

**Fort Ord Operable Unit 1 Meeting Minutes**  
**Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning**  
**Marina, California**  
**Base Closure Team Meeting**  
**1:30 p.m., 18 June 2014**  
**Prepared by HydroGeoLogic, Inc.**

**Attendees: (to be revised after meeting)**

<b>Individual</b>	<b>Attended?</b>	<b>Individual</b>	<b>Attended?</b>
James Specht, USACE		Edward Ticken, AMEC	X
Teresa Rodgers, USACE	X	Jeff Fenton, AMEC	X
Chris Goddard, USACE		Derek Lieberman, Ahtna	X
Alex Kan, USACE	X	Peter Kelsall, CB&I	
Bonnie McNeil, USACE		Steve Crane, Gilbane	X
William Collins, BRAC	X	Erin Caruso, Gilbane	X
Melissa Broadston, Chenega <sup>1</sup>	X	Larry Friend, Gilbane	
Caleb Schneider, Chenega <sup>1</sup>		Kevin Ghalambor, Burleson	
Bart Kowalski, Chenega <sup>1</sup>	X	Roy Evans, HGL	X
Lewis Mitani, EPA	X	Kevin Wierengo, HGL	
Martin Hausladen, EPA	X	Brad Clark, Ahtna	X
Peter Gathungu, DTSC	X	Lindsay Alexander, Gilbane	X
Min Wu, Ph.D., DTSC	X	Steve Sterling, DTSC	X
Grant Himebaugh, RWQCB	X	Ed Walker, DTSC	X
X = attended in person or by telephone; blank indicates absent from the meeting			

USACE = U.S. Army Corps of Engineers

BRAC = Base Realignment and Closure Fort Ord Office

EPA = U.S. Environmental Protection Agency

DTSC = California Department of Toxic Substances Control

RWQCB = Regional Water Quality Control Board

Ahtna = Ahtna Engineering Services

HGL = HydroGeoLogic, Inc.

CB&I = Chicago Bridge & Iron, Inc.

<sup>1</sup>Chenega staff supporting the BRAC

**OU-1 Treatment Plant Operations**

HGL reported the Northwest Treatment System (NWTS) operated continuously from 29 April 2014 through 2 June 2014. However, extraction well EW-OU1-60-A went off-line on approximately 30 May 2014 and was restarted on 2 June 2014. HGL discovered that the on-off power switch at the well head was set to “off” but how the power switch came to be in that position is not known.

Extraction wells EW-OU1-60-A and EW-OU1-66-A are operating and total pumping from those wells is approximately 16 gallons per minute. Extraction well EW-OU1-71-A was restarted on 23 March 2014 and shut down on 27 March 2014 after a groundwater sample was collected. Based on the validated sampling results from the March 2014 performance sampling effort (see following section),

pumping at MW-OU1-87-A was shut down on 15 May 2014—this action is consistent with the previously approved OU-1 Remedy Optimization Technical Memorandum approved by the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, and Regional Water Quality Control Board. MW-OU1-87-A remains operable and will be temporarily restarted to collect a performance monitoring sample in June 2014.

Since system startup in 2006, the NWTS has pumped approximately 210 million gallons of groundwater and removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE). An estimated 0.1 pound of TCE has been removed since the NWTS 18 September 2013 sampling event.

### **OU-1 Groundwater Quality Data**

In accordance with the Uniform Federal Policy (UFP)-Quality Assurance Project Plan (QAPP), HGL will collect the following samples from monitoring wells and the NWTS in June 2014:

MW-OU1-87-A

MW-OU1-61-A

MW-OU1-88-A

MW-OU1-87-A will be restarted to collect the sample and shut down after the sample is collected. Although the March 2014 NWTS effluent sample results were nondetect for all analytes, the midpoint sample showed TCE at 0.9 micrograms per liter. This indicates that TCE is not completely removed by the lead treatment vessels. Consequently, samples will also be collected from the NWTS midpoint and effluent locations in June.

### **Reporting/Federal Facility Agreement Schedule**

All scheduled submittals have been made for primary and secondary deliverables. The status of submitted and anticipated reports for 2014 is summarized in Table 2. The Draft UFP-QAPP for Operable Unit (OU)-1 was submitted 04 March 2014. Comments were received only from the DTSC during the comment period (ended 05 May 2014). The DTSC comments were limited to updating the DTSC point of contact, therefore replacement pages for the final QAPP were sent out on 29 May 2014. The Draft 2014 Semiannual Groundwater Monitoring Report was submitted on 28 May 2014.

### **OU-1 Weed Control and Rare Plant Monitoring**

The U.S. Fish and Wildlife Service required that the third year of rare plant monitoring be completed at the former well destruction sites and this survey was completed between 25 April 2014 and 02 May 2014. Additional monitoring will be performed during the well destruction effort at well sites to be destroyed within the Fort Ord Natural Reserve.

### **Uniform Federal Policy-Quality Assurance Project Plan**

The Final UFP-QAPP for OU-1 was submitted 29 May 2014.

## **Site Exit/Closure Strategy**

TCE concentrations have met or are approaching the aquifer cleanup level at all OU-1 monitoring wells. The strategy is based on demonstrating that the cleanup objectives of the Record of Decision (ROD) regarding human health protectiveness have been met and, therefore, the ROD cleanup goals have been attained. A technical memorandum will be prepared to present the case for OU-1 closure based on cleanup progress to date. The human health risk corresponding to Chemical of Concern concentrations observed at the site have met the human health protectiveness objectives for several years. The technical memorandum will include recommendations for performing attainment monitoring that incorporate existing data to the maximum extent. The memorandum will be presented to the regulators for review and comment.

## **Well Destruction and Treatment Plant Demolition**

The well destruction effort began on 13 May 2014. As of 10 June 2014, 24 of the 82 wells have been destroyed and 25 other wells have been grouted but the surface features still remain. During well destruction activities an obstruction was encountered at approximately 60 below ground surface at monitoring well MW-18-03-180. If this obstruction cannot be cleared then over-drilling will be required at this location. The Right of Entry for the Armstrong Ranch property has not yet been obtained and the timetable for destroying these wells and excavating the associated pipeline is uncertain. The treatment plant demolition is scheduled to begin in late June.

Buckwheat and Monterey spineflower were identified near several wells in the Fort Ord Dunes State Park. At most locations these plants can be avoided. However, at locations where Monterey spineflower cannot be avoided the proposed mitigation strategy is two-fold 1) remove only top foot of casing and 2) segregate top 6 inches of soil and replace it as the surface layer after the well destruction is complete. Where Buckwheat cannot be avoided at well sites, the well casing and infrastructure were cut off at the ground surface and no excavation was performed. Where possible, the vehicles used to perform the well destruction will avoid Buckwheat present in the access road(s). If necessary, road mats will be placed over the spineflower to mitigate the potential impact.

Work began at the Fort Ord Dunes State Park on 27 May 2014 and was completed on schedule on 10 June. During work activities there were two incidents where Buckwheat plants along access roads were slightly damaged. Corrective actions were implemented—including adding a second onsite biologist to expand the oversight of field activities—and work in the State Park was completed with no further damage to roadside Buckwheat plants.

As noted in the Demolition Work Plan, liquids are present in one holding tank and one 55-gallon drum at the original treatment plant located in the Fort Ord Natural Reserve (FONR). These liquids are believed to be rainwater or derived from former OU-1 treatment operations. The EPA, DTSC, and RWQCB agreed that these liquids could be taken to the NWTs for treatment and that no samples were needed to characterize the liquids.

The EPA, DTSC, and RWQCB also agreed that well MW-BW-61-A could be destroyed as part of the ongoing well destruction project—this well has been inadvertently damaged by construction operations at the site.

**Action Items:**

- The Army will obtain Right of Entry agreements for Armstrong Ranch – in progress.
- Complete well demolition project and begin treatment plant demolition – in progress.
- Continue to notify appropriate parties prior to well destruction – ongoing.
- HGL will prepare a technical memorandum to present the case for OU-1 closure in accordance with the strategy described above.

**Ongoing:**

- Submit draft minutes for previous Base Closure Team (BCT) meeting(s)—the draft minutes complete through May. Draft minutes for the April meeting were submitted for regulatory review. Draft minutes for the May meeting were submitted on 27 June 2014.
- Submit approved final minutes for previous BCT meeting(s) — complete through March 2014.

**Fort Ord HTW BCT Meeting  
18 June 2014**

**Fort Ord Operable Unit 1  
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning**

**ATTACHMENT 1**

Table 1A

TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring

BCT Meeting for Former Fort Ord – 18 June 2014

Began:	FONR Extraction Well (listed from south to north)					Boundary Extraction Well (from west to east)				NWTS											
	Nov-10	Oct-07				Jul-06				INFLUENT	MIDPOINT	EFFLUENT									
Date	IW-10	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62												
TCE (µg/L)																					
11/9/07	Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010.	<b>16</b>		<b>13</b>		<b>19</b>		<b>14</b>		ND	ND	1.7		ND	<b>11</b>		ND		ND		
1/18/08		<b>11</b>		<b>11</b>		<b>8.9</b>		<b>8.2</b>		ND	ND	1.2		ND	<b>6.0</b>		ND		ND		
3/18/08		<b>11</b>		<b>14</b>		<b>6.7</b>		<b>5.8</b>		ND	0.29	1.5		ND	<b>5.6</b>		ND		ND		
5/27/08		<b>9.7</b>		<b>18</b>		2.5		<b>6.1</b>		ND	ND	1.8		ND	3.9		ND		ND		
7/21/08		<b>9.1</b>		<b>14</b>		4.4		3.4		ND	0.78	1.4		ND	3.6		ND		ND		
9/29/08		<b>9.3</b>	J	<b>15</b>	J	4.3	J	2.9	J	ND	0.90	J	1.7	J	ND	3.8	J	0.19	J	ND	
12/1/08		<b>5.8</b>		<b>11</b>		2.6		1.6		ND	0.82		0.91		ND	2.7		0.35	J	ND	
1/26/09		<b>5.9</b>		<b>10</b>		2.2		1.2		ND	0.48	J	0.78		ND	2.4		ND		ND	
3/9/09		<b>5.8</b>		<b>9.9</b>		2.1		1.2		ND	0.95		0.86		ND	2.7		ND		ND	
6/11/09		<b>6.9</b>		<b>11</b>		2.4		1.5		ND	0.88		1.7		ND	2.6		0.14	J	ND	
9/15/09		<b>6.8</b>		<b>9.4</b>		1.7		0.78		ND	inactive		1.1		0.036	J	2.3		0.35	J	ND
12/14/09		<b>6.9</b>		<b>7.5</b>		0.84		not sampled		not sampled	inactive		0.94		not sampled	2.3		0.65	J	ND	
3/22/10		<b>7.2</b>		<b>8.5</b>		0.62		0.55		inactive	ND		0.90		inactive	2.3		ND		ND	
6/21/10		<b>7.4</b>		<b>6.5</b>		0.90		0.40	J	inactive	0.86		0.58		inactive	2.1		ND		ND	
9/20/10		<b>7.7</b>		<b>6.6</b>		0.83		0.35	J	discontinued	0.63		0.49	J	inactive	2.3		not sampled		ND	
12/16/10		<b>5.2</b>		<b>6.9</b>		<b>5.2</b>		0.58	J	discontinued	0.72		0.42	J	inactive	2.6		0.18	J	ND	
3/7/11		<b>5.1</b>		<b>6.0</b>		4.6		0.55		0.60	discontinued		0.87		0.42	J	inactive	2.5		0.59	ND
6/7/11		4.2		<b>6.1</b>		4.0		0.78		0.63	discontinued		0.76		0.36	J	inactive	2.6		1.0	ND
9/20/11		4.5		<b>6.2</b>		4.2		1.10		0.38	J	discontinued	0.57		0.36	J	inactive	2.5		1.7	ND
12/7/11		3.8		<b>5.1</b>		3.7		not sampled			discontinued	inactive		0.27	J	inactive	1.8		2.1		0.13
3/15/12	3.7		<b>5.5</b>		3.8		0.70		0.23	J	discontinued	inactive		0.38	J	inactive	0.81		0.32	J	ND
9/25/12	--		<b>5.3</b>		4.4		--		--	discontinued	inactive		0.19	J	inactive	1.8		0.72	J	ND	
1/8/13	--		<b>5.4</b>		--		--		--	discontinued	ND		0.19	J	inactive	1.5		--		ND	
3/27/13	--		4.8		--		--		--	discontinued	ND		0.23	J	inactive	1.5		--		ND	
6/26/13	--		4.4		--		--		--	discontinued	--		--		inactive	1.7		--		ND	
9/18/13	--		4.7		1.9		--		--	discontinued	0.17	J	0.31	J	inactive	2.0		--		ND	
12/17/13	2.8		4.2		--		--		--	discontinued	--		--		inactive	2.1		--		--	
3/27/14	--		3.4	A	0.89	A	--		--	discontinued	0.22	J/A	0.29	J/A	inactive	1.7		0.92	J/A	ND	A
Notes:		<b>Italics (if used) indicate data not yet validated</b>					<b>Bold font indicates concentration &gt; ACL</b>														
ACL - aquifer cleanup level		--- Not sampled					µg/L - micrograms per liter				J - Data qualified as estimated										
ND - nondetect		TCE - trichloroethene					NWTS - Northwest Treatment System				FONR - Fort Ord Natural Reserve										
Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.																					

**Table 1B**

**cis-1,2-DCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring**

**BCT Meeting for Former Fort Ord – 18 June 2014**

Began:	FONR Extraction Well (listed from south to north)						Boundary Extraction Well (from west to east)						NWTS																				
	Nov-10	Oct-07					Jul-06																										
Date	IW-10	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62	INFLUENT	MIDPOINT	EFFLUENT																					
<b>cis-1,2-DCE (µg/L)</b>																																	
11/09/07		1.9		1.6		2.3		1.70		ND		ND		1.3		ND		ND															
01/18/08		1.20		1.40		1.00		1.20		ND		ND		0.11		ND		ND															
03/18/08		1.20		1.50		0.74		0.63		ND		ND		ND		0.59		0.11	ND														
05/27/08		0.88		2.10		0.26		0.74		ND		ND		ND		0.36		0.21	ND														
07/21/08		0.80		1.50		0.52		0.37		ND		ND		ND		0.41		0.34	ND														
09/29/08		0.99		1.60		0.54		0.30		ND		ND		0.13		ND		0.42	0.12														
12/01/08		0.67		1.30		0.33		0.21	J	ND		ND		ND		ND		0.27	J 0.37 J 0.19 J														
01/26/09		0.63		1.20		0.29	J	0.12	J	ND		ND		ND		ND		0.26	J 0.24 J ND														
03/09/09		0.62		1.20		0.29	J	0.13	J	ND		ND		ND		ND		0.23	J 0.26 J ND														
06/11/09		0.71		1.10		0.30	J	0.13	J	ND		ND		0.14	J	ND		0.24	J 0.28 J ND														
09/15/09		0.80		1.00		0.22	J	0.08	J	ND		inactive		0.03	J	ND		0.22	J 0.37 J 0.03 J														
12/14/09		0.67		0.65		0.10	J	not sampled		not sampled		inactive		ND	J	not sampled		0.21	J 0.30 J 0.11 J														
03/22/10		0.67		0.79		ND		ND		ND		inactive		ND		inactive		0.20	J 0.11 J 0.13 J														
06/21/10		0.67		0.53		0.14	J	ND		inactive		ND		ND		inactive		0.20	J 0.23 J ND														
9/20/10		0.66		0.46	J	ND		ND		discontinued		ND		ND		inactive		0.23	J not sampled ND														
12/16/10	0.55	0.66		0.35	J	ND	J	ND		discontinued		ND		ND		inactive		0.27	J 0.28 J ND														
3/7/11	0.37	J	0.52		0.28	J	0.11	J	ND	discontinued		ND		ND		inactive		0.23	J 0.30 J ND														
6/7/11	0.35	J	0.55		0.29	J	ND		ND	discontinued		ND		ND		inactive		0.18	J 0.31 J 0.15 J														
9/20/11	0.25	J	0.46	J	0.21	J	ND		ND	discontinued		ND		ND		inactive		0.17	J 0.19 J 0.30 J														
12/7/11	0.27	J	0.48	J	0.19	J	not sampled			discontinued		inactive		ND		inactive		0.16	J 0.17 J 0.23 J														
3/15/12	0.15	J	0.40	J	0.22	J	0.15	J	ND	discontinued		inactive		ND		inactive		ND	0.24 J ND														
9/25/12	--		0.39	J	0.23	J	--		--	discontinued		inactive		ND		inactive		ND	0.24 J ND														
1/8/13	--		0.35	J	--		--		--	discontinued		ND		ND		inactive		0.12	-- --														
3/27/13	--		0.34	J	--		--		--	discontinued		ND		ND		inactive		0.12	-- --														
6/26/13	--		0.31	J	--		--		--	discontinued		--		--		inactive		0.27	-- --														
9/18/13	--		ND		ND		--		--	discontinued		ND		ND		inactive		ND	-- ND														
12/17/13	ND		0.19	J	--		--		--	discontinued		--		--		inactive		0.23	-- --														
3/27/14	--		0.16	J/A	--		--		--	discontinued		ND	A	ND	A	inactive		0.21	ND A ND A														
Notes:														<b>Italics (if used) indicate data not yet validated</b>					<b>Bold font indicates concentration &gt; ACL</b>														
ACL - aquifer cleanup level														---					Not sampled					µg/L - micrograms per liter					J - Data qualified as estimated				
ND - nondetect														TCE - trichloroethene					NWTS - Northwest Treatment System					FONR - Fort Ord Natural Reserve									
														Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.																			

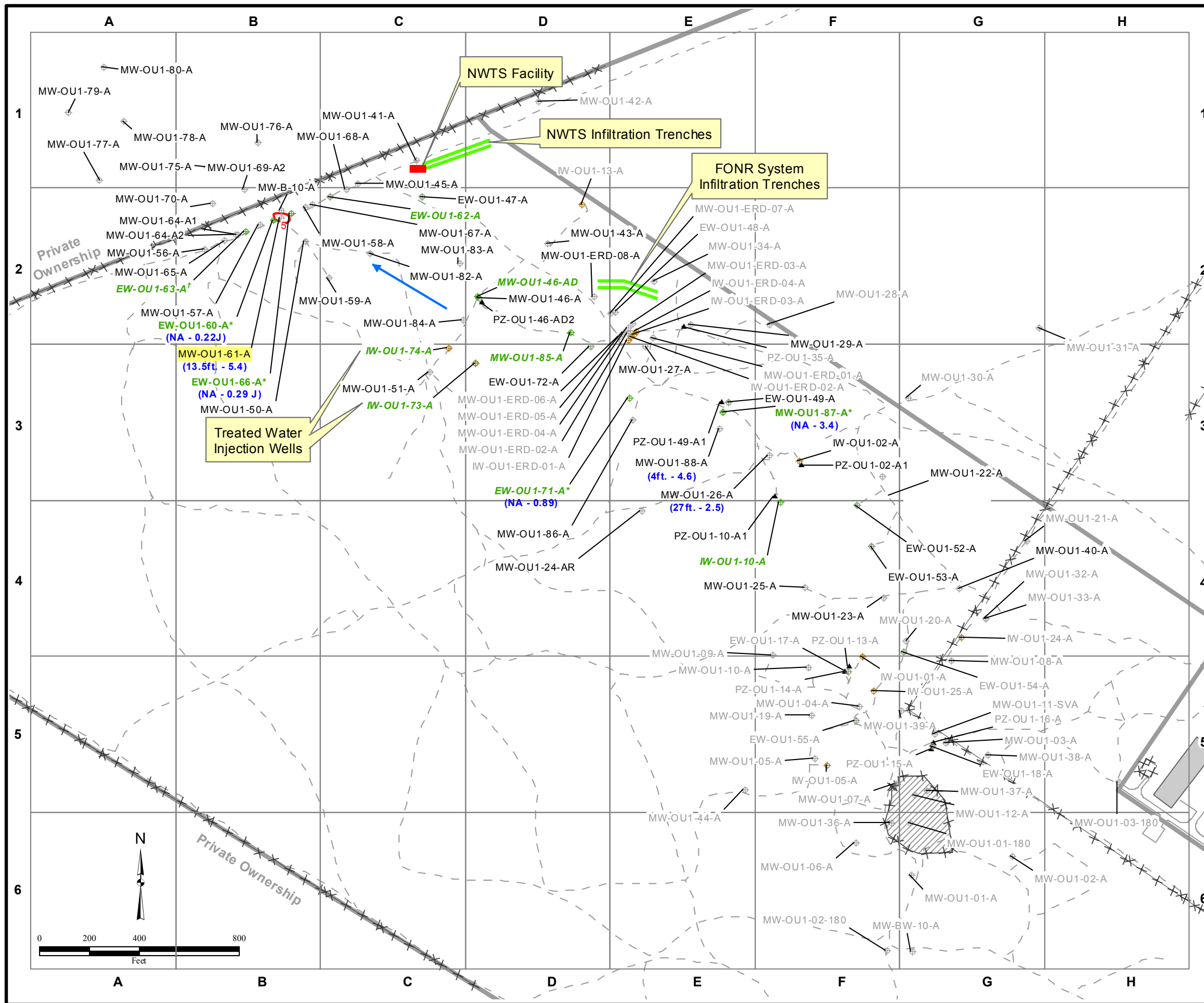
**Table 2**  
**Current Deliverable Schedule**  
**Former Fort Ord, Marina, California – 18 June 2014**

<b>Deliverable Title</b>	<b>Submittal</b>	<b>Review Comments Due</b>	<b>Status/Remarks</b>
<i>Primary Deliverables</i>			
Final UFP-QAPP	May 2014	Received	Submitted 29 May 2014
<i>Secondary Deliverables</i>			
Final 2014 Semiannual Groundwater Monitoring Report	June 2014	August 2014	Submitted 25 June 2014*
Draft Well Destruction and Treatment Plant Demolition Completion Report	August 2014	September 2014	Fieldwork to be completed in July 2014.
Draft Health & Safety Plan – OU-1 O&M/LTM	May 2014	Received	Draft accepted as Final.
<i>Completed Recent Submittals</i>			
Final Memorandum for Record for Optimizing Remediation Pumping	March 2012	February 2012	Accepted as final during July 2012 BCT meeting.
Draft 2012 Annual and 3 <sup>rd</sup> Quarter Groundwater Monitoring Report	December 2012	NA	Submitted 31 December 2012. Waiting for agency comments.
Final 2012 Annual and 3 <sup>rd</sup> Quarter Groundwater Monitoring Report	March 2013	NA	Submitted 21 March 2013.
2013 First Quarter Groundwater Monitoring Report	June 2013	August 2013	Submitted 1 July 2013.
Preliminary Draft Work Plan for Well Destruction and Treatment Plant Demolition	5 November 2013	19 November 2013	Army comments addressed.
Preliminary Draft Health & Safety Plan – Well Destruction and Treatment Plant Demolition	5 November 2013	19 November 2013	Army comments addressed.
Preliminary Draft Health & Safety Plan – OU-1 O&M / LTM	5 November 2013	19 November 2013	Army comments addressed
Draft 2013 Annual and 3 <sup>rd</sup> Quarter Groundwater Monitoring Report	January 2014	March 2014	Submitted 17 January 2014.
Preliminary Draft UFP-QAPP	26 November 2013	10 December 2013	Army comments addressed.
Draft UFP-QAPP	March 2014	May 2014	Submitted 04 March 2014
Draft Work Plan for Well Destruction and Treatment Plant Demolition	February 2014	April 2014	Submitted 11 February 2014
Final 2013 Annual and 3 <sup>rd</sup> Quarter Groundwater Monitoring Report	April 2014	NA	Submitted 04 April 2014
Final Work Plan for Well Destruction and Treatment Plant Demolition	April 2014	NA	Submitted 04 April 2014

\*Submitted after BCT meeting



**Figure 6**  
**OU-1 FONR A-Aquifer**  
**TCE Concentration in Groundwater**  
**March 2014**  
**Former Fort Ord, CA**



**Legend**

- ⊕ Well
- ⊕ Extraction Well
- ⊕ Injection Well
- ▲ Piezometer or 2-Inch Well
- Groundwater Flow Direction
- ⊕ MW-OU1-21-A Well Destroyed
- MW-OU1-88-A Location with March 2013 TCE Concentrations at or above ACL (5 µg/L)
- (13.5ft - 13) March 2014 Latest TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- 5 TCE contour based on March 2014 Data
- - - Trail/Unimproved Road
- × Fence
- Treated Water Infiltration Trench
- Property Boundary
- ▭ Building
- ▨ Former Fire Drill Area

**Notes:**  
 Units of TCE concentration are in micrograms per liter.  
 FONR = Fort Ord Natural Reserve  
 NWTS = Northwest Treatment System  
 ACL = Aquifer Cleanup Level  
 ND = nondetect  
 NA = Depth is not applicable - sample is from pumping well  
 µg/L = micrograms per liter  
 Wells shown with an asterisk were not used to develop contour boundaries.  
 Wells for which no data are posted were not sampled.  
 J = Estimated value  
 Green font indicates extraction or injection well.  
 Italicized font shows pumping suspended.  
 † = Disconnected extraction well. No longer operable.

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 5/8/2014 PD  
 Source: HGL