings, the vegetable oil injections conducted in 2000-2001 had been performed using approximately 40 direct push injection points, in the same area that is receiving the EVO injections. The old injection points could have acted as a conduit for the EVO to come up to the surface. Mr. Duke said he remembered that when the direct push injection points were abandoned, the contractor poured bentonite and sand down each boring and they did not compact these materials down the hole.

Mr. Freitas suggested perhaps too much EVO was injected too quickly. Mr. Wray said the same injection method that was used at the other EVO injection sites was used at this site. And those injections were successful. It is likely that the injected EVO at Site SS015 found some of the old injection points that acted as conduits to the surface, and that the old excavation also provided a place for the injected EVO to accumulate near the ground surface. The EVO mixture then found its way through the pavement seams and into the buried drainage pipes that emptied into the containment basin.

Mr. Berwick said that it was decided to test the third new injection well (IW2127x15) and several monitoring wells that were installed outside the area of the old injection points. Several 4-inch monitoring wells were constructed in the last round of drilling so they could serve as injection wells if needed. The injection test indicated that these

wells would function as injection wells.

Mr. Berwick showed on the map (attached) the locations of the problem injection wells and the injection well and monitoring wells that were used to successfully inject the EVO. The outfalls were monitored every hour to look for any sheen on the water; no sign of EVO entering the outfalls was detected. Mr. Freitas asked how many gallons of EVO were injected in the ground at his site. Mr. Berwick said about 800 gallons.

Mr. Duke said that, as a result of the water breach, a work request was submitted by the storm water program manager to look at resealing the concrete seams and the seams between the rings of the storm water drains and sewer system. Mr. Anderson said he appreciated the quick response and investigation of the CH2M HILL field crew which allowed them to determine why the injection did not work initially.

Ms. Burke asked is it possible that the injection wells were faulty. Mr. Berwick said no, he has seen faulty wells in the past, and the EVO in those situations came back up through the well annulus. It doesn't spread out as seen at SS015. Mr. Freitas asked if we are monitoring the wells in the area to see if the water level is rising. Mr. Berwick said yes the water levels are being measured in the surrounding wells.

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

Mr. Wray reported on the status of field work and documents which are completed, in progress, and upcoming. See Attachment 7 for details. Ms. Burke asked if EPA could ask for more time beyond the 60 days allotted to review the FFS if it was needed. Mr. Wray said hopefully the agencies will not need it, because the schedules for the Decision Documents are fairly tight.

Field Schedule (see Attachment 8)

Mr. Wray reported on the 2011 Field Schedule. See attachment 8 for details. Ms. Burke expressed interest in watching some of the GSAP sampling techniques.

Focused Feasibility Study Review (see Attachment 9)

Mr. Krook gave the presentation on the FFS Review.

Mr. Anderson started by briefly explaining what the presentation will include and more importantly what it will not include. During the last RPM meeting there was a request to provide an in-depth site-by-site summary on the FFS. He added that to provide an in depth review of each site would not be productive; each site is at a

different cleanup stage and uses different remediation technologies. The FFS report has detailed site information.

Mr. Krook presented PowerPoint slides on the FFS report, which is scheduled to be submitted to the regulatory agencies tomorrow (27 January). The presentation began with a listing of the 18 sites which were the focus of the FFS (Section 1). He discussed the purpose of the FFS, which is to describe the development of potential groundwater remedial alternatives for Travis AFB Environmental Restoration Program (ERP). Mr. Krook then discussed some background (Section 2) that included the past and current implementation of the CERCLA process, the interim remedial actions (IRAs), and performance of the IRAs during the period of interim remediation. This presentation excludes POCO sites, and Site SS041, at which completed remedial actions are documented in a No Further Remedial Action Planned (NFRAP) consensus statement. In accordance with the NFRAP statement, Site SS041 will be closed in the Basewide Record of Decision (ROD).

A flow chart was provided to show past and current implementation of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at Travis AFB. The chart shows the actions taken and the applicability of the various operable units. The chart also shows the two Five-Year Reviews; the first completed in 2003, and the second one completed in 2008. The next Five-Year Review is scheduled for 2013.

Mr. Freitas asked why there is an Interim ROD (IROD) and not just a Final ROD. Mr. Anderson replied that, at the time, other bases were having a difficult time with the development and regulatory acceptance of groundwater cleanup levels. Travis AFB wanted to move forward with cleanup so it was decided to utilize IRODs, which contain interim goals rather than legally-binding cleanup levels, to get remediation started. Mr. Freitas voiced a concern that he does not think the IROD is legal per CERCLA. Ms. Burke assured Mr. Freitas that IRODs are not new and are used at many sites. Mr. Parrott stated that the EPA signed the two Travis AFB IRODs, and that they are legal documents.

Mr. Krook then explained that the draft Basewide Groundwater FFS will be submitted tomorrow, 27 January 2010. The document is approximately 900 pages, two big binders, and at least half of the document contains characterization data. The next step is to develop the Basewide Groundwater PP, and ROD. Following approval of the ROD, the Base would then implement the final remedial design/remedial actions (RD/RA), and enter into long-term operations/long-term maintenance (LTO/LTM).

Section 3 of the FFS contains the conceptual site models for the sites. Site specific groundwater contamination at Travis AFB primarily consists of chlorinated VOCs, mostly TCE, as well as 1,1-DCE, and 1,2-DCA. One site (LF008) is contaminated with organochlorine pesticides. This landfill site was excavated in 2003, and the pesticide container debris and pesticide-contaminated soil were removed. The Base is now addressing the residual effects of the pesticide contamination in groundwater. The conceptual site models were updated to include the results of 2009 and 2010 field investigations.

Section 4 of the FFS discusses the approach taken in developing the document. CERCLA guidance was used as the basis of the document. In addition, the criteria used to focus the study included past completion of the CERCLA process at the Base, existing groundwater IRA performance, ongoing IRA optimization actions, demonstration projects, and a preference for sustainable remediation technologies.

The FFS was originally requested by the EPA in January 2007. The term FFS is used to acknowledge that Travis AFB has already completed the CERCLA process, including Final RIs, Final FSs, and the IRODs. The FFS serves as the bridge between the completed steps, and the final Basewide Groundwater ROD. Some important points to keep in mind include:

- Travis AFB completed MNA assessments for many sites, where pump and treat systems have been in action for a decade. The FFS addresses how these actions are working and how they need to be optimized.
- There is a Presidential Executive order for using green sustainable remediation technologies. The objective is to select technologies that avoid excessive CO₂ generation by using huge amounts of electrical power over their periods of operation. Travis has strongly considered the use of "green" technologies.

Section 5 of the FFS discusses preliminary cleanup goals. Remedial Action Objectives (RAOs) are developed, which consist of general RAOs and specific RAOs. This section evaluates ARARs, and develops numerical preliminary cleanup goals. The Air Force's position is to invoke the lesser of State or Federal MCLs as the preliminary cleanup goals. It was mentioned that the EPA attorney, Sara Goldsmith, will review the ARARs.

Section 6 presents identification and screening of technologies. The section describes the general response actions (GRA - the broad range of actions that will satisfy the RAOs). GRAs can consist of no action, institutional actions, containment, removal, treatment, and disposal.

Mr. Krook defined technologies and process options:

- Technologies are the general categories of remedies under a GRA
- Process options are specific categories of remedies within each remedial technology, and
- Representative process options are selected to represent a technology type, and are used to streamline the subsequent assembly of alternatives.

Several charts were presented to illustrate a summary of the technology screening that was conducted, and which remedies were determined to be representative process options.

Section 7 of the FFS discusses the assembly and screening of alternatives. The alternatives were developed to meet RAOs. The alternatives were assembled from the representative process options and then screened against the criteria of effectiveness, implementability, and cost. Several charts were presented to illustrate the assembly of

alternatives, and the application of the assembled alternatives to particular sites.

Section 8 is a detailed analysis of alternatives, using the nine CERCLA criteria.

Section 9 provides a comparative analysis of alternatives. A table was presented to show a comparison of IRAs that were implemented at the sites and the FFS alternatives. The conclusions in Section 9 are based on ten years of data collection, data gaps investigations, and the results of the focused feasibility study.

4. New Action Item Review

There are no new action items.

5. PROGRAM/ISSUES/UPDATE

None.

General Discussion

None.

7. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Petition to have the Lysimeter removed.	TBD	Open
2.	Travis AFB	Research beneficial reuse of treated water and give update.	TBD	Open
3.	Travis AFB and EPA	Review past site closure completion reports to determine if future site closure reports are necessary.	TBD	Open

TRAVIS AIR FORCE BASE ENVIRONMENTAL RESTORATION PROGRAM REMEDIAL PROGRAM MANAGER'S MEETING BLDG 570, Main Conference Room 26 January 2011, 9:30 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 (LONNIE)

3. Presentations

- A. SS015 EVO INJECTION UPDATE
- B. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING
- C. 2011Field Schedule
- D. FOCUSED FEASIBILITY STUDY REVIEW
- 4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

A. BASE TOUR FOR NEW EPA REPRESENTATIVE

Travis AFB Master Meeting and Document Schedule

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-26-11	_	_
02-16-11	_	_
03-16-11	_	_
04-21-11 (1:00 PM)	_	04-21-11
05-26-11	_	_
06-23-11	_	_
07-20-11	_	_
08-17-11	_	_
09-21-11	_	_
10-20-11 (1:00 PM)	_	10-20-11
11-30-11	_	_
_	_	_

PRIMARY DOCUMENTS					
	Basewide Groundwater				
Life Cycle	Focused Feasibility StudyProposed PlanTravis, Glenn AndersonTravis, Glenn AndersonCH2M Hill, Loren KrookCH2M HILL, Loren Krook		Record of Decision Travis, Glenn Anderson CH2M HILL, Tony Jaegel		
Scoping Meeting	03-30-10	NA	01-24-07		
Predraft to AF/Service Center	12-30-10	05-13-11	12-08-11		
AF/Service Center Comments Due	01-13-11	05-27-11	01-11-12		
Draft to Agencies	01-27-11	06-10-11	01-25-12		
Draft to RAB	01-27-11	06-10-11	01-25-12		
Agency Comments Due	03-31-11	08-09-11	03-28-12		
Response to Comments Meeting	<mark>04-21-11</mark>	08-17-11	04-18-12		
Agency Concurrence with Remedy	NA	NA	05-09-12		
Public Comment Period	NA	10-13-11 to 11-14-11	NA		
Public Meeting	NA	*10-20-11	NA		
Response to Comments Due	06-01-11	09-01-11	05-29-12		
Draft Final Due	06-01-11	<mark>09-13-11</mark>	05-29-12		
Final Due	07-01-11	<mark>10-13-11</mark>	06-27-12		

*Public meeting to coincide with RAB meeting.

PRIMARY DOCUMENTS					
	Comprehensive Site Evaluation Phase II				
	Travis AFB, Glenn Anderson				
	Sky Research, Ian Roberts				
Life Cycle	Report				
Scoping Meeting	NA				
Predraft to AF/Service Center	04-23-10				
AF/Service Center Comments Due	05-04-10				
Draft to Agencies	10-14-10				
Draft to RAB	10-14-10				
Agency Comments Due	11-24-10				
Response to Comments Meeting	02-23-11				
Agency Concurrence with Remedy	NA				
Public Comment Period	NA				
Public Meeting	NA				
Response to Comments Due	03-09-11				
Draft Final Due	03-09-11				
Final Due	04-06-11				

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

SECONDARY DOCUMENTS						
Life Cycle	ISCO/ERD Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Loren Krook	Site SS015 Field Implementation Plan Travis AFB, Lonnie Duke CH2M HILL, Loren Krook	Sites SS014 and ST032 Tier 1 POCO Evaluation Report Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich			
Scoping Meeting	NA	NA	NA			
Predraft to AF/Service Center	08-25-10	10-13-10	<mark>01-14-11</mark>			
AF/Service Center Comments Due	09-08-10 (09-10-10)	10-27-10	01-24-11			
Draft to Agencies	10-06-10	11-15-10	<mark>02-14-11</mark>			
Draft to RAB	10-06-10	11-15-10	<mark>02-14-11</mark>			
Agency Comments Due	11-05-10	12-15-10	<mark>03-16-11</mark>			
Response to Comments Meeting	<mark>02-16-11</mark>	<mark>02-16-11</mark>	<mark>04-21-11</mark>			
Response to Comments Due	<mark>03-09-11</mark>	02-22-11	<mark>04-29-11</mark>			
Draft Final Due	NA	NA	NA			
Final Due	03-09-11	02-22-11	04-29-11			
Public Comment Period	NA	NA	NA			
Public Meeting	NA	NA	NA			

Life Cycle	Site ST018 POCO Field Implementation Report Travis AFB, Lonnie Duke	2010 Groundwater RPO Annual Report Travis AFB, Lonnie Duke	Baseline Implementation Report Travis AFB, Lonnie Duke	
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	03-18-11	11-30-10	02-25-11	03-10-11
AF/Service Center Comments Due	4-1-11	12-10-10	03-07-11	03-24-11
Draft to Agencies	<mark>4-15-11</mark>	02-03-11	04-04-11	04-07-11
Draft to RAB	<mark>4-15-11</mark>	02-03-11	04-04-11	04-07-11
Agency Comments Due	<u>5-15-11</u>	<mark>03-05-11</mark>	05-04-11	05-05-11
Response to Comments Meeting	<mark>5-26-11</mark>	<mark>03-16-11</mark>	05-26-11	05-26-11
Response to Comments Due	<mark>6-9-11</mark>	03-29-11	06-22-11	06-15-11
Draft Final Due	NA	NA	NA	NA
Final Due	<mark>6-9-11</mark>	03-29-11	06-22-11	06-15-11
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA

INFORMATIONAL DOCUMENTS						
Life Cycle	Quarterly Newsletters (January 2011) Travis, Glenn Anderson	2009/2010 Annual GSAP Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	2010 CAMU Annual Report Travis AFB, Lonnie Duke ITSI, Rachel Hess			
Scoping Meeting	NA	NA	NA			
Predraft to AF/Service Center	NA	10-29-10	<mark>01-18-11</mark>			
AF/Service Center Comments Due	NA	11-12-10	01-31-11			
Draft to Agencies	<mark>01-05-11</mark>	12-07-10	<mark>02-04-11</mark>			
Draft to RAB	NA	12-07-10	<mark>02-04-11</mark>			
Agency Comments Due	<mark>01-19-11</mark>	02-01-11	<mark>03-07-11</mark>			
Response to Comments Meeting	TBD	<mark>02-16-11</mark>	TBD			
Response to Comments Due	<mark>01-26-11</mark>	<mark>03-01-11</mark>	<mark>03-21-11</mark>			
Draft Final Due	NA	NA				
Final Due	01-31-11	03-01-11	03-21-11			
Public Comment Period	NA	NA	NA			
Public Meeting	NA	NA	NA			

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 124 Reporting Period: 5 Nov 2010- 13 Dec 2010 Date Submitted: 10 January 2011

This data sheet includes the following: results for the operation of the South Base Boundary Groundwater Treatment Plant (SBBGWTP), a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the system, and a summary of analytical results for selected samples collected.

Percent Uptime: 100%

Operations Summary – November 2010

Operating Time: 912 hours^a

Electrical Power Usage: 16,380 kWh (22,441 lbs CO2 generated)

Gallons Treated: 4.8 million gallons

Volume Discharged to Union Creek: 4.8 million gallons

VOC Mass Removed: 1.77 pounds^b

VOC Mass Removed Since July 1998: 390 pounds

Gallons Treated Since July 1998: 717 million gallons

Rolling 12-Month Cost per Pound of Mass Removed : \$4,321^c

Monthly Cost per Pound of Mass Removed : \$2,601

^a Operating time is based on shutdown logs because the air stripper is offline.

^b Calculated using November 2010 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.

Flow Rates

Average Groundwater Total Flow Rate: 88.6 gpm^a

Average Flow Rate (gpm) ^b							
	FT	005 [°]		SS029		SS030	
EW01x05	Off line	EW736x05	Off line	EW01x29	0.53	EW01x30	10.1
EW02x05	1.60	EW737x05	Off line	EW02x29	5.13	EW02x30	Off line ^e
EW03x05	Off line	EW742x05	Off line	EW03x29	Off line ^d	EW03x30	3.27
EW731x05	Off line	EW743x05	Off line	EW04x29	6.30	EW04x30	24.1
EW732x05	Off line	EW744x05	Off line	EW05x29	14.3	EW05x30	9.47
EW733x05	Off line	EW745x05	Off line	EW06x29	10.4	EW06x30	Dry
EW734x05	8.77	EW746x05	Off line	EW07x29	14.3	EW711x30	10.0 ^f
EW735x05	2.97						
F	Γ005 Total:	13.3		SS029 Total:	51.0	SS030 Total:	56.9

^a The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant.

^b Extraction well flow rates are based on the average of the weekly readings.

^c Extraction wells at FT005 were taken off line in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.

^d Extraction well is off line due to low VOC concentrations.

^e Extraction well off line due to malfunctioning pump

^f Extraction well online, but has a faulty flow meter. Flow rate is measured at the well head.

gpm-gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP	No shutdowns in Nov. 2010				
SBBGWTP =	South Base Bounda	iry Ground	water Treatment Plant		

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 2 November 2010. Sample results are presented in Table 1. The total VOC concentration (43.8 μ g/L) in the influent sample has increased since the October 2010 sample (35.8 μ g/L) was collected. VOCs were not detected in the effluent sample indicating good treatment efficiency.

EW02x30 remained off line in November 2010 due to a broken pump. A new pump has been ordered and will be installed in the spring of 2011 when the field dries out where EW02x30 is located.

Optimization Activities

No optimization activities occurred during November 2010.

	Instantaneous	Detection		2	2 November 2010			
Constituent	Maximum (μα/L)	Limit (ua/L)	N/C	Influent	Midpoint	Effluent		
Halogenated Vola	atile Organics	(r·3·-/						
Bromodichloromethane	5.0	0.15	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		
1,1-Dichloroethane	5.0	0.19	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	2.6	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	0.20	0	ND	ND	ND		
Trichloroethene	5.0	0.19	0	41.2	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	4 J	NM	NM		
^a In accordance with	Appendix B of the <i>Trav</i>	is AFB South Base Bo	oundary Groun	dwater Treat	ment Plant Op	perations and		

Table 1 Summary of Groundwater Analytical Data for November 2010 – South Base Boundary Groundwater Treatment Plant

Maintenance Manual (CH2M HILL, 2004).

J	=	analyte concentration is considered an estimated value
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

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 125 Reporting Period: 13 Dec 2010 - 3 Jan 2011 Date Submitted: 10 January 2011

This data sheet includes the following: results for the operation of the South Base Boundary Groundwater Treatment Plant (SBBGWTP), a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the system, and a summary of analytical results for selected samples collected.

Percent Uptime: 91.7%

Operations Summary – December 2010

Operating Time: 462 hours

Electrical Power Usage: 5,580 kWh (7,645 lbs CO₂ generated)

Gallons Treated: 2.3 million gallons

Volume Discharged to Union Creek: 2.3 million gallons

VOC Mass Removed: **0.81 pounds**^a

VOC Mass Removed Since July 1998: 391 pounds

Gallons Treated Since July 1998: 719 million gallons

Rolling 12-Month Cost per Pound of Mass Removed : \$4,456^b

Monthly Cost per Pound of Mass Removed : \$3,856^b

^a Calculated using December 2010 EPA Method SW8260B analytical results.

^b Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

Flow Rates

Average Groundwater Total Flow Rate: 82.3 gpm^a

Average Flow Rate (gpm) ^b										
FT005°			SS02	9	SS030					
EW01x05	Off line	EW736x05	Off line	EW01x29	0.60	EW01x30	10.1			
EW02x05	1.40	EW737x05	Off line	EW02x29	5.53	EW02x30	Off line ^e			
EW03x05	Off line	EW742x05	Off line	EW03x29	Off line ^d	EW03x30	3.40			
EW731x05	Off line	EW743x05	Off line	EW04x29	5.47	EW04x30	24.4			
EW732x05	Off line	EW744x05	Off line	EW05x29	14.2	EW05x30	8.77			
EW733x05	Off line	EW745x05	Off line	EW06x29	9.30	EW06x30	Dry			
EW734x05	8.40	EW746x05	Off line	EW07x29	15.5	EW711x30	10.0 ^f			
EW735x05	3.27									
F	T005 Total:	13.1		SS029 Total:	50.6	SS030 Total:	56.7			

^a The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant.

^b Extraction well flow rates are based on the average of the weekly readings.

^c Extraction wells at FT005 were taken off line in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.

^d Extraction well is off line due to low VOC concentrations.

^e Extraction well off line due to malfunctioning pump

^f Extraction well online, but has a faulty flow meter. Flow rate is measured at the well head.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP	19 December 2010	12:45	20 December 2010	09:45	System shutdown due to heavy rain/high winds. System checked and restarted – no problems.
SBBGWTP	21 December 2010	15:15	22 December 2010	12:30	Water not flowing out of effluent pipe. Shutdown and open lower valve.
SBBGWTP =	South Base Bounda	ry Ground	water Treatment Plant		

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 14 December 2010. Sample results are presented in Table 1. The total VOC concentration (42.4 μ g/L) in the influent sample has decreased slightly since the November 2010 sample (43.8 μ g/L) was collected.

A detection of 0.26J μ g/L of TCE appeared in the effluent stream. The instantaneous maximum limit for TCE is 5.0 μ g/L, therefore a resample was not required. CH2M Hill will continue to monitor VOC concentrations to ensure adherence to discharge requirements.

On 21 December, 2010, the SBBGWTP shut down due to a high water level in the effluent holding tank. The cause of the high level was decreased flow from the effluent pipe which leads ultimately to Union Creek. Effluent process water leaves the effluent holding tank from a discharge pipe located near the top of the tank, approximately fourteen (14) feet above the tank floor. A small amount of debris had clogged this effluent pipeline. To address this problem, a separate drain valve on the effluent tank (approximately two [2] feet above the tank floor) was opened while the debris was cleared. Once cleared, the effluent tank was returned to its normal state of operation, with treated process water flowing out the upper drainage valve.

EW02x30 remained off line in December 2010 due to a broken pump. A new pump has been ordered and will be installed in the spring of 2011 when the field dries out where EW02x30 is located.

Optimization Activities

Electrical power usage at the SBBGWTP appears abnormally high, and is continuing to be investigated. Identification of high-energy components of the treatment system can lead to further optimizations and reductions in monthly energy consumption.

No additional optimization activities occurred during December 2010.

	Instantaneous Maximum ^ª	Detection Limit		14 December 2010 (μg/L)					
Constituent	(μg/L)	(µg/L)	N/C	Influent	Midpoint	Effluent			
Halogenated Vola	atile Organics								
Bromodichloromethane	5.0	0.15	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			
1,1-Dichloroethane	5.0	0.19	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	2.4	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	0.20	0	ND	ND	ND			
Trichloroethene	5.0	0.19	0	40.0	ND	0.26 J			
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	42	NM	NM			
^a In accordance with Appendix B of the Travis AFB South Base Boundary Groundwater Treatment Plant Operations and									

Table 1 Summary of Groundwater Analytical Data for December 2010 – South Base Boundary Groundwater Treatment Plant

Maintenance Manual (CH2M HILL, 2004).

J	=	analyte concentration is considered an estimated value
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

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 136 Reporting Period: 5 Nov 2010- 30 Nov 2010

Date Submitted: 10 January 2011

This data sheet includes the following: results for the operation of the Central Groundwater Treatment Plant (CGWTP) and West Treatment and Transfer Plant (WTTP). A summary of flow rates for the CGWTP, WTTP, and extraction wells EW01x16, EW02x16, EW03x16, EW605x16, and EW610x16, a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for selected samples collected are also included on this data sheet.

Operations	Summary – Novem	ber 2010						
Operating Time:		Percent Up	time:	Electrical Po	ower Usage:			
CGWTP:	610 hours	CGWTP:	100%	CGWTP:	55 kWh (75 lbs CO ₂ generated)			
WTTP:	Water: 0 hours	WTTP:	Water: 0%	WTTP:	0 kWh			
	Vapor: 0 hours		Vapor: 0%					
Gallons Treated:	1.12 million gallons	G	allons Treated Since	January 1996: 436.0 i	nillion gallons			
VOC Mass Remo	oved:	V	VOC Mass Removed Since January 1996:					
3.10 lbs ^a	(groundwater only)		2,515 lbs from groundwater					
0 lbs (vap	oor only)		8,686 lbs from vapor					
Rolling 12-Month	Cost per Pound of Mass F	Removed [:] \$1,228 ^b						
Monthly Cost per	Pound of Mass Removed:	\$1,950 ^b						
^a Calculated using ^b Costs include ope CGWTP and WTT	November 2010 EPA Metho erations and maintenance, r P.	od SW8260B analytic eporting, analytical la	cal results. aboratory, project mana	agement, and utility cos	sts related to operation of the			

Flow Rates Average Groundwater Flow Rate: **30.7 gpm**^a

Leastion	Average Flow Rate								
Location	Groundwater (gpm)	Soil Vapor (scfm) ^b							
EW01x16	22.0	Off line							
EW02x16	7.23	Off line							
EW03x16	5.67 ^c	Off line							
EW605x16	Off line ^d	Off line							
EW610x16	Off line ^d	Off line							
WTTP	Off line	Off line							
 ^a Measured by the effluent discharge to the s ^b No vapor was treated in November 2010 ^c Water discharged to Site SS016 bioreactor ^d Off line due to pump malfunctions 	 ^a Measured by the effluent discharge to the storm drain divided by the operating time during the month ^b No vapor was treated in November 2010 ^c Water discharged to Site SS016 bioreactor – flow rate taken when pump is operating (is not an average) ^d Off line due to pump malfunctions 								

gpm = gallons per minute

NA = not applicable/not available

scfm = standard cubic feet per minute

Average Flow Rate from the WIOU Extraction Wells ^a (gpm)										
SD037/ SD043			SD033/SD034		SD036					
EW599x37	Off line	EW705x37	Off line	EW501x33	Off line	EW593x36	Off line			
EW700x37	Off line	EW706x37	Off line	EW503x33	Off line	EW594x36	Off line			
EW701x37	Off line	EW707x37	Off line	EW01x34	Off line	EW595x36	Off line			
EW702x37	Off line	EW510x37	Off line	EW03x34	Off line					
EW703x37	Off line	EW511x37	Off line							
EW704x37	Off line	EW555x43	Off line							
^a Extraction wells are offline due to the ongoing rebound study in the WIOU. gpm—gallons per minute NA – not available / not recorded										

Shutdown/Restart Summary

	Shutdown		Restart							
Location	Date	Time	Date	Time	Cause					
CGWTP (G	CGWTP (Groundwater)									
CGWTP	No Shutdowns Nov. 2010									
WTTP										
WTTP (Vapor)	24 August 2009				System shutdown for rebound study					
WTTP (Water)	27 April 2010				System shutdown for rebound study					
CGWTP =	Central Groundwa	ater Treatn	nent Plant							
WTTP =	West Transfer Tre	atment Pla	ant							

Summary of O&M Activities

Monthly groundwater samples at the CGWTP were collected on 2 November 2010. Sample results are presented in Table 1. The total VOC concentration (331 μ g/L) in the influent sample has decreased slightly since the October 2010 sample (336 μ g/L) was collected.

TCE was detected in the effluent sample (0.26J μ g/L). The instantaneous discharge limit for TCE is 5.0 μ g/L, and therefore did not require a resample. In the following months, Travis AFB will continue to monitor the effluent sample to ensure treated water remains in compliance with discharge requirements.

In December 2010, EW605x16 was offline due to a broken pump motor and EW610x16 remained offline with stripped splines. CH2M HILL is ordering new pumps and will install them in the first quarter of 2011.

The WIOU vapor and groundwater extraction system rebound study is ongoing.

Optimization Activities

In November 2010, the three 2,000-pound GAC vessels, which had been taken off line in May 2009, were removed from the CGWTP. These vessels were relocated to Site ST018 for use in a new groundwater treatment system. The CGWTP continues to successfully treat contaminated groundwater using the two 20,000-pound GAC vessels.

The WTTP remained off line since being shut down in April 2010 for the ongoing rebound study.

No additional optimization activities occurred at the CGWTP in November 2010.

Table 1	
Summary of Groundwater Analytical Data for November 2010 – Central Groundwater Treatment Pla	nt

					2 Nover	mber 2010	
					ц)	ıg/L)	
	Instantaneous	Detection			After	After	Custom
Constituent	Maximum [®]	Limit (ug/L)	N/C	Influent	Effluent	Effluent	System
Halogenated Volatile Orga	nics	(~9, -)					
Bromodichloromethane	5.0	0.15	0	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	4.1	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.08	0	0.46 J	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.15	0	0.57	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	0.83	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	88.1	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	3.5	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.62	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	1.9	0	232	ND	ND	0.26 J
Vinyl Chloride	0.5	0.18	0	1	ND	ND	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	0.5 - 0.23	0	ND	ND	ND	ND

^a In accordance with Appendix G of the *Travis AFB Central Groundwater Treatment Plant Operations and Maintenance Manual* (URS Group, Inc., 2002).
 J = analyte concentration is considered an estimated value
 N/C = number of samples out of compliance with discharge limits

ND = not detected

 μ g/L = micrograms per liter

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 137 Reporting Period: 1 Dec 2010- 3 Jan 2011

Date Submitted: 10 January 2011

This data sheet includes the following: results for the operation of the Central Groundwater Treatment Plant (CGWTP) and West Treatment and Transfer Plant (WTTP). A summary of flow rates for the CGWTP, WTTP, and extraction wells EW01x16, EW02x16, EW03x16, EW605x16, and EW610x16, a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for selected samples collected are also included on this data sheet.

Operations	Summary – Decem	ber 2010					
Operating Time:		Percent Up	time:	Electrical Po	ower Usage:		
CGWTP:	807 hours	CGWTP:	99.0%	CGWTP:	75 kWh (103 lbs CO_2 generated)		
WTTP:	Water: 0 hours	WTTP:	Water: 0%	WTTP:	0 kWh		
	Vapor: 0 hours		Vapor: 0%				
Gallons Treated:	1.40 million gallons	Ga	allons Treated Since	January 1996: 437 mi	llion gallons		
VOC Mass Removed:		V	VOC Mass Removed Since January 1996:				
5.93 lbs ^a (groundwater only)			2,521 lbs from groundwater				
0 lbs (vap	oor only)		8,686 lbs from vapor				
Rolling 12-Month	Cost per Pound of Mass R	Removed [:] \$1,475 ^b					
Monthly Cost per	Pound of Mass Removed:	\$738					
^a Calculated using ^b Costs include ope CGWTP and WTT	December 2010 EPA Metho erations and maintenance, re P.	od SW8260B analytic eporting, analytical la	cal results. aboratory, project mana	agement, and utility cos	sts related to operation of the		

Flow Rates Average Groundwater Flow Rate: 28.8 gpm^a

Leastion	Average Flow Rate				
Location	Groundwater (gpm)	Soil Vapor (scfm) ^b			
EW01x16	20.9	Off line			
EW02x16	7.23	Off line			
EW03x16	3.22 ^c	Off line			
EW605x16	Off line ^d	Off line			
EW610x16	Off line ^d	Off line			
WTTP	Off line	Off line			
 ^a Measured by the effluent discharge to the storm drain divided by the operating time during the month ^b No vapor was treated in December 2010 ^c Water discharged to Site SS016 bioreactor – flow rate taken when pump is operating (is not an average) ^d Off line due to pump malfunctions 					

gpm = gallons per minute

NA = not applicable/not available scfm = standard cubic feet per minute

Average Flow Rate from the WIOU Extraction Wells ^a (gpm)							
SD037/ SD043			SD033/SD034		SD036		
EW599x37	Off line	EW705x37	Off line	EW501x33	Off line	EW593x36	Off line
EW700x37	Off line	EW706x37	Off line	EW503x33	Off line	EW594x36	Off line
EW701x37	Off line	EW707x37	Off line	EW01x34	Off line	EW595x36	Off line
EW702x37	Off line	EW510x37	Off line	EW03x34	Off line		
EW703x37	Off line	EW511x37	Off line				
EW704x37	Off line	EW555x43	Off line				
^a Extraction wells are offline due to the ongoing rebound study in the WIOU. gpm—gallons per minute NA – not available / not recorded							

Shutdown/Restart Summary

	Shutdown		Restart		
Location	Date	Time	Date	Time	Cause
CGWTP (G	roundwater)				
CGWTP	No shutdowns Dec. 2010				
WTTP					
WTTP (Vapor)	24 August 2009				System shutdown for rebound study
WTTP (Water)	27 April 2010				System shutdown for rebound study
CGWTP =	Central Groundwa	ater Treatn	nent Plant		
WTTP =	West Transfer Tre	atment Pla	ant		

Summary of O&M Activities

Monthly groundwater samples at the CGWTP were collected on 14 December 2010. Sample results are presented in Table 1. The total VOC concentration (510 μ g/L) in the influent sample has increased since the November 2010 sample (331 μ g/L) was collected.

Carbon disulfide was detected (0.57J μ g/L) in the effluent sample and vinyl chloride was detected (0.63 μ g/L) after the first carbon vessel, but was not detected in the effluent sample. The instantaneous maximum limit for carbon disulfide is 5.0 μ g/L, thus not requiring a resample or system shutdown. In the following months, Travis AFB will continue to monitor the carbon midpoint and effluent samples to ensure treated water remains in compliance with discharge requirements.

In December 2010, EW605x16 was offline due to a broken pump motor and EW610x16 remained offline with stripped splines. CH2M HILL is ordering new pumps and will install them in the first quarter of 2011.

The WIOU vapor extraction system rebound study is ongoing.

Optimization Activities

The WTTP remained off line since being shut down in April 2010 for the ongoing rebound study.

No additional optimization activities occurred at the CGWTP in December 2010.

Table 1		
Summary of Groundwate	nalytical Data for December 2010 – Central Groundwater Treatment Pla	nt

					14 Dece	mber 2010	
					ц)	ıg/L)	
	Instantaneous	Detection			After	After	Custom
Constituent	Maximum ⁻		N/C	Influent	Effluent	Carbon 2	System
Halogenated Volatile Orga	anics	(µg/⊏)	14/0	minuent	Lindent	Lindent	Emacin
Bromodichloromethane	50	0.15	0	ND	ND	ND	ND
Carbon Disulfide	1.0	0.19	0	0.22 J	ND	0.21 J	0.57 J
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
MTBF	1.0	0.5	0	2.7	ND	ND	ND
1.2-Dichlorobenzene	5.0	0.08	0	ND	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	1.3	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	130	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	5.7	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.91	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	1.9	0	368	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	1.3	0.63	ND	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	0.5 - 0.23	0	ND	ND	ND	ND

^a In accordance with Appendix G of the *Travis AFB Central Groundwater Treatment Plant Operations and Maintenance Manual* (URS Group, Inc., 2002).
 J = analyte concentration is considered an estimated value
 N/C = number of samples out of compliance with discharge limits

ND = not detected

 $\mu g/L =$ micrograms per liter

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 111 Reporting Period: 5 Nov 2010 - 10 Dec 2010 Date Submitted: 10 January 2011

This data sheet includes the following: data collected during operation of the groundwater extraction system, a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for samples collected during the reporting period.

Operations Summary – November 2010					
Operating Time: Water: 840 hours	Percent Uptime: Water: 100%				
Electrical Power Usage: 406 kWh (556 lbs CO ₂ generated)					
Gallons Treated: 9,250	Gallons Treated Since March 2000: 82.6 million gallons				
Volume Discharged to Duck Pond: 9,250	Volume Discharged to Storm Drain: 0				
Percentage of Treated Water to Beneficial Use: 100%					
VOC Mass Removed:	VOC Mass Removed Since March 2000:				
< 0.01 pounds	174.3 lbs from groundwater				
Rolling 12-Month Cost per Pound of Mass Removed: NM ^a					
Monthly Cost per Pound of Mass Removed: NM ^a					
^a Dividing operating costs by a very low "pounds removed" number results in inflated monthly costs					

Flow Rates

Average Groundwater Total Flow Rate: 0.18

Location	Average Flow Rate (gpm)
EW614x07	NM ^a
EW615x07	NM ^a
Combined Flow/day	~264 gallons
^a Individual flow rates were not recor	ded in November 2010

gpm = gallons per minute

Shutdown/Restart Summary

	Shutdown		Restart		
Location	Date	Time	Date	Time	Cause
NGWTP (water)	10 December 2010	10:00			Shutdown for the wet season. Site LF007C extraction wells to be restarted in 2011, once vernal pools have dissipated.
NGWTP =	North Groundwa	ter Treatm	ent Plant		

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 2 November 2010. The total VOC concentration (6.1 μ g/L) was a slight increase from the October 2010 concentration (5.8 μ g/L). The only VOCs detected in the influent samples were Trichloroethene (5.6 μ g/L) and cis-1-2,dichloroethene (0.47 J μ g/L). No VOCs were detected in the effluent sample.

The NGWTP was shutdown on 10 December 2010 due to the development of seasonal standing water in the vernal pools at Site LF007C.

Optimization Activities

No additional optimization activities were performed at the NGWTP in November 2010.

Table '	1
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Summary of Groundwater Analytical Data for November 2010 – North Groundwater Treatment Plant

	Instantaneous Maximumª (ug/l)	Detection		2 Novem (μg	ber 2010 /L)
Constituent	(20)	 (μg/L)	N/C	Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.18	0	ND	ND
Bromoform	5.0	0.10	0	ND	ND
Carbon Tetrachloride	0.5	0.22	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.10	0	ND	ND
1,3-Dichlorobenzene	5.0	0.13	0	ND	ND
1,4-Dichlorobenzene	5.0	0.10	0	ND	ND
1,1-Dichloroethane	5.0	0.19	0	ND	ND
1,2-Dichloroethane	0.5	0.22	0	ND	ND
1,1-Dichloroethene	5.0	0.24	0	ND	ND
cis-1,2-Dichloroethene	5.0	0.16	0	0.47 J	ND
trans-1,2-Dichloroethene	5.0	0.21	0	ND	ND
Methylene Chloride	5.0	0.27	0	ND	ND
Tetrachloroethene	5.0	0.16	0	ND	ND
1,1,1-Trichloroethane	5.0	0.20	0	ND	ND
1,1,2-Trichloroethane	5.0	0.14	0	ND	ND
Trichloroethene	5.0	0.50	0	5.6	ND
Vinyl Chloride	0.5	0.19	0	ND	ND
Non-Halogenated Volatile Organi	cs				
Benzene	1.0	0.12	0	ND	ND
Ethylbenzene	5.0	0.10	0	ND	ND
Toluene	5.0	0.14	0	ND	ND
Xylenes	5.0	0.10 - 0.21	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	50	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	100	0	NM	ND

^a 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).

J = analyte concentration is considered an estimated value N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

 μ g/L = micrograms per liter

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 112 Reporting Period: 10 Dec 2010 - 31 Dec 2010 Date Submitted: 10 January 2011

This data sheet includes the following: data collected during operation of the groundwater extraction system, a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for samples collected during the reporting period.

Operations Summary – December 2010Operating Time: Water: 0 hoursPercent Uptime: Water: 0%Electrical Power Usage: 0 kWh (0 lbs CO2 generated)Gallons Treated Since March 2000: 82.5 million gallonsGallons Treated: 0Gallons Treated Since March 2000: 82.5 million gallonsVolume Discharged to Duck Pond: 0Volume Discharged to Storm Drain: 0Percentage of Treated Water to Beneficial Use: 100%VOC Mass Removed:VOC Mass Removed:VOC Mass Removed Since March 2000:NM174.3 lbs from groundwaterRolling 12-Month Cost per Pound of Mass Removed: NMMonthly Cost per Pound of Mass Removed: NM

Flow Rates

Average Groundwater Total Flow Rate: 0.0

Location	Average Flow Rate (gpm)
EW614x07	0
EW615x07	0
gpm = gallons per minute	

Shutdown/Restart Summary

	Shutdown		Restart		
Location	Date	Time	Date	Time	Cause
NGWTP (water)	10 December 2010				Shutdown for the wet season. Site LF007C extraction wells to be restarted in 2011, once vernal pools have dissipated.
NGWTP =	North Groundwa	ter Treatm	ent Plant		

Summary of O&M Activities

NGWTP MONTHLY REPORTS WILL BE SUSPENDED UNTIL THE SYSTEM IS BROUGHT BACK ONLINE AND TREATMENT RESUMES.

Optimization Activities

No additional optimization activities were performed at the NGWTP in December 2010.







Initial Injection Event Began injection on 13 December, 2010 14 December, 2010, discovered "milky white" water in facility containment basin Estimated 1,400 gallons of water within containment basin, some of which was from injection activities Injection activities halted, Restoration notified Approximately 250 gallons of EVO had been injected





Injection Test Runs

- Vac truck and trash pump used to remove standing water in containment basin
- Water from hydrant injected into IW2126x15
- Water breaching concrete within the hour, also getting into containment basin
- Water breaching storm sewer (manhole) from injection at IW2128x15 within 5 minutes of injection
- Injection rate approximately 3.0 5.0 gallons per minute (gpm)
- Injection points IW2126x15 and IW2128x15 unsuitable for further EVO injection









- Hydrant water injected into other injection and monitoring wells (including MW216x15) starting 10 January, 2011
- No leaks or surfacing seen during hydrant injection testing
- Remaining EVO (~524 gallons) injected among IW2127x15, MW2129x15, MW2132x15, and MW216x15 between 11 and 19 January, 2011
- First performance monitoring event to be in May 2011

Travis AFB Restoration Program

Management Overview Briefing

RPM Meeting January 26, 2011

Completed Documents

- 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 WP
- ST027B Site Characterization WP
- 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 WP
- Phytostabilization Demonstration Tech Memo
- Model QAPP
- LF008 Rebound Test Tech 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 and Second 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
- Phytostabilization Study Report

Completed Field Work

- ST027B Gore Sorber Survey Ph 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 Ph 1
- ST027 Site Characterization -Ph 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 ٠
- 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 DP039 Bioreactor Quarterly Performance
- Sampling SD037 EVO Quarterly Performance
- Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup ٠
- SD036 Injection Well Installation (8) ٠
- SS015 Injection Well Installation (5) •
- ST018 GETS Installation •
- SD036 EVO Injection
- Semiannual GSAP
- SS015 EVO Injection

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 Sites SS014 and ST032 Tier 1 POCO Evaluation Report Site ST018 POCO Field Implementation Report 2010 Groundwater RPO Annual Report** Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039) FT005 Data Gap Investigation Report 	Feb Apr Apr Apr TBD
 ** The RPO Annual Report will be changed from strictly focusing treatment plants, to include other RPO actions: Bioreactor performance monitoring EVO performance monitoring Rebound studies monitoring The Monthly Data Sheets will present the performance monitor rebound data as we get it. Then, annually, the data will be roll into the Groundwater RPO Annual report. 	g on oring and led up 5



Travis AFB Field Schedule - 2011

RPM Meeting January 26, 2011

2011 Field Schedule

Quarterly RPO Performance Monitoring (sites SS016 bioreactor, SD036 EVO injection, SD037 EVO injection, & DP030 EVO bioharrier)	Feb
 ST018 GETS Startup 	Feb
2011 Annual GSAP Sampling	Apr
Quarterly RPO Performance Monitoring (sites SS015 EVO injection, SS016 bioreactor, SD036 EVO injection, SD037 EVO injection, DP039 bioreactor, & DP039 EVO biobarrier)	May
 <u>LF007C Remedy Optimization</u> 	
<u>Investigation</u>	Jun
 Quarterly RPO Performance Monitoring (sites SS016 bioreactor, SD036 EVO injection, SD037 EVO injection, & DP039 EVO biobarrier) 	Aug
 Quarterly RPO Performance Monitoring 	Nov
(sites SS015 EVO injection, SS016 bioreactor, SD036 EVO injection, SD037 EVO injection, DP039 bioreactor, & DP039 EVO biobarrier)	
 <u>2011 Semiannual GSAP Sampling</u> 	Nov
FT005 Soil Remedial Action	June



Preview Presentation Travis AFB, CA 26 January 2011

Section 1 - Introduction















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Section 6 - Identification and Screening of Technologies

- General Response Actions
- Remedial Technologies
- Technology Process Options
- Representative Process Options
- Screened against criteria of Effectiveness, Implementability, and Relative Cost



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Technologies and Process Options

- Technologies General categories of remedies under a GRA
- Process Options Specific categories of remedies within each remedial technology
- Representative Process Options
 - Selected to represent a technology type
 - Used to streamline the subsequent assembly of alternatives

No Action none none Require Institutional Administrative Actions Administrative Mechanisms Land Use Controls Represent Controls Controls Controls Controls Controls	uired
Institutional Administrative Mechanisms Land Use Controls Representation Actions Controls on off-base properties Controls on off-base properties	linea
Controls on off- base properties	esentat
Natural Attenuation	esentat

Summary of GRAs, Technologies, and Process Options (cont.)

Containment Physical Barrier Sheet piling Soil-bentonite Soil-bentonite Soil-bentonite Soil-bentonite Hydraulic Barrier Extraction wells	GRA	Technology	Process Option	Comment
Hydraulic Barrier Extraction wells	Containment	Physical Barrier	Sheet piling	
Hydraulic Barrier Extraction wells			Soil-bentonite slurry wall	
Hydraulic Barrier Extraction wells				
		Hydraulic Barrier	Extraction wells	
Interceptor trench			Interceptor trench	

Summary of GRAs, Technologies, and Process Options (cont.)

GRA	Technology	Process Option	Comment
Removal	Groundwater extraction	Extraction well	Representative
	Source removal	Excavation	Representative
	Free product removal	Passive skimming	Representative
			14

Summary of GRAs, Technologies, and Process Options (cont.)

GRA	Technology	Process Option	Comment
In situ Treatment	In situ Bioremediation	EVO injection	Representative
		Organic PRB	
		Bioaugmentation	
		Phytoremediation	Representative
		Bioreactor	Representative
	In situ Chemical Treatment	ISCO	
		Ferox	
		ZVI PRB	
			1

Summary of GRAs, Technologies, and Process Options (cont.)

Ex situ TreatmentPhysical TreatmentLGACRepresentativeImage: Stormwater Groundwater DischargeAir strippingImage: Stormwater drainage systemRepresentativeImage: Stormwater DischargeBeneficial reuseImage: Stormwater drainage systemRepresentative	GRA	Technology	Process Option	Comment
Air stripping Disposal Treated Groundwater Discharge Stormwater drainage system Representative Beneficial reuse Beneficial reuse Image: Store St	Ex situ Treatment	Physical Treatment	LGAC	Representative
Disposal Treated Groundwater Discharge Stormwater drainage system Representative Beneficial reuse Beneficial reuse Beneficial reuse			Air stripping	
Beneficial reuse	Disposal	Treated Groundwater Discharge	Stormwater drainage system	Representative
		2.00.10.90	Beneficial reuse	

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- Alternatives developed to meet RAOs
- Assembled from the representative process options
- Screened against criteria:
 - Effectiveness
 - Implementability
 - Cost

Assembly of Alternatives

GRA	Technology	Representative Process Option		Ali	ter	ma	ati	ve	
			1	2	3	4	5	6	7
No Action	None	None	•						
Institutional Actions	Administrative mechanisms	LUCs		•	•	•	•	•	•
Natural Attenuation	Monitoring & verification	MNA		•					
		EA					•	•	•
Removal	Groundwater extraction	Extraction wells			•	•			
	Free product removal	Passive skimming							•
	Source removal	Excavation				•		•	
								18	3

As	sembly of	Alternatives	(0	0	0	n	t	.)	
GRA	Technology	Representative Process Option		AI	tei	na	ativ	/e	
			1	2	3	4	5	6	7
In situ Treatment	In situ bioremediation	EVO injection					•	•	
		Phytoremediation						•	
		Bioreactor				•		•	
Ex situ Treatment	Physical treatment	LGAC			•	•			
Disposal	Treated groundwater discharge	Stormwater drainage system			•	•			
								19	;

Summary of Alternatives and Applicable Sites

Alternative	Applicable Site(s)
Alternative 1 – No Action	All
Alternative 2 - MNA	FT004, FT005, LF006, LF007B, LF007D, LF008, ST027B, SD031, SD033, SS035, SD043
Alternative 3 – GET	LF007C, SS029, SS030
Alternative 4 – Excavation, Bioreactor, & GET	SS016
Alternative 5 – EVO & EA	SS015, SD036, SD037
Alternative 6 – Excavation, Bioreactor, Phytoremediation, EVO PRB, & EA	DP039
Alternative 7 – Passive Skimming & EA	SD034 20

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Alternatives evaluated using nine (9) CERCLA criteria:

- 1. Overall Protection of Human Health and the Environment
- 2. Compliance with ARARs
- 3. Long-term Effectiveness and Permanence
- 4. Reduction of Toxicity, Mobility, or Volume through Treatment



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Section 9 - Comparative Analysis of Alternatives

- Uses same CERCLA evaluation criteria
- Primary comparisons are between the implemented IRA and the FFS alternative for each site
- Includes a comparative analysis of sustainability criteria (e.g., carbon footprint)

Summary Comparison of IRAs and FFS Alternatives

Site	IRA	FFS Alternative
FT004, SD031, SD033	GET & MNA assessment	2 - MNA
FT005, LF008, SS035, SD043	GET	2 - MNA
LF006, LF007B, LF007D, ST027B*	MNA assessment	2 - MNA
LF007C, SS029, SS030	GET	3 - GET
* Former POCO site		
		2

Summary Comparison of IRAs and FFS Alternatives (cont.)

Site	IRA	FFS Alternative
SS015	MNA assessment	5 – EVO & EA
SS016	GET	4 – Excavation, Bioreactor, & GET
SD034	GET, Passive Skimming, & MNA assessment	7 – Passive Skimming & EA
SD036, SD037	GET & MNA assessment	5 – EVO & EA
DP039	GET & MNA assessment	6 – Excavation, Bioreactor, Phytoremediation, EVO PRB, & EA
		25