

SUBJECT: HTW – BCT Meeting
May 12, 2010
1:30 p.m. BRAC Conference Room

✓	Name	Organization	Phone	E-mail address
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✓	Name	Organization	Phone	E-mail address
<i>AM</i>	Jen Moser	GEM/Shaw E&I	831/883-5812	Jen.moser@shawgrp.com
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	Michael Taraszki	MACTEC E&C	510/628-3222	mdtaraski@mactec.com
	Chuck Holman	Ahtna	916/372-2000	cholman@ahtnaes.com
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<i>MB</i>	Melissa Broadston	Fort Ord BRAC	831/393-1284	Melissa.broadston@us.army.mil
<i>my phone</i>	Roy Evans	HGL	303/984-1167 xt. 5	revans@hgl.com
<i>my phone</i>	<i>Jeff Jensen</i>			
<i>CG</i>	Chris Goddard	USACC	916/557-6796	Christopher.a.goddard@usace.army.mil

HTW BCT Meeting Agenda

May 12, 2010 at 1:30 pm

Item	Action	Comment
Community Relations	Update	
OU1 Groundwater Remediation	Status Update	HGL
OU1 Off-Site	Status Update	
OU2 and 2/12 Treatment Systems	Status Update	
Other Groundwater Issues	Status Update	
OUCTP	Status Update	
OU2 Landfill	Status Update	
Site 39 Remediation	Status Update	
FFA Schedule	Status Update	
Calendar Update	Update	

U.S. Army Community Outreach Update

Actions:

1. Proposal for letter/update/fact sheet to be distributed to Monterey Bay Estates II residents. Purpose of notification is to discuss results (non-detect) from monitoring well 94 and overall results of off-site Operable Unit 1 groundwater investigation and cleanup.
2. Working on interactive map for web site (per Fort Ord Environmental Justice Network comments/requests).
3. Provide draft Annual Report (newsletter distributed to 50,000 households) to BRAC Cleanup Team for review.

Recent Activities:

1. April 22, 2010: Participated in Earth Day/Farmer's Market event at California State University Monterey Bay. Talked with 50 participants/students/faculty.
2. April 24, 2010: Conducted first guided walk inside the Impact Area. 40 people participated in the event. Received favorable after action comments from community participants. Participants also recommend a longer walk, more emphasis on the Fort Ord history and habitat, registration at walk/meeting area.
3. May 8-9, 2010: Participated in Marina Festival of the Winds with an information booth. Gave away 300 pencils.

Upcoming Activities

1. May 19, 2010: Conduct munitions and explosives of concern school safety program presentation for Washington Union School.
2. May 28, 2010: Participate in Presidio of Monterey Safety Day (typically attended by over 1,000 active duty personnel) with a munitions and explosives of concern/safety awareness information booth.
3. Week of June 15: Send targeted mailings for prescribed burn program.
4. June 22, 2010: Host a bus tour for Sustainable Seaside.
5. June 26, 2010: Host the semi-annual community open house / bus tour that will emphasize munitions cleanup with a drive around and one stop at the Impact Range.
6. July 14-15, 2010: Host the Community Involvement Workshop followed by the Technical Review Committee. Presentations are updates on the Environmental Services Cooperative Agreement and Landfill.

STATUS: RESPONSE to COMMUNITY COMMENTS

AR Number	Title/Subject	Status
Not yet assigned	Clarification of meeting with FOEJN on Administrative Record and other issues.	The (Response to Comments) RTC is in progress.
N/A	Letter from Mike Weaver regarding email footers, addresses and issues regarding the Administrative Record.	RTC is in progress.
OE-0712.3	Comments submitted by the Fort Ord Community Advisory Group on the Draft Prescribed Burn 2009 MRS-BLM Units 14 and 19 After Action Report, Former Fort Ord, Monterey County, California	RTC is in progress
N/A	E-mail from Mike Weaver on 16 burn related issues.	RTC is in progress.
OU1-575.2	Comments submitted by Mike Weaver on the Draft 2009 Annual and Third-Quarter Groundwater Monitoring Report, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California	RTC is in progress
IAFS-235E.3	Comments from Mike Weaver [Fort Ord Community Advisory Group] on the Draft Final Work Plan, Historical Area 161 Excavation, Inter-Garrison Training Area, Former Fort Ord, California	RTC in progress. Part 1: Initial response is a letter to CAG noting that we are preparing report/documents that will response to these comments/questions. Part 2: Issue report- Both the initial letter and report will be a part of the Administrative Record.
OU1-573.3	Comments submitted by Mike Weaver [Fort Ord Community Advisory Group] on the Report of Off-Site Groundwater Extraction Pilot Study and Quarterly Monitoring, Operable Unit 1, April to June 2009 and Annual Summary, Former Fort Ord, California	RTC is in progress. Final RTC will be attached to next version of the report.
OUCTP-0040D.3	Comments submitted by Mike Weaver on the Draft Final Interim Remedial Action Completion Report, Operable Unit Carbon Tetrachloride Plume, Former Fort Ord, California, Revision 0	RTC is complete and included within final version of the document.
OE-0708.6	Comments submitted by the Fort Ord Environmental Justice Network on the Draft MRS-BLM Units 15, 21, 32 and 34 Prescribed Burn Plan, 2010, Former Fort Ord, Monterey, California	RTC is complete and included in draft final version of the report.
OE-0708.3	Comments submitted by Nancy Amadeo [Marina in Motion] on the Draft, MRS-BLM Units 15, 21, 32 and 34 Prescribed Burn Plan, 2010, Former Fort Ord, Monterey, California	RTC is complete and included in draft final version of the report.
OE-0708.4	Comments submitted by Mike Weaver on the Draft MRS-BLM Units 15, 21, 32 and 34 Prescribed Burn Plan, 2010, Former Fort Ord, Monterey, California	RTC is complete and included in draft final version of the report.
IAFS-235B	Comments provided by Fort Ord Environmental Justice Network on the Draft Work Plan, Historical Area 161 Excavation, Inter-Garrison Training Area, Former Fort Ord, California	RTC is complete in format of letter in Administrative Record.

HydroGeoLogic, Inc.
Agenda & Notes

Fort Ord Hazardous and Toxic Waste Base Closure Team Meeting
12 May 2010, 1:30 PM
Monterey, California

1. Groundwater Remediation System Update

The Northwest Treatment System (NWTS) was out of service during two periods:

- PG&E power outages on 21 and 22 April took the plant down for approximately 48 hours between approximately 1 PM on the 21st through 1 PM on the 23rd.
- On 26 April a pipe leak was detected in the piping to the lead carbon units and the system shut down at approximately 5:40 PM. The pipe was repaired and operations were restored using only the lead GAC units at approximately 4:30 PM on 29 April. Repairs to the cracked pipe on the lag GAC units (leak detected on 22 March) were completed and these units returned to service on 30 April.

The injection pump software problem is also completed. HGL had temporarily increased pumping from MW-OU1-85-A from approximately 15 gallons per minute (gpm) to 30 gpm in attempt to improve injection pump performance pending software repairs. The pumping rate has been lowered back to 15 gpm. The pressure switch and EW-OU1-60-A fan repairs are awaiting parts. Extraction well EW-OU1-60-A has not operated since approximately 24 March.

Preliminary laboratory analytical results from the March 2010 performance sampling effort have been received and are shown in Table 1. The information in Table 1 was discussed verbally during the April BCT meeting and trichloroethylene (TCE) results are summarized below (*italicized*) for reference:

- *TCE exceeded the aquifer cleanup level (ACL) only at the two extraction wells nearest to the original source area (EW-OU1-71-A and MW-OU1-87-A). TCE concentrations increased by 1 microgram per liter ($\mu\text{g/L}$) at EW-OU1-71-A to 8.5 $\mu\text{g/L}$ and rose slightly from 6.9 $\mu\text{g/L}$ to 7.2 $\mu\text{g/L}$ at MW-OU1-87-A.*
- *TCE concentrations at EW-OU1-66-A, MW-OU1-85-A and MW-OU1-46-AD continued to decline and all were less than 1 microgram per liter ($\mu\text{g/L}$). Concentrations at the latter two wells are approaching the detection limit (0.62 $\mu\text{g/L}$ AND 0.55 $\mu\text{g/L}$, respectively.)*
- *EW-OU1-60-A was sampled and TCE was not detected. This well had not been sampled since June 2009.*
- *The influent TCE to the treatment plant was stable at 2.3 $\mu\text{g/L}$ and the effluent concentration remained non-detect. Cis-1,2-dichloroethene (Cis-1,2-DCE) was present in the effluent at 0.13 $\mu\text{g/L}$ (well below the carbon change criteria of 3.0 $\mu\text{g/L}$).*

Thus far in 2010, the NWTS has removed approximately 0.16 pounds of trichloroethene (TCE). Since system start-up in 2006, the NWTS has removed approximately 4.6 pounds of total volatile organic compounds.

Extraction wells EW-OU1-62-A and EW-OU1-63-A on the northwest boundary were taken out of service in January as discussed in previous BCT meetings. Wells MW-OU1-57-A and MW-OU1-58-A were designated as replacement samples but were inadvertently omitted from the sampling program in March.

These wells were sampled on 03 May. Analytical results will be reported when available and included in the 2010 First Quarter Groundwater Monitoring Report.

2. Long-term Monitoring Update

Preliminary laboratory analytical results from the March 2010 long-term monitoring (LTM) sampling event have also been received and are shown in Figure 7. These results were also discussed at the April BCT and a brief summary is provided below.

- *The maximum TCE concentration reported in the first quarter 2010 LTM event was 7.8 µg/L at well EW-OUI-53-A. This is a decline from the 11 µg/L to 10 µg/L detected during 2009.*
- *Un-validated sample results for the long term monitoring semi-annual sampling showed general declines in TCE concentration at most wells in comparison to the previous samples collected in September 2009. TCE increased only at the following locations:*
 - *MW-OUI-61-A from 9.9 µg/L to 15.0 µg/L*
 - *EW-OUI-52-A from 5.0 µg/L to 6.5 µg/L*
 - *MW-OUI-82-A from 0.88 µg/L to 1.4 µg/L*
 - *MW-OUI-23-A from 3.8 µg/L to 3.9 µg/L*
- *TCE concentrations decreased at 11 wells and remained at non-detect at off-Post well MW-OUI-70-A. The more notable decreases included the following wells within the trailing portion of the plume (listed in order of increasing distance from the southernmost [i.e., nearest] extraction well):*
 - *MW-OUI-86-A from 2.6 µg/L to 1.2 µg/L*
 - *MW-OUI-26-A from 7.7 µg/L to 6.4 µg/L*
 - *IW-OUI-10-A from 8.2 µg/L to 6.0 µg/L*
 - *EW-OUI-53-A (this well and well MW-OUI-23-A define the trailing edge of the plume) from 10.0 µg/L to 7.8 µg/L*

3. Report Submittals

Table 2 summarizes the status of scheduled reports through 2010. The Draft 2009 Annual and Fourth Quarter Groundwater Monitoring Report was submitted during the second week in February. The regulatory agencies (US Environmental Protection Agency, CA Department of Toxic Substance Control, and the CA Regional Water Quality Control Board) approved via electronic mail the sampling frequency recommended in the Draft 2009 Annual and Fourth Quarter Groundwater Monitoring Report. These changes, which included shifting three wells from semi-annual to annual schedule, were implemented during the March sampling event. The regulatory agencies had no other comments. HGL also received comments from the Fort Ord Community Action Group and is working with the Army to address those comments. Preparation has begun on the final version of this report.

Preparation has also begun on the First Quarter 2010 Groundwater Monitoring Report.

4. Other

4a) 2010 Rare Plant Survey

The U.S. Fish & Wildlife Service has not responded to the recommendation that the 2010 rare plant monitoring be suspended. Given that the optimal survey period for obtaining representative plant population counts has passed, the OU-1 survey will not be performed this year. However, HGL did survey the reference plot and will incorporate that data into the 2010 Annual Fort Ord Natural Reserve Impact Report.

4b) IW-OUI-10-A System Expansion

HGL has received bids for construction of the proposed remediation system expansion and is working with the Army to implement this project.

4c) Previous Meeting Minutes

No comments were received on the Draft April BCT OU-1 meeting minutes and these minutes are now accepted as final.

There are no other planned agenda items.

Table 1

TCE and Cis-1,2-DCE in OU-1 FONR Groundwater Remediation System - Performance Monitoring

BCT Meeting for Former Fort Ord, at Monterey CA - May 2010

Sample Date	FONR Extraction Well (listed from south to north) Began Operation October 2007				Boundary Extraction Well (listed from west to east) Began Operation July 2006				NWTS			
	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62	INFLUENT	MIDPOINT	EFFLUENT	
TCE (µg/L)												
11/9/2007	16	13	19	14	ND	ND	1.7	ND	11	ND	ND	
1/18/2008	11	11	8.9	8.2	ND	ND	1.2	ND	6.0	ND	ND	
3/18/2008	11	14	6.7	5.8	ND	0.29	1.5	ND	5.6	ND	ND	
5/27/2008	9.7	18	2.5	6.1	ND	ND	1.8	ND	3.9	ND	ND	
7/21/2008	9.1	14	4.4	3.4	ND	0.78	1.4	ND	3.6	ND	ND	
9/29/2008	9.3	J 15	J 4.3	J 2.9	J ND	J 0.90	J 1.7	J ND	3.8	J 0.19	J ND	
12/1/2008	5.8	11	2.6	1.6	ND	0.82	0.91	ND	2.7	0.35	J ND	
1/26/2009	5.9	10	2.2	1.2	ND	0.48	J 0.78	ND	2.4	ND	ND	
3/9/2009	5.8	9.9	2.1	1.2	ND	0.95	0.86	ND	2.7	ND	ND	
6/11/2009	6.9	11	2.4	1.5	ND	0.88	1.7	ND	2.6	0.14	J ND	
9/15/2009	6.8	9.4	1.7	0.78	ND	inactive	1.1	0.036	J 2.3	0.35	J ND	
12/14/2009	6.9	7.5	0.84	not sampled	not sampled	inactive	0.94	not sampled	2.3	0.65	J ND	
3/22/2010	7.2	8.5	0.62	0.55	inactive	ND	0.90	inactive	2.3	ND	ND	
cis-1,2-DCE (µg/L)												
11/9/2007	1.9	1.6	2.3	1.70	ND	ND	ND	ND	1.3	ND	ND	
1/18/2008	1.20	1.40	1.00	1.20	ND	ND	0.11	ND	0.66	ND	ND	
3/18/2008	1.20	1.50	0.74	0.63	ND	ND	ND	ND	0.59	0.11	ND	
5/27/2008	0.88	2.10	0.26	0.74	ND	ND	ND	ND	0.36	0.21	ND	
7/21/2008	0.80	1.50	0.52	0.37	ND	ND	ND	ND	0.41	0.34	ND	
9/29/2008	0.99	1.60	0.54	0.30	ND	ND	0.13	ND	0.42	0.42	0.12	
12/1/2008	0.67	1.30	0.33	0.21	J ND	ND	ND	ND	0.27	J 0.37	J 0.19	
1/26/2009	0.63	1.20	0.29	J 0.12	J ND	ND	ND	ND	0.26	J 0.24	J ND	
3/9/2009	0.62	1.20	0.29	J 0.13	J ND	ND	ND	ND	0.23	J 0.26	J ND	
6/11/2009	0.71	1.10	0.30	J 0.13	J ND	ND	0.14	J ND	0.24	J 0.28	J ND	
9/15/2009	0.80	1.00	0.22	J 0.08	J ND	inactive	0.03	J ND	0.22	J 0.37	J 0.03	
12/14/2009	0.67	0.65	0.10	J not sampled	not sampled	inactive	ND	J not sampled	0.21	J 0.30	J 0.11	
3/22/2010	0.67	0.79	ND	ND	inactive	ND	ND	inactive	0.20	J 0.11	J 0.13	
Italics (if used) indicate data not yet validated					Bold font indicates concentration > ACL							

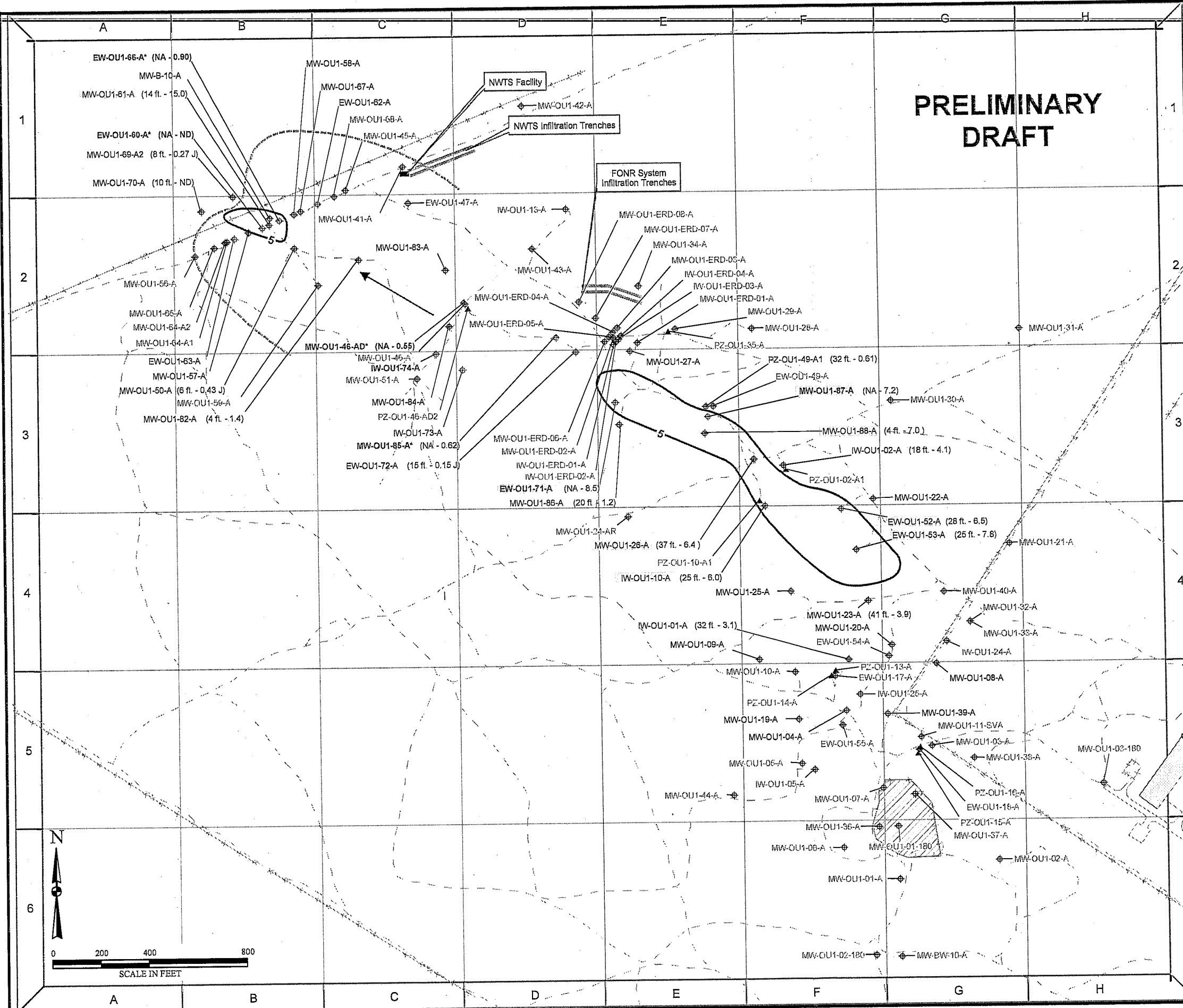
Table 2
Deliverable Schedule
IPM / BCT Meeting for Former Fort Ord, Marina CA –May 2010

Deliverable	Scheduled Submittal	Status / Remarks (Bold font indicates submittal)
<i>Primary Deliverables</i>		
None Scheduled for 2010		
<i>Secondary Deliverables</i>		
Draft 2007 Annual and Fourth Quarter Groundwater Monitoring Report	June-2010	In Progress.
Agency Comments	August-2010	
Final 2007 Annual and Fourth Quarter Groundwater Monitoring Report	September-2010	
Agency Comments	NA	
First Quarter 2008 Groundwater Monitoring Report	July-2009	Submitted 21 August 2009
Agency Comments	NA	
Third Quarter 2008 Groundwater Monitoring Report	March-2009	Submitted 19 March 2009
Agency Comments	May-2009	No Comment
Draft 2008 Annual and Fourth Quarter Groundwater Monitoring Report	May-2009	Comments received on 2nd through 4th Quarter reports
Agency Comments	Sept-2009	Received
Final 2008 Annual and Fourth Quarter Groundwater Monitoring Report	December-2009	Submitted 18 December 2009
Agency Comments	NA	
First Quarter 2009 Groundwater Monitoring Report	June-2009	Submitted 22 June 2009
Agency Comments	August-2009	No Comment
Draft 2009 Annual and Third Quarter Groundwater Monitoring Report	February-2010	Submitted 08 February 2009
Agency Comments	April-2010	Agencies approved changes to 2010 sample frequency with no other comments. FOCAG comments are being addressed.
Final 2009 Annual and Third Quarter Groundwater Monitoring Report	May-2010	
Agency Comments	NA	
Final Rebound Evaluation Report	June-2010	In Progress.
Agency Comments	NA	

Bold denotes completed submittals.

Figure 7
OU-1 FONR
TCE Concentrations in Groundwater
March 2010

**PRELIMINARY
DRAFT**



- Legend**
- ◊ Monitoring Well
 - ◊ Extraction Well
Bold green font indicates active well
 - ◊ Injection Well
Bold green font indicates active well
 - ▲ Piezometer
 - Locations With March 2010 TCE Concentration At Or Above ACL (5 µg/L)
 - 5— TCE Contour (µg/L)
Based on March 2010 Data
 - MW-OU1-88-A Well ID
(4 ft. - 7.0) March 2010 TCE Result (µg/L)
 - Sample Elevation (feet above mean sea level)
 - - - Trail/Unimproved Road
 - Fence
 - Treated Water Infiltration Trench
 - - - - - Estimated Northwest Treatment System Capture Zone
 - ▨ Former Fire Drill Area
 - ← General Direction of Groundwater Flow

Notes:
Units of TCE concentrations are in ppb
ND = Non-detect
NA = Depth is not applicable - sample is from pumping well
J = Estimated Value
µg/L = Micrograms per liter
Wells shown with an asterisk were not used to develop contour boundaries.
Active extraction wells were typically not included because the data is not location-specific. Data from extraction wells EW-OU1-71-A and MW-OU1-87-A were used to infer the 5 µg/L TCE contour because the results at those wells suggest higher TCE concentrations nearby.
Well names appearing in gray were not included in OU1-Groundwater Monitoring Program.
Wells for which no data are posted were not sampled.

**OPERABLE UNIT 1
OFF-SITE GROUNDWATER EXTRACTION PILOT STUDY**

STATUS – May 12, 2010

FIELD WORK

- Well construction complete – December 21, 2007
- Draft Final OU1 Pilot Study Work Plan distributed – April 22, 2008
- Baseline sampling and analysis – June 14, 2008
- System construction completed – July 16, 2008
- Monitoring well (City of Marina) installation – July 28, 2008
- System start-up – August 5, 2008
- Extraction Well EW-OU1-92-A shut off – December 11, 2008
- Field Work Variance (FWV) issued to document system shut-off – February 16, 2009
- Groundwater extraction system shut off and rebound testing initiated – February 17, 2009
- Sampled GAC for waste profiling – March 24, 2009
- System restarted (EW-OU1-93-A operating) – April 7, 2009
- Second rebound study initiated – July 13, 2009 and completed March 22, 2010
- Quarterly sampling of monitoring and extraction wells – March 22, 2010

SCHEDULE

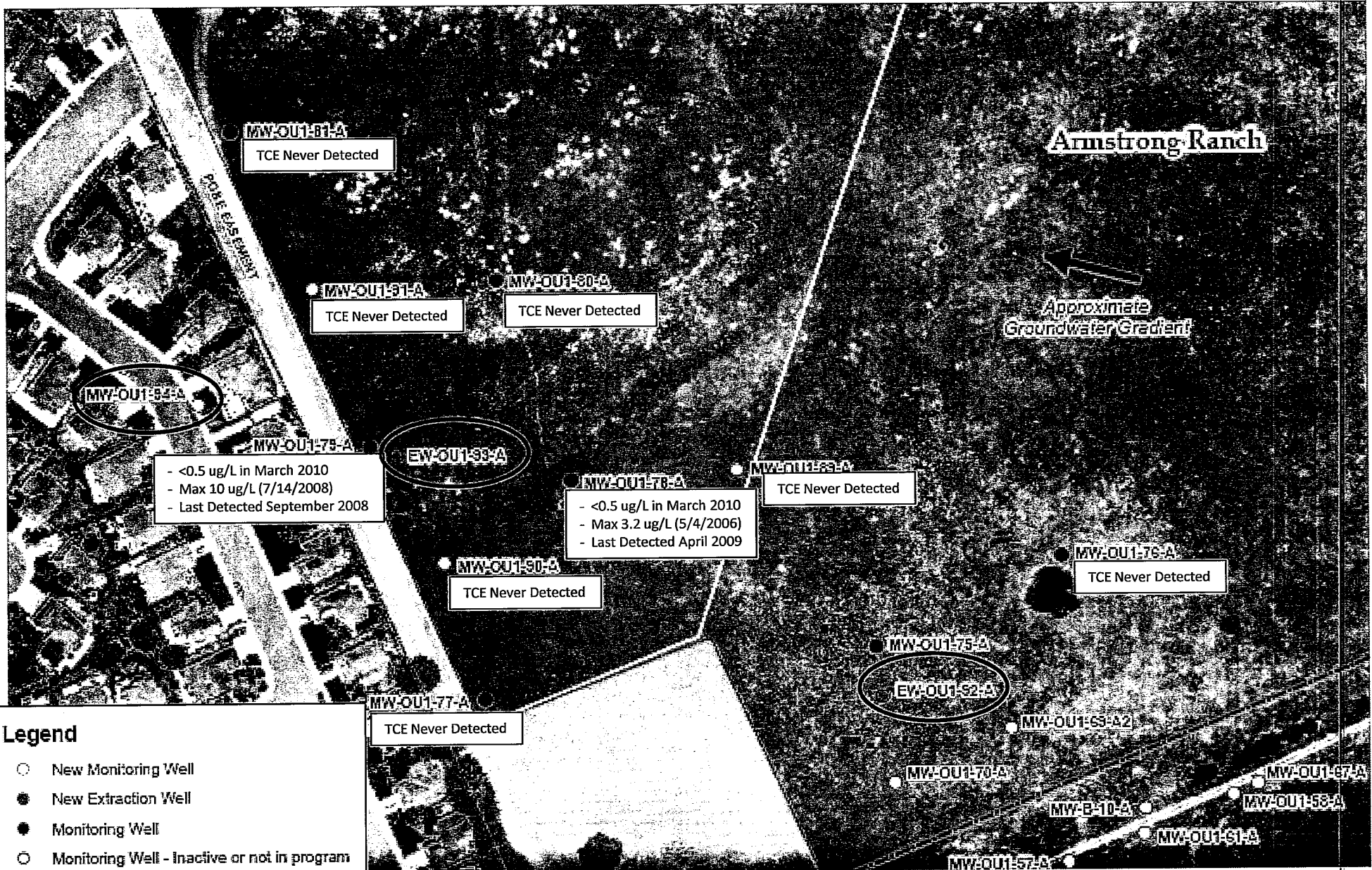
- Response to FOCAG comments on Annual Summary Report (Shaw, 2009).
- Planning carbon changeout of lead vessel as part of system mothballing. GAC sampled April 27, 2010.
- Conduct quarterly monitoring through June 2010.

DATA (Preliminary)

- Proposed wells to include in basewide groundwater monitoring program.

PROBLEMS/CHANGES

- Treated groundwater is being discharged to a discharge basin within the MCWD property. An injection well was not installed.
- One monitoring well has been installed in the City of Marina to determine the downgradient extent of the plume.
- Extraction Well EW-OU1-92-A shut off due to concerns of potential impact to OU1 On-Site GWETS plume capture.
- GWETS was shut off and rebound testing initiated because concentrations of TCE in all off-site wells are below Aquifer Cleanup Levels.
- GWETS restarted because TCE concentration in EW-OU1-93-A rebounded to 7.4 µg/L. TCE concentration in all other monitoring wells below detection limit.
- A second round of rebound testing was initiated because concentrations of TCE in all off-site wells are below Aquifer Cleanup Levels.



MW-OU1-81-A
TCE Never Detected

MW-OU1-81-A
TCE Never Detected

MW-OU1-80-A
TCE Never Detected

MW-OU1-83-A

MW-OU1-78-A
 - <0.5 ug/L in March 2010
 - Max 10 ug/L (7/14/2008)
 - Last Detected September 2008

EW-OU1-83-A

MW-OU1-78-A
 - <0.5 ug/L in March 2010
 - Max 3.2 ug/L (5/4/2006)
 - Last Detected April 2009

MW-OU1-83-A
TCE Never Detected

MW-OU1-80-A
TCE Never Detected

MW-OU1-76-A
TCE Never Detected

MW-OU1-75-A
EW-OU1-82-A

MW-OU1-77-A
TCE Never Detected

MW-OU1-68-A

MW-OU1-70-A

MW-OU1-67-A

MW-B-10-A

MW-OU1-58-A

MW-OU1-51-A

MW-OU1-57-A

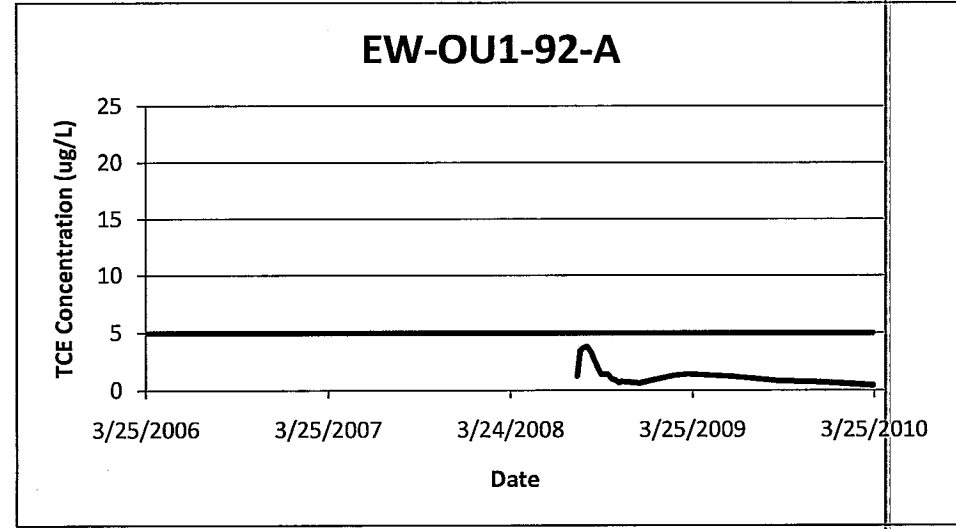
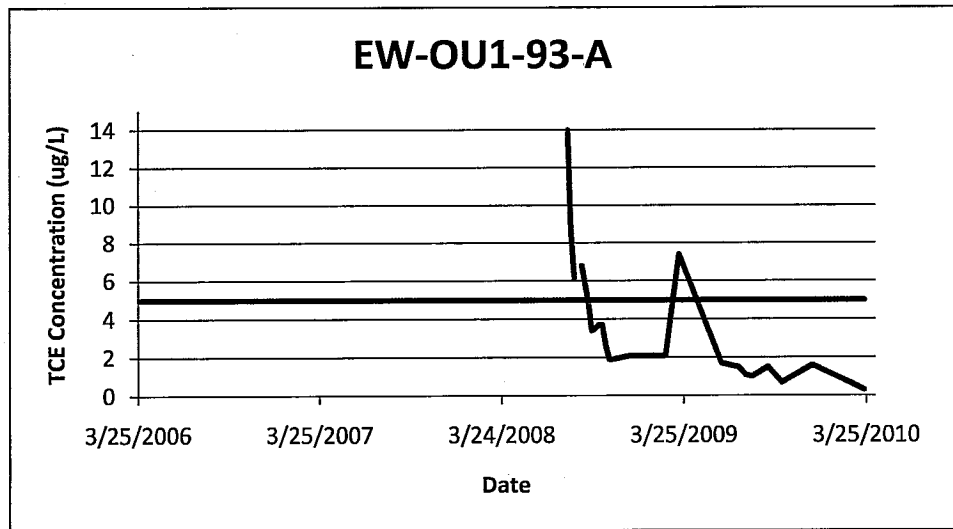
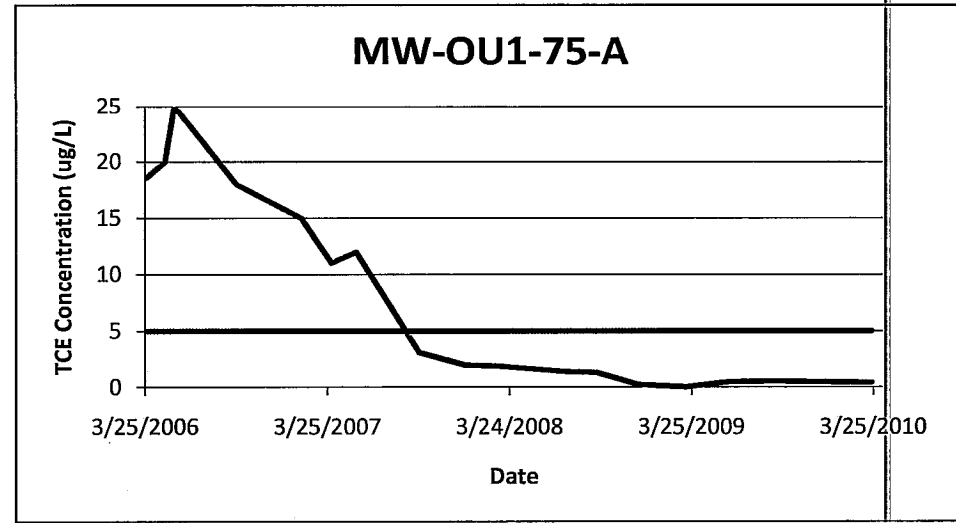
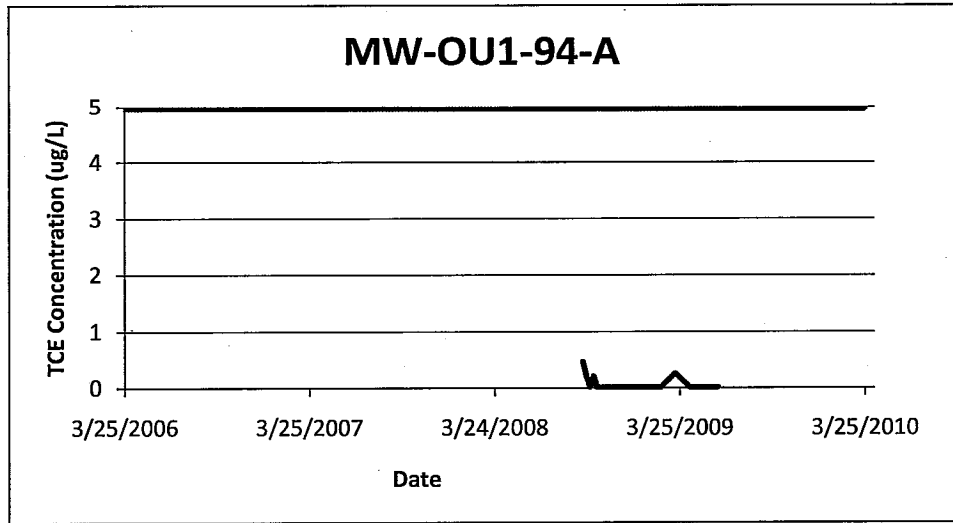
Armstrong Ranch

Approximate Groundwater Gradient

Legend

- New Monitoring Well
- New Extraction Well
- Monitoring Well
- Monitoring Well - Inactive or not in program
- ▭ PG&E Easement
- ▭ Boundary of Former Fort Ord

Operable Unit 1 Off-Site
Proposed Wells to Include in Basewide Groundwater Monitoring Program





Former Fort Ord Groundwater Treatment Systems Operational Data and Status

BRAC Cleanup Team Meeting, May 12, 2010

Table 1: OU2 and Sites 2/12 GWTP Treatment Statistics, as of April 30, 2010.

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons per minute)	Percent of Time Online	COC Mass Removed (lbs)
OU2				
April 2010	24,426,130	565	99.99	2.13
Total since October 1995	4.836 billion			653.31
Sites 2/12				
April 2010	9,124,800	211	99.8	0.69
Total since June 1999	1.325 billion			424.01

Table 2: OU2 and Sites 2/12 GWTP Calendar of Events, as of April, 2010.

Key Events for OU2 and Sites 2/12 for April 2010						
There were 31 USAN Notices transmitted to Ahtna April 1-30, 2010. Two of these alerts required the personal attention of the Senior GWTP Operator.						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7 2/12 Planned maintenance, downtime 0.75 hours.	8	9	10 Power outage, plants remained online. EW-OU2-08-180 offline.
11 Power outage at OU2 expansion, comms lost to wells for 6 hours. Comms restored.	12 EW-OU2-08-180 restarted.	13 2/12 offline due to operator error, downtime 0.5 hours. Replaced fuse on EW-OU2-06-180 flow meter.	14	15	16 OU2 briefly offline due to high level alarm.	17
18	19 Sample collected from EW-OU2-11-A for bacterial analysis, results pending.	20	21	22	23 Comms failure to CSUMB extraction wells.	24
25	26	27	28	29	30	

Table 3: April 2010 - OU2 Analytical Results at TS-OU2-INJ

COC	Discharge Limit (ug/L)	Sample Date / Analytical Results	
		4/7/10	4/21/10
1,1-DCA	5.0*	0.30	0.60
1,2-DCA	0.50	0.14	0.25
1,2-DCP	0.50	ND	ND
Benzene	0.50	ND	ND
Carbon Tetrachloride	0.50	ND	ND
Chloroform	2.0*	0.17	0.34
cis-1,2-DCE	6.0*	0.10	0.24
Methylene Chloride	0.50	ND	ND
PCE	0.50	ND	ND
TCE	0.50	ND	ND
Vinyl Chloride	0.10	ND	ND

Table 4: April 2010 - Sites 2/12 Analytical Results at TS-212-INJ

COC	Discharge Limit (ug/L)	Sample Date / Analytical Results				
		4/1/10	4/7/10	4/14/10	4/21/10	4/28/10
1,1-DCE	6.0	ND	ND	ND	ND	ND
1,2-DCA	0.50	0.15	0.13	0.13	0.21	0.15
1,3-DCP †	0.50	ND	ND	ND	ND	ND
Chloroform	2.0	0.19	0.16	0.16	0.27	0.21
cis-1,2 DCE	6.0	0.56	0.49	0.47	0.66	0.56
PCE	3.0	ND	ND	ND	ND	ND
TCE	5.0	0.28	0.23	0.24	0.33	0.30
Vinyl Chloride	0.10	ND	ND	ND	ND	ND

NOTES:

ND The analyte was not detected above MDL.

* Discharge limits for low carbon affinity compounds were increased to the Aquifer Cleanup Level (ACL).

‡ Discharge limits are the ACLs for injection over the plume.

† The reported value is the sum of both cis- and trans-isomers.

Figure 1: Sites 2/12 GWTP Lag GAC Vessel Effluent TCE Concentrations and Trend

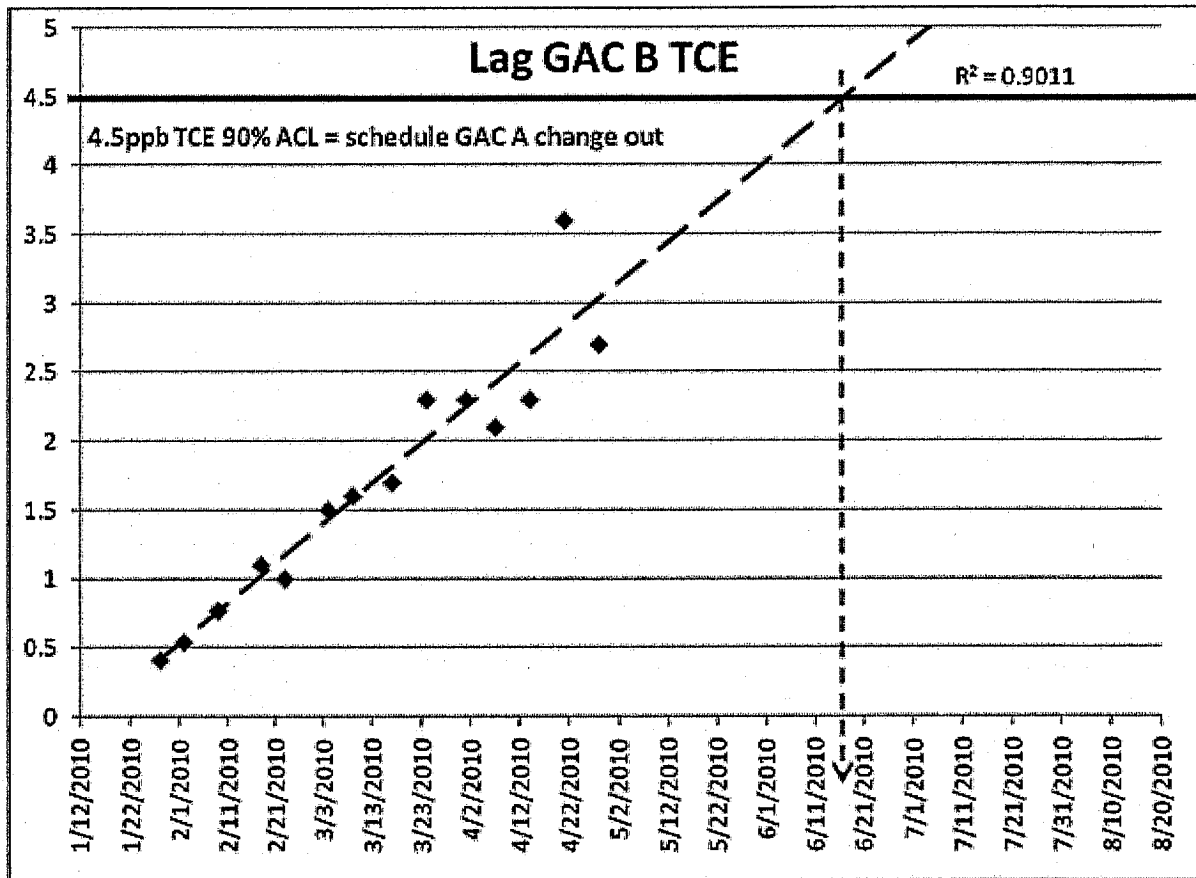


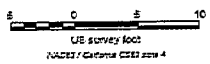
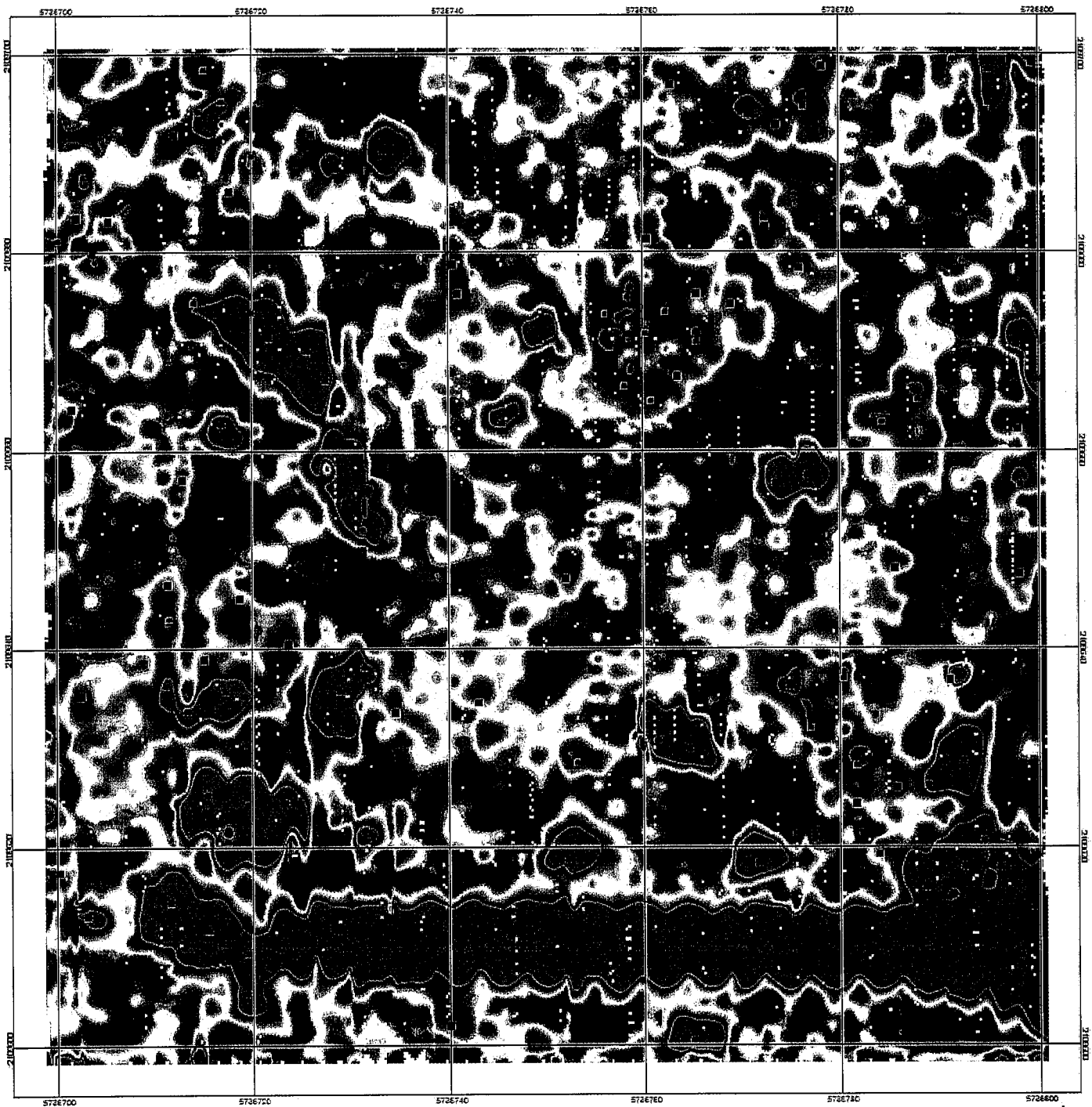
Table 5: AES Document Submittals - Status Summary

Document	Submitted	Comments Due
Draft Annual Groundwater Treatment Systems Operation Data Summary Report, January through December 2009, Operable Unit 2 and Sites 2 and 12 Groundwater Remedies, Former Fort Ord, California	March 22, 2010	May 21, 2010
No documents were submitted in April.		



Table 6: April 2010 OU2 and Sites 2/12 Extraction Well Status (as of April 30)

Well Identification	% On	Avg. gpm	Total Gallons	% of Total	Comments	TCF (ug/L) 1Q 2010
Site 12 Extraction Wells						
EW-12-05-180M	0.0	0	0	0.0	Well offline due to pump failure	Not Sampled
EW-12-06-180M	99.7	83	3,594,600	39.4		6.4
EW-12-07-180M	99.7	63	2,710,100	29.7		2.6
EW-12-03-180U	0.0	0	0	0.0	Well offline due to low concentrations	0.16
EW-12-03-180M	99.8	65	2,820,100	30.9		1.2
EW-12-04-180U	0.0	0	0	0.0	Well offline due to low concentrations	0.26
EW-12-04-180M	0.0	0	0	0.0	Pump removed, sampled with PDBs	0.99
<i>Total 2/12 gallons treated:</i>			<i>9,124,800</i>	<i>100.0</i>		
OU2 Extraction Wells						
<i>Western Network</i>						
EW-OU2-01-A	0.0	0	0	0.0	Well offline due to low concentrations	Not Sampled
EW-OU2-02-A	99.9	52	2,230,880	9.1		0.61
EW-OU2-03-A	0.0	0	0	0.0	Well offline due to low concentrations, sampled with PDBs	0.87
EW-OU2-04-A	99.9	49	2,098,320	8.6		0.95
EW-OU2-05-A	99.1	50	2,158,530	8.8		2.6
EW-OU2-06-A	99.2	35	1,506,540	6.2		4.2
EW-OU2-01-180	0.0	0	0	0.0	No pump in well, sampled with PDBs	6.5
<i>Total gallons extracted:</i>			<i>7,994,270</i>	<i>32.7</i>		
<i>Eastern Network</i>						
EW-OU2-07-A	0.0	0	0	0.0	Well offline due to low concentrations	0.16
EW-OU2-08-A	79.3	17	725,670	3.0		0.60
EW-OU2-09-A	96.9	15	632,720	2.6		3.1
EW-OU2-10-A	99.7	18	757,250	3.1		4.2
EW-OU2-11-A	0.0	0	0	0.0	Pump removed due to biofouling	Not Sampled
EW-OU2-12-A	95.0	15	628,980	2.6	Low yield; running at reduced capacity	5.5
EW-OU2-13-A	99.7	29	1,249,540	5.1		12.1
EW-OU2-02-180	99.7	66	2,831,000	11.6		9.3
<i>Total gallons extracted:</i>			<i>6,825,160</i>	<i>27.9</i>		
<i>Shoppette</i>						
EW-OU2-05-180	0.0	0	0	0.0	Well offline due to pump failure	Not Sampled
EW-OU2-06-180	89.5	146	6,301,000	25.8		4.9
EW-OU2-16-A	99.1	21	907,300	3.7	High drawdown, operating with new level settings	13.2
<i>Total gallons extracted:</i>			<i>7,208,300</i>	<i>29.5</i>		
<i>CSUMB</i>						
EW-OU2-14-A	99.9	18	761,400	3.1		1.3
EW-OU2-15-A	0.0	0	0	0	Well offline due to low concentrations	Not Sampled
<i>Total gallons extracted:</i>			<i>761,400</i>	<i>3.1</i>		
<i>Landfill</i>						
EW-OU2-03-180	0.0	0	0	0.0	Well offline due to pump failure	Not Sampled
EW-OU2-04-180	0.0	0	0	0.0	Well offline due to low concentrations	0.21
<i>Total gallons extracted:</i>			<i>0</i>	<i>0.0</i>		
<i>Bunker Hill</i>						
EW-OU2-07-180	0.0	0	0	0.0	No pump in well, sampled with PDBs	4.9
EW-OU2-08-180	67.6	38	1,637,000	6.7		1.0
<i>Total gallons extracted:</i>			<i>1,637,000</i>	<i>6.7</i>		
<i>Total OU2 gallons treated:</i>			<i>24,426,130</i>	<i>100.0</i>		



- - 20 mV EM61 Target
- - 14 mV EM61 Target

Range 26
Grid A2H2G3
EM61 MK2 Targets 14mV sum



Site 39 Remedial Action Status Update 05/12/2010

Ongoing Documents

- Prepare Appendix SSWP (FWV) for screening at HA 44.
- Prepare Appendix SSWP (FWV) to provide details for MEC Survey of New Surface.

Engineering Activities

Site 39

- Completed placement of additional transects in proposed remediation areas within the Impact Area. Data included in 2009 Annual Biological Report.
- 2009-2010 wetland monitoring ongoing.
- BLM to construct Riso Ridge Road at HA 36 after Agency approval of Technical Memorandum.

OU2 Landfills

- Completed design/grading plan for E/F Hill as borrow source for vegetative cover.

Construction Activities

Site 39

- Surveying, bio clearance, and mowing/limbing
 - Completed HAs 27, 27A, 29, 33, 36, 43, 18, 22, 23, and 19
- Excavation
 - Completed HAs 27, 27A, 29, 33, 36, 43, 23, 22, and 18
 - Continue HA 19
- Sampling as needed
 - Completed HAs 27, 27A, 29, 33, 43, 22, 23, 18, and 36
 - Sample at HA 19
- QC Seeding
 - Seed placed at HA 36 recovered from within excavation (Step 1)
 - Seed placed at HA 18 recovered from within excavation (Step 1)
 - Recovered all five seeds placed at HA 19 (Steps 1, 4, and 5)
- Planning for HAs 39/40, 26 (MEC Removal ongoing), and 44
- Implement erosion control measures, as needed
- Road improvements and repairs

OU2 Landfills

- Completed Phase 1 vegetative layer removal
- Hauled and placed soil from HA 27, 27A, 29, 33, 36, 22, 23, 43, 18, and 19
- Implement erosion control measures, as needed
- Completed moving 12,000cy soil into Area E and stockpile base rock
- Planning for removing remaining vegetative layer

Technical Memorandum

Tech Memos (TM) will present analytical results with the objective of receiving preliminary concurrence from Agencies that remediation is complete and acceptable and re-contouring/ restoration can occur.

- HA 27 – Final issued on 4/12. Waiting for EPA and DTSC concurrence
- HA 22 – Draft e-mailed on 4/12. Waiting for DTSC concurrence
- HA 43 – Draft issued on 4/20. Waiting for DTSC concurrence
- HA 36 – Draft issued on 4/26. Waiting for EPA and DTSC concurrence
- HAs 33, 23, and 29 – TM being prepared for Army review
- HAs 27A and 18 – Waiting for data validation

**Schedule of Field Work
(as of 05/11/2010)**

TASK	HISTORICAL AREA	ACTUAL (Bank CY)	ACRES	OVER-EX (Bank CY)	STOCKPILE EX (Bank CY)	EQUIPMENT	STOCKPILE	Date (Start and End Dates)					Over-excavation	Transport to OU2 Landfill	Sampling Date	Tech Memo Date	Date Completed	
								Surveying	Bio Clearance	Mowing/limbing	Site Prep	Excavation					Regrading	Erosion Control
1	27	120	0.1			Excavator, 1 A35, WT	HA 27A	10/19	10/28	10/28	11/2	11/2 11/4	NA	1/6	11/18	11/19, 3/18, 4/12		
2	27A	1030	0.6	470	240	Excavator, 1 A35, WT	onsite	10/19 10/20	10/29	10/28 10/29	11/4	11/4 11/13	1/4, 1/5, 2/2, 3/31	1/6 1/7, 2/2, 2/3, 4/8	11/19, 1/11			
3	29	2580	1.0	330	280	Excavator, 2 A35, 2 WT	onsite	10/21	10/29	11/5, 11/9	11/9 11/12, 11/16	11/17 12/1	1/6	12/28- 12/31, 1/6, SP on 2/2	12/2, 1/12, SP on 2/9			
4	OU2 Landfill Phase 1					OU2 Landfill Clearing and grubbing of 1/3 Area E		10/27	NA	11/9 11/12	12/1	12/2, 12/31, 1/11	NA	NA	NA	NA	NA	NA
5	36 (Explosives)	2750	0.51	40		Excavator, on-road, loader, WT	direct load	10/22	12/10	12/24	1/11	1/12 2/1	3/22	1/12 2/1, 3/22	2/9, 3/22	4/26		
6	43	150	0.1			Excavator, 2 A35, WT	Primary Stockpile	10/20	10/26	NA	2/2	2/8 2/9	NA	3/16	2/9, 2/23	4/20		
7	33 (Explosives)	20	0.01			Backhoe, 12-yd DT, WT	direct load	10/20	12/10	12/24	1/27	1/27	NA	1/27	2/9			
8						Transport Stockpiled Soil from E/F Hill to Area E		NA	NA	NA	NA	2/16 3/4	NA	NA	NA	NA	NA	NA
9						Prepare Primary Stockpile - Austin		NA	12/10	12/21	2/1	NA	NA	NA	NA	NA	NA	NA
10	22	80	0.1			backhoe, 12-yd DT, WT	Primary Stockpile	10/20	10/26	12/22	2/4	2/9 2/10	NA	3/16	2/23	4/12		
11	23	440	0.3			Excavator, 2 A35, WT	Primary Stockpile	10/22 & 10/26	12/10	12/22	2/4	2/10, 2/16-17	NA	3/16	2/23			
12	18	2730	1.4	20		Excavator, 3 A35, WT	Primary Stockpile	10/26-27, 12/3, 12/8-	12/21, 2/4	1/8, 1/11, 2/4,	2/16	2/17 3/4	4/16	3/16 3/23	3/4, 3/9, 3/31, 4/20			
13	19	26510	13.8			2 Excavators, 6 A35, 3 WT	Primary Stockpile	12/16 2/3	2/8, 3/4	2/16 3/11	3/8 3/16	3/17 5/20		3/24 5/27	4/13 - 6/4			
14	26	24760	13.9			2 Excavators, 6 A35, 3 WT	Primary Stockpile	5/31 7/15	3/3	3/3 3/30	6/7 6/10	6/14 8/5		6/14 8/5				
15	39/40	6520	2.5			1 Excavator, 2 A35, 2 WT	onsite	5/31 6/10	6/14	6/14 6/24	6/28 7/1	7/6 8/12		7/6 8/12				
16	44	3340	1.8			1 Excavator, 2 A35, 2 WT	onsite											
17	48	140	0.05			Backhoe, 12-yd DT, WT	direct load	5/17	5/17	5/18	5/19	5/20		5/20				
18	28	6920	3.2			1 Excavator, 2 A35, 2 WT	onsite											
19	34	26270	7.9			2 Excavators, 6 A35, 3 WT	onsite											
20	37	19430	6.2			2 Excavators, 6 A35, 3 WT	onsite											
Total		123790	53.5	860	520													

Notes:

11/17 date completed
 11/18 tentative scheduled start and end dates
 11/23

**Site 39 Remediation
Excavated Volume
(as of 5/07/2010)**

Summary						
Historical Area	FS Total Plan (bank cy)	Actual Plan To Date (bank cy)	% Planned To Date	O/S/SP To Date (bank cy)	Total To Date (bank cy)	Remediation Status
18	2,730	2,730	100%		2,730	complete
18 OVEREX				20	20	complete
22	80	100	100%		100	complete
23	440	440	100%		440	complete
27	120	120	100%		120	complete
27A	1,030	1,030	100%		1,030	complete
27A OVEREX				470	470	complete
27A STOCKPILE				240	240	complete
29	2,580	2,580	100%		2,580	complete
29 OVEREX				330	330	complete
29 STOCKPILE				280	280	complete
33	20	20	100%		20	complete
36	2,750	2,580	100%		2,580	complete
36 OVEREX				40	40	complete
43	150	150	100%		150	complete
19	26,510	22,680	86%		22,680	
26	24,760		0%		-	
39/40	6,520		0%		-	
48	140		0%		-	
44	3,340		0%		-	
34	26,270		0%		-	
37	19,430		0%		-	
28	6,920		0%		-	
Total	123,790	32,430	26%	1,380	33,810	

Site 39 MEC/MD Found

No.	Munitions Response Site	Burn Unit	Historical Area	Date	Item	Description	Step	Type
1	MRS-BLM	1	27	11/04/09	Grenade, hand, practice, M69	Excavation	1	MD
2	MRS-BLM	5	29	11/23/09	Projectile, 40mm, practice, M781	Excavation	1	MD
3	MRS-BLM	5	29	11/23/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
4	MRS-BLM	3	23	12/22/09	Grenade, hand, smoke, M18 series	mowing/Excavation	1	DMM
5	MRS-BLM	5	29	12/29/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
6	MRS-BLM	5	29	12/29/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
7	MRS-BLM	21	36	01/11/10	Projectile, 40mm, practice, M407A1	Outside remediation	NA	UXO
8	MRS-BLM	21	36	01/14/10	Grenade, hand, smoke, white phosphorous, M34	Stockpile	5	MD
9	MRS-BLM	21	36	01/27/10	Igniter, time fuse, blasting, M2	Excavation	1	MD
10	MRS-BLM	21	36	01/28/10	Grenade, hand, smoke, white phosphorous, M34	Excavation	1	MD
11	MRS-BLM	3	23	02/17/10	Cartridge, 40mm, practice, M781	Excavation	1	DMM
12	MRS-BLM	Not Applicable	18	03/04/10	Grenade, hand, training, MK1A1	Excavation	1	DMM

**Thermal Treatment Unit
Operation Summary
2007 - 2010**

TREATMENT SYSTEM OPERATION SUMMARY	
Treatment System Start Date:	6/4/2001
TTU Start Date:	4/4/2006
Last Reading Date/Time:	4/30/2010 13:30
Historical through 2009 (TTU only):	
Total TTU Hours:	32,808
Total TTU Hours Operated:	14,292
% TTU Operation:	43.6%
Total Pounds of Methane Removed:	1,802,161
Total Pounds of VOCs Removed:	202
Current Year 2010	
Total Hours:	3,144
Total Hours Operated:	872
% TTU Operation:	27.7%
Total Pounds of Methane Removed:	76,491
Cumulative:	
% TTU Operation:	42.2%
Total Pounds of Methane Removed:	1,878,652

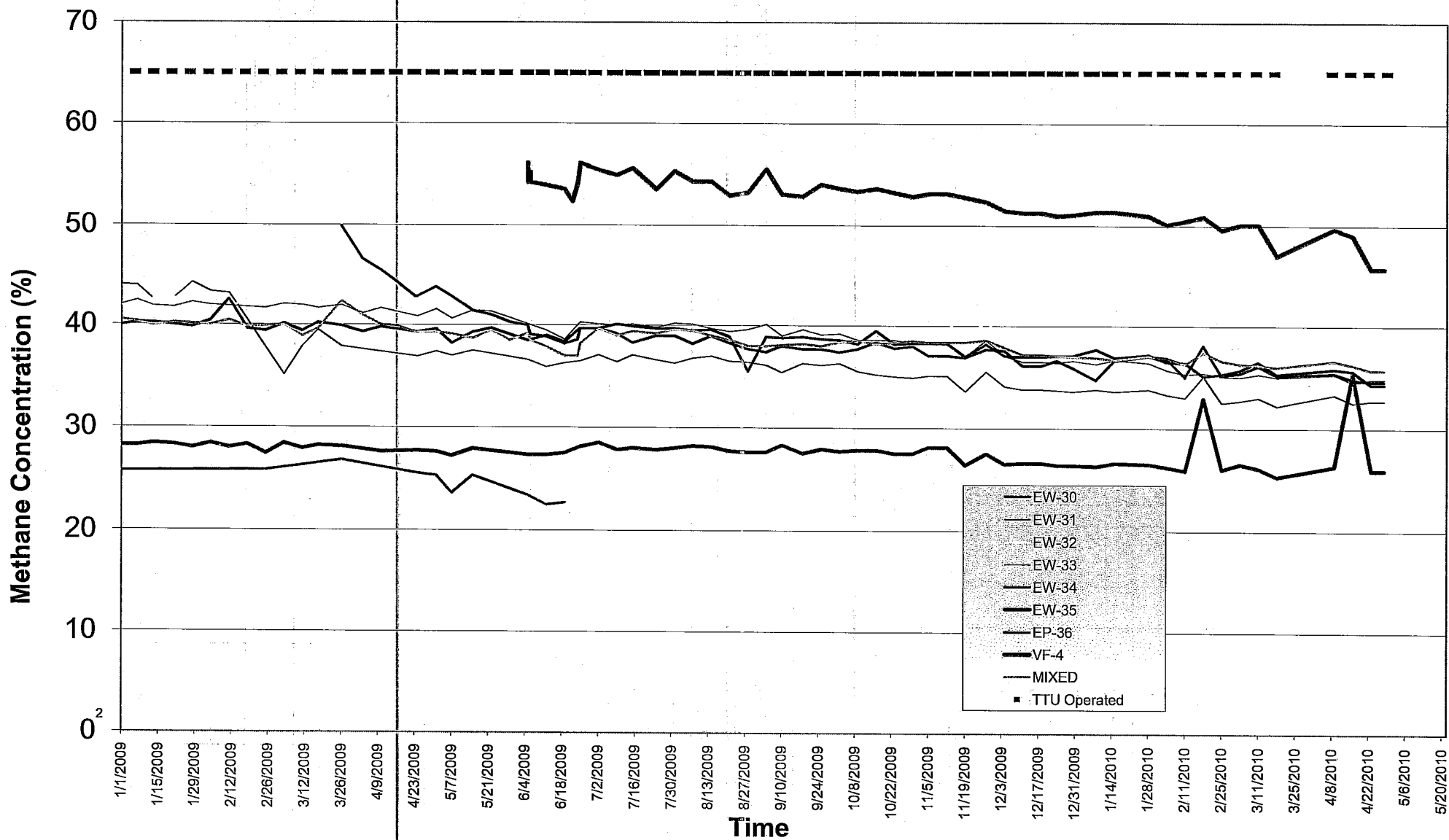
	Total Pounds Removed	Pounds/week
Pounds of Methane Removed (2007)	540,920	10,374
Pounds of Methane Removed (2008)	293,169	5,622
Pounds of Methane Removed (2009)	455,507	8,736
Pounds of Methane Removed (2010)	76,491	4,087

EXTRACTION SYSTEM (2010)					
Location	Last Instantaneous Methane Reading (%)	Last Instantaneous Flow Rate Reading (scfm)	Current Methane Removal Rate (lbs/day)	2010 % Operation	2010 Methane Removed (Lbs)
Area E					
EP-36	34.6	25	510.2	27.7	16831.7
Area F					
EW-31	32.7	1	19.3	27.7	4151.2
EW-32	37.8	15	334.4	27.7	12137.8
EW-33	34.8	22	451.6	27.7	12178.2
EW-34	34.3	31	627.2	27.7	21237.8
VF-4	45.7	3	80.9	24.4	4637.2
Area D					
EW-35	25.9	22	336.1	27.7	3693.2

Notes:

1. TTU shut down from 3/19 thru 4/6 to allow LFG rebound.
2. TTU O&M performed from on 4/20-21
3. TTU shut down from 4/30 thru 5/11 to allow LFG rebound.

Methane Concentration vs. Time (after 01-01-2009) Interior Extraction System



~~OPERABLE UNIT CARBON TETRACHLORIDE PLUME~~
A-AQUIFER REMEDIAL ACTION

STATUS – May 12, 2010

FIELD WORK

- Final RA Work Plan/RD (Appendix A – A-Aquifer) complete – August 28.
- Installation and development of wells at Areas 1A and 1B complete – January 16
- Installation of process equipment at Area 1A complete – July 10.
- Baseline sampling at Area 1A complete – August 12.
- Start-up testing at Area 1A complete – September 4.
- Installation and development of wells at Area 1C complete - September 4.
- Substrate injection at Area 1A initiated – September 14.
- Substrate injection at Area 1A completed – October 8.
- Groundwater recirculation at Area 1A completed – November 12.
- Installation of process equipment at Area 1B complete – January 6.
- Installation and development of new well at Area 1C complete – January 29.
- Start-up testing at Area 1B complete – February 26.
- Substrate injection at Area 1B initiated – March 2.
- Draft RAWP Appendix B – Upper 180-Foot Aquifer – March 15. Comments due May 20.
- Draft RAWP Appendix C – Lower 180-Foot Aquifer – March 15. Comments due May 20.
- Installation and development of wells at Areas 2A and 2B complete – March 23.
- Substrate injection at Area 1B completed – May 6. Continuing with groundwater recirculation.

SCHEDULE

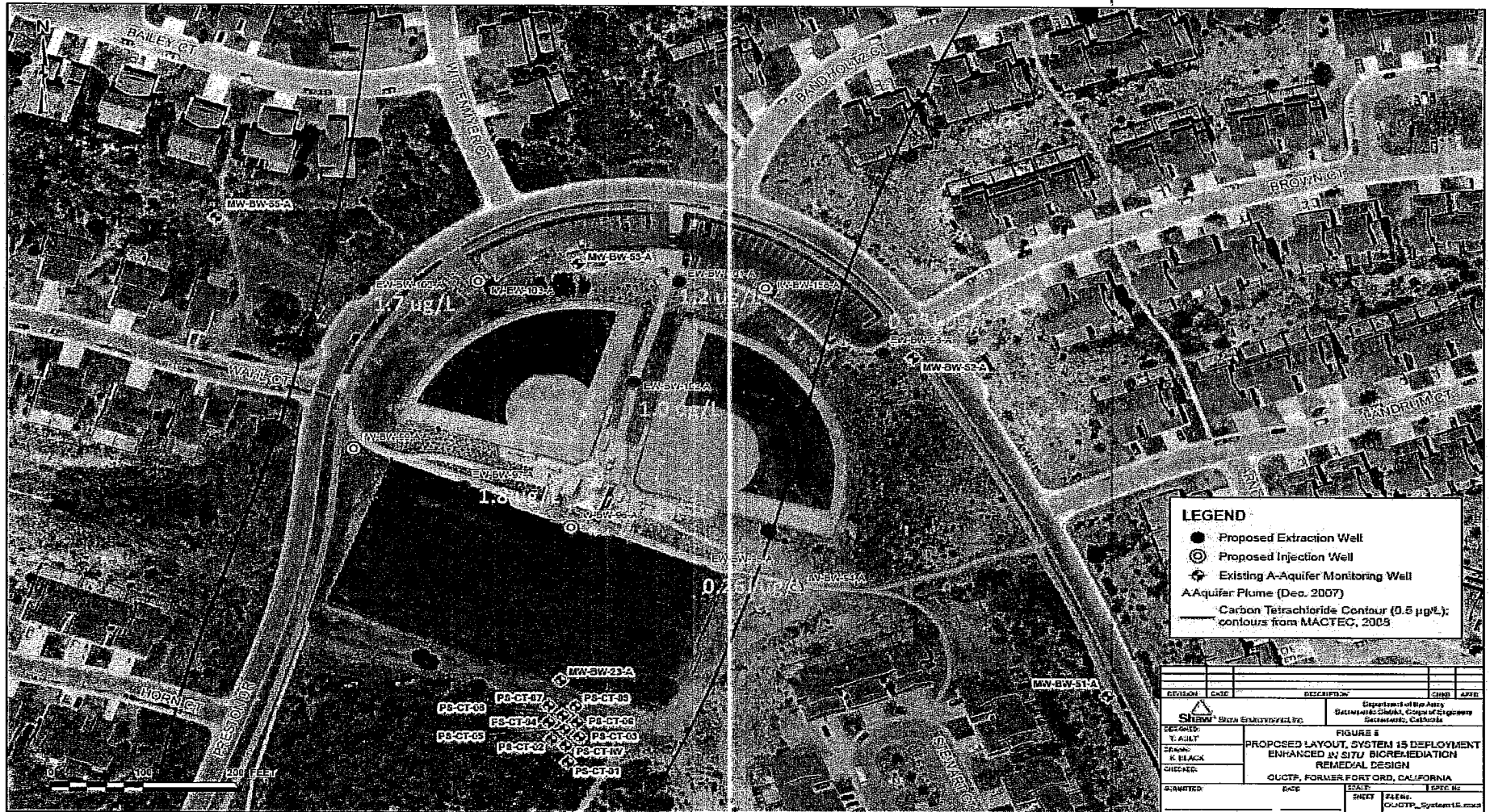
- Subsequent quarterly monitoring for EISB pilot study conducted under Groundwater Monitoring Program.
- Groundwater recirculation and monitoring ongoing at Area 1B.
- Installation of process equipment at Area 1C – June 2010.
- Baseline biological survey in FONR South Reserve – April/May 2010.
- Installation of extraction well in Upper 180-Foot Aquifer – June/July 2010.

DATA (Preliminary)

- Preliminary EISB data for Area 1B.
- Post-treatment monitoring at Area 1A.

PROBLEMS/CHANGES

- FWV TII-142 issued to provide analytical requirements for methods not included in the CDQMP (metabolic acids [EPA 300.0M], dissolved gases [RSK-175], and total heterotrophic anaerobic bacteria [SM9215B]).
- Analytical data from grab samples at Area 1B indicate that extraction wells EW-BW-95-A and EW-BW-98-A and injection well IW-BW-94-A do not have detectable concentrations of carbon tetrachloride. Plans are to operate both extraction wells, but not inject substrate into the injection well.
- During installation of extraction well EW-BW-143-A, the auger ceased and broke below ground surface. Auger was above the bentonite seal and approximately 20 feet below ground surface. Auger was grouted in place and is not expected to impact EISB or monitoring activities.
- Following installation of extraction well EW-BW-142-A the well was driven over. The well was video logged and a failure in the well casing was observed at approximately 8 feet bgs. Excavation was conducted to expose the top section of casing and replace it – completed March 4.
- For Area 1C, a new formulation of substrate will be used that includes a mixture of fatty acids (lactate, propionate, acetate, etc.) and carbohydrates proven to enhance reductive dechlorination better than plain sodium lactate.



LEGEND

- Proposed Extraction Well
- ⊙ Proposed Injection Well
- ⊕ Existing A-Aquifer Monitoring Well
- A-Aquifer Plume (Dec. 2007)
- Carbon Tetrachloride Contour (0.5 µg/L); contours from MACTEC, 2005

REVISION	DATE	DESCRIPTION	CHG	APP
SHEW Environmental, Inc.		Department of the Army Sacramento District, Corps of Engineers Sacramento, California		
DESIGNED BY: Y. AJLT	FIGURE 8			
DRAWN BY: R. BLACK	PROPOSED LAYOUT, SYSTEM 15 DEPLOYMENT ENHANCED IN SITU BIOREMEDIATION REMEDIAL DESIGN			
CLIENT: QUOTR, FORMER FORT ORD, CALIFORNIA	SCALE: _____			
DATE: _____	SHEET _____		PAGE _____	
PROJECT: QUOTR, System 15, 2005				

Baseline Sample
Carbon Tetrachloride Concentrations

Area 1B OUCTP EISB
System Operation
Preliminary Data Summary

System Start Date: 3/2/2010

Date: 3/3/2010
1 day

3/10/2010
8 day

Extraction Well	Model Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous		Total Flow (gallons)	Instantaneous	
			Flowrate (gallons per minute)	Flowrate (gallons per minute)		Flowrate (gallons per minute)	Flowrate (gallons per minute)
EW-BW-95-A	3	2,703	3.1		31,711	2.9	
EW-BW-97-A	6	5,365	5.5		61,456	5.4	
EW-BW-98-A	7.5	7,020	6.8		72,369	7.2	
EW-BW-100-A	7.5	7,102	7.0		78,273	7.2	
EW-BW-101-A	6	5,418	5.8		64,817	5.7	
EW-BW-102-A	6.5	5,615	6.0		65,597	6.1	
Total	36.5	33,223	34.2		374,223	34.5	
Total Flow	36.5	32,351	33		369,011	33.5	

Injection Well	Model Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 1 (gallons)	Substrate Injection Rate on 3/2/2010 (gallons per hour)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 8 (gallons)	Substrate Injection Rate 3/10/2010 (gallons per hour)
P-302				0	0.00			0	0.00
IW-BW-96-A	11	7,711	8.02			100,373	8.41		
P-303				37	9.23			295	9.23
IW-BW-99-A	8.5	6,660	6.82			83,372	7.27		
P-301				28	7.00			227	7.11
IW-BW-103-A	8.5	6,420	6.67			71,056	7.12		
P-305				28	7.04			225	7.04
IW-BW-158-A	8.5	6,034	6			73,056	6.15		
P-304				28	7.09			227	7.09
Total	36.5	26,825	27.5	121		327,857	29.0	975	

Area 1B OUCTP EISB
System Operation
Preliminary Data Summary

System Start Date:

Date: 3/17/2010
15 day

3/24/2010
22 day

3/31/2010
29 day

Extraction Well	3/17/2010 15 day		3/24/2010 22 day		3/31/2010 29 day	
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-95-A	60,879	2.9	89,679	2.7	118,954	2.9
EW-BW-97-A	117,121	5.4	171,219	5.1	227,599	5.9
EW-BW-98-A	144,965	7.3	218,842	7.0	289,562	7.3
EW-BW-100-A	151,218	7.3	226,391	7.4	299,515	7.2
EW-BW-101-A	129,693	6.5	197,393	6.5	261,967	6.3
EW-BW-102-A	155,516	5.9	186,102	5.9	242,389	5.6
Total	759,392	35.3	1,089,626	34.6	1,439,986	35.2
Total Flow	717,020	34.1	1,060,438	35	1,385,382	28.8

Injection Well	3/17/2010 15 day				3/24/2010 22 day				3/31/2010 29 day			
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 15 (gallons)	Substrate Injection Rate 3/17 (gallons per hour)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 22 (gallons)	Substrate Injection Rate 3/24 (gallons per hour)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 29 (gallons)	Substrate Injection Rate 3/31 (gallons per hour)
IW-BW-94-A	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00
P-302												
IW-BW-96-A	198,213	8.8	555	9.26	283,188	8.5	813	9.23	361,367	7.2	1072	9.23
P-303												
IW-BW-99-A	156,637	7.9	427	7.13	237,273	8.9	626	7.11	319,052	6.8	822	7.00
P-301												
IW-BW-103-A	143,827	7.2	423	7.07	215,914	7.3	621	7.07	285,958	5.1	818	7.04
P-305												
IW-BW-158-A	144,462	7.3	433	7.36	219,020	7.6	631	7.08	290,095	5.5	833	7.19
P-304												
Total	643,139	31.2	1838		955,395	32.3	2691		1,256,472	24.6	3544	

Area 1B OUCTP EISB
System Operation
Preliminary Data Summary

System Start Date:

Date: 4/7/2010
36 day

4/14/2010
43 day

4/21/2010
50 day

Extraction Well	4/7/2010 36 day		4/14/2010 43 day		4/21/2010 50 day	
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-95-A	147,493	2.7	166,705	2.9	195,441	2.6
EW-BW-97-A	287,173	5.9	342,052	5.7	398,201	5.2
EW-BW-98-A	364,547	7.2	431,276	7.2	505,090	7.3
EW-BW-100-A	369,727	6.3	444,774	6.3	511,254	6.2
EW-BW-101-A	323,527	7.0	381,287	5.7	433,343	5.2
EW-BW-102-A	300,443	5.6	355,544	6.0	414,115	5.7
Total	1,792,910	34.7	2,121,638	33.8	2,457,444	32.2
Total Flow	1,601,452	18.3	NA	9	2,014,061	25.8

Injection Well	4/7/2010 36 day		4/14/2010 43 day		4/21/2010 50 day	
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
IW-BW-94-A	0		0		0	
P-302						
IW-BW-96-A	406,435	3.9	NA	6.1	480,209	1.2
P-303						
IW-BW-99-A	375,202	5.2	NA	2.1	467,784	3.9
P-301						
IW-BW-103-A	329,622	2.6	NA	3.5	382,542	1.7
P-305						
IW-BW-158-A	328,387	1.8	NA	8	401,046	1.8
P-304						
Total	1,439,646	13.5	NA	19.7	1,731,581	8.6

Injection Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	4/7/2010 36 day		4/14/2010 43 day		4/21/2010 50 day	
			Estimated Substrate Injected Day 36 (gallons)	Substrate Injection Rate 4/7 (gallons per hour)	Estimated Substrate Injected Day 43 (gallons)	Substrate Injection Rate 4/14 (gallons per hour)	Estimated Substrate Injected Day 50 (gallons)	Substrate Injection Rate 4/21 (gallons per hour)
IW-BW-94-A	0							
P-302			0	0.00	0	0.00	0	0.00
IW-BW-96-A	406,435	3.9			NA			
P-303			1330	9.23	1588	9.23	1847	9.23
IW-BW-99-A	375,202	5.2			NA			
P-301			1020	7.08	1218	7.08	1419	7.18
IW-BW-103-A	329,622	2.6			NA			
P-305			1016	7.07	1214	7.07	1411	7.04
IW-BW-158-A	328,387	1.8			NA			
P-304			1033	7.16	1233	7.16	1434	7.16
Total	1,439,646	13.5	4399		5254		6111	

Area 1B OUCTP EISB
System Operation
Preliminary Data Summary

System Start Date:

Date: 4/28/2010
57 day

Extraction Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-95-A	223,133	2.8
EW-BW-97-A	450,461	5.6
EW-BW-98-A	580,583	7.4
EW-BW-100-A	558,916	2.8
EW-BW-101-A	477,129	2.9
EW-BW-102-A	471,497	5.9
Total	2,761,719	27.4

Total Flow 2,107,557 3.3

Injection Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 57 (gallons)	Substrate Injection Rate 4/28 (gallons per hour)
IW-BW-94-A	0			
P-302			0	0.00
IW-BW-96-A	515,650	6.8		
P-303			2105	9.23
IW-BW-99-A	530,156	6.8		
P-301			1616	7.04
IW-BW-103-A	417,940	2.2		
P-305			1611	7.12
IW-BW-158-A	433,391	2.1		
P-304			1633	7.11
Total	1,897,137	17.9	6965	

Sample ID	Method ^a	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A	MW-BW-53-A
Well Type		monitoring	monitoring	monitoring	monitoring	monitoring	monitoring	monitoring	monitoring
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
		2/4/2010	3/3/2010	3/10/2010	3/17/2010	3/24/2010	3/31/2010	4/7/2010	4/14/2010
well flowrate (operating)		NA	NA	NA	NA	NA	NA	NA	NA
alkalinity (CaCO ₃ total)	HACH ^b	114 mg/L	96 mg/L	110 mg/L	95 mg/L	90 mg/L	95 mg/L	72 mg/L	60 mg/L
pH	meter ^c	6.55	6.55	6.50	6.50	6.62	6.54	6.58	6.59
dissolved oxygen	meter ^c	9.18 ppm	9.18 ppm	9.2 ppm	9.3 ppm	8.3 ppm	10.17 ppm	11.62 ppm	10.05 ppm
oxidation reduction potential	meter ^c	230 mV	210 mV	202 mV	142 mV	144 mV	160 mV	127 mV	121 mV
conductivity	meter ^c	67.6 mS/cm	56.8 mS/cm	63.0 mS/cm	57.1 mS/cm	56.1 mS/cm	56.3 mS/cm	56.3 mS/cm	58.7 mS/cm
turbidity	meter ^c	13 NTU	17 NTU	11 NTU	9 NTU	14 NTU	8 NTU	10 NTU	9 NTU
temperature	meter ^c	17.6 °C	17.2 °C	17.9 °C	17.9 °C	18.5 °C	18.5 °C	19.5 °C	18.8 °C
nitrate	300.0	5880(5870) µg/L		5670(5680) µg/L		6460(6470) µg/L	6220 µg/L	7280 µg/L	8020 µg/L
nitrite	300.0	<100(<100) µg/L		<100(<100) µg/L		<100(<100) µg/L	<100 µg/L	<100 µg/L	<100 µg/L
sulfate	300.0	36100(36100) µg/L		27200(27200) µg/L		26300(26200) µg/L	23300 µg/L	23800 µg/L	28000 µg/L
ortho-phosphate	300.0								
dissolved iron	6010B	<200 µg/L		<200 µg/L		<200 µg/L	<200 µg/L	<200 µg/L	<200 µg/L
manganese	6010B	<10 µg/L		<10 µg/L		<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L
arsenic	6010B	<10 µg/L		<10 µg/L		<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L
methane	RSK 175 ^d								
ethane	RSK 175 ^d								
lactate	300.0M	<100 µg/L						<100 µg/L	
propionate	300.0M	<100 µg/L						<100 µg/L	
acetate	300.0M	<100 µg/L						<100 µg/L	
carbon tetrachloride	8260B	1.6 µg/L		1.6 µg/L		1.7 µg/L	1.9 µg/L	2 µg/L	1.5 µg/L
chloroform	8260B	0.39J µg/L		0.30J µg/L		0.26J µg/L	0.32J µg/L	0.30J µg/L	0.21J µg/L
dichloromethane	8260B	<5.0 µg/L		<5.0 µg/L		<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L
chloromethane	8260B	<1.0 µg/L		<1.0 µg/L		<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
trichloroethene	8260B	0.75 µg/L		0.65 µg/L		0.53 µg/L	0.67 µg/L	0.58 µg/L	0.25J µg/L
toluene	8260B	0.30J µg/L							

Method^a

Sample ID		MW-BW-53-A	MW-BW-53-A
Well Type		monitoring	monitoring
Date		Week 7	Week 8
		4/21/2010	4/28/2010
well flowrate (operating)		NA	NA
alkalinity (CaCO ₃ total)	HACH ^b	93 mg/L	96 mg/L
pH	meter ^c	6.58	6.59
dissolved oxygen	meter ^c	9.36 ppm	9.69 ppm
oxidation reduction potential	meter ^c	140 mV	61 mV
conductivity	meter ^c	57.7 mS/cm	62.0 mS/cm
turbidity	meter ^c	11 NTU	11 NTU
temperture	meter ^c	17.9 °C	18.6 °C
nitrate	300.0	µg/L	µg/L
nitrite	300.0	µg/L	µg/L
sulfate	300.0	µg/L	µg/L
ortho-phosphate	300.0		
dissolved iron	6010B	µg/L	µg/L
manganese	6010B	µg/L	µg/L
arsenic	6010B	µg/L	µg/L
methane	RSK 175 ^d		
ethane	RSK 175 ^d		
lactate	300.0M		µg/L
propionate	300.0M		µg/L
acetate	300.0M		µg/L
carbon tetrachloride	8260B	µg/L	µg/L
chloroform	8260B	µg/L	µg/L
dichloromethane	8260B	µg/L	µg/L
chloromethane	8260B	µg/L	µg/L
trichloroethene	8260B		
toluene	8260B		

Sample ID	Method ^a	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
		1/28/2010	3/3/2010	3/10/2010	3/17/2010	3/24/2010	3/31/2010	4/7/2010	4/14/2010	4/21/2010	4/28/2010
well flowrate (operating)		NA	5.5	5.4	5.4	5.1	5.9	5.9	5.7	5.2	5.6
alkalinity (CaCO ₃ total)	HACH ^b	95 mg/L	75 mg/L	78 mg/L	76 mg/L	71 mg/L	72 mg/L	72 mg/L	69 mg/L	67 mg/L	71 mg/L
pH	meter ^c	6.57	6.51	6.50	6.42	6.57	6.50	6.48	6.50	6.57	6.48
dissolved oxygen	meter ^c	8.77 ppm	9.68 ppm	9.66 ppm	9.55 ppm	7.52 ppm	9.3 ppm	11.21 ppm	9.81 ppm	8.05 ppm	10.96 ppm
oxidation reduction potential	meter ^c	145 mV	185 mV	173 mV	111 mV	136 mV	178 mV	175 mV	147 mV	155 mV	198 mV
conductivity	meter ^c	64.2 mS/cm	61 mS/cm	63.6 mS/cm	62.6 mS/cm	63.5 mS/cm	62.4 mS/cm	61.4 mS/cm	61.6 mS/cm	61.5 mS/cm	62.5 mS/cm
turbidity	meter ^c	63 NTU	9 NTU	13 NTU	25 NTU	27 NTU	20 NTU	19 NTU	25 NTU	6 NTU	120 NTU
temperature	meter ^c	17.4 °C	17.4 °C	17.5 °C	17.5 °C	17.8 °C	17.9 °C	17.9 °C	17.7 °C	17.5 °C	17.6 °C
nitrate	300.0	7330 µg/L					7940 µg/L		7950 µg/L		µg/L
nitrite	300.0	<100 µg/L					<100 µg/L		<100 µg/L		µg/L
sulfate	300.0	37900 µg/L					32500 µg/L		29900 µg/L		µg/L
ortho-phosphate	300.0	<500 µg/L									
dissolved iron	6010B	40.9J µg/L					<200 µg/L		<200 µg/L		µg/L
manganese	6010B	11.8 µg/L					<10 µg/L		<10 µg/L		µg/L
arsenic	6010B	<10 µg/L					<10 µg/L		<10 µg/L		µg/L
methane	RSK 175 ^d										
ethane	RSK 175 ^d										
lactate	300.0M	<100 µg/L									
propionate	300.0M	<100 µg/L									
acetate	300.0M	<100 µg/L									
carbon tetrachloride	8260B	1.8 µg/L					1.9 µg/L		2.0 µg/L		µg/L
chloroform	8260B	0.38J µg/L					0.36J µg/L		0.42J µg/L		µg/L
dichloromethane	8260B	<5.0 µg/L					<5.0 µg/L		<5.0 µg/L		µg/L
chloromethane	8260B	<1.0 µg/L					<1.0 µg/L		<1.0 µg/L		µg/L
trichloroethene	8260B	0.6 µg/L					0.64 µg/L		0.53 µg/L		µg/L
methyl tert-butyl ether	8260B	0.67J µg/L					0.92J µg/L		1.1 µg/L		µg/L

Sample ID	Method ^a	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
		1/28/2010	3/3/2010	3/10/2010	3/17/2010	3/24/2010	3/31/2010	4/7/2010	4/14/2010	4/21/2010	4/28/2010
well flowrate (operating)		NA	7.0	7.2	7.3	7.4	7.2	6.3	6.3	6.2	2.8
alkalinity (CaCO ₃ total)	HACH ^b	75 mg/L	64 mg/L	70 mg/L	68 mg/L	67 mg/L	75 mg/L	85 mg/L	97 mg/L	107 mg/L	120 mg/L
pH	meter ^c	6.46	6.52	6.53	6.51	6.64	6.56	6.64	6.70	6.75	6.80
dissolved oxygen	meter ^c	9.09 ppm	9.05 ppm	9.46 ppm	9.51 ppm	7.56 ppm	8.43 ppm	9.05 ppm	7.36 ppm	5.84 ppm	7.07 ppm
oxidation reduction potential	meter ^c	189 mV	176 mV	179 mV	137 mV	140 mV	67 mV	-26 mV	-42 mV	-41 mV	-47 mV
conductivity	meter ^c	93.5 mS/cm	73.1 mS/cm	71.6 mS/cm	70.5 mS/cm	72 mS/cm	71.4 mS/cm	74.8 mS/cm	81.1 mS/cm	84.3 mS/cm	89.3 mS/cm
turbidity	meter ^c	48 NTU	4 NTU	31 NTU	12 NTU	23 NTU	15 NTU	12 NTU	13 NTU	18 NTU	11 NTU
temperature	meter ^c	17.7 °C	17.6 °C	17.9 °C	17.9 °C	17.9 °C	17.6 °C	18.0 °C	18.2 °C	17.5 °C	18.6 °C
nitrate	300.0	18400(18400) µg/L				12300 µg/L		11400 µg/L			µg/L
nitrite	300.0	<100(<100) µg/L				<100 µg/L		<100 µg/L			µg/L
sulfate	300.0	44400(44300) µg/L				33700 µg/L		32600 µg/L			µg/L
ortho-phosphate	300.0	<500(<500) µg/L									µg/L
dissolved iron	6010B	<200 µg/L				<200 µg/L		<200 µg/L			µg/L
manganese	6010B	6.25J µg/L				<10 µg/L		261 µg/L			µg/L
arsenic	6010B	<10 µg/L				<10 µg/L		<10 µg/L			µg/L
methane	RSK 175 ^d	<2.0 µg/L									
ethane	RSK 175 ^d	<2.0 µg/L									
lactate	300.0M	<100 µg/L									
propionate	300.0M	<100 µg/L									
acetate	300.0M	<100 µg/L									
carbon tetrachloride	8260B	1.7 µg/L				1.4 µg/L		1.6 µg/L			µg/L
chloroform	8260B	<0.5 µg/L				0.20J µg/L		0.26J µg/L			µg/L
dichloromethane	8260B	<5.0 µg/L				<5.0 µg/L		<5.0 µg/L			µg/L
chloromethane	8260B	<1.0 µg/L				<1.0 µg/L		<1.0 µg/L			µg/L
acetone	8260B	11 µg/L									
trichloroethene	8260B	0.23J µg/L				0.57 µg/L		0.76 µg/L			µg/L
carbon disulfide	8260B							0.20J µg/L			

Method ^a											
Sample ID		EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
		1/27/2010	3/3/2010	3/10/2010	3/17/2010	3/24/2010	3/31/2010	4/7/2010	4/14/2010	4/21/2010	4/28/2010
well flowrate (operating)		NA	5.8	5.7	6.5	6.5	6.3	7.0	5.7	5.2	2.9
alkalinity (CaCO ₃ total)	HACH ^b	157 mg/L	108 mg/L	106 mg/L	100 mg/L	94 mg/L	95 mg/L	116 mg/L	161 mg/L	175 mg/L	194 mg/L
pH	meter ^c	6.53	6.46	6.46	6.45	6.55	6.52	6.59	6.65	6.68	6.63
dissolved oxygen	meter ^c	7.91 ppm	8.28 ppm	9.02 ppm	8.44 ppm	7.41 ppm	8.2 ppm	7.98 ppm	5.64 ppm	3.14 ppm	4.04 ppm
oxidation reduction potential	meter ^c	221 mV	185 mV	185 mV	134 mV	158 mV	131 mV	-27 mV	-59 mV	-50 mV	-60 mV
conductivity	meter ^c	64.9 mS/cm	64.5 mS/cm	62.5 mS/cm	60.8 mS/cm	60.6 mS/cm	60.5 mS/cm	69.2 mS/cm	85.7 mS/cm	94.2 mS/cm	102 mS/cm
turbidity	meter ^c	32 NTU	26 NTU	31 NTU	47 NTU	110 NTU	88 NTU	12 NTU	0 NTU	2 NTU	11 NTU
temperature	meter ^c	17.6 °C	17.6 °C	17.8 °C	17.9 °C	17.9 °C	17.9 °C	18.2 °C	18.4 °C	17.6 °C	18.3 °C
nitrate	300.0	5280 µg/L					4330(4340) µg/L		3030(2980) µg/L		µg/L
nitrite	300.0	<100 µg/L					<100(<100) µg/L		<100(<100) µg/L		µg/L
sulfate	300.0	36000 µg/L					33500(33400) µg/L		26700(26500) µg/L		µg/L
ortho-phosphate	300.0	<500 µg/L									µg/L
dissolved iron	6010B	<200 µg/L					<200 µg/L		<200 µg/L		µg/L
manganese	6010B	5.80J µg/L					18.1 µg/L		930 µg/L		µg/L
arsenic	6010B	<10 µg/L					<10 µg/L		<10 µg/L		µg/L
methane	RSK 175 ^d										
ethane	RSK 175 ^d										
lactate	300.0M	<100(<100) µg/L									µg/L
propionate	300.0M	<100(<100) µg/L									µg/L
acetate	300.0M	<100(<100) µg/L									µg/L
carbon tetrachloride	8260B	1.2 µg/L					1.6 µg/L		1.2 µg/L		µg/L
chloroform	8260B	0.21J µg/L					0.27J µg/L		0.22J µg/L		µg/L
dichloromethane	8260B	<5.0 µg/L					<5.0 µg/L		<5.0 µg/L		µg/L
chloromethane	8260B	<1.0 µg/L					<1.0 µg/L		<1.0 µg/L		µg/L
trichloroethene	8260B	0.39J µg/L					0.58 µg/L		0.52 µg/L		µg/L
acetone	8260B								12 µg/L		
2-butanone	8260B								20 µg/L		
carbon disulfide	8260B								0.33J µg/L		

Table 3
Guidance for Groundwater Sampling and Analysis

Monitoring Phase	Baseline	Performance	Post –Treatment	Long-Term
Monitoring Goal	Evaluate the pre-treatment concentrations of COCs and establish the <i>in situ</i> hydrochemistry of the A-Aquifer.	Evaluate the distribution of substrate and monitor the establishment of the anaerobic conditions and degradation of COCs during active treatment in each deployment area.	Collect long-term data on in situ hydrochemistry in the A-Aquifer after active treatment at each deployment area to monitor enhance attenuation.	Document COC concentrations, evaluate changes in concentration over time, monitor remediation progress, and document achievement of Aquifer Cleanup Levels to support site closure.
When Conducted	As part of system start-up prior to substrate injection.	During substrate injection in each deployment area and for up to 3 months following substrate injection.	Concurrent with quarterly groundwater monitoring activities at each deployment area following active treatment.	Continuation of ongoing Basewide Groundwater Monitoring Program conducted until site closure.
Sampling Frequency	One sample per extraction and monitoring well.	Sample collected; - week during the first month of substrate injection - twice monthly during the second month of substrate injection - monthly through six months after substrate injection was initiated Performance monitoring will continue as necessary until 3 months after substrate injection was completed.	Samples from selected extraction and monitoring wells within and downgradient of each deployment area collected quarterly.	Sampling conducted quarterly and annually on specific monitoring wells. Selected remediation wells added to the Basewide program following active treatment in each deployment area.
Analysis^a	Groundwater Parameters Alkalinity VOCs Anions VOAs Dissolved Metals Dissolved Gases Total Organic Carbon Heterotrophic Bacteria	Groundwater Parameters Alkalinity VOCs Anions VOAs Dissolved Metals Dissolved Gases	Groundwater Parameters Alkalinity Anions VOAs Dissolved Metals Dissolved Gases	VOCs

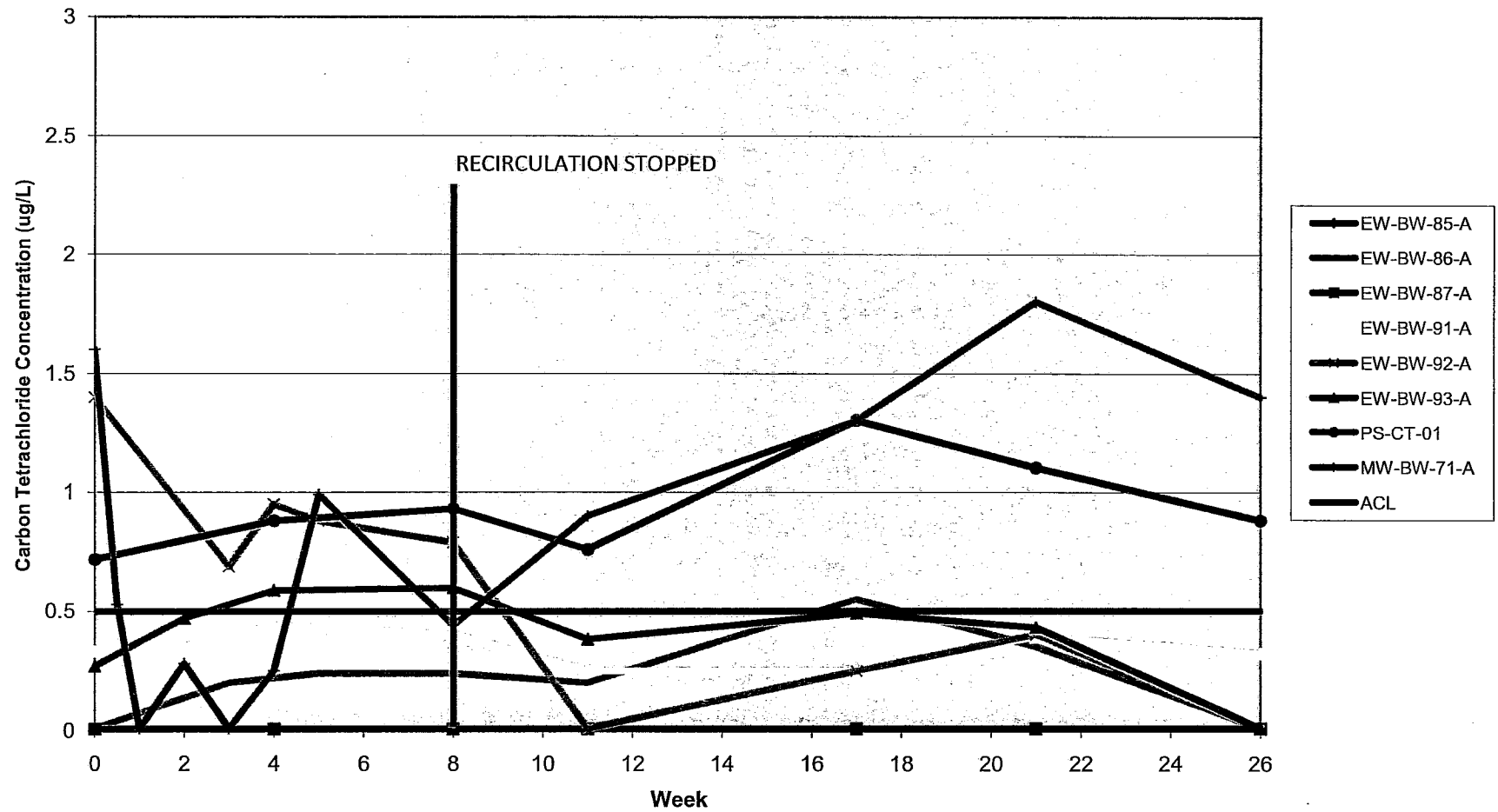
COC denotes contaminants of concern

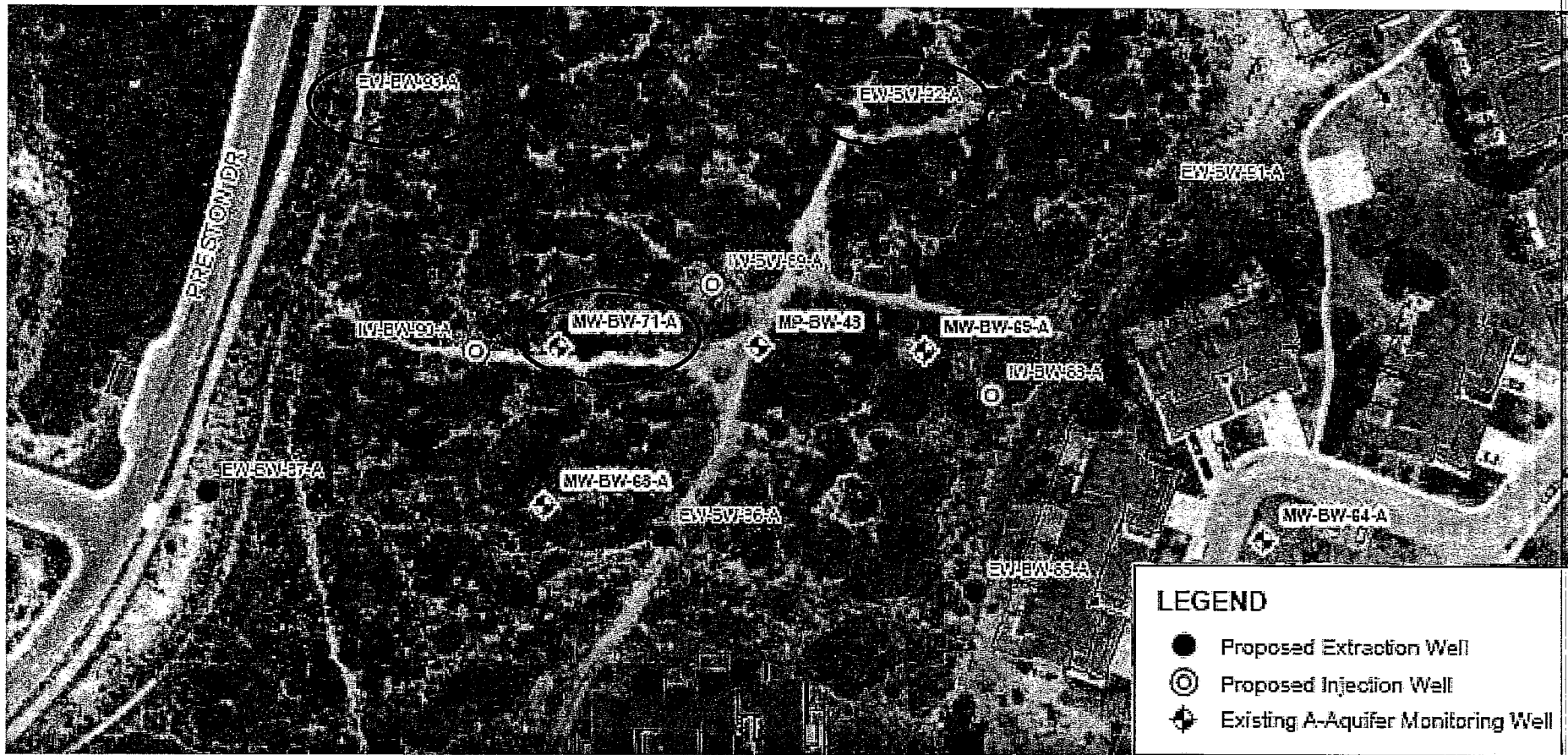
VOA denotes volatile organic acids

VOC denotes volatile organic carbon

^aSection 5.0 of Appendix A provides the specific guidance for sample collection and analysis. Not all wells will be sampled and not all samples will be analyzed for all parameters during each sampling event.

Change in Carbon Tetrachloride Concentration Over Time





Operable Unit Carbon Tetrachloride Plume
 Proposed Wells to Include in Post-Treatment Monitoring