Appendix C

Supporting Data

2010 PLOO Stations

Sediment Conditions

Appendix C.1

A subset of the Wentworth scale (based on Folk 1980) and modifications used in the analysis of sediments from the PLOO region in 2010. The modified scale was developed to accommodate data output from the Horiba laser analyzer. Particle size is presented in microns, millimeters, and phi size along with descriptions of each size range and how they are classified within size fractions.

Wentworth Scale

Original	Modified				
Microns	**Microns**	**Millimeters**	**Phi size**	**Description**	**Fraction**
≥2000	≥1681	≥1.681	≤-1	Granules–Pebbles	Coarse
1000–1999	931–1680	0.931–1.680	0	Very coarse sand	
500–999	441–930	0.441–0.930	1	Coarse sand	Sand
250–499	246–440	0.246–0.440	2	Medium sand	
125–249	106–245	0.106–0.245	3	Fine sand	
62.5–124	54–105	0.054–0.105	4	Very fine sand	
31–62.4	28–53	0.028–0.053	5	Coarse silt	Silt
15.6–30.9	14.9–27	0.0149–0.027	6	Medium silt	
7.8–15.5	6.0–14.8	0.0060–0.0148	7	Fine silt	
3.9–7.7	3.5–5.9	0.0035–0.0059	8	Very fine silt	
2.0–3.8	1.6–3.4	0.0016–0.0034	9	Clay	Clay
0.98–1.9	0.51–1.5	0.00051–0.0015	10	Clay	
≤0.97	≤0.50	≤0.00050	11	Clay	

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Appendix C.2

Constituents and method detection limits (MDLs) for sediment samples analyzed for the PLOO monitoring program during 2010.

Parameter	MDL	Parameter	MDL
Organic Indicators			
Total Sulfides (ppm)	0.14	Total Volatile Solids (% weight)	0.11
Total Nitrogen (% weight)	0.005	Biochemical Oxygen Demand (ppm)	2
Total Organic Carbon (% weight)	0.01		
Metals (ppm)			
Aluminum (Al)	2	Lead (Pb)	0.8
Antimony (Sb)	0.3	Manganese (Mn)	0.08
Arsenic (As)	0.33	Mercury (Hg)	0.003
Barium (Ba)	0.02	Nickel (Ni)	0.1
Beryllium (Be)	0.01	Selenium (Se)	0.24
Cadmium (Cd)	0.06	Silver (Ag)	0.04
Chromium (Cr)	0.1	Thallium (Tl)	0.5
Copper (Cu)	0.2	Tin (Sn)	0.3
Iron (Fe)	9	Zinc (Zn)	0.25
Pesticides (ppt)			
Hexachlorocyclohexane (HCH)			
HCH, Alpha isomer	400	HCH, Delta isomer	400
HCH, Beta isomer	400	HCH, Gamma isomer	400
Total Chlordane			
Alpha (cis) Chlordane	700	Heptachlor epoxide	700
Cis Nonachlor	700	Methoxychlor	700
Gamma (trans) Chlordane	700	Oxychlordane	700
Heptachlor	700	Trans Nonachlor	700
Total Dichlorodiphenyltrichloroethane (DDT)			
o,p-DDD	400	p,p-DDE	400*
o,p-DDE	700	p,p-DDMU	**
o,p-DDT	700	p,p-DDT	700
p,p-DDD	700		
Miscellaneous Pesticides			
Aldrin	700	Endrin	700
Alpha Endosulfan	700	Endrin aldehyde	700
Beta Endosulfan	700	Hexachlorobenzene (HCB)	400
Dieldrin	700	Mirex	700
Endosulfan Sulfate	700		

* MDL for p,p-DDE = 700 for analysis of samples from E2 and E8 in July 2010

** No MDL available for this parameter

Appendix C.2 *continued*

Parameter	MDL	Parameter	MDL
Polychlorinated Biphenyl Congeners (PCBs) (ppt)			
PCB 18	700	PCB 126	1500
PCB 28	700	PCB 128	700
PCB 37	700	PCB 138	700
PCB 44	700	PCB 149	700
PCB 49	700	PCB 151	700
PCB 52	700	PCB 153/168	700
PCB 66	700	PCB 156	700
PCB 70	700	PCB 157	700
PCB 74	700	PCB 158	700
PCB 77	700	PCB 167	700
PCB 81	700	PCB 169	700
PCB 87	700	PCB 170	700
PCB 99	700	PCB 177	700
PCB 101	700	PCB 180	400
PCB 105	700	PCB 183	700
PCB 110	700	PCB 187	700
PCB 114	700	PCB 189	400
PCB 118	700	PCB 194	700
PCB 119	700	PCB 201	700
PCB 123	700	PCB 206	700
Polycyclic Aromatic Hydrocarbons (PAHs) (ppb)			
1-methylnaphthalene	20	Benzo[K]fluoranthene	20
1-methylphenanthrene	20	Benzo[e]pyrene	20
2,3,5-trimethylnaphthalene	20	Biphenyl	30
2,6-dimethylnaphthalene	20	Chrysene	40
2-methylnaphthalene	20	Dibenzo(A,H)anthracene	20
3,4-benzo(B)fluoranthene	20	Fluoranthene	20
Acenaphthene	20	Fluorene	20
Acenaphthylene	30	Indeno(1,2,3-CD)pyrene	20
Anthracene	20	Naphthalene	30
Benzo[A]anthracene	20	Perylene	30
Benzo[A]pyrene	20	Phenanthrene	30
Benzo[G,H,I]perylene	20	Pyrene	20

Appendix C.3

Summary of tDDT, tPCB, and tPAH constituents in sediment samples collected during the January and July surveys of the PLOO monitoring program during 2010.

Station	Class	Constituent	January	July	Units
B8	DDT	p,p-DDE	330	260	ppt
B9	DDT	o,p-DDT	nd	4900	ppt
B9	DDT	p,p-DDE	580	490	ppt
B9	DDT	p,p-DDT	nd	6900	ppt
B10	DDT	p,p-DDE	310	230	ppt
B11	DDT	p,p-DDE	220	nd	ppt
B12	DDT	p,p-DDE	250	<MDL	ppt
E1	DDT	p,p-DDE	760	470	ppt
E1	PAH	3,4-benzo(B)fluoranthene	54.5	21.2	ppb
E1	PAH	Benzo[A]anthracene	32.6	nd	ppb
E1	PAH	Benzo[A]pyrene	40.6	nd	ppb
E1	PAH	Benzo[e]pyrene	27.4	nd	ppb
E1	PAH	Benzo[G,H,I]perylene	27.8	nd	ppb
E1	PAH	Fluoranthene	39.3	nd	ppb
E1	PAH	Indeno(1,2,3-CD)pyrene	20.5	nd	ppb
E1	PAH	Pyrene	51.7	nd	ppb
E1	PCB	PCB 66	350	nd	ppt
E1	PCB	PCB 70	250	nd	ppt
E1	PCB	PCB 99	230	nd	ppt
E1	PCB	PCB 101	600	nd	ppt
E1	PCB	PCB 105	110	81	ppt
E1	PCB	PCB 110	500	300	ppt
E1	PCB	PCB 118	270	170	ppt
E1	PCB	PCB 128	120	nd	ppt
E1	PCB	PCB 138	450	270	ppt
E1	PCB	PCB 149	340	380	ppt
E1	PCB	PCB 151	110	nd	ppt
E1	PCB	PCB 153/168	230	140	ppt
E1	PCB	PCB 156	42	nd	ppt
E1	PCB	PCB 170	98	nd	ppt
E1	PCB	PCB 177	110	nd	ppt
E1	PCB	PCB 180	1200	450	ppt
E1	PCB	PCB 183	140	nd	ppt
E1	PCB	PCB 187	150	nd	ppt

nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

Appendix C.3 *continued*

Station	Class	Constituent	January	July	Units
E1	PCB	PCB 206	150	nd	ppt
E2	DDT	p,p-DDE	870	270	ppt
E2	DDT	p,p-DDT	1000	nd	ppt
E2	PAH	3,4-benzo(B)fluoranthene	35.5	nd	ppb
E2	PAH	Benzo[A]anthracene	23.3	nd	ppb
E2	PAH	Benzo[A]pyrene	24.6	nd	ppb
E2	PCB	PCB 105	140	nd	ppt
E2	PCB	PCB 110	340	nd	ppt
E2	PCB	PCB 118	250	nd	ppt
E2	PCB	PCB 149	440	nd	ppt
E2	PCB	PCB 153/168	210	nd	ppt
E2	PCB	PCB 187	99	nd	ppt
E3	DDT	p,p-DDE	210	240	ppt
E3	PAH	3,4-benzo(B)fluoranthene	33.4	nd	ppb
E3	PAH	Benzo[A]anthracene	24.5	nd	ppb
E3	PAH	Benzo[A]pyrene	23.2	20.4	ppb
E3	PCB	PCB 52	nd	<MDL	ppt
E3	PCB	PCB 66	nd	160	ppt
E3	PCB	PCB 70	nd	300	ppt
E3	PCB	PCB 87	nd	<MDL	ppt
E3	PCB	PCB 99	nd	<MDL	ppt
E3	PCB	PCB 101	nd	<MDL	ppt
E3	PCB	PCB 105	nd	<MDL	ppt
E3	PCB	PCB 110	140	290	ppt
E3	PCB	PCB 118	120	<MDL	ppt
E3	PCB	PCB 128	nd	<MDL	ppt
E3	PCB	PCB 138	150	220	ppt
E3	PCB	PCB 149	170	510	ppt
E3	PCB	PCB 153/168	99	150	ppt
E3	PCB	PCB 156	nd	<MDL	ppt
E3	PCB	PCB 158	nd	<MDL	ppt
E3	PCB	PCB 177	nd	<MDL	ppt
E3	PCB	PCB 180	nd	270	ppt
E3	PCB	PCB 187	59	nd	ppt
E5	DDT	p,p-DDE	350	230	ppt
E5	PCB	PCB 118	52	nd	ppt
E5	PCB	PCB 153/168	31	nd	ppt

nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

Appendix C.3 *continued*

Station	Class	Constituent	January	July	Units
E7	DDT	p,p-DDE	530	220	ppt
E7	PCB	PCB 153/168	53	nd	ppt
E8	DDT	p,p-DDE	nd	190	ppt
E8	PCB	PCB 138	nd	150	ppt
E8	PCB	PCB 153/168	<MDL	nd	ppt
E9	DDT	p,p-DDE	190	230	ppt
E9	PCB	PCB 110	97	nd	ppt
E9	PCB	PCB 118	98	nd	ppt
E9	PCB	PCB 138	110	nd	ppt
E9	PCB	PCB 149	86	nd	ppt
E9	PCB	PCB 153/168	52	nd	ppt
E9	PCB	PCB 180	360	nd	ppt
E11	DDT	p,p-DDE	290	210	ppt
E14	DDT	p,p-DDE	190	160	ppt
E15	DDT	p,p-DDE	310	210	ppt
E17	DDT	p,p-DDE	210	250	ppt
E17	PCB	PCB 105	nd	160	ppt
E17	PCB	PCB 110	nd	380	ppt
E17	PCB	PCB 118	nd	230	ppt
E17	PCB	PCB 138	nd	330	ppt
E17	PCB	PCB 149	83	330	ppt
E17	PCB	PCB 153/168	nd	150	ppt
E17	PCB	PCB 180	nd	450	ppt
E19	DDT	p,p-DDE	600	230	ppt
E20	DDT	p,p-DDE	240	280	ppt
E21	DDT	p,p-DDE	370	300	ppt
E21	PCB	PCB 138	160	nd	ppt
E21	PCB	PCB 149	180	nd	ppt
E21	PCB	PCB 151	190	nd	ppt
E21	PCB	PCB 153/168	170	nd	ppt
E21	PCB	PCB 177	320	nd	ppt
E21	PCB	PCB 180	2200	nd	ppt

nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

Appendix C.3 *continued*

Station	Class	Constituent	January	July	Units
E21	PCB	PCB 183	370	nd	ppt
E21	PCB	PCB 187	870	nd	ppt
E21	PCB	PCB 194	630	nd	ppt
E21	PCB	PCB 201	1100	nd	ppt
E21	PCB	PCB 206	880	nd	ppt
E23	DDT	p,p-DDE	420	250	ppt
E23	PCB	PCB 118	55	nd	ppt
E23	PCB	PCB 138	100	nd	ppt
E25	DDT	p,p-DDE	370	380	ppt
E26	DDT	p,p-DDE	450	280	ppt

nd = not detected

Appendix C.4

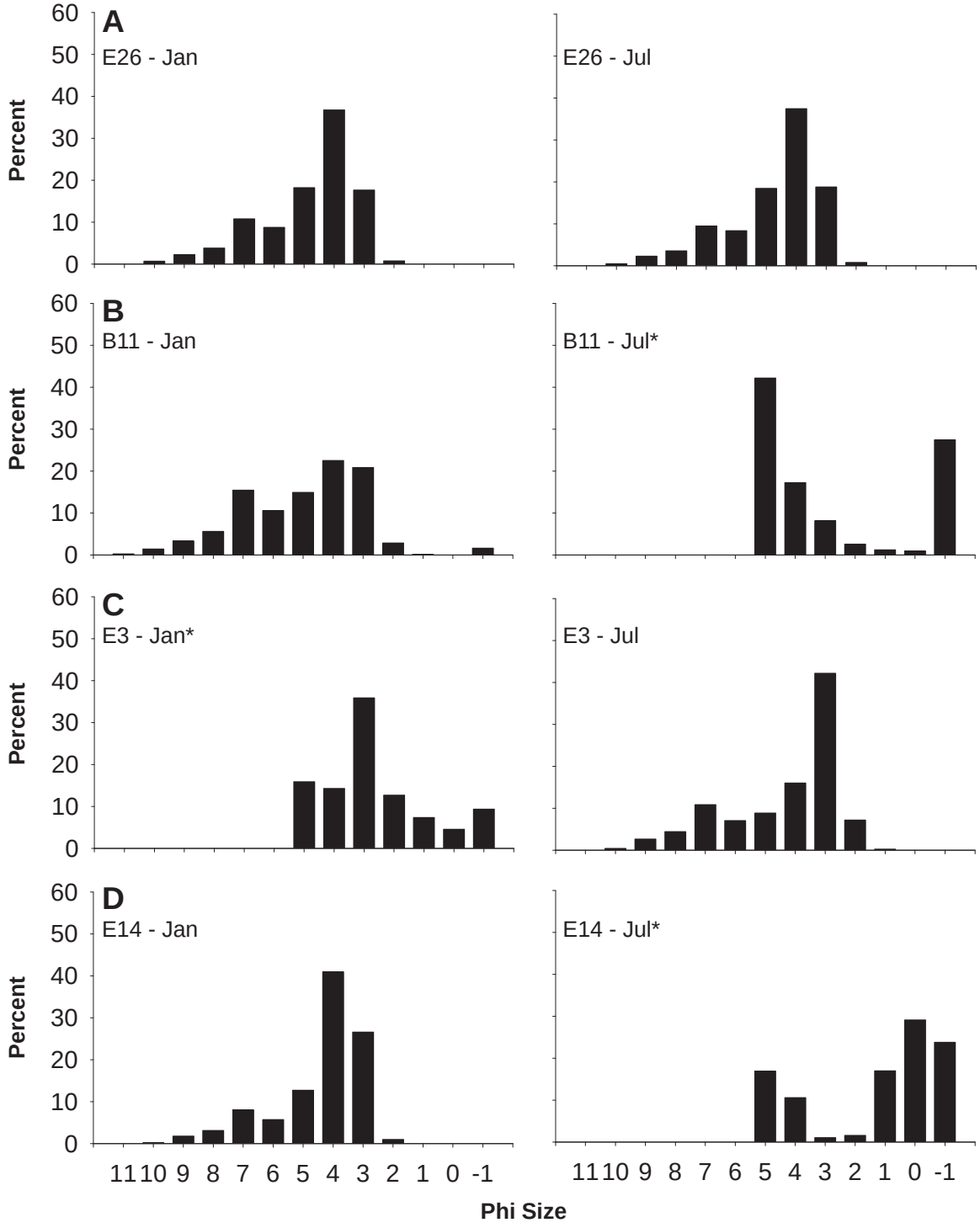
PLOO sediment statistics for the January 2010 survey. Silt and clay fractions are indiscernible for samples analyzed by sieve. Visual observations of sediments were made in the field at the time of collection as well as on the sieved "grunge" (i.e., particles retained on 1-mm mesh screen and preserved with infauna for benthic community analysis). * = nearfield stations; SD = standard deviation; Pre-discharge period = 1991–1993.

	Mean (mm)	Mean (phi)	SD (phi)	Median (phi)	Skewness (phi)	Kurtosis (phi)	Coarse (%)	Sand (%)	Silt (%)	Clay (%)	Fines (%)	Visual Observations
88-m Depth Contour												
B11	0.045	4.46	1.89	4.12	0.3	0.8	1.7	46.5	46.7	5.1	51.8	Silt, sand, coarse sand, pea gravel, shell hash
B8	0.042	4.58	1.54	4.20	0.4	1.0	0.0	42.9	53.4	3.8	57.1	Silt
E19	0.049	4.35	1.51	3.93	0.4	1.1	0.0	52.6	44.0	3.4	47.4	Silt with fine sand
E7	0.052	4.27	1.50	3.85	0.4	1.1	0.0	54.9	42.4	2.7	45.1	Silt, shell hash
E1	0.056	4.17	1.70	3.71	0.4	0.9	0.0	56.5	40.5	3.1	43.5	Silt, coarse sand, pea gravel, rock, shell hash
98-m Depth Contour												
B12	0.063	3.99	1.82	3.29	0.5	0.8	0.0	63.0	34.2	2.8	37.0	Sand, silt, coarse sand, pea gravel, shell hash
B9	0.052	4.28	1.65	3.73	0.5	1.0	0.0	57.4	39.0	3.6	42.6	Silt, pea gravel, mud balls
E26	0.050	4.31	1.55	3.83	0.4	1.0	0.0	55.2	41.7	3.0	44.8	Silt with some shell hash and organic material
E25	0.056	4.17	1.50	3.70	0.5	1.1	0.0	59.5	37.9	2.5	40.4	Silt with some pea gravel and shell hash
E23	0.054	4.21	1.50	3.76	0.4	1.1	0.0	58.1	38.9	3.0	41.9	Silt with shell hash and organic material
E20	0.064	3.97	1.38	3.58	0.5	1.3	0.0	64.3	33.5	2.2	35.7	Silt with fine sand, shell hash, organic material
E17*	0.066	3.93	1.40	3.57	0.4	1.2	0.0	67.4	30.4	2.2	32.6	Silt and fine sand
E14*	0.068	3.88	1.37	3.42	0.5	1.3	0.0	68.5	29.5	2.0	31.5	Gravel, silt, coarse black sand, shell hash
E11*	0.068	3.87	1.35	3.48	0.5	1.3	0.0	67.3	30.7	2.0	32.7	Silt, shell hash
E8	0.068	3.87	1.38	3.46	0.5	1.3	0.0	67.1	30.8	2.0	32.8	Silt
E5	0.064	3.97	1.45	3.58	0.4	1.2	0.0	65.8	31.8	2.3	34.1	Silt
E2	0.054	4.21	1.68	3.74	0.4	0.9	0.0	57.6	39.0	3.3	42.4	Silt, shell hash, coarse sand, pea gravel, rock
116-m Depth Contour												
B10	0.066	3.93	1.50	3.41	0.5	1.2	0.0	70.5	27.5	2.0	29.5	Silt with sand, some shell hash
E21	0.063	3.98	1.44	3.47	0.5	1.3	0.0	66.4	31.3	2.3	33.6	Silt with fine sand
E15*	0.068	3.88	1.40	3.38	0.6	1.4	0.0	69.1	28.6	2.3	30.9	Silt with some shell hash
E9	0.049	4.35	1.76	3.75	0.5	0.9	0.0	56.1	39.3	4.5	43.9	Sand, silt, lots of coarse black sand, shell hash
E3	0.210	2.25	1.73	2.44	-0.2	1.1	13.9	70.2	—	—	15.9	Silt, fine sand, shell hash, coarse sand, gravel
January Max	0.210	4.58	1.89	4.20	0.6	1.4	13.9	70.5	53.4	5.1	57.1	
Pre-discharge Max	0.125	5.80	3.00	5.60	1.9	8.1	26.4	79.0	62.0	13.9	74.2	

Appendix C.4 *continued*

PLOO sediment statistics for the July 2010 survey. Silt and clay fractions are indiscernible for samples analyzed by sieve. Visual observations of sediments were made in the field at the time of collection as well as on the sieved "grunge" (i.e., particles retained on 1-mm mesh screen and preserved with infauna for benthic community analysis). * = nearfield stations; SD = standard deviation. Pre-discharge period = 1991–1993.

	Mean (mm)	Mean (phi)	SD (phi)	Median (phi)	Skewness (phi)	Kurtosis (phi)	Coarse (%)	Sand (%)	Silt (%)	Clay (%)	Fines (%)	Visual Observations
88-m Depth Contour												
B11	0.184	2.44	2.41	3.59	-0.6	0.4	28.5	29.3	—	—	42.2	Silt, cobble, fine sand, gravel, shell hash
B8	0.040	4.65	1.53	4.34	0.3	0.9	0.0	41.7	54.6	3.7	58.3	Silt
E19	0.049	4.34	1.48	3.93	0.4	1.1	0.0	52.6	44.7	2.7	47.4	Silt with some shell hash and organic material
E7	0.055	4.18	1.47	3.79	0.4	1.1	0.0	58.7	39.0	2.3	41.3	Silt with fine sand
E1	0.059	4.09	1.64	3.65	0.4	1.0	1.1	58.7	37.5	2.7	40.2	Fine sand, shell hash, coarse red sand, gravel
98-m Depth Contour												
B12	0.068	3.87	1.76	3.13	0.6	1.0	0.0	67.5	29.9	2.6	32.5	Sand with silt, pea gravel, shell hash
B9	0.054	4.22	1.65	3.75	0.4	1.0	1.3	57.3	38.5	2.9	41.4	Silt, mud pea gravel
E26	0.053	4.25	1.51	3.83	0.4	1.1	0.0	57.1	40.0	2.9	42.9	Silt with some shell hash and organic material
E25	0.054	4.21	1.52	3.77	0.4	1.1	0.0	59.1	38.2	2.7	40.9	Silt with some shell hash and organic material
E23	0.056	4.17	1.48	3.72	0.5	1.1	0.0	59.4	38.1	2.5	40.6	Silt with some shell hash and organic material
E20	0.061	4.05	1.43	3.59	0.5	1.2	0.0	63.4	34.4	2.2	36.6	Silt with some shell hash and organic material
E17*	0.064	3.96	1.42	3.50	0.5	1.3	0.0	66.0	31.8	2.2	34.0	Silt, fine sand, shell hash, organic material
E14*	0.517	0.95	2.09	-0.09	0.6	0.5	52.9	30.2	—	—	16.8	Lots of gravel, coarse black sand, rocks, shell hash
E11*	0.070	3.84	1.34	3.50	0.4	1.3	0.0	69.6	28.5	1.8	30.3	Silt with fine sand, shell hash, organic material
E8	0.065	3.95	1.42	3.56	0.4	1.2	0.0	66.7	31.1	2.1	33.2	Silt with fine sand
E5	0.065	3.95	1.42	3.56	0.4	1.2	0.0	66.4	31.4	2.2	33.6	Silt with fine sand, some black sand, shell hash
E2	0.057	4.14	1.65	3.63	0.5	1.0	0.0	59.4	37.6	3.0	40.6	Fine sand, shell hash, coarse red sand, gravel
116-m Depth Contour												
B10	0.063	4.00	1.58	3.45	0.5	1.1	0.0	68.4	28.9	2.6	31.5	Silt, shell hash, rocks
E21	0.063	3.98	1.45	3.44	0.6	1.2	0.0	66.4	31.3	2.3	33.6	Silt, clay, shell hash, and organic material
E15*	0.066	3.93	1.43	3.43	0.5	1.3	0.0	67.5	30.2	2.2	32.5	Silt, fine sand, shell hash, coarse black sand, gravel
E9	0.054	4.21	1.65	3.72	0.4	1.1	0.9	59.1	36.6	3.3	39.9	Silt, coarse sand, shell hash, coarse black sand
E3	0.071	3.82	1.87	3.02	0.6	0.8	0.0	65.7	31.3	3.1	34.3	Fine sand, shell hash, coarse red sand, gravel
July Max	0.517	4.65	2.41	4.34	0.6	1.3	52.9	69.6	54.6	3.7	58.3	
Pre-discharge Max	0.125	5.80	3.00	5.60	1.9	8.1	26.4	79.0	62.0	13.9	74.2	



Appendix C.5

Select histograms illustrating particle size distributions of PLOO sediments in 2010. (A) Station E26 represents the general shape of the particle size distribution at most stations. Note the consistency in shape between January and July surveys; (B–D) Stations with inconsistently shaped particle size distributions between surveys. An asterisk indicates samples analyzed by sieve; therefore the bar at phi 5 represents all material finer than phi 4 (see text).

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Appendix C.6

Summary of organic loading indicators at PLOO benthic stations for the January and July 2010 surveys. * = nearfield stations; DR = detection rate.

	January					July					
	BOD (ppm)	Sulfides (ppm)	TN (% wt)	TOC (% wt)	TVS (% wt)		BOD (ppm)	Sulfides (ppm)	TN (% wt)	TOC (% wt)	TVS (% wt)
88-m Depth Contour						*88-m Depth Contour*					
B11	390	1.75	0.093	3.550	3.7	B11	402	3.33	0.098	1.370	4.3
B8	399	0.50	0.090	0.978	3.1	B8	355	1.34	0.085	0.752	3.0
E19	359	2.49	0.062	0.690	2.6	E19	438	4.56	0.074	0.642	2.6
E7	399	0.58	0.064	0.731	2.5	E7	409	3.11	0.069	0.580	2.3
E1	304	2.29	0.052	0.624	2.4	E1	311	7.65	0.054	0.460	2.1
98-m Depth Contour						*98-m Depth Contour*					
B12	474	2.04	0.058	4.810	3.1	B12	370	0.71	0.072	2.140	3.0
B9	313	0.42	0.062	1.030	2.7	B9	270	1.79	0.070	0.681	3.1
E26	275	0.90	0.062	0.711	2.6	E26	514	16.80	0.070	0.604	2.5
E25	261	0.93	0.056	0.807	2.1	E25	328	2.61	0.061	0.522	2.5
E23	288	0.50	0.057	0.645	2.3	E23	403	3.41	0.061	0.522	2.3
E20	247	4.70	0.046	0.522	2.0	E20	382	7.05	0.055	0.470	2.0
E17*	331	18.40	0.047	0.524	2.0	E17*	298	12.00	0.054	0.468	1.9
E14*	361	2.86	0.042	0.648	1.7	E14*	368	16.50	0.065	0.862	1.3
E11*	436	6.13	0.044	0.666	2.0	E11*	980	15.40	0.062	0.521	2.0
E8	256	0.45	0.040	0.642	1.8	E8	171	3.31	0.050	0.434	1.9
E5	225	1.16	0.051	0.813	2.2	E5	339	8.86	0.054	0.455	2.1
E2	354	2.03	0.053	0.774	2.6	E2	209	4.00	0.056	0.478	2.4
116-m Depth Contour						*116-m Depth Contour*					
B10	407	1.09	0.053	1.470	2.3	B10	349	8.64	0.052	1.320	2.8
E21	231	5.89	0.054	0.628	2.1	E21	525	5.12	0.057	0.489	2.3
E15*	268	1.20	0.044	0.678	2.2	E15*	298	2.83	0.057	0.495	2.3
E9	307	1.63	0.049	1.760	2.7	E9	240	4.70	0.050	0.655	2.3
E3	156	1.30	0.036	0.607	1.7	E3	245	6.70	0.042	0.360	1.9
DR (%)	100	100	100	100	100	DR (%)	100	100	100	100	100

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Appendix C.7

Concentrations of trace metals (ppm) for the January 2010 PLOO survey. * = nearfield stations; ERL = Effects Range Low threshold value; ERM = Effects Range Median threshold value. See Appendix C.2 for MDLs and names for each metal represented by periodic table symbol.

		Al	Sb	As	Ba	Be	Cd	Cr	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Tl	Sn	Zn
88-m Depth Contour																			
	B11	9750	1.20	4.59	40.00	nd	0.17	23.5	9.08	19,000	6.33	152.0	0.033	9.16	nd	nd	nd	1.8	44.9
	B8	15,200	< MDL	4.22	58.30	nd	0.28	24.5	11.90	16,500	8.00	135.0	0.038	10.20	nd	nd	nd	1.4	39.4
	E19	10,200	0.31	3.22	50.80	nd	0.15	19.4	10.40	13,400	7.18	112.0	0.035	9.42	nd	nd	nd	1.5	37.6
	E7	11,900	nd	3.27	51.30	nd	0.17	20.1	10.50	13,800	6.00	120.0	0.036	9.13	nd	nd	nd	1.2	34.5
	E1	9710	nd	2.23	48.20	nd	0.11	16.9	12.00	12,400	7.88	101.0	0.054	7.12	nd	nd	nd	1.0	32.9
98-m Depth Contour																			
	B12	7740	0.47	5.42	23.30	nd	0.17	24.4	4.25	22,100	4.22	59.8	0.015	6.08	nd	nd	nd	1.7	34.8
	B9	9260	nd	3.11	67.20	nd	0.15	21.9	7.39	15,800	5.61	98.9	0.026	7.80	nd	nd	nd	0.9	34.0
	E26	6120	nd	2.39	40.90	nd	nd	10.7	4.21	7290	1.85	72.4	0.028	3.93	nd	nd	nd	0.8	21.4
	E25	9280	nd	2.02	40.40	nd	0.13	17.4	8.19	11,700	4.93	97.0	0.026	8.28	nd	nd	nd	1.7	33.3
	E23	8540	nd	2.51	40.10	nd	0.12	16.6	9.39	11,300	4.77	91.2	0.025	7.94	nd	nd	nd	1.1	32.0
	E20	7840	nd	2.32	33.40	nd	0.12	14.9	8.20	10,100	3.83	80.9	0.021	7.21	nd	nd	nd	0.9	27.9
	E17*	3450	nd	2.13	15.30	nd	0.06	7.0	3.75	4840	1.89	37.6	0.023	3.30	nd	nd	nd	1.0	13.3
	E14*	7510	nd	3.16	28.60	nd	0.20	14.0	6.92	7510	3.29	76.0	0.015	6.36	nd	nd	nd	0.8	23.3
	E11*	7650	nd	2.28	30.80	nd	0.15	14.1	6.92	7650	3.76	77.7	0.019	6.29	nd	nd	nd	0.9	24.0
	E8	8400	nd	2.28	31.20	nd	0.14	14.3	6.52	9930	3.81	82.7	0.022	6.01	nd	nd	nd	0.8	24.1
	E5	9230	nd	2.71	37.60	nd	0.14	15.7	7.66	11,600	4.25	90.8	0.022	6.76	nd	nd	nd	0.8	27.3
	E2	11,500	nd	2.24	69.40	nd	0.12	18.8	12.30	15,100	6.04	117.0	0.041	7.75	nd	nd	nd	1.0	35.3
116-m Depth Contour																			
	B10	6700	< MDL	2.58	27.70	nd	0.14	18.5	5.79	13,200	4.17	67.8	0.019	6.36	nd	nd	nd	1.1	32.4
	E21	6750	nd	1.86	30.40	nd	0.12	14.4	8.93	9550	4.18	73.2	0.024	6.87	nd	nd	nd	1.0	27.0
	E15*	7220	nd	1.42	28.70	nd	0.13	15.3	7.96	9940	3.96	74.3	0.018	6.92	nd	nd	nd	1.5	27.8
	E9	9100	nd	0.78	32.30	nd	0.18	19.0	10.90	13,400	4.78	83.4	0.022	7.29	nd	nd	nd	0.9	35.8
	E3	8480	nd	2.02	51.90	nd	0.10	13.0	11.30	11,500	6.64	93.6	0.048	5.02	nd	nd	nd	0.7	30.2
Detection Rate (%)		100	14	100	100	0	95	100	100	100	100	100	100	100	0	0	0	100	100
	ERL	na	na	8.2	na	na	1.2	81	34	na	46.7	na	0.15	20.9	na	1	na	na	150
	ERM	na	na	70	na	na	9.6	370	270	na	218	na	0.71	51.6	na	3.7	na	na	410

na = not available; nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

Appendix C.7 *continued*

Concentrations of trace metals (ppm) for the July 2010 PLOO survey. *=nearfield stations; ERL=Effects Range Low threshold value; ERM=Effects Range Median threshold value. See Appendix C.2 for MDLs and names for each metal represented by periodic table symbol.

	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Tl	Sn	Zn
88-m Depth Contour																		
B11	9750	0.62	4.00	66.60	nd	0.06	32.8	16.30	21,800	13.30	112.0	0.041	10.60	0.590	nd	nd	1.2	45.3
B8	9990	0.72	3.41	68.20	0.25	nd	25.3	16.00	14,700	12.00	103.0	0.038	9.49	nd	nd	nd	1.1	36.2
E19	9200	0.44	3.60	54.10	0.19	0.19	18.4	10.30	12,600	5.74	110.0	0.037	9.28	nd	nd	nd	1.1	33.9
E7	6910	0.37	2.99	43.40	0.15	0.16	14.7	8.50	9970	4.94	86.7	0.022	7.31	<MDL	0.17	nd	1.0	28.8
E1	8540	0.47	3.02	46.60	0.17	0.15	15.8	9.65	11,300	5.90	93.2	0.026	7.10	<MDL	nd	nd	1.1	29.1
98-m Depth Contour																		
B12	5970	0.42	5.45	22.00	0.06	nd	32.9	5.37	21,200	8.45	53.4	0.018	6.23	0.370	0.57	nd	0.6	35.5
B9	9820	nd	4.42	56.50	0.33	0.18	26.2	8.58	20,900	6.12	107.0	0.026	8.85	nd	nd	nd	1.3	40.9
E26	6610	nd	2.49	37.00	0.16	0.10	15.1	7.78	10,700	4.08	79.7	0.028	7.40	0.770	nd	nd	0.7	27.9
E25	6460	0.33	2.50	35.30	0.16	0.12	15.0	7.75	10,700	4.29	78.4	0.028	6.94	nd	nd	nd	0.8	27.0
E23	5140	nd	2.72	34.20	0.14	0.11	13.3	7.28	9130	4.40	70.8	0.040	6.86	0.420	nd	nd	0.7	25.0
E20	4420	nd	2.87	28.00	0.12	0.09	11.6	6.05	7980	3.79	59.9	0.023	5.74	nd	nd	nd	0.6	21.7
E17*	6120	nd	2.88	31.10	0.13	0.17	13.5	6.68	8930	3.66	72.3	0.019	6.33	nd	nd	nd	0.9	24.1
E14*	7100	0.47	6.11	35.40	0.15	0.25	15.3	12.30	12,000	3.51	141.0	0.022	9.70	0.290	nd	nd	1.0	35.0
E11*	5780	0.36	2.30	30.40	0.13	0.19	12.8	6.77	8710	3.43	68.4	0.022	6.20	0.310	0.05	nd	0.9	24.3
E8	7130	0.37	2.28	37.10	0.16	0.18	15.0	11.10	10,200	4.36	82.4	0.028	6.99	<MDL	nd	nd	1.2	27.7
E5	6400	0.33	2.34	41.10	0.14	0.15	13.5	7.35	9400	4.09	75.2	0.017	6.25	<MDL	nd	nd	0.9	25.0
E2	9310	0.38	2.79	54.80	0.18	0.15	17.2	11.70	12,800	5.69	103.0	0.028	7.64	<MDL	nd	nd	1.1	33.8
116-m Depth Contour																		
B10	6920	nd	3.20	29.80	0.18	0.19	16.9	6.16	12,200	3.66	72.8	0.018	6.02	0.320	nd	nd	0.8	28.3
E21	5860	0.32	2.72	32.20	0.14	0.17	14.9	6.48	10,300	4.14	72.0	0.024	7.08	0.620	nd	nd	0.7	26.5
E15*	6000	nd	2.15	28.80	0.13	0.16	13.1	6.62	8490	3.58	67.9	0.024	5.97	nd	nd	nd	1.0	22.8
E9	6860	0.48	3.09	31.20	0.17	0.19	17.9	10.80	12,000	5.08	73.0	0.044	6.82	<MDL	nd	nd	1.0	36.6
E3	6270	0.39	2.58	50.20	0.13	0.13	13.1	12.20	10,400	7.42	91.2	0.025	5.22	<MDL	0.10	nd	0.9	31.8
Detection Rate (%)	100	68	100	100	95	91	100	100	100	100	100	100	100	36	18	0	100	100
ERL	na	na	8.2	na	na	1.2	81	34	na	46.7	na	0.15	20.9	na	1	na	na	150
ERM	na	na	70	na	na	9.6	370	270	na	218	na	0.71	51.6	na	3.7	na	na	410

na = not available; nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

Appendix C.8

Concentrations of HCH - Beta isomer (HCH), HCB, tDDT, tPCB, and tPAH detected at each PLOO benthic station during the January and July 2010 surveys. * = nearfield stations; DR = detection rate; ERL = Effects Range Low threshold value; ERM = Effects Range Median threshold value.

	January						July				
	HCH (ppt)	**HCB (ppt)**	**tDDT (ppt)**	**tPCB (ppt)**	**tPAH (ppb)**		**HCH (ppt)**	**HCB (ppt)**	**tDDT (ppt)**	**tPCB (ppt)**	**tPAH (ppb)**
88-m Depth Contour						*88-m Depth Contour*					
B11	nd	76	220	nd	nd	B11	980	nd	nd	nd	nd
B8	nd	nd	330	nd	nd	B8	nd	nd	260	nd	nd
E19	nd	nd	600	nd	nd	E19	nd	nd	230	nd	nd
E7	nd	nd	530	53	nd	E7	nd	nd	220	nd	nd
E1	nd	nd	760	5450	294.4	E1	nd	nd	470	1791	21.2
98-m Depth Contour						*98-m Depth Contour*					
B12	nd	160	250	nd	nd	B12	nd	nd	< MDL	nd	nd
B9	nd	nd	580	nd	nd	B9	nd	nd	12,290	nd	nd
E26	nd	nd	450	nd	nd	E26	nd	nd	280	nd	nd
E25	nd	nd	370	nd	nd	E25	nd	nd	380	nd	nd
E23	nd	nd	420	155	nd	E23	nd	nd	250	nd	nd
E20	nd	nd	240	nd	nd	E20	nd	nd	280	nd	nd
E17*	nd	200	210	83	nd	E17*	nd	nd	250	2030	nd
E14*	nd	nd	190	nd	nd	E14*	nd	nd	160	nd	nd
E11*	nd	nd	290	nd	nd	E11*	nd	nd	210	nd	nd
E8	nd	nd	nd	< MDL	nd	E8	nd	nd	190	150	nd
E5	nd	220	350	83	nd	E5	nd	nd	230	nd	nd
E2	nd	140	1870	1479	83.4	E2	nd	nd	270	nd	nd
116-m Depth Contour						*116-m Depth Contour*					
B10	nd	nd	310	nd	nd	B10	nd	nd	230	nd	nd
E21	nd	nd	370	7070	nd	E21	nd	nd	300	nd	nd
E15*	nd	nd	310	nd	nd	E15*	nd	nd	210	nd	nd
E9	nd	nd	190	803	nd	E9	nd	nd	230	nd	nd
E3	nd	160	210	738	81.1	E3	nd	nd	240	1900	20.4
DR (%)	0	27	95	41	14	DR (%)	5	0	91	18	9
ERL	na	na	1580	na	4022	ERL	na	na	1580	na	4022
ERM	na	na	46,100	na	44,792	ERM	na	na	46,100	na	44,792

na = not available; nd = not detected; <MDL=Average of lab duplicates below MDL (see City of San Diego 2011)

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