

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

Site:	Aliso Creek AC-PPD			Aliso Creek AC-CCR			Arroyo Trabuco Cr. ATC-AP			San Juan Creek SJC-74			Murrieta Creek MC-GS			Temecula Creek TC-I-15			Santa Margarita R. SMR-WGR		
Transect Number:	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
ABL Laboratory Number:	2729	2730	2731	2732	2733	2734	2726	2727	2728	2723	2724	2725	2714	2715	2716	2711	2712	2713	2702	2703	2704
Taxa Richness	22	21	19	26	25	30	17	23	20	9	13	10	28	11	21	22	26	17	35	40	27
Percent Dominant Taxon	33	38	68	27	32	39	54	16	39	54	49	75	26	86	62	53	13	62	21	16	24
Ephemeropteran Taxa	1	1	2	2	2	2	2	2	3	2	3	2	0	0	0	3	2	3	2	3	2
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	1	1	2	2	1	1	1	2	3	2	3	1	1	0	0	2	5	2	5	3	5
EPT Taxa	2	2	4	4	3	3	3	4	6	4	6	3	1	0	0	5	7	5	7	6	7
EPT Index (%)	29	29	72	27	33	45	22	25	24	78	84	96	0	0	0	66	33	76	37	9	68
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	8
Percent Baetidae	26	26	69	23	30	45	7	16	8	54	57	75	0	0	0	6	13	9	1	3	5
Percent Hydropsychidae	0	0	0	0	0	0	14	7	15	23	22	6	0	0	0	53	10	62	10	1	19
Dipteran Taxa	10	8	7	9	11	11	5	6	4	2	3	3	13	4	8	7	8	5	14	15	4
Percent Dipteran	21	15	12	31	26	27	2	10	2	1	3	2	68	3	16	13	38	17	35	43	8
Non-Insect Taxa	6	7	6	7	6	5	4	7	5	3	4	3	11	7	10	5	7	2	9	13	9
Percent Non-Insect	43	49	15	37	37	20	62	51	67	21	13	2	30	97	83	15	15	5	25	37	13
Percent Chironomidae	7	4	6	16	20	22	1	6	2	0	1	1	23	1	9	3	24	7	5	5	6
Shannon Diversity	2.1	2.0	1.4	2.4	2.0	2.1	1.6	2.5	1.9	1.1	1.6	0.9	2.5	0.6	1.6	1.8	2.7	1.5	2.6	3.0	2.6
Tolerance Value	6.4	6.7	4.8	6.2	6.0	5.7	4.8	5.7	5.8	4.0	4.3	4.2	6.1	9.4	8.4	4.8	5.9	4.5	6.2	6.8	5.0
Percent Intolerant (0-2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	3
Percent Tolerant (8-10)	45	55	13	35	36	26	2	23	22	0	0	1	18	88	72	4	17	2	24	41	9
Percent Collectors	83	82	88	67	69	68	10	43	10	56	63	91	39	89	82	27	64	30	69	48	41
Percent Filterers	2	0	0	13	3	1	16	8	36	23	23	6	6	0	0	53	12	62	10	1	23
Percent Grazers	5	4	3	6	5	3	12	14	3	0	1	0	1	0	1	1	1	1	6	13	22
Percent Predators	10	13	8	14	23	28	63	32	51	21	13	2	53	11	17	19	22	7	14	38	15
Percent Shredders	0	0	0	0	1	0	0	3	0	0	0	0	1	0	0	0	0	0	1	0	0
Abundance (#/ sample)	466	1411	3828	694	1511	780	5009	737	582	7760	6272	6040	495	1358	1648	11373	2441	5221	1276	458	3378

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

Site: <i>Transect Number:</i> <i>ABL Laboratory Number:</i>	Rainbow Creek RC-WGR			Sandia Creek SC-SCR			Santa Margarita R. SMR-DP			Santa Margarita R. SMR-CP			San Luis Rey River SLRR-PG			San Luis Rey River SLRR-395			San Luis Rey River SLRR-MR		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
	2720	2721	2722	2717	2718	2719	2708	2709	2710	2705	2706	2707	2699	2700	2701	2687	2688	2689	2693	2694	2695
Taxa Richness	25	25	18	26	33	31	28	16	23	25	18	20	21	17	19	24	33	31	21	28	27
Percent Dominant Taxon	28	25	31	43	22	33	63	63	68	23	46	47	32	34	33	39	15	35	28	47	27
Ephemeropteran Taxa	2	2	2	3	3	4	3	2	3	3	2	3	2	3	3	2	2	2	3	3	2
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Trichopteran Taxa	2	2	2	7	7	8	4	1	2	3	0	2	2	3	1	4	2	2	1	0	2
EPT Taxa	4	4	4	10	10	12	7	3	5	6	2	5	5	6	4	6	4	4	4	3	4
EPT Index (%)	32	13	4	82	61	62	80	78	76	48	47	51	64	53	51	54	36	39	34	50	42
Sensitive EPT Index	0	0	0	2	4	13	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Percent Baetidae	9	10	2	31	24	9	11	14	6	41	47	48	31	35	36	39	11	19	30	49	41
Percent Hydropsychidae	22	2	1	43	17	33	63	63	68	1	0	0	32	16	15	0	0	0	3	0	0
Dipteran Taxa	8	6	2	4	9	4	6	3	5	11	9	6	7	4	7	8	13	9	8	6	8
Percent Dipteran	17	3	1	6	21	12	4	1	3	25	32	18	13	6	16	10	33	12	17	10	9
Non-Insect Taxa	10	10	12	5	4	5	8	4	4	4	4	5	6	5	6	7	8	6	6	9	10
Percent Non-Insect	49	82	96	7	6	5	11	13	15	25	18	29	20	39	28	35	25	43	47	20	46
Percent Chironomidae	12	1	0	2	11	3	3	0	1	16	26	15	11	5	14	6	9	3	13	6	6
Shannon Diversity	2.4	2.3	2.0	2.0	2.7	2.5	1.6	1.3	1.3	2.3	1.8	1.7	2.0	1.7	2.0	2.2	2.8	2.3	2.1	2.2	2.2
Tolerance Value	4.6	6.9	7.1	4.5	4.6	4.1	4.3	4.2	4.2	5.9	5.4	6.0	5.4	6.5	6.2	5.9	5.8	6.3	6.8	5.4	6.2
Percent Intolerant (0-2)	0	0	0	1	2	11	1	2	3	0	0	0	1	1	0	0	0	0	0	0	0
Percent Tolerant (8-10)	10	70	71	2	1	1	4	1	1	24	18	28	17	36	24	33	18	43	46	20	43
Percent Collectors	36	40	20	41	57	37	22	17	14	64	43	43	59	76	70	81	57	73	79	66	74
Percent Filterers	22	2	1	47	25	41	65	63	68	3	3	3	34	18	21	9	2	1	12	6	6
Percent Grazers	6	46	66	5	7	14	5	4	3	5	0	0	2	1	1	5	18	17	0	1	0
Percent Predators	36	12	13	6	9	7	8	15	15	11	7	6	5	5	8	5	22	8	6	26	6
Percent Shredders	0	0	0	1	2	2	0	0	0	18	47	47	1	0	0	0	1	2	2	1	14
Abundance (#/ sample)	1219	1062	1411	1806	3893	3576	774	6040	12152	623	154	217	970	770	458	1141	2258	2671	439	956	1029

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

Site: <i>Transect Number:</i> <i>ABL Laboratory Number:</i>	San Luis Rey River SLRR-FR			Keys Creek KC-LR			Loma Alta Creek LAC-CB			Loma Alta Creek LAC-ECR			Buena Vista Cr. BVR-ED			Buena Vista Cr. BVR-SVW			Agua Hedionda Cr. AHC-SA		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
	2696	2697	2698	2690	2691	2692	2684	2685	2686	2681	2682	2683	2678	2679	2680	2675	2676	2677	2672	2673	2674
Taxa Richness	21	22	15	18	29	26	20	24	14	27	23	13	19	23	31	16	20	16	7	10	6
Percent Dominant Taxon	51	31	78	55	30	43	48	35	48	49	60	88	39	36	23	45	41	65	65	76	65
Ephemeropteran Taxa	2	2	2	1	2	2	1	1	0	1	2	0	2	2	2	1	1	1	0	0	0
Plecopteran Taxa	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	1	1	3	2	4	4	2	2	0	1	2	1	1	1	1	0	0	0	0	0	0
EPT Taxa	3	3	5	4	7	7	3	3	0	2	4	1	3	3	3	1	1	1	0	0	0
EPT Index (%)	23	32	7	80	35	79	9	11	0	1	2	1	75	49	22	2	7	3	0	0	0
Sensitive EPT Index	0	0	0	7	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Baetidae	22	31	4	18	10	31	1	4	0	0	0	0	73	46	20	2	7	3	0	0	0
Percent Hydropsychidae	0	0	0	55	18	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dipteran Taxa	6	7	2	6	12	12	11	10	6	14	8	5	8	10	15	7	11	6	1	4	2
Percent Dipteran	7	11	3	12	45	12	19	26	23	12	20	8	15	24	22	6	5	4	5	2	1
Non-Insect Taxa	10	10	7	5	5	3	5	9	7	8	9	6	7	7	11	7	7	8	6	6	4
Percent Non-Insect	69	56	90	5	16	4	71	61	73	82	77	90	10	26	54	91	87	92	95	98	99
Percent Chironomidae	4	5	3	3	32	4	12	20	22	8	16	8	7	7	6	2	1	3	5	0	1
Shannon Diversity	1.8	2.1	1.0	1.6	2.4	1.9	1.9	2.4	1.7	1.9	1.7	0.6	1.7	2.3	2.5	1.7	1.6	1.4	1.3	0.8	0.9
Tolerance Value	6.7	5.7	7.6	4.5	5.2	4.7	7.3	7.4	7.7	7.8	7.5	7.8	5.0	6.0	7.2	7.4	6.3	7.7	8.5	8.8	8.5
Percent Intolerant (0-2)	0	0	0	7	10	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Tolerant (8-10)	60	32	86	5	18	6	71	62	67	76	75	89	5	27	54	79	56	88	70	77	73
Percent Collectors	81	62	87	22	51	37	57	66	30	78	74	93	85	82	71	83	67	86	70	77	65
Percent Filterers	5	10	7	63	25	46	4	5	12	1	0	0	1	0	1	3	0	5	0	0	1
Percent Grazers	2	1	3	1	11	3	29	16	52	5	10	2	2	8	20	0	0	4	15	3	8
Percent Predators	11	27	4	7	6	8	11	13	6	16	16	4	12	9	8	14	33	5	15	20	26
Percent Shredders	0	0	0	7	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Abundance (#/ sample)	2738	852	4445	2752	466	1470	2295	442	3864	441	1220	1243	1199	265	330	2494	2463	1059	20	240	4711

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

	Agua Hedionda Cr.			San Marcos Cr.			San Marcos Cr.			San Marcos Cr.			San Marcos Cr.			Encinitas Creek			Escondido Creek			Esc
Site:	AHC-ECR			SMC-SP			SMC-M			SMC-RSFR			SMC-LCCC			EC-GVR			EC-HRB			
Transect Number:	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1
ABL Laboratory Number:	2669	2670	2671	2660	2661	2662	2657	2658	2659	2663	2664	2665	2654	2655	2656	2666	2667	2668	2651	2652	2653	2648
Taxa Richness	30	25	30	22	21	23	31	24	28	22	25	16	15	22	23	14	17	18	16	19	17	15
Percent Dominant Taxon	48	27	44	41	64	32	36	32	25	58	34	41	42	56	54	46	30	44	59	42	77	59
Ephemeropteran Taxa	3	2	2	3	3	3	2	2	2	2	2	1	1	1	1	2	2	2	1	1	1	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
Trichopteran Taxa	3	1	2	1	1	1	2	0	2	2	2	1	3	3	2	2	1	2	1	1	0	2
EPT Taxa	6	3	4	4	4	4	4	2	4	4	4	2	4	4	3	4	3	4	2	2	1	4
EPT Index (%)	55	30	13	24	15	20	48	32	45	60	36	44	41	8	3	39	40	52	4	2	0	81
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	5	0	2	0	0	0	0	0	0	0
Percent Baetidae	49	24	9	23	14	17	47	32	44	59	34	41	4	2	0	35	37	46	4	2	0	20
Percent Hydropsychidae	0	0	0	0	0	0	1	0	1	1	2	2	0	3	0	0	0	0	0	0	0	59
Dipteran Taxa	9	8	9	3	4	6	13	10	14	7	11	3	3	8	6	4	7	8	5	9	7	6
Percent Dipteran	5	7	9	5	8	21	16	11	25	7	26	4	3	10	5	5	16	29	25	32	17	11
Non-Insect Taxa	10	11	12	13	10	10	12	12	10	9	8	9	7	8	11	5	6	6	6	8	7	5
Percent Non-Insect	37	60	76	69	75	54	35	57	29	28	31	40	55	81	90	56	43	19	70	66	82	9
Percent Chironomidae	1	1	1	4	8	20	5	3	5	4	9	4	2	1	2	1	4	2	23	26	15	1
Shannon Diversity	2.1	2.4	2.1	2.1	1.6	2.3	2.4	2.2	2.5	1.7	2.5	1.9	1.8	1.8	1.5	1.6	2.0	1.8	1.5	1.9	1.0	1.4
Tolerance Value	5.3	5.9	6.1	6.3	7.2	6.4	5.8	6.4	4.7	4.9	5.3	5.6	4.7	7.9	7.8	6.4	5.7	5.4	7.2	7.1	7.5	4.5
Percent Intolerant (0-2)	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Tolerant (8-10)	24	42	57	53	73	46	29	45	12	14	17	31	5	64	66	51	33	18	69	62	81	4
Percent Collectors	72	71	76	88	93	82	76	57	74	70	54	67	15	14	16	89	82	67	93	89	94	32
Percent Filterers	5	6	8	0	0	0	13	33	6	8	10	4	4	60	55	4	11	23	0	0	1	59
Percent Grazers	6	7	4	6	3	4	3	3	9	1	1	0	33	4	1	3	3	6	4	3	3	2
Percent Predators	16	17	12	6	3	13	8	7	7	21	33	29	48	21	29	3	4	4	3	7	2	7
Percent Shredders	0	0	0	0	0	0	0	0	4	0	2	0	0	1	0	0	0	1	0	0	0	0
Abundance (#/ sample)	612	2469	1632	2487	3304	694	263	1967	322	7215	693	2566	1146	1772	1224	6505	347	650	5843	10069	3646	667

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

	Indido Creek			Rattlesnake Creek			Los Penasquitos Cr.			Los Penasquitos Cr.			Carroll Canyon Creek			San Diego River			San Diego River			San J
	Site: EC-EF		RC-HP			LPC-CCR			LPC-BMR			CCC-805			SDR-MD			SDR-MT			T1	
Transect Number:	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	
ABL Laboratory Number:	2649	2650	2645	2646	2647	2642	2643	2644	2639	2640	2641	2636	2637	2638	2633	2634	2635	2630	2631	2632	2627	
Taxa Richness	16	20	17	19	16	16	21	18	19	20	20	18	18	20	24	18	18	16	17	15	6	
Percent Dominant Taxon	36	40	43	68	69	66	44	40	61	52	41	43	35	33	25	29	29	30	37	34	91	
Ephemeropteran Taxa	3	2	1	1	2	3	2	1	2	2	2	2	2	2	1	1	1	2	2	2	0	
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Trichopteran Taxa	2	2	2	2	1	1	2	2	2	2	1	3	3	3	1	0	1	2	3	2	1	
EPT Taxa	5	4	3	3	3	4	4	3	4	4	3	5	5	5	2	1	2	4	5	4	1	
EPT Index (%)	76	43	44	72	77	88	50	19	66	63	23	56	57	53	4	3	4	34	47	46	3	
Sensitive EPT Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Percent Baetidae	38	16	43	68	70	72	6	7	63	57	19	48	39	34	4	3	3	9	10	10	0	
Percent Hydropsychidae	35	24	0	0	0	15	44	11	2	3	4	0	1	1	0	0	0	18	31	34	0	
Dipteran Taxa	4	9	7	7	6	3	7	7	6	5	4	6	5	4	7	6	3	4	3	6	2	
Percent Dipteran	4	6	34	11	17	3	10	14	6	4	6	17	19	21	8	8	2	10	3	8	92	
Non-Insect Taxa	5	7	7	8	4	6	7	6	8	8	8	4	4	7	11	11	11	7	7	4	3	
Percent Non-Insect	19	51	22	17	4	7	26	60	27	31	64	15	14	24	85	89	93	56	47	46	5	
Percent Chironomidae	0	1	9	6	16	2	8	13	4	1	4	14	17	20	5	6	2	6	2	0	1	
Shannon Diversity	1.6	1.8	1.8	1.4	1.3	1.3	2.0	2.0	1.6	1.8	2.0	2.1	2.0	2.0	2.3	2.3	2.0	2.2	1.8	1.8	0.4	
Tolerance Value	4.4	4.7	5.5	5.0	4.7	4.3	5.4	6.9	4.8	5.6	7.3	5.2	5.3	5.2	5.3	6.1	7.7	6.5	4.8	4.7	5.9	
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	
Percent Tolerant (8-10)	2	3	14	17	5	1	19	45	12	24	47	10	6	6	36	41	69	34	3	3	1	
Percent Collectors	41	23	82	88	85	74	12	13	71	63	24	54	43	41	45	42	60	10	14	11	1	
Percent Filterers	37	25	2	0	0	16	54	52	12	22	48	2	2	2	22	21	15	52	32	43	92	
Percent Grazers	3	2	2	5	8	0	0	0	1	5	13	7	17	20	1	0	0	14	7	2	3	
Percent Predators	19	50	15	6	7	10	31	35	15	10	13	36	38	37	32	37	25	24	47	44	4	
Percent Shredders	0	0	0	0	0	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	
Abundance (#/ sample)	2391	2694	5019	4543	640	2569	1729	345	888	1421	3645	1236	594	891	2397	2500	681	2866	1302	5006	4037	

Appendix 4b. Bioassessment metrics calculated for macroinvertebrate samples collected September 1998 from sites within the San Diego watershed, San Diego County, California.

	Diego River		Sweetwater River			Sweetwater River			Sweetwater River		
	<i>Site: SDR-1</i>		<i>SR-79</i>			<i>SR-94</i>			<i>SR-WS</i>		
<i>Transect Number:</i>	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
<i>ABL Laboratory Number:</i>	2628	2629	2624	2625	2626	2621	2622	2623	2618	2619	2620
Taxa Richness	12	11	25	30	23	17	15	19	13	11	23
Percent Dominant Taxon	56	71	17	28	25	77	38	72	46	35	25
Ephemeropteran Taxa	0	0	3	3	3	1	1	3	1	1	1
Plecopteran Taxa	0	0	0	1	1	0	0	0	0	0	0
Trichopteran Taxa	1	3	4	4	3	0	1	1	0	0	1
EPT Taxa	1	3	7	8	7	1	2	4	1	1	2
EPT Index (%)	2	3	59	55	60	2	5	4	1	1	7
Sensitive EPT Index	0	0	16	2	1	0	3	0	0	0	0
Percent Baetidae	0	0	18	9	31	2	2	1	1	1	2
Percent Hydropsychidae	0	0	17	28	19	0	0	0	0	0	0
Dipteran Taxa	3	4	8	8	7	6	1	5	5	4	9
Percent Dipteran	62	86	22	33	19	4	3	3	43	12	41
Non-Insect Taxa	8	4	7	7	6	6	9	6	5	5	7
Percent Non-Insect	36	10	16	6	14	92	89	90	54	87	45
Percent Chironomidae	6	9	21	30	17	1	0	2	26	7	20
Shannon Diversity	1.5	1.2	2.6	2.5	2.4	1.1	1.8	1.2	1.5	1.6	2.2
Tolerance Value	6.4	5.8	4.7	5.1	5.3	4.6	5.3	8.4	5.0	3.9	4.3
Percent Intolerant (0-2)	0	0	15	3	1	0	0	0	0	0	0
Percent Tolerant (8-10)	21	4	13	5	8	9	28	76	4	2	3
Percent Collectors	13	18	42	35	45	14	45	85	34	31	39
Percent Filterers	70	71	29	43	27	0	0	1	15	4	20
Percent Grazers	2	3	14	4	4	2	0	0	0	0	5
Percent Predators	15	8	11	17	23	84	55	14	50	66	35
Percent Shredders	0	0	3	1	0	0	0	0	0	0	0
Abundance (#/ sample)	2325	7490	14197	1402	1525	411	487	341	142	958	647