

Former Fort Ord Operable Unit Carbon Tetrachloride Plume Data and Status

HTW BCT, February 2, 2018

Table 1. OUCTP EISB 3A VOC Results

Analyte:	Carbon Tetrachloride								
ACL:	0.5 µg/L								
Well Identification	Baseline	Month 1	Month 2	Month 3	Month 5	Month 6	Month 7	3Q 2017	4Q 2017
EW-BW-160-A	1.1 J+	0.86	0.66	0.60	1.3	1.0	1.0	0.64	0.83
EW-BW-161-A	0.84 J+	0.67	0.51	0.48 J	0.69	0.47 J	0.47 J	0.38 J	0.19 J
EW-BW-162-A	1.0 J+	0.72	0.59	0.56	0.41 J	0.28 J	0.18 J	ND (0.25)	ND (0.25)
EW-BW-163-A	1.2 J+	1.2	0.94	0.89	0.31 J	0.25 J	0.25 J	0.16 J	0.13 J
EW-BW-164-A	0.92 J+	0.73	0.61 J-	0.59	0.78	0.71	0.89	0.64	0.47 J
EW-BW-165-A	1.2 J+	1.1	0.83	0.82	0.13 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
EW-BW-166-A	1.7 J+	1.4	1.2	1.2	1.4	1.1	1.3	1.5	0.35 J
EW-BW-167-A	1.7 J+	1.4	1.1	1.4	1.1	0.71	0.66	0.43 J	0.22 J
EW-BW-168-A	1.3 J+	1.1	0.82	0.77	0.84	0.72	0.80	0.55	0.53
EW-BW-169-A	1.0 J+	0.68	0.63	0.67	0.73	0.42 J	0.80	0.51	0.38 J
MW-BW-16-A	0.60 J+	0.75	ND (0.25)						
MW-BW-57-A	0.45 J+	ND (0.25)	0.26 J	0.32 J	0.26 J	0.24 J	0.31 J	0.17 J	ND (0.25)
MW-BW-87-A	0.17 J+	ND (0.25)	0.29 J	0.65	0.61	0.34 J	1.6	0.16 J	0.42 J
MW-BW-91-A	ND (0.25)	1.3	0.84	2.3	0.50	0.28 J	0.55	0.59	4.3

Notes:
 There were no detections for either methylene chloride or trichloroethene
 ACL: Aquifer Cleanup Level
 ND: The analyte was not detected at or above the detection limit
 µg/L: micrograms per liter
 J: Estimated result with a possible low (-) or high bias (+)
 Results in **bold** and shaded are concentrations above the ACL
 Results in gray are ND

January 2018 Key Events for OUCTP

- None.

February 2018 Key Events for OUCTP

- None.



Table 1 (continued). OUCTP EISB 3A VOC Results

Analyte:	Chloroform									Chloromethane								
ACL:	2.0 µg/L									N/A								
Well Identification	Baseline	Month 1	Month 2	Month 3	Month 5	Month 6	Month 7	3Q 2017	4Q 2017	Baseline	Month 1	Month 2	Month 3	Month 5	Month 6	Month 7	3Q 2017	4Q 2017
EW-BW-160-A	0.15 J	ND (0.25)	ND (0.25)	0.13 J	0.18 J	0.20 J	0.19 J	0.18 J	0.16 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.13 J	ND (0.25)	ND (0.25)
EW-BW-161-A	0.13 J	ND (0.25)	ND (0.25)	ND (0.25)	0.14 J	0.18 J	0.15 J	0.14 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.44 J
EW-BW-162-A	0.13 J	ND (0.25)	0.15 J	0.15 J	0.17 J	ND (0.25)	0.40 J	ND (0.25)										
EW-BW-163-A	0.19 J	0.16 J	0.16 J	0.16 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.11 J	ND (0.25)	0.53	ND (0.25)	ND (0.25)	ND (0.25)	0.79	0.95	0.20 J	ND (0.25)
EW-BW-164-A	0.17 J	0.14 J	0.14 J	0.14 J	0.16 J	0.16 J	0.19 J	0.19 J	0.11 J	ND (0.25)	0.32 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.14 J	ND (0.25)	ND (0.25)
EW-BW-165-A	0.25 J	0.22 J	0.20 J	0.18 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.11 J	ND (0.25)	0.41 J	ND (0.25)	ND (0.25)	0.11 J	2.5	ND (0.25)	1.9	0.11 J
EW-BW-166-A	0.39 J	0.30 J	0.28 J	0.29 J	0.28 J	0.28 J	0.25 J	0.34 J	ND (0.25)	ND (0.25)	0.28 J	ND (0.25)						
EW-BW-167-A	0.30 J	0.25 J	0.25 J	0.26 J	0.21 J	0.20 J	0.17 J	0.16 J	ND (0.25)	ND (0.25)	0.44 J	ND (0.25)						
EW-BW-168-A	0.23 J	0.17 J	0.16 J	0.15 J	0.16 J	0.17 J	0.15 J	0.15 J	0.13 J	ND (0.25)	0.20 J	ND (0.25)						
EW-BW-169-A	0.17 J	ND (0.25)	ND (0.25)	ND (0.25)	0.14 J	ND (0.25)	0.17 J	0.14 J	0.11 J	ND (0.25)	0.24 J	ND (0.25)						
MW-BW-16-A	0.13 J	0.36 J	ND (0.25)	ND (0.25)	ND (0.25)	0.16 J	0.15 J	ND (0.25)	0.38 J	ND (0.25)	0.36 J	ND (0.25)						
MW-BW-57-A	0.18 J	0.23 J	0.22 J	0.16 J	0.12 J	0.15 J	0.14 J	0.18 J	0.15 J	ND (0.25)	1.1	ND (0.25)	ND (0.25)	0.10 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
MW-BW-87-A	ND (0.25)	ND (0.25)	ND (0.25)	0.15 J	0.13 J	ND (0.25)	0.28 J	ND (0.25)	0.15 J	ND (0.25)	0.50	ND (0.25)						
MW-BW-91-A	ND (0.25)	0.20 J	0.21 J	0.34 J	0.17 J	0.15 J	0.20 J	0.14 J	0.63	ND (0.25)	0.37 J	ND (0.25)						

Notes:

There were no detections for either methylene chloride or trichloroethene

ACL: Aquifer Cleanup Level

ND: The analyte was not detected at or above the detection limit

µg/L: micrograms per liter

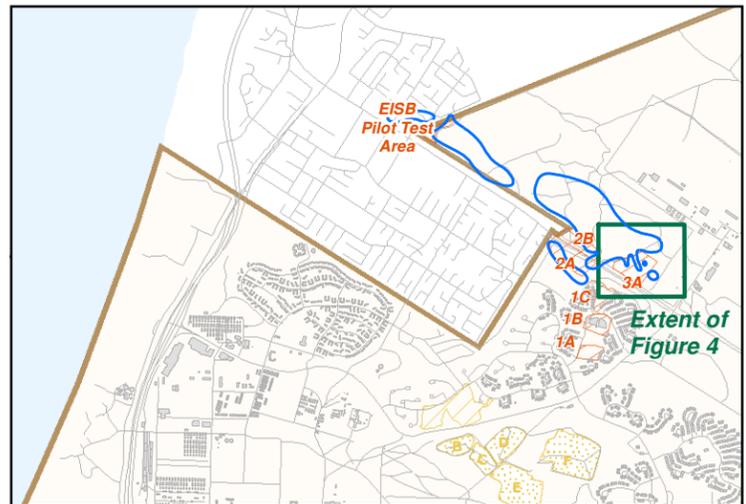
J: Estimated result with a possible low (-) or high bias (+)

Results in **bold** and shaded are concentrations above the ACL

Results in gray are ND

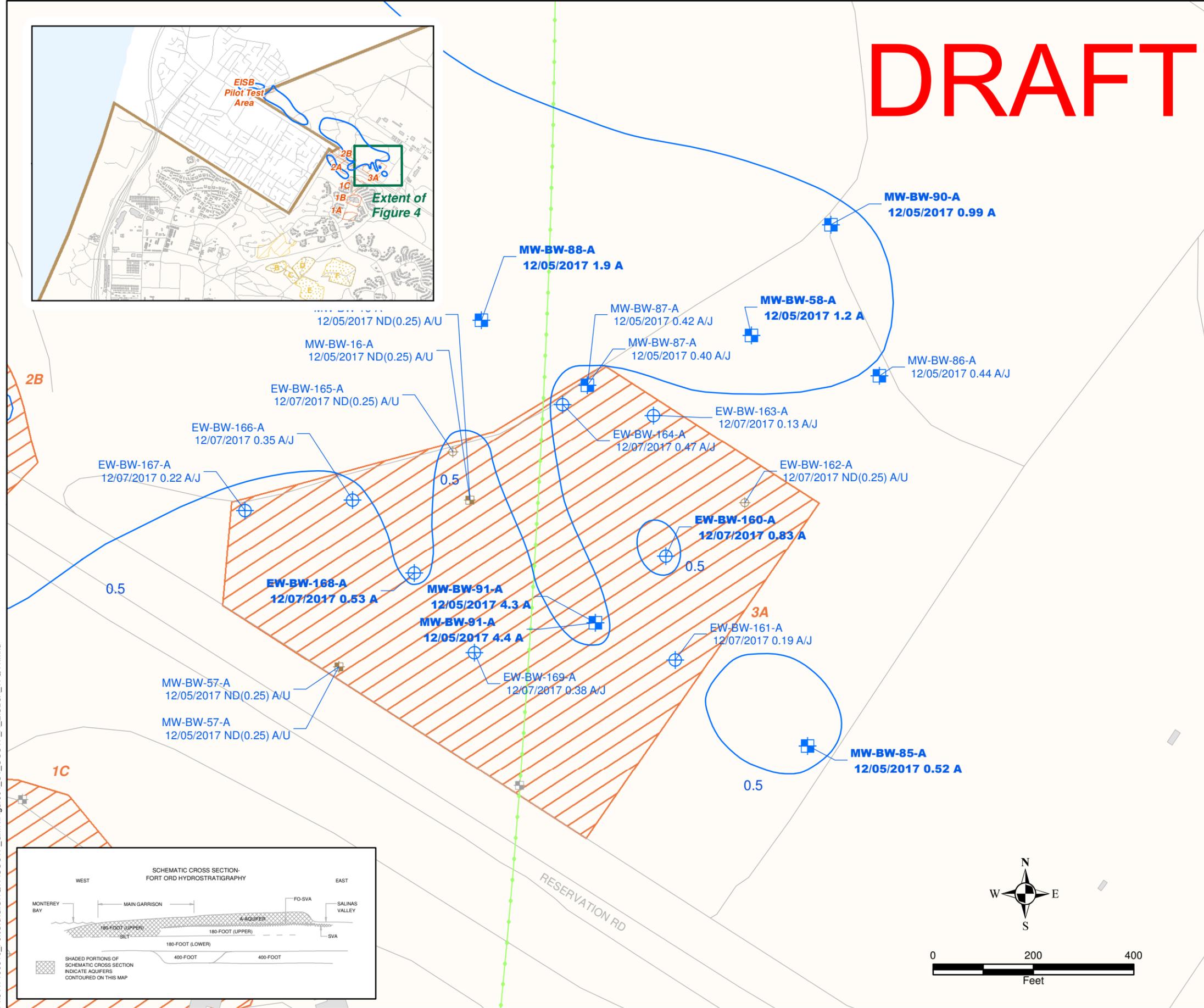


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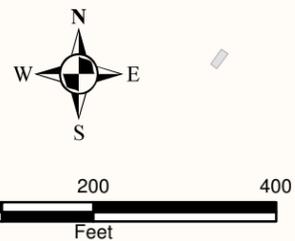
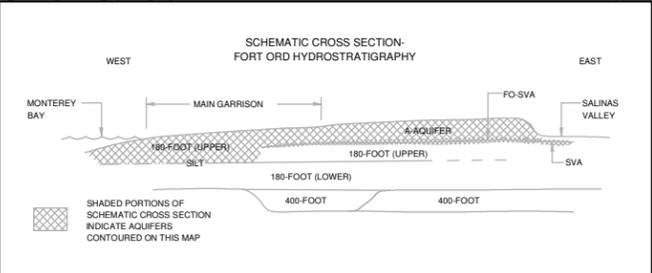


EXPLANATION	
	Monitoring Well with CT Detection
	Extraction Well with CT Detection
	Well ID - Bold When ACL Exceeded (* Indicates: Sample result not used for contouring)
	Baseline and/or quarterly monitoring concentration (µg/L) with validation/lab qualifier. Bold when exceeds the ACL.
	Monitoring Well CT Not Detected
	Extraction Well CT Not Detected
	Monitoring Well Not Sampled This Quarter
	Extraction Well Not Sampled This Quarter
Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L	
	0.5 Carbon tetrachloride (CT)
	Enhanced In Situ Bioremediation (EISB) Deployment Area
	Approximate Location of a Groundwater Divide
	Roads
	Facilities
	Former Fort Ord Boundary
Approximate extent of Fort Ord Landfill Areas	
	OU2 Landfill Areas B through F
	Area A (clean closed)

- NOTES:
- (1) Quarterly samples at EISB Deployment Area 3A extraction wells were collected on December 7, 2017. Samples at OU2TP monitoring wells were collected on December 5, 2017.
 - (2) Contours are based on one interpretation of the data that were available at the time this report was prepared; other interpretations may be possible.
 - (3) Contours based on highest value obtained from multiple bags where applicable.
 - (4) Contours near wells not sampled this quarter are inferred from previous analytical data.



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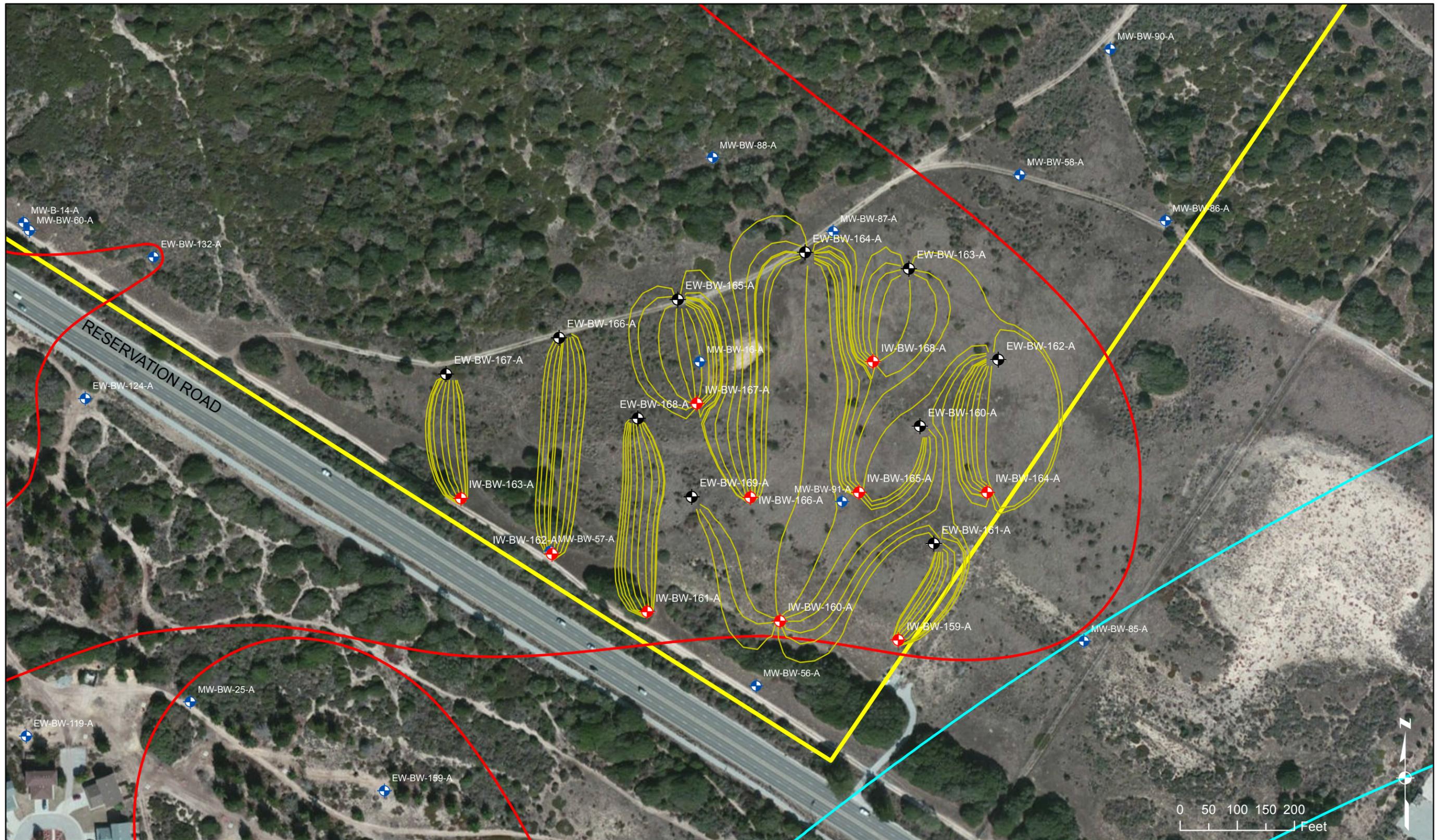


CT CONCENTRATIONS
EISB DEPLOYMENT AREA 3A
A-AQUIFER
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2017
Groundwater Monitoring Report
Former Fort Ord, California



Date: 1/2018 Project No. 8416181810

Figure 4



Ahtna
Environmental, Inc.

-  Modeled Extraction Wells
-  Modeled Injection Wells
-  Existing Monitoring Wells
-  Forward Tracking Particle Pathlines
-  CT Plume (1Q16)
-  Groundwater Elevation Contour (1Q16)
-  FONR Boundary

Operable Unit Carbon Tetrachloride Plume
Remedial Action Work Plan Addendum
Former Fort Ord, California

**Modeled Substrate Distribution
with Fort Ord Groundwater Model
(MODFLOW)**

Figure

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Table 2. OUCTP A-Aquifer Select Monitoring Well Data

OUCTP Hydraulic Zone ¹	EISB Deployment Area	Well Identification	Select COC Concentrations (µg/L)					
			3Q 2017	4Q 2017	3Q 2017	4Q 2017	3Q 2017	4Q 2017
			CT		Chloroform		TCE	
			ACL: 0.5		2.0		5.0	
1	1C	EW-BW-109-A	1.5	1.8	0.34 J	0.35 J	0.65	0.77
1	N/A	MW-BW-24-A	3.9	4.5	0.68	0.69	2.4	2.5
2	3A	MW-BW-58-A	1.1	1.2	0.24 J	0.21 J+	ND (0.25)	ND (0.25)
2	3A	MW-BW-87-A	1.9	0.40 J	0.32 J	0.14 J	ND (0.25)	ND (0.25)
2	3A	MW-BW-91-A	2.8 J+	4.4	0.59 J+	0.67	ND (0.25)	ND (0.25)
N/A	3A	MW-BW-90-A	0.99	0.99	0.17 J	0.15 J	ND (0.25)	ND (0.25)
3	3A	MW-BW-16-A	ND (0.25)	ND (0.25)	ND (0.25)	0.40 J	ND (0.25)	ND (0.25)
3	3A	MW-BW-57-A	0.29 J	ND (0.25)	0.25 J	0.15 J	ND (0.25)	ND (0.25)
3	N/A	MW-BW-88-A	3.0	1.9	0.87	0.59	ND (0.25)	ND (0.25)
4	2A	EW-BW-124-A	0.51	0.59	1.0	1.1	1.4	1.5
4	N/A	MW-B-12-A	0.81	0.99	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
4	2B	MW-B-14-A	2.0	2.2	0.27 J	0.36 J	0.13 J	0.20 J
4	2B	EW-BW-155-A	1.8	ND (0.25)	0.23 J	1.2	0.74	0.74
4	2A	MW-BW-26-A	3.5	5.0	0.58	0.71	ND (0.25)	0.90
4	N/A	MW-BW-31-A	ND (0.25)	ND (0.25)	7.1 J+	2.6	ND (0.25)	ND (0.25)
4	N/A	MW-BW-32-A	2.1	2.5	0.27 J	0.30 J	0.15 J	0.17 J
4	N/A	MW-BW-36-A	1.1	0.16 J	0.41 J	0.50	ND (0.25)	ND (0.25)
4	N/A	MW-BW-42-A	0.16 J	ND (0.25)	0.76	0.22 J	ND (0.25)	ND (0.25)
4	N/A	MW-BW-89-A	1.5	1.3	0.39 J	0.43 J	ND (0.25)	ND (0.25)
4	N/A	MW-BW-92-A	1.2	1.9	0.18 J	0.25 J	ND (0.25)	ND (0.25)
5	Pilot	EISB-EW-01	0.85	0.52	0.41 J	0.27 J	ND (0.25)	ND (0.25)
5	Pilot	EISB-EW-09	4.4	3.3	0.30 J	0.27 J	ND (0.25)	ND (0.25)
5	N/A	MW-BW-65-A	0.19 J	0.15 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
5	Pilot	MW-BW-66-A	0.97	1.4	0.16 J	0.27 J	ND (0.25)	ND (0.25)
5	N/A	MW-BW-74-A	ND (0.25) [0.21 J]	ND (0.25) [0.17 J]	ND (0.25) [ND (0.25)]			
5	N/A	MW-BW-49-A	1.1	1.5	0.22 J	0.57	ND (0.25)	ND (0.25)
5	N/A	MW-BW-78-A	0.30 J [0.37 J]	0.33 J [0.55]	ND (0.25) [0.11 J]	ND (0.25) [0.14 J]	ND (0.25) [ND (0.25)]	ND (0.25) [ND (0.25)]
5	N/A	MW-BW-80-A	ND (0.25)	0.49 J	ND (0.25)	0.11 J	ND (0.25)	ND (0.25)

Notes:

TCE: trichloroethene
 CT: carbon tetrachloride
 µg/L: micrograms per liter
 ND: The analyte was not detected above the detection limit
 NS: not sampled
 J: Estimated result with a low (-) or high (+) bias

¹ Hydraulic zones are identified in the Groundwater QAPP.
 Results in **bold** and shaded are concentrations above the ACL
 Results in gray are ND
 COC: chemical of concern
 [Results in brackets are from a second deeper passive diffusion bag]

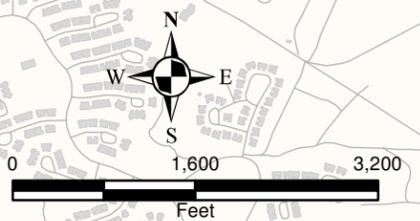
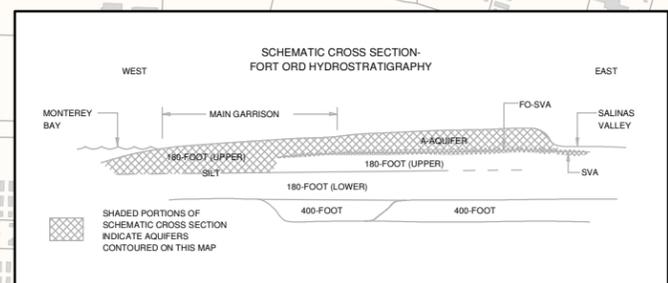
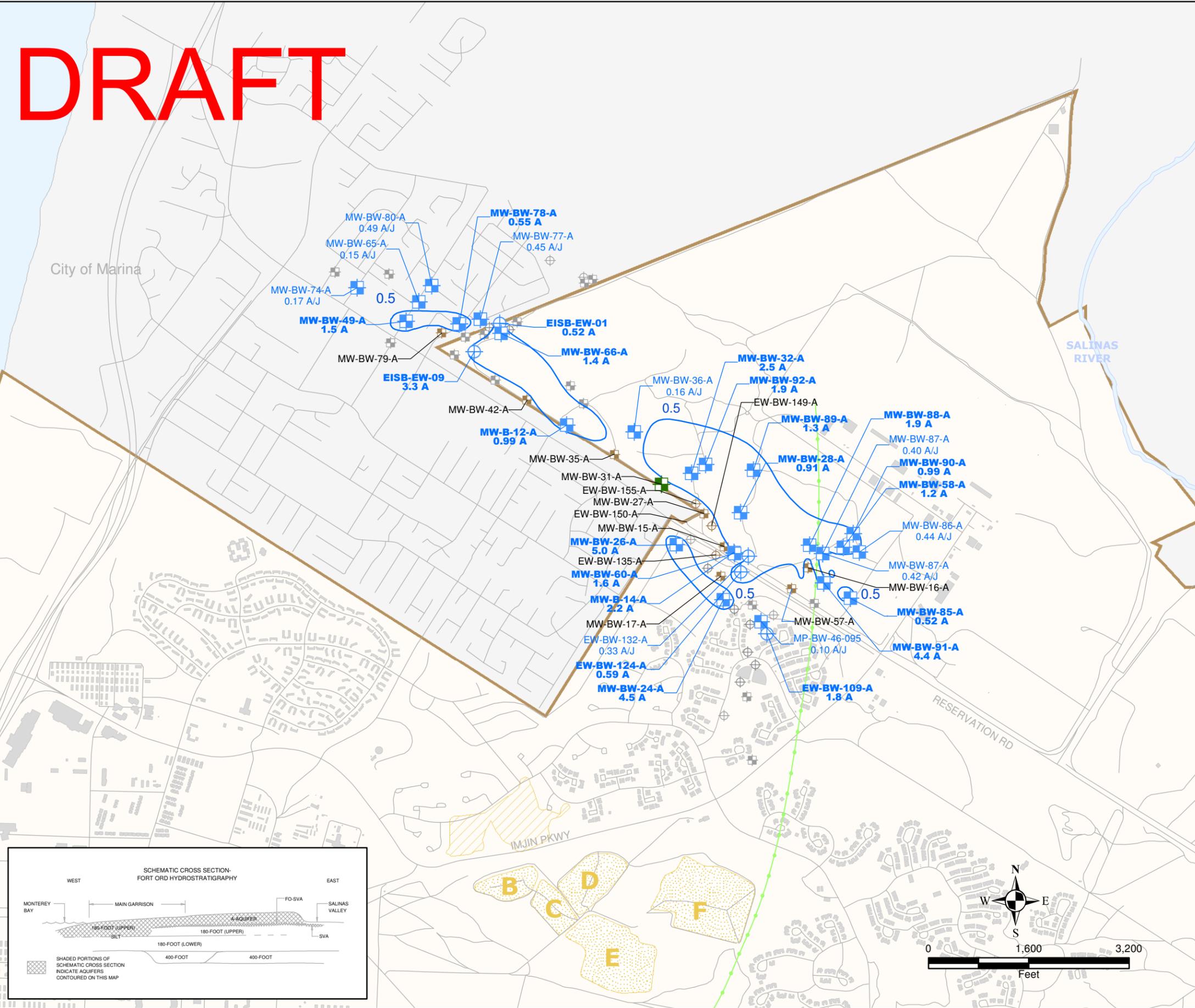
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EXPLANATION

-  Monitoring Well with CT Detection
 -  Extraction Well with CT Detection
 -  Well ID - Bold When CT Exceeds the ACL
(* Indicates: Sample result not used for contouring)
 -  **MW-BW-88-A**
1.9 A
CT Concentration (µg/L) and validation/lab qualifier.
Bold when CT exceeds the ACL.
 -  Monitoring Well with COC ACL Exceedance (Not CT)
 -  Monitoring Well CT Not Detected, and No Other COC ACL Exceedances
 -  Extraction Well CT Not Detected
 -  Monitoring Well Not Sampled This Quarter
 -  Extraction Well Not Sampled This Quarter
- Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L
-  **0.5** Carbon tetrachloride (CT) Exceedance Contour in µg/L
 -  Approximate Extent of Landfill Areas
 -  OU2 Landfill Areas B through F
 -  Area A (clean closed)
 -  Approximate Location of a Groundwater Divide
 -  Roads
 -  Facilities
 -  Former Fort Ord Boundary

- NOTES:
- (1) Samples were collected between December 4 and 7, 2017.
 - (2) Contours are based on one interpretation of the data that were available at the time this report was prepared; other interpretations may be possible.
 - (3) Contours based on highest value obtained from multiple bags and/or multiple ports where applicable.
 - (4) Contours near wells not sampled this quarter are inferred from previous analytical data.

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CT CONCENTRATIONS
A-AQUIFER
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2017
Groundwater Monitoring Report
Former Fort Ord, California



Date: 1/2018

Project No. 8417190510

Figure
3

Table 3. OUCTP Upper 180-Foot Aquifer Select Monitoring Well Data

OUCTP Hydraulic Zone ¹	Well Identification	CT Concentration (µg/L) ²	
		3Q 2017	4Q 2017
ACL:		0.5	
6	EW-OU2-09-180 ³	0.13 J	0.11 J
6	MP-BW-41-231	0.35 J	0.34 J
6	MP-BW-46-170	4.4	5.4
6	MW-BW-52-180	1.2	1.1
6	MW-OU2-64-180	8.8	8.4
6	MW-OU2-67-180	0.71	0.35 J
6	MW-OU2-70-180	NS	ND (0.25)

Notes:

ACL: aquifer cleanup level

COC: chemical of concern

CT: carbon tetrachloride

MCL: maximum contaminant level

ND: The analyte was not detected at or above the detection limit

NS: not sampled

TCE: trichloroethene

µg/L: micrograms per liter

J: Estimated result with a low (-) or high (+) bias

¹ Hydraulic zones are identified in the Groundwater QAPP.

² Concentration in **bold** and shaded cell exceeds the Aquifer Cleanup Level (ACL) for CT and the Maximum Contaminant Level (MCL) for TCE. Results in gray are ND.

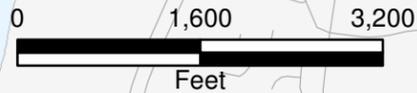
³ EW-OU2-09-180 is operated as part of the remedy for the OUCTP Upper 180-Foot Aquifer and is connected to the OU2 GWTP. cis-1,2-DCE was detected in this well at 8.4 µg/L in 2Q17 and 2.7 µg/L in 3Q17.

⁴ TCE is not a COC in the OUCTP Lower 180-Foot Aquifer (reported for Lower 180-Foot Aquifer with respect to protection of supply wells)

Table 4. OUCTP Lower 180-Foot Aquifer Select Monitoring Well Data

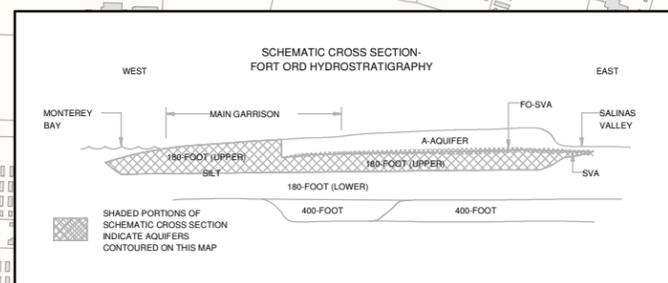
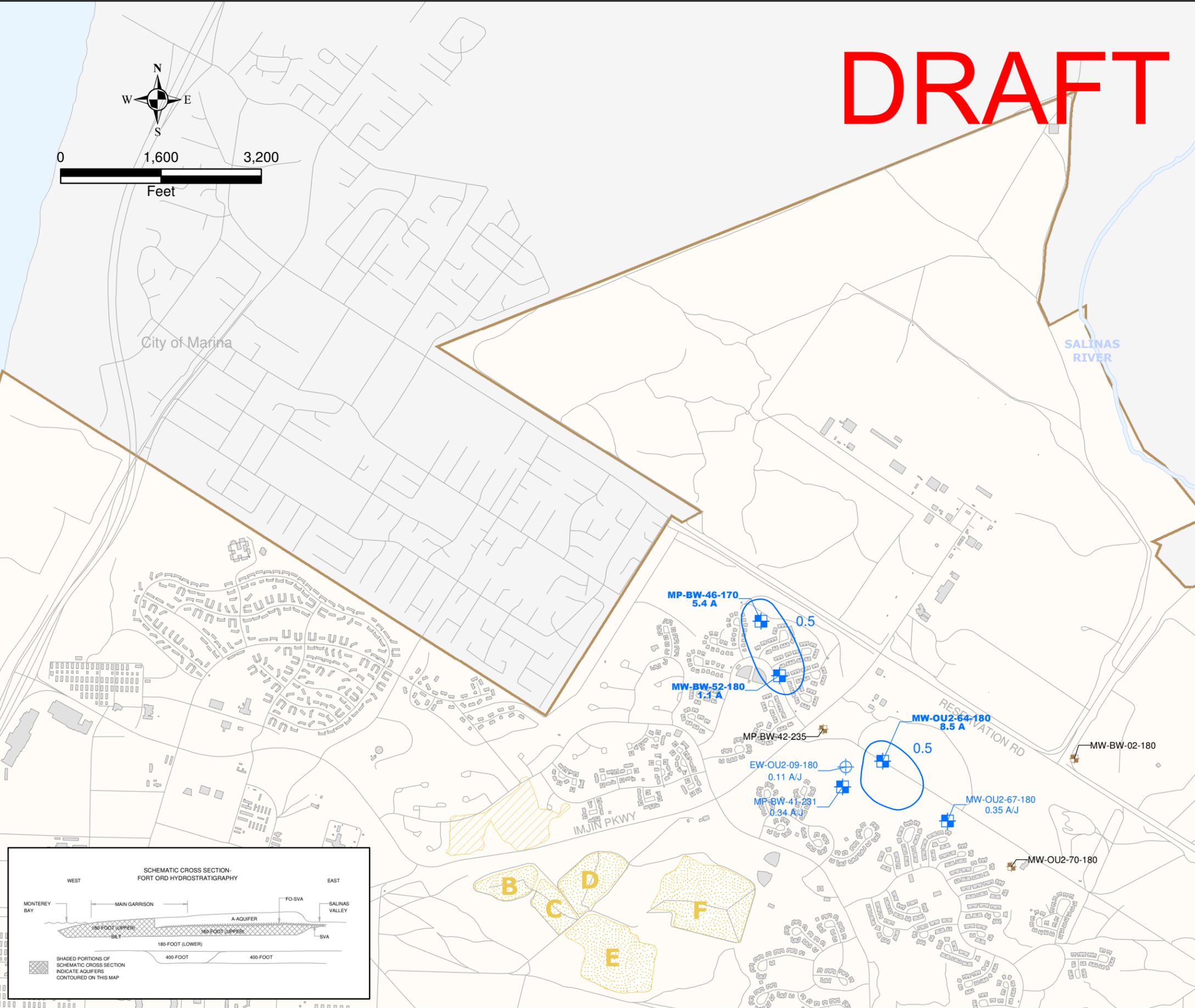
OUCTP Hydraulic Zone ¹	Well Identification	Select COC Concentrations (µg/L) ²			
		3Q 2017	4Q 2017	3Q 2017	4Q 2017
		CT		TCE ⁴	
Limit:		ACL 0.5		MCL 5.0	
7	MP-BW-49-316	1.4	0.88	ND (0.25)	ND (0.25)
7	MP-BW-49-400	ND (0.25)	ND (0.25)	4.1	4.8
7	MP-BW-50-339	0.55	0.33 J	ND (0.25)	ND (0.25)
7	MP-BW-50-384	0.12 J	0.10 J	2.3	2.4
7	MP-BW-51-405	0.16 J	0.18 J	1.7	1.7
7	MW-OU2-69-180	0.48 J	0.70	0.16 J	0.13 J
8	AIRFIELD	0.57	0.68	ND (0.25)	ND (0.25)
N/A	EW-OU2-07-180	ND (0.25)	ND (0.25)	1.6	2.2
N/A	FO-29	0.11 J	0.17 J	1.8	1.6
N/A	FO-30	0.15 J	0.15 J	0.46 J	0.52
N/A	FO-31	ND (0.25)	ND (0.25)	0.83	0.52
N/A	MP-BW-41-353	ND (0.25)	ND (0.25)	1.3	1.7
N/A	MW-OU2-72-180	ND (0.25)	ND (0.25)	1.5	1.6
N/A	MW-OU2-78-180	ND (0.25)	ND (0.25)	2.0	2.3
N/A	MW-OU2-82-180	ND (0.25)	ND (0.25)	6.4	6.3

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EXPLANATION	
	Monitoring Well with CT Detection
	Extraction Well with CT
	Well ID - Bold When Concentration Exceeds the ACL (* Indicates: Sample result not used for contouring)
	CT Concentration ($\mu\text{g/L}$) and validation/lab qualifier (red indicates TCE; blue indicates CT) Bold when exceeds the ACL.
	Monitoring Well CT Not Detected
	Extraction Well CT Not Detected
	Monitoring Well Not Sampled This Quarter
Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in $\mu\text{g/L}$	
	0.5 Carbon tetrachloride (CT)
Approximate extent of Landfill Areas	
	OU2 Landfill Areas B through F
	Area A (clean closed)
	Roads
	Facilities
	Former Fort Ord Boundary

- NOTES:
- (1) Samples were collected between December 4 and 7, 2017.
 - (2) Contours are based on one interpretation of the data that were available at the time this report was prepared; other interpretations may be possible.
 - (3) Contours based on highest value obtained from multiple bags and/or multiple ports where applicable.
 - (4) Contours near wells not sampled this quarter are inferred from previous analytical data.



CT CONCENTRATIONS
UPPER 180-FOOT AQUIFER
OUCTP
Fourth Quarter 2017
Groundwater Monitoring Report
Former Fort Ord, California

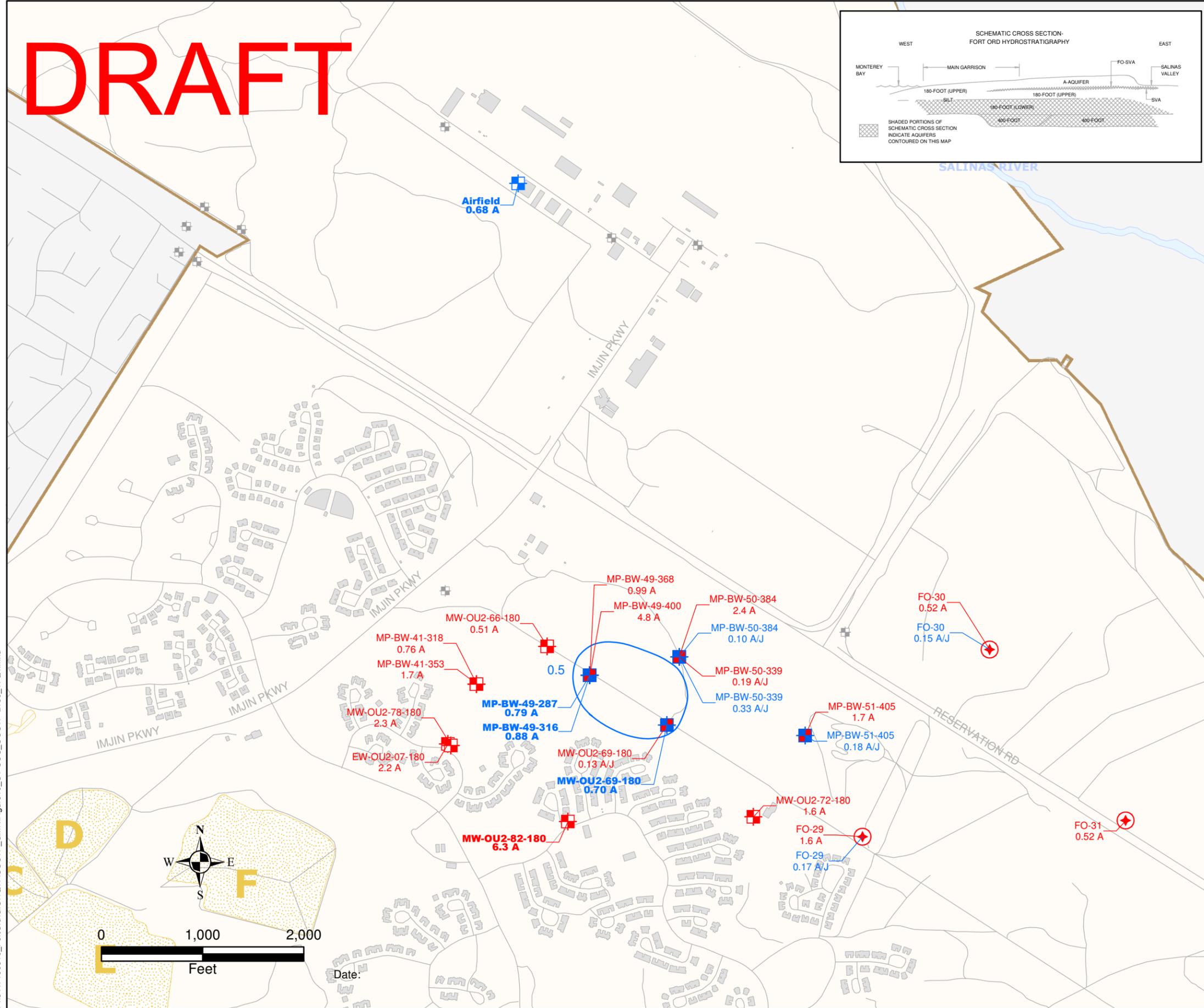
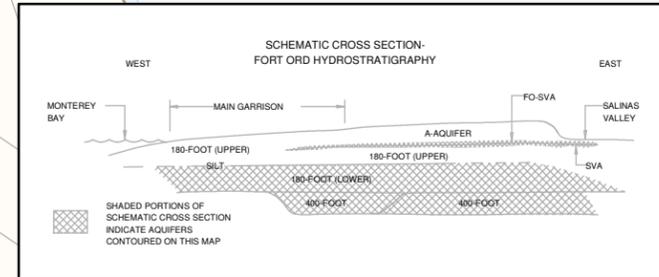


Date: 1/2018 Project No. 8416181810

Figure 8

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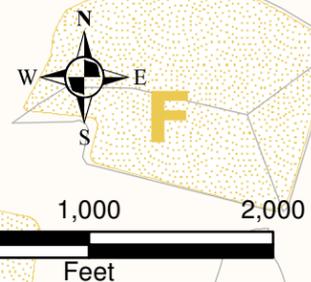


EXPLANATION

- Monitoring Well with CT Detection
- Monitoring Well with TCE Detection
- Remediation Extraction Well with TCE Detection
- Active Supply Well with TCE Detection
- Monitoring Well with TCE and CT Detections
- Well ID - Bold When Concentration Exceeds ACL
Indicates: Multi-port well sampled at more than one depth with no detections.
- Concentration in µg/L and validation/lab qualifier (red indicates TCE; blue indicates CT)
Bold when exceeds the ACL.
- Monitoring Well CT Not Detected
- Active Supply Well CT Not Detected
- Monitoring Well Not Sampled This Quarter
- Supply Well Not Sampled This Quarter
- Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L**
- 0.5** — Carbon tetrachloride (CT)
- Approximate Extent of Landfill Areas**
- OU2 Landfill Areas B through F
- Area A (clean closed)
- Roads
- Facilities
- Former Fort Ord Boundary

- NOTES:
- (1) Samples were collected between December 4 and 7, 2017.
 - (2) Contours are based on one interpretation of the data that were available at the time this report was prepared; other interpretations may be possible.
 - (3) Contours based on highest value obtained from multiple bags and/or multiple ports where applicable.
 - (4) Supply wells FO-29, FO-30 and FO-31 have been renamed as 29(A), 30(B) and 31(C) respectively. The wells are referred to by the original names in this report for consistency.
 - (5) TCE is not a chemical of concern in the OUCTP Lower 180-Foot Aquifer.

Thursday, January 18, 2018 5:42:46 PM thomas.hunt P:\8417190510_FortOrd\GIS\4017\OUCTP_GMR\Figure10_CT-COC_OUCTP-L180_17Q4.mxd



Date:

CT AND TCE CONCENTRATIONS
LOWER 180-FOOT/400-FOOT AQUIFERS
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2017
Groundwater Monitoring Report
Former Fort Ord, California

