Final Minutes
Former Fort Ord – Operable Unit (OU)-1
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning
Marina, California
Base Closure Team Meeting
13 November 2014

OU-1 On-Post Activities for October 2014

Prepared by HydroGeoLogic, Inc., Roy Evans, Project Manager

Attendees: (to be revised after meeting)

Individual	Attended?	Individual	Attended?
James Specht, USACE		Grant Himebaugh, RWQCB	X
Teresa Rodgers, USACE	X	Edward Ticken, AMEC	X
Alex Kan, USACE	X	Jeff Fenton, AMEC	X
Bonnie McNeil, USACE		Derek Lieberman, Ahtna	X
Cory Koger, USACE	X	Brad Clark, Ahtna	X
William Collins, BRAC	X	Holly Dillon, Ahtna	X
Tom Ghigliotto, Chenega[1]	X	Kevin Ghalambor, Burleson	X
Melissa Broadston, Chenega[1]	X	Peter Kelsall, CB&I	
Bart Kowalski, Chenega[1]	X	Steve Crane, Gilbane	
Cary Stiebel, Chenega[1]		Erin Caruso, Gilbane	X
Lewis Mitani, EPA	X	Lindsay Alexander, Gilbane	X
Martin Hausladen, EPA	X	Larry Friend, Gilbane	
Kimberly Gettman, DTSC		Kevin Siemann, Gilbane	
Franklin Mark, DTSC		Roy Evans, HGL	X
Min Wu, Ph.D., DTSC	X	Kevin Wierengo, HGL	
Edward Walker, DTSC		Sean McStay, UCSC	
Steve Sterling, DTSC	X		
X = attended in person or by telephone; blank indicates absent from the meeting			

[1]Chenega staff supporting the BRAC
Ahtna = Ahtna Engineering Services
BRAC = Base Realignment and Closure Fort Ord Office
CB&I = Chicago Bridge & Iron, Inc.
DTSC = California Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
HGL = HydroGeoLogic, Inc.
RWQCB = Regional Water Quality Control Board
UCSC = University of California, Santa Cruz
USACE = U.S. Army Corps of Engineers

OU-1 Treatment Plant Operations

HGL reported that the treatment plant remained off-line pending repairs. The Base Closure Team (BCT) was informed at the October BCT meeting that the Northwest Treatment System (NWTS) shut down at approximately 1 a.m. on 15 October 2014. The cause of the shutdown was a short circuit in the SMART meter. PG&E has temporarily disconnected power to the plant pending replacement of the faulty equipment. As agreed at the October BCT meeting, the plant will remain offline pending review of the results from the upcoming December sampling

event. After power is restored, we will determine if there was any damage to the NWTS electrical equipment and/or process control system and make any necessary repairs to restore operability.

Since system startup in 2006, the NWTS has pumped approximately 212 million gallons of groundwater and removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE).

OU-1 Groundwater Quality Data

Tables 1A and 1B show the validated TCE and cis-1,2-dichloroethene concentrations, respectively, found in the extraction wells and treatment system in the September 2014 sampling event. All validated TCE results in monitoring wells from that sampling event are presented on Table 2. A Figure showing the September 2014 TCE concentrations is included for reference in Attachment 1. The next planned sampling event is in December 2014.

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 3. The proposed attainment sampling well location network and sampling schedule, as well as consideration of emerging contaminants were discussed during the September BCT meeting. Preliminary comments and additional EPA guidance concerning implementation of groundwater monitoring to support remedy complete evaluations were provided by the BCT on 05 November 2014. The Draft OU-1 Exit Strategy Technical Memorandum will be prepared after reviewing the new guidance information and submitted for regulatory agency comment. Additional information concerning the Exit Strategy and emerging contaminants is included in Attachment 2 to facilitate further discussion during this meeting.

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 was performed in May and June during the well destruction effort at well sites destroyed within the Fort Ord Natural Reserve (FONR). The 2014 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results Report was submitted to the Army for distribution on 10 October 2014.

Site Exit/Closure Strategy

Based on data from the September sampling event, TCE concentrations have met the aquifer cleanup level at all OU-1 monitoring wells. The exit 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. The human health risk corresponding to Chemical of Concern concentrations observed at the site have met the human health protectiveness objectives for several years.

An OU-1 Exit Strategy Technical Memorandum is being prepared to present the case for OU-1 closure based on cleanup progress to date. The technical memorandum will include recommendations for performing attainment monitoring that incorporate existing data to the maximum extent. Selected topics from the technical memorandum are summarized in Attachment 2 to facilitate discussion during the BCT meeting.

The information presented in Attachment 2 was discussed during the meeting. The BCT participants concurred that the Draft Exit Strategy Technical Memorandum may reflect the following approach:

- Monthly sampling is acceptable for attainment monitoring
- The decision tree for performing sampling for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) is acceptable.
- EPA Method 537, Version 1.1 is an acceptable method for analyzing PFOS and PFOA samples. The suitability of this method will be discussed with the Army and the analytical laboratory pending final selection. The selected method should be consistent with EPA guidance.

The Army is preparing the Draft Exit Strategy Technical Memorandum to reflect the relevant EPA guidance and the elements of the approach identified above.

Well Destruction and Treatment Plant Demolition

Well destruction within OU-1 is complete pending review of attainment monitoring results.

Action Items:

- HGL will respond to regulatory agency and public comments on Draft OU-1 Exit Strategy Technical Memorandum.
- Determine the submittal schedule for the Draft Exit Strategy Technical Memorandum.

Ongoing:

- Submit draft minutes for previous BCT meeting(s)—complete through September 2014.
- Submit approved final minutes for previous BCT meeting(s) — complete through September 2014.

Fort Ord HTW BCT Meeting
13 November 2014

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

ATTACHMENT 1

Reference Table(s) and Figure(s)

Table 1A
TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT for Former Fort Ord – 22 October 2014

	FONR Extraction Well (listed from south to north)										Boundary Extraction Well (from west to east)								NWTS					
Began:	**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**	
TCE (µg/L)																								
11/9/07	Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010.		**16**		**13**		**19**		**14**		ND		ND		1.7		ND		**11**		ND		ND	
1/18/08			**11**		**11**		**8.9**		**8.2**		ND		ND		1.2		ND		**6.0**		ND		ND	
3/18/08			**11**		**14**		**6.7**		**5.8**		ND		0.29		1.5		ND		**5.6**		ND		ND	
5/27/08			**9.7**		**18**		2.5		**6.1**		ND		ND		1.8		ND		3.9		ND		ND	
7/21/08			**9.1**		**14**		4.4		3.4		ND		0.78		1.4		ND		3.6		ND		ND	
9/29/08			**9.3**	J	**15**	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			**5.8**		**11**		2.6		1.6		ND		0.82		0.91		ND		2.7		0.35	J	ND	
1/26/09			**5.9**		**10**		2.2		1.2		ND		0.48	J	0.78		ND		2.4		ND		ND	
3/9/09			**5.8**		**9.9**		2.1		1.2		ND		0.95		0.86		ND		2.7		ND		ND	
6/11/09			**6.9**		**11**		2.4		1.5		ND		0.88		1.7		ND		2.6		0.14	J	ND	
9/15/09			**6.8**		**9.4**		1.7		0.78		ND		inactive		1.1		0.036	J	2.3		0.35	J	ND	
12/14/09			**6.9**		**7.5**		0.84		not sampled		not sampled		inactive		0.94		not sampled		2.3		0.65	J	ND	
3/22/10			**7.2**		**8.5**		0.62		0.55		inactive		ND		0.90		inactive		2.3		ND		ND	
6/21/10			**7.4**		**6.5**		0.90		0.40	J	inactive		0.86		0.58		inactive		2.1		ND		ND	
9/20/10			**7.7**		**6.6**		0.83		0.35	J	discontinued		0.63		0.49	J	inactive		2.3		not sampled		ND	
12/16/10	**5.2**		**6.9**		**5.2**		0.58		0.28	J	discontinued		0.72		0.42	J	inactive		2.6		0.18	J	ND	
3/7/11	**5.1**		**6.0**		4.6		0.55		0.60		discontinued		0.87		0.42	J	inactive		2.5		0.59		ND	
6/7/11	4.2		**6.1**		4.0		0.78		0.63		discontinued		0.76		0.36	J	inactive		2.6		1.0		ND	
9/20/11	4.5		**6.2**		4.2		1.10		0.38	J	discontinued		0.57		0.36	J	inactive		2.5		1.7		ND	
12/7/11	3.8		**5.1**		3.7		not sampled				discontinued		inactive		0.27	J	inactive		1.8		2.1		0.13	J
3/15/12	3.7		**5.5**		3.8		0.70		0.23	J	discontinued		inactive		0.38	J	inactive		0.81		0.32	J	ND	
9/25/12	--		**5.3**		4.4		--		--		discontinued		inactive		0.19	J	inactive		1.8		0.72	J	ND	
1/8/13	--		**5.4**		--		--		--		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
6/27/14	--		3.7		--		--		--		discontinued		--		--		inactive		0.28		0.39	J	ND	
9/2/14	2.2		4.2		0.88		--		--		discontinued		0.25	J	0.26	J	inactive		1.0		0.41	J	ND	

Notes:

Italics (if used) indicate data not yet validated

Bold font indicates concentration > ACL

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 for Former Fort Ord – 22 October 2014

	FONR Extraction Well (listed from south to north)										Boundary Extraction Well (from west to east)										NWTS					
Began:	**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**	
cis-1,2-DCE (µg/L)																										
11/09/07	Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010.		1.9		1.6		2.3		1.70		ND		ND		ND		ND		1.3		ND		ND			
01/18/08			1.20		1.40		1.00		1.20		ND		ND		0.11		ND		0.66		ND		ND			
03/18/08			1.20		1.50		0.74		0.63		ND		ND		ND		ND		0.59		0.11		ND			
05/27/08			0.88		2.10		0.26		0.74		ND		ND		ND		ND		0.36		0.21		ND			
07/21/08			0.80		1.50		0.52		0.37		ND		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		0.42		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		inactive		ND		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		
6/27/14	--		ND		--		--		--		discontinued		--		--		inactive		ND		0.43	J	0.17	J		
9/2/14	ND		0.21	J	ND		--		--		discontinued		ND		ND		inactive		ND		0.48	J	ND			

Notes:

Italics (if used) indicate data not yet validated

Bold font indicates concentration > ACL

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

NA - Not Available

Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.

Table 2
Validated OU-1 Sampling Results for September 2014

Sample Point	Location	TCE	
		µg/L	Qualifier
Treatment plant			
NWTS-Influent	Treatment Plant	1.0	
NWTS-Midpoint	Treatment Plant	0.41	J
NWTS-Effluent	Treatment Plant	ND	
Extraction wells			
EW-OU1-60-A*	NW Boundary	0.25	J
EW-OU1-66-A*	NW Boundary	0.26	J
EW-OU1-71-A*	Central FONR	0.88	
MW-OU1-87-A*	Central FONR	4.2	
IW-OU1-10-A*	Central FONR	2.2	
Monitoring wells			
MW-OU1-58-A	NW Boundary	ND	
MW-OU1-57-A	NW Boundary	ND	
MW-OU1-61-A	NW Boundary	4.7	
MW-OU1-61-A	Duplicate	4.0	
EW-OU1-72-A	Central FONR	0.78	
MW-OU1-86-A	Central FONR	0.42	J
PZ-OU1-49-A1	Central FONR	1.2	
MW-OU1-88-A	Central FONR	4.7	
MW-OU1-26-A	Central FONR	2.7	
PZ-OU1-10-A1	Central FONR	2.4	
EW-OU1-52-A	Central FONR	2.9	
EW-OU1-53-A	Central FONR	1.9	

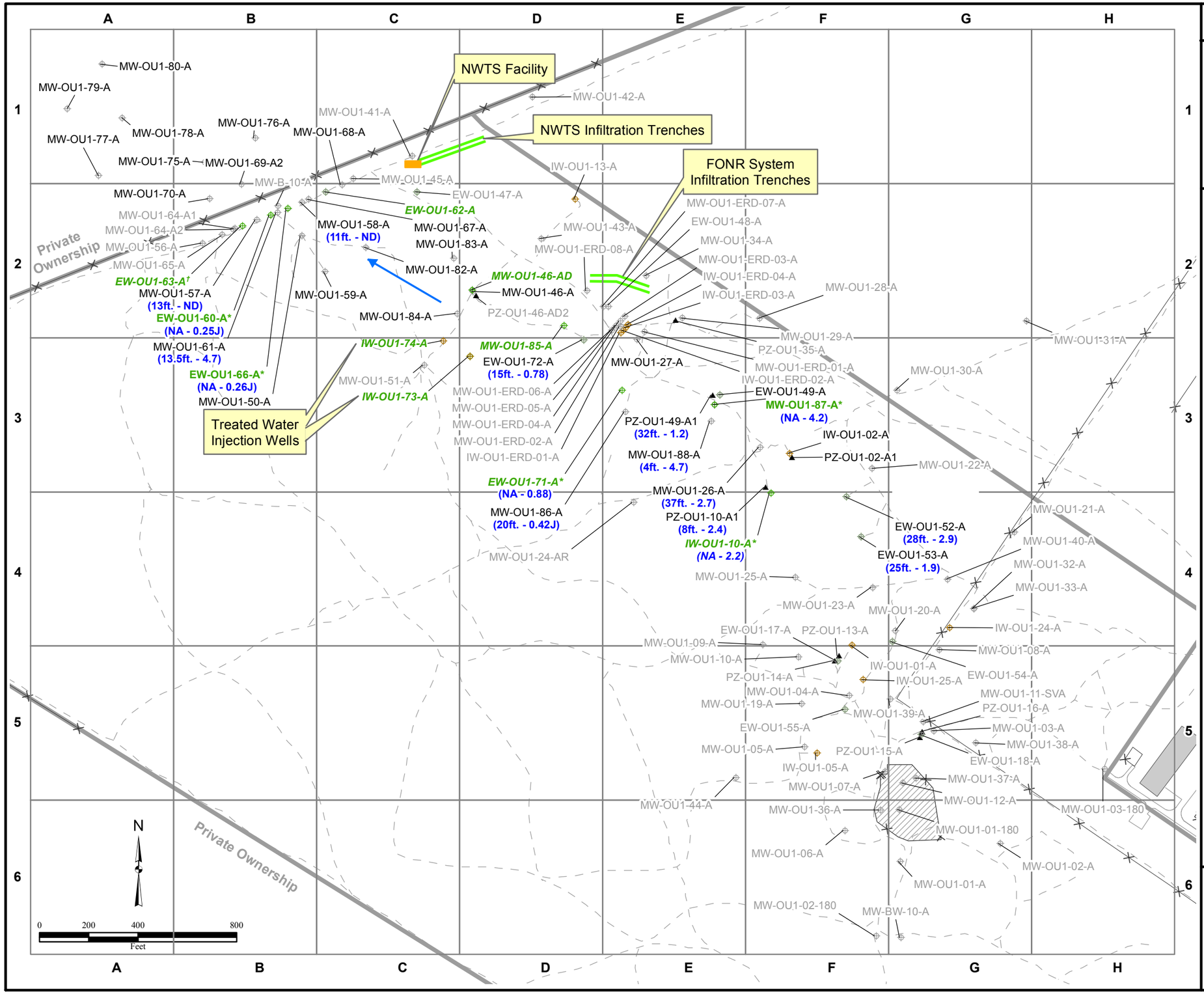
* Operating extraction well - samples collected from port on discharge pipe.
µg/L = micrograms per liter
FONR = Fort Ord Natural Reserve
ND = nondetect
TCE = trichloroethene

Table 3
Current Deliverable Schedule
Former Fort Ord, Marina, CA – 13 November 2014

Deliverable Title	Submittal	Review Comments Due	Status/Remarks
Primary Deliverables			
Final UFP-QAPP	May 2014	Received	Submitted 29 May 2014
Secondary Deliverables			
Final 2014 Semiannual Groundwater Monitoring Report	June 2014	August 2014[1]	Submitted 25 June 2014
Draft 2014 Annual Groundwater Monitoring Report	November 2014	December 2014	In progress
Draft Exit Strategy Technical Memorandum	October 2014	December 2014	In progress
Site Safety and Health Plan Update	September 2014	TBD	
UFP-QAPP 2014 Update	TBD	TBD	To be scheduled after determination of cleanup attainment monitoring sampling requirements
Completed Recent Submittals			
Preliminary Draft Health & Safety Plan – OU-1 O&M / LTM	5 November 2013	19 November 2013	Army comments addressed
Draft 2013 Annual and 3rd Quarter Groundwater Monitoring Report	January 2014	March 2014	Submitted 17 January 2014
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 3rd 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
Draft Health & Safety Plan – OU-1 O&M/LTM	May 2014	Received	Draft accepted as Final
Draft Well Destruction and Treatment Plant Demolition Completion Report	August 2014	September 2014	Draft accepted as Final Submitted 03 October 2014

[1] The Semiannual Groundwater Monitoring Report is submitted as a final document but review comments are accepted. Any comments are addressed in the Annual Groundwater Monitoring Report.

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



Legend

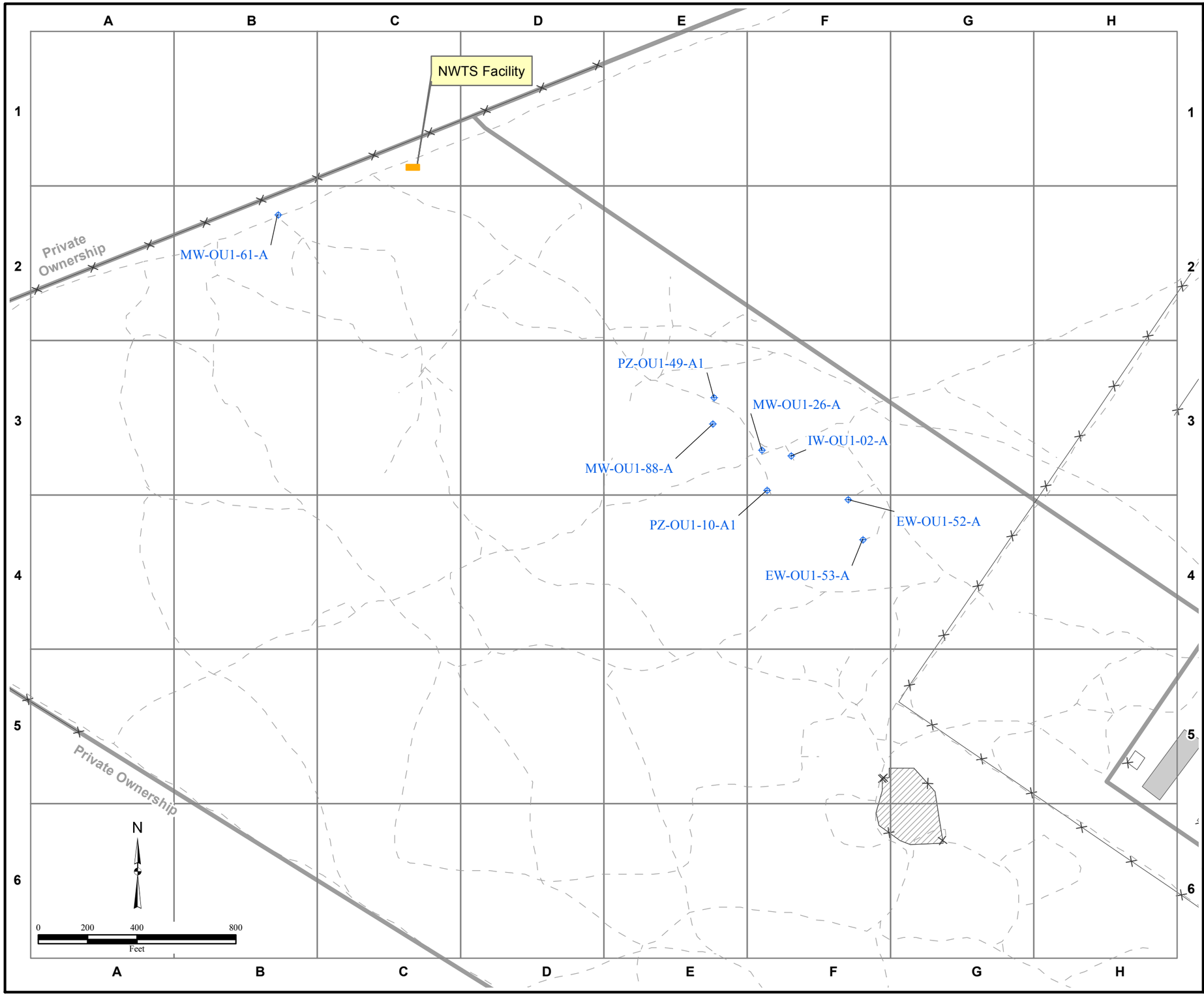
- Well
- Extraction Well
- Injection Well
- Piezometer or 2-Inch Well
- Groundwater Flow Direction
- MW-OU1-21-A — Well Destroyed
- MW-OU1-61-A — Location with September 2014 TCE Concentrations at or above ACL (5 µg/L)
- (13.5ft. - 13) — September 2014 TCE Result (µg/L); Sample Elevation (feet above mean sea level)
- 5 — TCE contour based on September 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.

\\gst-srv-01\HGLGIS\Ft_Ord_MSIW\OU-1 Exit Startegy Technical Memorandum\ Fig. 1-1 FONR A-Aquifer TCE Groundwater Concentration.mxd
9/26/2014 SS
Source: HGL

HGL HydroGeoLogic, Inc

Figure 2
OU-1 Monitoring Well Verification Network Location
Former Fort Ord, CA



Legend

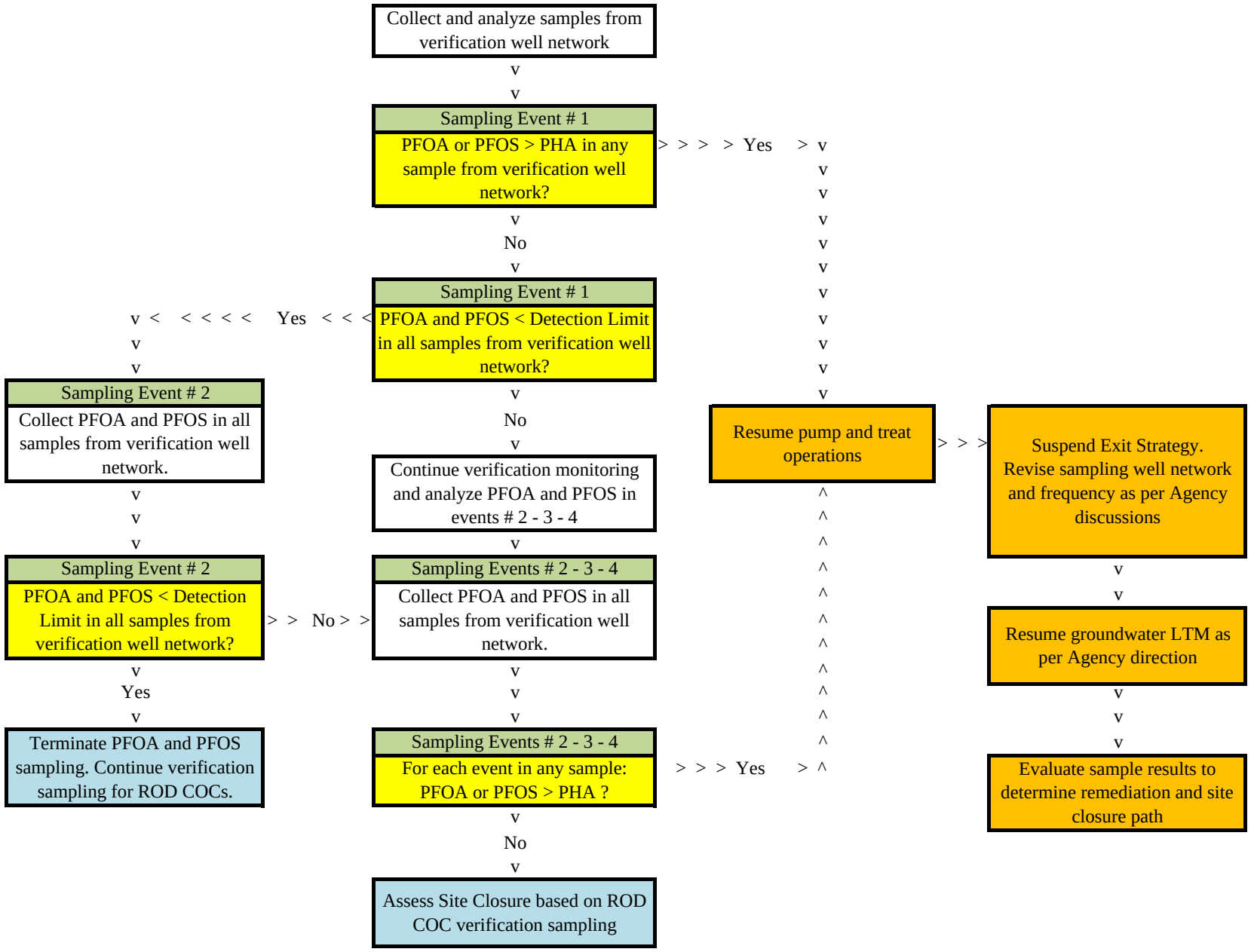
- Well
- Trail/Unimproved Road
- Fence
- Property Boundary
- Building
- Former Fire Drill Area

Note:
NWTS = Northwest Treatment System

\\gst-srv-01\HGLGIS\Ft_Ord_MSW\OU-1 Exit Startegy Technical Memorandum
Fig. 1-2 OU-1 Monitoring Well Verification Network Location.mxd
9/25/2014 SS
Source: HGL

HGL HydroGeoLogic, Inc

Figure 3
PFOA and PFOS Sampling Program for OU-1



Notes:
Agency: U.S. Environmental Protection Agency, California Department of Toxic Substance Control, and California Regional Water Quality Boar
COC - chemical of concern
LTM - long term monitoring
PFOA - Perfluorooctanoic Acid
PFOS - Perfluorooctane Sulfonate
PHA - Preliminary Health Advisory
ROD - Record of Decision
indicates decision point
PFOA or PFOS > PHA
PFOA and PFOS < PHA

Fort Ord HTW BCT Meeting
13 November 2014

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

ATTACHMENT 2

DISCUSSION POINTS

EXIT STRATEGY AND EMERGING CONTAMINANTS

DISCUSSION POINTS

EXIT STRATEGY AND EMERGING CONTAMINANTS

The following summary presents an overview of key elements of the proposed Exit Strategy based on the discussions held at the September Base Closure Team (BCT) meeting and review of the U.S. Environmental Protection Agency (EPA) guidance documents provided on 05 November 2014:

- U.S. Environmental Protection Agency, OSWER Directive 9200.2-144. Groundwater Remedy Completion Strategy, May 2014. EPA, 2014a).
- U.S. Environmental Protection Agency, OSWER Directive 9283.1-44. Recommended Approach for Evaluating Completion of Groundwater Restoration, August 2014. (EPA, 2014b).

The proposed strategy is based on the historic data from the OU-1 groundwater Long Term Monitoring (LTM) program and departs from the specific guidance (EPA, 2014b) in some cases—primarily in the number of samples used in assessing completion of the remediation monitoring (RM) and the attainment monitoring (AM) efforts. The Draft Exit Strategy Technical Memorandum will include supporting information to justify these departures. This approach is consistent with the guidance (EPA, 2014a—page 4), as noted below:

> **"This guidance does not alter or supersede existing CERCLA guidance (including existing policy regarding RAOs or cleanup levels).** While designed to promote a consistent national approach for implementing groundwater remedies to completion, the recommendations contained within this document are neither substitutions for CERCLA requirements or EPA's regulations, nor are they regulation themselves. EPA, federal, state, tribal and local decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate."

Proposed Attainment Monitoring

Monitoring wells that have shown long-term history of meeting the Aquifer Cleanup Levels (ACLs) specified in the Record of Decision (ROD), are located outside of historic plume boundaries, or do not merit further sampling were excluded from the attainment monitoring network. These wells are shown in Table 2. Figure 1 shows the results of the September 2014 sampling event for trichloroethene (TCE). The remaining 8 existing OU-1 monitoring wells are located along the main axis of plume migration and will serve as the attainment monitoring points. These wells are identified in Table 3 and shown on Figure 2.

The existing OU-1 pump and treat operation ceased on 15 October and will remain off-line pending review of each attainment monitoring event. Four samples from each well in the attainment monitoring network will be collected and analyzed for all OU-1 chemicals of concern (COC). The resulting data set will be analyzed for the average concentration and trend at each well. The results of that analysis will be evaluated to determine if attainment monitoring is complete.

The proposed attainment monitoring frequency is monthly. Please note this is a change from the every-other-month cycle discussed earlier. This frequency is the minimum acceptable frequency identified in the EPA guidance (EPA, 2014b).

Emerging Contaminants

During discussions with the regulatory agencies concerning the acceptability and implementation of the exit strategy described above, the agencies expressed concern that the compounds perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) may have been used during fire training activities at the OU-1 source area. These compounds have been used as part of fire-fighting foam and have been identified by the EPA as emerging contaminants. Information concerning the toxicity, fate, and transport characteristics for PFOS and PFOA is presented in Attachment D (EPA 2014b, 2014c). Although drinking water standards for these chemicals have not been established, EPA has developed Preliminary Health Advisory (PHA) standards for concentrations in groundwater (Attachment D). The PHAs for groundwater for PFOS and PFOA are 0.4 micrograms per liter (μg/L) and 0.2 μg/L, respectively. Although these compounds were not identified in the OU-1 ROD, the regulatory agencies stated that the attainment monitoring sampling program must include these potential contaminants in order to evaluate the case for OU-1 closure.

Consequently, the attainment monitoring network wells listed in Table 3 will also be sampled for PFOS and PFOA during either the December 2014 or January 2015 sampling event (depending upon the time required to revise the Quality Assurance Project Plan and obtain analytical laboratory support). If either compound is detected in any well at a concentration greater than the corresponding PHA during this sampling event, then the remediation effort will resume and PFOS and PFOA sampling will be extended as noted in the following paragraph. If neither compound is detected above the method detection limit in any sample, then a second (confirmation) set of samples and analysis for PFOS and PFOA will be performed in the next scheduled sampling event (in either January 2015 or February 2015). If the confirmation samples also show that all PFOS and PFOA concentrations are less than the corresponding method detection limit, then collection and analysis for PFOS and PFOA will be terminated. If either compound is detected in any well at a concentration less than the corresponding PHA during the confirmation sampling, then PFOS and PFOA sampling will be extended through four sampling periods. The decision logic described above is illustrated in Figure 3.

The PFOS and PFOA samples will be collected using low flow sampling methods and analyzed using EPA Method 537 or an alternative approved method with method detection limits less than the PHA concentrations. If the PFOS and PFOA concentrations in all samples are less than their corresponding PHA value, then site closure activities will be based on the results of the attainment monitoring for the COCs specified in the ROD. If the PFOS or PFOA concentration in any sample exceeds the corresponding PHA, then the pump and treat system will resume operation and the attainment monitoring sample results will be evaluated to develop an acceptable path forward to complete the OU-1 remediation effort and attain site closure.