

HTW BCT, April 11, 2018

March 2018 Key Events for OUCTP

- March 5-8: First Quarter 2018 Groundwater Monitoring Program.
- March 14: OUCTP EISB Deployment Area 3A sampled. EW-BW-165-A requires surface pipe repairs likely due to cold weather, inoperable. Repairs conducted.
- March 27: EW-BW-165-A and EISB-EW-01 sampled.
- March 26-29: Temporary shutdown of OU2 GWTP during JV construction, EW-OU2-09-180 offline.

April 2018 Key Events for OUCTP

- Prepare for 2018 decommissioning of five OUCTP A-Aquifer monitoring wells and three OUCTP Upper 180-Foot Aquifer monitoring wells.
- Prepare for 2018 installation of three OUCTP A-Aquifer monitoring wells, two OUCTP Upper 180-Foot Aquifer monitoring wells, and one OUCTP Lower 180-Foot Aquifer monitoring well.
- Monitor reference site to determine 2018 HMP annuals monitoring time frame.
 - Year 3 at 2015 well installation locations (final monitoring event).
 - Year 2 at EISB Deployment Area 3A.
 - Baseline survey at FONR well installation and decommission locations.

Ahtna

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	1Q 2018*
EW-BW-160-A	1.1 J+	0.86	0.66	0.60	1.3	1.0	1.0	0.64	0.83	0.91
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	0.15 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)	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	ND (0.25)
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	0.32 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)	Pending
EW-BW-166-A	1.7 J+	1.4	1.2	1.2	1.4	1.1	1.3	1.5	0.35 J	1.4
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	0.16 J
EW-BW-168-A	1.3 J+	1.1	0.82	0.77	0.84	0.72	0.80	0.55	0.53	0.48 J
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	0.23 J
MW-BW-16-A	0.60 J+	0.75	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	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)	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	0.13 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	3.4

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

* Preliminary results



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

Analyte:	Chloroform									
ACL:	2.0 µg/L									
Well Identification	Baseline	Month 1	Month 2	Month 3	Month 5	Month 6	Month 7	3Q 2017	4Q 2017	1Q 2018*
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	0.16 J
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)	0.14 J
EW-BW-162-A	0.13 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.15 J	0.15 J	0.17 J	0.18 J
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	0.12 J
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)
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	Pending
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)	0.30 J
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)
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	0.13 J
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)
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)
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	0.75
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)
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	0.49 J

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

* Preliminary results



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

Analyte:	Chloromethane									
ACL:	N/A									
Well Identification	Baseline	Month 1	Month 2	Month 3	Month 5	Month 6	Month 7	3Q 2017	4Q 2017	1Q 2018*
EW-BW-160-A	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)	ND (0.25)
EW-BW-161-A	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	ND (0.25)
EW-BW-162-A	ND (0.25)	0.40 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)
EW-BW-163-A	ND (0.25)	0.53	ND (0.25)	ND (0.25)	ND (0.25)	0.79	0.95	0.20 J	ND (0.25)	ND (0.25)
EW-BW-164-A	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)	ND (0.25)
EW-BW-165-A	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	Pending
EW-BW-166-A	ND (0.25)	0.28 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)
EW-BW-167-A	ND (0.25)	0.44 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)
EW-BW-168-A	ND (0.25)	0.20 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)
EW-BW-169-A	ND (0.25)	0.24 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)
MW-BW-16-A	ND (0.25)	0.36 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)
MW-BW-57-A	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)	ND (0.25)
MW-BW-87-A	ND (0.25)	0.50	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
MW-BW-91-A	ND (0.25)	0.37 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)

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

* Preliminary results, trip blank contaminated with chloromethane



Table 2. OUCTP A-Aquifer Select Monitoring Well Data

OUCTP Hydraulic Zone ¹	EISB Deployment Area	Well Identification	Select COC Concentrations (µg/L)					
			4Q 2017	1Q 2018*	4Q 2017	1Q 2018*	4Q 2017	1Q 2018*
			CT		Chloroform		TCE	
			ACL: 0.5		2.0		5.0	
1	1C	EW-BW-109-A	1.8	1.4	0.35 J	0.37 J	0.77	0.62
1	N/A	MW-BW-24-A	4.5	3.1	0.69	0.58	2.5	1.6
2	3A	MW-BW-58-A	1.2	0.68	0.21 J+	0.12 J	ND (0.25)	ND (0.25)
2	3A	MW-BW-87-A	0.40 J	0.14 J	0.14 J	ND (0.25)	ND (0.25)	ND (0.25)
2	3A	MW-BW-91-A	4.4	3.5	0.67	0.50	ND (0.25)	ND (0.25)
N/A	3A	MW-BW-90-A	0.99	0.86	0.15 J	0.13 J	ND (0.25)	ND (0.25)
3	3A	MW-BW-16-A	ND (0.25)	ND (0.25)	0.40 J	ND (0.25)	ND (0.25)	ND (0.25)
3	3A	MW-BW-57-A	ND (0.25)	ND (0.25)	0.15 J	0.81	ND (0.25)	ND (0.25)
3	N/A	MW-BW-88-A	1.9	1.1	0.59	0.40 J	ND (0.25)	ND (0.25)
4	2A	EW-BW-124-A	0.59	0.27 J	1.1	1.2	1.5	0.93
4	N/A	MW-B-12-A	0.99	0.64	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
4	2B	MW-B-14-A	2.2	1.8	0.36 J	0.41 J	0.20 J	0.25 J
4	2B	EW-BW-155-A	ND (0.25)	0.51	1.2	0.48 J	0.74	0.54
4	2A	MW-BW-26-A^	5.0	4.4	0.71	0.74	0.90	0.77
4	N/A	MW-BW-31-A	ND (0.25)	ND (0.25)	2.6	0.99	ND (0.25)	ND (0.25)
4	N/A	MW-BW-32-A	2.5	2.2	0.30 J	0.28 J	0.17 J	0.14 J
4	N/A	MW-BW-36-A	0.16 J	0.79	0.50	1.7	ND (0.25)	ND (0.25)
4	N/A	MW-BW-42-A	ND (0.25)	ND (0.25)	0.22 J	0.16 J	ND (0.25)	ND (0.25)
4	N/A	MW-BW-89-A	1.3	0.97	0.43 J	0.37 J	ND (0.25)	ND (0.25)
4	N/A	MW-BW-92-A	1.9	1.3	0.25 J	0.20 J	ND (0.25)	ND (0.25)
5	Pilot	EISB-EW-01	0.52	Pending	0.27 J	Pending	ND (0.25)	Pending
5	Pilot	EISB-EW-09	3.3	3.0	0.27 J	0.31 J	ND (0.25)	ND (0.25)
5	N/A	MW-BW-65-A	0.15 J	0.12 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
5	Pilot	MW-BW-66-A	1.4	0.95	0.27 J	0.54	ND (0.25)	ND (0.25)
5	N/A	MW-BW-74-A	ND (0.25) [0.17 J]	ND (0.25) [0.29 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)]
5	N/A	MW-BW-49-A	1.5	0.94	0.57	0.26 J	ND (0.25)	ND (0.25)
5	N/A	MW-BW-78-A	0.33 J [0.55]	0.25 J [0.41 J]	ND (0.25) [0.14 J]	ND (0.25) [ND (0.25)]	ND (0.25) [ND (0.25)]	ND (0.25) [ND (0.25)]
5	N/A	MW-BW-80-A	0.49 J	0.45 J	0.11 J	ND (0.25)	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]
 * Preliminary results
 ^ downgradient monitoring well MW-BW-30-A is ND.

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

OUCTP Hydraulic Zone ¹	Well Identification	CT Concentration (µg/L) ²	
		4Q 2017	1Q 2018*
ACL:		0.5	
6	EW-OU2-09-180 ³	0.11 J	ND (0.25)
6	MP-BW-41-231	0.34 J	0.15 J
6	MP-BW-46-170	5.4	5.7
6	MW-BW-52-180	1.1	0.98
6	MW-OU2-64-180	8.4	6.9
6	MW-OU2-67-180	0.35 J	0.46 J
6	MW-OU2-70-180	ND (0.25)	NS

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)

* Preliminary results

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

OUCTP Hydraulic Zone ¹	Well Identification	Select COC Concentrations (µg/L) ²			
		4Q 2017	1Q 2018*	4Q 2017	1Q 2018*
		CT		TCE ⁴	
Limit:		ACL 0.5		MCL 5.0	
7	MP-BW-49-316	0.88	2.8	ND (0.25)	ND (0.25)
7	MP-BW-49-400	ND (0.25)	ND (0.25)	4.8	4.3
7	MP-BW-50-339	0.33 J	0.36 J	ND (0.25)	0.21 J
7	MP-BW-50-384	0.10 J	0.14 J	2.4	2.5
7	MP-BW-51-405	0.18 J	0.17 J	1.7	1.6
7	MW-OU2-69-180	0.70	0.71	0.13 J	0.13 J
8	AIRFIELD	0.68	0.62	ND (0.25)	ND (0.25)
N/A	EW-OU2-07-180	ND (0.25)	ND (0.25)	2.2	2.0
N/A	FO-29	0.17 J	0.19 J	1.6	1.4
N/A	FO-30	0.15 J	0.16 J	0.52	0.54
N/A	FO-31	ND (0.25)	ND (0.25)	0.52	0.85
N/A	MP-BW-41-353	ND (0.25)	ND (0.25)	1.7	1.6
N/A	MW-OU2-72-180	ND (0.25)	ND (0.25)	1.6	1.3
N/A	MW-OU2-78-180	ND (0.25)	ND (0.25)	2.3	2.1
N/A	MW-OU2-82-180	ND (0.25)	ND (0.25)	6.3	5.3

Table 5: OUCTP Well Decommissioning 2018*

Well ID	Aquifer	FONR	Notes
MW-BW-62-A	A	No	Well installed in 2003. Last sampled in 2009, CT always below ACL, currently used for DTW but not needed.
MW-BW-64-A	A	No	Well installed in 2003. Last sampled in 2013, CT below ACL since 2006, currently used for DTW but not needed.
MW-BW-68-A	A	No	Well installed in 2004. SVE well not screened in aquifer, not sampled or used for DTW.
MW-BW-69-A	A	No	Well installed in 2004. SVE well not screened in aquifer, not sampled or used for DTW.
MW-BW-70-A	A	No	Well installed in 2004. SVE well not screened in aquifer, not sampled or used for DTW.
MW-BW-20-180	Upper 180	No	Well installed in 1998. Last sampled in 2003, CT always ND, currently used for DTW but not needed.
MW-BW-22-180	Upper 180	No	Well installed in 1998. Last sampled in 2009, CT ND since 2006, currently used for DTW but not needed.
MW-BW-29-180	Upper 180	Yes	Well installed in 2000. Last sampled in 2009, CT always below ACL, currently used for DTW but not needed.

Table 6: OUCTP Well Installation 2018

Tentative Well ID	Aquifer	FONR	Notes
MW-BW-93-A	A	Yes	Location may be adjusted due to presence of sensitive plant species
MW-BW-94-A	A	Yes	Location may be adjusted due to presence of sensitive plant species
MW-BW-95-A	A	Yes	Location may be adjusted due to presence of sensitive plant species
MW-BW-57-180	Upper 180	No	
MW-BW-58-180	Upper 180	No	
MW-BW-59-180	Lower 180	No	

Notes:

* Sampling no longer conducted and water levels unnecessary as listed in the OUCTP Annual Report.

ACL: aquifer cleanup level

CT: carbon tetrachloride

DTW: depth to water

FONR: Fort Ord Natural Reserve

SVE: soil vapor extraction





Legend

- Groundwater Divide
- Carbon Tetrachloride (0.5 ug/L) 2017-4Q
- Groundwater (ft MSL) 2017-4Q
- Roads
- OU2 Landfills
- Buildings
- Former Fort Ord Boundary

A-Aquifer Well Types

- EISB Extraction Well
- Multi-Port Well (Westbay)
- Monitoring Well
- Monitoring Well - To Decommission

OUCTP EISB Wells

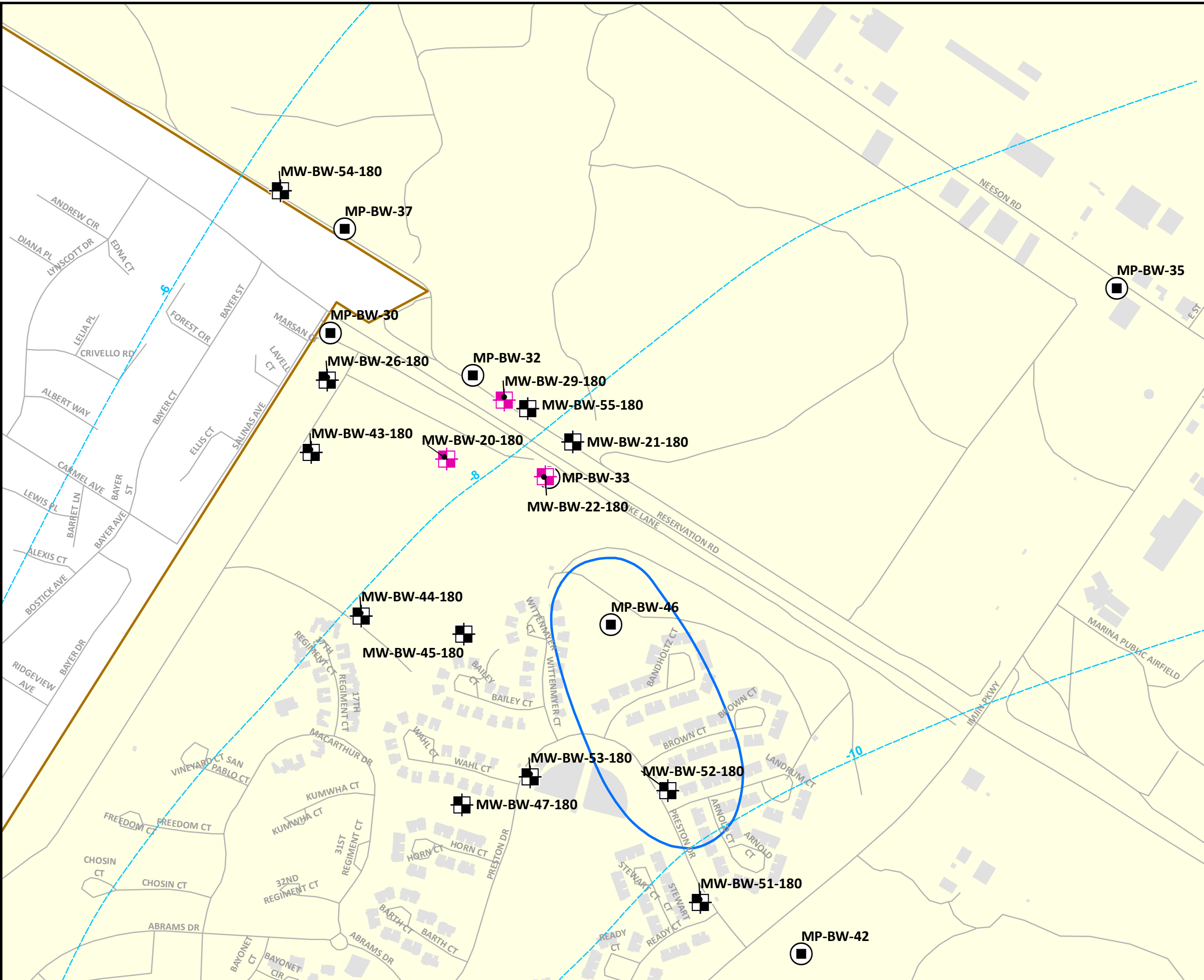
- Extraction Well
- Injection Well
- SVE Well - To Decommission

0 140 280 560 Feet

N

**OUCTP A-Aquifer
Monitoring Well and
Soil Vapor Extraction Well
Decommissioning Locations**

Well Decommissioning
Work Plan
Former Fort Ord, California



Legend

- Roads
- Carbon Tetrachloride (0.5 ug/L) 2017-4Q
- - - Groundwater Elevation (ft MSL) 2017-4Q
- ▭ Former Fort Ord Boundary
- ▭ Buildings

OUCTP Upper 180-Foot Aquifer Well Type

- ⊕ Extraction Well
- ⊞ Monitoring Well
- ⊞ Multi-Port Well (Westbay)
- ⊞ Monitoring Well - To Decommission

0 250 500 1,000 Feet

N

**OUCTP Upper 180-Foot Aquifer
Monitoring Well
Decommissioning Locations**

Well Decommissioning
Work Plan
Former Fort Ord, California



Legend

- Groundwater Divide
- - - Groundwater Elevation (ft MSL) 2017-4Q
- Carbon Tetrachloride (0.5 ug/L) 2017-4Q
- Roads
- FONR Boundary
- + Existing Wells
- + Proposed Well Location
- Access Routes
- Staging Areas

N

0 250 500 1,000 Feet

**OUCTP A-Aquifer
New Monitoring Well Locations**

Well Installation
Work Plan
Former Fort Ord, California

Ahtna

Figure:

3

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

Well Type

- Existing Extraction Well
- Existing Multi-Port Well
- Existing Monitoring Well
- Proposed Well Location
- Carbon Tetrachloride (0.5 ug/L) 2017-4Q
- Groundwater Elevation (ft MSL) 2017-4Q
- Roads
- FONR Boundary
- Staging Area
- Access Route

0 250 500 1,000 Feet

N

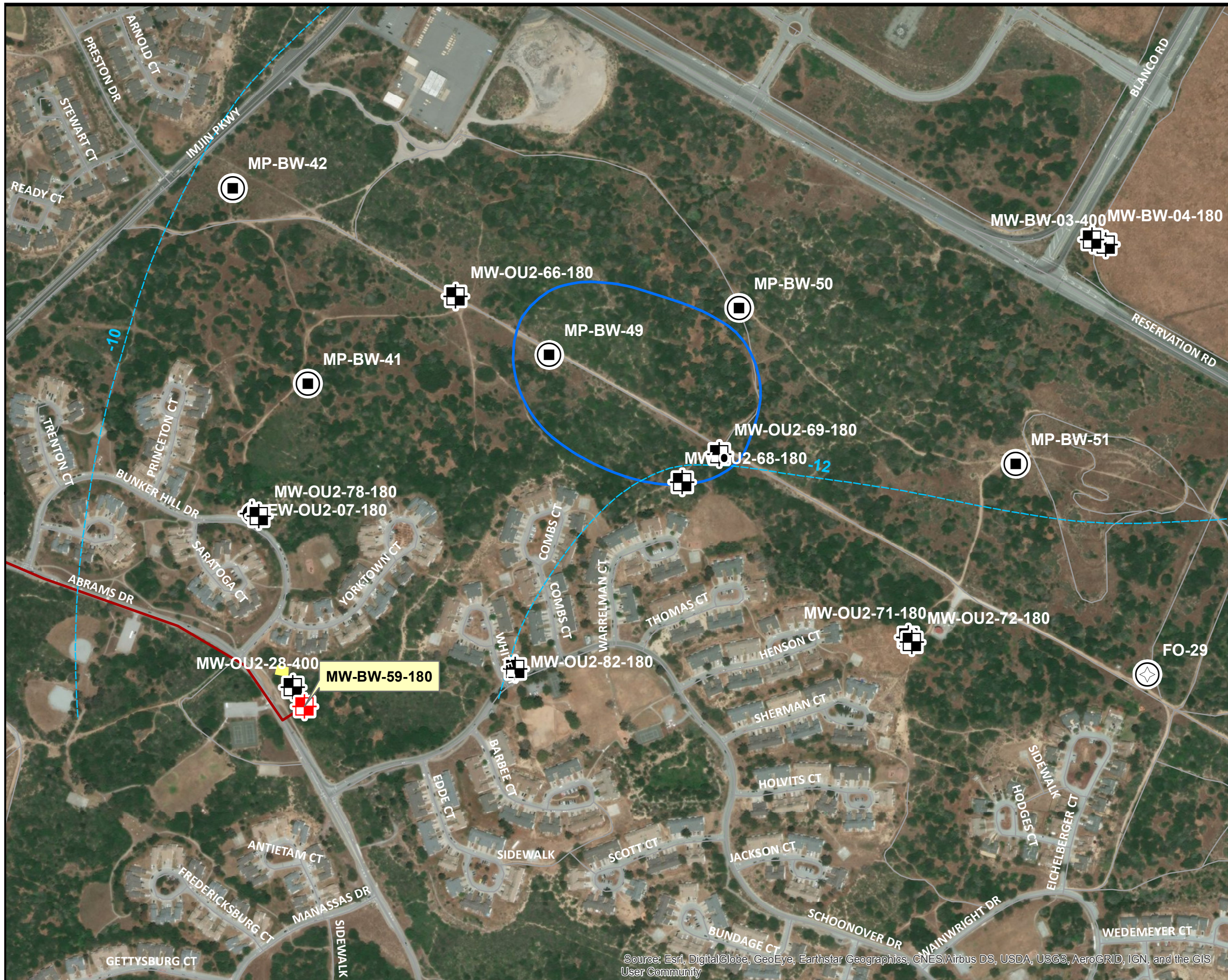
**OUCTP Upper 180-Foot Aquifer
New Monitoring Well Locations**

Well Installation
Work Plan
Former Fort Ord, California



Figure:
4

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Roads
- - - Groundwater Elevation (ft MSL) 2017-4Q
- Carbon Tetrachloride (0.5 ug/L) 2017-4Q

Well Type

- ⊕ Existing Extraction Well
- ⊙ Existing Supply Well
- ⊗ Existing Multi-Port Well
- ⊞ Existing Monitoring Well
- ⊞ Proposed Well Location
- Staging Area
- Access Route

0 245 490 980 Feet



OUCTP Lower 180-Foot Aquifer New Monitoring Well Location

Well Installation
Work Plan
Former Fort Ord, California

Ahtna

Figure:

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