

Appendix IIa. Bioassessment metrics calculated for macroinvertebrate samples collected May 1998 from sites within the watersheds of the San Diego Region, California.

Site: Transect Number: BL Laboratory Number:	Aliso Creek AC-PPD			Aliso Creek AC-CCR			Murieta Creek MC-WB			Murrieta Creek MC-GS			Temecula Creek TC-I-15			River SMR-WGR			Rainbow Creek RC-WGR			Sandia Creek SC-SCR			River SMR-DP			River SMR-CP		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Taxa Richness	10	5	9	8	6	6	11	11	9	13	14	11	11	7	9	8	14	11	5	6	6	13	20	21	7	8	8	29	23	13
Percent Dominant Taxon	57	54	54	75	59	65	88	82	59	27	51	30	28	37	46	65	38	55	54	54	67	50	39	29	47	57	42	23	33	27
Ephemeropteran Taxa	1	1	2	1	1	1	1	1	2	2	2	3	2	2	2	3	3	3	1	1	1	1	1	2	2	2	2	4	4	4
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Trichopteran Taxa	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	1	1	1	0	0	0	4	7	4	1	1	1	1	1	1
EPT Taxa	2	1	3	1	1	1	1	1	2	3	2	3	3	2	3	4	4	4	1	1	1	5	9	7	3	3	3	5	5	5
EPT Index (%)	23	39	37	6	10	16	4	4	14	25	11	27	29	10	13	70	45	63	2	6	3	60	65	48	48	62	46	58	65	42
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4	0	0	0	0	0	0
Percent Baetidae	22	39	37	6	10	16	4	4	14	24	11	27	29	10	13	66	41	60	2	6	3	50	39	29	47	59	42	34	49	33
Percent Hydropsychidae	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	3	0	0	0	8	22	15	1	3	3	1	5	8
Dipteran Taxa	3	3	4	4	1	2	6	6	5	3	4	3	5	4	4	3	5	4	3	3	4	4	6	4	2	3	3	13	8	3
Percent Dipteran	62	55	57	76	59	66	7	12	25	43	32	39	53	53	40	29	40	31	45	40	30	36	21	45	37	30	40	21	17	27
Non-Insect Taxa	5	1	2	3	4	3	4	3	2	7	5	5	3	1	2	1	4	2	1	2	1	2	3	5	2	2	2	3	6	4
Percent Non-Insect	15	6	5	18	31	18	89	83	61	32	57	33	18	37	46	0	14	6	54	55	67	4	12	5	15	9	14	17	16	29
Percent Chironomidae	60	55	55	76	59	66	3	5	15	24	19	20	30	26	33	8	11	8	40	31	26	32	16	19	25	11	22	3	5	6
Shannon Diversity	1.4	0.9	1.1	0.8	1.0	1.0	0.6	0.8	1.4	1.7	1.5	1.7	1.6	1.4	1.4	1.1	1.7	1.4	1.0	1.1	0.9	1.4	1.9	1.9	1.3	1.3	1.5	2.4	2.1	2.2
Tolerance Value	5.4	5.2	5.2	5.5	5.9	5.5	7.7	7.6	7.0	6.1	6.9	6.2	5.7	6.4	6.5	5.2	5.7	5.3	6.7	6.7	7.1	5.0	4.9	5.0	5.5	5.3	5.5	5.4	5.3	5.7
Percent Intolerant (0-2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	0	0	0	1	0	0
Percent Tolerant (8-10)	13	6	5	18	30	18	89	83	61	29	57	32	15	37	46	0	14	6	54	55	67	3	8	1	14	7	13	17	15	19
Percent Collectors	69	61	59	94	89	84	90	86	68	51	70	51	45	60	76	9	19	12	93	86	93	36	27	20	39	18	34	44	31	27
Percent Filterers	6	1	3	0	0	0	4	7	14	21	13	19	22	29	10	25	38	27	5	8	4	12	27	42	13	21	22	9	14	19
Percent Grazers	23	39	37	6	10	16	5	5	16	27	15	30	29	11	13	66	42	60	2	6	3	50	40	30	47	59	42	36	50	33
Percent Predators	3	0	0	0	1	0	0	1	2	1	1	0	4	0	0	0	1	1	0	0	0	1	5	4	0	2	1	11	4	19
Percent Shredders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	0	0	0	1	0	2
Abundance (#/ sample)	144	190	1050	679	452	107	996	921	950	851	729	1420	1024	5420	3851	2137	2260	1593	3078	7712	15549	505	907	992	474	939	1364	540	708	89

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Site:	River SMR-SMB			River SLRR-PG			River SLRR-395			River SLRR-MR			River SLRR-FR			Keys Creek KC-LR			Creek LAC-CB			Creek LAC-ECR			Creek BVR-ED			Creek BVR-SVW			C AF
Transect Number:	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1
BL Laboratory Number:	2371	2372	2373	2368	2369	2370	2356	2357	2358	2362	2363	2364	2365	2366	2367	2359	2360	2361	2353	2354	2355	2350	2351	2352	2347	2348	2349	2344	2345	2346	2341
Taxa Richness	15	11	13	21	20	15	16	15	16	15	15	12	20	18	13	19	17	20	10	10	7	11	14	11	9	7	9	14	12	13	12
Percent Dominant Taxon	74	89	73	21	33	34	33	36	37	72	31	57	39	38	75	27	40	35	56	42	81	66	33	31	65	48	59	53	49	34	52
Ephemeropteran Taxa	4	3	4	3	4	2	4	3	5	3	3	3	2	3	3	2	2	1	2	0	1	1	1	2	1	1	1	2	2	2	1
Plecopteran Taxa	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	0	0	1	2	0	2	2	1	1	1	0	0	1	0	0	1	2	2	0	0	0	0	0	0	1	1	1	1	1	1	0
EPT Taxa	4	3	5	7	6	5	6	4	6	4	3	3	3	3	3	3	4	3	2	0	1	1	1	2	2	2	2	3	3	3	1
EPT Index (%)	4	4	12	29	39	50	48	53	58	17	47	31	5	5	3	20	14	29	1	0	0	6	15	30	70	53	32	18	19	16	7
Sensitive EPT Index	0	0	0	7	4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Baetidae	3	3	11	20	34	34	43	42	47	15	38	25	4	5	3	15	11	26	0	0	0	6	15	30	65	48	29	16	14	14	7
Percent Hydropsychidae	0	0	1	1	0	2	2	2	0	0	0	0	0	0	0	5	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Dipteran Taxa	6	4	4	6	4	5	4	6	2	6	4	4	9	8	4	7	7	10	5	8	2	7	9	6	5	4	4	3	5	5	4
Percent Dipteran	19	6	13	48	20	14	44	41	25	80	47	61	49	69	90	67	68	67	42	57	17	89	66	46	29	45	65	23	25	38	64
Non-Insect Taxa	5	4	4	5	7	5	6	5	8	3	8	4	8	7	6	7	3	5	3	2	4	3	4	3	2	1	3	8	4	5	7
Percent Non-Insect	77	90	75	21	40	36	7	6	18	2	6	7	47	26	7	10	15	2	57	43	82	5	19	24	1	2	3	59	56	46	29
Percent Chironomidae	18	3	10	27	17	14	11	24	16	7	16	4	37	39	14	38	25	30	40	53	17	22	31	33	26	45	63	12	20	36	62
Shannon Diversity	1.1	0.6	1.1	2.3	2.0	1.9	1.8	1.9	1.9	1.1	1.9	1.5	1.7	1.6	1.0	2.0	1.9	1.8	1.1	1.3	0.6	1.1	1.6	1.6	1.0	1.1	1.1	1.5	1.7	1.9	1.5
Tolerance Value	7.3	7.7	7.2	5.8	6.1	5.7	5.4	5.0	5.2	5.7	5.3	5.6	6.4	6.0	5.8	5.8	5.9	5.5	6.8	6.6	7.5	5.8	5.9	5.8	5.1	5.1	5.2	6.9	6.8	6.6	6.0
Percent Intolerant (0-2)	0	0	0	6	4	14	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Tolerant (8-10)	76	89	75	20	38	35	7	5	15	1	5	6	43	24	2	8	12	1	57	43	82	4	19	23	1	2	2	58	55	46	27
Percent Collectors	91	94	85	49	53	56	19	34	40	11	26	15	76	62	16	22	25	16	88	76	98	26	48	54	26	46	63	69	71	75	64
Percent Filterers	5	3	3	28	9	9	36	21	10	73	33	57	11	30	76	54	53	53	10	22	0	66	34	14	3	1	4	12	9	8	12
Percent Grazers	3	3	11	20	34	34	44	43	48	15	38	25	6	5	3	15	11	27	1	0	1	6	16	30	70	53	32	18	19	16	23
Percent Predators	1	1	1	2	4	2	1	2	2	2	3	2	7	2	5	9	10	4	1	1	0	1	2	2	0	0	1	1	1	2	1
Percent Shredders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Abundance (#/ sample)	1800	262	722	4100	3215	1658	1261	5161	1378	6467	3035	1232	867	1017	1780	3020	4715	2796	4678	3127	3181	4698	3667	2168	3123	1582	1132	5579	9487	7162	2093

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	Creek Site: IC-SA		Creek AHC-ECR			Creek SMC-SP			Creek SMC-M			Creek SMC-RSFR			Creek SMC-LCCC			Encinitas Creek EC-GVR			Escondido Creek EC-HRB			Escondido Creek EC-EF			Escondido Creek EC-RSFR			Creek RC-HI	
Transect Number:	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2
BL Laboratory Number:	2342	2343	2338	2339	2340	2329	2330	2331	2326	2327	2328	2332	2333	2334	2323	2324	2325	2335	2336	2337	2320	2321	2322	2317	2318	2319	2314	2315	2316	2311	2312
Taxa Richness	12	10	14	19	14	11	13	11	9	7	7	10	10	9	11	11	9	8	6	9	14	13	14	14	11	12	13	17	13	13	17
Percent Dominant Taxon	23	66	50	35	35	39	37	41	36	38	35	59	61	83	61	54	55	35	33	44	38	32	33	63	47	45	36	33	74	22	26
Ephemeropteran Taxa	1	0	2	2	2	2	2	2	1	1	2	2	2	2	2	1	2	1	1	1	2	3	2	3	2	2	2	0	1	2	2
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	0	0	1	1	1	1	1	1	0	0	0	0	1	1	1	2	1	0	0	0	1	1	1	2	2	2	0	0	0	1	1
EPT Taxa	1	0	3	3	3	3	3	3	1	1	2	2	3	3	3	3	3	1	1	1	3	4	3	5	4	4	2	0	1	3	3
EPT Index (%)	1	0	5	5	19	45	44	57	36	21	22	31	27	8	33	37	31	1	2	1	20	31	24	76	52	55	3	0	1	46	35
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Baetidae	1	0	5	4	18	39	38	42	36	21	22	31	26	7	31	35	30	1	2	1	17	26	21	65	50	46	3	0	1	28	26
Percent Hydropsychidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	6	1	8	0	0	0	0	0
Dipteran Taxa	3	3	6	8	5	3	4	3	4	3	3	4	4	4	3	5	3	4	3	3	4	4	4	4	5	4	4	5	5	6	8
Percent Dipteran	38	18	79	70	64	13	27	26	56	56	42	64	70	89	63	60	61	86	72	90	45	40	48	20	48	41	41	26	17	37	36
Non-Insect Taxa	8	7	4	8	6	5	6	5	4	3	2	4	3	2	5	3	3	3	2	5	7	5	7	5	1	3	5	10	7	3	6
Percent Non-Insect	60	82	15	25	18	41	29	17	8	23	36	5	3	2	4	3	8	13	26	9	35	29	28	3	0	3	55	68	82	17	29
Percent Chironomidae	38	17	29	47	29	13	26	26	21	41	24	6	9	7	2	5	7	66	57	80	43	38	39	8	16	8	35	26	16	21	15
Shannon Diversity	1.9	1.3	1.5	1.8	1.7	1.4	1.6	1.5	1.4	1.5	1.5	1.1	1.2	0.7	1.1	1.1	1.2	1.5	1.5	1.3	1.9	1.9	2.0	1.4	1.4	1.5	1.8	2.3	1.1	2.1	2.1
Tolerance Value	6.8	7.3	6.0	6.0	5.8	6.2	5.8	5.6	5.6	5.9	6.3	5.7	5.7	5.9	5.7	5.6	5.7	5.9	6.2	5.7	6.0	5.9	5.9	5.1	5.3	5.3	5.4	7.1	4.6	5.8	6.0
Percent Intolerant (0-2)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Percent Tolerant (8-10)	55	75	15	25	16	38	27	15	8	22	36	4	3	2	3	3	8	13	26	8	32	28	26	3	0	2	19	63	8	16	27
Percent Collectors	52	20	39	62	44	50	52	40	26	60	55	10	11	9	5	8	14	44	59	52	73	64	61	12	15	9	75	74	86	30	39
Percent Filterers	18	7	56	32	36	2	3	1	37	18	23	59	61	83	63	56	55	54	39	46	3	4	11	21	34	43	18	12	11	19	20
Percent Grazers	25	67	5	4	18	45	44	57	36	21	22	31	27	8	31	36	30	1	2	2	21	31	24	66	50	47	6	4	2	46	35
Percent Predators	4	6	1	2	1	3	1	1	1	1	0	1	0	0	1	0	1	1	0	0	3	1	4	1	0	2	1	10	1	5	6
Percent Shredders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Abundance (#/ sample)	935	2364	526	1637	560	1237	1160	6141	6551	6671	6744	7200	4740	4471	21360	7157	####	6387	1261	2006	2388	1265	3116	1455	####	1455	863	5052	1826	7065	2124

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Site: Transect Number: BL Laboratory Number:	Creek LPC-CCR			Creek LPC-BMR			San Diego River SDR-MD			San Diego River SDR-MT			San Diego River SDR-1			River SR-79			River SR-94			River SR-WS			
	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
	2313	2308	2309	2310	2305	2306	2307	2302	2303	2304	2299	2300	2301	2296	2297	2298	2293	2294	2295	2290	2291	2292	2287	2288	2289
Taxa Richness	12	14	13	16	9	14	15	15	9	12	13	9	11	12	11	18	20	19	21	8	12	17	14	15	14
Percent Dominant Taxon	57	54	40	27	53	61	38	33	68	61	61	40	74	75	74	47	45	31	25	65	46	37	48	58	77
Ephemeropteran Taxa	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	3	1	2	4	1	1	1	0	2	1
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Trichopteran Taxa	1	2	2	2	1	2	2	0	0	0	1	0	0	0	0	1	2	3	1	0	0	0	1	1	1
EPT Taxa	3	4	4	4	3	4	4	2	2	2	3	2	2	2	1	4	3	6	6	1	1	1	1	3	2
EPT Index (%)	18	89	46	51	73	75	51	13	13	5	23	41	18	3	1	2	14	25	10	2	3	4	2	15	5
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0
Percent Baetidae	15	69	37	32	68	72	47	13	13	5	23	41	18	3	1	1	12	22	8	2	3	4	0	12	3
Percent Hydropsychidae	0	3	5	14	4	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dipteran Taxa	6	6	5	5	5	4	5	5	3	4	4	3	4	4	5	3	9	6	5	4	5	11	7	7	7
Percent Dipteran	22	8	12	38	16	18	36	39	73	71	65	49	75	78	82	52	61	53	58	77	45	43	58	66	87
Non-Insect Taxa	3	4	3	6	1	5	5	8	4	6	6	4	5	5	5	11	7	5	9	3	6	5	6	5	5
Percent Non-Insect	61	3	41	11	11	7	13	48	14	23	12	9	6	18	17	46	26	22	32	21	52	52	40	20	7
Percent Chironomidae	21	5	7	26	6	12	13	7	5	10	4	9	1	4	8	5	47	36	38	12	13	13	8	7	8
Shannon Diversity	1.5	1.5	1.6	2.2	1.5	1.4	1.8	1.7	1.1	1.3	1.3	1.5	1.0	0.9	1.0	1.7	1.9	1.9	2.1	1.1	1.5	1.8	1.6	1.6	1.1
Tolerance Value	6.8	5.0	6.2	5.1	5.2	5.2	5.5	6.3	6.0	6.2	5.9	5.6	5.8	6.3	6.3	6.9	5.7	5.8	6.1	6.3	6.9	6.9	6.7	6.1	6.0
Percent Intolerant (0-2)	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0
Percent Tolerant (8-10)	61	1	41	5	11	7	12	36	12	20	11	8	5	18	17	46	23	21	27	21	52	53	39	15	6
Percent Collectors	75	3	43	17	16	15	21	43	17	30	15	17	6	21	25	48	69	52	53	28	57	61	34	14	8
Percent Filterers	3	5	8	26	15	9	27	32	68	62	61	40	74	75	74	48	13	21	31	69	35	30	50	58	80
Percent Grazers	19	87	41	37	68	73	48	13	13	5	23	41	20	4	1	3	14	23	8	2	5	7	11	19	9
Percent Predators	3	5	6	20	1	3	4	12	2	3	1	1	1	0	0	1	3	4	7	1	2	2	5	8	2
Percent Shredders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Abundance (#/ sample)	6576	6578	3245	2745	7200	2941	5939	4833	3328	8480	5423	3888	6605	7142	8554	####	534	1592	1378	4577	6805	3139	4299	3441	6845