

**SUBJECT: HTW – BCT Meeting**  
**June 25, 2010**  
**1:30 PM - BRAC Conference Room**

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**HTW BCT Meeting Agenda**

June 25, 2010 at 1:30 PM

<b>Item</b>	<b>Action</b>	<b>Comment</b>
<b>OU1 Groundwater Remediation</b>	<b>Status Update</b>	<b>HGL</b>
<b>OU1 Off-Site</b>	<b>Status Update</b>	
<b>OU2 and 2/12 Treatment Systems</b>	<b>Status Update</b>	
<b>Other Groundwater Issues</b>	<b>Status Update</b>	
<b>OUCTP</b>	<b>Status Update</b>	
<b>OU2 Landfill</b>	<b>Status Update</b>	
<b>FFA Schedule</b>	<b>Update</b>	

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

**STATUS – June 25, 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
- System restarted (EW-OU1-93-A operating) – April 7, 2009
- Second rebound study initiated – July 13, 2009 and completed March 22, 2010
- Carbon changeout of lead vessel as part of system mothballing – June 3, 2010
- System mothballing complete – June 7, 2010
- Preliminary Draft of January to March 2010 Quarterly Report for USACE review – June 18, 2010.

**SCHEDULE**

- Response to FOCAG comments on Annual Summary Report (Shaw, 2009).
- Quarterly sampling of monitoring and extraction wells – June 21, 2010.
- Issue Technical Memorandum with monitoring wells proposed for long-term monitoring – July 2010.

**DATA (Preliminary)**

- None.

**PROBLEMS/CHANGES**

- None.

**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
- MW-OU1-88-A 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

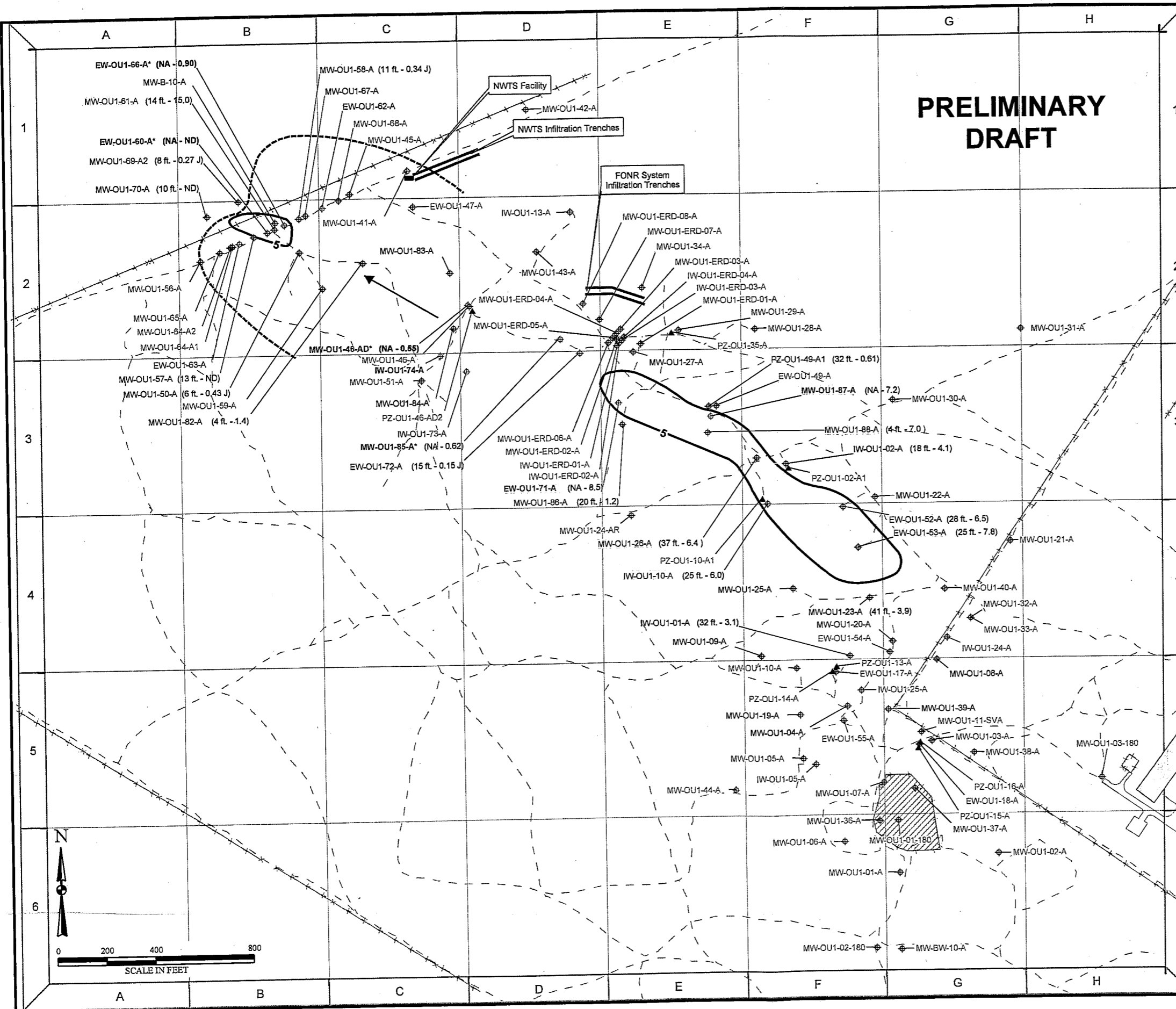
Notes:  
Units of TCE concentrations are in ppb  
ND = Non-detect  
NA = Depth is not applicable - sample is from pumping well  
J = Estimated Value  
µg/L = Micrograms per liter  
Wells shown with an asterisk were not used to develop contour boundaries.  
Active extraction wells were typically not included 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.

X:/OMA009/FT\_Ord/TO\_201/Maps/GW\_Monitoring\_Y7Q1/

TCE\_in\_GW\_Mar\_2010.mxd

Source: HGL

06/07/10 PD



HydroGeoLogic, Inc.  
Agenda & Notes

Fort Ord Hazardous and Toxic Waste Base Closure Team (BCT) Meeting  
25 June 2010, 1:30 PM  
Monterey, California

**1. Groundwater Remediation System Update**

The Northwest Treatment System (NWTS) has operated continuously since 30 April 2010, except for a brief shutdown on 10 June 2010 (approximately 4.5 hours) to repair the high-pressure alarm switch. Extraction well EW-OU1-66-A (the remaining pumping well on the northwest boundary – the others are off-line) stopped pumping due to a low voltage episode sometime between 07 June and 14 June 2010. Operation was restored at that well on 16 June 2010, and the flow control logic was adjusted to reduce the possibility of a recurrence. EW-OU1-60-A continued to show zero pumping at the flow rate and volume meters; however, it was determined during the re-start of EW-OU1-66-A on 16 June 2010 that a very minimal flow (below the sensitivity range of the meters) is occurring at EW-OU1-60-A – perhaps 0.1 gallon per minute (gpm). We will continue to monitor EW-OU1-60-A during the weekly O&M inspections to determine if this minimal flow rate is continuing. The four extraction wells in the interior portion of the OU-1 plume have operated normally since the last BCT meeting. Thus far in 2010, the NWTS has removed approximately 0.23 pound of trichloroethene (TCE). Since system start-up in 2006, the NWTS has removed approximately 4.7 pounds of total volatile organic compounds.

Performance monitoring samples for the second quarter 2010 will be collected on 21 June 2010. Laboratory analytical results for TCE from the March 2010 performance sampling effort have been validated and are shown in Table 1. These results were discussed during the April BCT meeting and 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  $\mu\text{g/L}$ ).*

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 2010. The validated analytical results for TCE at these wells are:

- MW-OU1-57-A      Non-detect
- MW-OU1-58-A      0.34  $\mu\text{g/L}$

These results are consistent with data from these wells since 2007 and will be included in the 2010 First Quarter Groundwater Monitoring Report.

## **2. Long-Term Monitoring Update**

Validated laboratory analytical results from the March 2010 long-term monitoring (LTM) sampling event have also been received and are shown in Figure 7 (preliminary draft extracted from 2010 First Quarter Groundwater Monitoring Report in preparation). There were no changes from the preliminary results discussed at the April BCT meeting. A brief summary of these data are provided below for reference.

- *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 semiannual 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. HGL received comments from the Fort Ord Community Action Group on the Draft 2009 Annual and Fourth Quarter Groundwater Monitoring Report and worked with the Army to address those comments. Draft responses were provided to the agencies for review and the final version is being prepared.

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 did not respond to the recommendation that the 2010 rare plant monitoring be suspended. Therefore, the OU-1 rare plant survey was not performed this year. HGL did

survey the reference plot and will incorporate those 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. The IW-OUI-10-A Design Technical Memorandum is tentatively scheduled for submittal in late July or early August. Construction will begin after the review and comment response is completed. HGL is requesting a rapid review if possible (within 2 to 3 weeks) to facilitate compliance with the Habitat Management Plan (in particular, to complete the project within the dry season). A draft outline of this Technical Memorandum is provided as Attachment 1 for reference. We request agency comment on the proposed schedule and outline.

***4c) Previous Meeting Minutes***

No comments were received on the Draft May 2010 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 - June 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	ND
1/18/2008	11	11	8.9	8.2	ND	ND	1.2	ND	6.0	ND	ND	ND
3/18/2008	11	14	6.7	5.8	ND	0.29	1.5	ND	5.6	ND	ND	ND
5/27/2008	9.7	18	2.5	6.1	ND	ND	1.8	ND	3.9	ND	ND	ND
7/21/2008	9.1	14	4.4	3.4	ND	0.78	1.4	ND	3.6	ND	ND	ND
9/29/2008	9.3	J	4.3	J	ND	0.90	J	J	3.8	J	0.19	J
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	ND	2.4	ND	ND	ND
3/9/2009	5.8	9.9	2.1	1.2	ND	0.95	0.86	ND	2.7	ND	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	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	J	ND
6/21/2010												
<b>cis-1,2-DCE (µg/L)</b>												
11/9/2007	1.9	1.6	2.3	1.70	ND	ND	ND	ND	1.3	ND	ND	ND
1/18/2008	1.20	1.40	1.00	1.20	ND	ND	0.11	ND	0.66	ND	ND	ND
3/18/2008	1.20	1.50	0.74	0.63	ND	ND	ND	ND	0.59	0.11	ND	ND
5/27/2008	0.88	2.10	0.26	0.74	ND	ND	ND	ND	0.36	0.21	ND	ND
7/21/2008	0.80	1.50	0.52	0.37	ND	ND	ND	ND	0.41	0.34	ND	ND
9/29/2008	0.99	1.60	0.54	0.30	ND	ND	0.13	ND	0.42	0.42	0.12	J
12/1/2008	0.67	1.30	0.33	0.21	J	ND	ND	ND	0.27	J	0.37	J
1/26/2009	0.63	1.20	0.29	J	J	ND	ND	ND	0.26	J	0.24	J
3/9/2009	0.62	1.20	0.29	J	J	ND	ND	ND	0.23	J	0.26	J
6/11/2009	0.71	1.10	0.30	J	J	ND	0.14	J	0.24	J	0.28	J
9/15/2009	0.80	1.00	0.22	J	J	inactive	0.03	J	0.22	J	0.37	J
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
3/22/2010	0.67	0.79	ND	ND	inactive	ND	ND	inactive	0.20	J	0.11	J
6/21/2010												
<b>Italics (if used) indicate data not yet validated</b>												
<b>Bold font indicates concentration &gt; ACL</b>												

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

Deliverable	Scheduled Submittal	Status / Remarks ( <b>Bold font indicates submittal</b> )
<i>Primary Deliverables</i>		
<b>None Scheduled for 2010</b>		
<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	
<b>First Quarter 2008 Groundwater Monitoring Report</b>	<b>July 2009</b>	<b>Submitted 21 August 2009</b>
Agency Comments	NA	
<b>Third Quarter 2008 Groundwater Monitoring Report</b>	<b>March 2009</b>	<b>Submitted 19 March 2009</b>
Agency Comments	May 2009	No Comment
<b>Draft 2008 Annual and Fourth Quarter Groundwater Monitoring Report</b>	<b>May 2009</b>	<b>Comments received on 2<sup>nd</sup> through 4<sup>th</sup> Quarter reports</b>
Agency Comments	Sept 2009	Received
<b>Final 2008 Annual and Fourth Quarter Groundwater Monitoring Report</b>	<b>December 2009</b>	<b>Submitted 18 December 2009</b>
Agency Comments	NA	
<b>First Quarter 2009 Groundwater Monitoring Report</b>	<b>June 2009</b>	<b>Submitted 22 June 2009</b>
Agency Comments	August 2009	No Comment
<b>Draft 2009 Annual and Third Quarter Groundwater Monitoring Report</b>	<b>February 2010</b>	<b>Submitted 08 February 2009</b>
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	
Draft IW-OU1-10-A Design Technical Memorandum	July 2010	
Agency Comments	August 2010	
Final IW-OU1-10-A Design Technical Memorandum	August 2010	

**Bold** denotes completed submittals.

HydroGeoLogic, Inc.

Agenda & Notes - Attachment 1

Fort Ord Hazardous and Toxic Waste Base Closure Team (BCT) Meeting

25 June 2010, 1:30 PM

Monterey, California

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Draft Outline: IW-OU1-10-A Remediation System Expansion Design Technical Memorandum

1. Project Overview
2. Project Description
  - a. Pump and Pipeline Modifications
  - b. Power
  - c. Treatment Plant Modifications
  - d. Construction Activities
  - e. Environmental Monitoring
3. Estimated Construction Schedule
4. Groundwater Quality and System Performance Monitoring
5. Reporting Schedule

List of Figures

- a) Project Site and Current Plume Extent
- b) Design Drawings:
  - a. Vicinity Map & Index to Drawings
  - b. Civil, Structural, Mechanical Legends, and Standard Abbreviations
  - c. Site Layout, Piping & Well Locations
  - d. Trench, Yard Pipe & Details
  - e. Extraction Wellhead Vaults & Detail
  - f. Instrumentation and Control and Electrical Legend
  - g. Instrumentation Installation Detail
  - h. Modifications to Annunciator Panel Controls
  - i. Treatment System Electrical Plan, Panel Schedules and Control Diagrams
- c) Revised Groundwater Monitoring Network

List of Tables – none planned



# Community Involvement Training Conference

2009

CALL FOR PRESENTERS

Reaching Across Boundaries:  
Sharing Challenges and Opportunities

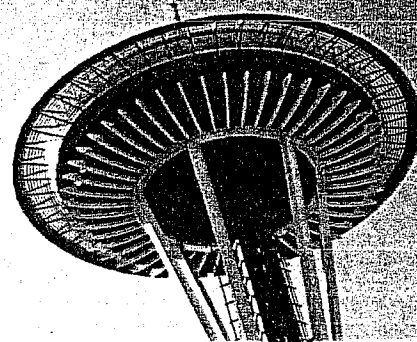
August 18 - 20, 2009  
Seattle, Washington

Visit the conference website: [www.epa.gov/ciconference](http://www.epa.gov/ciconference)



# Community Involvement Training Conference

2009



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MPO/BRAC SUPPLY REQUEST

Mar-09

Supply Request

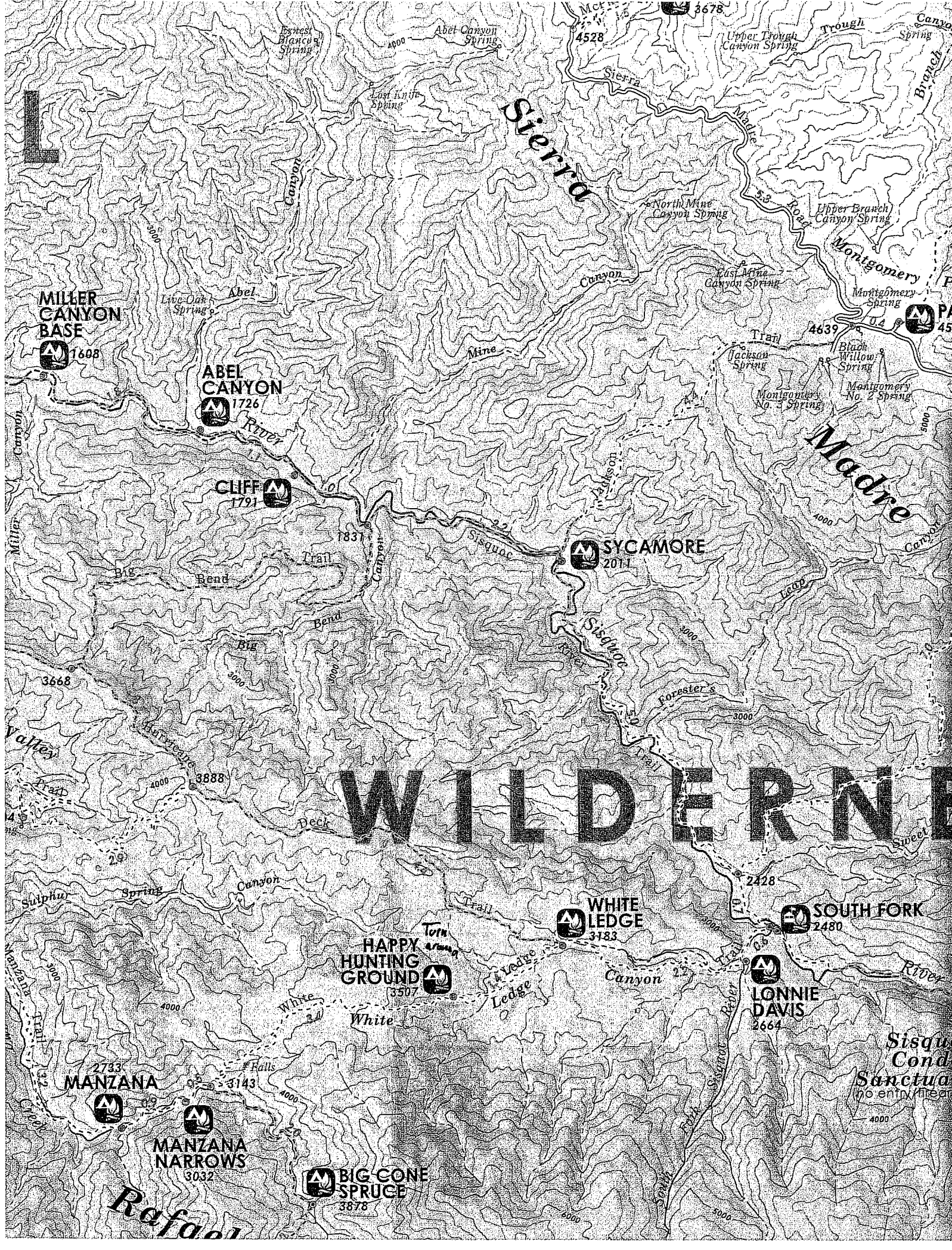
Internal Transaction Form  
Credit Card Approval

Buyer:

Caleb Schneider (831) 393-1496 Fort Ord BRAC Office Building 4463 Gigling Rd. Seaside CA 93955

Date Purchase was Initiated: 3/1/2009

<u>Item #</u>	<u>Mfr #</u>	<u>Authorized Item</u>	<u>Unit</u>	<u>Qty</u>	<u>Pricing</u>	<u>Total Price</u>
7520-00-240-2411	N/A	<b>Charge Items below to OE</b>	EA	2	\$ 3.26	\$ 6.52
OS1-F577823	N/A	TAPE DISPENSER [DISPENSER,PRESSURE]	EA	1	\$ 17.01	\$ 17.01
7520-00-579-9053	N/A	RUBBERMAID - ROUGHNECK PORTABLE FILE STO	EA	1	\$ 4.50	\$ 4.50
7520-00-240-2417	N/A	PACKAGING TAPE DISPENSER [DISPENSER,PRESSURE]	EA	1	\$ 10.58	\$ 10.58
		TAPE DISPENSER [DISPENSER,PRESSURE]				



# WILDERNIE

**MILLER CANYON BASE**  
1608

**ABEL CANYON**  
1726

**CLIFF**  
1791

**SYCAMORE**  
2011

**WHITE LEDGE**  
3183

**SOUTH FORK**  
2480

**LONNIE DAVIS**  
2664

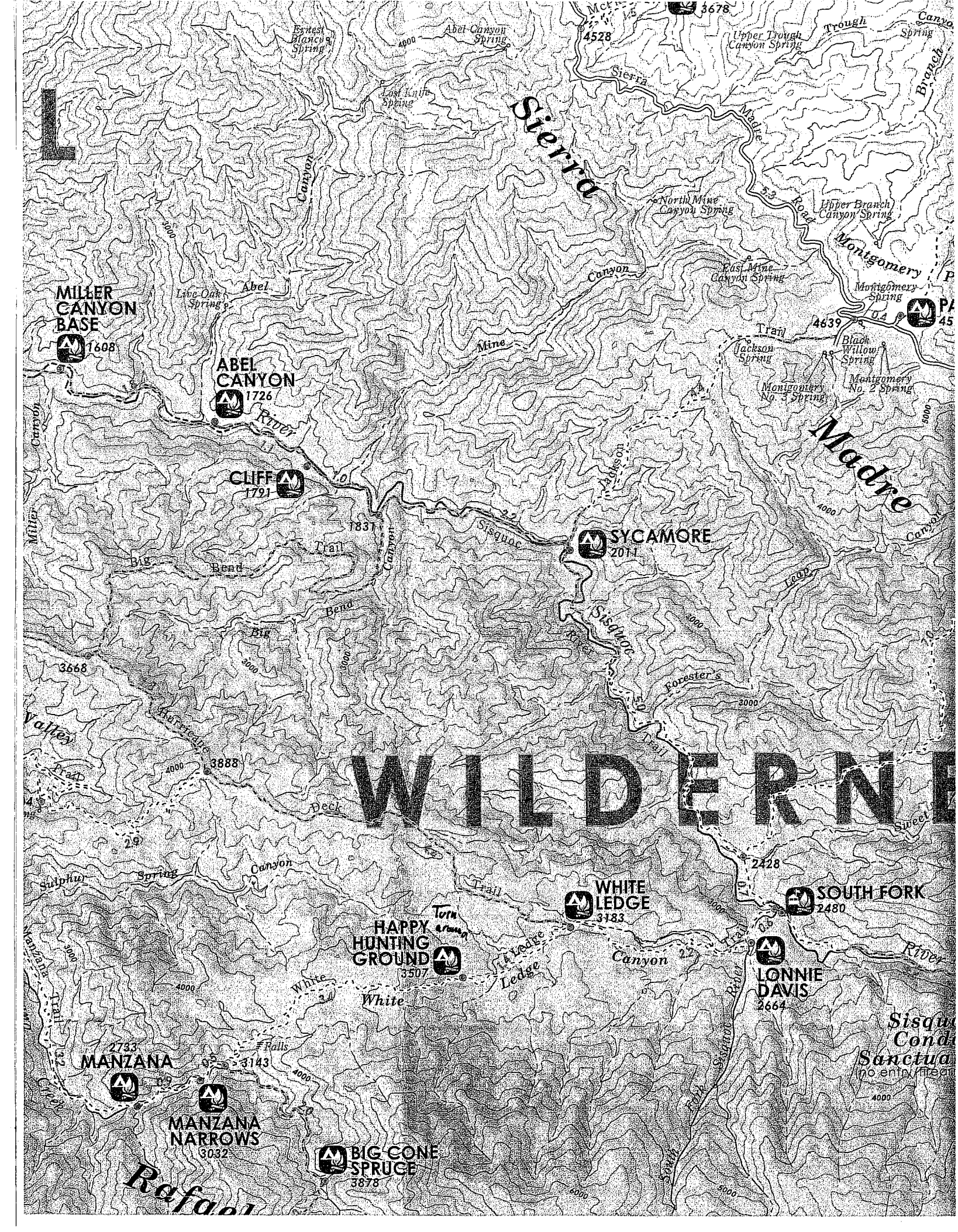
**MANZANA**  
2733

**MANZANA NARROWS**  
3032

**BIG CONE SPRUCE**  
3878

**HAPPY HUNTING GROUND**  
3507

**Refuge**



# WILDERNI

**MILLER CANYON BASE**  
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2011

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2733

**MANZANA NARROWS**  
3032

**BIG CONE SPRUCE**  
3878

**Sisquoc Condensation Sanctuaries**  
(no entry fee)

**Refuge**

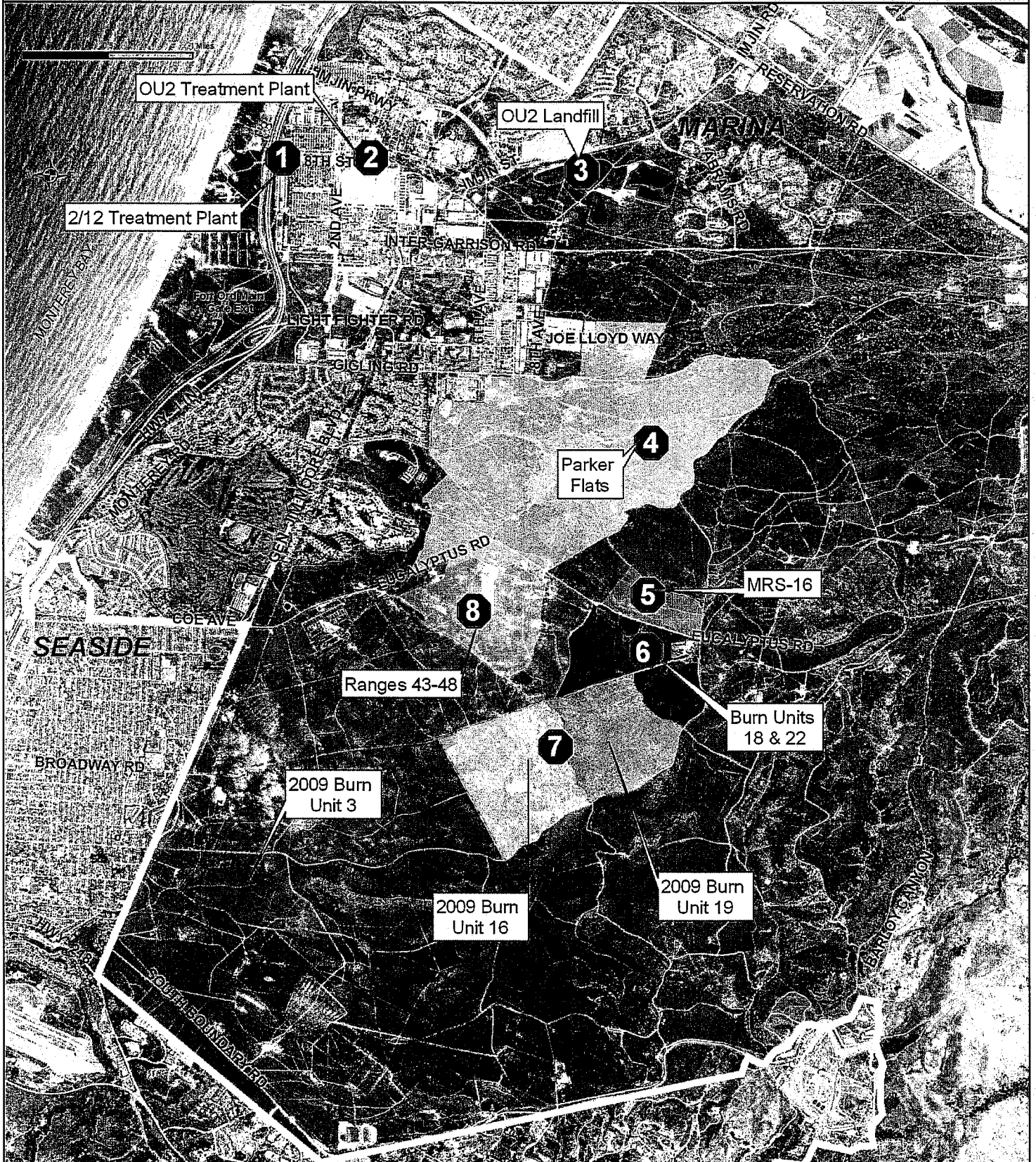


**FORT ORD  
CLEANUP**

Tour Guide Map  
February 5, 2009

- 1. 2/12 Groundwater Treatment Plant
- 2. OU2 Groundwater Treatment Plant
- 3. OU2 Landfill
- 4. Parker Flats

- 5. Munitions Response Site 16 (MRS-16)
- 6. Burn Units 18 + 22
- 7. Burn Units 3, 16, 19
- 8. Ranges 43-48

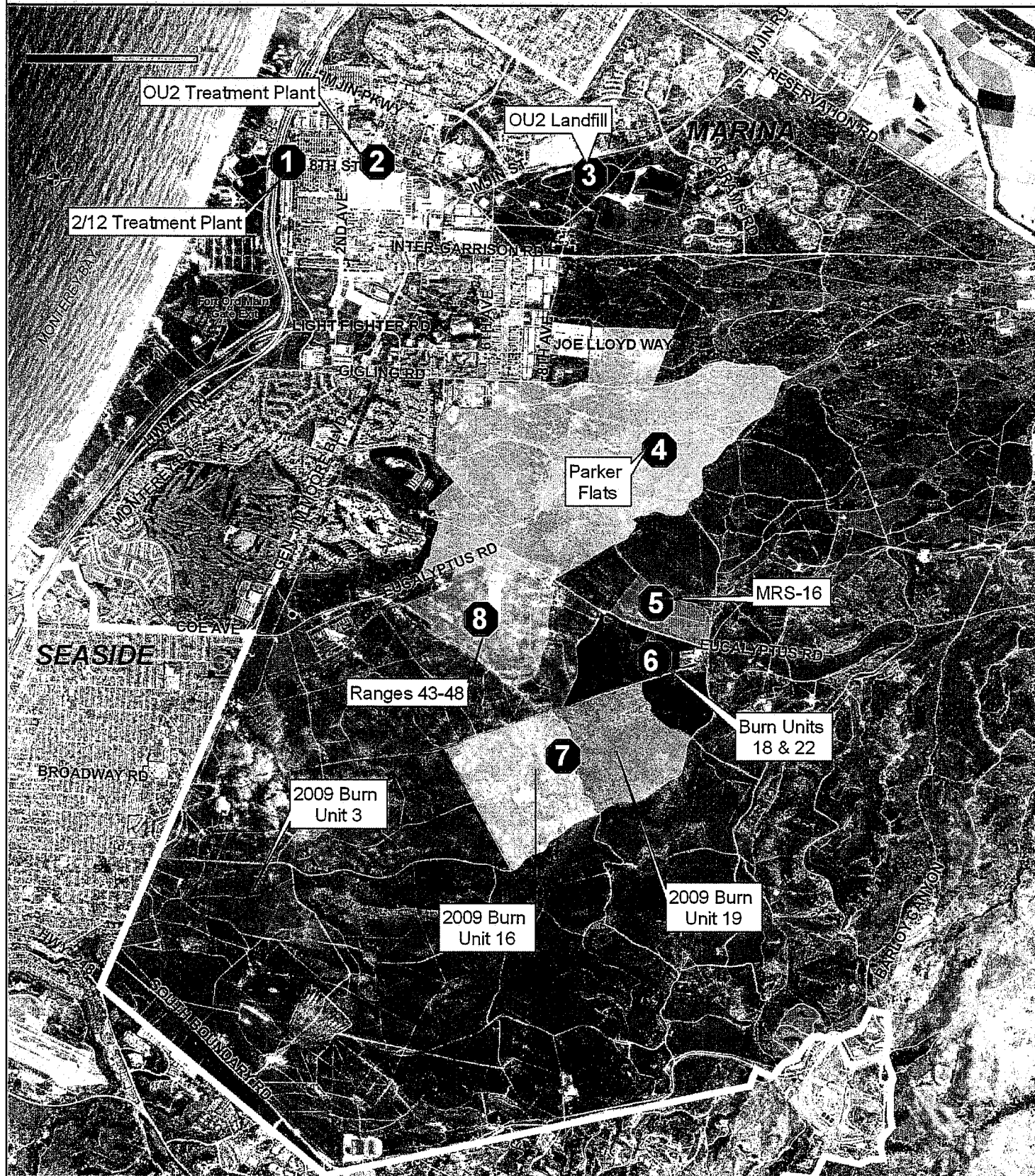


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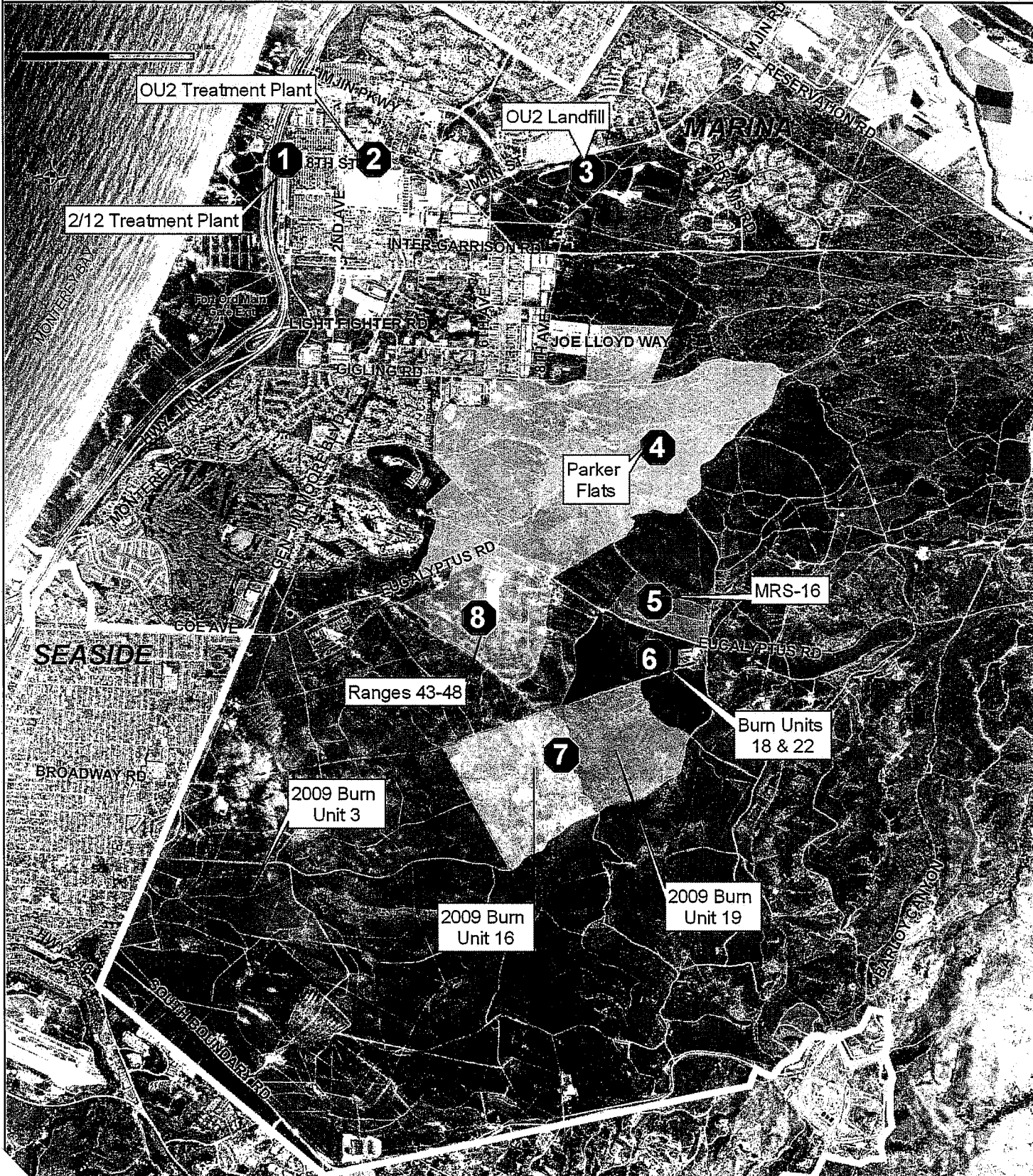


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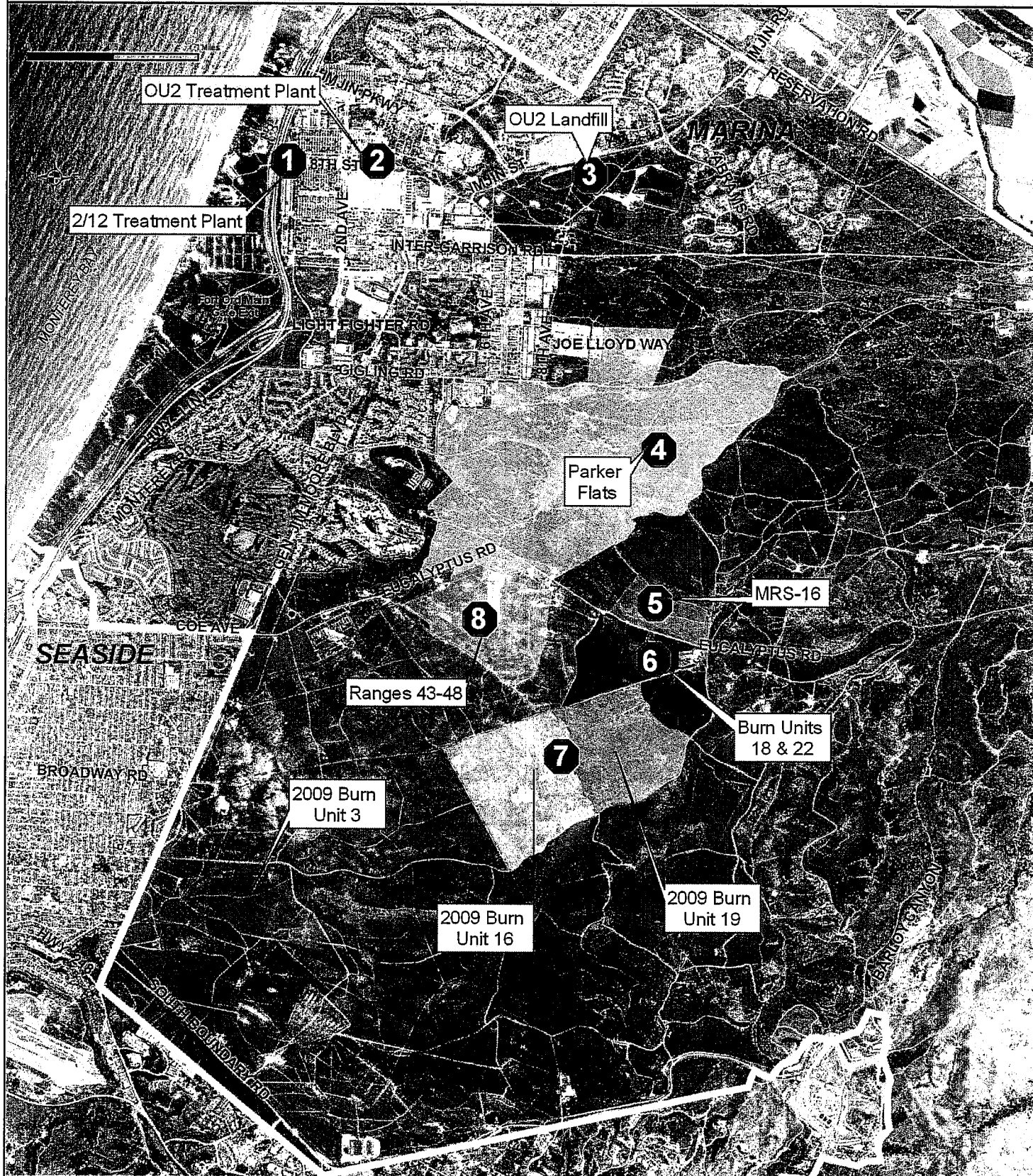


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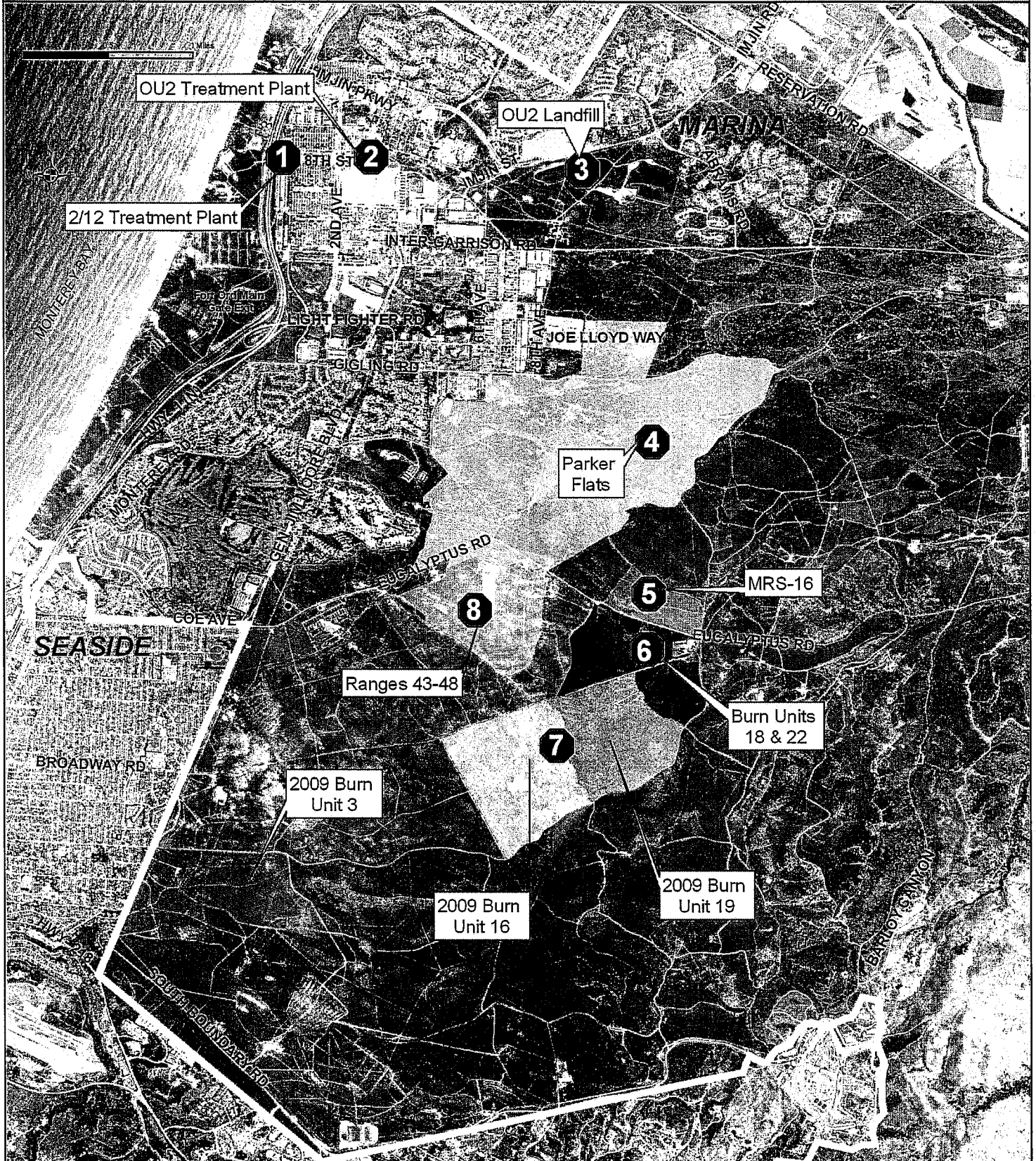


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- 7. Burn Units 3, 16, 19
- 8. Ranges 43-48

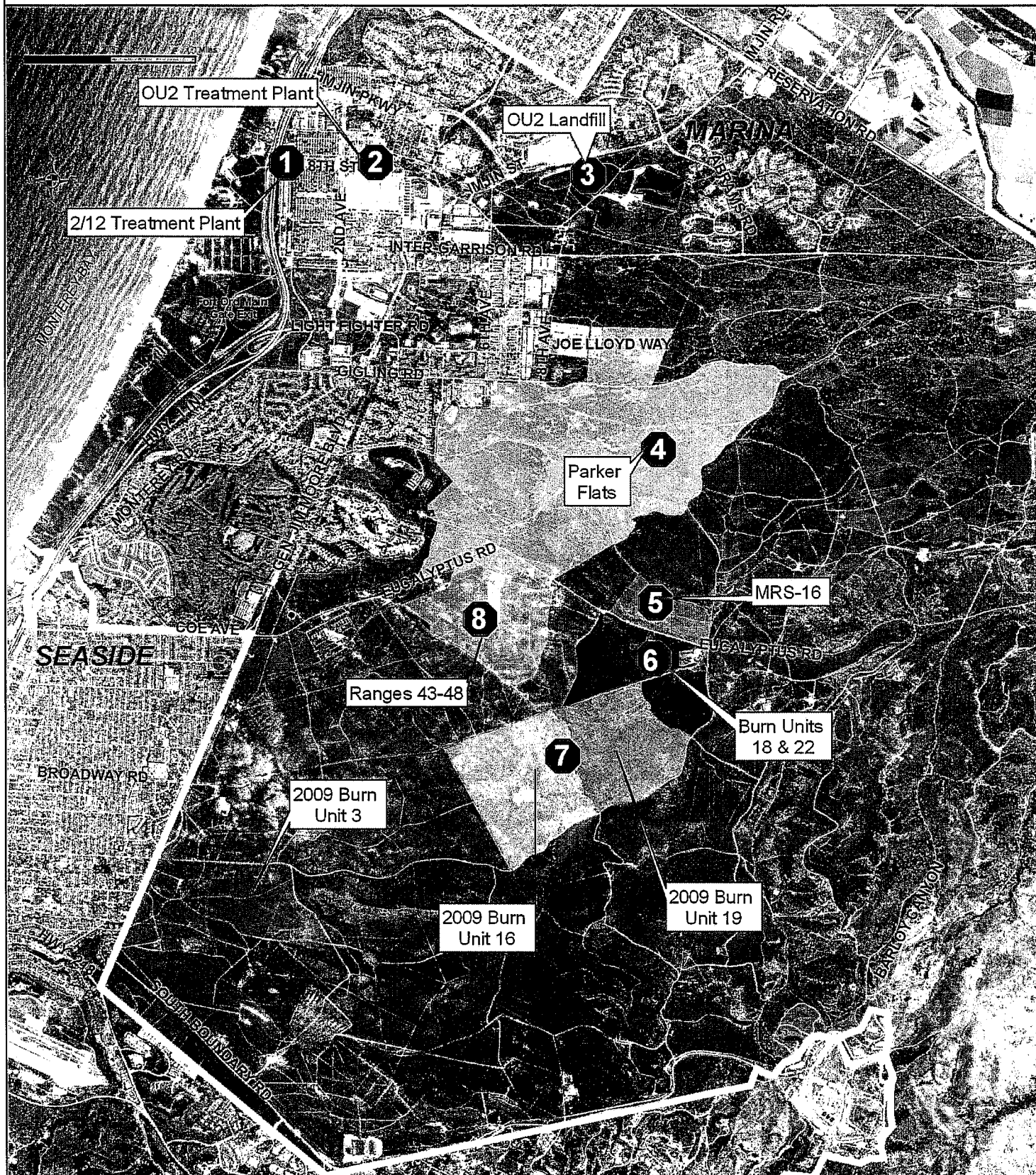


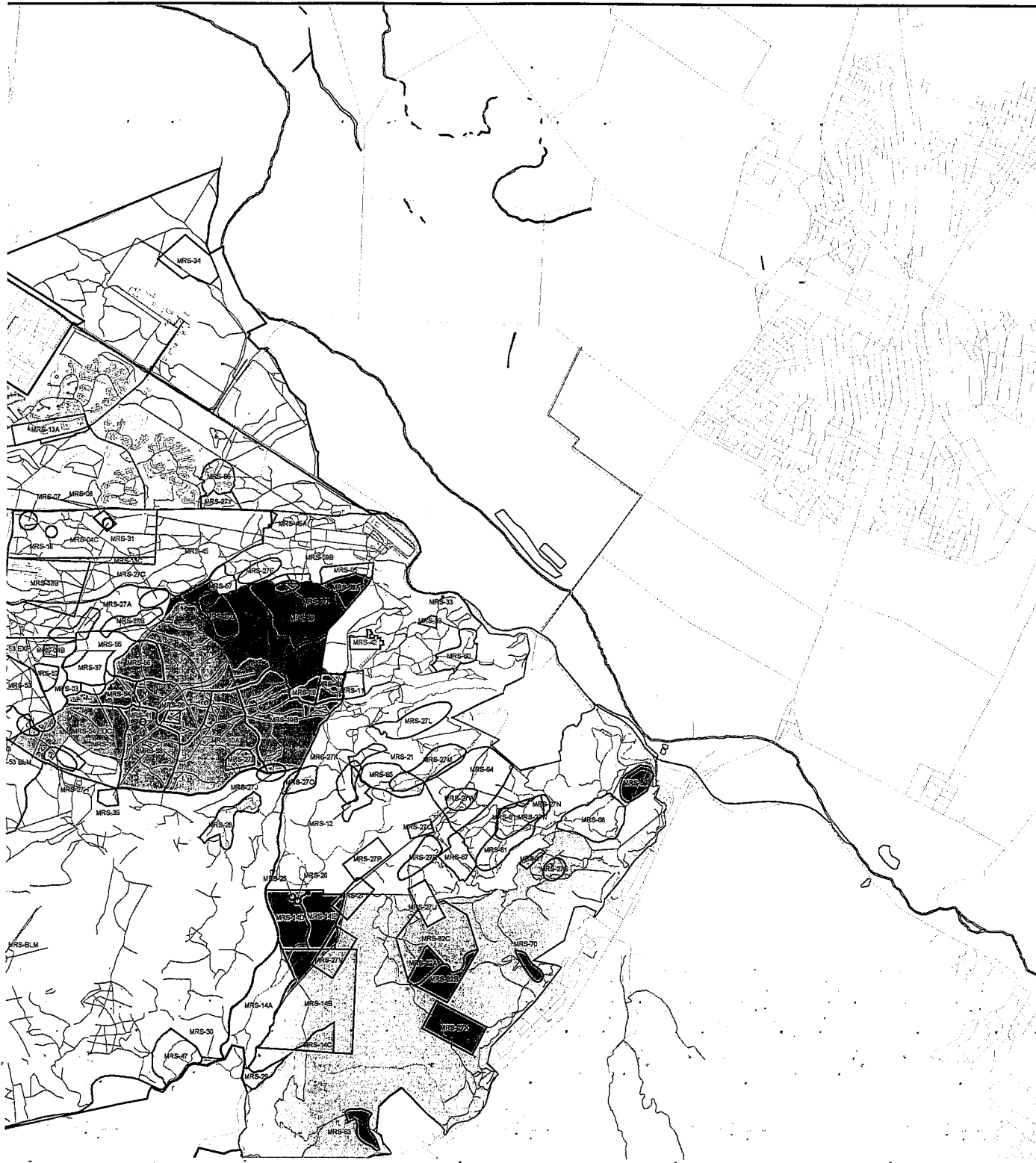
**FORT ORD  
CLEANUP**

Tour Guide Map  
February 5, 2009











- 1. 2/12 Groundwater Treatment Plant
- 2. OU2 Groundwater Treatment Plant
- 3. OU2 Landfill
- 4. Parker Flats

- 5. Munitions Response Site 16 (MRS-16)
- 6. Burn Units 18 + 22
- 7. Burn Units 3, 16, 19
- 8. Ranges 43-48





**EXPLANATION**

-  BLM East/Pre-1940 (Northern Portion)
-  BLM East/Pre-1940 (Southern Portion)
-  BLM East Post-1940 (Northern Portion)
-  BLM East Post-1940 (Southern Portion)
-  BLM North (Northern Portion)
-  BLM North (Southern Portion)
-  BLM Headquarters
-  Garrison South
-  Rocket Range FAAF
-  Completed Track 1 Sites



## Fort Ord Prescribed Burn Program Fact Sheet January 2009

**2008 Burn Operations:** On December 10, 2008 the Army conducted a prescribed burn of Units 18 and 22 within the former Impact Area. The prescribed burn was conducted to clear brush so that removal of munitions and explosives of concern can be conducted.

The prescribed burn began at 10:45 am as soon as the meteorologists confirmed that all meteorological conditions were within the prescription. Active ignition continued until approximately 1:00 pm at which point aviation fuel had to be replenished causing a break in active ignition for about 2 hours. Ignition began again around 3:30 pm after reconfirming with the meteorologists that the conditions were still within prescription. Ignition continued until approximately 5:00 pm. Approximately 125 acres were burned. Vegetation continued to burn/smolder into the evening. As the sun went down, temperatures and the mixing height dropped which caused the smoke generated by the smoldering to stay close to the ground around the burn location and in some of the areas on Fort Ord. The Presidio of Monterey Fire Department (POMFD) monitored the burn site overnight.

On December 11, 2008 POMFD conducted clean-up of the burn site which included ground-ignition of parts of the masticated fuel breaks for approximately 90 minutes. The prescribed burn was conducted during appropriate prescription conditions. POMFD continued to mop-up and monitor the site throughout the day.

**Community Notification:** The Army made autodialer notifications to 877 people on the Direct Notification Program; made about 100 calls to local municipalities, emergency service providers, hospitals and schools; and sent out over 2,000 e-mail notices. These notices were sent out at the time of mobilization, ignition and at the end of the active burn operation. Periodic updates were posted to the Army's website [www.fortordcleanup.com](http://www.fortordcleanup.com) and the hotline 1-800-852-9699. The local media (television, radio, and newspapers) provided updates as well.

**Air Monitoring:** Air monitoring was conducted on the burn day. Air monitoring units were placed at seven separate locations surrounding the former Fort Ord. Monitoring for particulate matter was conducted over a 24-hour period beginning at the time of prescribed burn ignition. The results will be available in March.

**Reports:** The prescribed burn program is a living program. The Army will assess all aspects of each burn with the goal of making improvements every year to increase the efficiency of the project. The Lessons Learned will be compiled and included in the Unit 18 and 22 After Action report which will be made available for public review in the next several months.

**2009:** POMFD is presently assessing the burn units to determine which units will be prepared for the 2009 burn season. Units 2 or 3 (near Del Rey Oaks) will continue to be a priority for burning. POMFD will issue a prescribed burn plan for the 2009 burn unit(s) in the next several months. See the reverse side for a map of the burn units.

We will discuss the completed 2008 burn and upcoming burn program in greater detail at the April 2009 Community Involvement Workshop.



# OUCTP Remedial Action Community Outreach Activities

- **September**
  - Draft Remedial Action Work Plan Issued for Review
    - Fort Ord Environmental Justice Network
    - Fort Ord Community Advisory Group
  - Discussions
    - Shelter Outreach Plus
  - Meetings
    - Residential Alliance
    - City of Marina Public Works
    - City of Marina Parks and Recreation Department
    - City of Marina Cultural Resources Department
- **October**
  - Fact Sheet and Community Meeting Notice
    - Shelter Outreach Plus
    - Residential Alliance - Hand delivered fact sheets to all r Preston and Abrams Park.
  - Community Meeting – October 23
    - Residential Alliance and residents in Preston and Abrar
- **December**
  - Tour of Project Site and Fact Sheet
    - Fort Ord Environmental Justice Network
  - Responding to Remedial Action Work Plan Comment
    - Fort Ord Environmental Justice Network

# Preliminary Schedule

## OUCTP A-Aquifer Remedial Act

- **Deployment Area 1A**
  - Construction – December 2008 to March 2009
  - Substrate Injection – March 2009 to May 2009
  - Monitoring – March 2009 to August 2009
- **Deployment Area 1B**
  - Construction – December 2008 to July 2009
  - Substrate Injection – July 2009 to August 2009
  - Monitoring – July 2009 to November 2009
- **Deployment Area 1C**
  - Construction – July 2009 to October 2009
  - Substrate Injection – October 2009 to December 2009
  - Monitoring – October 2009 to March 2010



## Former Fort Ord Groundwater Treatment Systems Operational Data and Status

**BRAC Cleanup Team Meeting, June 25, 2010**

**Table 1:** OU2 and Sites 2/12 GWTP Treatment Statistics, as of May 31, 2010.

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons per minute)	Percent of Time Online	COC Mass Removed (lbs.)
<b>OU2</b>				
May 2010	24,584,979	551	100.0	2.41
Total since October 1995	4.868 billion			655.72
<b>Sites 2/12</b>				
May 2010	8,238,200	185	99.5	0.68
Total since June 1999	1.334 billion			424.68

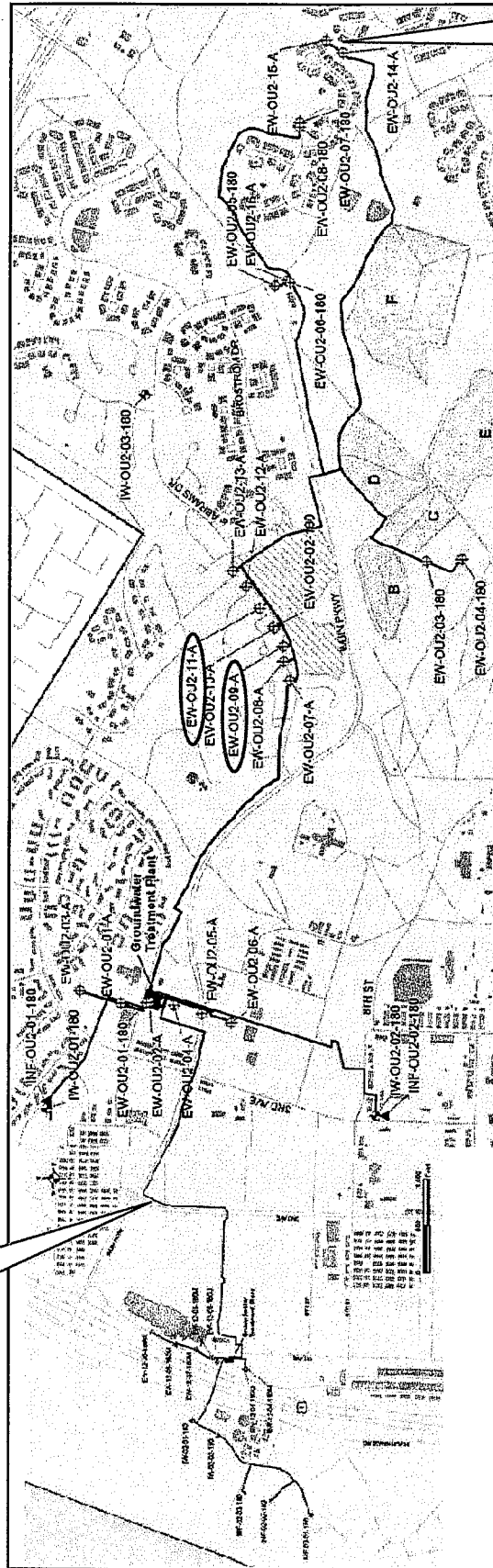
**Table 2:** OU2 and Sites 2/12 GWTP Calendar of Events, May 2010.

Key Events for OU2 and Sites 2/12 for May 2010						
<p><b>There were 25 USAN Notices transmitted to Ahtna May 1-31, 2010. One of these alerts required the personal attention of the Senior GWTP Operator.</b></p>						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 CSUMB PLC communication cable replaced.	4 EW-OU2-09-A offline due to uncoupled drop pipe.	5	6 EW-OU2-11-A redeveloped. Sand pack material recovered in bailer, indicating hole in screen.	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24 OU2 XS pipeline valve damaged by construction. Repaired same day. 2/12 GWTP offline for 3.5 hours. OU2 GWTP low flow for 3.5 hours.	25	26	27	28	29
30	31					

CSUMB  
PLC

Figure 1: OU2 and Sites 2/12 GWTSs

OU2 XS  
damage





**Table 3: May 2010 - OU2 Analytical Results at TS-OU2-INJ**

COC	Discharge Limit (µg/L)	Sample Date / Analytical Results	
		5/4/10	5/18/10
1,1-DCA	5.0*	0.73	0.98
1,2-DCA	0.50	0.28	0.37
1,2-DCP	0.50	ND	ND
Benzene	0.50	ND	ND
Carbon Tetrachloride	0.50	ND	ND
Chloroform	2.0*	0.40	0.56
cis-1,2-DCE	6.0*	0.30	0.41
Methylene Chloride	0.50	ND	ND
PCE	0.50	ND	ND
TCE	0.50	0.11	ND
Vinyl Chloride	0.10	ND	ND

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

COC	Discharge Limit (µg/L)	Sample Date / Analytical Results			
		5/4/10	5/12/10	5/18/10	5/26/10
1,1-DCE	6.0	ND	ND	ND	ND
1,2-DCA	0.50	0.21	0.20	0.27	0.23
1,3-DCP †	0.50	ND	ND	ND	ND
Chloroform	2.0	0.27	0.27	0.41	0.32
cis-1,2 DCE	6.0	0.58	0.60	0.78	0.70
PCE	3.0	ND	ND	ND	ND
TCE	5.0	0.28	0.34	0.53	0.36
Vinyl Chloride	0.10	ND	ND	ND	ND

**NOTES:**

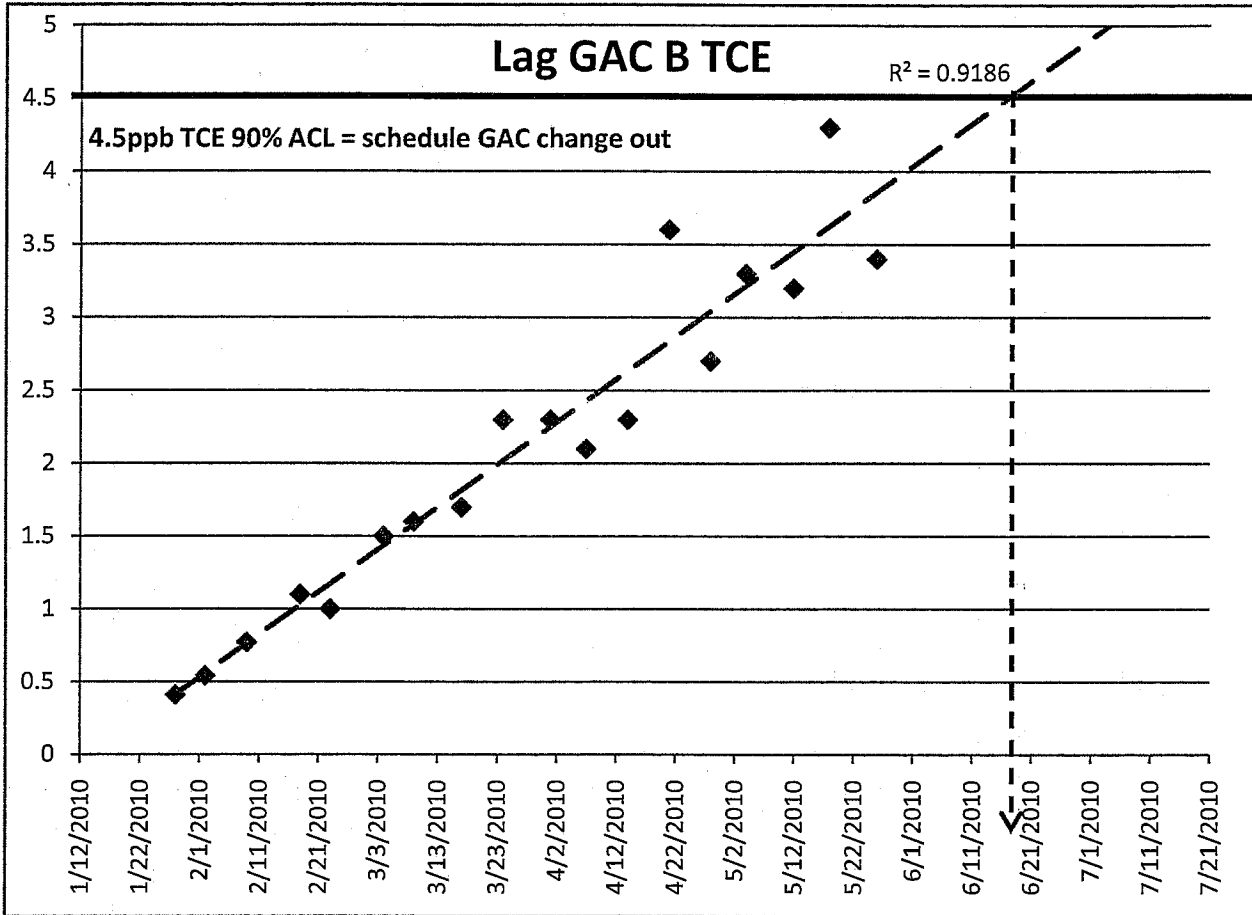
ND The analyte was not detected above the limit of quantitation.

\* 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 2: Sites 2/12 GWTP Lag GAC Vessel Effluent TCE Concentrations and Trend**



**Table 5: AES Document Submittals - Status Summary**

Document	Submitted	Comments Due
Draft Final 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	June 21, 2010	July 21, 2010



**Table 6: May 2010 OU2 and Sites 2/12 Extraction Well Status (as of May 31)**

Well Identification	% On	Avg. gpm	Total Gallons	% of Total	Comments	TCE (ug/L) 1Q 2010
<b>Site 12 Extraction Wells</b>						
EW-12-05-180M	0	0	0	0	Well offline due to pump failure	Not Sampled
EW-12-06-180M	99.6	73.0	3,258,900	39.6		6.4
EW-12-07-180M	99.6	54.0	2,410,800	29.3		2.6
EW-12-03-180U	0	0	0	0	Well offline due to low concentrations	0.16
EW-12-03-180M	99.6	57.5	2,568,500	31.2		1.2
EW-12-04-180U	0	0	0	0	Well offline due to low concentrations	0.26
EW-12-04-180M	0	0	0	0	Pump removed, sampled with PDBs	0.99
<i>Total 2/12 gallons treated:</i>			<i>8,238,200</i>	<i>100.0</i>		
<b>OU2 Extraction Wells</b>						
<i>Western Network</i>						
EW-OU2-01-A	0	0	0	0	Well offline due to low concentrations	Not Sampled
EW-OU2-02-A	100	52.1	2,325,390	9.5		0.61
EW-OU2-03-A	0	0	0	0	Well offline due to low concentrations, sampled with PDBs	0.87
EW-OU2-04-A	99.6	48.6	2,168,620	8.8		0.95
EW-OU2-05-A	97.5	49.3	2,202,960	9.0		2.6
EW-OU2-06-A	100	37.2	1,660,860	6.8		4.2
EW-OU2-01-180	0	0	0	0	No pump in well, sampled with PDBs	6.5
<i>Total gallons extracted:</i>			<i>8,357,830</i>	<i>34.0</i>		
<i>Eastern Network</i>						
EW-OU2-07-A	0	0	0	0	Well offline due to low concentrations	0.16
EW-OU2-08-A	81.1	19.5	868,584	3.5		0.60
EW-OU2-09-A	2.6	0.4	17,715	0.1	Well offline due to uncoupled pipe	3.1
EW-OU2-10-A	93.1	22.3	997,488	4.1		4.2
EW-OU2-11-A	0	0	0	0	Pump removed due to damaged screen	Not Sampled
EW-OU2-12-A	17.8	0.7	31,812	0.1	Low yield; running at reduced capacity	5.5
EW-OU2-13-A	99.3	29.8	1,330,350	5.4		12.1
EW-OU2-02-180	99.5	36.7	1,638,000	6.7		9.3
<i>Total gallons extracted:</i>			<i>4,883,949</i>	<i>19.9</i>		
<i>Shoppette</i>						
EW-OU2-05-180	0	0	0	0	Well offline due to pump failure	Not Sampled
EW-OU2-06-180	89.9	146.9	6,555,700	26.7		4.9
EW-OU2-16-A	90.2	18.5	825,500	3.4		13.2
<i>Total gallons extracted:</i>			<i>7,381,200</i>	<i>30.0</i>		
<i>CSUMB</i>						
EW-OU2-14-A	99.7	34.3	1,533,000	6.2		1.3
EW-OU2-15-A	0	0	0	0	Well offline due to low concentrations	Not Sampled
<i>Total gallons extracted:</i>			<i>1,533,000</i>	<i>6.2</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	99.5	54.4	2,429,000	9.9		1.0
<i>Total gallons extracted:</i>			<i>2,429,000</i>	<i>9.9</i>		
<i>Total OU2 gallons treated:</i>			<i>24,584,979</i>	<i>100.0</i>		

# OPERABLE UNIT CARBON TETRACHLORIDE PLUME A-AQUIFER REMEDIAL ACTION

STATUS – June 25, 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.
- Installation and development of wells at Areas 2A and 2B complete – March 23.
- Substrate injection at Area 1B completed – May 6.
- Groundwater recirculation at Area 1B completed – June 16.
- Issued technical memorandum for post-treatment and long-term monitoring at Deployment Area 1A – June 3.
- Baseline biological survey in FONR South Reserve – April-June 2010.

## SCHEDULE

- Subsequent quarterly monitoring for EISB pilot study conducted under Groundwater Monitoring Program.
- Groundwater monitoring ongoing at Area 1B. (Extended 1 month for preliminary guidance)
- Installation of process equipment at Area 1C – June 2010. Process container moved June 21.
- Installation of process equipment at Area 2A ongoing.
- Draft Final RAWP Appendix B – Upper 180-Foot Aquifer – June 2010. Comments from FOCAG and DTSC.
- Draft Final RAWP Appendix C – Lower 180-Foot Aquifer – June 2010. No comments received from DTSC.
- Installation of extraction well in Upper 180-Foot Aquifer – July 6, 2010.

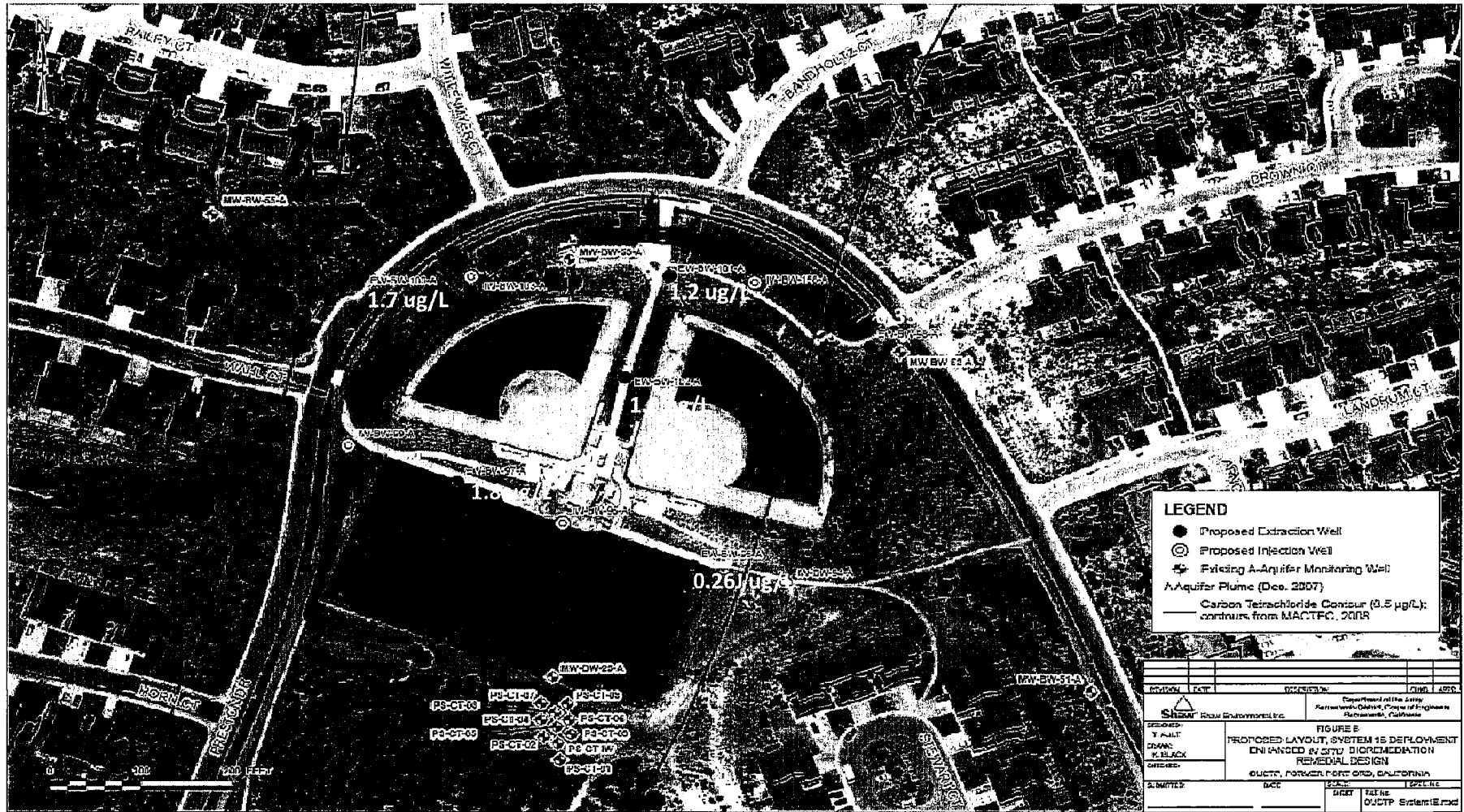
## DATA (Preliminary)

- Preliminary EISB data for Area 1B.

## 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. Well repair 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.





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	
<b>Total</b>	<b>36.5</b>	<b>33,223</b>	<b>34.2</b>		<b>374,223</b>	<b>34.5</b>	
<b>Total Flow</b>	<b>36.5</b>	<b>32,351</b>	<b>33</b>		<b>369,011</b>	<b>33.5</b>	

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 (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)	
										IW-BW-94-A
P-302										
IW-BW-96-A	11	7,711	8.02	37	9.23	100,373	8.41	295	9.23	
P-303										
IW-BW-99-A	8.5	6,660	6.82	28	7.00	83,372	7.27	227	7.11	
P-301										
IW-BW-103-A	8.5	6,420	6.67	28	7.04	71,056	7.12	225	7.04	
P-305										
IW-BW-158-A	8.5	6,034	6	28	7.09	73,056	6.15	227	7.09	
P-304										
<b>Total</b>	<b>36.5</b>	<b>26,825</b>	<b>27.5</b>	<b>121</b>		<b>327,857</b>	<b>28.0</b>	<b>975</b>		

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	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-95-A	60,879	2.9
EW-BW-97-A	117,121	5.4
EW-BW-98-A	144,965	7.3
EW-BW-100-A	151,218	7.3
EW-BW-101-A	129,693	6.5
EW-BW-102-A	155,516	5.9
<b>Total</b>	<b>759,392</b>	<b>35.3</b>
<b>Total Flow</b>	<b>717,020</b>	<b>34.1</b>

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
89,679	2.7
171,219	5.1
218,842	7.0
226,391	7.4
197,393	6.5
186,102	5.9
<b>1,089,626</b>	<b>34.6</b>
<b>1,060,438</b>	<b>35</b>

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
118,954	2.9
227,599	5.9
289,562	7.3
299,515	7.2
261,967	6.3
242,389	5.6
<b>1,439,986</b>	<b>35.2</b>
<b>1,385,382</b>	<b>28.8</b>

Injection Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 15 (gallons)	Substrate Injection Rate 3/17 (gallons per hour)
IW-BW-94-A	0	0	0	0.00
P-302	198,213	8.8	555	9.26
IW-BW-96-A	156,637	7.9	427	7.13
P-301	143,827	7.2	423	7.07
IW-BW-103-A	144,462	7.3	433	7.36
P-304				
<b>Total</b>	<b>643,139</b>	<b>31.2</b>	<b>1838</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 22 (gallons)	Substrate Injection Rate 3/24 (gallons per hour)
0		0	0.00
283,188	8.5	813	9.23
237,273	8.9	626	7.11
215,914	7.3	621	7.07
219,020	7.6	631	7.08
<b>955,395</b>	<b>32.3</b>	<b>2691</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 29 (gallons)	Substrate Injection Rate 3/31 (gallons per hour)
0		0	0.00
361,367	7.2	1072	9.23
319,052	6.8	822	7.00
285,958	5.1	818	7.04
290,095	5.5	833	7.19
<b>1,256,472</b>	<b>24.6</b>	<b>3544</b>	

**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	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-95-A	147,493	2.7
EW-BW-97-A	287,173	5.9
EW-BW-98-A	364,547	7.2
EW-BW-100-A	369,727	6.3
EW-BW-101-A	323,527	7.0
EW-BW-102-A	300,443	5.6
<b>Total</b>	<b>1,792,910</b>	<b>34.7</b>
<b>Total Flow</b>	<b>1,601,452</b>	<b>18.3</b>

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
166,705	2.9
342,052	5.7
431,276	7.2
444,774	6.3
381,287	5.7
355,544	6.0
<b>2,121,638</b>	<b>33.8</b>
NA	9

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
195,441	2.6
398,201	5.2
505,090	7.3
511,254	6.2
433,343	5.2
414,115	5.7
<b>2,457,444</b>	<b>32.2</b>
<b>2,014,061</b>	<b>25.8</b>

Injection Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 36 (gallons)	Substrate Injection Rate 4/7 (gallons per hour)
IW-BW-94-A	0			
P-302			0	0.00
IW-BW-96-A	406,435	3.9		
P-303			1330	9.23
IW-BW-99-A	375,202	5.2		
P-301			1020	7.08
IW-BW-103-A	329,622	2.6		
P-305			1016	7.07
IW-BW-158-A	328,387	1.8		
P-304			1033	7.16
<b>Total</b>	<b>1,439,646</b>	<b>13.5</b>	<b>4399</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 43 (gallons)	Substrate Injection Rate 4/14 (gallons per hour)
0			
NA	6.1	0	0.00
NA	2.1	1551	9.23
NA	3.5	1190	7.08
NA	8	1186	7.07
NA		1205	7.16
<b>NA</b>	<b>19.7</b>	<b>5132</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 50 (gallons)	Substrate Injection Rate 4/21 (gallons per hour)
0			
480,209	1.2	0	0.00
467,784	3.9	1810	9.23
382,542	1.7	1391	7.18
401,046	1.8	1383	7.04
1,731,581	8.6	1405	7.16

**Area 1B OUCTP EISB  
System Operation  
Preliminary Data Summary**

System Start Date:

Date: 4/28/2010  
57 day

5/5/2010  
64 day

5/12/2010  
71 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	5.8
<b>Total</b>	<b>2,761,719</b>	<b>27.4</b>
<b>Total Flow</b>	<b>2,107,557</b>	<b>3.3</b>

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
250,216	3.0
507,698	5.7
654,465	7.3
579,395	2.9
512,115	5.5
526,791	5.6
<b>3,030,680</b>	<b>30.0</b>
<b>2,155,216</b>	<b>7</b>

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
280,885	3.0
580,819	4.6
727,266	7.0
596,339	0.0
553,840	4.6
580,133	5.3
<b>3,289,282</b>	<b>24.5</b>
<b>0</b>	<b>23</b>

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			2068	9.23
IW-BW-99-A	530,156	6.8		
P-301			1588	7.04
IW-BW-103-A	417,940	2.2		
P-305			1582	7.12
IW-BW-158-A	433,391	2.1		
P-304			1604	7.11
<b>Total</b>	<b>1,897,137</b>	<b>17.9</b>	<b>6843</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 64 (gallons)	Substrate Injection Rate 5/5 Completed 5/5 (gallons per hour)
0			
		0	0.00
554,362	2.6		
		2327	9.23
555,095	1.2		
		1787	7.09
436,035	0.8		
		1780	7.07
456,078	1.1		
		1812	7.41
<b>2,001,570</b>	<b>5.7</b>	<b>7706</b>	

Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
581,617	5
564,627	0
329,622	0.5
328,367	1.9
<b>1,146,244</b>	<b>7.4</b>

Area 1B OUCTP EISB  
System Operation  
Preliminary Data Summary

System Start Date:

Date:	5/19/2010 78 day	5/26/2010 85 day	6/2/2010 92 day	6/9/2010 99 day	6/16/2010 106 day					
<b>Extraction Well</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>
EW-BW-95-A	309,100	2.8	334,444	2.5	359,198	2.5	379,422	2.5	406,601	2.5
EW-BW-97-A	611,660	5.9	646,854	2.6	668,357	2.2	678,024	5.3	722,545	3.3
EW-BW-98-A	801,482	7.3	870,797	7.3	943,538	6.9	1,000,092	6.9	1,071,032	6.7
EW-BW-100-A	596,339	0.0	596,339	0.0	596,339	0.0	596,339	0.0	596,339	0.0
EW-BW-101-A	592,049	5.7	613,534	2.2	614,351	0.0	638,666	7.0	672,365	2.3
EW-BW-102-A	635,664	6.1	693,845	6.1	754,245	5.6	789,525	5.2	856,117	5.1
<b>Total</b>	<b>3,546,284</b>	<b>27.8</b>	<b>3,755,813</b>	<b>20.7</b>	<b>3,936,028</b>	<b>17.2</b>	<b>4,092,068</b>	<b>26.9</b>	<b>4,324,999</b>	<b>19.9</b>
<b>Total Flow</b>	<b>2,272,045</b>	<b>7.1</b>	<b>2,299,725</b>	<b>0</b>	<b>2,302,817</b>	<b>0</b>	<b>2,398,969</b>	<b>21.2</b>	<b>2,489,657</b>	<b>5.7</b>
<b>Injection Well</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>	<b>Total Flow (gallons)</b>	<b>Instantaneous Flowrate (gallons per minute)</b>
IW-BW-94-A										
P-302										
IW-BW-96-A	611,578	7.9	648,337	2.5	680,517	2.5	709,453	8.5	761,133	3.7
P-303										
IW-BW-99-A	565,470	0	565,962	0	566,376	0	578,025	6.8	607,837	2.7
P-301										
IW-BW-103-A	469,595	5.6	488,373	0.6	511,738	1.5	534,466	5.6	557,918	1.1
P-305										
IW-BW-158-A	504,899	2.3	517,616	1.2	531,255	0.8	550,967	6.7	589,579	1.7
P-304										
<b>Total</b>	<b>1,177,048</b>	<b>15.8</b>	<b>1,214,299</b>	<b>4.3</b>	<b>1,246,893</b>	<b>4.8</b>	<b>1,287,478</b>	<b>27.6</b>	<b>1,368,970</b>	<b>9.2</b>

Method<sup>a</sup>

Sample ID		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 <sub>3</sub> total)	HACH <sup>b</sup>	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 <sup>c</sup>	6.55	6.55	6.50	6.50	6.62	6.54	6.58	6.59
dissolved oxygen	meter <sup>c</sup>	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 <sup>c</sup>	230 mV	210 mV	202 mV	142 mV	144 mV	160 mV	127 mV	121 mV
conductivity	meter <sup>c</sup>	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 <sup>c</sup>	13 NTU	17 NTU	11 NTU	9 NTU	14 NTU	8 NTU	10 NTU	9 NTU
temperature	meter <sup>c</sup>	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 <sup>d</sup>								
ethane	RSK 175 <sup>d</sup>								
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	2.0 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<sup>a</sup>

Sample ID		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
Date		Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
		5/5/2010	5/12/2010	5/19/2010	5/26/2010	6/2/2010	6/9/2010	6/16/2010
well flowrate (operating)		5.7	4.6	5.9	2.6	2.2	5.3	3.3
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	65 mg/L	67 mg/L	83 mg/L	95 mg/L	110 mg/L	123 mg/L	129 mg/L
pH	meter <sup>c</sup>	6.54	6.60	6.64	6.73	6.67	6.73	6.50
dissolved oxygen	meter <sup>c</sup>	10.27 ppm	6.89 ppm	5.55 ppm	3.67 ppm	3.43 ppm	2.92 ppm	6.3 ppm
oxidation reduction potential	meter <sup>c</sup>	128 mV	56 mV	71 mV	3 mV	-45 mV	-32 mV	-71 mV
conductivity	meter <sup>c</sup>	53.5 mS/cm	65.5 mS/cm	64 mS/cm	69.7 mS/cm	71.3 mS/cm	74.5 mS/cm	78 mS/cm
turbidity	meter <sup>c</sup>	25 NTU	28 NTU	12 NTU	11 NTU	5 NTU	45 NTU	253 NTU
temperature	meter <sup>c</sup>	17.5 °C	17.6 °C	17.9 °C	19 °C	18.8 °C	18.7 °C	19.1 °C
nitrate	300.0					6570 µg/L		
nitrite	300.0					<100 µg/L		
sulfate	300.0					29500 µg/L		
ortho-phosphate	300.0							
dissolved iron	6010B					110J µg/L		
manganese	6010B					512 µg/L		
arsenic	6010B					<10 µg/L		
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M							
propionate	300.0M							
acetate	300.0M							
carbon tetrachloride	8260B					1.5 µg/L		
chloroform	8260B					0.32J µg/L		
dichloromethane	8260B					<5.0 µg/L		
chloromethane	8260B					<1.0 µg/L		
trichloroethene	8260B					0.46J µg/L		
methyl tert-butyl ether	8260B					1.6 µg/L		
acetone	8260B					10 µg/L		
2-butanone	8260B					10J µg/L		

Method\*

Sample ID Well Type		EW-BW-100-A extraction baseline	EW-BW-100-A extraction Week 0	EW-BW-100-A extraction Week 1	EW-BW-100-A extraction Week 2	EW-BW-100-A extraction Week 3	EW-BW-100-A extraction Week 4	EW-BW-100-A extraction Week 5	EW-BW-100-A extraction Week 6	EW-BW-100-A extraction Week 7	EW-BW-100-A extraction Week 8
Date		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 <sub>3</sub> total)	HACH <sup>b</sup>	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 <sup>c</sup>	6.46	6.52	6.53	6.51	6.64	6.56	6.64	6.70	6.75	6.80
dissolved oxygen	meter <sup>c</sup>	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 <sup>c</sup>	189 mV	176 mV	179 mV	137 mV	140 mV	67 mV	-26 mV	-42 mV	-41 mV	-47 mV
conductivity	meter <sup>c</sup>	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 <sup>c</sup>	48 NTU	4 NTU	31 NTU	12 NTU	23 NTU	15 NTU	12 NTU	13 NTU	18 NTU	11 NTU
temperature	meter <sup>c</sup>	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			7810 µg/L
nitrite	300.0	<100(<100) µg/L				<100 µg/L		<100 µg/L			<100 µg/L
sulfate	300.0	44400(44300) µg/L				33700 µg/L		32600 µg/L			31100 µg/L
ortho-phosphate	300.0	<500(<500) µg/L									
dissolved iron	6010B	<200 µg/L				<200 µg/L		<200 µg/L			118J µg/L
manganese	6010B	6.25J µg/L				<10 µg/L		261 µg/L			1310 µg/L
arsenic	6010B	<10 µg/L				<10 µg/L		<10 µg/L			<10 µg/L
methane	RSK 175 <sup>d</sup>	<2.0 µg/L									
ethane	RSK 175 <sup>d</sup>	<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			1.5 µg/L
chloroform	8260B	<0.5 µg/L				0.20J µg/L		0.26J µg/L			0.30J µg/L
dichloromethane	8260B	<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
acetone	8260B	11 µg/L									11 µg/L
2-butanone	8260B										18J µg/L
trichloroethene	8260B	0.23J µg/L				0.57 µg/L		0.76 µg/L			0.67 µg/L
carbon disulfide	8260B							0.20J µg/L			0.27J µg/L

Method<sup>a</sup>

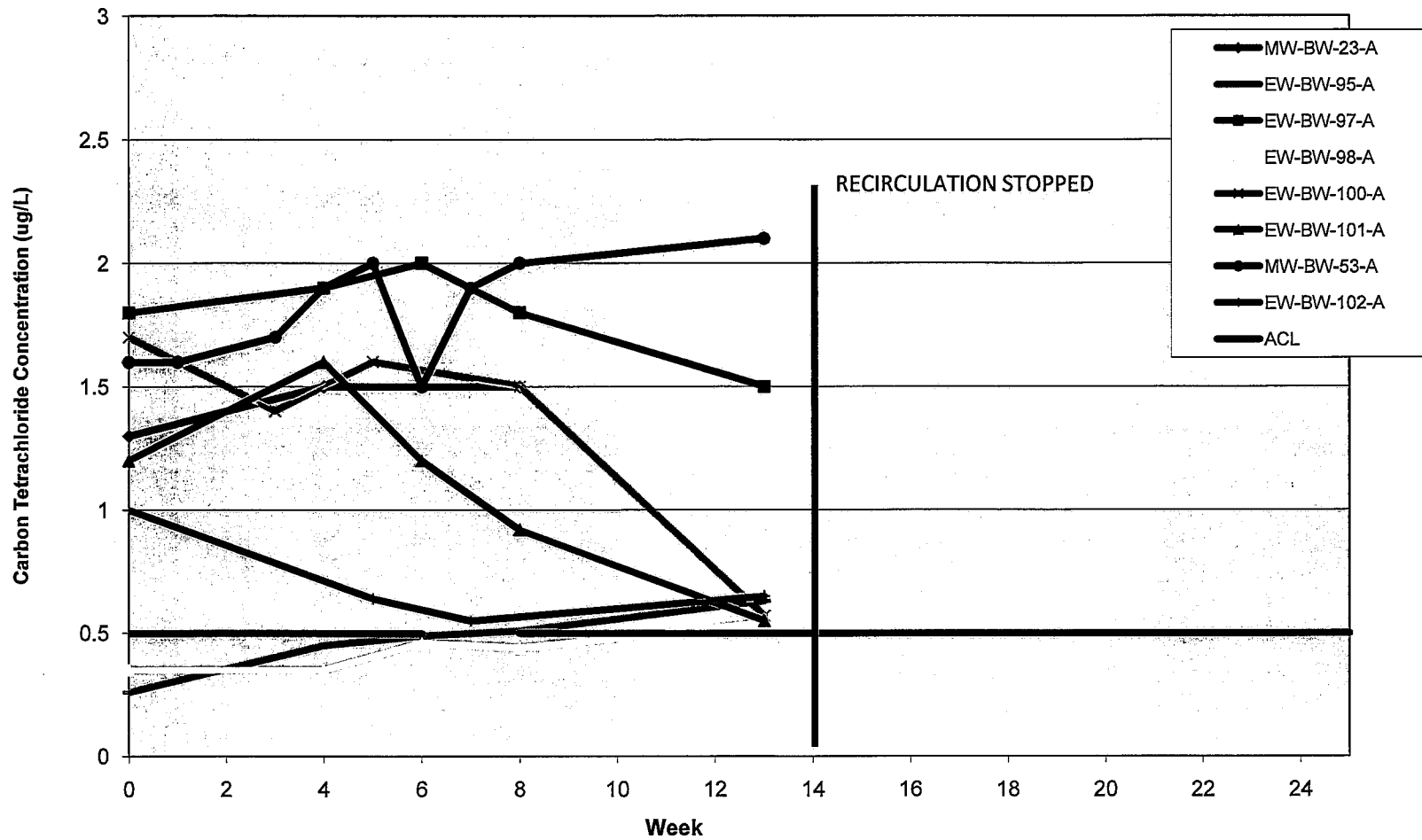
Sample ID		EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
		5/5/2010	5/12/2010	5/19/2010	5/26/2010	6/2/2010	6/9/2010	6/16/2010
well flowrate (operating)		2.9	0.0	0.0	0.0	0.0	0.0	0.0
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	137 mg/L	140 mg/L	106 mg/L	98 mg/L	92 mg/L	87 mg/L	82 mg/L
pH	meter <sup>c</sup>	6.71	6.76	6.67	6.55	6.60	6.70	6.50
dissolved oxygen	meter <sup>c</sup>	2.68 ppm	0.94 ppm	0.95 ppm	1.34 ppm	0.67 ppm	3.26 ppm	7.9 ppm
oxidation reduction potential	meter <sup>c</sup>	-53 mV	-102 mV	-147 mV	-124 mV	-112 mV	-74 mV	-75 mV
conductivity	meter <sup>c</sup>	74.2 mS/cm	90.6 mS/cm	86.5 mS/cm	87.5 mS/cm	85.3 mS/cm	87.2 mS/cm	88 mS/cm
turbidity	meter <sup>c</sup>	36 NTU	32 NTU	16 NTU	130 NTU	4 NTU	5 NTU	36 NTU
temperture	meter <sup>c</sup>	19.9 °C	20.5 °C	20.7 °C	20.0 °C	20.4 °C	18.4 °C	18.9 °C
nitrate	300.0					12500(12600) µg/L		
nitrite	300.0					<100(<100) µg/L		
sulfate	300.0					49300(49200) µg/L		
ortho-phosphate	300.0							
dissolved iron	6010B					108J(<200) µg/L		
manganese	6010B					207(213) µg/L		
arsenic	6010B					<10(10) µg/L		
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M							
propionate	300.0M							
acetate	300.0M							
carbon tetrachloride	8260B					0.57 µg/L		
chloroform	8260B					<0.5 µg/L		
dichloromethane	8260B					<5.0 µg/L		
chloromethane	8260B					<1.0 µg/L		
acetone	8260B							
2-butanone	8260B							
trichloroethene	8260B							
carbon disulfide	8260B							



Method<sup>a</sup>

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
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
		5/5/2010	5/12/2010	5/19/2010	5/26/2010	6/2/2010	6/9/2010	6/16/2010
well flowrate (operating)		5.5	4.6	5.7	2.2	0+	7.0	2.3
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	220 mg/L	230 mg/L	248 mg/L	258 mg/L	300 mg/L	282 mg/L	284 mg/L
pH	meter <sup>c</sup>	6.61	6.62	6.60	6.60	6.56	6.58	6.30
dissolved oxygen	meter <sup>c</sup>	2.48 ppm	2.32 ppm	2.05 ppm	1.62 ppm	0 ppm	2.5 ppm	5 ppm
oxidation reduction potential	meter <sup>c</sup>	-65 mV	-40 mV	-56 mV	-107 mV	-139 mV	-68 mV	-87 mV
conductivity	meter <sup>c</sup>	91.2 mS/cm	117 mS/cm	115 mS/cm	119 mS/cm	127 mS/cm	127 mS/cm	140 mS/cm
turbidity	meter <sup>c</sup>	10 NTU	12 NTU	10 NTU	98 NTU	24 NTU	3 NTU	58 NTU
temperature	meter <sup>c</sup>	18.8 °C	18.7 °C	18.3 °C	18.9 °C	21.5 °C	18.4 °C	19.4 °C
nitrate	300.0					<100 µg/L		
nitrite	300.0					<100 µg/L		
sulfate	300.0					18800 µg/L		
ortho-phosphate	300.0							
dissolved iron	6010B					1080 µg/L		
manganese	6010B					4170 µg/L		
arsenic	6010B					<10 µg/L		
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M	<	<	<	<	<	<	<
propionate	300.0M	<	<	<	<	<	<	<
acetate	300.0M	<	<	<	<	<	<	<
carbon tetrachloride	8260B					0.55 µg/L		
chloroform	8260B					<0.5 µg/L		
dichloromethane	8260B					<5.0 µg/L		
chloromethane	8260B					<1.0 µg/L		
trichloroethene	8260B					0.52 µg/L		
acetone	8260B					24 µg/L		
2-butanone	8260B					66 µg/L		
carbon disulfide	8260B					1.3 µg/L		
methyl tert-butyl ether	8260B					0.21J µg/L		

# Change in Carbon Tetrachloride Concentration Over Time



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

<b>TREATMENT SYSTEM OPERATION SUMMARY</b>	
Treatment System Start Date:	6/4/2001
TTU Start Date:	4/4/2006
Last Reading Date/Time:	5/28/2010 10:30
<b>Historical through 2009 (TTU only):</b>	
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
<b>Current Year 2010</b>	
Total Hours:	3,792
Total Hours Operated:	1025
% TTU Operation:	27.0%
Total Pounds of Methane Removed:	89,966
<b>Cumulative:</b>	
% TTU Operation:	41.8%
Total Pounds of Methane Removed:	1,892,127

	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)	89,966	3,986

<b>EXTRACTION SYSTEM (2010)</b>					
Location	Last Instantaneous Methane Reading (%)	Last Instantaneous Flow Rate Reading (scfm)	Current Methane Removal Rate (lbs/day)	2010 % Operation	2010 Methane Removed (Lbs)
<b>Area E</b>					
EP-36	35.7	21	442.2	27.0	19889.3
<b>Area F</b>					
EW-31	34.3	6	121.4	27.0	6209.8
EW-32	39.7	16	374.7	27.0	14759.3
EW-33	36.9	21	457.1	27.0	14492.8
EW-34	37.7	31	689.3	27.0	25750.9
VF-4	51.1	9	271.3	20.2	4637.2
<b>Area D</b>					
EW-35	27.4	7	113.1	27.0	4488.1

**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

