

## Section 4: EC Sampling Results (ng/L) for 2012

Table 4a: June 2012 - POTWs

Sampling Location	Acetaminophen	Bisphenol A	Caffeine	Carbamazepine	DEET	Diuron	17β Estradiol (E2)	17α Ethynylestradiol (EE2)	Gemfibrozil	Ibuprofen	Iopromide	Naproxen	Sulfamethoxazole	TCEP	Triclosan
City of Beaumont WWTP No. 1	<10	<10	43	230	75	21	<10	<10	57	15	<10	<10	200	240	<10
City of Corona WRF 1B	<10 <sup>BA</sup>	<10	14 <sup>BA</sup>	150	230	34	<10	<10	<10	69	46	<10	20	370	15
City of Corona WRF 2	<10	<10	190	310	350	110	<10	<10	330	100	210	50	2900	420	180
City of Corona WRF 3	<10 <sup>BA</sup>	<10	23 <sup>BA</sup>	68	160	<10	<10	<10	<10	68	26	<10	<10	240	<10
EMWD MV-RWRF	30	<10	200	120	350	42	<10	<10	970	<15	110	<10	400	660	<10
EMWD PV-RWRF	<10	<10	20	<10	180	12	<10	<10	<10	<15	<10	<10	<10	650	<10
EMWD SJV-RWRF	<10	<10	170	190	640	65	<10	<10	930	<15	<10	<10	460	520	66
EMWD TV-RWRF	<10	<10	31	<10	340	<10	<10	<10	<10	<15	<10	<10 M2	<10	510	<10
EVMWD Horsethief Canyon	<10	<10	<10	69	310	<10	<10	<10	<10	<15	<10	<10	<10	780	<10
EVMWD Railroad Canyon WRP	20	<10	11 <sup>BA</sup>	110	190	<10	<10	<10	250	<15	<10	<10	190	500	<10
EVMWD Regional WRP	30	<10	170	220	280	39	<10	<10	<10	<15	<10	<10	150	580	1000
IEUA CCWRF	<10	<10	13	80	50	220	<10	<10	<10	<15	88	<10	<10	480	<10
IEUA RP1 02	<10	<10	<10	110	400	38	<10	<10	<10	<15	110	<10	<10	550	18
IEUA RP1 1B	<10	<10	<10	88	550	15	<10	<10	<10	<15	120	<10	<10	560	25
IEUA RP5 (no discharge at facility to sample)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRWD Los Alisos Plant	<10	45	210 <sup>FA</sup>	150	520	84	<10	<10	670	55	340	19	1000	330 <sup>M2</sup>	45
IRWD Michelson Plant	<10	24	26	82	520	18	<10	<10	24	24	<10	<10	<10	360 <sup>M2</sup>	31
City of Redlands WWTP	<10	<10	<10 <sup>FA</sup>	390	87	35	<10	<10	<10	<15	<10	<10	<10	460	<10
City of Rialto WWTP	<10	<10	15	160	1300	18	<10	<10	15	<10	27	<10	35	930	<10
City of Riverside RWQCP	<10	<10	12	100	370	31	<10	<10	<10	<15	860	<10	14	660	<10
City of San Bernardino RIX	<10	40	140	340	180	63	<10	<10	350	110	27	140	1200	150	28
WRCWRA Treatment Plant	<10	<10	77	280	420	67	<10	<10	440	97	27	90	1600	370	24
YVWD WRF	<10	<10	33	200	420	81	<10	<10	<10	<15	<10	<10	1300	710	86

Table 4b: June 2012 - River Sites

State Project Water at Devil Canyon (MWD)	<10	<10	18	<10	<10	132	<10	<10	<10	<10	<10	<10	12	<10	<10
Colo River at San Jacinto West Portal (MWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Santa Ana River near MWD crossing (OCWD)	<10	<10	49	90	43	58	<10	<10	49	<10	<10	24	198	79	<10
Santa Ana River near Prado Dam (OCWD)	<10	<10	15	97	100	38	<10	<10	23	<10	42	<10	108	223	<10

Table 4c: September 2011 - River Sites

Santa Ana River near MWD crossing (OCWD)	<10	<10	11	110	<10	47	<10	<10	<10	<10	NA	NA	169	77	<10
Santa Ana River near Prado Dam (OCWD)	<10	68	55	92	43	30	<10	<10	<10	<10	NA	NA	94	198	<10

## Notes:

	10 ng/L is the designated Study Reporting Limit (SRL) for this study. The Laboratory Reporting Limits (LRL) are provided in the supporting documentation.
NA	No Sample Available
B4	Only needed for Elsinore. Detected in FB above MRL, may be false positive.
FA	Field blank contains target analyte but sample >10X field blank level or not detected in sample (only needed for Los Alisos IRWD)
M2	Matrix spike recovery was low, but the associated blank spike recovery was acceptable. Only applicable to the 2 TCEP samples for IRWD. Possible low bias due to matrix, but spike level also <1/3 of ambient level so may not be meaningful
BA	Analyte was detected at 24 ng/L in the filtered Method Blank

## Section 5: QA/QC Blank Data (ng/L) for 2012

Table 5a: June 2012 - POTWs

Sampling Location	Acetaminophen	Bisphenol A	Caffeine	Carbamazepine	DEET	Diuron	17 $\beta$ Estradiol (E2)	17 $\alpha$ Ethynylestradiol (EE2)	Gemfibrozil	Ibuprofen	Iopromide	Naproxen	Sulfamethoxazole	TCEP	Triclosan
City of Beaumont WWTP No. 1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
City of Corona WRF 1B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
City of Corona WRF 2	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
City of Corona WRF 3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EMWD MV-RWRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EMWD PV-RWRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EMWD SJV-RWRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EMWD TV-RWRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EVMWD Horsethief Canyon	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EVMWD Railroad Canyon WRP	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
EVMWD Regional WRP	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
IEUA CCWRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
IEUA RP1 02	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
IEUA RP1 1B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
IEUA RP5 (no discharge at facility to sample)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRWD Los Alisos Plant	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
IRWD Michelson Plant	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
City of Redlands WWTP	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
City of Rialto WWTP	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
City of Riverside RWQCP	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10
City of San Bernardino RIX	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
WRCWRA Treatment Plant	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
YVWD WRF	<10	<10	<10	<10	<10	<10	<10	<10	<10	<15	<10	<10	<10	<10	<10

Table 5b: June 2012 - River Sites

State Project Water at Devil Canyon (MWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Colo River at San Jacinto West Portal (MWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Santa Ana River near MWD crossing (OCWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10
Santa Ana River near Prado Dam (OCWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Table 5c: September 2011 - River Sites

Santa Ana River near MWD crossing (OCWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10
Santa Ana River near Prado Dam (OCWD)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	NA	<10	<10	<10

## Notes:

10 ng/L is the designated Study Reporting Limit (SRL) for this study. The Laboratory Reporting Limits (LRL) are provided in the supporting documentation.
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Section 6: QA/QC Reference Samples Spiked with Known EC Concentrations

Table 6a: June 2012 - QC Data, MWD

Analyte	Acetaminophen		Bisphenol A		Caffeine		Carbamazepine		DEET		Diuron		17α Ethynylestradiol (EE2)		17β Estradiol (E2)		Gemfibrozil		Ibuprofen		Iopromide		Naproxen		Sulfamethoxazole		TCEP		Triclosan	
MRL (ng/L)	5		10		5		2		2		6		5		5		3		10		5		3		3		4		3	
	Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery	
Devil Canyon Field Blank	<5		<10		<5		<2		<2		<6		<5		<3		<10		<5		<3		<3		<3		<4		<3	
Devil Canyon	0.1		0.0		18.3		2.8		8.5		132.0		0.0		1.3		0.4		2.6		0.0		0.0		11.6		7.6		0.0	
Devil Canyon_spike 50 ppt	47.3	94%	52.7	105%	60.8	85%	55.9	106%	66.1	115%	186.0	108%	53.1	106%	64.2	126%	58.8	117%	51.2	97%	45.7	91%	64.0	128%	62.4	102%	43.8	72%	58.8	118%
Devil Canyon_spike 50 ppt duplicate	46.9	94%	48.9	98%	59.8	83%	53.0	100%	62.6	108%	182.0	100%	49.8	100%	63.8	125%	59.4	118%	45.7	86%	40.4	81%	64.3	129%	59.4	96%	38.5	62%	61.9	124%
MS/MSD Relative % Diff (RPD)	1.0		7		2		5		5		2		6		1		1		11		12		0		5		13		5	

Table 6b: June 2012 - QC Data, OCWD

Analyte	Acetaminophen		Bisphenol A		Caffeine		Carbamazepine		DEET		Diuron		17α Ethynylestradiol (EE2)		17β Estradiol (E2)		Gemfibrozil		Ibuprofen		Iopromide		Naproxen		Sulfamethoxazole		TCEP		Triclosan	
MRL (ng/L)	5		10		3		1		1		5		2		2		1		1		10		5		1		5		1	
	Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery	
True Value Low LFB (ng/L)	5		10		3		1		1		5		2		2		1		1		10		5		1		5		1	
Laboratory Result Low LFB	4.1	82%	14.5	145%	1.8	59%	0.90	90%	0.87	87%	4.2	83%	2.5	127%	2.1	103%	0.47	47%	0.53	53%	7.7	77%	4.1	82%	0.78	78%	3.4	68%	0.53	53%
True Value LFB (ng/L)	10		50		30		10		10		10		10		10		10		10		20		10		10		10		10	
Laboratory Result mid-level LFB*	9.5	95%	51.9	104%	30	100%	9.9	99%	9.6	96%	9.9	99%	11.3	113%	9.9	99%	6.3	63%	9.7	97%	17.4	87%	9.0	90%	9.9	99%	12.8	128%	9.0	90%
SAR near Prado Dam (Initial)	5.2		<10		14.5		96.6		100		38.1		<2		<2		23.1		<1		41.6		<5		108		223		2.7	
SAR near Prado Dam Matrix Spike*	191	93%	279	140%	655	107%	292	98%	311	106%	249	105%	183	92%	202	101%	164	71%	219	110%	258	108%	219	110%	317	105%	425	101%	215	106%
SAR near Prado Dam Mat Spk (dup)	196	95%	308	154%	633	103%	292	98%	296	98%	255	108%	190	95%	182	91%	169	73%	215	108%	248	103%	215	108%	307	100%	439	108%	211	104%
MS/MSD Relative % Diff (RPD)	2.6		9.9		3.4		0.00		4.9		2.4		3.8		10.4		3.0		1.8		4.0		1.8		3.2		3.2		1.9	

Note: Spike concentration = 200 ng/L except Caffeine with spike concentration = 600 ng/L

Table 6c: September, 2011 - QC Data, OCWD

Analyte	Acetaminophen		Bisphenol A		Caffeine		Carbamazepine		DEET		Diuron		17α Ethynylestradiol (EE2)		17β Estradiol (E2)		Gemfibrozil		Ibuprofen		Iopromide		Naproxen		Sulfamethoxazole		TCEP		Triclosan	
MRL (ng/L)	5		10		3		1		1		5		2		2		1		1		NA		NA		1		5		1	
	Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery		Recovery	
True Value Low LFB (ng/L)	5		10		3		1		1		5		2		2		1		1		NA		NA		1		5		1	
Laboratory Result Low LFB	4.7	94%	13.3	133%	4.2	141%	0.71	71%	0.79	79%	5.0	101%	2.2	111%	2.5	123%	0.9	90%	1.2	124%	NA	NA	NA	NA	0.95	95%	4.6	91%	1.5	145%
True Value LFB (ng/L)	10		50		30		10		10		10		10		10		10		10		NA		NA		10		10		10	
Laboratory Result mid-level LFB**	10.2	102%	49.5	99%	31.7	106%	10.6	106%	10.4	104%	9.5	95%	98.3	98%	11.6	116%	9.4	94%	8.5	85%	NA	NA	NA	NA	10.4	104%	10.4	104%	11.8	118%
SAR MWDXING-01 (Initial)	6.5		67.8		55.4		91.9		42.5		29.6		<2		<2		4.0		3.9		NA		NA		94		198		4.4	
SAR MWDXING-01 Matrix Spike**	210	102%	261	96%	657	100%	289	99%	237	97%	233	102%	202	101%	181	91%	194	95%	209	103%	NA	NA	NA	NA	293	100%	421	112%	238	117%
SAR MWDXING-01 Matrix Spike (dup)	214	104%	247	90%	662	101%	292	100%	237	97%	234	102%	197	99%	184	92%	198	97%	205	101%	NA	NA	NA	NA	286	96%	408	105%	243	119%
MS/MSD Relative % Diff (RPD)	1.9		5.5		0.76		1.0		0.00		0.43		2.5		1.6		2.0		1.9		NA		NA		2.4		3.1		2.1	

Note: Spike concentration = 200 ng/L except Caffeine with spike concentration = 600 ng/L

**Section 7: QA/QC Identical Split Sample Data for June 2012**

**Table 7a: ERA - QC Low-Level Check**

					OCWD	MWD	E.S.Babcock	MWH	CSM	OCWD	MWD	E.S.Babcock	MWH	CSM
Analyte	%RSD	Assigned Value	Mean Recovery	Median Recovery	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery
Acetaminophen	11.4	13.5	93.6	94.1	12.7	13.0	12.2	9.98	7.71	94.1	96.3	90.4	73.9	57.1
Bisphenol A	9.1	13.9	90.6	91.4	13.1	12.0	12.7	10.6	21.3	94.2	86.3	91.4	76.3	153.2
Caffeine	13.9	13.0	114.6	116.9	13.5	16.0	15.2	11.6	16.1	103.8	123.1	116.9	89.2	123.8
Carbamazepine	13.0	12.0	104.4	108.3	13.1	13.0	11.5	9.81	12.1	109.2	108.3	95.8	81.8	100.8
DEET	-----	-----	-----	-----	<1	<2	<10	<10	<10	-----	-----	-----	-----	-----
Diuron	-----	-----	-----	-----	<5	<6	<10	<10	NA	-----	-----	-----	-----	NA
17a-Ethynylestradiol	-----	-----	-----	-----	<2	<5	<10	<10	NA	-----	-----	-----	-----	NA
17b-Estradiol	6.99	14.0	99.5	101.4	14.6	13.0	14.2	15.4	NA	104.3	92.9	101.4	110.0	NA
Gemfibrozil	13.1	12.0	91.9	99.2	12.2	9.00	11.9	10.9	<10	101.7	75.0	99.2	90.8	-----
Ibuprofen	10.5	13.5	101.0	97.8	12.7	15.0	13.2	11.7	14.8	94.1	111.1	97.8	86.7	109.6
Sulfamethoxazole	-----	-----	---	---	<1	<3	<10	<10	<1	-----	-----	-----	-----	-----
TCEP	-----	-----	---	---	<5	<5	<10	<10	<5	-----	-----	-----	-----	-----
Triclosan	-----	-----	---	---	3.68	4.00	<10	<10	4.82	-----	-----	-----	-----	-----
Iopromide	-----	-----	---	---	<10	<5	<10	<10	NA	-----	-----	-----	-----	NA
Naproxen	13.8	13.0	83.1	76.9	9.99	10.0	12.4	9.05	13.0	76.8	76.9	95.4	69.6	100.0

**Table 7b: ERA - QC Mid-Level Check**

					OCWD	MWD	E.S.Babcock	MWH	CSM	OCWD	MWD	E.S.Babcock	MWH	CSM
Analyte	%RSD	Assigned Value	Mean Recovery	Median Recovery	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery
Acetaminophen	7.00	175	88.7	90.6	164	155	162	140	169	93.7	88.6	92.6	80.0	96.6
Bisphenol A	6.20	72.4	88.7	90.8	65.5	66.0	67.0	58.3	66.9	90.5	91.2	92.5	80.5	92.4
Caffeine	15.0	90.0	95.0	93.1	92.5	100	75.0	74.5	97	102.8	111	83.3	82.8	107.8
Carbamazepine	8.61	194	94.7	97.7	194	195	185	161	180	100.0	101	95.4	83.0	92.8
DEET	8.36	112	94.3	96.0	106	109	114	93.3	134	94.6	97.3	101.8	83.3	119.6
Diuron	10.8	180	94.7	98.1	185	173	180	144	NA	102.8	96.1	100.0	80.0	NA
17a-Ethynylestradiol	9.43	87.5	91.4	89.8	81.2	90.0	76.0	72.7	NA	92.8	103	86.9	83.1	NA
17b-Estradiol	11.5	165	93.9	97.0	165	170	155	130	NA	100.0	103	93.9	78.8	NA
Gemfibrozil	16.8	130	85.7	83.7	133	95.0	121	96.5	116	102.3	73.1	93.1	74.2	89.2
Ibuprofen	15.1	100	88.5	86.9	89.7	106	84.0	74.1	90.3	89.7	106	84.0	74.1	90.3
Sulfamethoxazole	16.5	175	93.1	100.0	179	171	179	123	197	102.3	97.7	102.3	70.3	112.6
TCEP	18.5	176	86.4	88.9	180	166	115	147	178	102.3	94.3	65.3	83.5	101.1
Triclosan	14.3	146	98.6	103.8	147	159	114	156	135	100.7	109	78.1	106.8	92.5
Iopromide *	98.64	15	133.7	85.4	5.56	16	49	9.63	NA	37.1	106.7	326.7	64.2	NA
Naproxen	8.34	135	87.8	85.2	114	116	133	111	124	84.4	85.9	98.5	82.2	91.9

\* ERA Estimated Values only

**Table 7c: SAR-BELOWDAM-01 (Matrix Split)**

Analyte	%RSD		Mean Result (ng/L)	Median Result (ng/L)	OCWD	MWD	E.S.Babcock	MWH	CSM
					Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)
Acetaminophen	---	---	---	---	5.15	<5	<10	<10	<10
Bisphenol A	---	---	---	---	<10	<10	20.0	<10	<25
Caffeine	57.8	---	22.1	16.75	14.5	19.0	41.0	14.0	17.1
Carbamazepine	11.5	---	95.9	96.3	96.6	109	96.0	82.0	97.7
DEET	10.3	---	104.8	105.5	100	111	116	92.0	135
Diuron	18.8	---	38.8	37.1	38.1	36.0	49.0	32.0	NA
17a-Ethynylestradiol	---	---	---	---	<2	<5	<10	<10	NA
17b-Estradiol	---	---	---	---	<2	<5	<10	<10	NA
Gemfibrozil	10.3	---	20.7	20	23.1	19.0	20.0	<10	16.5
Ibuprofen	---	---	---	---	<1	<10	<10	<15	<10
Sulfamethoxazole	8.75	---	102.8	103.5	108	99.0	112	92.0	127
TCEP	28.2	---	216	231.5	223	240	129	270	229
Triclosan	---	---	---	---	2.70	6.00	<10	<10	<5
Iopromide	91.5	---	82	51.8	41.6	62	192	31.0	NA
Naproxen	---	---	---	---	<5	<3	<10	<10	3.41

Site Blank	OCWD	MWD	E.S.Babcock	MWH
	Result (ng/L)	Result (ng/L)	Result (ng/L)	Result (ng/L)
TCEP	<5	15	11.7	<10

## DRAFT

Table 1 – CECs to be Monitored

<u>Constituent</u>	<u>Constituent Group</u>	<u>Relevance/Indicator Type</u>	<u>Method Reporting Limit (µg/L)</u>
<b>GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION</b>			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
N-Nitrosodimethylamine (NDMA)	Disinfection byproduct	Health	0.002
Triclosan	Antimicrobial	Health	0.05
Gemfibrozil	Pharmaceutical	Performance	0.01
Iopromide	Pharmaceutical	Performance	0.05
N,N-Diethyl-meta-toluamide (DEET)	Personal care product	Performance	0.01
Sucralose	Food additive	Performance	0.1
<b>GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION</b>			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
NDMA	Disinfection byproduct	Health & Performance	0.002
Triclosan	Antimicrobial	Health	0.05
DEET	Personal care product	Performance	0.01
Sucralose	Food additive	Performance	0.1
<b>LANDSCAPE IRRIGATION</b>			
None	--	--	--

µg/L – Micrograms per liter

Analytical methods for laboratory analysis of CECs shall be selected to achieve the method reporting limits presented in Table 1, unless the method reporting limit is found to be unachievable. In cases where a method reporting limit is found to be unachievable using readily available methodologies, an analytical method with a method reporting limit that is closest to the recommended method reporting limit with proven reliability shall be selected.

If the United States Environmental Protection Agency (U.S. EPA) has approved an analytical method for analysis of a CEC or a surrogate, then the CEC or surrogate shall be analyzed in conformance with the analytical method. The CDPH shall be consulted for the use of analytical methods for CECs or surrogates that do not have analytical methods approved by U.S. EPA.

# DRAFT

## **1.2. Surrogates for Monitoring Programs**

Selection of appropriate surrogates shall be based on the types of treatment processes used, the recycled water use, and the measurable occurrence of surrogates in the treatment process. Table 2 presents a list of surrogates to be considered for monitoring treatment of recycled water used for groundwater recharge reuse and landscape irrigation.

Table 2: Surrogates

GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION
Ammonia
Total Organic Carbon (TOC)
Nitrate
Ultraviolet (UV) Light Absorption
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION
Electrical Conductivity
TOC
LANDSCAPE IRRIGATION
Chlorine Residual
Total Coliform
Turbidity

Surrogates shall be selected on a case-by-case basis and shall be appropriate for the treatment process or processes. For example, chlorine residual is not an appropriate surrogate for projects that do not use chlorine-based compounds for disinfection.

Where applicable, surrogates may be measured using in-line or hand-held instruments provided that instrument calibration procedures are implemented in accordance with the manufacturer's specifications and that calibration is documented.

## **2. MONITORING LOCATIONS**

Monitoring locations for CECs and surrogates will depend on the unit treatment processes utilized and the recycled water use. Monitoring for CECs and surrogates shall be conducted before and after an individual treatment process or a combination of processes that provide removal of CECs; unit processes are presented in Section 1. Additionally, surface application recharge reuse projects relying on the process of soil aquifer treatment shall monitor for CECs in groundwater at a location prior to the point of extraction for drinking water supply. Monitoring locations for health-relevant and performance indicator CECs and surrogates are detailed below.