

Former Fort Ord Operable Unit 2 Data and Status

HTW BCT Meeting, April 10, 2019

Table 1: OU2 GWTP Statistics as of March 30, 2019

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons per minute)	Percent of Time Online	COC Mass Removed (pounds)
March 2019	36,255,665	812	91.3	1.94
Total since October 1995	7.581 billion			851

March 2019 Key Events for OU2

- March 1-8: First Quarter 2019 GWM sampling, including PFOA/PFOS sampling.

April 2019 Key Events for OU2

- Prepare for old OU2 GWTP decommissioning.
- Prepare for Western Network and EW-OU2-09-A connection and operation.

Table 2: March 2019 – OU2 Analytical Results at TS-OU2-INJ-01

COC	Discharge Limit (µg/L)	Analytical Results (µg/L)
		3/20/2019
1,1-dichloroethane (1,1-DCA)	5.0*	ND (0.25)
1,2-dichloroethane (1,2-DCA)	0.5	ND (0.25)
1,2-dichloropropane (1,2-DCP)	0.5	ND (0.25)
Benzene	0.5	ND (0.25)
Carbon tetrachloride (CT)	0.5	ND (0.25)
Chloroform	2.0*	ND (0.25)
Cis-1,2-dichloroethene (cis-1,2-DCE)	6.0*	ND (0.25)
Methylene Chloride	0.5	ND (0.50)
Tetrachloroethene (PCE)	0.5	ND (0.25)
Trichloroethene (TCE)	0.5	ND (0.25)
Vinyl chloride (VC)	0.1	ND (0.05)

Notes:

COC: chemical of concern

µg/L: micrograms per liter

ND: The analyte was not detected above the limit of detection (LOD).

NS: not sampled.

J: Estimated results below the limit of quantitation (LOQ).

TS-OU2-INJ: Injection point of compliance, the OU2 effluent pipeline.

*Discharge limits for low carbon affinity compounds were increased to the Aquifer Cleanup Level (ACL).

Results in *italics* are above the discharge limit, and results in **bold** and shaded are concentrations above the ACL

Results in *gray* are ND



Table 3. OU2 A-Aquifer Select Extraction/Monitoring Well Data

OU2 Hydraulic Zone ¹	Well Identification ²	Select COC Concentrations (µg/L)									
		4Q 2018					1Q 2019*				
		TCE	PCE	1,1-DCA	1,2-DCA	VC	TCE	PCE	1,1-DCA	1,2-DCA	VC
ACL:		5.0	3.0	5.0	0.5	0.1	5.0	3.0	5.0	0.5	0.1
1	EW-OU2-16-A	2.7	2.3	6.6	2.3	0.94	2.5	2.5	6.2	2.2	0.76
1	EW-OU2-17-A	11.9	10.4	3.9	0.11 J	0.20	15.1	8.6	3.7	0.17 J	0.17
1	EW-OU2-18-A	6.8	6.9	12.5	1.8	1.0	8.9	8.6	12.6	1.7	0.88
1	EW-OU2-19-A	8.3	9.7	19.1	2.5	1.4	7.6	9.8	18.5	2.4	1.4
1	EW-OU2-20-A	2.5 J+	2.9 J+	11.0 J	1.5 J+	1.2 J+	2.7	3.6	8.7	1.1	0.84
1	MW-OU2-02-A	0.52	2.3	5.3	1.2	9.4	1.1	2.9	6.6	1.5	8.8
1	MW-OU2-44-A	4.7	3.7	16.0	4.0	0.59	4.7	5.4	13.5	3.1	1.2
1	MW-OU2-73-A	ND (0.25)	1.1	6.1	0.95	10.5	ND (0.25)	1.4	4.6	0.73	11.3
2	EW-OU2-15-A	1.4	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)	0.67	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)
2	MW-OU2-27-A	ND (0.25)	3.0	0.27 J	ND (0.25)	ND (0.05)	ND (0.25)	3.1	0.25 J	ND (0.25)	ND (0.05)
3	EW-OU2-09-A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3	EW-OU2-10-A	1.4 J+	1.0 J+	0.62 J+	0.83 J+	0.10	1.2	0.87	0.47 J	0.66	0.064 J
3	EW-OU2-11-AR	1.3	0.85	0.43 J	0.31 J	ND (0.05)	1.6	0.76	0.42 J	0.30 J	ND (0.05)
3	EW-OU2-12-A	7.5	4.6	5.9	2.0	0.17	8.4	4.9	5.9	2.3	0.14
3	EW-OU2-13-A	6.2	2.2	1.7	3.6	ND (0.05)	7.3	2.5	1.9	4.1	ND (0.05)
3	MW-OU2-25-A	0.90 J+	0.45 J+	0.45 J+	0.70 J+	ND (0.05)	1.1	0.44 J	0.59	0.91	ND (0.05)
4	EW-OU2-04-A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4	EW-OU2-05-A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4	EW-OU2-06-A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4	MW-OU2-40-A	14.9	0.61	0.24 J	ND (0.25)	ND (0.05)	14.8	0.50	0.27 J	ND (0.25)	ND (0.05)
5	MW-OU2-04-A	2.9	0.77	0.59	0.50	ND (0.05)	3.4	1.0	0.86	0.73	ND (0.05)
5	MW-OU2-06AR	3.7	0.78	1.1	0.47 J	ND (0.05)	0.77	0.13 J	0.11 J	0.15 J	ND (0.05)
5	MW-OU2-08-A	7.7	7.1	26.6	1.1	0.77	8.1	6.3	31.0	1.4	0.91
5	MW-OU2-75-A	3.7	6.4	7.8	ND (0.25)	0.087 J	4.1	6.8	9.0	ND (0.25)	0.11
5	MW-OU2-81-A	13.9	12.1	3.9	0.19 J	ND (0.05)	13.4	13.6	4.3	0.23 J	ND (0.05)
5	MW-OU2-83-A	0.55	0.60	3.0	ND (0.25)	ND (0.05)	0.86	0.70	4.7	ND (0.25)	0.086 J
5	MW-BW-50-A	0.58	1.2	0.61	ND (0.25)	ND (0.05)	1.8	5.9	3.0	ND (0.25)	ND (0.05)

Notes:

ACL: Aquifer Cleanup Level
 COC: chemical of concern
 1,2-DCA: 1,2-dichloroethane
 TCE: trichloroethene
 PCE: tetrachloroethene
 1,1-DCA: 1,1-dichloroethane
 µg/L: micrograms per liter
 NS: not sampled
 ND: The analyte was not detected above the detection limit.
 J: Estimated result with a high (+) or low (-) bias.
¹ Hydraulic zones are identified in the Groundwater QAPP.
² Extraction wells not listed have met the QAPP decision rules to no longer operate.
 Results in **bold** and shaded are concentrations above the ACL
 Results in gray are ND
 Results in brackets from a second deeper passive diffusion bag
 * Preliminary data

Table 4. OU2 Upper 180-Foot Select
Extraction/Monitoring Well Data

OU2 Hydraulic Zone ¹	Well Identification ²	TCE Concentration (µg/L)	
		4Q 2018	1Q 2019*
ACL:		5.0	
6	EW-OU2-03-180	9.6	9.0
6	MW-OU2-50-180	9.9	10.7
6	MW-OU2-51-180	0.22 J	2.4
6	MW-OU2-55-180	ND (0.25)	NS
7	EW-OU2-05-180	1.6	3.6
7	EW-OU2-06-180	6.0	4.8
7	EW-OU2-10-180	5.5	6.8
7	EW-OU2-11-180	8.2	NS
7	EW-OU2-12-180	8.9	10.3
7	MW-OU2-81-180	7.0	6.1
7	MW-OU2-44-180	16.4	13.1
8	EW-OU2-08-180	3.1	2.4
8	MW-OU2-28-180	5.0	3.9
8	MW-OU2-62-180	8.0	13.0
9	EW-OU2-01-180	3.7	3.5
9	EW-OU2-02-180R	5.6	6.4
9	MW-OU2-06-180R2	2.0	3.2
9	MW-OU2-43-180	2.2	3.8

Notes:

ACL: Aquifer Cleanup Level

COC: chemical of concern

1,2-DCA: 1,2-dichloroethane

TCE: trichloroethene

PCE: tetrachloroethene

1,1-DCA: 1,1-dichloroethane

µg/L: micrograms per liter

NS: not sampled

ND: The analyte was not detected above the detection limit.

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

¹ Hydraulic zones are identified in the Groundwater QAPP.

² Extraction wells not listed have met the QAPP decision rules to no longer operate.

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

Results in *gray* are ND

Results in brackets from a second deeper passive diffusion bag

* Preliminary data

Table 5. OU2 PFOA/PFOS Data

Well ID	Sample Depth (ft btoc)	PFOA (µg/L)	PFOS (µg/L)	PFOT (µg/L)
A-Aquifer				
MW-OU2-06-AR	118	0.00762	0.00790	0.01552
MW-OU2-08-A	125	0.00245 J	ND (0.002)	0.00245
MW-OU2-40-A	118	ND (0.002)	0.00351 J	0.00351
MW-OU2-44-A	90	ND (0.002)	ND (0.002)	-
MW-OU2-27-A	113	ND (0.002)	ND (0.002)	-
MW-OU2-73-A	122	ND (0.002)	ND (0.002)	-
MW-OU2-75-A	116	ND (0.002)	0.00193 J	0.00193
Upper 180-Foot Aquifer				
EW-OU2-01-180	158	ND (0.002)	ND (0.002)	-
MW-OU2-23-180	219	0.113	0.447	0.560
MW-OU2-24-180	214	0.00326 J	0.00254 J	0.00580
MW-OU2-44-180	188	0.00309 J	0.00343 J	0.00652
MW-OU2-56-180	225	0.00252 J	ND (0.002)	0.00252
OU2 GWTP				
TS-OU2-INF-01	-	0.01560	0.01530	0.03090
TS-OU2-INF-02	-	ND (0.002)	ND (0.002)	-
TS-OU2-EFF-1A	-	ND (0.002)	ND (0.002)	-
TS-OU2-EFF-2A	-	ND (0.002)	ND (0.002)	-
TS-OU2-INJ-01	-	ND (0.002)	ND (0.002)	-

Notes:

-: collected from sample spigot

ft btoc: feet below top of casing

µg/L: micrograms per liter

PFOA: perfluorooctanoic acid

PFOS: perfluorooctane sulfonate (perfluorooctanesulfonic acid)

PFOT: sum of PFOA and PFOS concentrations

Results in *gray* are not detected above the limit of detection

Results in **bold** and shaded are above the USEPA HA of 0.07 µg/L

J: estimated result below the limit of quantitation

ND: not detected

Results are preliminary

TS-OU2-INF-01: Eastern Main influent (EW-OU2-16-A, -17-A, -18-A, -19-A, -20-A, -05-180, -06-180, -09-180, -10-180, -12-180)

TS-OU2-INF-02: Western Main influent (EW-OU2-10-A, -11-AR, -12-A, -13-A, -02-180R, -03-180)

TS-OU2-EFF-1A: Lead GAC Vessel Effluent for GAC Train #1

TS-OU2-EFF-2A: Lead GAC Vessel Effluent for GAC Train #2

TS-OU2-INJ-01: GWTP effluent



Legend

- OU2 GWTP-E: existing Operable Unit 2 Groundwater Treatment Plant in operation until October 2018 when transition to GWTP-N began, not sampled.
- OU2 GWTP-N: new Operable Unit 2 Groundwater Treatment Plant operation started in November 2018, results below USEPA HA
- ⊕ Extraction Well - Sample for PFOA/PFOS
PFOA and PFOS results not detected
- ⊕ Extraction Well - Sample for PFOA/PFOS
PFOA and PFOS results below USEPA HA
- ⊞ Monitoring Well - Sample for PFOA/PFOS
PFOA and PFOS results not detected
- ⊞ Monitoring Well - Sample for PFOA/PFOS
PFOA and PFOS results below USEPA HA
- ⊕ Extraction Well - not sampled
- ⊞ Monitoring Well - not sampled
- Groundwater Divide

GWMP A-Aquifer COCs 2018-1Q

- 1,1-DCA (5.0 ug/L)
- 1,2-DCA (0.5 ug/L)
- PCE (3.0 ug/L)
- TCE (5.0 ug/L)
- Vinyl Chloride (0.1 ug/L)

0 375 750 1,500 Feet

OU2 A-Aquifer Well Sampling Locations

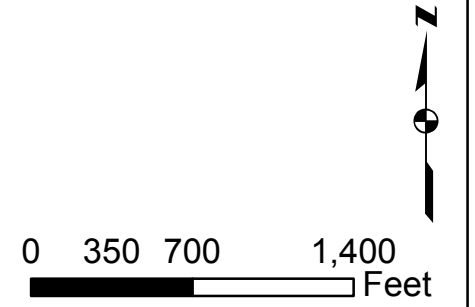
Operable Unit 2
PFOA/PFOS Tech Memo
Former Fort Ord, California



- Legend**
- OU2 GWTP-E: existing Operable Unit 2 Groundwater Treatment Plant in operation until October 2018 when transition to GWTP-N began, not sampled.
 - OU2 GWTP-N: new Operable Unit 2 Groundwater Treatment Plant operation started in November 2018, results below USEPA HA
 - ⊕ Extraction Well - Sample for PFOA/PFOS
PFOA and PFOS results not detected
 - ⊕ Extraction Well - Sample for PFOA/PFOS
PFOA and PFOS results below USEPA HA
 - ⊕ Monitoring Well - Sample for PFOA/PFOS
PFOA and PFOS results not detected
 - ⊕ Monitoring Well - Sample for PFOA/PFOS
PFOA and PFOS results below USEPA HA
 - ⊕ Monitoring Well - Sample for PFOA/PFOS
PFOA and PFOS results above USEPA HA
 - ⊕ Extraction Well - not sampled
 - ⊕ Monitoring Well - not sampled

GWMP Upper 180-Foot Aquifer COCs

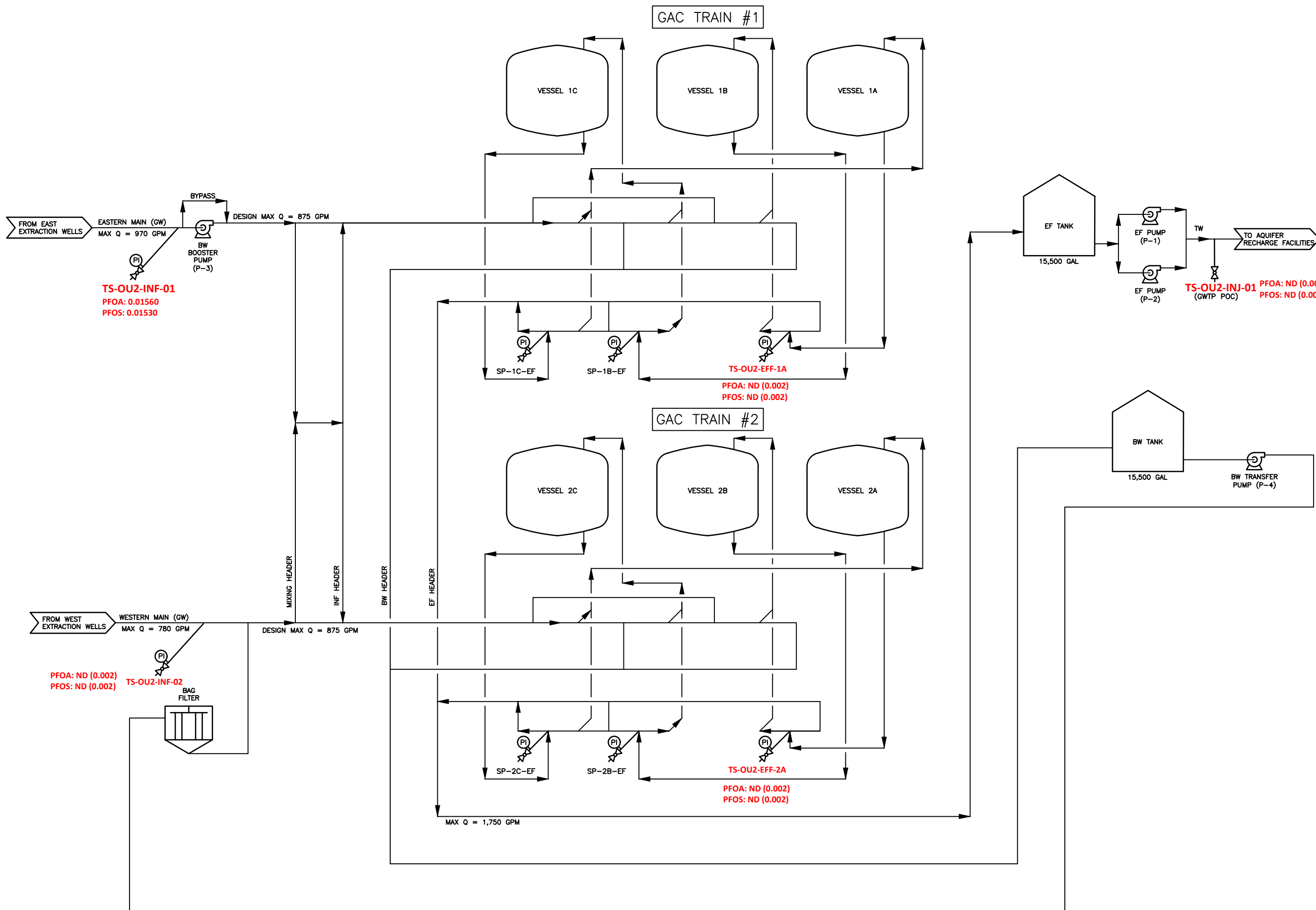
— TCE (5.0 ug/L) 2018-1Q



OU2 Upper 180-Foot Aquifer Well Sampling Locations

Operable Unit 2
PFOA/PFOS Tech Memo
Former Fort Ord, California

FILENAME: P:\Projects\JRGF JV0001RDRRRE JV GWTP Fort Ord\10.0_CADD\CADD\400_Current Drawings\26.0_Datam\Figures\Fig 2-5.dwg



Legend

ABBREVIATIONS

BW	BACKWASH
EF	EFFLUENT
GAC	GRANULAR ACTIVATED C.
GAL	GALLONS
GPM	GALLONS PER MINUTE
GW	GROUNDWATER (UNTREA
GWTP	GROUNDWATER TREATME
MAX	MAXIMUM
PI	PRESSURE INDICATOR
POC	POINT OF COMPLIANCE
Q	FLOW RATE
SP	SAMPLE PORT
TW	TREATED WATER

- NOTES**
1. VALVES ARE NOT INDICATED.
 2. FLOW ARROWS INDICATE NORMAL OPERATION, WITH VESSEL SEQUENCE A-B-C IN EACH GAC TRAIN.

Locations in red font are sample locations for PFOA/PFOS.

Note: The lead GAC vessel effluent will be sampled at the time of the sampling event

**OU2 GWTP
Sampling
Locations**

Operable Unit 2 PFOA/PFOS
Sampling and Analysis
Former Fort Ord, California



Figure

4