Former Fort Ord Operable Unit Carbon Tetrachloride Plume Data and Status

HTW BCT, July 17, 2020

Table 1. OUCTP A-Aquifer Select Monitoring Well Data – Hydraulic Zones 1, 2, and 3

OUCTP Hydraulic Zone[1]	EISB Deployment Area	Well Identification	COC Concentrations (µg/L)			
			3Q 2019	4Q 2019	1Q 2020	2Q 2020*
			CT			
		ACL:	0.5			
1	1C	EW-BW-109-A	**1.3**	**1.4**	**1.1**	**1.2**
1	N/A	MW-BW-24-A	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
2	3A	MW-BW-58-A	0.38 J	0.30 J	**0.52**	**0.53**
2	3A	MW-BW-87-A	**1.9**	**1.9**	**2.6**	**2.3**
2	3A	MW-BW-91-A	**1.6**	**0.93**	**1.0**	**0.94**
2	N/A	MW-BW-94-AR	0.39 J	0.49 J	**0.63**	**0.52**
N/A	3A	MW-BW-90-A	**1.1**	**1.3**	**1.6**	**1.4**
2	3A	EW-BW-160-A	**2.2**	**1.2**	**2.2**	**2.1**
3	3A	EW-BW-166-A	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
3	N/A	MW-BW-88-A	**1.5**	**1.4**	**1.5**	**1.0**
3	N/A	MW-BW-93-A	0.25 J	0.25 J	0.24 J	0.23 J
3	N/A	MW-BW-95-A	**1.3**	**1.2**	**1.5**	**1.1**

Notes:
CT: carbon tetrachloride
µg/L: micrograms per liter
ND: The analyte was not detected above the detection limit
NS: not sampled
N/A: not applicable
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 data

April 2020 Key Events
- None.

May 2020 Key Events
- None.

June 2020 Key Events
- June 1-5: Second Quarter 2020 Groundwater Monitoring Event.

July 2020 Key Events
- None.

Aug 2020 Key Events
- Aug 31-Sept 4: Third Quarter 2020 Groundwater Monitoring Event.

Sep 2020 Key Events
- None.

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Table 2. OUCTP A-Aquifer Select Monitoring Well Data – Hydraulic Zones 4 and 5

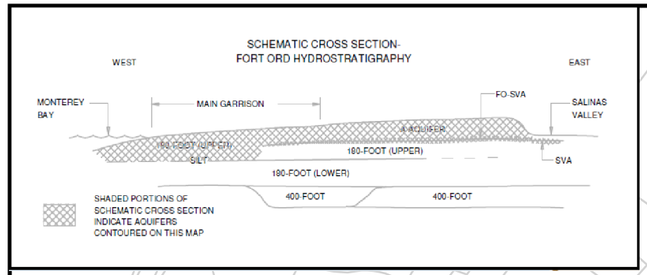
OUCTP Hydraulic Zone[1]	EISB Deployment Area	Well Identification	COC Concentrations (µg/L)			
			3Q 2019	4Q 2019	1Q 2020	2Q 2020*
			CT			
		ACL:	0.5			
4	2A	EW-BW-124-A	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
4	2A	EW-BW-129-A	NS	NS	NS	**2.0**
4	2A	EW-BW-140-A	NS	NS	NS	**1.1**
4	N/A	MW-B-12-A	0.48 J	**0.65**	**0.56**	0.49 J
4	2B	MW-B-14-A	**0.69**	**0.60 J**	**0.73**	**0.52**
4	2B	EW-BW-155-A	**0.73**	0.33 J	0.25 J	0.12 J
4	2A	MW-BW-26-A^	**4.1**	**3.9**	**4.9**	**3.6**
4	N/A	MW-BW-31-A	**0.60**	**1.3**	**0.65**	0.45 J
4	N/A	MW-BW-32-A	**1.7**	**1.8**	**2.2**	**1.5**
4	N/A	MW-BW-35-A	0.36 J	0.13 J	0.34 J	0.12 J
4	N/A	MW-BW-36-A	**0.72**	**0.67**	**0.71**	0.21 J
4	N/A	MW-BW-42-A	0.14 J	ND (0.25)	0.16 J	ND (0.25)
4	N/A	MW-BW-89-A	**0.68**	**0.77**	**0.81**	**0.66**
4	N/A	MW-BW-92-A	**0.72**	**0.81**	**0.95**	**0.83**
5	Pilot	EISB-EW-01	0.37 J	0.33 J	0.33 J	0.36 J
5	Pilot	EISB-EW-09	**1.5**	**1.4**	**1.3**	**1.2**
5	N/A	MW-BW-65-A	0.39 J	**0.70 J+**	ND (0.25)	0.27 J
5	Pilot	MW-BW-66-A	**1.5**	**1.1**	**1.1**	**0.91**
5	N/A	MW-BW-74-A	ND (0.25) [ND (0.25)]	ND (0.25) [0.12 J]	ND (0.25) [0.10 J]	ND (0.25) [0.11 J]
5	N/A	MW-BW-49-A	0.48 J	**1.4 J+**	**0.96**	0.39 J
5	N/A	MW-BW-78-A	0.24 J [0.24 J]	ND (0.25) [0.17 J]	ND (0.25) [0.15 J]	ND (0.25) [0.15 J]
5	N/A	MW-BW-80-A	**3.0**	**3.3 J+**	**2.3**	**2.0**

Notes:
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]
^ Downgradient monitoring well MW-BW-30-A sampled annually: ND.
* Preliminary data
† Qualified as estimated (J) due to field duplicate imprecision.

Table 3. OUCTP A-Aquifer Select Monitoring Well Data – wells added back to the GWMP

OUCTP Hydraulic Zone[1]	EISB Deployment Area	Well Identification	Sample Station	CT Concentration (µg/L)[2]
				2Q 2020*
			ACL:	0.5
4	2A	EW-BW-129-A	1	ND (0.25)
			2	ND (0.25)
			3	**2.0**
4	2A	EW-BW-140-A	2	ND (0.25)
			3	0.27 J
			4	0.27 J
			5	0.28 J
			6	0.27 J
5	N/A	MW-BW-82-A	5	**1.1**

Notes:
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
* Preliminary data



N

MW-BW-65-A 0.7 J+
MW-BW-75-A 1.9 J+
MW-BW-80-A 3.3 J+
MW-BW-79-A 0.24 J
MW-BW-74-A 0.12 J
MW-BW-78-A 0.17 J
MW-BW-82-A
MW-BW-77-A 0.28 J
EISB-EW-01 0.33 J
MW-BW-66-A 1.1
MW-BW-36-A 0.67
MW-BW-32-A 1.8
MW-BW-92-A 0.81
MW-BW-95-A 1.2
MW-BW-89-A 0.77
MW-BW-49-A 1.4 J+
MW-BW-42-A
EISB-EW-09 1.4
MW-B-12-A 0.65
MW-BW-28-A
MW-BW-93-A 0.25 J
MW-BW-90-A 1.3
MW-BW-35-A 0.13 J
MW-BW-31-A 1.3
City of Marina
EW-BW-155-A 0.33 J
MW-BW-27-A
EW-BW-149-A
MW-BW-26-A 3.9
MW-BW-94-AR 0.49 J
MW-BW-58-A 0.3 J
MW-BW-86-A 0.24 J
MW-BW-88-A 1.4
MW-BW-87-A 1.9
MW-BW-85-A 0.85
EW-BW-135-A
MW-BW-15-A 0.14 J
MW-BW-17-A
MW-BW-24-A
MW-BW-60-A 0.32 J
EW-BW-160-A 1.2
MW-BW-91-A 0.93
MW-B-14-A 0.6
EW-BW-166-A
EW-BW-124-A
EW-BW-109-A 1.4

Feet
0 2,500 5,000

EXPLANATION

- Extraction Well with CT Detection.
- Monitoring Well with CT Detection.
- Monitoring Well with Chloroform above ACL and CT Detection.
- Extraction Well with No CT Detection.
- Monitoring Well with No CT Detection
- Extraction Well Not Sampled
- Monitoring Well Not Sampled

MW-BW-88-A / **1.4** — Well ID - Bold When CT Exceeds the ACL. CT Concentrations (µg/L) and validation/lab qualifier.

Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L.

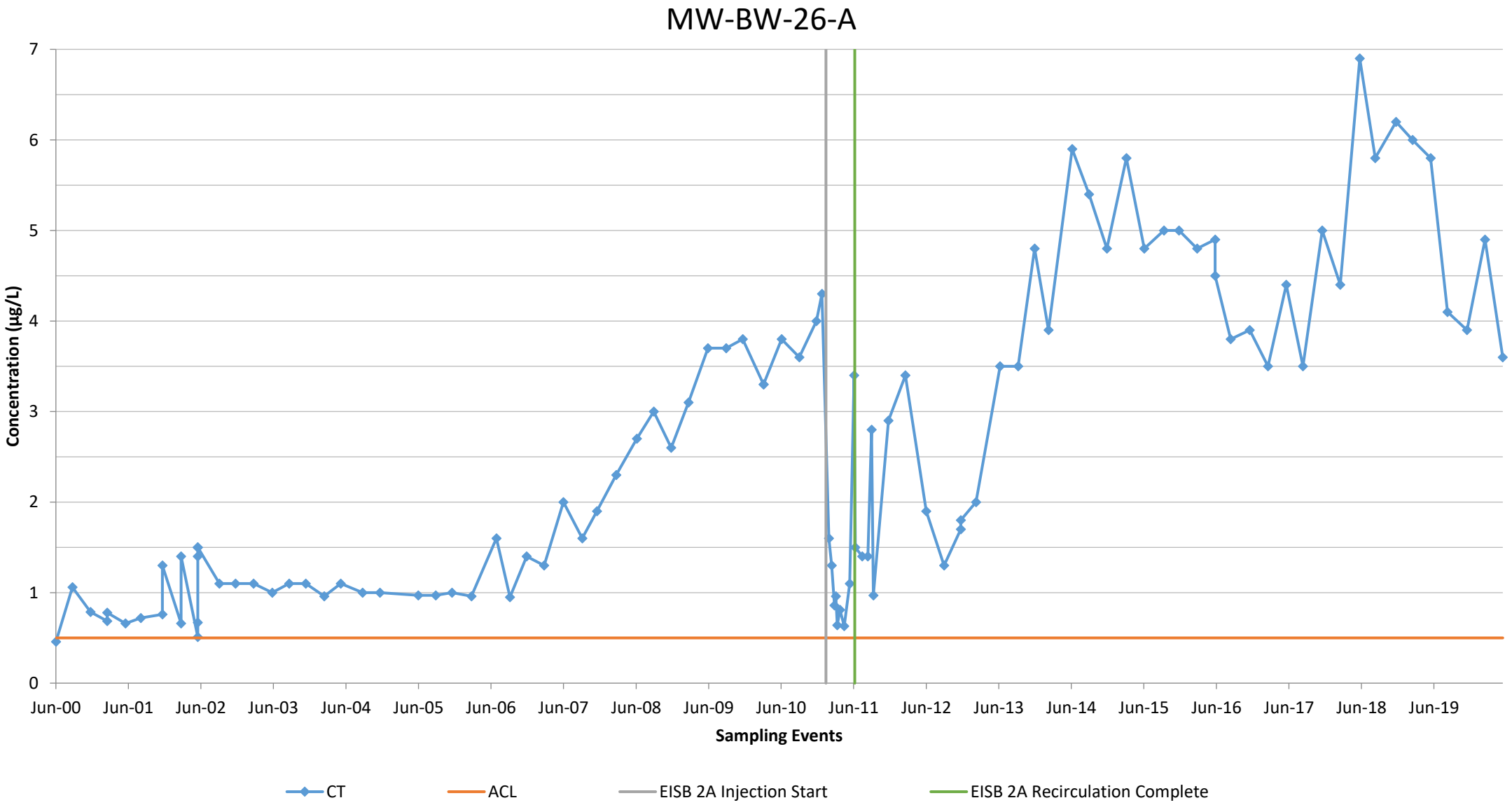
- 0.5 — Carbon Tetrachloride (CT)
- 0.5 - - - - Estimated Carbon Tetrachloride (CT) Plume Extent
- General Groundwater Flow Direction
- Approximate Location of a Groundwater Divide
- Roads
- Facilities
- Former Fort Ord Boundary

NOTES:

(1) Groundwater samples were taken between December 2, 2019 and December 6, 2019.
(2) Contours based on highest value obtained from multiple bags and/or multiple ports where applicable.
(3) Contours near wells not sampled this quarter are inferred from previous analytical data.

CARBON TETRACHLORIDE CONCENTRATIONS
A-AQUIFER
FOURTH QUARTER 2019
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2019
Groundwater Monitoring Report
Former Fort Ord, California

Ahtna | Date: 3/27/2019 | Figure: 3


MW-BW-26-A
Concentration (µg/L)
0
1
2
3
4
5
6
7
Jun-00
Jun-01
Jun-02
Jun-03
Jun-04
Jun-05
Jun-06
Jun-07
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15
Jun-16
Jun-17
Jun-18
Jun-19
Sampling Events
CT
ACL
EISB 2A Injection Start
EISB 2A Recirculation Complete

EW-BW-129-A


IW-BW-147-A
EW-BW-144-A
EW-BW-140-A
IW-BW-141-A
IW-BW-145-A
EW-BW-142-A
IW-BW-137-A
EW-BW-138-A
EW-BW-133-A
IW-BW-134-A
EW-BW-135-A
EW-BW-129-A
IW-BW-130-A
EW-BW-131-A
EW-BW-126-A
IW-BW-128-A

10
7.5
5
2.5
0
Concentration (µg/L)
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Sampling Events
CT
ACL
EISB 2A Injection Start
EISB 2A Recirculation Complete

MW-BW-82-A

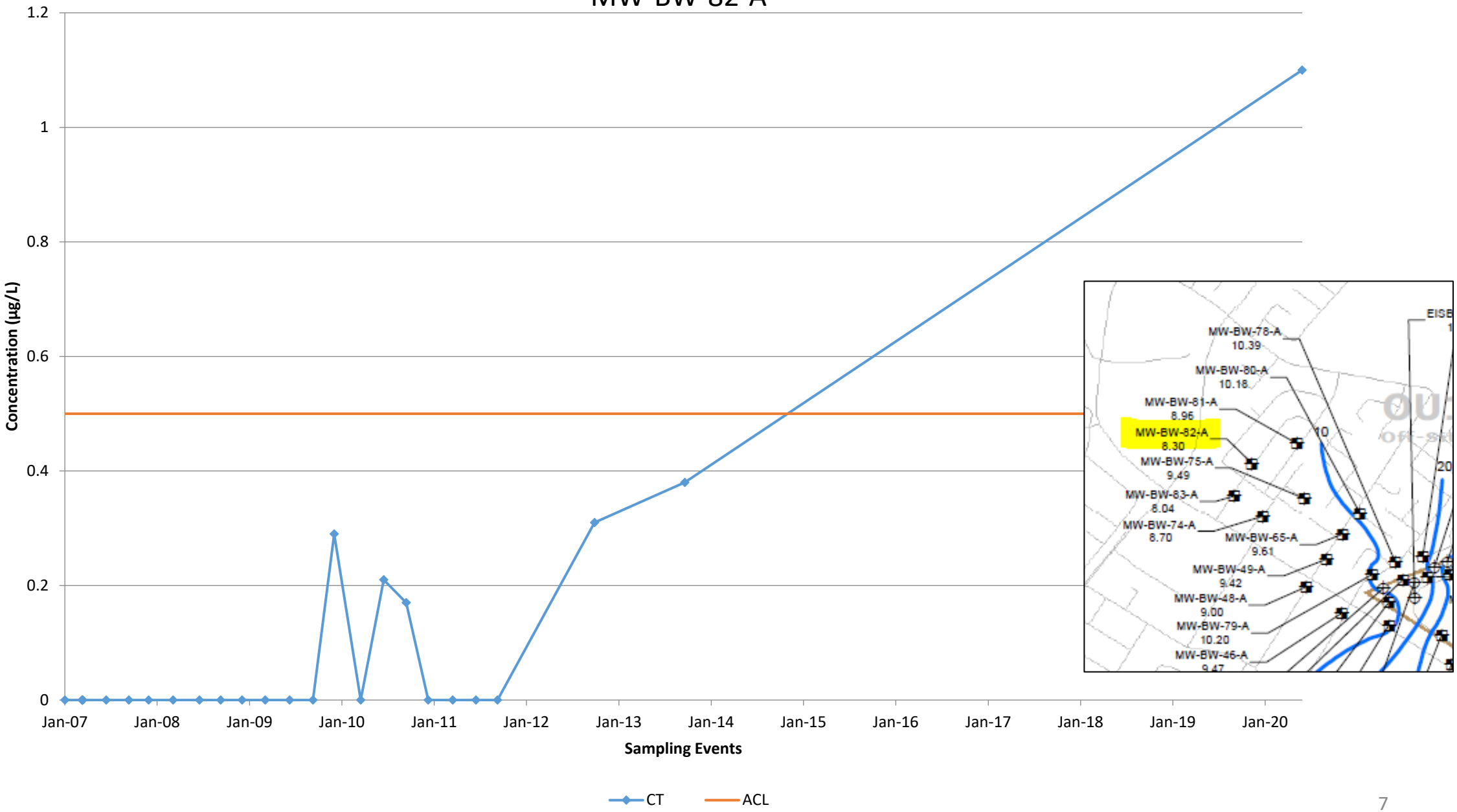
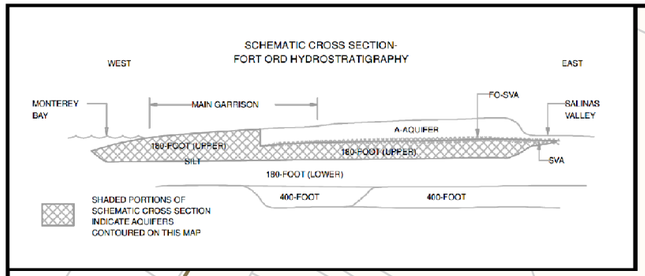

1.2
1
0.8
0.6
0.4
0.2
0
Concentration (µg/L)
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Sampling Events
CT
ACL
MW-BW-78-A
10.39
MW-BW-80-A
10.18
MW-BW-81-A
8.96
MW-BW-82-A
8.30
MW-BW-75-A
9.49
MW-BW-83-A
8.04
MW-BW-74-A
8.70
MW-BW-65-A
9.61
MW-BW-49-A
9.42
MW-BW-48-A
9.00
MW-BW-79-A
10.20
MW-BW-46-A
9.47

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

OUCTP Hydraulic Zone[1]	Well Identification	CT Concentration (µg/L)[2]			
		3Q 2019	4Q 2019	1Q 2020	2Q 2020*
	ACL:	0.5			
6	EW-OU2-09-180[3]	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
6	MP-BW-46-170	**5.0**	**5.0**	**6.5**	**4.5**
N/A	MW-BW-21-180	NS	NS	NS	0.15
N/A	MW-BW-43-180	NS	NS	NS	ND (0.25)
6	MW-BW-52-180	**0.81**	**0.92**	**0.65**	**0.62**
6	MW-BW-57-180	**0.95**	**1.1**	**1.1**	**0.96**
6	MW-BW-58-180	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
6	MW-OU2-64-180	**6.3**	**8.8**	**7.4**	**4.3**
6	MW-OU2-67-180[5]	0.11 J	0.11 J	ND (0.25)	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.
[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)
[5] Downgradient well MW-OU2-70-180 sampled annually: ND.
* Preliminary data



0 1,000 2,000
Feet

N

MP-BW-46-170
5

MW-BW-52-180
0.92

0.5

MW-BW-57-180
1.1

MW-OU2-64-180
8.8

EW-OU2-09-180

MW-BW-58-180

MW-OU2-67-180
0.11 J

0.5

D

F

EXPLANATION

- Monitoring Well With CT Detection
- Monitoring Well CT Not Detected
- Extraction Well CT Not Detected

Well ID - Bold When Concentration Exceeds the ACL

MW-OU2-64-180
8.8

CT Concentrations (µg/L) and validation/lab qualifier.

Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L.

0.5 Carbon Tetrachloride (CT)

General Groundwater Flow Direction

Roads

OU2 Landfill (Areas B Through F)

Facilities

Former Fort Ord Boundary

Notes:

(1) Samples were collected between December 2, 2019 and December 6, 2019.
(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 are based on highest value obtained from multiple bags and/or multiple ports were applicable.
(4) Contours near wells not sampled this quarter are inferred from previous analytical data.

GROUNDWATER ELEVATIONS
UPPER 180-FOOT AQUIFER
FOURTH QUARTER 2019
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2019
Groundwater Monitoring Report, Former Fort Ord, California

Ahtna | Date: 4/17/2020 | Figure: 6

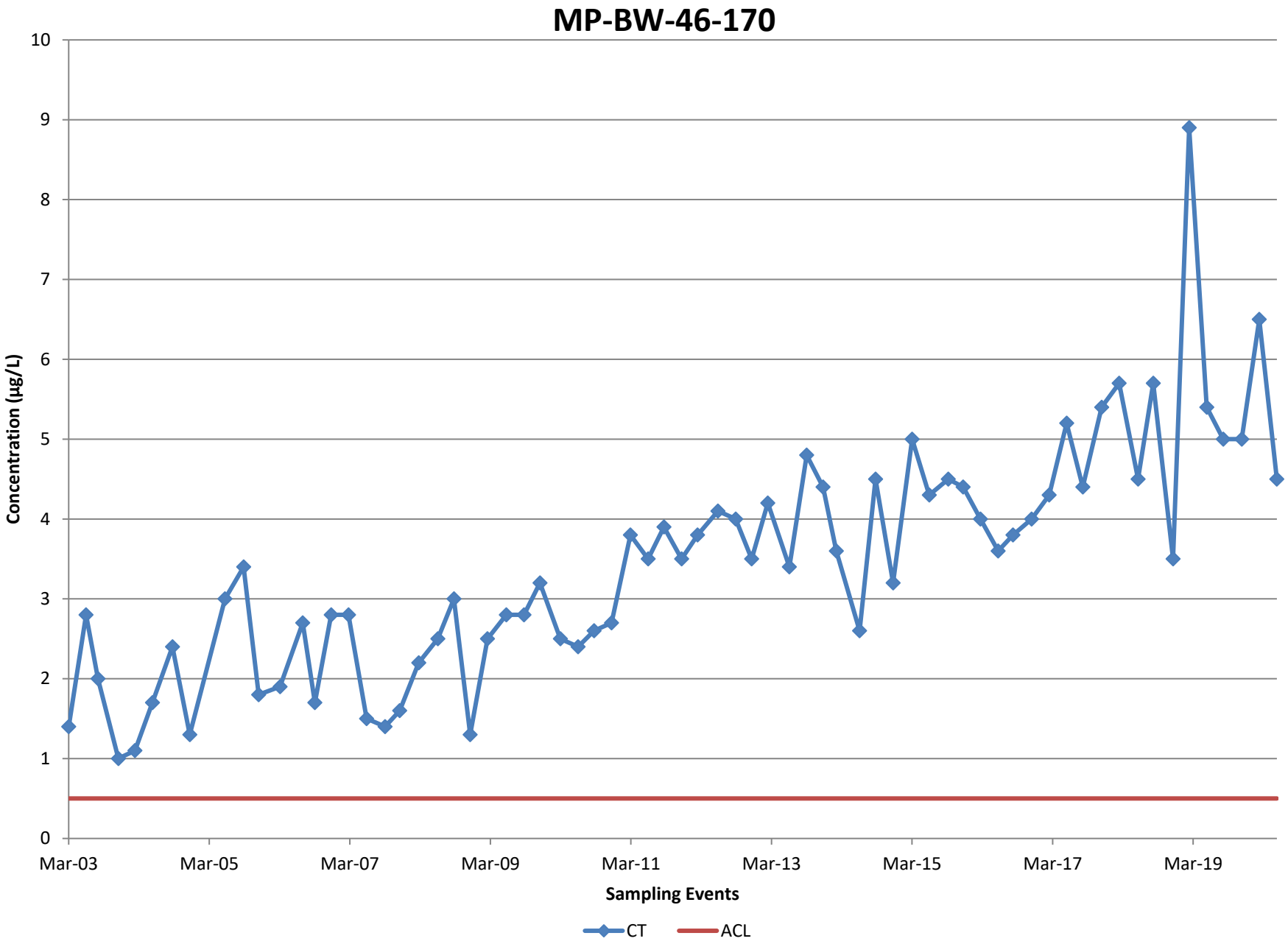

MP-BW-46-170
Concentration (µg/L)
0
1
2
3
4
5
6
7
8
9
10
Mar-03
Mar-05
Mar-07
Mar-09
Mar-11
Mar-13
Mar-15
Mar-17
Mar-19
Sampling Events
CT
ACL

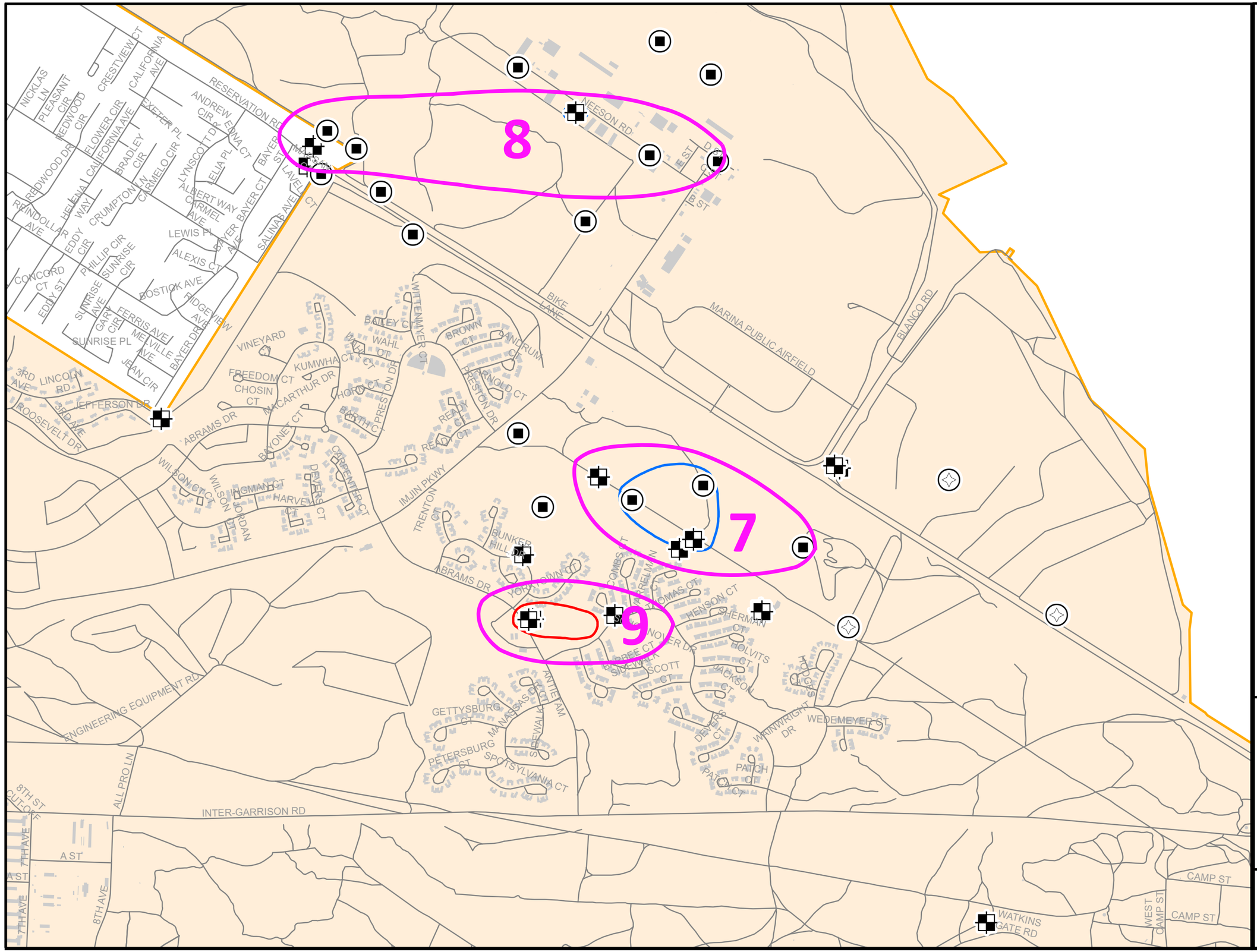
Table 5. OUCTP Lower 180-Foot Aquifer Select Monitoring Well Data

OUCTP Hydraulic Zone[1]	Well Identification	Select COC Concentrations (µg/L)[2]							
		3Q 2019	4Q 2019	1Q 2020	2Q 2020*	3Q 2019	4Q 2019	1Q 2020	2Q 2020*
		CT				TCE[4]			
Limit:		ACL 0.5				MCL 5.0			
7	MP-BW-49-316	**2.4**	**1.8**	**2.5**	**3.1**	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
7	MP-BW-49-400	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	4.6	3.9	ND (0.25)	4.4
7	MP-BW-50-339	**0.77**	**0.59**	0.48 J	**1.2**	0.14 J	0.17 J	0.22 J	ND (0.25)
7	MP-BW-50-384	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	1.3	2.3	2.4	1.4
7	MP-BW-51-405	0.11 J	0.12 J	0.18 J	0.13 J	1.3	1.7	2.0	1.7
7	MW-OU2-69-180	**0.86**	**1.0**	**1.1**	**0.91**	0.17 J	ND (0.25)	ND (0.25)	ND (0.25)
8	AIRFIELD	ND (0.25)	0.40 J	0.42 J	0.44 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)
9	EW-OU2-07-180	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	3.3	2.9	2.9	2.8
N/A	FO-29	0.13 J	0.18 J	0.23 J	0.23 J	1.7	1.6	1.9	1.8
N/A	FO-30	0.20 J	0.19 J	0.16 J	0.24 J	0.44 J	0.39 J	0.69	0.52
N/A	FO-31	0.12 J	0.13 J	0.15 J	0.14 J	0.78	0.79	1.0	0.85
N/A	MP-BW-41-318	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.60	0.55	0.67
N/A	MP-BW-41-353	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	1.2	1.3	1.3
9	MW-BW-59-180	ND (0.25)	ND (0.25)	0.11 J	0.13 J	**10.7**	**9.3**	**9.9**	**10.9**
N/A	MW-OU2-72-180	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	1.3	1.4	1.6	1.3
9	MW-OU2-78-180	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	2.2	2.3	2.3	2.0
9	MW-OU2-82-180	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	4.9	5.0	4.2	3.7

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.
[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)
[5] Downgradient well MW-OU2-70-180 sampled annually: ND.
* Preliminary data

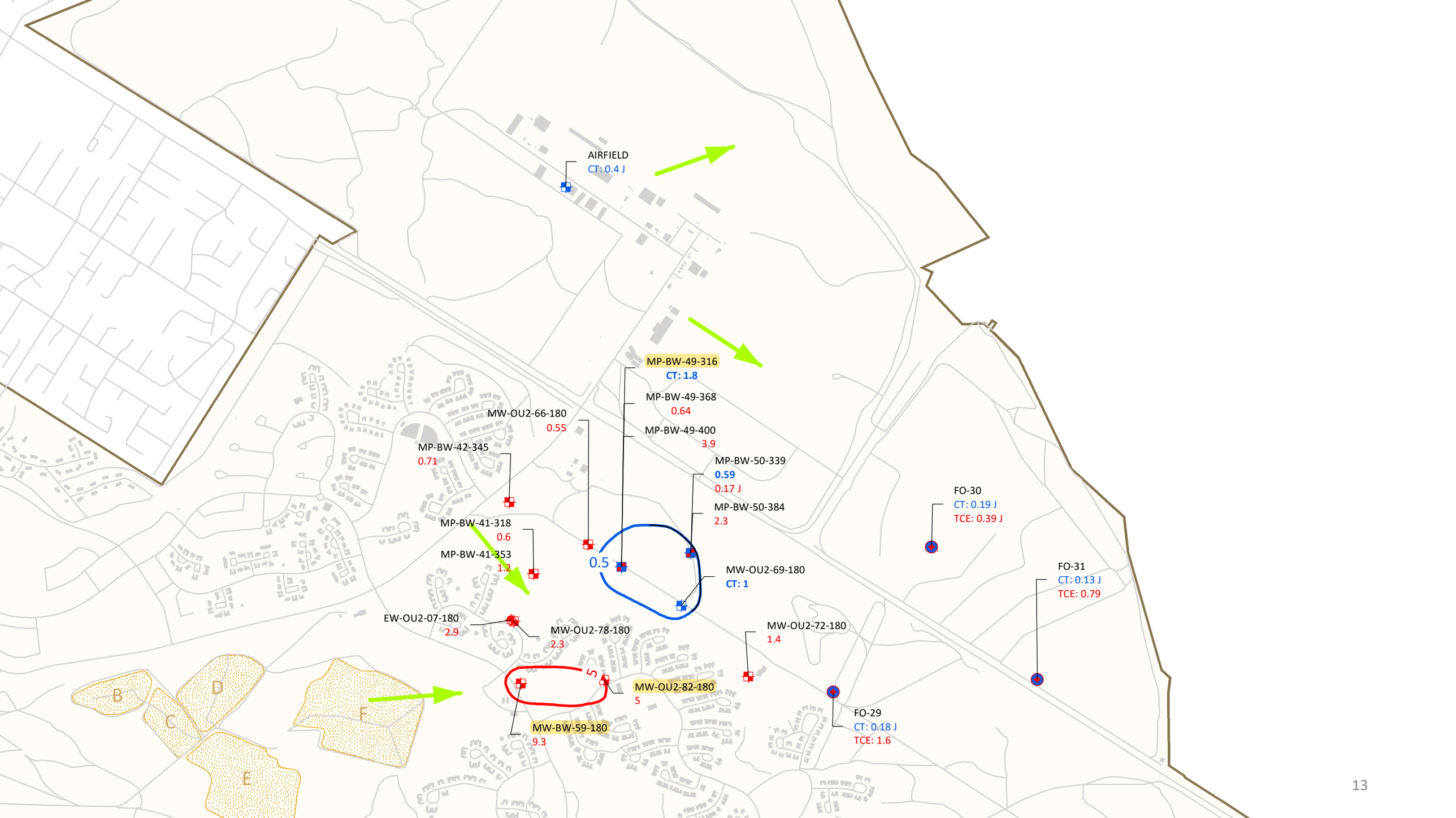


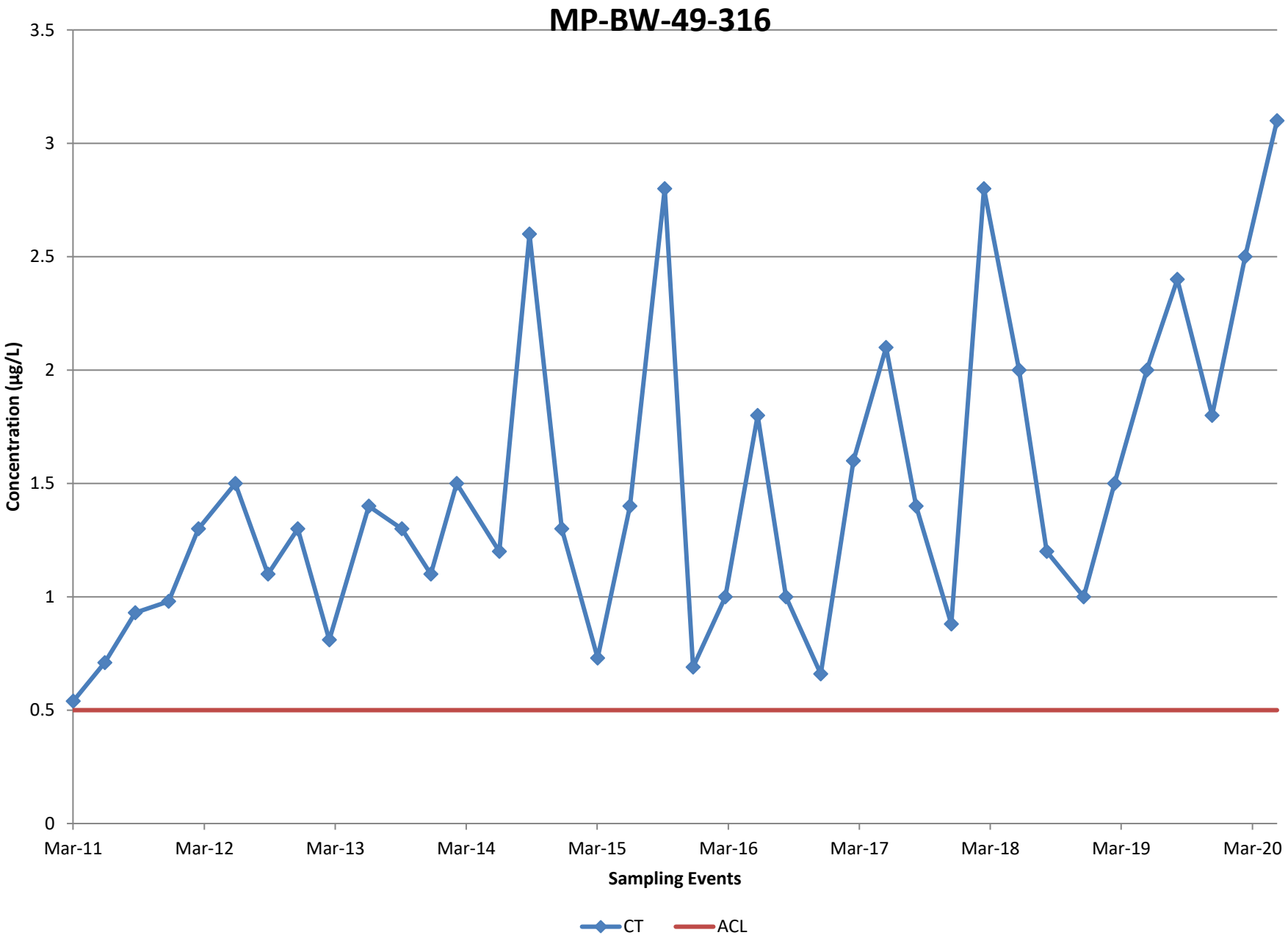
OUCTP Lower 180-Foot Aquifer Hydraulic Zone Map

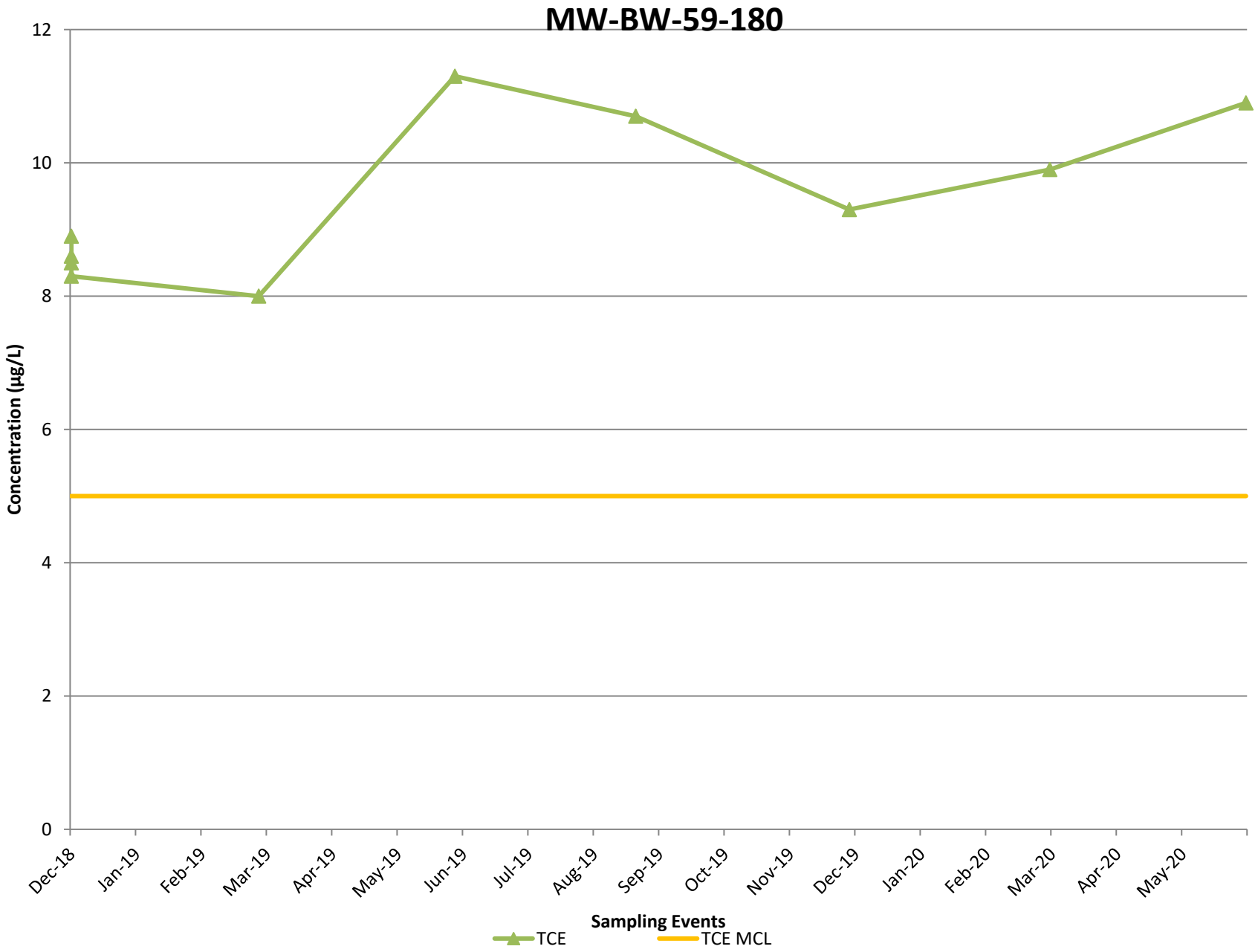
Quality Assurance Project Plan
Former Fort Ord, California
Volume 1, Appendix A, Revision 8
Groundwater Remedies and Monitoring
at Operable Unit 2, Sites 2 and 12,
and Operable Unit Carbon Tetrachloride Plume

Ahtna

Figure: **13**


AIRFIELD
CT: 0.4 J
MP-BW-49-316
CT: 1.8
MP-BW-49-368
0.64
MW-OU2-66-180
0.55
MP-BW-49-400
3.9
MP-BW-42-345
0.71
MP-BW-50-339
0.59
0.17 J
MP-BW-50-384
2.3
MP-BW-41-318
0.6
MP-BW-41-353
1.2
0.5
MW-OU2-69-180
CT: 1
FO-30
CT: 0.19 J
TCE: 0.39 J
FO-31
CT: 0.13 J
TCE: 0.79
EW-OU2-07-180
2.9
MW-OU2-78-180
2.3
MW-OU2-72-180
1.4
5
MW-OU2-82-180
5
MW-BW-59-180
9.3
FO-29
CT: 0.18 J
TCE: 1.6
B
C
D
E
F


MP-BW-49-316
Concentration (µg/L)
3.5
3
2.5
2
1.5
1
0.5
0
Mar-11
Mar-12
Mar-13
Mar-14
Mar-15
Mar-16
Mar-17
Mar-18
Mar-19
Mar-20
Sampling Events
CT
ACL


MW-BW-59-180
12
10
8
6
4
2
0
Concentration (µg/L)
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Sampling Events
TCE
TCE MCL