

**Appendix B – Pilot Study Design Criteria, Operational Information,
and Water Quality Data**

Table 1 –Siemens PVDF UF Membranes

Parameter	Units	Value
Sub-module Type	-	L10V
Membrane Material	-	PVDF
Membrane Type	-	Hollow fiber
Filtration Direction	-	Outside to inside
Pore Size (nominal)	micron	0.04
No. of Fibers per Element	-	9,600
Ave. Active Membrane Area (OD)	ft ²	252
Operating Temperature Range	°C	>0 - 40
Maximum Temperature	°C	45
Operating pH Range	-	2 – 10
Max. Trans-Membrane Pressure (TMP)	psi	22
Max. Exposure to Chlorine/Chloramine	ppm	1,000

Table 2 - UF System: Flows, Fluxes, and Maintenance for 12-Module Siemens/Memcor Unit (Memcor 12M10C CMF)

Parameter	Units	Recommended Value	Actual Value
Flows			
Feed	gpm	40-50	46
Waste/Backwash*	gpm	3-4	3-4
Net Filtrate/Permeate	gpm	37-46	42-43
Flux and Recovery			
Flux	gfd	19-24	22
Recovery (for L10V Module)	%	93	91-93
Backwash			
Frequency	min	30	15-22
Flow	gpm	120	100
Co-current Duration	sec	23	23
Counter Current Duration	sec	23	23
Chemically Enhanced Backwash (CEB)			
Frequency	days	7	2-18
NaOCl Concentration	mg/L	500	500-1000
Soak Duration	min	30	15-30
Rinse Duration	sec	50	90-120
Clean in Place (CIP)			
Frequency	days	30	14-36
Citric Acid Concentration**	%	2	2
NaOCl Concentration	mg/L	500	500-1000
Duration	hrs	6	6

* Equivalent continuous flow rate

** Citric acid solutions were heated to 100°F (38°C), per the manufacturer’s recommendation.

Table 3 - GE/Zenon ZeeWeed MBR Membranes

Parameter	Unit	Phases 1 and 2	Phase 3
Membrane Name Membrane Material	-	ZeeWeed 500c PVDF	ZeeWeed 500d PVDF
Membrane Type	-	Hollow fiber	Hollow fiber
Filtration Direction	-	Outside to inside	Outside to inside
Pore Size (nominal)	micron	0.04	0.04
Operating Temperature Range	°C	0.1 - 40	0.1 - 40
Maximum Temperature	°C	54*	40
Operating pH Range	-	5.0 – 9.5	5.0 – 9.5
Max. TMP	psi	10*	8
Max. Chlorine Concentration	ppm	2,000*	1,000

*Based on conversations with the manufacturer.

Table 4 - Average Operating Conditions of the MBR System

Parameter	Units	Phase 1	Phase 2	Phase 3
Flows and Flux				
Feed Flow	gpm	29	21	34
Flux	gfd	10	14	20
Hydraulic Retention Time (HRT)	min	73	96	74
Cyclic Backpulse				
Interval	min	11	11	11*
Duration	sec	45	45	45
Flow	gpm	51	25	27
Biological Parameters				
Membrane Tank Mixed Liquor Suspended Solids (MLSS)	mg/L	3,700	3,300	4,000
Solids Retention Time (SRT)	days	11	18	12
Mixed Liquor Recirculation Rate	gpm	120	140	140
Air Scouring Rate	scfm	130	120	130
Aeration Rate in Aeration Tank	scfm	25	25	25
Maintenance Cleaning				
Frequency	per week	1	---	1
NaOCl Concentration	mg/L	200	---	200
Manual Relaxations				
Frequency	per week	--	3	2
Duration	min	---	45	45

*In response to TMP increases (Section 4.2.1.2), the backpulse interval was decreased to as low as 6 min from February 6-29, 2012; to 10 min from March 5-12, 2012, and to as low as 6 min from May 2-7, 2012.

Table 5 - MBR Membrane Configuration

Parameter	Units	Phase 1	Phase 2	Phase 3
Membrane Tank Volume	gal	1,588	1,588	2,075
Modules				
Module Height	ft	6.6	6.6	7.2
Module Width	ft	2.8	2.8	2.8
Module Length	ft	0.7	0.7	0.7
Cassettes				
Number of Cassettes in Service	-	2	1	1
Number of Modules/Cassette	-	10	10	8
Total Number of Modules	-	20	10	8
Total Active Membrane Area	ft ²	4,730	2,365	2,720

Table 6 – RO Pilot System

Parameter	Description
Membranes and Housing	
RO membranes	4-inch diameter – Hydranautics ESPA2
Filter Housing	Bekaert PROTECT Model PRO-4-300-SP
Maximum Pressure	300 psig
Prefilter	5 micron cartridge
Power	
RO Skid	480V/3 phases/60Hz
Pump	7.5 hp
Instrumentation and Controls	
RO Control System	R&D Specialties Series 250 PLC controller with communication package, status lamps and pump motor starter
Instrumentation	Influent flow, permeate and concentrate flow meters, conductivity sensors, pH meter and pressure sensors
Liquid Filled Pressure Gages	Panel mount for pump effluent, membrane feed and final concentrate
Antiscalant System	
Chemical Addition Tanks	Two 25-gallon tanks
Chemical Addition Pumps	Two Pulsafeeder chemical pumps

Table 7 – Average Operating Conditions of UF-RO System

Parameter	Units	Phase 1	Phase 2	Phase 3
Net Operating Time	hours	5,204	3,537	3,292
Feed Flow	gpm	17.5	17.5	17.5
Permeate Flow	gpm	14.8	14.8	14.7
Recovery	%	84.7	84.4	84.3
Specific Flux	gfd	12.0	11.9	11.9
Initial Pressure	psi	171	147	167
Second Stage Pressure	psi	157	132	152
Antiscalant Dose	mg/L	5.7	7.3	6.5
Sulfuric Acid Dose	mg/L	162	97	137
Influent pH	-	6.5	6.8	6.7
Permeate pH	-	5.5	5.6	5.5
Concentrate pH	-	-	7.2	7.1

Table 8 – Average Operating Conditions of MBR-RO System

Parameter	Units	Phase 1	Phase 2	Phase 3
Net Operating Time	hours	2,549	2,850	3,606
Feed Flow	gpm	17.5	17.5	17.5
Permeate Flow	gpm	14.7	14.7	14.7
Recovery	%	84.4	84.1	84.2
Specific Flux	gfd	11.9	11.9	11.9
Initial Pressure	psi	164	141	166
Second Stage Pressure	psi	148	134	152
Antiscalant Dose	mg/L	3.3	6.5	6.5
Sulfuric Acid Dose	mg/L	53	3	25
Influent pH	-	6.5	7.1	6.9
Permeate pH	-	5.6	5.8	5.7
Concentrate pH	-	-	7.3	7.2

Table 9 – UV System Design

	Trojan UV Max G Reactors	Calgon Rayox	
Number of Reactors	3 flow-through reactors	1 batch reactor	
Lamp Type	100-W low-pressure high-output (LPHO) amalgam lamp	40-W LPHO lamp	1-kW medium pressure lamp
Output	monochromatic radiation at 254 nm	monochromatic radiation at 254 nm	polychromatic radiation

Table 10 – Summary of AOP Experiments

Experiment Number		Goal: Determination of	Tested UV EEDs (kWh/kgal)	Tested H ₂ O ₂ Doses (mg/L)
UF/RO	MBR/RO			
1	2	Approximate UV dose	0.5-7.0	0
3	4	Approximate H ₂ O ₂ dose	~4	0-5
5	6	Effects of Combined UV/ H ₂ O ₂	0-6	0-6

Table 11 – Approximate Hydrogen Peroxide Doses (mg/L) Required to Meet Treatment Goals in the Trojan UV Reactor with the Maximum Observed Concentrations in the RO Permeates

Compound	UV EED (kWh/kgal)		
	2	4	6
1,4-dioxane	4-6	2-3	~2
NDMA	x	0	0
NDEA	x	x	x
NDPA	x	6	4

Water Quality Data

Table 1 – Water Quality from JWPCP Secondary Effluent, OCWD GWRS Permit, Pilot Study, and Metropolitan Source Waters

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water †	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000-2014)	Silverwood Lake (2000-2014)
Nutrients	Ammonia-N	mg/L	37 [±]	—	36 [*]	< 1.0 [*]	1.9 [*]	<1.0 [*]	—	—	<0.03 [§]	<0.03 [§]
	Ammonia-N (Title 22+ data)	mg/L	39.5	—	38	<0.1	1.3	0.3	1.3	0.2	—	—
	Nitrite (as N)	mg/L	—	—	0.04 [*]	0.02 [*]	<0.01 [*]	<0.01 [*]	—	—	<0.005 [§]	0.009 [§]
	Nitrate (as N)	mg/L	0.05 [±]	3	<0.10 [*]	39 [*]	<0.10 [*]	2.8 [*]	—	—	0.2 [§]	0.7
	Nitrate (as N) (Title 22+ data)	mg/L	< 0.1	—	< 0.1	41	< 0.1	2.3	0.2	3.3	—	—
	Total Nitrate, Nitrite (as N) (Title 22+ data)	mg/L	< 0.1	—	<0.1	41	<0.1	2.3	0.2	3.3	—	—
	Total Nitrogen	mg/L	41 [±]	5	—	—	1.9 [‡]	2.8 [‡]	—	—	—	—
	Organic Nitrogen	mg N/L	2.6	—	1.3	< 1.0	<1.0	<1.0	<1.0	<1.0	—	—
	TKN (as N)	mg/L	39.5 [*]	—	38 [*]	<1.0 [*]	2.0 [*]	<1.0 [*]	—	—	0.22 [§]	0.33 [§]
	Phosphate (as P)	mg/L	0.5 [*]	—	0.25 [*]	0.29 [*]	<0.13 [*]	<0.13 [*]	—	—	—	—
Phosphorus, Total	mg/L	0.5	—	0.15	0.19	<0.02	<0.02	<0.02	<0.02	0.01	0.07	
Wastewater Indicators	COD, Total	mg/L	54 [*]	—	—	32 [*]	—	—	—	—	—	—
	Oil and Grease	mg/L	4 [±]	1	—	—	—	—	—	—	—	—
	Surfactants	mg/L	0.21	—	0.23	0.16	—	—	—	—	—	—
	TSS	mg/L	10.5	—	—	—	—	—	—	—	—	—
General Parameters & Limits	Alkalinity	mg/L	370	—	360	110	19	6	14	4	129	78
	Color	CU	55	15	45	30	< 3.0	< 3.0	—	—	3	11
	Corrosivity	AI	—	Non-corrosive	—	—	—	—	—	—	12.5	11.5
	Dissolved Organic Carbon	mg/L	13.1	—	12.0	9.3	< 0.5	< 0.5	< 0.5	< 0.5	—	—

±LACSD Data – Maximum values from 2006-2007.

^ LACSD Data – Median values from Pilot Study Title 22+ sampling data unless noted otherwise; see this report’s Appendix D. All Title 22+ samples taken from AOP effluent used in median calculation regardless of reactor type, LP or MP.

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*LACSD Data – Median values from Pilot Study report (Tables 5-1 and 5-2).

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‡LACSD Data – Median values from Pilot Study report (Tables 8-2 and 8-3).

‡‡ LACSD Data – Data from Pilot Study report; microbes (Tables 7-5 and 7-12).

Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Foaming Agents (MBAS)	mg/L	—	0.5	—	—	< 0.5‡	< 0.5‡	—	—	—	—
	Hardness	mg/L	260	240	245	265	< 3.0	< 3.0	< 3.0	< 3.0	288	102
	Odor Threshold	TON	—	3	200	200	< 1.0	< 1.0	< 1.0	1.0	12	12
	pH	-	7.4	6 to 9	7.5	7.5	5.7	5.8	5.6	6.2	8.2	8.1
	Specific Conductance	µS/cm	2650	—	2700	2500	71	48	72	60	965	480
	Total Chlorine Residual	mg/L	—	—	4.4	< 0.05	4.1	2.6	0.5	0.6	—	—
	Total Dissolved Solids (TDS)	mg/L	1400	500	1400	1500	25.5	24	30	37	599	256
	Total Organic Carbon (TOC)	mg/L	15.5	0.5	12.2	9.4	< 0.5	< 0.5	< 0.5	< 0.5	3.1	3.7
	Turbidity	NTU	2.4	0.5	0.1*	0.1*	< 0.05	0.09	< 0.05	0.12	1.30	1.80
	UV Transmittance (254 nm)	%	41.0	—	57.4	58.3	96.6	97.0	99.0	100	—	—
Inorganic Constituents & Limits	Aluminum	µg/L	23	200	< 20	< 20	< 20	< 20	< 20	< 20	< 50	< 50
	Antimony	µg/L	2.7	6	2.4	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 6	< 6
	Arsenic	µg/L	2.6	50	2.9	2	< 1.0	< 1.0	< 1.0	< 1.0	2.5	2.5
	Barium	µg/L	130	1000	110	115	< 2.0	< 2.0	< 2.0	< 2.0	120	< 0.1
	Boron	µg/L	910	—	885	915	640*	620*	600	600	130	150
	Bromide	µg/L	1600	—	1550	1650	31.5	79	48	85	60	230
	Cadmium	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1
	Calcium	mg/L	66.5	—	65	66.5	< 1.0	< 1.0	< 1.0	< 1.0	69	22
	Chloride	mg/L	470	55	482*	481*	8.7*	5.8*	9	6	86	76
	Chromium	µg/L	1.3	50	1.3	2.9	< 1.0	< 1.0	< 1.0	< 1.0	< 10	< 10
	Chromium VI	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	0.13	0.12	< 1	< 1
Copper	µg/L	< 2.0	1000	< 2.0	< 2.0	< 2.0	< 2.0	27	3.5	< 50	< 50	

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Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Fluoride	mg/L	1.2	2	1.2*	1.2*	0.14*	<0.10*	0.1	0.1	0.3	0.1
	Iron	µg/L	1350	300	110	115	< 20*	< 20*	< 20	< 20	< 100	< 100
	Lead	µg/L	< 0.5	15	< 0.5	< 0.5	< 0.5	< 0.5	0.68	< 0.5	< 5	< 5
	Magnesium	mg/L	23	—	24*	24*	<0.02*	<0.02*	< 0.1	< 0.1	28	11
	Manganese	µg/L	98	50	89	25	< 2.0	< 2.0	< 2.0	< 2.0	< 20	< 20
	Mercury	µg/L	< 0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 1
	Nickel	µg/L	10	100	11	9.1	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10
	Potassium, Total	mg/L	21.5	—	21*	21*	< 1.0	< 1.0	< 1.0	< 1.0	4.6	2.7
	Selenium	µg/L	9.5	50	10.5	8.6	< 5.0	< 5.0	< 5.0	< 5.0	< 5	< 5
	Silica	mg/L	22±	—	25*	25*	0.51*	0.37*	—	—	—	—
	Silver	µg/L	< 0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10	< 10
Sodium	mg/L	390	45	415*	419*	13*	11*	11	11	91	57	
	Sulfate	mg/L	220	100	232*	240*	<0.5*	<0.5*	< 0.5	< 0.5	232	37
	Thallium	µg/L	< 1.0	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1
	Vanadium	µg/L	< 3.0	—	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	3.0	4.5
	Zinc	mg/L	< 0.02	5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.05
Disinfection By- Products and Nitrosamines	Haloacetic acids	µg/L	—	60	—	—	—	—	—	—	—	—
	NDEA	ng/L	—	—	—	—	62‡	52‡	—	—	—	—
	NDEA (Title 22+ data) ^	ng/L	125	—	275	700†	31	112	3	18	—	—
	NDMA	ng/L	680‡	1	—	—	245‡	180‡	—	—	—	< 2
	NDMA (Title 22+ data) ^	ng/L	370	—	370	380	225	215	6.2	< 4.4	—	—
	NDPA	ng/L	—	—	—	—	11‡	< 2.0‡	—	—	—	—

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Category	Parameter	Units	JWPCP Second- ary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	NDPA (Title 22+ data) ^	ng/L	1280	—	2450	< 19	12	< 2.0	< 2.0	< 2.0	—	—
	NPYR (Title 22+ data) ^	ng/L	8.6	—	13.5	2.3	< 2.0	< 2.0	< 2.0	< 2.0	—	—
	Total Trihalomethanes	µg/L	12.5	80	13.5	1.9	5.4	6.4	6.4	3.0	3.5	—
Microorganisms	<i>Cryptosporidium</i>	Oocysts/ 10 L	2**	—	< 1.0**	< 1.0**	—	—	—	—	—	—
	<i>E. coli</i>	CFU/ 100 mL	> 23**	—	< 2.0**	< 2.0**	< 2.0	< 2.0	< 2.0	< 1.1	7.0	3.0
	Fecal Coliform	MPN/ 100 mL	> 23**	—	< 1.1**	< 1.1**	< 1.1	< 1.1	< 1.1	< 1.1	—	—
	<i>Giardia</i>	Cysts/ 10 L	1510**	—	0.5**	< 1.0**	—	—	—	—	—	—
	Heterotrophic Plate Count	CFU/mL	> 5,700**	—	66**	3350**	< 1.0	< 1.0	< 1.0	< 1.0	—	—
	Total Coliform Bacteria	MPN/ 100mL	> 23**	2.2	< 1.1**	6.6**	< 1.1	< 1.1	< 1.1	< 1.1	790	260
Radionuclides	Combined Radium-226 + 228	pCi/L	0.36±	5	—	—	—	—	—	—	< 0.05	< 0.05
	Gross Alpha Particle Activity	pCi/L	< 2.1	15	3	—	< 2.0	< 1.2	< 1.7	< 1.5	4.2	2.0
	Gross Beta Particle Activity	pCi/L	11.3	50	7.6	11.5	< 3.0*	< 3.0*	< 2.1	< 1.7	5.5	< 4
	Strontium	µg/L	752*	—	741*	748*	0.29*	0.23*	—	—	—	—
	Strontium-90	pCi/L	< 0.9	8	< 0.8	< 0.8	< 0.6	< 0.7	< 0.6	< 0.6	< 2	< 2
	Tritium	pCi/L	217	20000	204.5	225	199	224.5	203	222	< 1000	< 1000
	Uranium	pCi/L	1.3^	20	1.3	2.3	< 0.7	< 0.7	< 0.7	< 0.7	3.3	0.5
Volatile Organic Chemicals	1,1,1-Trichloroethane	µg/L	< 0.5	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,1,2,2-Tetrachloroethane	µg/L	< 0.5	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,1,2-Trichloroethane	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,1-Dichloroethane	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

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					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	1,1-Dichloroethylene	µg/L	< 0.5	6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,2,4-Trichlorobenzene	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,2-Dichlorobenzene	µg/L	< 0.5	600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,2-Dichloroethane	µg/L	< 0.5	500	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,2-Dichloropropane	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,3-Dichlorobenzene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	1,3-Dichloropropene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,4-Dichlorobenzene	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzene	µg/L	< 0.5	1	—	—	—	—	—	—	< 0.5	< 0.5
	Bromochloromethane	µg/L	0.7	—	0.6	< 0.5	0.6	< 0.5	0.6	< 0.5	—	—
	Bromodichloromethane	µg/L	< 0.5	—	0.6	< 0.5	< 0.5	1.6	< 0.5	1.2	—	—
	Bromoform	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Bromomethane	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Chloroethane	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Chloroform	µg/L	11	—	10.4	1.4	5.7	1.5	5.2	1.3	—	—
	Chloromethane	µg/L	0.6	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Chloropicrin	µg/L	< 0.5	—	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	—	—
	Chlorodibromomethane	µg/L	0.5	—	< 0.5	< 0.5	< 0.5	1.3	< 0.5	< 0.5	—	—
	Dibromochloromethane	µg/L	< 0.5	—	1.1	< 0.5	< 0.5	1.6	< 0.5	< 0.5	—	—
	Dibromomethane	µg/L	0.7	—	0.6	< 0.5	0.6	< 0.5	5.2	1.3	—	—
	Dichloromethane (Methylene Chloride)	µg/L	3.1	5	2.65	< 0.5	2.45	0.95	< 0.5	< 0.5	< 0.5	< 0.5
	Ethylbenzene	µg/L	< 0.5	300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

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§ Metropolitan Data – Median values taken from Metropolitan’s Laboratory Information Management System (LIMS) data.

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‡‡ LACSD Data – Data from Pilot Study report; microbes (Tables 7-5 and 7-12).

Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000-2014)	Silverwood Lake (2000-2014)
	Hexachlorobutadiene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Monochlorobenzene	µg/L	< 0.5	70	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Napthalene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Styrene	µg/L	< 0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Tetrachloroethene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Toluene	µg/L	< 0.5	150	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	trans-1,2-Dichloroethylene	µg/L	< 0.5	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Trichloroethylene (TCE)	µg/L	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Vinyl chloride	µg/L	< 0.3	500	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.5	< 0.5
	Xylenes	mg/L	< 1	1.75	< 1.0	< 0.8	< 1.0	< 0.8	< 1.0	< 0.5	< 0.5	< 0.5
Semi-Volatile Organic Compounds	Benzo(a)pyrene	ng/L	2±	200	—	—	—	—	—	—	< 100	< 100
	Di(2-ethylhexyl) adipate	µg/L	< 0.6	400	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 5	< 5
	Di(2-ethylhexyl) phthalate	µg/L	< 0.6	4	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 3	< 3
Non-Volatile Synthetic Organic Chemicals	1,4-Dichlorodiphenyldichloroethane	µg/L	< 0.01±	—	—	—	—	—	—	—	—	—
	1,4-Dichlorodiphenyltrichloroethane	µg/L	< 0.01±	—	—	—	—	—	—	—	—	—
	2,3,7,8-TCDD (Dioxin)	pg/L	< 3.8±	30	—	—	—	—	—	—	< 5	< 5
	2,4,5-TP (Silvex)	µg/L	< 0.2	50	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 1
	2,4-D	µg/L	—	70	—	—	—	—	—	—	< 10	< 10
	4,4-Dichlorodiphenyldichloroethane	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	4,4-Dichlorodiphenyldichloroethylene	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	4,4-Dichlorodiphenyltrichloroethane	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
Aldrin	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—	

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‡‡ LACSD Data – Data from Pilot Study report; microbes (Tables 7-5 and 7-12).

Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Aroclor-1016 (PCB-1016)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1221 (PCB-1221)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1232 (PCB-1232)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1242 (PCB-1242)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1248 (PCB-1248)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1254 (PCB-1254)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Aroclor-1260 (PCB-1260)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Atrazine	ng/L	—	1000	—	—	—	—	—	—	< 1	2
	Bentazon	µg/L	< 0.5	18	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 2
	Carbofuran	µg/L	< 0.5	18	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5
	Chlordane	ng/L	< 100	100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	Dalapon	µg/L	< 1.0	200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	< 10
	Dibromochloropropane (DBCP)	ng/L	—	200	—	—	—	—	—	—	< 10	< 10
	Diethyl Phthalate	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Diethyl Phthalate	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Diethylhexyl Phthalate	µg/L	< 0.6	—	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	—	—
	Di-n-Butyl Phthalate	µg/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	—	—
	Di-n-Octyl Phthalate	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Dinoseb	µg/L	—	7	—	—	—	—	—	—	< 2	< 2
	Heptachlor	ng/L	< 10 [±]	10	—	—	—	—	—	—	< 10	< 10
	Heptachlor Epoxide	ng/L	< 10 [±]	10	—	—	—	—	—	—	< 10	< 10
	Hexachlorobenzene	µg/L	< 0.1	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5

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Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Hexachlorocyclopentadiene	µg/L	< 0.1	50	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	Lindane	ng/L	20‡	200	—	—	—	—	—	—	< 200	< 200
	Methoxychlor	µg/L	< 0.1	30	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 10	< 10
	Molinate (Ordram)	µg/L	< 0.1	20	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 2	< 2
	Oxamyl (Vydate)	µg/L	< 0.5	50	< 0.5	< 0.5	< 0.8	< 0.5	< 0.5	< 0.5	< 50	< 50
	Pentachlorophenol	µg/L	< 1.0	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.2
	Picloram	µg/L	< 0.1	500	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	Polychlorinated Biphenyls (PCBs)	ng/L	< 100	500	< 100	< 100	< 100	< 100	< 100	< 100	< 500	< 500
	Pyrene	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Simazine	µg/L	< 0.1	4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	Thiobencarb	µg/L	< 0.2	1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 1
Other Constituents of Concern	1,1,2-Trichloro-1,2,2- trifluoroethane (Freon-113)	mg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01
	1,2-Diphenylhydrazine	µg/L	< 1.0	—	< 1.0	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.5	< 0.5
	1,4-Dioxane	µg/L	8.6	—	8.1	8.5	0.5‡	0.4‡	< 0.4	< 0.4	—	—
	17-Beta Estradiol	ng/L	< 10	—	< 7.2	< 5.6	< 2.0	< 1.3	< 2.0	< 0.5	—	—
	2,4,6-Trichlorophenol	µg/L	< 10	—	< 10	< 30	< 10	< 10	< 10	< 10	< 1	< 1
	2,4-Dichlorophenol	µg/L	—	—	—	—	—	—	—	—	< 1	< 1
	2,4-Dimethylphenol	µg/L	< 2.0	—	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	—	—
	2,4-Dinitroluene	µg/L	—	—	—	—	—	—	—	—	< 3	< 3
	2,4-Dinitrophenol	µg/L	< 5.0	—	< 5.0	< 15.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5	< 5
	2,4-Dinitrotoluene	µg/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2	< 2
	2,6-Dinitrotoluene	µg/L	—	—	—	—	—	—	—	—	< 3	< 3

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— Data not available or non-applicable

Category	Parameter	Units	JWPCP Second- ary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	2,6-Dinitrotoluene	µg/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2	< 2
	2-Methylphenol	µg/L	< 0.2	—	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 1
	3-Hydroxycarbofuran	µg/L	1.8^	—	1.8	2.0	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	4-Nonylphenol (Tech Mix)	ng/L	1150	—	475	179	< 25	< 25	< 25	< 25	—	—
	4-tert Octylphenol	ng/L	624	—	305	36.8	< 5.0	< 5.0	< 5.0	< 5.0	—	—
	Acetaminophen	ng/L	< 20	—	23	23.5	< 10	< 10	< 10	< 10	5	< 5
	Acetochlor	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 2	< 2
	Aldicarb Sulfone	µg/L	1.9	—	2.2	1.8	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Asbestos	MFL	< 3.1	—	< 6.2	< 0.2	< 6.2	< 0.2	< 6.4	< 0.2	< 0.2	< 0.2
	Atenolol	µg/L	2.05±	—	—	—	—	—	—	—	—	—
	Atorvastatin	µg/L	0.116±	—	—	—	—	—	—	—	—	—
	Azithromycin	ng/L	933.5	—	937	620.5	< 10	< 10	< 10	< 10	—	—
	Beryllium	µg/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1
	Bisphenol A	ng/L	284	—	34.5	< 25	< 25	< 10	< 25	< 10	—	—
	Bromacil	µg/L	< 0.2	—	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	—	—
	Caffeine	ng/L	453.5	—	394.5	245.5	< 10	< 10	< 10	< 10	3.3	27.4
	Captan	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—
	Carbamazepine	ng/L	< 10	—	< 10	< 10	< 10	< 10	< 10	< 10	2	4.82
	Carbon Disulfide	µg/L	1.7	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Carbon Tetrachloride	ng/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 500	< 500
	Chlorate	µg/L	30	—	615	< 10	12.5	< 10	< 10	< 10	—	—
	cis-1,2-Dichloroethylene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

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Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Cyanide	µg/L	—	—	—	—	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100
	DCPA di-acid degradate	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	DCPA mono-acid degradate	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	DEET	ng/L	506	—	476	273	< 10	< 10	< 10	< 10	3	8
	Diazinon	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5
	Dichlorodifluoromethane (Freon 12)	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dichlorodiphenyldichloro- ethylene (4,4'-DDE)	µg/L	—	—	—	—	—	—	—	—	< 0.8	< 0.8
	Diclofenac	ng/L	144±	—	—	—	—	—	—	—	< 5	< 5
	Dilantin	ng/L	309	—	314.5	313	< 25	< 10	< 25	< 10	< 5	< 5
	Diquat	µg/L	< 0.4	—	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 4	< 4
	Disulfoton	µg/L	—	—	—	—	—	—	—	—	< 0.5	< 0.5
	Diuron	ng/L	< 1000	—	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 5	116
	Endothall	µg/L	< 5.0	—	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 45	< 45
	Endrin	µg/L	< 0.1	—	< 0.1	0.1	< 0.1	0.1	< 0.1	0.2	< 0.1	< 0.1
	Erythromycin	µg/L	0.245±	—	—	—	—	—	—	—	—	—
	Estrone	ng/L	24.5	—	13.5	5.6	2.0	1.3	2.0	< 0.5	—	—
	Ethylene Dibromide (EDB)	µg/L	< 0.01	—	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02
	Ethyl-tert-butyl ether (ETBE)	µg/L	—	—	—	—	—	—	—	—	< 3	< 3
	Fluoxetine	µg/L	0.006±	—	—	—	—	—	—	—	—	—
	Fonofos	µg/L	—	—	—	—	—	—	—	—	< 0.5	< 0.5
	Formaldehyde	µg/L	20	—	40	15	6.8	10	27	42	—	—
	Furosemide	µg/L	0.882±	—	—	—	—	—	—	—	—	—

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‡‡ LACSD Data – Data from Pilot Study report; microbes (Tables 7-5 and 7-12).

Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Secondary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000-2014)	Silverwood Lake (2000-2014)
	Gemfibrozil	ng/L	1195	—	1120	243	< 10	< 10	< 10	< 10	< 5	< 5
	Glyphosate	µg/L	< 6.0	—	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 25	< 25
	Ibuprofen	ng/L	< 10	—	< 10	12	15	< 10	< 10	< 10	< 10	< 10
	Iopromide	ng/L	942	—	882	928.5	< 30	< 30	< 30	< 30	—	—
	Ketoprofen	µg/L	0.163±	—	—	—	—	—	—	—	—	—
	Linuron	ng/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5	< 5
	Lohexal	µg/L	26.8±	—	—	—	—	—	—	—	—	—
	Meprobamate	ng/L	390.5	—	385	438	< 10	< 10	< 10	< 10	—	—
	Methomyl	µg/L	< 0.5	—	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	—	—
	Methyl-tert-butyl ether (MTBE)	µg/L	0.9	5	10.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 3	< 3
	Metoprolol	µg/L	0.551±	—	—	—	—	—	—	—	—	—
	n-Acetyl Sulfamethoxazole	µg/L	0.581±	—	—	—	—	—	—	—	—	—
	Naproxen	µg/L	1.04±	—	—	—	—	—	—	—	—	—
	Nitrobenzene	µg/L	< 1.0	—	< 1.0	< 1.0	< 3.0	< 1.0	< 1.0	< 1.0	< 10	< 10
	4-Nonylphenol (tech mix)	ng/L	1150	—	475	< 179	< 25	< 25	< 25	< 25	—	—
	Nonylphenol Diethoxylate	ng/L	8050	—	7600	697	< 25	< 25	< 25	< 25	—	—
	Nonylphenol Monoethoxylate	ng/L	2972.5	—	1855	345.5	< 25	< 25	< 25	< 25	—	—
	Octylphenol	ng/L	624	—	305	37	< 5.0	< 5.0	< 5.0	< 5.0	—	—
	Octylphenol Diethoxylate	ng/L	3692.5	—	4472.5	93.8	< 25	< 25	< 25	< 25	—	—
	Octylphenol Monoethoxylate	ng/L	1122.5	—	1072.5	93.8	< 25	< 25	< 25	< 25	—	—
	o-Dichlorobenzene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	o-Hydroxy Atorvastatin	µg/L	0.542±	—	—	—	—	—	—	—	—	—

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Note: For calculation of median values, ND was assumed to be equal to the reporting limit for LACSD data and half of the detection limit for Metropolitan data.

— Data not available or non-applicable

Category	Parameter	Units	JWPCP Second- ary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Oxcarbamazepine	µg/L	0.19±	—	—	—	—	—	—	—	—	—
	p-Dichlorobenzene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Perchlorate	µg/L	< 2.0	—	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4	< 4
	Phenol	µg/L	0.3	—	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	—	—
	p-Hydroxy Atorvastatin	µg/L	0.095±	—	—	—	—	—	—	—	—	—
	Primidone	ng/L	113±	—	—	—	—	—	—	—	1.8	6
	Prometon	µg/L	—	—	—	—	—	—	—	—	< 0.5	< 0.5
	Propranolol	µg/L	0.02±	—	—	—	—	—	—	—	—	—
	Radium-226	pCi/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1
	Radium-228	pCi/L	< 1.0	—	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1
	Radon	pCi/L	< 50	—	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 100
	s-ethyl dipropylthio-carbamate (EPTC)	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1
	Simvastatin OH Acid	µg/L	0.043±	—	—	—	—	—	—	—	—	—
	Sucralose	ng/L	20900	—	19850	25700	< 40	< 40	< 40	< 40	—	—
	Sulfamethoxazole	ng/L	968	—	712	1515	< 10	< 10	< 10	< 10	1.1	13
	TCEP	ng/L	407	—	380.5	438.5	< 10	< 10	< 10	< 10	4.2	9
	Terbacil	µg/L	< 0.1	—	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 2	< 2
	Terbufos	µg/L	—	—	—	—	—	—	—	—	< 0.5	< 0.5
	tert-Amyl-methyl ether (TAME)	µg/L	< 3.0	—	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3	< 3
	tert-Butyl alcohol (TBA)	µg/L	8.0	—	9.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2	< 2
	Tetrachloroethylene (PCE)	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Toxaphene	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1

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— Data not available or non-applicable

Category	Parameter	Units	JWPCP Second- ary Effluent ^	OCWD GWRS Permit	Pilot Study^						MWD Source Water†	
					UF	MBR	UF - RO	MBR - RO	UF - RO - AOP	MBR - RO - AOP	Lake Mathews (2000- 2014)	Silverwood Lake (2000-2014)
	Trichlorofluoromethane (Freon-11)	µg/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5
	Trichloropropane (1,2,3-TCP)	ng/L	< 0.5	—	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5
	Triclosan	ng/L	493.5	—	348	71.5	< 25	< 25	< 25	< 25	3.35	< 5
	Trimethoprim	µg/L	0.547±	—	—	—	—	—	—	—	—	—

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