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This report is the exact same as

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Newport Bay and San Diego Creek—Chemistry Results
for Water, Sediment, Suspended sediment

Performed by SCCWRP
(Steve Bay and Darrin Greenstein)

for
Santa Ana RWQCB and EPA

(original study for RB8 per American Trader settlement, this report includes extra monitoring data—per extended RB8 contract and separate EPA contract with SCCWRP in 2001 and 2002 to get more water samples, suspended sediment samples, and results for more contaminants)

1 m = 3.28 ft

This is the full
report

Newport Bay Sample Collection and Handling

Water column samples for toxicity testing, metals and organics analyses were collected using an ISCO pump from a depth of 2 to 3 meters, using EPA suggested clean techniques. Organics analysis samples were collected unfiltered and were stored in 1 gallon amber bottles at 5 °C until tested. Samples for dissolved metals were passed through a 0.45 µm filter attached to the pump. Samples for total metals and methyl mercury were collected unfiltered. All water column samples were stored at 5 °C and transported to the chemistry laboratory for analysis within 24 hrs of collection.

Sediment samples were collected using a Van Veen grab. The top 2 cm from multiple grabs were homogenized together. Subsamples for sediment chemistry and whole sediment toxicity were taken from the homogenized composite sample. The samples for chemistry were frozen at -20 °C until analyzed. Samples for sediment toxicity and grain size were stored at 5 °C until analyzed. For the November 2001 sediment-water interface sample collection, core samples were taken from a grab by manually pressing a plastic core tube into the sediment so that an undisturbed sample was obtained. The depth of sediment in the core tubes was at least 5 cm. Ten cores were collected from each station. The cores were stored at 15 °C with overlying water. In the laboratory, during the course of toxicity testing, overlying water (representing the sediment-water interface) was removed from sediment cores and transferred to clean plastic containers. The overlying water samples were transported to the chemistry laboratory with 24 hrs for analysis of dissolved metals.

San Diego Creek Sampling

For wet weather, samples were collected from the Campus Drive bridge. To take the samples, a metal davit was attached to the bridge. From the davit a torpedo sampler was lowered to the creek. Inside the sampler was a 1 gallon glass bottle. At each sampling period, multiple drops were made and the water was transferred to a 5 gallon polycarbonate bottle until it was full. Samples for all analyses were then aliquoted from this composite. Samples for dissolved metals were taken from the composite by an ISCO sampler with a 0.45 micron filter attached using EPA suggested clean sampling techniques. Samples for total and dissolved metals analysis were transferred to cleaned plastic 500 ml or 1 liter bottles. Total suspended solids aliquots were put into 1 liter plastic bottles.

For dry weather, samples were collected directly from the creek bed at the base of the bridge using an ISCO sampler. For each collection event, a sample was taken in the morning and then another was taken 4 to 5 hours later. The samples for metals analysis went straight from the creek into their respective containers (either through the filter or not). The remaining samples were taken from a composite made in a 5 gallon polycarbonate bottle. All sample containers were the same as described above.

All samples were stored on ice until transported back to SCCWRP where they were stored at 5 °C. Samples for chemical analysis were delivered to the chemistry lab within 24 hrs of collection.

Figure 1. Map of all sampling locations in Newport Bay and San Diego Creek.

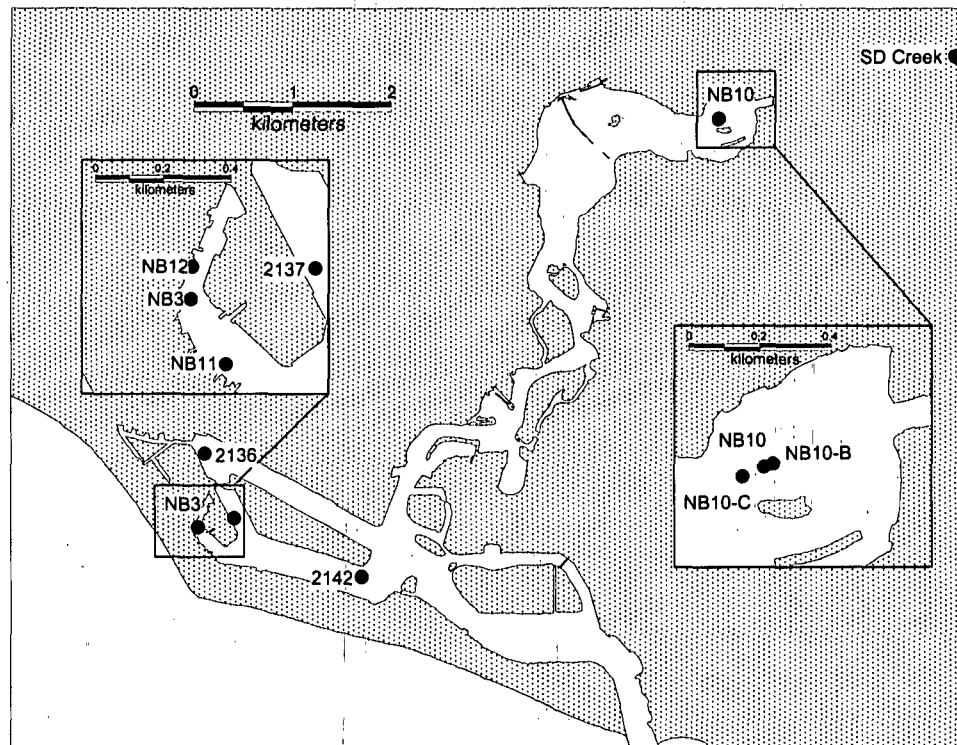


Table 1. Station information.

Station Location	Station	Date	Time	Depth (m)	Lat Degree	Lat Min.	Long Degree	Long Min.
Upper Newport Bay	NB10	11/28/01	919	4.27	33	38.973	-117	52.255
Rhine Channel	NB3	11/28/01	1244	3.05	33	36.72	-117	55.67
Upper Newport Bay	NB10	3/12/02	845	4.27	33	38.974	-117	52.262
Upper Newport Bay	NB10-B	3/12/02	1000	3.96	33	38.979	-117	52.246
Upper Newport Bay	NB10-C	3/12/02	1040	4.27	33	38.959	-117	52.301
Rhine Channel	NB3	3/12/02	1205	3.96	33	36.73	-117	55.675
Rhine Channel	NB11	3/12/02	1347	3.96	33	36.625	-117	55.609
Rhine Channel	NB12	3/12/02	1318	4.27	33	36.782	-117	55.673
Lower Newport Bay	2136	5/14/02	1239	6.40	33	37.136	-117	55.633
Lower Newport Bay	2137	5/14/02	1207	3.90	33	36.779	-117	55.438
Lower Newport Bay	2142		1224	3.50	33	36.46	-117	54.603
San Diego Creek	Campus Dr.	3/7/02	1100	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	3/7/02	1425	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	5/2/02	900	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	5/2/02	1405	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	8/12/02	900	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	8/12/02	1350	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	11/8/02	100	N/A	33	39.314	-117	50.722
San Diego Creek	Campus Dr.	11/8/02	430	N/A	33	39.314	-117	50.722

Table 2. Sample analyses completed by station number.

Station Number	Date	Matrix	Metals Total	Metals Dissolved	AVS-SEM	Chlorinated Pesticides Total	Chlorinated Pesticides Particulate	OP Pesticides Total	OP Pesticides Particulate	PAH	PCB Total	PCB Particulate
NB3	11/21/01	Sediment	x		x	x				x	x	
NB10	11/21/01	Sediment	x		x	x				x	x	
NB3	11/21/01	Sed/Water Interface		x								
NB10	11/21/01	Sed/Water Interface		x								
NB3	11/21/01	Water	x	x								
NB10	11/21/01	Water	x	x								
NB10	3/12/02	Water	x	x		x					x	
NB3	3/12/02	Water	x	x		x					x	
NB10	3/12/02	Sediment	x		x	x				x	x	
NB10-B	3/12/02	Sediment			x	x				x	x	
NB10-C	3/12/02	Sediment			x	x				x	x	
NB3	3/12/02	Sediment	x			x				x	x	
NB11	3/12/02	Sediment				x				x	x	
NB12	3/12/02	Sediment				x				x	x	
2136	5/14/02	Sediment	x			x				x	x	
2137	5/14/02	Sediment	x			x				x	x	
2142	5/14/02	Sediment	x			x				x	x	
SDC	3/7/02	Water	x	x		x		x			x	
SDC	5/2/02	Water	x	x		x		x			x	
SDC	8/12/02	Water	x	x		x		x			x	
SDC	11/8/02	Water	x	x		x	x	x	x		x	x

NEWPORT BAY SEDIMENT AND WATER November 2001

Table 3. Newport Bay sediment metals concentrations from November 2001 sampling. Concentrations are in mg/dry kg.

Constituent	MDL	NB3	NB10
Aluminum (Al)	1	30450	46400
Antimony (Sb)	0.05	0.755	0.820
Arsenic (As)	0.05	8.61	6.13
Barium (Ba)	0.05	80.9	160
Beryllium (Be)	0.01	0.560	0.785
Cadmium (Cd)	0.01	0.505	1.53
Chromium (Cr)	0.05	38.8	41.2
Cobalt (Co)	0.01	5.70	8.36
Copper (Cu)	0.01	540	38.5
Iron (Fe)	1	27950	33100
Lead (Pb)	0.01	57.0	15.8
Manganese (Mn)	0.05	200	326
Mercury (Hg)	0.005	4.95	0.24
Molybdenum (Mo)	0.05	4.71	2.90
Nickel (Ni)	0.01	15.1	19.6
Selenium (Se)	0.05	1.28	1.75
Silver (Ag)	0.01	0.30	0.35
Strontium (Sr)	0.05	90.2	86.0
Thallium (Tl)	0.01	0.27	0.40
Tin (Sn)	0.05	7.20	2.87
Titanium (Ti)	0.05	1505	2270
Vanadium (V)	0.05	71.1	95.7
Zinc (Zn)	0.05	238	160

Table 4. Newport Bay sediment simultaneously extracted metals (SEM) and acid volatile sulfide (AVS) values from samples collected in November 2001. Method detection limit for Cd, Cu, Pb and Ni is 0.01 mg/dry mg and is 0.05 mg/dry mg for Zn.

Constituent	NB3 (μ moles/g)	NB3 (mg/ dry kg)	NB10 (μ moles/g)	NB10 (mg/ dry kg)
SEM				
Cadmium	0.00126	0.142	0.00512	0.575
Copper	0.00464	0.295	0.000755	0.048
Lead	0.0516	10.7	0.0151	3.12
Nickel	0.0125	0.732	0.0273	1.6
Zinc	1.22	79.7	0.489	32.0
Total SEM	1.29	91.5	0.54	37.3
AVS	60.2	1930	54.9	1760

Table 5. Newport Bay sediment PCB congener concentrations from November 2001 sampling.
Concentrations are in $\mu\text{g}/\text{dry kg}$.

Compound	NB3	NB10
PCB018	1.11	<1.0
PCB028	3.36	<1.0
PCB031	5.55	<1.0
PCB033	5.66	<1.0
PCB037	<1.0	<1.0
PCB044	8.53	<1.0
PCB049	12.6	<1.0
PCB052	8.99	<1.0
PCB066	10.8	<1.0
PCB070	8.68	<1.0
PCB074	5.1	<1.0
PCB077	<1.0	<1.0
PCB081	<1.0	<1.0
PCB087	4.04	<1.0
PCB095	5.53	<1.0
PCB097	2.33	<1.0
PCB099	7.07	<1.0
PCB101	9.98	<1.0
PCB105	11.2	<1.0
PCB110	11.8	<1.0
PCB114	<1.0	<1.0
PCB118	12.3	<1.0
PCB119	<1.0	<1.0
PCB123	1.73	<1.0
PCB126	<1.0	<1.0
PCB128	<1.0	<1.0
PCB138	3.58	<1.0
PCB141	<1.0	<1.0
PCB149	4.45	<1.0
PCB151	<1.0	<1.0
PCB153	8.29	<1.0
PCB156	<1.0	<1.0
PCB157	<1.0	<1.0
PCB158	3.51	<1.0
PCB167	<1.0	<1.0
PCB168/132	<1.0	<1.0
PCB169	<1.0	<1.0
PCB170	<1.0	<1.0
PCB177	<1.0	<1.0
PCB180	1.12	<1.0
PCB183	<1.0	<1.0
PCB187	1.24	<1.0
PCB189	<1.0	<1.0
PCB194	<1.0	<1.0
PCB200	<1.0	<1.0
PCB201	<1.0	<1.0
PCB206	<1.0	<1.0
Total Detectable PCBs	158	<1.0

Table 6. Newport Bay sediment PAH concentrations from November 2001 sampling. Concentrations are in $\mu\text{g}/\text{dry kg}$. Method detection limit for all constituents is 1 $\mu\text{g}/\text{dry kg}$.

Compound	NB3	NB10
Naphthalene	9.2	8.6
2-Methylnaphthalene	7.0	5.6
1-Methylnaphthalene	4.2	2.8
Biphenyl	3.2	2.0
2,6-Dimethylnaphthalene	4.8	6.8
Acenaphthene	7.4	1.8
Acenaphthylene	12.3	4.7
2,3,5-Trimethylnaphthalene	1.0	1.8
Fluorene	8.4	6.0
Phenanthrene	120	42.5
Anthracene	42.1	9.0
1-Methylphenanthrene	12.5	10.6
Fluoranthene	322	124
Pyrene	330	152
Benz[a]anthracene	125	45.4
Chrysene	211	93.6
Benzo[b]fluoranthene	183	60.0
Benzo[k]fluoranthene	34.7	13.8
Benzo[e]pyrene	132	61.6
Benzo[a]pyrene	153	48.3
Perylene	34	32.6
Indeno[1,2,3-c,d]pyrene	91.1	37.4
Dibenz[a,h]anthracene	30	11.6
Benzo[g,h,i]perylene	90.9	65.0
Total Detectable PAHs	1970	847

Table 7. Newport Bay sediment pesticides from November 2001 sampling. Concentrations are in ug/dry kg. Method detection limits for all constituents are 1 µg /dry kg, except toxaphene which is 10 µg/dry kg.

Compound	NB3	NB10
Toxaphene	<10	<10
Aldrin	<1.0	<1.0
BHC-alpha	<1.0	<1.0
BHC-beta	<1.0	<1.0
BHC-delta	<1.0	<1.0
BHC-gamma	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0
Dieldrin	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0
Endosulfan-I	<1.0	<1.0
Endosulfan-II	<1.0	<1.0
Endrin	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0
Heptachlor	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0
Methoxychlor	<1.0	<1.0
Mirex	<1.0	<1.0
trans-Nonachlor	<1.0	<1.0
2,4'-DDD	4.4	6.25
2,4'-DDE	<1.0	<1.0
2,4'-DDT	<1.0	<1.0
4,4'-DDD	<1.0	8.6
4,4'-DDE	31.7	61.4
4,4'-DDT	<1.0	<1.0
Total Detectable DDTs	36.1	76.3

Table 8. Water metals concentrations from November 2001 sampling. Values are from water column and sediment-water interface samples. All concentrations are in µg/L.

Metal	MDL	Water Column				SWI	
		NB3		NB10		Dissolved	
		Total	Dissolved	Total	Dissolved	NB3	NB10
Aluminum	0.01	71.0	10.0	533	9.87	4.51	4.15
Antimony	0.01	0.165	0.207	0.165	0.251	0.276	0.419
Arsenic	0.01	1.71	1.72	2.07	1.80	1.33	1.70
Beryllium	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cadmium	0.005	0.151	0.183	0.124	0.116	0.298	0.168
Chromium	0.005	0.460	0.448	1.15	0.272	0.197	0.225
Cobalt	0.005	<0.005	<0.005	0.123	0.005	<0.005	0.141
Copper	0.005	12.4	10.8	2.02	1.31	5.78	0.519
Iron	0.01	42.0	3.41	237	9.15	16.6	47.6
Lead	0.005	0.168	0.053	0.266	0.051	0.162	0.040
Manganese	5	23.4	22.8	178	155	21.1	232
Mercury	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	0.005	11.6	11.8	11.8	12.0	13.1	11.9
Nickel	0.005	1.42	1.35	1.95	1.76	1.20	1.64
Selenium	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.336
Silver	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	0.01	NA	NA	NA	NA	NA	NA
Thallium	0.005	<0.005	<0.005	<0.005	<0.005	0.018	0.009
Tin	0.005	0.011	<0.005	<0.005	<0.005	0.022	<0.005
Titanium	0.005	4.06	0.495	23.7	0.627	0.208	0.392
Vanadium	0.005	3.62	3.58	5.05	3.74	2.05	3.55
Zinc	0.005	34.6	33.8	12.9	10.0	50.7	9.65

NA=Not analyzed.

NEWPORT BAY SEDIMENT AND WATER March 2002

Table 9. Concentrations of sediment constituents in samples from the March 2002 Newport Bay sampling.

Constituent	MDL	Upper Bay			Rhine Channel		
		NB10	NB10B	NB10C	NB3	NB11	NB12
Metals (mg/dry kg)							
Aluminum	1	50700	NA	NA	39700	NA	NA
Antimony	0.05	0.845	NA	NA	0.675	NA	NA
Arsenic	0.05	7.14	NA	NA	10.2	NA	NA
Barium	0.05	184	NA	NA	125	NA	NA
Beryllium	0.01	0.925	NA	NA	0.810	NA	NA
Cadmium	0.01	1.90	NA	NA	0.635	NA	NA
Chromium	0.05	50.0	NA	NA	53.0	NA	NA
Cobalt	0.01	9.54	NA	NA	7.54	NA	NA
Copper	0.01	60.0	NA	NA	532	NA	NA
Iron	1	38850	NA	NA	36050	NA	NA
Lead	0.01	21.4	NA	NA	85.0	NA	NA
Manganese	0.05	351	NA	NA	251	NA	NA
Mercury	0.005	0.295	NA	NA	6.69	NA	NA
Molybdenum	0.05	3.31	NA	NA	4.71	NA	NA
Nickel	0.01	23.4	NA	NA	19.8	NA	NA
Selenium	0.05	2.36	NA	NA	1.52	NA	NA
Silver	0.01	0.405	NA	NA	0.39	NA	NA
Strontium	0.05	124	NA	NA	82.0	NA	NA
Thallium	0.01	0.44	NA	NA	0.37	NA	NA
Tin	0.05	3.74	NA	NA	9.66	NA	NA
Titanium	0.05	2340	NA	NA	1770	NA	NA
Vanadium	0.05	112	NA	NA	98.2	NA	NA
Zinc	0.05	219	NA	NA	294	NA	NA
TOC (%Dry Wt)		1.1	2.1	2.3	1.6	1.6	1.7

Table 10. Sediment acid volatile sulfide (AVS) and simultaneously extracted metals (SEM) data for three upper bay stations from the March 2002 sampling. Method detection limits for Cd, Cu, Pb, and Ni are 0.01 mg/dry g and 0.05 mg/dry g for Zn.

Constituent	$\mu\text{moles/dry g}$			mg/dry g		
	NB10	NB10B	NB10C	NB10	NB10B	NB10C
SEM						
Cadmium	0.00512	0.0066	0.0056	0.543	0.742	0.630
Copper	0.00076	0.0001	0.0004	0.102	0.062	0.028
Lead	0.0151	0.0197	0.0153	3.96	4.08	3.16
Nickel	0.0273	0.0315	0.0291	1.35	1.85	1.71
Zinc	0.489	1.02	0.674	46.0	67.0	44.1
Total SEM	0.54	1.08	0.72	52.0	73.7	49.6
AVS	54.9	106	81.4	2140	3400	2610

Table 11. Newport Bay sediment PCB congener concentrations from March 2002 sampling.
Concentrations are in $\mu\text{g}/\text{dry kg}$.

Compound	Upper Bay			Rhine Channel		
	NB10	NB10B	NB10C	NB3	NB11	NB12
PCB018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB028	<1.0	<1.0	<1.0	3.63	3.94	0.93
PCB031	<1.0	<1.0	<1.0	5.72	6.07	1.56
PCB033	<1.0	<1.0	<1.0	5.3	3.58	<1.0
PCB037	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB044	<1.0	3.38	1.61	6.07	9.83	2.77
PCB049	<1.0	1.74	0.93	14.6	12.3	5.2
PCB052	<1.0	1.08	<1.0	8.55	8.81	3.39
PCB066	<1.0	<1.0	<1.0	12.2	14.8	9.83
PCB070	<1.0	<1.0	<1.0	8.44	8.6	7.08
PCB074	<1.0	<1.0	<1.0	4.92	8.81	7.34
PCB077	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB081	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB087	<1.0	<1.0	<1.0	3.4	3.05	4.19
PCB095	<1.0	<1.0	<1.0	4.16	5.07	3.8
PCB097	<1.0	<1.0	<1.0	1.03	3.84	4.51
PCB099	<1.0	<1.0	<1.0	8.11	8.68	5.85
PCB101	<1.0	<1.0	<1.0	10.4	11.1	9.08
PCB105	<1.0	<1.0	<1.0	7.37	4.11	4.02
PCB110	<1.0	1.2	1.75	9.6	10.2	9.7
PCB114	<1.0	<1.0	<1.0	4.54	3.64	<1.0
PCB118	<1.0	<1.0	<1.0	12.5	13.9	8.98
PCB119	<1.0	<1.0	<1.0	<1.0	0.7	0.75
PCB123	<1.0	<1.0	<1.0	2.84	2.09	6.8
PCB126	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB128	<1.0	<1.0	<1.0	1.08	1.93	<1.0
PCB138	<1.0	<1.0	<1.0	3.77	14.6	7.99
PCB141	<1.0	<1.0	<1.0	<1.0	<1.0	0.93
PCB149	<1.0	<1.0	<1.0	4.87	7.48	4.79
PCB151	<1.0	<1.0	<1.0	<1.0	1.5	0.48
PCB153	<1.0	<1.0	<1.0	8.41	9.65	8.38
PCB156	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB157	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB158	<1.0	<1.0	1.52	2.22	<1.0	1.83
PCB167	<1.0	<1.0	<1.0	<1.0	1.68	<1.0
PCB168/132	<1.0	<1.0	<1.0	<1.0	1.23	1.25
PCB169	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB170	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB177	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB180	<1.0	<1.0	<1.0	1.9	1.41	1.96
PCB183	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB187	<1.0	<1.0	<1.0	1.26	<1.0	2.44
PCB189	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB194	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB201	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB206	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Detected PCBs	<1.0	7	6	157	183	126

Table 12. Newport Bay sediment PAH concentrations from March 2002 sampling. Concentrations are in $\mu\text{g}/\text{dry kg}$. Method detection limit for all constituents is 1 $\mu\text{g}/\text{dry kg}$.

Compound	Upper Bay			Rhine Channel		
	NB10	NB10B	NB10C	NB3	NB11	NB12
Naphthalene	13.5	7.6	4.9	8.1	7.9	3.4
2-Methylnaphthalene	10.2	4.6	2.1	5.5	7.3	2.2
1-Methylnaphthalene	4.2	1.9	1.6	2.2	5.7	1.3
Biphenyl	2.9	2.1	1.3	1.7	2.7	0.85
2,6-Dimethylnaphthalene	8.1	4	6.9	5	6.4	2.2
Acenaphthene	3.1	2.1	1.6	9.6	4.5	4.5
Acenaphthylene	6.2	4.9	3.5	5.1	71.6	4.3
2,3,5-Trimethylnaphthalene	2.7	1.9	2.5	1.7	5.7	2.3
Fluorene	8	5	3.1	6.6	51	3.9
Phenanthrene	79.3	44.8	25.8	67.3	572	71.8
Anthracene	14.3	9.3	6.8	32.1	137	18.5
1-Methylphenanthrene	16.6	7.3	5.3	14.2	87.7	11.7
Fluoranthene	197	130	87.2	167	810	210
Pyrene	228	141	102	202	763	197
Benz[a]anthracene	58.1	48.2	35.6	111	408	102
Chrysene	144	85.9	60.4	216	398	124
Benzo[b]fluoranthene	79.8	61.3	41.8	209	285	128
Benzo[k]fluoranthene	14	25	17	39.1	114	56.2
Benzo[e]pyrene	92.1	46.3	31.5	153	172	78.0
Benzo[a]pyrene	64.4	39.4	27	177	238	90.3
Perylene	31.9	21	15.3	56.3	48.3	23.3
Indeno[1,2,3-c,d]pyrene	47.9	39.7	33.1	145	147	112
Dibenz[a,h]anthracene	12.6	17.7	8.4	37.8	35.7	17.0
Benzo[g,h,i]perylene	83.8	39.7	33.7	138	86.4	95.7
Total Detectable PAHs	1220	791	558	1810	4460	1360

Table 13. Newport Bay sediment pesticide concentrations from March 2002 sampling. Concentrations are in $\mu\text{g}/\text{dry kg}$.

Compound	Upper Bay			Rhine Channel		
	NB10	NB10B	NB10C	NB3	NB11	NB12
Toxaphene	<10	<10	<10	<10	<10	<10
2,4'-DDD	8.3	5.97	6	<1.0	4.34	<1.0
2,4'-DDE	<1.0	8.23	10.3	<1.0	22.2	14.1
2,4'-DDT	<1.0	5.23	4.67	<1.0	3.22	2.21
4,4'-DDD	<1.0	10	9.98	<1.0	4.38	4.58
4,4'-DDE	64.9	76.6	80.6	41.1	54.2	25.1
4,4'-DDT	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Detectable DDTs	73	106	112	41	88	46
Aldrin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BHC-alpha	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BHC-beta	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BHC-delta	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BHC-gamma	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlordane-alpha	<1.0	1.84	3.39	<1.0	<1.0	<1.0
Chlordane-gamma	<1.0	1.88	2.59	<1.0	<1.0	<1.0
Dieldrin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endosulfan-I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endosulfan-II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endrin	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Heptachlor	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methoxychlor	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mirex	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-Nonachlor	<1.0	0.92	2.23	<1.0	<1.0	<1.0

Table 14. Water column metals concentrations from March 2002 sampling. All concentrations are in $\mu\text{g/L}$.

Description	MDL	NB3		NB10	
		Total	Dissolved	Total	Dissolved
Aluminum	0.01	48.7	<0.01	318	<0.01
Antimony	0.01	0.255	0.160	0.2	0.230
Arsenic	0.01	1.33	1.37	1.48	1.38
Beryllium	0.005	<0.005	<0.005	<0.005	<0.005
Cadmium	0.005	0.05	0.11	0.06	0.18
Chromium	0.005	0.39	0.28	0.63	0.25
Cobalt	0.005	<0.005	<0.005	0.155	0.11
Copper	0.005	8.24	7.94	1.98	1.39
Iron	0.01	24.4	<0.01	177	0.05
Lead	0.005	0.130	0.040	0.26	0.010
Manganese	0.005	16.7	16.2	54.9	48.8
Mercury	0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	0.005	10.3	10.9	11.4	11.6
Nickel	0.005	0.475	0.500	0.945	0.800
Selenium	0.01	0.055	0.040	0.18	0.170
Silver	0.005	<0.005	<0.005	<0.005	<0.005
Strontium	0.01	NA	NA	NA	NA
Thallium	0.005	0.010	0.010	0.01	0.010
Tin	0.005	0.055	0.030	0.02	0.010
Titanium	0.005	3.87	0.060	19.3	0.050
Vanadium	0.005	2.96	2.74	4.59	3.66
Zinc	0.005	29.8	29.3	9.63	7.23

NA=Not analyzed.

Table 15. Water column total PCB concentrations from March 2002 sampling.

	NB3 (ng/L)	NB10 (ng/L)
PCB018	<1.0	<1.0
PCB028	<1.0	<1.0
PCB031	<1.0	<1.0
PCB033	<1.0	<1.0
PCB037	<1.0	<1.0
PCB044	<1.0	<1.0
PCB049	<1.0	<1.0
PCB052	<1.0	<1.0
PCB066	<1.0	<1.0
PCB070	<1.0	<1.0
PCB074	<1.0	<1.0
PCB077	<1.0	<1.0
PCB081	<1.0	<1.0
PCB087	<1.0	<1.0
PCB095	<1.0	<1.0
PCB097	<1.0	<1.0
PCB099	<1.0	<1.0
PCB101	<1.0	<1.0
PCB105	<1.0	<1.0
PCB110	<1.0	<1.0
PCB114	<1.0	<1.0
PCB118	<1.0	<1.0
PCB119	<1.0	<1.0
PCB123	<1.0	<1.0
PCB126	<1.0	<1.0
PCB128	<1.0	<1.0
PCB138	<1.0	<1.0
PCB141	<1.0	<1.0
PCB149	<1.0	<1.0
PCB151	<1.0	<1.0
PCB153	<1.0	<1.0
PCB156	<1.0	<1.0
PCB157	<1.0	<1.0
PCB158	<1.0	<1.0
PCB167	<1.0	<1.0
PCB168/132	<1.0	<1.0
PCB169	<1.0	<1.0
PCB170	<1.0	<1.0
PCB177	<1.0	<1.0
PCB180	<1.0	<1.0
PCB183	<1.0	<1.0
PCB187	<1.0	<1.0
PCB189	<1.0	<1.0
PCB194	<1.0	<1.0
PCB200	<1.0	<1.0
PCB201	<1.0	<1.0
PCB206	<1.0	<1.0
Total Detectable PCB	<1.0	<1.0

Table 16. Water column total chlorinated pesticide concentrations from March 2002 sampling.

	NB3 (ng/L)	NB10 (ng/L)
Toxaphene	<10	<10
2,4'-DDD	<1.0	<1.0
2,4'-DDE	<1.0	<1.0
2,4'-DDT	<1.0	<1.0
4,4'-DDD	<1.0	<1.0
4,4'-DDE	<1.0	<1.0
4,4'-DDT	<1.0	<1.0
Total Detectable DDT	0	0
Aldrin	<1.0	<1.0
BHC-alpha	<1.0	<1.0
BHC-beta	<1.0	<1.0
BHC-delta	<1.0	<1.0
BHC-gamma	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0
Dieldrin	<1.0	<1.0
Endosulfan-Sulfate	<1.0	<1.0
Endosulfan-I	<1.0	<1.0
Endosulfan-II	<1.0	<1.0
Endrin	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0
Heptachlor	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0
Methoxychlor	<1.0	<1.0
Mirex	<1.0	<1.0
trans-Nonachlor	<1.0	<1.0

LOWER NEWPORT BAY MAY SEDIMENT SAMPLES

Table 17. Lower Newport Bay sediment metals concentrations from May 2002 sampling. Concentrations are in mg/dry kg

	MDL	2137	2136	2142
Aluminum	1	46800	51200	48900
Antimony	0.05	0.46	0.62	0.37
Arsenic	0.05	10.8	11.0	8.68
Barium	0.05	137	156	184
Beryllium	0.01	1.06	1.18	1.12
Cadmium	0.01	0.72	0.74	1.1
Chromium	0.05	60.8	64.4	56.8
Cobalt	0.01	9.24	9.18	9.28
Copper	0.01	160	92.6	40.9
Iron	1	39800	42850	39300
Lead	0.01	55.2	57.9	22.5
Manganese	0.05	314	315	347
Mercury	0.005	2.08	0.69	0.32
Molybdenum	0.05	2.06	1.96	1.69
Nickel	0.01	25.4	27.0	24.8
Selenium	0.05	2.26	2.10	2.04
Silver	0.01	0.16	0.16	0.12
Strontium	0.05	81.3	83.6	134
Thallium	0.01	0.52	0.50	0.53
Tin	0.05	4.08	4.46	2.74
Titanium	0.05	2090	1990	1940
Vanadium	0.05	112	120	110
Zinc	0.05	260	256	164

Table 18. Lower Newport Bay sediment PCB concentrations from May 2002 sampling. Concentrations are in $\mu\text{g}/\text{dry kg}$.

	2137	2136	2142
PCB018	<1.0	<1.0	<1.0
PCB028	<1.0	0.95	<1.0
PCB031	<1.0	<1.0	<1.0
PCB033	<1.0	<1.0	<1.0
PCB037	<1.0	<1.0	<1.0
PCB044	<1.0	4.17	<1.0
PCB049	0.89	5.45	<1.0
PCB052	1.11	2.17	<1.0
PCB066	1.23	6.41	<1.0
PCB070	0.69	4.71	<1.0
PCB074	<1.0	6	<1.0
PCB077	<1.0	<1.0	<1.0
PCB081	<1.0	<1.0	<1.0
PCB087	<1.0	1.13	<1.0
PCB095	<1.0	2.16	<1.0
PCB097	<1.0	1.67	<1.0
PCB099	<1.0	2.44	<1.0
PCB101	2.7	4.72	<1.0
PCB105	2.33	<1.0	1.14
PCB110	3.11	7.11	<1.0
PCB114	1.02	<1.0	0.79
PCB118	3.9	10.2	0.85
PCB119	<1.0	1.13	<1.0
PCB123	0.79	7.54	<1.0
PCB126	<1.0	<1.0	2.1
PCB128	<1.0	<1.0	0.76
PCB138	5.24	7.86	<1.0
PCB141	<1.0	2.12	<1.0
PCB149	2.08	2.83	<1.0
PCB151	<1.0	<1.0	<1.0
PCB153	6.27	5.01	<1.0
PCB156	2.91	<1.0	<1.0
PCB157	<1.0	<1.0	<1.0
PCB158	<1.0	0.71	<1.0
PCB167	<1.0	<1.0	0.76
PCB168/132	<1.0	0.78	<1.0
PCB169	<1.0	8.14	<1.0
PCB170	<1.0	<1.0	<1.0
PCB177	<1.0	<1.0	<1.0
PCB180	<1.0	0.93	<1.0
PCB183	<1.0	<1.0	<1.0
PCB187	<1.0	0.96	<1.0
PCB189	<1.0	<1.0	<1.0
PCB194	<1.0	<1.0	<1.0
PCB200	<1.0	<1.0	<1.0
PCB201	<1.0	<1.0	<1.0
PCB206	<1.0	<1.0	<1.0
Total Detectable PCB	34.3	97.3	6.4

Table 19. Lower Newport Bay sediment PAH concentrations from May 2002 sampling. Concentrations are in $\mu\text{g}/\text{dry kg}$. Method detection limit for all PAH constituents is 1 $\mu\text{g}/\text{dry kg}$.

	2137	2136	2142
Naphthalene	3.8	6.7	2.6
2-Methylnaphthalene	2.4	14.9	1.4
1-Methylnaphthalene	2.3	10.6	1.2
Biphenyl	<1.0	1.9	0.6
2,6-Dimethylnaphthalene	2.2	19.3	1.3
Acenaphthene	2.3	1.3	0.5
Acenaphthylene	3.2	7.2	2.6
2,3,5-Trimethylnaphthalene	3.5	7.6	<1.0
Fluorene	1.1	7.5	0.9
Phenanthrene	17.8	95.5	13.2
Anthracene	8.3	18.5	4.1
1-Methylphenanthrene	5.2	11	3.7
Fluoranthene	50.9	174	40.6
Pyrene	60.5	185	52.8
Benz[a]anthracene	32	64.7	26.7
Chrysene	48.7	85.6	35.8
Benzo[b]fluoranthene	64.6	60.9	27.1
Benzo[k]fluoranthene	30.9	33.4	14.2
Benzo[e]pyrene	49.1	44.9	22.7
Benzo[a]pyrene	57.4	48.4	25.6
Perylene	20.1	19.4	10.6
Indeno[1,2,3-c,d]pyrene	60.6	44.3	22.3
Dibenz[a,h]anthracene	16.3	9.7	7.5
Benzo[g,h,i]perylene	43.4	34.1	18.7
Total Detectable PAH	587	1010	337
Total Organic Carbon (% Dry Wt)	0.94	1.51	0.65
Total Solids (% Dry Wt)	37.8	33.4	44.6

Table 20. Lower Newport Bay sediment pesticide concentrations from May 2002 sampling.
Concentrations are in $\mu\text{g}/\text{dry kg}$.

	2137	2136	2142
Toxaphene	<10	<10	<10
2,4'-DDD	<1.0	5	5.69
2,4'-DDE	5.99	23	16.8
2,4'-DDT	<1.0	<1.0	1.99
4,4'-DDD	<1.0	13.1	6.8
4,4'-DDE	32	64.5	51.5
4,4'-DDT	<1.0	6.85	<1.0
Total Detectable DDT	38	112	82.8
Aldrin	<1.0	<1.0	<1.0
BHC-alpha	<1.0	<1.0	<1.0
BHC-beta	<1.0	<1.0	<1.0
BHC-delta	<1.0	<1.0	<1.0
BHC-gamma	<1.0	<1.0	<1.0
Chlordane-alpha	<1.0	2.64	<1.0
Chlordane-gamma	<1.0	3.86	<1.0
Dieldrin	<1.0	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0	<1.0
Endosulfan-I	<1.0	<1.0	<1.0
Endosulfan-II	<1.0	<1.0	<1.0
Endrin	<1.0	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0	<1.0
Heptachlor	<1.0	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0	<1.0
Methoxychlor	<1.0	<1.0	<1.0
Mirex	<1.0	<1.0	<1.0
trans-Nonachlor	<1.0	1.64	<1.0

SAN DIEGO CREEK SAMPLES

Table 21. Concentrations of total and dissolved metals from San Diego Creek wet weather runoff samples collected March 7, 2002.

		<u>1100 hrs</u>		<u>1425 hrs</u>	
Constituent	MDL	Total	Dissolved	Total	Dissolved
Metals (µg/L)					
Aluminum	0.01	1255	160	872	260
Antimony	0.01	1.58	1.41	2.18	1.86
Arsenic	0.01	4.38	3.9	3.91	3.62
Barium	0.5	46.2	34.2	35.6	25.0
Beryllium	0.005	<0.5	<0.5	<0.5	<0.5
Cadmium	0.005	0.15	<0.1	0.18	<0.1
Chromium	0.005	5.20	3.66	2.44	1.36
Cobalt	0.005	1.17	<0.5	<0.5	<0.5
Copper	0.005	15.7	10.4	15.6	10.6
Iron	0.01	1036	198	804	236
Lead	0.005	2.02	0.30	2.44	0.54
Manganese	0.005	116	83.4	65.2	42.0
Mercury	0.005	<0.1	<0.1	<0.1	<0.1
Molybdenum	0.005	17.8	21.0	9.12	10.1
Nickel	0.005	5.04	4.09	4.78	3.87
Selenium	0.01	10.6	10.2	4.30	4.16
Silver	0.005	<0.1	<0.1	<0.1	<0.1
Strontium	0.01	862	855	392	414
Thallium	0.005	<0.5	<0.5	<0.5	<0.5
Tin	0.005	0.11	<0.5	0.15	<0.5
Titanium	0.005	46.1	11.1	44.7	16.6
Vanadium	0.005	12.6	9.88	10.6	8.84
Zinc	0.005	55.0	30.2	51.6	27.2
TSS mg/L		62		38	
Alkalinity (mg/L)		129		85	
Hardness (mg/L)		393		183	

Table 22. Concentrations of total PCBs from San Diego Creek wet weather runoff samples collected March 7, 2002. Concentrations are in ng/L.

	1100 hrs	1425 hrs
PCB018	<1.0	<1.0
PCB028	<1.0	<1.0
PCB031	<1.0	<1.0
PCB033	<1.0	<1.0
PCB037	<1.0	<1.0
PCB044	<1.0	<1.0
PCB049	<1.0	<1.0
PCB052	<1.0	<1.0
PCB066	<1.0	<1.0
PCB070	<1.0	<1.0
PCB074	<1.0	<1.0
PCB077	<1.0	<1.0
PCB081	<1.0	<1.0
PCB087	<1.0	<1.0
PCB095	<1.0	<1.0
PCB097	<1.0	<1.0
PCB099	<1.0	<1.0
PCB101	<1.0	<1.0
PCB105	<1.0	<1.0
PCB110	<1.0	<1.0
PCB114	<1.0	<1.0
PCB118	<1.0	<1.0
PCB119	<1.0	<1.0
PCB123	<1.0	<1.0
PCB126	<1.0	<1.0
PCB128	<1.0	<1.0
PCB138	<1.0	<1.0
PCB141	<1.0	<1.0
PCB149	<1.0	<1.0
PCB151	<1.0	<1.0
PCB153	<1.0	<1.0
PCB156	<1.0	<1.0
PCB157	<1.0	<1.0
PCB158	<1.0	<1.0
PCB167	<1.0	<1.0
PCB168/132	<1.0	<1.0
PCB169	<1.0	<1.0
PCB170	<1.0	<1.0
PCB177	<1.0	<1.0
PCB180	<1.0	<1.0
PCB183	<1.0	<1.0
PCB187	<1.0	<1.0
PCB189	<1.0	<1.0
PCB194	<1.0	<1.0
PCB200	<1.0	<1.0
PCB201	<1.0	<1.0
PCB206	<1.0	<1.0
Total Detectable PCB	<1.0	<1.0

Table 23. Concentrations of total chlorinated pesticides from San Diego Creek wet weather runoff samples collected March 7, 2002. Concentrations are in ng/L.

	1100 hrs	1425hrs
Toxaphene	<10	<10
2,4'-DDD	<1.0	<1.0
2,4'-DDE	<1.0	<1.0
2,4'-DDT	<1.0	<1.0
4,4'-DDD	<1.0	<1.0
4,4'-DDE	<1.0	<1.0
4,4'-DDT	<1.0	<1.0
Total Detectable DDT	<1.0	<1.0
Aldrin	<1.0	<1.0
BHC-alpha	<1.0	<1.0
BHC-beta	<1.0	<1.0
BHC-delta	<1.0	<1.0
BHC-gamma	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0
Dieldrin	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0
Endosulfan-I	<1.0	<1.0
Endosulfan-II	<1.0	<1.0
Endrin	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0
Heptachlor	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0
Methoxychlor	<1.0	<1.0
Mirex	1	<1.0
trans-Nonachlor	<1.0	<1.0

Table 24. Concentrations of total organophosphorus pesticides in runoff from San Diego Creek wet weather samples collected March 7, 2002. Concentrations are in ng/L. Note: data table is based on verbal communication with chemistry laboratory.

Compound	Sample 1100	Sample 1425
Bolstar (Sulprofos)	<10	<10
Chlorpyrifos	<10	<10
Coumaphos	<10	<10
Demeton	<10	<10
Diazinon	<10	<10
Disulfoton	<10	<10
Ethoprop (Ethoprofos)	<10	<10
Fenchlorophos (Ronnol)	<10	<10
Fensulfothion	<10	<10
Fenthion	<10	<10
Guthion	<10	<10
Merphos	<10	<10
Methyl Parathion	<10	<10
Mevinphos (Phosdrin)	<10	<10
Phorate	<10	<10
Tetrachlovinphos (Stirofos)	<10	<10
Tokuthion	<10	<10
Trichloronate	<10	<10

Table 25. Concentrations of total and dissolved metals from San Diego Creek dry weather runoff samples collected May 2, 2002.

Collected May 2, 2002.

Constituent	MDL	0900 hrs		1405 hrs	
		Total	Dissolved	Total	Dissolved
Metals (µg/L)					
Aluminum	0.01	1050	220	1100	200
Antimony	0.01	1.30	1.46	1.32	1.48
Arsenic	0.01	6.44	5.27	6.51	5.22
Barium	0.5	73.5	58.2	74.3	59.2
Beryllium	0.005	<0.5	<0.5	<0.5	<0.5
Cadmium	0.005	0.16	<0.1	0.17	<0.1
Chromium	0.005	2.15	0.74	2.14	0.74
Cobalt	0.005	0.88	<0.6	0.90	<0.6
Copper	0.005	4.68	2.81	5.60	2.77
Iron	0.01	1345	299	1390	284
Lead	0.005	1.49	0.21	1.66	0.20
Manganese	0.005	130	15.8	120	19.0
Mercury	0.005	<0.1	<0.1	<0.1	<0.1
Molybdenum	0.005	37.4	46.2	37.0	46.0
Nickel	0.005	4	3.08	3.96	3.01
Selenium	0.01	18.4	18.4	19.8	18.6
Silver	0.005	<0.1	<0.1	<0.1	<0.1
Strontium	0.01	1500	1515	1495	1505
Thallium	0.005	<0.5	<0.5	<0.5	<0.5
Tin	0.005	0.16	0.16	0.15	0.13
Titanium	0.005	55.4	14.0	61.2	13.0
Vanadium	0.005	16.7	11.4	16.6	11.8
Zinc	0.005	10.8	4.54	12.6	4.42
TSS mg/L		80		83	
Alkalinity (mg/L)		261		232	
Hardness (mg/L)		681		666	

Table 26. Concentrations of total PCBs from San Diego Creek dry weather runoff samples collected May 2, 2002. Concentrations are in ng/L.

	0900 hrs	1405 hrs
PCB018	<1.0	<1.0
PCB028	<1.0	<1.0
PCB031	<1.0	<1.0
PCB033	<1.0	<1.0
PCB037	<1.0	<1.0
PCB044	<1.0	<1.0
PCB049	<1.0	<1.0
PCB052	<1.0	<1.0
PCB066	<1.0	<1.0
PCB070	<1.0	<1.0
PCB074	<1.0	<1.0
PCB077	<1.0	<1.0
PCB081	<1.0	<1.0
PCB087	<1.0	<1.0
PCB095	<1.0	<1.0
PCB097	<1.0	<1.0
PCB099	<1.0	<1.0
PCB101	<1.0	<1.0
PCB105	<1.0	<1.0
PCB110	<1.0	<1.0
PCB114	<1.0	<1.0
PCB118	<1.0	<1.0
PCB119	<1.0	<1.0
PCB123	<1.0	<1.0
PCB126	<1.0	<1.0
PCB128	<1.0	<1.0
PCB138	<1.0	<1.0
PCB141	<1.0	<1.0
PCB149	<1.0	<1.0
PCB151	<1.0	<1.0
PCB153	<1.0	<1.0
PCB156	<1.0	<1.0
PCB157	<1.0	<1.0
PCB158	<1.0	<1.0
PCB167	<1.0	<1.0
PCB168/132	<1.0	<1.0
PCB169	<1.0	<1.0
PCB170	<1.0	<1.0
PCB177	<1.0	<1.0
PCB180	<1.0	<1.0
PCB183	<1.0	<1.0
PCB187	<1.0	<1.0
PCB189	<1.0	<1.0
PCB194	<1.0	<1.0
PCB200	<1.0	<1.0
PCB201	<1.0	<1.0
PCB206	<1.0	<1.0
Total Detectable PCB	<1.0	<1.0

Table 27. Concentrations of total chlorinated pesticides from San Diego Creek dry weather runoff samples collected May 2, 2002. Concentrations are in ng/L.

	0900 hrs	1405 hrs
Toxaphene	<10	<10
2,4'-DDD	<1.0	<1.0
2,4'-DDE	<1.0	<1.0
2,4'-DDT	<1.0	<1.0
4,4'-DDD	<1.0	<1.0
4,4'-DDE	<1.0	<1.0
4,4'-DDT	<1.0	<1.0
Total Detectable DDT	<1.0	<1.0
Aldrin	<1.0	<1.0
BHC-alpha	<1.0	<1.0
BHC-beta	<1.0	<1.0
BHC-delta	<1.0	<1.0
BHC-gamma	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0
Dieldrin	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0
Endosulfan-I	<1.0	<1.0
Endosulfan-II	<1.0	<1.0
Endrin	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0
Heptachlor	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0
Methoxychlor	<1.0	<1.0
Mirex	<1.0	<1.0
trans-Nonachlor	<1.0	<1.0

Table 28: Concentrations of total organophosphorus pesticides in runoff from San Diego Creek wet weather samples collected May 2, 2002. Concentrations are in ng/L. Note: data table is based on verbal communication with chemistry laboratory.

Compound	Sample 0900	Sample 1405
Bolstar (Sulprofos)	<10	<10
Chlorpyrifos	<10	<10
Coumaphos	<10	<10
Demeton	<10	<10
Diazinon	<10	<10
Disulfoton	<10	<10
Ethoprop (Ethoprofos)	<10	<10
Fenchlorophos (Rannel)	<10	<10
Fensulfothion	<10	<10
Fenthion	<10	<10
Guthion	<10	<10
Merphos	<10	<10
Methyl Parathion	<10	<10
Mevinphos (Phosdrin)	<10	<10
Phorate	<10	<10
Tetrachlovinphos (Stirofos)	<10	<10
Tokuthion	<10	<10
Trichloronate	<10	<10

Table 29. Concentrations of total and dissolved metals from San Diego Creek dry weather runoff samples collected August 12, 2002.

Collected August 12, 2002.					
Constituent	MDL	0922 hrs		1400 hrs	
		Total	Dissolved	Total	Dissolved
Metals (µg/L)					
Aluminum	0.01	538	<0.01	392	<0.01
Antimony	0.01	1.08	1.09	1.04	1.12
Arsenic	0.01	8.74	7.64	8.25	7.92
Barium	0.5	53.4	41.2	51.6	43.2
Beryllium	0.005	<0.005	<0.005	<0.005	<0.005
Cadmium	0.005	0.14	<0.005	0.10	<0.005
Chromium	0.005	0.92	<0.005	<0.005	<0.005
Cobalt	0.005	0.70	0.51	0.62	0.51
Copper	0.005	3.62	1.60	3.06	1.96
Iron	0.01	758	110	526	109
Lead	0.005	1.16	<0.005	0.86	<0.005
Manganese	0.005	89.1	22.0	69.2	19.6
Mercury	0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	0.005	53.1	55.9	51.4	55.8
Nickel	0.005	3.32	2.76	3.12	2.99
Selenium	0.01	17.3	16.4	16.4	16.4
Silver	0.005	<0.005	<0.005	<0.005	<0.005
Strontium	0.01	1625	1585	1550	1585
Thallium	0.005	<0.005	<0.005	<0.005	<0.005
Tin	0.005	0.40	0.42	0.36	0.36
Titanium	0.005	33.6	0.64	21.8	0.57
Vanadium	0.005	18.0	15.6	17.6	17.0
Zinc	0.005	7.91	2.02	7.16	2.16
TSS mg/L		61		41	
Alkalinity (mg/L)		282		293	
Hardness (mg/L)		524		692	

Table 30. Concentrations of total PCBs from San Diego Creek dry weather runoff samples collected August 12, 2002. Concentrations are in ng/L.

	0922 hrs	1400 hrs
PCB018	<1.0	<1.0
PCB028	<1.0	<1.0
PCB031	<1.0	<1.0
PCB033	<1.0	<1.0
PCB037	<1.0	<1.0
PCB044	<1.0	<1.0
PCB049	<1.0	<1.0
PCB052	<1.0	<1.0
PCB066	<1.0	<1.0
PCB070	<1.0	<1.0
PCB074	<1.0	<1.0
PCB077	<1.0	<1.0
PCB081	<1.0	<1.0
PCB087	<1.0	<1.0
PCB095	<1.0	<1.0
PCB097	<1.0	<1.0
PCB099	<1.0	<1.0
PCB101	<1.0	<1.0
PCB105	<1.0	<1.0
PCB110	<1.0	<1.0
PCB114	<1.0	<1.0
PCB118	<1.0	<1.0
PCB119	<1.0	<1.0
PCB123	<1.0	<1.0
PCB126	<1.0	<1.0
PCB128	<1.0	<1.0
PCB138	<1.0	<1.0
PCB141	<1.0	<1.0
PCB149	<1.0	<1.0
PCB151	<1.0	<1.0
PCB153	<1.0	<1.0
PCB156	<1.0	<1.0
PCB157	<1.0	<1.0
PCB158	<1.0	<1.0
PCB167	<1.0	<1.0
PCB168/132	<1.0	<1.0
PCB169	<1.0	<1.0
PCB170	<1.0	<1.0
PCB177	<1.0	<1.0
PCB180	<1.0	<1.0
PCB183	<1.0	<1.0
PCB187	<1.0	<1.0
PCB189	<1.0	<1.0
PCB194	<1.0	<1.0
PCB200	<1.0	<1.0
PCB201	<1.0	<1.0
PCB206	<1.0	<1.0
Total Detectable PCB	<1.0	<1.0

Table 31. Concentrations of chlorinated pesticides from San Diego Creek dry weather runoff samples collected August 12, 2002. Concentrations are in ng/L.

Compound	0922 hrs Sample	1400 hrs Sample
Toxaphene	<10	<10
2,4'-DDD	<1.0	<1.0
2,4'-DDE	<1.0	<1.0
2,4'-DDT	<1.0	<1.0
4,4'-DDD	<1.0	<1.0
4,4'-DDE	<1.0	<1.0
4,4'-DDT	<1.0	<1.0
Total Detectable DDT	<1.0	<1.0
Aldrin	<1.0	<1.0
BHC-alpha	<1.0	<1.0
BHC-beta	<1.0	<1.0
BHC-delta	<1.0	<1.0
BHC-gamma	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0
Dieldrin	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0
Endosulfan-I	<1.0	<1.0
Endosulfan-II	<1.0	<1.0
Endrin	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0
Heptachlor	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0
Methoxychlor	<1.0	<1.0
Mirex	<1.0	<1.0
trans-Nonachlor	<1.0	<1.0

Table 32. Concentrations of total organophosphorus pesticides in runoff from San Diego Creek wet weather samples collected August 12, 2002. Concentrations are in ng/L. Note: data table is based on verbal communication with chemistry laboratory.

Compound	Sample 0922	Sample 1400
Bolstar (Sulprofos)	<10	<10
Chlorpyrifos	<10	<10
Coumaphos	<10	<10
Demeton	<10	<10
Diazinon	<10	<10
Disulfoton	<10	<10
Ethoprop (Ethoprofos)	<10	<10
Fenchlorophos (Ronnel)	<10	<10
Fensulfothion	<10	<10
Fenthion	<10	<10
Guthion	<10	<10
Merphos	<10	<10
Methyl Parathion	<10	<10
Mevinphos (Phosdrin)	<10	<10
Phorate	<10	<10
Tetrachlovinphos (Stirofos)	<10	<10
Tokuthion	<10	<10
Trichloronate	<10	<10

Table 33. Concentrations of total and dissolved metals from San Diego Creek wet weather runoff samples collected November 8, 2002.

Collected November 6, 2002.					
Element	MDL	0100 hrs		0430 hrs	
		Total	Dissolved	Total	Dissolved
Metals (µg/L)					
Aluminum	0.01	380	19.5	460	19.6
Antimony	0.01	1.04	1.20	1.05	1.22
Arsenic	0.01	5.54	4.86	5.68	5.12
Barium	0.5	52.8	48.8	53.4	48.0
Beryllium	0.005	<0.005	<0.005	<0.005	<0.005
Cadmium	0.005	0.12	<0.005	0.14	<0.005
Chromium	0.005	1.70	0.90	1.82	1.04
Cobalt	0.005	0.58	<0.005	0.62	<0.005
Copper	0.005	3.46	1.84	3.66	1.885
Iron	0.01	666	202	766	202
Lead	0.005	1.11	<0.005	1.16	<0.005
Manganese	0.005	50.2	11.5	54.9	12.1
Mercury	0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	0.005	53.5	60.4	50.4	60.0
Nickel	0.005	3.78	3.27	3.96	3.26
Selenium	0.01	24.5	22.9	24.9	24.1
Silver	0.005	<0.005	<0.005	<0.005	<0.005
Strontium	0.01	1775	1690	1750	1680
Thallium	0.005	<0.005	<0.005	<0.005	<0.005
Tin	0.005	<0.005	<0.005	<0.005	<0.005
Titanium	0.005	17.2	2.11	17.3	2.37
Vanadium	0.005	16	12.8	16.2	13.0
Zinc	0.005	9.26	3.14	10.4	3.04
TSS mg/L		48.9		55.3	
Alkalinity (mg/L)		293		292	
Hardness (mg/L)		768		783	

Table 34. Concentrations of total and particulate PCBs from San Diego Creek wet weather runoff samples collected November 8, 2002. Concentrations are in ng/L.

Compound	0100 hrs		0430 hrs	
	Total	Particulate	Total	Particulate
PCB018	<1.0	<1.0	<1.0	<1.0
PCB028	<1.0	<1.0	<1.0	<1.0
PCB031	<1.0	<1.0	<1.0	<1.0
PCB033	<1.0	<1.0	<1.0	<1.0
PCB037	<1.0	<1.0	<1.0	<1.0
PCB044	<1.0	<1.0	<1.0	<1.0
PCB049	<1.0	<1.0	<1.0	<1.0
PCB052	<1.0	<1.0	<1.0	<1.0
PCB066	<1.0	<1.0	<1.0	<1.0
PCB070	<1.0	<1.0	<1.0	<1.0
PCB074	<1.0	<1.0	<1.0	<1.0
PCB077	<1.0	<1.0	<1.0	<1.0
PCB081	<1.0	<1.0	<1.0	<1.0
PCB087	<1.0	<1.0	<1.0	<1.0
PCB095	<1.0	<1.0	<1.0	<1.0
PCB097	<1.0	<1.0	<1.0	<1.0
PCB099	<1.0	<1.0	<1.0	<1.0
PCB101	<1.0	<1.0	<1.0	<1.0
PCB105	<1.0	<1.0	<1.0	<1.0
PCB110	<1.0	<1.0	<1.0	<1.0
PCB114	<1.0	<1.0	<1.0	<1.0
PCB118	<1.0	<1.0	<1.0	<1.0
PCB119	<1.0	<1.0	<1.0	<1.0
PCB123	<1.0	<1.0	<1.0	<1.0
PCB126	<1.0	<1.0	<1.0	<1.0
PCB128	<1.0	<1.0	<1.0	<1.0
PCB138	<1.0	<1.0	<1.0	<1.0
PCB141	<1.0	<1.0	<1.0	<1.0
PCB149	<1.0	<1.0	<1.0	<1.0
PCB151	<1.0	<1.0	<1.0	<1.0
PCB153	<1.0	<1.0	<1.0	<1.0
PCB156	<1.0	<1.0	<1.0	<1.0
PCB157	<1.0	<1.0	<1.0	<1.0
PCB158	<1.0	<1.0	<1.0	<1.0
PCB167	<1.0	<1.0	<1.0	<1.0
PCB168/132	<1.0	<1.0	<1.0	<1.0
PCB169	<1.0	<1.0	<1.0	<1.0
PCB170	<1.0	<1.0	<1.0	<1.0
PCB177	<1.0	<1.0	<1.0	<1.0
PCB180	<1.0	<1.0	<1.0	<1.0
PCB183	<1.0	<1.0	<1.0	<1.0
PCB187	<1.0	<1.0	<1.0	<1.0
PCB189	<1.0	<1.0	<1.0	<1.0
PCB194	<1.0	<1.0	<1.0	<1.0
PCB200	<1.0	<1.0	<1.0	<1.0
PCB201	<1.0	<1.0	<1.0	<1.0
PCB206	<1.0	<1.0	<1.0	<1.0
Total Detectable PCB	<1.0	<1.0	<1.0	<1.0

Table 35. Concentrations of total and particulate chlorinated pesticides from San Diego Creek wet weather runoff samples collected November 8, 2002. Concentrations are in ng/L.

Compound	0100 hrs		0430 hrs	
	Total	Particulate	Total	Particulate
Toxaphene	<10	<10	<10	<10
2,4'-DDD	<1.0	<1.0	<1.0	<1.0
2,4'-DDE	<1.0	<1.0	<1.0	<1.0
2,4'-DDT	<1.0	<1.0	<1.0	<1.0
4,4'-DDD	<1.0	<1.0	<1.0	<1.0
4,4'-DDE	3.2	<1.0	<1.0	<1.0
4,4'-DDT	<1.0	<1.0	<1.0	<1.0
Total Detectable DDT	3	<1.0	<1.0	<1.0
Aldrin	<1.0	<1.0	<1.0	<1.0
BHC-alpha	<1.0	<1.0	<1.0	<1.0
BHC-beta	<1.0	<1.0	<1.0	<1.0
BHC-delta	<1.0	<1.0	<1.0	<1.0
BHC-gamma	<1.0	<1.0	<1.0	<1.0
Chlordane-alpha	<1.0	<1.0	<1.0	<1.0
Chlordane-gamma	<1.0	<1.0	<1.0	<1.0
Dieldrin	<1.0	<1.0	<1.0	<1.0
Endosulfan Sulfate	<1.0	<1.0	<1.0	<1.0
Endosulfan-I	<1.0	<1.0	<1.0	<1.0
Endosulfan-II	<1.0	<1.0	<1.0	<1.0
Endrin	<1.0	<1.0	<1.0	<1.0
Endrin Aldehyde	<1.0	<1.0	<1.0	<1.0
Heptachlor	<1.0	<1.0	<1.0	<1.0
Heptachlor Epoxide	<1.0	<1.0	<1.0	<1.0
Methoxychlor	<1.0	<1.0	<1.0	<1.0
Mirex	<1.0	<1.0	<1.0	<1.0
trans-Nonachlor	<1.0	<1.0	<1.0	<1.0

Table 36. Concentrations of total and particulate organophosphorus pesticides in runoff from San Diego Creek wet weather samples collected November 8, 2002. Concentrations are in ng/L.

Compound	Sample 0100		Sample 0430	
	Total	Particulate	Total	Particulate
Bolstar (Sulprofos)	<10	<10	<10	<10
Chlorpyrifos	<10	<10	<10	<10
Coumaphos	<10	<10	<10	<10
Demeton	<10	<10	<10	<10
Diazinon	34.9	<10	33.2	<10
Disulfoton	<10	<10	<10	<10
Ethoprop (Ethoprofos)	<10	<10	<10	<10
Fenchlorophos (Ronnol)	<10	<10	<10	<10
Fensulfothion	<10	<10	<10	<10
Fenthion	<10	<10	<10	<10
Guthion	<10	<10	<10	<10
Merphos	<10	<10	<10	<10
Methyl Parathion	<10	<10	<10	<10
Mevinphos (Phosdrin)	<10	<10	<10	<10
Phorate	<10	<10	<10	<10
Tetrachlovinphos (Stirofos)	<10	<10	<10	<10
Tokuthion	<10	<10	<10	<10
Trichloronate	25.5	<10	<10	<10

Figure 2. Hydrograph of San Diego Creek at Campus Drive for wet weather event in March 2002. Dashed lines indicate when samples were taken.

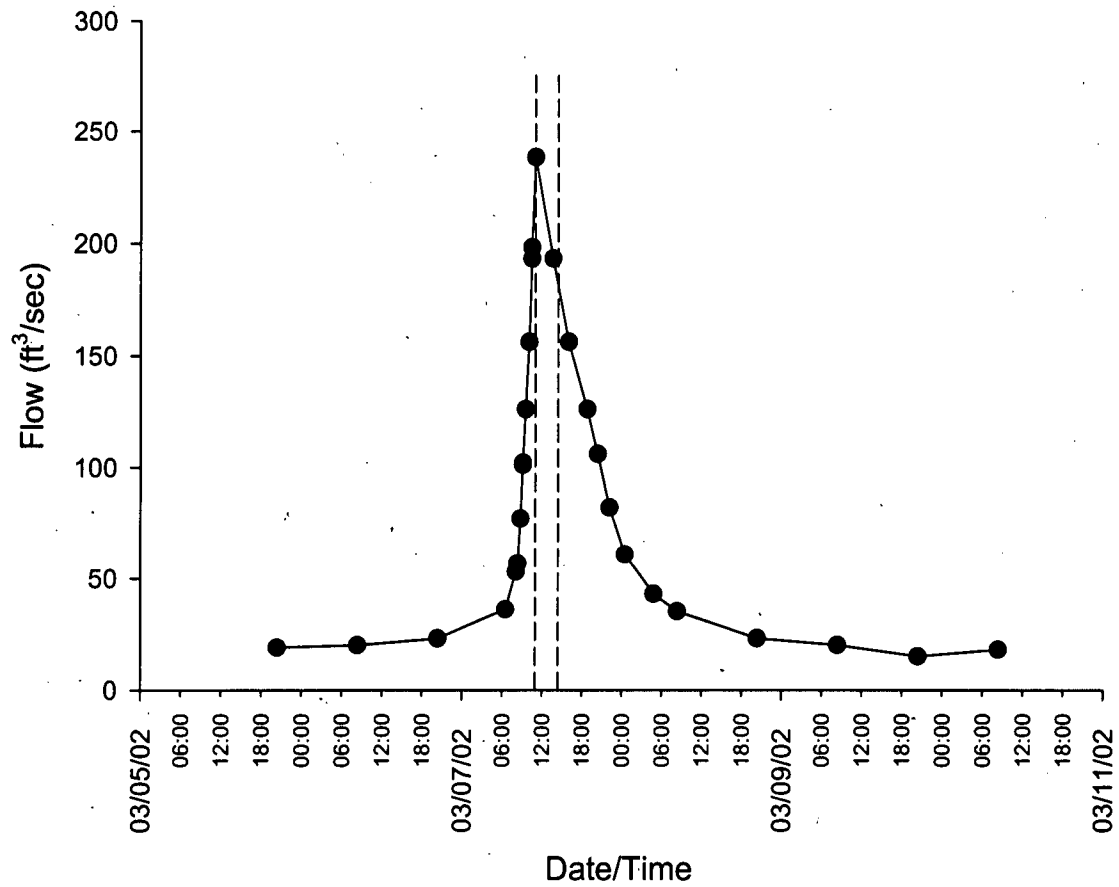


Figure 3. Hydrograph of San Diego Creek at Campus Drive for wet weather event in November 2002. Dashed lines indicate when samples were taken.

