

Table C-11.1 - Applicable Water Quality Guidance for the Protection of Aquatic Life

Water Quality Measurement	California Toxics Rule (CTR)	CTR	Ocean Plan	Region 8/9 Basin Plans	
	Freshwater dissolved metals	Saltwater Dissolved metals	Toxic Mat. Limits	Total metals	
Lead ug/L	4 day = [1.462-0.146H][exp(1.273H-4.705)]	4day = 8.1	Daily max = 8		
H=ln Hardness	1 hour = [1.462-0.146H][exp(1.273H-1.460)]	1hr = 210	Inst. max = 20		
Cadmium ug/L	4 day = [1.107-0.042H][exp(0.7852H-2.715)]	4day = 9.3	Daily max = 4		
	1 hour = [1.137-0.042H][exp(1.128H-3.6867)]	1hr = 42	Inst. max = 10		
Hexavalent Chromium ug/L		4day = 50 1hr = 1100	Daily max = 8 Inst. max = 20		
Nickel ug/L	4 day = 0.997[exp(0.846H+0.0584)]	4day = 8.2	Daily max = 50		
	1 hour = 0.998[exp(0.846H + 2.255)]	1hr = 74	Inst. max = 20		
Copper ug/L	4 day = 0.96[exp(0.8545H-1.702)]	4day = 3.1	Daily max = 12		
	1 hour = 0.96[exp(0.9422H-1.70)]	1hr = 4.8	Inst. max = 30		
Silver ug/L		1hr = 1.9	Daily max = 2.8		
	1 hour = 0.85[exp(1.72H-6.52)]		Inst. max = 7		
Zinc ug/L	4 day = 0.986[exp(0.8473H+0.884)]	4 day = 81	Daily max = 80		
	1 hour = 0.978[exp(0.8473H+0.884)]	1 hr = 90	Inst. max = 200		
Turbidity				Natural	Max. increase
				0-50 NTU	20% over natural
				50-100 NTU	10 NTU
				>100 NTU	10% over natural
pH				6.5 - 8.5 freshwater	
				7.0 - 9.0 saltwater (SDR)	
				7.0 - 8.5 saltwater (SAR)	
Dissolved Oxygen				>5.0 mg/L MAR & WARM	
				>6.0 mg/L COLD	
Unionized Ammonia*				SDR = 0.025 in receiving waters	
				SAR (See below)	

* [Unionized Ammonia] =
$$\frac{[\text{NH}_4\text{-N}] + [\text{NH}_3\text{-N}]}{1 + 10^{(\text{pKa} - \text{pH})}}$$
 where $\text{pKa} = 0.09018 + \frac{2729.92}{T}$

T= degrees Kelvin = C+273.16

SAR Unionized Ammonia (UIA) Criteria for waterbodies designated as WARM

Acute Objective = 0.822[0.87/FT/FPH/2] where

FT= $10^{0.03(20-T)}$

FT=0.7079

FHP=[$1 + 10^{(7.4 - \text{pH})}$]/1.25

FHP=1

$0 \leq T \leq 25^\circ\text{C}$

$25 \leq T \leq 30^\circ\text{C}$

$6.5 \leq \text{pH} \leq 9$

$8 \leq \text{pH} \leq 9$

Chronic Objective = 0.822[0.87/FT/FHP/RATIO] where

FT= $10^{0.03(20-T)}$

FT=1

FHP=[$1 + 10^{(7.4 - \text{pH})}$]/1.25

FHP=1

$\text{RATIO} = \frac{24[10^{(7.7 - \text{pH})}]}{1 + 10^{(7.4 - \text{pH})}}$

RATIO=13.5

$0 \leq T \leq 20^\circ\text{C}$

$20 \leq T \leq 30^\circ\text{C}$

$6.5 \leq \text{pH} \leq 8$

$8 \leq \text{pH} \leq 9$

$6.5 \leq \text{pH} \leq 7.7$

$7.7 \leq \text{pH} \leq 9$

Table C-11.2 - Applicable Sediment Quality Guidelines for the Protection of Marine Aquatic Life

NOAA's Screening Concentrations

Metals (ppm) dry weight	ER-L	ER-M	ER-L - Effects Range Low	
Cadmium	1.2	9.6		The ERL represents the concentration corresponding to the 10th percentile in toxicity testing. No effects are likely below the ER-L.
Chromium	81	370		
Copper	34	270		
Lead	46.7	218		
Mercury	0.15	0.71		
Nickel	20.9	51.6		
Silver	1.0	3.7		
Zinc	150	410		
Organics (ppb) dry weight			ER-M - Effects Range Median The ERM represents the concentration corresponding to the 50th percentile or median value. Effects are likely above the ER-M.	
Acenaphthene	16	500		
Acenaphthylene	44	640		
Anthracene	85.3	1100		
Fluorene	19	540		
2-Methyl naphthalene	70	670		
Naphthalene	160	2100		
Phenanthrene	240	1500		
Low molecular weight PAHs	552	3160		
Benzo(a)anthracene	261	1600		
Benzo(a)pyrene	430	1600		
Chrysene	384	2800		
Dibenzo(a,h)anthracene	63.4	260		
Fluoranthene	600	5100		
Pyrene	665	2600		
High molecular weight PAHs	1700	9600		
Total PAHs	4022	44792		
Chlordane	0.05	6		
p,p' -DDD	2	20		
p,p' -DDE	2.2	27		
p,p' -DDT	1	7		
Total DDT	1.58	46.1		
Dieldrin	0.02	8.0		
Total PCBs	22.7	180		

SCCWRP Iron Normalization Regression Coefficients

Iron (% dry) Versus	Sample Size	r²	Slope (m)	Intercept (b)	± 99% Prediction Interval
Cadmium (mg/dry g)	83	0.734	0.0978	0.0055	0.1274
Chromium (mg/dry g)	88	0.882	16.50	-0.021	11.56
Copper (mg/dry g)	96	0.833	7.40	-2.01	6.50
Lead (mg/dry g)	103	0.738	4.350	0.0836	5.199
Nickel (mg/dry g)	110	0.533	9.850	-0.407	19.596
Silver (mg/dry g)	99	0.581	0.0795	-0.0183	0.1426
Zinc (mg/dry g)	88	0.967	31.50	-1.95	15.45

Table C-11.3 - IBI Metrics Used to Characterize Communities

Metric	Description	Response to Impairment
Richness Measures		
Taxa Richness	Total number of individual taxa	Decrease
EPT Taxa	Number of taxa in the Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) insect orders	Decrease
Ephemeroptera Taxa	Number of taxa in the insect order Ephemeroptera (mayflies)	Decrease
Plecoptera Taxa	Number of taxa in the insect order Plecoptera (stoneflies)	Decrease
Trichoptera Taxa	Number of taxa in the insect order Trichoptera (caddisflies)	Decrease
Composition Measures		
EPT Index	Percent composition of mayfly, stonefly, and caddisfly larvae	Decrease
Sensitive EPT Index	Percent composition of mayfly, stonefly, and caddisfly larvae with tolerance values between 0 and 3	Decrease
Shannon Diversity	General measure of sample diversity that incorporates richness and evenness (Shannon and Weaver 1963)	Decrease
Tolerance/Intolerance Measures		
Tolerance Value	Value between 0 and 10 weighted for abundance of individuals designated as pollution tolerant (higher values) or intolerant (lower values)	Increase
Percent Intolerant Organisms	Percent of organisms in sample that are highly intolerant to impairment as indicated by a tolerance value of 0, 1 or 2	Decrease
Percent Tolerant Organisms	Percent of organisms in sample that are highly tolerant to impairment as indicated by a tolerance value of 8, 9 or 10	Increase
Percent Dominant Taxa	Percent composition of the single most abundant taxon	Increase
Percent Hydropsychidae	Percent of organisms in the caddisfly family Hydropsychidae	Increase
Percent Baetidae	Percent of organisms in the mayfly family Baetidae	Increase
Functional Feeding Groups (FFG)		
Percent Collector	Percent of macrobenthos that collect or gather fine particulate matter	Increase
Percent Filterers	Percent of macrobenthos that filter fine particulate matter	Increase
Percent Grazers	Percent of macrobenthos that graze upon periphyton	Variable
Percent Predators	Percent of macrobenthos that feed on other organisms	Variable
Percent Shredders	Percent of macrobenthos that shreds coarse particulate matter	Decrease
Abundance		
Estimated Abundance	Estimated number of BMIs in sample calculated by extrapolating from the proportion of organisms counted in the subsample	Variable

Table C-11.4 - IBI Scoring Ranges for the Seven Metrics Included in the IBI Values

Metric Scoring Ranges for the Southern California IBI										
Metric Score	Coleoptera Taxa	EPT Taxa		Predator Taxa	% Collector Individuals		% Intolerant Individuals		% Non-Insect Taxa	% Tolerant Taxa
	All Sites	6	8	All Sites	6	8	6	8	All Sites	All Sites
10	>5	>17	>18	>12	0-59	0-39	25-100	42-100	0-8	0-4
9		16-17	17-18	12	60-63	40-46	23-24	37-41	9-12	5-8
8	5	15	16	11	64-67	47-52	21-22	32-36	13-17	9-12
7	4	13-14	14-15	10	68-71	53-58	19-20	27-31	18-21	13-16
6		11-12	13	9	72-75	59-64	16-18	23-26	22-25	17-19
5	3	9-10	11-12	8	76-80	65-70	13-15	19-22	26-29	20-22
4	2	7-8	10	7	81-84	71-76	10-12	14-18	30-34	23-25
3		5-6	8-9	6	85-88	77-82	7-9	10-13	35-38	26-29
2	1	4	7	5	89-92	83-88	4-6	6-9	39-42	30-33
1		2-3	5-6	4	93-96	89-94	1-3	2-5	43-46	34-37
0	0	0-1	0-4	0-3	97-100	95-100	0	0-1	47-100	38-100
Cumulative IBI Scores										
Very Poor		Poor		Fair		Good		Very Good		
0-19		20-39		40-59		60-79		80-100		

6 – Coastal Scrub Oak Habitat

8 – Coastal Mountains

Table C-11.5 - Decision framework for Interpreting Triad Results

	Chemistry	Toxicity	Benthic Alteration	Example Conclusions	Possible Actions or Decisions
1.	Exceedance of water quality objectives	Evidence of toxicity	Indications of alteration	Strong evidence of pollution-induced degradation	Use TIE to identify contaminants of concern, based on TIE metric Initiate upstream source identification as a high priority
2.	No persistent exceedances of water quality objectives	No evidence of toxicity	No indications of alteration	No evidence of current pollution-induced degradation Potentially harmful pollutants not yet concentrated enough to cause visible impact	No immediate action necessary Conduct periodic broad scans for new and/or potentially harmful pollutants
3.	Exceedance of water quality objectives	No evidence of toxicity	No indications of alteration	Contaminants are not bioavailable Test organisms not sensitive to problem pollutants	TIE would not provide useful information with no evidence of toxicity Continue monitoring for toxic and benthic impacts Initiate upstream source identification as a low priority Consider whether different or additional test organisms should be evaluated
4.	No persistent exceedances of water quality objectives	Evidence of toxicity	No indications of alteration	Unmeasured contaminant(s) or conditions have the potential to cause degradation Pollutant causing toxicity at very low levels	Recheck chemical analyses; verify toxicity test results Consider additional advanced chemical analyses Use TIE to identify contaminants of concern, based on TIE metric Initiate upstream source identification as a medium priority
5.	No persistent exceedances of water quality objectives	No evidence of toxicity	Indications of alteration	Alteration may not be due to toxic contamination Test organisms not sensitive to problem pollutants	No action necessary due to toxic chemicals Initiate upstream source identification (for physical sources) as a high priority Consider whether different or additional test organisms should be evaluated

	Chemistry	Toxicity	Benthic Alteration	Example Conclusions	Possible Actions or Decisions
6.	Exceedance of water quality objectives	Evidence of toxicity	No indications of alteration	Toxic contaminants are bioavailable, but in situ effects are not demonstrable Benthic analysis not sensitive enough to detect impact Potentially harmful pollutants not yet concentrated enough to change community	Determine if chemical and toxicity tests indicate persistent degradation Recheck benthic analyses; consider additional data analyses If recheck indicates benthic alteration, perform TIE to identify contaminants of concern, based on TIE metric Initiate upstream source identification as a high priority If recheck shows no effect, use TIE to identify contaminants of concern, based on TIE metric Initiate upstream source identification as a medium priority
7.	No persistent exceedances of water quality objectives	Evidence of toxicity	Indications of alteration	Unmeasured toxic contaminants are causing degradation Pollutant causing toxicity at very low levels Benthic impact due to habitat disturbance, not toxicity	Recheck chemical analyses and consider additional advanced analyses Use TIE to identify contaminants of concern, based on TIE metric Initiate upstream source identification as a high priority Consider potential role of physical habitat disturbance
8.	Exceedance of water quality objectives	No evidence of toxicity	Indications of alteration	Test organisms not sensitive to problem pollutants Benthic impact due to habitat disturbance, not toxicity	TIE would not provide useful information with no evidence of toxicity Initiate upstream source identification as a high priority Consider whether different or additional test organisms should be evaluated Consider potential role of physical habitat disturbance

Table C-11.6
Stormwater Mass Loads from Sampled Storms: 2008-09 SAR

Station	Period	Volume Sampled ac-ft	Type	Nitrate As NO3	NH3 as N	TKN	Total Phos. as PO4	Ortho Phos. as P	TSS	VSS	lbs										Hardness as CaCO3 Tons
											Cd	Cr	Cu	Pb	Ni	Ag	Zn	As	Se		
BARSED	Dec 15-19, 2008	2263	Total	30	0.59	5.7	9.8	1.1	1190	176	6.7	68	134	54	60	1.5	554	37	22	429	
			Dissolved								1.5	5.4	40	1.5	13	1.5	52	21	19		
	Feb 5-11, 2009	1991	Total	29	0.45	3.5	4.2	0.63	329	64	1.9	25	102	23	25	1.4	316	23	24	412	
				Dissolved								1.9	5.0	47	1.4	14	1.4	71	19	24	
BCC02	Jan 23-27, 2009	96	Total	0.91	0.07	0.28	0.12	0.004	3.7	1.5	0.06	0.70	7.0	1.1	1.4	0.07	18	0.56	0.17	18	
			Dissolved								0.07	0.41	5.0	0.17	1.2	0.07	10	0.61	0.16		
CARB01	Jan 23-27, 2009	70	Total	0.54	0.03	0.34	0.20	0.003	10	3.5	0.07	0.53	5.0	1.4	0.92	0.05	22	0.57	0.17	13	
			Dissolved								0.05	0.25	2.5	0.09	0.52	0.05	4.5	0.41	0.14		
CCBA01	Jan 23-27, 2009	266	Total	2.4	0.08	0.43	0.17	0.008	11	3.6	0.19	1.1	9.6	1.5	2.3	0.19	29	1.4	0.82	166	
			Dissolved								0.18	0.59	6.7	0.29	1.8	0.18	13	1.2	0.58		
	Feb 5-6, 2009	1069	Total	3.1	0.29	1.8	2.0	0.28	284	47	0.07	0.36	1.9	1.4	0.61	0.01	10	0.16	0.01		
				Dissolved								0.73	1.7	22	1.7	7.5	0.73	58	4.1	0.58	
CICF25	Dec 15-19, 2008	341	Total	5.0	0.10	0.82	1.7	0.17	189	27	1.1	12	22	8.0	9.9	0.23	91	4.8	0.91	61	
			Dissolved								0.23	0.89	5.9	0.24	2.0	0.23	7.0	2.4	0.51		
	Feb 5-11, 2009	166	Total	2.8	0.04	0.40	0.51	0.08	44	7.4	0.27	2.8	9.3	2.3	2.9	0.11	30	1.9	0.30	31	
				Dissolved								0.11	0.43	4.2	0.11	1.2	0.11	5.1	1.3	0.19	
CMCG02	Dec 15-19, 2008	66	Total	0.29	0.02	0.16	0.15	0.03	3.8	1.7	0.05	0.58	5.5	1.0	0.75	0.05	20	0.19	0.09	6.4	
			Dissolved								0.05	0.24	3.3	0.11	0.56	0.05	9.7	0.28	0.06		
	Feb 5-11, 2009	48	Total	0.19	0.01	0.11	0.09	0.02	2.1	0.91	0.02	0.32	4.4	0.54	0.48	0.03	12	0.22	0.05	4.7	
				Dissolved								0.03	0.17	3.1	0.07	0.41	0.03	6.2	0.21	0.04	
EGWC05	Jan 23-27, 2009	4	Total	0.03	0.002	0.01	0.006	0.000	0.20	0.08	0.004	0.03	0.50	0.04	0.07	0.003	0.73	0.03	0.007	0.76	
			Dissolved								0.001	0.01	0.18	0.006	0.06	0.001	0.35	0.02	0.007		
FCVA03	Jan 23-27, 2009	17	Total	0.12	0.003	0.02	0.01	0.000	1.1	0.29	0.02	0.09	0.55	0.16	0.14	0.007	2.1	0.07	0.03	1.7	
			Dissolved								0.01	0.04	0.50	0.01	0.13	0.01	1.0	0.09	0.05		
FULA03	Feb 5-6, 2009	15	Total	0.05	0.005	0.03	0.03	0.002	3.5	0.83	0.02	0.30	1.5	0.61	0.31	0.01	7.3	0.09	0.02		
			Dissolved								0.01	0.04	0.45	0.02	0.13	0.01	1.4	0.06	0.008		
SADF01	Dec 15-19, 2008	883	Total	6.3	0.17	2.5	1.9	0.12	246	61	1.4	17	112	44	20	0.60	448	7.5	5.9	204	
			Dissolved								0.60	2.9	22	1.2	7.7	0.60	73	3.5	4.9		
	Feb 5-11, 2009	424	Total	2.1	0.12	0.70	0.58	0.05	36	11	0.39	3.5	35	10	5.5	0.29	127	2.2	2.1	81	
				Dissolved								0.36	1.2	15	0.46	3.6	0.29	39	1.5	1.7	
SDMF05	Dec 15-19, 2008	4691	Total	42	1.2	16	25	1.8	4860	670	25	219	353	182	209	3.2	1580	85	34	823	
			Dissolved								3.2	8.9	63	3.2	28	3.2	79	36	26		
	Feb 5-10, 2009	3306	Total	33	0.53	6.1	8.4	1.0	1340	188	5.9	70	171	54	68	2.2	581	39	25	680	
				Dissolved								2.2	5.2	53	2.2	19	2.2	56	25	23	
WYLS01	Dec 15-19, 2008	1670	Total	20	0.54	7.7	12	0.72	2670	341	18	108	140	84	100	1.1	1640	37	13	478	
			Dissolved								1.9	2.8	27	1.1	14	1.1	354	14	8.8		
	Feb 5-11, 2009	1298	Total	17	0.23	2.9	4.3	0.45	930	114	4.7	33	68	22	34	0.88	560	17	6.0	238	
				Dissolved								0.88	1.4	20	0.88	9.9	0.88	141	10	5.1	

Table C-11.7
Event Mean Concentrations from Sampled Storms: 2008-09 SAR

Station	Period	Volume Sampled ac-ft	Type	Nitrate	NH3	TKN	Total	Ortho	TSS	VSS	Cd	Cr	Cu	Pb	Ni	Ag	Zn	As	Se	Hardness
				As NO3	as N		Phos. as PO4	Phos. as P												as CaCO3
				mg/L							ug/L							mg/L		
BARSED	Dec 15-19, 2008	2263	Total	9.8	0.19	1.9	3.2	0.35	386	57	1.1	11	22	8.7	9.7	0.25	90	6.0	3.7	140
			Dissolved								0.25	0.88	6.5	0.25	2.1	0.25	8.5	3.3	3.1	
	Feb 5-11, 2009	1991	Total	11	0.17	1.3	1.5	0.23	122	23	0.34	4.6	19	4.2	4.7	0.25	58	4.3	4.5	152
			Dissolved								0.34	0.93	8.7	0.25	2.5	0.25	13	3.5	4.4	
BCC02	Jan 23-27, 2009	96	Total	6.9	0.53	2.1	1.0	0.03	29	12	0.21	2.7	27	4.2	5.4	0.25	69	2.1	0.64	136
			Dissolved								0.25	1.6	19	0.65	4.5	0.25	39	2.3	0.61	
CARB01	Jan 23-27, 2009	70	Total	5.6	0.28	3.6	2.1	0.03	106	37	0.39	2.8	26	7.1	4.8	0.25	118	3.0	0.89	140
			Dissolved								0.25	1.3	13	0.46	2.7	0.25	24	2.2	0.74	
CCBA01	Jan 23-27, 2009	266	Total	6.5	0.21	1.2	0.48	0.02	30	9.9	0.26	1.6	13	2.1	3.2	0.26	40	1.9	1.1	459
			Dissolved								0.25	0.82	9.2	0.40	2.4	0.25	17	1.6	0.80	
	Feb 5-6, 2009	1069	Total	2.1	0.20	1.2	1.3	0.19	196	33	0.02	0.12	0.65	0.49	0.21	0.004	3.5	0.05	0.004	
			Dissolved								0.25	0.60	7.6	0.59	2.6	0.25	20	1.4	0.20	
CICF25	Dec 15-19, 2008	341	Total	11	0.21	1.8	3.7	0.37	408	59	1.2	13	23	8.6	11	0.25	98	5.2	1.0	131
			Dissolved								0.25	1.0	6.3	0.26	2.2	0.25	7.5	2.6	0.55	
	Feb 5-11, 2009	166	Total	12	0.19	1.8	2.3	0.36	196	33	0.61	6.3	21	5.0	6.4	0.25	67	4.1	0.67	137
			Dissolved								0.25	1.0	9.2	0.25	2.6	0.25	11	2.9	0.41	
CMCG02	Dec 15-19, 2008	66	Total	3.2	0.17	1.8	1.7	0.33	43	19	0.26	3.2	31	5.7	4.2	0.25	111	1.1	0.51	71
			Dissolved								0.25	1.4	18	0.60	3.1	0.25	54	1.6	0.35	
	Feb 5-11, 2009	48	Total	2.9	0.19	1.6	1.4	0.31	32	14	0.17	2.4	34	4.2	3.7	0.25	92	1.7	0.39	72
			Dissolved								0.25	1.3	24	0.53	3.1	0.25	48	1.6	0.29	
EGWC05	Jan 23-27, 2009	4	Total	5.4	0.39	2.2	1.1	0.08	37	15	0.37	2.5	46	4.0	6.1	0.28	67	2.5	0.64	140
			Dissolved								0.09	1.3	17	0.55	5.8	0.09	32	2.2	0.64	
FCVA03	Jan 23-27, 2009	17	Total	5.2	0.12	0.86	0.58	0.01	49	13	0.43	1.9	12	3.4	3.1	0.15	46	1.6	0.63	74
			Dissolved								0.26	0.84	11	0.26	2.8	0.26	22	2.0	1.0	
FULA03	Feb 5-6, 2009	15	Total	2.3	0.24	1.7	1.6	0.12	173	41	0.56	7.5	37	15	7.7	0.25	179	2.3	0.42	
			Dissolved								0.25	1.0	11	0.56	3.2	0.25	34	1.4	0.20	
SADF01	Dec 15-19, 2008	883	Total	5.3	0.15	2.1	1.6	0.10	205	51	0.60	7.0	47	18	8.4	0.25	187	3.1	2.5	170
			Dissolved								0.25	1.2	9.3	0.49	3.2	0.25	30	1.4	2.0	
	Feb 5-11, 2009	424	Total	3.7	0.21	1.2	1.0	0.09	62	19	0.34	3.0	31	9.1	4.7	0.25	110	1.9	1.8	140
			Dissolved								0.31	1.1	13	0.40	3.1	0.25	34	1.3	1.5	
SDMF05	Dec 15-19, 2008	4691	Total	6.5	0.19	2.5	4.0	0.29	763	105	1.9	17	28	14	16	0.25	124	6.6	2.7	129
			Dissolved								0.25	0.70	4.9	0.25	2.2	0.25	6.2	2.8	2.0	
	Feb 5-10, 2009	3306	Total	7.3	0.12	1.4	1.9	0.23	298	42	0.66	7.8	19	6.0	7.5	0.25	65	4.4	2.8	151
			Dissolved								0.25	0.57	5.9	0.25	2.1	0.25	6.2	2.8	2.6	
WYLS05	Dec 15-19, 2008	1670	Total	8.7	0.24	3.4	5.1	0.32	1170	150	3.9	24	31	19	22	0.25	362	8.1	2.9	210
			Dissolved								0.41	0.61	6.0	0.25	3.1	0.25	78	3.1	1.9	
	Feb 5-11, 2009	1298	Total	9.9	0.13	1.6	2.4	0.26	527	65	1.3	9.3	19	6.3	9.7	0.25	159	4.8	1.7	135
			Dissolved								0.25	0.40	5.8	0.25	2.8	0.25	40	2.8	1.4	

Table C-11.8
 Exceedances of CTR Criteria at SAR Long-Term Mass Loading Sites: 2008-09

Station	Sample Size		Freshwater			Saltwater		
			Acute		Chronic	Acute		Chronic
	Acute	Chronic	Cu	Zn	Cu	Cu	Zn	Cu
BARSED	11	2						
BCC02	6	1	3			5		1
CARB01	6	1	2					
CCBA01	6	1						
CICF25	12	2	2					
CMCG02	11	2	7	4	2	11	2	2
EGWC05	4		1			4		
FCVA03	3		1					
FULA03	1							
SADF01	12	2	2			12	1	2
SDMF05	11	2				8		2
WYLSSED	12	2						
Totals	95	15	18	4	2	40	3	7

Table C-11.9
Toxicity Testing at SAR Long-Term Mass Loading Sites: 2008-09

Site	Composite			Type	Samples #	Hyalella azteca		Ceriodaphnia			Fathead Minnow			Selenastrum	Mysidopsis			Sea Urchin	
	Start	End	%			Survival	Surv		Repro	Surv		Grwth	Growth	Surv		Fertil	Embryo Dev		
							%surv	%surv cont		96hr TUa	48hr TUa			TUc	TUc			48hr TUa	TUc
BARSED	9/16/08 9:05	9/17/08 8:05	DT	24			3.8	0	1	2									
BARSED	9/17/08 9:09		DT	1	90	95													
BARSED	11/4/08 8:10		ST	1											0.69	4	2	4	1
BARSED	12/10/08 8:00	12/11/08 7:00	DT	24			0	0.94	> 2	1	0	1	> 2	1					
BARSED	12/11/08 9:00		DT	1	35	87.5													
BARSED	12/15/08 6:40	12/16/08 4:40	ST	12				0	1	1					0	1	1	1	1
BARSED	2/5/09 18:14	2/6/09 16:14	ST	12				0	1	1					0	1	1	1	1
BARSED	5/5/09 9:32	5/6/09 8:32	DT	24			0.41	0	1	1	0	1	1	2					
BARSED	5/6/09 11:08		DT	1	82.5	97.5													
BARSED	6/16/09 9:00	6/17/09 8:00	DT	24			0	0	1	1				2					
BARSED	6/17/09 9:34		DT	1	92.5	95													
BCC02	10/8/08 9:12	10/9/08 8:12	DT	24			0	0	1	1				1					
BCC02	11/4/08 8:48		ST	1											0	2	1	> 16	1
BCC02	1/23/09 4:23	1/24/09 14:23	ST	6				0	1	1					1.2	2	> 2	1	4
BCC02	6/23/09 11:30	6/24/09 10:30	DT	24			0	0	1	1				> 2					
CARB01	10/8/08 10:06	10/9/08 9:06	DT	24			0	0.59	1	1				1					
CARB01	11/4/08 9:15		ST	1											0	1	1	> 16	2
CARB01	1/23/09 15:30	1/24/09 13:30	DT	6				0	1	1					1.27	2	2	1	2
CARB01	6/23/09 10:41	6/24/09 9:41	DT	24			0	0	1	1				1					
CCBA01	10/8/08 9:15	10/9/08 8:15	DT	24			0	0.59	> 2	> 2				1					
CCBA01	11/4/08 9:40		ST	1											0.51	4	1	> 16	2
CCBA01	1/23/09 13:40	1/24/09 11:40	ST	6				0	1	1					0.87	> 2	1	1	4
CCBA01	6/23/09 9:40	6/24/09 8:40	DT	24			0	0	1	> 2				1					
CICF25	9/16/08 8:34	9/17/08 7:34	DT	24			3.8	0	1	1	0.14	1	1	1					
CICF25	11/4/08 7:58		ST	1											1.02	8	2	> 16	1
CICF25	12/10/08 8:00	12/11/08 7:00	DT	24			1.16	1.33	> 2	2	0	1	1	1					
CICF25	12/15/08 7:03	12/16/08 5:03	ST	12				0	1	2					0	1	> 2	1	1
CICF25	2/5/09 19:19	2/6/09 17:19	ST	12				0	1	> 2					0	1	1	1	1
CICF25	5/5/09 8:42	5/6/09 7:42	DT	24			0	0	1	1	0.31	1	1	1					
CMCG02	9/16/08 11:45	9/17/08 10:45	DT	24			1.33	0	1	1	0	1	1	1					
CMCG02	11/4/08 9:50		ST	1											0.65	2	1	16	1
CMCG02	12/10/08 10:25	12/11/08 9:25	DT	24			0.91	0	1	1	0	1	1	1					
CMCG02	12/15/08 6:51	12/16/08 4:51	ST	12				0	1	1					0	1	1	1	1
CMCG02	2/5/09 17:18	2/6/09 15:18	ST	12				0	1	1					0	1	1	1	1
CMCG02	5/5/09 12:43	5/6/09 11:43	DT	24			0	0	1	1	0.14	1	1	1					
EGWC05	10/8/08 10:08	10/9/08 9:08	DT	24			0	0	1	1				1					
EGWC05	11/4/08 7:55		ST	1											0	2	1	> 16	4
EGWC05	1/23/09 14:22	1/24/09 12:22	ST	6				0	1	1					0.93	2	2	1	1
EGWC05	6/23/09 12:12	6/24/09 11:12	DT	24			0	0	1	1				1					
FCVA03	1/23/09 13:46	1/24/09 11:46	ST	6				0	1	2					0.94	> 2	1	1	1
FULA03	10/8/08 8:28	10/9/08 7:28	DT	24			0.41	0.59	1	1				1					
FULA03	11/4/08 10:05		ST	1											0.41	1	1	16	1
FULA03	2/5/09 17:47	2/6/09 15:47	ST	12				0	1	1					0	1	1	1	1
FULA03	6/23/09 9:54	6/24/09 8:54	DT	24			0	0	1	1				1					
SADF01	9/16/08 11:10	9/17/08 10:10	DT	24			3.79	0.59	1	1	0	1	1	1					
SADF01	9/17/08 11:54		DT	1	100	95													
SADF01	11/4/08 9:30		ST	1											0.85	2	1	4	1
SADF01	12/10/08 10:00	12/11/08 9:00	DT	24			0	0	1	> 2	0	1	1	1					
SADF01	12/11/08 10:25		DT	1	12.5	87.5													
SADF01	12/15/08 3:34	12/16/08 1:34	ST	12				0	1	1					0	1	1	1	1

Table C-11.9
Toxicity Testing at SAR Long-Term Mass Loading Sites: 2008-09

Site	Composite		Type	Samples #	Hyalella azteca		Ceriodaphnia			Fathead Minnow			Selenastrum	Mysidopsis			Sea Urchin	
					10d sed surv		Aq Survival	Surv		Repro	Surv	Surv	Grwth	Growth	Surv		Grwth	Fertil
	Start	End			%surv	%surv cont	96hr TUa	48hr TUa	TUc	TUc	48hr TUa	TUc	TUc	TUc	48hr TUa	TUc	TUc	TUc
SADF01	2/5/09 18:24	2/6/09 16:24	ST	12				0	1	1								
SADF01	5/5/09 11:46	5/6/09 10:46	DT	24			0.69	0	1	1	0	1	1	1				
SADF01	5/6/09 13:05		DT	1	100	97.5												
SADF01	6/16/09 11:33	6/17/09 10:33	DT	24			0	0	1	1				1				
SADF01	6/17/09 10:21		DT	1	95	95												
SDMF05	9/16/08 10:34	9/17/08 9:34	DT	24			3.4	0	1	> 2	0.14	1	1	2				
SDMF05	9/17/08 10:27		DT	1	90	95												
SDMF05	11/4/08 8:51		ST	1										0.41	1	1	4	1
SDMF05	12/10/08 9:03	12/11/08 8:03	DT	24			0	0	> 2	> 2	0	1	1	1				
SDMF05	12/11/08 9:32		DT	1	62.5	87.5												
SDMF05	12/15/08 9:53	12/16/08 7:53	ST	12				0	1	2				0	1	1	1	1
SDMF05	2/5/09 21:35	2/6/09 20:35	ST	12				0	1	1				0	1	1	1	1
SDMF05	5/5/09 11:17	5/6/09 10:17	DT	24			0	0	1	1	0	1	1	1				
SDMF05	5/6/09 12:30		DT	1	85	97.5												
SDMF05	6/16/09 12:40	6/17/09 11:40	DT	24			0	0	1	1				1				
SDMF05	6/17/09 11:49		DT	1	82.5	95												
WYLSED	9/16/08 9:40	9/17/08 8:40	DT	24			3.4	0	1	1	0	1	1	2				
WYLSED	9/17/08 9:32		DT	1	90	95												
WYLSED	11/4/08 8:27		ST	1										0	1	1	4	1
WYLSED	12/10/08 8:00	12/11/08 7:00	DT	24			0.41	0	1	2	0	2	2	1				
WYLSED	12/11/08 9:55		DT	1	2.5	87.5												
WYLSED	12/15/08 8:30	12/16/08 6:30	ST	12				0	1	> 2				0	1	2	1	1
WYLSED	2/5/09 21:10	2/6/09 14:10	ST	12				0	1	> 2				0	1	1	1	1
WYLSED	5/5/09 9:58	5/6/09 8:58	DT	24			0							1				
WYLSED	5/6/09 11:35		DT	1	80	97.5												
WYLSED	6/16/09 8:32	6/17/09 7:32	DT	24			0	0	1	1				1				

Table C-11.10
Toxicity Testing in SAR Harbor, Estuaries, and Marshes: 2008-09

Site	Date	Type	Eohaustorius 10d Sed Surv%		Mysidopsis			Sea Urchin	
			Sample	Control	Survival		Growth	Fertilization	Embryo Dev
					48hr TUa	TUc	TUc	TUc	TUc
BBOLR	10/9/08 8:45	DT	91	96	0	1	1	1	1
BBOLR	6/25/09 9:40	DT			1.33	2	2	1	1
HUNBCC	10/9/08 11:12	DT	29	96	0	1	1	1	1
HUNBCC	6/25/09 9:48	DT			1.08	2	1	1	1
HUNCRB	10/9/08 10:02	DT	87	96	0.00	1	1	1	1
HUNCRB	6/25/09 10:26	DT			1.56	> 2	> 2	1	2
HUNWAR	10/9/08 9:15	DT	93	96	0	1	1	1	1
HUNWAR	6/25/09 10:50	DT			1.43	> 2	> 2	1	1
LNBHIR	9/18/08 11:49	DT	89	96	0	1	1	1	1
LNBHIR	12/11/08 9:35	DT	85	96	0	1	1	1	1
LNBHIR	12/15/08 1:50	ST			0.97	> 16	1	4	1
LNBHIR	2/6/09 13:09	ST			0.59	1	1	1	1
LNBHIR	5/6/09 9:26	DT	95	95	0	1	1	1	1
LNBHIR	6/18/09 9:30	DT	89	89	0	1	1	1	1
LNBRIN	9/18/08 12:50	DT	89	96					
LNBRIN	6/18/09 10:47	DT	94	89					
LNBTUB	9/18/08 10:35	DT	90	96	0	1	1	1	1
LNBTUB	12/11/08 10:40	DT	92	96	0	1	1	> 2	1
LNBTUB	12/15/08 2:25	ST			0.77	> 16	1	2	1
LNBTUB	2/6/09 12:28	ST			0.23	1	> 16	1	1
LNBTUB	5/6/09 8:38	DT	92	95	0.41	1	1	1	> 2
LNBTUB	6/18/09 10:11	DT	96	89	0.41	2	2	1	1
TBTMAR	10/9/08 12:00	DT	90	96	0	1	1	1	1
TBTMAR	6/25/09 11:30	DT			2.77	> 2	> 2	1	1
TGDC05	10/9/08 10:15	DT	92	96	0	1	1	1	1
TGDC05	6/25/09 10:40	DT			1.85	> 2	2	1	1
UNBCHB	9/18/08 8:50	DT	90	96	0.59	1	1	1	1
UNBCHB	12/11/08 8:25	DT	87	96	0	1	1	> 2	1
UNBCHB	12/15/08 1:14	ST			5.33	> 16	> 16	8	1
UNBCHB	2/6/09 11:52	ST			0.23	1	1	1	1
UNBCHB	5/6/09 10:02	DT	94	95	0.23	1	1	1	2
UNBCHB	6/18/09 8:53	DT	91	89	0.69	2	1	1	1
UNBJAM	9/17/08 9:35	DT	91	96	2.37	> 2	1	> 2	1
UNBJAM	12/10/08 9:50	DT	93	96	0.82	> 2	2	1	1
UNBJAM	12/15/08 10:25	ST			5.68	> 16	> 16	16	1
UNBJAM	2/6/09 10:18	ST			0.23	1	1	1	1
UNBJAM	5/7/09 8:40	DT	93	95	0.65	1	2	1	1
UNBJAM	6/17/09 8:35	DT	96	89	0	1	1	1	1
UNBNSB	9/17/08 12:00	DT	77	96	0.41	1	2	> 2	1
UNBNSB	12/10/08 11:32	DT	94	96	0	1	1	1	1
UNBNSB	12/15/08 12:26	ST			1.94	8	8	16	1
UNBNSB	2/6/09 11:20	ST			0.41	2	1	1	1
UNBNSB	5/7/09 10:30	DT	91	95	0	1	1	1	1
UNBNSB	6/17/09 10:02	DT	95	89	0	1	1	1	1
UNBSDC	9/17/08 10:42	DT	92	96	0.69	2	1	> 2	1
UNBSDC	12/10/08 10:29	DT	94	96	0	> 2	1	1	1
UNBSDC	12/15/08 11:25	ST			9.04	16	16	> 16	1
UNBSDC	2/6/09 10:40	ST			0.23	1	1	1	1
UNBSDC	5/7/09 9:40	DT	91	95	0	1	1	> 2	1
UNBSDC	6/17/09 9:20	DT	80	89	0	1	2	1	> 2

Table C-11.11
EBRI Scores at Harbor, Estuary, Marsh Sites in the SAR: 2008-09

Community Measure	Newport Bay					
	LNBHIR	LNBTUB	UNBCHB	UNBJAM	UNBNSB	UNBSDC
Number of Species	53	22	75	25	40	16
Abundance	636	116	4511	428	1218	295
Shannon-Wiener diversity index	3.03	2.33	1.58	2.19	2.5	1.19
Margalef diversity index	8.06	4.42	8.80	3.96	5.49	2.64
Evenness	0.76	0.75	0.37	0.68	0.68	0.43
Schwartz Dominance index	11	6	2	5	6	2
Simpson Diversity	0.92	0.85	0.57	0.80	0.87	0.45
EBRI	41.46	43.64	42.58	64.2	49.61	53.28

Community Measure	Huntington Harbour/Talbert Marsh					
	BBOLR	HUNBCC	HUNCRB	HUNWAR	TBTMAR	TGDC05
Number of Species	25	45	14	37	34	28
Abundance	1972	279	42	1575	705	764
Shannon-Wiener diversity index	1.8	3.08	2.38	1.82	1.99	2.08
Margalef diversity index	3.16	7.81	3.48	4.89	5.03	4.07
Evenness	0.56	0.81	0.90	0.50	0.56	0.62
Schwartz Dominance index	3	13	7	3	4	4
Simpson Diversity	0.78	0.92	0.89	0.71	0.76	0.81
EBRI	83.46	49.21	65.91	55.46	67.38	74.99

Table C-11.12
 BRI threshold levels of benthic community condition for bays and estuaries

BRI Threshold	Level	Definition
< 39.96	Reference	1
≥ 39.96 to < 49.15	Low Disturbance	2
≥ 49.15 to < 73.27	Moderate Disturbance	3
≥ 73.27	High Disturbance	4

Table C-11.13
Sediment Toxicity in Estuary/Wetlands in a Regional Context
Using Data from the Bight '03 Bays and Harbors Stratum

Area	% Highly toxic	% Moderately toxic	% Nontoxic
Wetlands / Estuaries 2005-06	46 / 55 *	39 / 25	15 / 20
Wetlands / Estuaries 2006-07	38	27	13
Wetlands / Estuaries 2007-08	7	3	90
Wetlands / Estuaries 2008-09	3	3	94
S. California Bight overall 2003	10	37	53
Anaheim Bay	0	50	50
Dana Point	0	0	100
San Pedro Bay	5	37	58
Marina del Rey	0	25	75
Mission Bay	0	50	50
Newport Bay	63	25	13
Oxnard Harbor	0	0	100
Redondo Harbor	0	0	100
San Diego Bay	0	47	53

* percentage to the left of the slash is based on the August 2005 survey; percentage to the right of the slash is based on the entire year

Highly toxic: < 50% survival

Moderately toxic: \geq 50 - < 83% survival

Nontoxic: \geq 83% survival

Table C-11.15
Samples Exceeding AB411 Standards Near Coastal Stormdrains

Entire Year					AB411 Season				
Rank	Station	# days	# samples	Avg Hits	Rank	Station	# days	# samples	Avg Hits
Regional Channels									
1	CMCG02	37	37	0.91	1	CMCG02	26	26	0.936
2	BCC02	37	37	0.55	2	SUNC07	28	28	0.524
3	SUNC07	39	39	0.521	3	BCC02	26	26	0.487
4	EGWC05	38	38	0.456	4	EGWC05	27	27	0.407
5	SADF01	33	33	0.424	5	SADF01	22	22	0.303
6	SDC@JAM	6	6	0.111	6	SDC@JAM	6	6	0.111
7	SDMF05	37	37	0.09	7	SDMF05	26	26	0.038
Surfzone near Outlets of Coastal Stormdrains or Creeks									
1	BGC	45	90	0.044	1	BGC	29	58	0.052
2	HB2	45	86	0.026	2	HB2	29	57	0.017
3	HB1	45	89	0.019	3	HB4	28	41	0.012
4	HB3	45	70	0.015	4	WFC	29	57	0.011
5	PPC	45	69	0.015	5	HB5	29	57	0.006
6	HB4	44	69	0.011	6	PPC	29	41	0.006
7	HB5	45	87	0.011	7	HB1	29	58	0
8	WFC	45	89	0.011	8	HB3	29	45	0
9	MDC	45	89	0.007	9	MDC	29	57	0

¹Exceedance proportion or "hits" calculated as #AB411 exceedance / #total tests. Total tests per day of sampling = 2 samples (upcoast & downcoast) X indicators = 6

Table C-11.16
 Number of AB411 Exceedances in Each Monitoring Condition

Type	Entire Year						AB411 Season					
	Sites x		Exceeded Single Sample Std				Sites x		Exceeded Single Sample Std			
	Days	Samples	ENT	FC	TC	Total	Days	Samples	ENT	FC	TC	Hits
Coastal	404	738	34	4	3	41	260	471	12	3	2	17
Channel*	227	227	158	106	126	390	161	161	101	73	83	257

**Comparison to AB411 Ocean Water Sports Contact Standard made for purposes of discussion only.*

Table C - 11.17
Average Estimated Flowrates at Coastal Stormdrain Sites

Station	Ave Discharge Rate (cfs)	Relative Flow Rate
BGC	0.65301	Low
HB1	0.05408	Low
HB2	0.04795	Low
HB3	0.00399	Low
HB4	0.01492	Low
HB5	0.01193	Low
MDC	0.16189	Low
PPC	0.03229	Low
WFC	0.11807	Low

** Discharge average calculated on the days that the pipes were flowing as opposed to total days sampled.*

Flow	Category
< 1	Low
1 - 3.99	Medium
> 4	High

Table C-11.18a
Coastal Stormdrain Sites Ranked in Terms of Significance of Regression Slopes
of All Bacterial Indicators, Based on Data from the Entire Year

Based on data from the entire monitoring year (7/1/2008 - 6/30/2009)

Enterococcus			Fecal Coliform			Total Coliform		
Rank	Station	P-Value	Rank	Station	P-Value	Rank	Station	P-Value
1	BGC	1	5	BGC	1	5	BGC	0.0255
1	HB1	1	4	HB1	0.4307	4	HB1	0.0068
1	HB2	1	1	HB2	0.0535	6	HB2	0.0946
1	HB3	1	5	HB3	1	1	HB3	0.0002
1	HB4	1	5	HB4	1	7	HB4	0.285
1	HB5	1	5	HB5	1	8	HB5	1
1	MDC	1	3	MDC	0.3093	3	MDC	0.0023
1	PPC	1	5	PPC	1	8	PPC	1
1	WFC	1	2	WFC	0.2846	2	WFC	0.0022

Greater P values - less likelihood that concentrations in surfzone and stormdrain are related

Significant relationship between surfzone and stormdrain concentrations

Table C-11.18b
Coastal Stormdrain Sites Ranked in Terms of Significance of Regression Slopes
of All Bacterial Indicators Based on Data from the AB411 Season

Based on data from the AB411 Season Only (Apr. 1 - Oct. 30)

Enterococcus			Fecal Coliform			Total Coliform		
Rank	Station	P-Value	Rank	Station	P-Value	Rank	Station	P-Value
5	BGC	1	6	BGC	1	7	BGC	0.4353
5	HB1	1	6	HB1	1	3	HB1	0.0651
2	HB2	0.3579	1	HB2	0.0757	8	HB2	1
5	HB3	1	6	HB3	1	5	HB3	0.2334
5	HB4	1	3	HB4	0.39	6	HB4	0.3753
3	HB5	0.3789	6	HB5	1	8	HB5	1
5	MDC	1	4	MDC	0.4191	1	MDC	0.0457
4	PPC	0.4048	2	PPC	0.3852	4	PPC	0.1322
1	WFC	0.191	5	WFC	0.4697	2	WFC	0.0593

Greater P values - less likelihood that concentrations in surfzone and stormdrain are related

Significant relationship between surfzone and stormdrain concentrations

Table C-11.19
Stream Bioassessment Sites

Hydrologic Unit	Station Designation	Location	Station Coordinates	Elevation
Newport Coast	BGH01	Buck Gully Wash @ Little Corona Beach	33.59001 117.86836	23
Newport Bay	BCWG04	Big Canyon Wash @ Back Bay Drive	33.63139 117.882	77
San Diego Creek	UBPF19	Serrano Creek Park	33.64899 117.69747	404
	BCF04	Bonita Canyon Channel @ Bonita Creek Park	33.64808 117.86236	33
	TWF05	San Diego Creek @ Harvard Avenue	33.66908 117.83571	48
	UHAF05	San Diego Creek @ Harbor Street	33.68679 117.81702	47
	LCRF05	San Diego Creek near Hiway 133	33.65531 117.76131	201
	BPF06	Peter's Canyon Wash @ Barranca Pkwy	33.69262 117.82133	46
Santa Ana River	VICE08	Santiago Creek	33.77397 117.86025	182
	REF-MC	Modeska Creek @ Modeska Canyon	33.70874 117.61452	1426
	REF-SVC	Silverado Canyon Creek d/s of Belha Way	33.74578 117.60185	1634
	REF-SNC	Santiago Creek u/s of Irvine Lake	33.77323 117.68313	843

Table C-11.20
 Toxicity Testing at SAR Urban Stream Bioassessment Sites: 2008-09

Site	Date	Type	Spec Cond uS	Hyalella azteca	Ceriodaphnia			Fathead Minnow			Selenastrum
				Survival	Surv		Repro	Surv	Surv	Grwth	Growth
				Tua	48hr TUa	TUc	TUc	48hr TUa	TUc	TUc	TUc
BCF04	9/30/08 13:24	DT	2760	4.00	0	2	> 2	0	1	1	1
BCWG04	9/30/08 14:15	DT	5020	3.89	0	1	> 2	0.14	> 2	1	1
BGH01	10/1/08 13:10	DT	6340	0	0	> 2	> 2				1
BPF06	10/2/08 10:50	DT	2090	0.41	2.6	> 2	> 2				1
LCRF05	9/30/08 12:30	DT	2150	4	0.59	1	1	0	1	1	1
REF-MC	10/2/08 8:40	DT	1140	0.69	1.2	2	> 2				1
REF-SVC	10/2/08 9:35	DT	1260	0.59	1.29	2	2				1
SMC00105	5/12/09 8:00	DT	1200		0	1	> 2				
SMC00670	5/21/09 7:30	DT	1500		0	1	1				
SMC01155	5/12/09 12:30	DT	1400		0	1	1				
SMC26288	5/12/09 10:30	DT	1180		0	1	1				
TWF05	10/1/08 13:30	DT	2860	0.82	0	1	1	0	1	1	1
UBPF19	9/30/08 11:10	DT	1460	3.79	0	1	1	0.49	1	1	1
UHAF05	10/1/08 14:30	DT	2460	0.41	0	> 2	> 2	0	1	1	1

Table C-11.22
Landuse Monitoring Locations

Channel	Monitoring Site	Landuse Conversion	
		From	To
San Joaquin	SJQF14u	Grassland	Residential
	SJQF14d	Grassland	Residential
Central Irvine	HINF25u	Nursery/Ag	Commercial
	HINF25d	Nursery/Ag	Commercial
Santa Ana-Santa Fe	SASF10u	MCAS-Tustin	Commercial
	SASF10d	MCAS-Tustin	Commercial
Barranca	BRCF09u	MCAS-Tustin	Commercial
	BRCF09d	MCAS-Tustin	Commercial

