— CITY OF PORTLAND —
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ▪ Sam Adams, Commissioner ▪ Dean Marriott, Director

May 24, 2006

Mr. Tom Roick
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

Re: Supplement to the City of Portland's *Phase I Report for City of Portland Priority 1 Basins*

Dear Tom:

The City of Portland (City) is submitting the attached tables as a supplement to the City's *Phase I Report for City of Portland Priority 1 Basins*, dated May 2006. The attached tables summarize a screen of the City in-water sediment data against the December 2005 Joint Source Control Strategy document (JSCS) screening level values (SLVs).

The City originally compiled and screened the in-water sediment data in 2004 to identify potential contaminants of interest (PCOI) within upland City basins. This initial screening was conducted prior to availability of the Oregon Department of Environmental Quality (DEQ)/Environmental Protection Agency (EPA) JSCS SLVs. The attached tables are provided to provide a screening of the sediment data relative to the more recent JSCS SLVs.

A comparison of the City sediment dataset to the December 2005 JSCS SLVs (presented in the attached tables) identified the same PCOIs as identified in the report (Section 3), based on the 2004 screening. The only exception is the specific polynuclear aromatic hydrocarbon (PAH) contaminant, chrysene, should be added as a PCOI for Basin 19. This does not change the report conclusion because the report currently suggests that all PAH compounds should be carried forward in Basin 19 as PCOIs.

The City's cross-check of the report's conclusions based on the screening relative to JSCS SLVs confirms that the PCOI lists and recommended actions remain the same. This letter and tables should be filed with the City's *Phase I Report for City of Portland Priority 1 Basins* report.

Sincerely,

Dawn Sanders
City of Portland Project Manager
Superfund Program
Bureau of Environmental Services

c: Bruce Brody-Heine, Groundwater Solutions, Inc.

Attachments (Tables)

TABLE

Outfall Sediment Analytical Data Adjacent to City Outfall M3
2002 City Source Control Sediment Investigation

DRAFT

	Location (ft from OF along shore)	Adjacent to Private Outfall WR-16		At Outfall		Adjacent to Outfall in Lagoon								
	(ft offshore)	240' north of beach sample		160' northwest 115' offshore		10' offshore		63' offshore		25' southwest 145' offshore				
	Sample ID	SI01M3010		SI01M3050		SI01M3020		SI01M3030		SI01M3040				
	Sample Date	10/14/2002		10/15/2002		10/14/2002		10/14/2002		10/15/2002				
Analyte	**Units[a]**	Normal		Normal		Normal		Normal		Normal		**JSCS Catch Basin Toxicity SLVs[b]**	**JSCS Catch Basin Bioacc SLVs[b]**	**DEQ Inriver Baseline[c]**
Total Organic Carbon	mg/kg	189000		9540		767		27000		40200		--	--	20000
Total Metals														
Aluminum	mg/kg	10800		10400		9210		12000		9930		--	--	42800
Antimony	mg/kg	4.92		0.782		0.613		1.49		0.908		64	10	5
Arsenic	mg/kg	7.57		3.87	B2	2.21		4.04		5.78	B2	33	--	5
Cadmium	mg/kg	46.2		**0.195**	J	0.00172	U	**0.0883**	J	**0.167**	J	4.98	0.003	0.6
Chromium	mg/kg	99.6		52.1		16.5		22.1		25.2		111	4200	41
Copper	mg/kg	244		**44.6**	B2	**21.2**		**72**		**43.3**	B2	149	10	60
Lead	mg/kg	936		29	B2	14.6		31.9		31	B2	128	128	30
Mercury	mg/kg	0.769		0.0162	J	0.0225	J	0.0398		0.0112	U	1.06	--	0.1
Nickel	mg/kg	61.9		23.6		19.1		17.8		18.9		48.6	316	32
Selenium	mg/kg	*0.112*	*U*	0.0978	U	0.0933	U	0.0988	U	*0.101*	*U*	5	0.1	15
Silver	mg/kg	0.799		0.207	B2	0.107		0.216		0.274	B2	5	--	1.4
Zinc	mg/kg	2850		**176**	B2	**80.1**		**236**		**179**	B2	459	3	118
PAHs														
2-Methylnaphthalene	ug/kg	309	J	19.6	J	2.86	J	19	U	27.9	J	200	--	150
Acenaphthene	ug/kg	215	UJ	23.2	J	14.2		19	U	147		300	--	180
Acenaphthylene	ug/kg	503	J	34.5	J	2.82	J	28.5	J	123		200	--	60
Anthracene	ug/kg	215	UJ	60.5		3.41	J	43		1360		845	--	150
Benzo (a) anthracene	ug/kg	215	UJ	111		13.8		89		5570	D10	1050	--	360
Benzo (a) pyrene	ug/kg	215	UJ	101		13.1		85.7		2600		1450	--	500
Benzo [g,h,i] perylene	ug/kg	3450	J	204		24.2		168		4470		300	--	250
Benzofluoranthenes	ug/kg	215	UJ	124		8.71		19	U	854		--	--	--
Chrysene	ug/kg	215	UJ	174		16.5		86.6		11100	D10	1290	--	425
Dibenzo (a,h) anthracene	ug/kg	215	UJ	17.8	U	1.79	U	19	U	667		1300	--	125
Fluoranthene	ug/kg	1750	J	319		27.1		222		37400	D10	2230	--	600
Fluorene	ug/kg	215	UJ	30.7	J	7.99		22	J	367		536	--	125
Indeno (1,2,3-cd) pyrene	ug/kg	*215*	*UJ*	75.6		9.72		19	U	739		100	--	225
Naphthalene	ug/kg	222	J	29.7	J	2.13	J	19	U	31	J	561	--	200
Phenanthrene	ug/kg	215	UJ	158		17.2		107		11300	D10	1170	--	700
Pyrene	ug/kg	2310	J	411		28.3		226		29600	D10	1520	--	700
Estimated Total LPAHs[1,2]	ug/kg	1034		356.2		50.61		200.5		13355.9		--	--	--
Estimated Total HPAHs[1,3]	ug/kg	7510		1519.6		141.43		877.3		93000		--	--	--
Estimated Total PAHs[1,4]	ug/kg	8544		1875.8		192.04		1077.8		106355.9		--	--	--
Phthalates														
Bis(2-Ethylhexyl) Phthalate	ug/kg	33200	J	4210		71.4		1940		3030		800	330	390
Butyl Benzyl Phthalate	ug/kg	2150	UJ	215	J	20.4	J	190	U	250	J	--	--	20
Diethyl Phthalate	ug/kg	3790	J	178	U	17.9	U	190	U	359	J	600	--	--
Dimethyl Phthalate	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	20
Di-n-Butyl Phthalate	ug/kg	*2150*	*UJ*	*178*	*U*	*17.9*	*U*	*190*	*U*	*190*	*U*	100	--	20
Di-n-Octyl Phthalate	ug/kg	12000	J	178	U	17.9	U	190	U	574		--	--	20
Other Semivolatile Organics														
1,2,4-Trichlorobenzene	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	9200	--	--
1,2-Dichlorobenzene	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	1700	--	--
1,3-Dichlorobenzene	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	300	--	--
1,4-Dichlorobenzene	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	300	--	--
2,3,4,6-Tetrachlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,3,5,6-Tetrachlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,4,5-Trichlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,4,6-Trichlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,4-Dichlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,4-Dimethylphenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,4-Dinitrophenol	ug/kg	10800	UJ	892	U	89.4	U	949	U	949	U	--	--	--
2,4-Dinitrotoluene	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2,6-Dinitrotoluene	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2-Chloronaphthalene	ug/kg	215	UJ	17.8	U	1.79	U	19	U	19	U	--	--	--
2-Chlorophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2-Methylphenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2-Nitroaniline	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
2-Nitrophenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
3,3'-Dichlorobenzidine	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
3-Nitroaniline	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4,6-Dinitro-2-Methylphenol	ug/kg	10800	UJ	892	U	89.4	U	949	U	949	U	--	--	--
4-Bromophenyl Phenyl Ether	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4-Chloro-3-Methylphenol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4-Chloroaniline	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4-Chlorophenyl Phenyl Ether	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4-Methylphenol	ug/kg	4310	UJ	357	U	35.8	U	380	U	380	U	--	--	680
4-Nitroaniline	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
4-Nitrophenol	ug/kg	10800	UJ	892	U	89.4	U	949	U	949	U	--	--	--
Aniline	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Benzoic Acid	ug/kg	10800	UJ	892	U	89.4	U	949	U	949	U	--	--	200
Benzyl Alcohol	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	20
Bis(2-Chloroethoxy) Methane	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Bis(2-Chloroethyl) Ether	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Bis(2-Chloroisopropyl) Ether	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Carbazole	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	1600	--	100
Dibenzofuran	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	100
Hexachlorobenzene	ug/kg	*2150*	*UJ*	*178*	*U*	17.9	U	*190*	*U*	*190*	*U*	100	--	--
Hexachlorobutadiene	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	600	--	--
Hexachlorocyclopentadiene	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	400	--	--
Hexachloroethane	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Isophorone	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
n-Nitrosodi-n-Propylamine	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
n-Nitrosodimethylamine	ug/kg	10800	UJ	892	U	89.4	U	949	U	949	U	--	--	--
n-Nitrosodiphenylamine	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Nitrobenzene	ug/kg	2150	UJ	178	U	17.9	U	190	U	190	U	--	--	--
Pentachlorophenol	ug/kg	*2150*	*UJ*	178	U	17.9	U	190	U	190	U	1000	--	97
Phenol	ug/kg	*2150*	*UJ*	*178*	*U*	17.9	U	*190*	*U*	*190*	*U*	50	--	20
Chlorinated Herbicides														
2,4,5-T	ug/kg	NA		NA		4.11	U	NA		NA		--	--	--
2,4,5-TP	ug/kg	NA		NA		3.36	U	NA		NA		--	--	--
2,4-D	ug/kg	NA		NA		3.49	U	NA		NA		--	--	3.3
2,4-Db	ug/kg	NA		NA		2.52	U	NA		NA		--	--	5
4-Nitrophenol	ug/kg	NA		NA		2	U	NA		NA		--	--	--
Dalapon	ug/kg	NA		NA		2.02	U	NA		NA		--	--	--
Dicamba	ug/kg	NA		NA		2.06	U	NA		NA		--	--	--
Dichloroprop	ug/kg	NA		NA		3.32	U	NA		NA		--	--	--
Mcpa	ug/kg	NA		NA		3.94	U	NA		NA		--	--	--
Mcpp	ug/kg	NA		NA		1.76	U	NA		NA		--	--	--
Pentachlorophenol	ug/kg	NA		NA		2.57	U	NA		NA		1000	--	97

TABLE

DRAFT

Outfall Sediment Analytical Data Adjacent to City Outfall M3
2002 City Source Control Sediment Investigation

Analyte	Units[a]	Location (ft from OF along shore) / (ft offshore) / Sample ID / Sample Date	Adjacent to Private Outfall WR-16: 240' north of beach sample / SI01M3010 / 10/14/2002 / Normal		At Outfall: 160' northwest 115' offshore / SI01M3050 / 10/15/2002 / Normal		Adjacent to Outfall in Lagoon: 10' offshore / SI01M3020 / 10/14/2002 / Normal		63' offshore / SI01M3030 / 10/14/2002 / Normal		25' southwest 145' offshore / SI01M3040 / 10/15/2002 / Normal		JSCS Catch Basin Toxicity SLVs[b]	JSCS Catch Basin Bioacc SLVs[b]	DEQ Inriver Baseline[c]
PCBs as Congeners															
PCB-008	ug/kg		0.45	U	0.35	U	0.31	U	0.34	U	0.76	JP	--	--	--
PCB-018	ug/kg		2.85	P	0.35	U	0.3	U	0.33	U	0.37	U	--	--	--
PCB-028	ug/kg		1.38	P	0.22	U	0.19	U	0.48		0.46	P	--	--	--
PCB-044	ug/kg		4.11		0.2	U	0.17	U	0.59	P	0.21	U	--	--	--
PCB-052	ug/kg		0.4	U	4.79	P	0.27	U	3.99	P	4.71	P	--	--	--
PCB-066	ug/kg		5.98		1.2	P	0.16	U	0.86	P	1.25	P	--	--	--
PCB-101	ug/kg		6.16	P	1.6		0.22	U	1.3		1.3		--	--	--
PCB-105	ug/kg		0.2	U	1.75	P	0.13	U	0.15	U	0.16	U	--	--	--
PCB-118	ug/kg		0.24	U	1.17	P	0.16	U	1.05		0.75	JP	--	--	--
PCB-128	ug/kg		0.21	U	0.99	P	0.14	U	0.38	J	0.76	JP	--	--	--
PCB-138	ug/kg		5.4	P	3.78		0.15	U	2.76		2.55		--	--	--
PCB-153	ug/kg		0.28	U	0.22	U	0.19	U	2.18	P	2.06	P	--	--	--
PCB-170	ug/kg		0.23	U	1.75	P	0.15	U	1.09	P	0.19	U	--	--	--
PCB-180	ug/kg		0.2	U	3.43		0.13	U	2.85		1.72		--	--	--
PCB-187	ug/kg		0.24	U	1.44		0.16	U	1.36		1.67		--	--	--
Estimated Total PCBs[1,5]	ug/kg		52.6		44.8		--		38.9		37.2		676	--	180
Pesticides															
2,4'-DDD	ug/kg		61.8	UJ	2.7	U	2.53	U	25.9	UJ	3.82	J C1	--	--	--
2,4'-DDE	ug/kg		61.8	UJ	2.7	U	2.53	U	25.9	UJ	2.94	U	--	--	--
2,4'-DDT	ug/kg		61.8	UJ	2.7	U	2.53	U	25.9	UJ	2.94	U	--	--	--
4,4'-DDD	ug/kg		40.6	J C2	*0.524*	*U*	*0.492*	*U*	*5.04*	*UJ*	**1.85**	J C2	28	0.3	--
4,4'-DDE	ug/kg		*14.2*	*UJ*	*0.62*	*U*	*0.583*	*U*	*5.97*	*UJ*	*0.676*	*U*	31.3	0.3	--
4,4'-DDT	ug/kg		**48**	J C2	*0.698*	*U*	*0.656*	*U*	*6.72*	*UJ*	*0.761*	*U*	62.9	0.3	--
Estimated Total DDTs[1,6]	ug/kg		**88.6**		--		--		--		**1.85**		--	0.3	220
4,4'-Methoxychlor	ug/kg		85	UJ	3.71	U	3.49	U	35.7	UJ	4.04	U	--	--	--
Aldrin	ug/kg		26.6	UJ	1.16	U	1.09	U	11.2	UJ	1.27	U	40	--	--
Alpha-BHC	ug/kg		19.2	UJ	0.837	U	0.786	U	8.06	UJ	0.913	U	--	--	--
beta-BHC	ug/kg		26.1	UJ	1.14	U	1.07	U	11	UJ	1.24	U	--	--	--
Beta-Chlordane	ug/kg		*25.1*	*UJ*	1.09	U	1.03	U	10.5	UJ	1.19	U	17.6	--	--
Chlordane	ug/kg		*86.9*	*UJ*	3.8	U	3.56	U	*36.5*	*UJ*	4.14	U	17.6	--	--
cis-Chlordane	ug/kg		*24.5*	*UJ*	1.07	U	1.01	U	10.3	UJ	1.17	U	17.6	--	--
cis-Nonachlor	ug/kg		61.8	UJ	2.7	U	2.53	U	25.9	UJ	2.94	U	--	--	--
delta-BHC	ug/kg		23.7	UJ	1.03	U	0.971	U	9.96	UJ	1.13	U	--	--	--
Dieldrin	ug/kg		20.3	UJ	0.884	U	0.83	U	8.51	UJ	0.963	U	61.8	--	--
Endosulfan I	ug/kg		26.3	UJ	1.15	U	1.08	U	11	UJ	1.25	U	--	--	--
Endosulfan II	ug/kg		23.9	UJ	1.04	U	0.978	U	10	UJ	1.14	U	--	--	--
Endosulfan Sulfate	ug/kg		22.5	UJ	0.981	U	0.921	U	9.44	UJ	6.91	C1	--	--	--
Endrin	ug/kg		22.3	UJ	0.973	U	0.913	U	9.36	UJ	1.06	U	207	--	--
Endrin Aldehyde	ug/kg		25.2	UJ	1.1	U	1.03	U	10.6	UJ	1.2	U	--	--	--
Endrin Ketone	ug/kg		17.4	UJ	0.757	U	0.711	U	7.29	UJ	0.825	U	--	--	--
Heptachlor	ug/kg		*21.3*	*UJ*	0.928	U	0.871	U	8.93	UJ	1.01	U	10	--	--
Heptachlor Epoxide	ug/kg		*22.6*	*UJ*	0.985	U	0.925	U	9.48	UJ	2.63	J C1	16	--	--
Hexachlorobenzene	ug/kg		30.9	UJ	1.35	U	1.27	U	13	UJ	1.47	U	--	--	--
Hexachlorobutadiene	ug/kg		30.9	UJ	1.35	U	1.27	U	13	UJ	1.47	U	--	--	--
Hexachloroethane	ug/kg		30.9	UJ	1.35	U	1.27	U	13	UJ	1.47	U	--	--	--
Lindane	ug/kg		*23.6*	*UJ*	1.03	U	0.967	U	9.91	UJ	1.12	U	4.99	--	--
Oxychlordane	ug/kg		61.8	UJ	2.7	U	2.53	U	25.9	UJ	2.94	U	--	--	--
Toxaphene	ug/kg		387	UJ	16.9	U	15.9	U	163	UJ	18.4	U	--	--	--
Trans-Nonachlor	ug/kg		100	J C2	2.7	U	2.53	U	25.9	UJ	4.14	J C2	--	--	--
TPH															
Diesel	mg/kg		2310		106	J	10.4		83.2		82	J	--	--	--
Lube Oil - NWTPH	mg/kg		9420		261		17.8		274		263		--	--	--

Notes:

[a] All results reported on a dry-weight basis.

[b] Portland Harbor Joint Source Control Strategy (DEQ/EPA Final, December 2005) levels are presented for comparison to sediment sample results.

[c] DEQ baseline values are used here for comparison purposes only.

italic The method reporting limit exceeds JSCS Screening Levels.

bold The detected concentration exceeds JSCS Bioaccumulation Screening Level.

shaded The reported value exceeds JSCS Toxicity Screening Level.

[1] Total parameters (i.e., LPAHs, HPAHs, PAHs, PCBs, and DDTs) were calculated based on detections only. Qualifiers are not included on total parameters as it is implied that these are estimated quantities.

[2] Total LPAHs: low molecular weight polycyclic aromatic hydrocarbons includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and 2-methylnaphthalene.

[3] Total HPAHs: High molecular weight polycyclic aromatic hydrocarbons includes fluoranthene, pyrene, benz[a]anthracene, chrysene, benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[ghi]perylene.

[4] Total PAHs: Represents the sum of Total LPAHs and HPAHs.

[5] Total PCBs: The list of PCB congeners is based on EPA recommendations provided in *QA/QC Guidance for Sampling and Analysis of Sediment, Water, and Tissues for Dredged* Material Evaluations, EPA 823-B-95-001 (April 1995).

This list can be used to estimate total PCBs in accordance with the NOAA method provided in NOAA Technical Memorandum NOA OMA 49 (August 1989). Calculations follow the Battelle method: Total PCB = 1.95 (Σ congeners listed) + 2.1.

[6] Total DDTs: Sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Qualifiers:

B1 This analyte was detected in the associated method blank. The concentration was determined not to be significantly higher than the associated method blank (less than 10 times the concentration reported in the blank).

B2 This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than 10 times the concentration reported in the blank).

C1 Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2 Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

D5 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

D10 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

J The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

U The analyte was not detected above the reported method detection limit.

UJ The analyte was not detected above the reported method detection limit. However, the reported method detection limit is approximate and may or may not represent the actual method detection limit necessary to accurately and precisely measure the analyte in the sample.

P The difference between the analyte detected in the front and back column is greater than 40%.

Abbreviations/Definitions:

-- Not available or applicable

ug/kg micrograms per kilogram

mg/kg milligrams per kilogram

NA Not analyzed

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl

TPH total petroleum hydrocarbon

TABLE

Outfall Sediment Analytical Data Adjacent to City Outfalls 19 and 19A
2002 City Source Control Sediment Investigation

DRAFT

			Outfall 19A						Outfall 19								
			At Outfall		Offshore from Outfall		Downstream		At Outfall		Downstream		Upstream				
Location (ft from OF along shore)			Next to OF		35' offshore		75' down 150' offshore		Next to OF		95' down 125' offshore		110' up 75' offshore				
(ft offshore)																	
Sample ID			SI0119A010		SI0119A020		SI0119A030		SI0119010		SI0119020		SI0119030				
Sample Date			10/18/2002		10/18/2002		10/18/2002		10/18/2002		10/18/2002		10/18/2002				
	Analyte	**Units[a]**	Normal		Normal		Normal		Normal		Normal		Normal		**JSCS Catch Basin Toxicity SLVs[b]**	**JSCS Catch Basin Bioacc SLVs[b]**	**DEQ Inriver Baseline[c]**
	Total Organic Carbon	mg/kg	29900		24300		23300		16600		36900		13000		--	--	20000
Total Metals																	
	Aluminum	mg/kg	15400		13600		13500		21500		16300		12000		--	--	42800
	Antimony	mg/kg	**13**		0.571	J	0.683	J	1.32		4.33		0.525	J	64	10	5
	Arsenic	mg/kg	23.3		3.51		3.67		3.88		5.65		2.67		33	--	5
	Cadmium	mg/kg	**2.82**		**0.0608**	J	**0.331**		**0.395**		**1.35**		0.00228	U	4.98	0.003	0.6
	Chromium	mg/kg	774		27.6		28.1		31.4		44.2		19.9		111	4200	41
	Copper	mg/kg	772	B2	**48.3**	B2	**61.5**	B2	**102**	B2	266	B2	**62.3**	B2	149	10	60
	Lead	mg/kg	350	B2	31.7	B2	33.7	B2	88.5	B2	187	B2	24.7	B2	128	128	30
	Mercury	mg/kg	0.302		0.157		0.149		0.796		0.417		0.105		1.06	--	0.1
	Nickel	mg/kg	153	B2	21.1	B2	21.1	B2	23.2	B2	45	B2	15.3	B2	48.6	316	32
	Selenium	mg/kg	*0.534*	*U*	*0.131*	*U*	*0.138*	*U*	*0.119*	*U*	*0.139*	*U*	*0.124*	*U*	5	0.1	15
	Silver	mg/kg	3.73		0.386	B2	0.449	B2	0.445	B2	0.695	B2	0.936	B2	5	--	1.4
	Zinc	mg/kg	1320	B2	**134**	B2	**138**	B2	**213**	B2	**397**	B2	**96.8**	B2	459	3	118
PAHs																	
	2-Methylnaphthalene	ug/kg	182	J	75		76.5		60.3	J	314	J	44.2		200	--	150
	Acenaphthene	ug/kg	251	J	58		60.3		72	J	508	J	40.1	J	300	--	180
	Acenaphthylene	ug/kg	197	J	73		31	J	34.6	J	22.3	UJ	30.4	J	200	--	60
	Anthracene	ug/kg	357	J	99.7		77.3		97.2	J	892	J	105		845	--	150
	Benzo (a) anthracene	ug/kg	850	J	271		117		147	J	1210	J	108		1050	--	360
	Benzo (a) pyrene	ug/kg	735	J	257		99.3		108	J	905	J	77.7		1450	--	500
	Benzo [g,h,i] perylene	ug/kg	554	J	182		76.4		86	J	666	J	104		300	--	250
	Benzofluoranthenes	ug/kg	1140	J	417		186		233	J	1450	J	100		--	--	--
	Chrysene	ug/kg	870	J	274		150		225	J	1290	J	93.4		1290	--	425
	Dibenzo (a,h) anthracene	ug/kg	166	J	52.1		21.4	U	18.2	UJ	221	J	21.7	U	1300	--	125
	Fluoranthene	ug/kg	1340	J	523		304		419	J	2980	J	245		2230	--	600
	Fluorene	ug/kg	215	J	76.1		52.8		79.1	J	766	J	40.7	J	536	--	125
	Indeno (1,2,3-cd) pyrene	ug/kg	466	J	178		67.2		70.8	J	620	J	67.1		100	--	225
	Naphthalene	ug/kg	269	J	113		146		78.6	J	220	J	108		561	--	200
	Phenanthrene	ug/kg	1060	J	304		265		386	J	2170	J	218		1170	--	700
	Pyrene	ug/kg	1680	J	591		340		413	J	2870	J	261		1520	--	700
	Estimated Total LPAHs[1,2]	ug/kg	2531		799		709		808		4870		586		--	--	--
	Estimated Total HPAHs[1,3]	ug/kg	7801		2745		1340		1702		12212		1056		--	--	--
	Estimated Total PAHs[1,4]	ug/kg	10332		3544		2049		2510		17082		1643		--	--	--
Phthalates																	
	Bis(2-Ethylhexyl) Phthalate	ug/kg	4420	J	**479**		**483**		3050	J	3240	J	290	J	800	330	390
	Butyl Benzyl Phthalate	ug/kg	231	J	231	U	214	U	182	UJ	223	UJ	217	U	--	--	20
	Diethyl Phthalate	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	600	--	--
	Dimethyl Phthalate	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	20
	Di-n-Butyl Phthalate	ug/kg	*202*	*UJ*	*231*	*U*	*214*	*U*	*182*	*UJ*	*223*	*UJ*	*217*	*U*	100	--	20
	Di-n-Octyl Phthalate	ug/kg	612	J	231	U	214	U	182	UJ	437	J	217	U	--	--	20
Other Semivolatile Organics																	
	1,2,4-Trichlorobenzene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	9200	--	--
	1,2-Dichlorobenzene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	1700	--	--
	1,3-Dichlorobenzene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	300	--	--
	1,4-Dichlorobenzene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	300	--	--
	2,3,4,6-Tetrachlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,3,5,6-Tetrachlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,4,5-Trichlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,4,6-Trichlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,4-Dichlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,4-Dimethylphenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,4-Dinitrophenol	ug/kg	1010	UJ	1150	U	1070	U	910	UJ	1110	UJ	1080	U	--	--	--
	2,4-Dinitrotoluene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2,6-Dinitrotoluene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2-Chloronaphthalene	ug/kg	20.2	UJ	23.1	U	21.4	U	18.2	UJ	22.3	UJ	21.7	U	--	--	--
	2-Chlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2-Methylphenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2-Nitroaniline	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	2-Nitrophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	3,3'-Dichlorobenzidine	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	3-Nitroaniline	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4,6-Dinitro-2-Methylphenol	ug/kg	1010	UJ	1150	U	1070	U	910	UJ	1110	UJ	1080	U	--	--	--
	4-Bromophenyl Phenyl Ether	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4-Chloro-3-Methylphenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4-Chloroaniline	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4-Chlorophenyl Phenyl Ether	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4-Methylphenol	ug/kg	404	UJ	462	U	427	U	364	UJ	563	J	434	U	--	--	680
	4-Nitroaniline	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	4-Nitrophenol	ug/kg	1010	UJ	1150	U	1070	U	910	UJ	1110	UJ	1080	U	--	--	--
	Aniline	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Benzoic Acid	ug/kg	1010	UJ	1150	U	1070	U	910	UJ	1110	UJ	1080	U	--	--	200
	Benzyl Alcohol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	20
	Bis(2-Chloroethoxy) Methane	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Bis(2-Chloroethyl) Ether	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Bis(2-Chloroisopropyl) Ether	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Carbazole	ug/kg	202	UJ	231	U	214	U	182	UJ	350	J	217	U	1600	--	100
	Dibenzofuran	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	100
	Hexachlorobenzene	ug/kg	*202*	*UJ*	*231*	*U*	*214*	*U*	*182*	*UJ*	*223*	*UJ*	*217*	*U*	100	--	--
	Hexachlorobutadiene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	600	--	--
	Hexachlorocyclopentadiene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	400	--	--
	Hexachloroethane	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Isophorone	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	n-Nitrosodi-n-Propylamine	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	n-Nitrosodimethylamine	ug/kg	1010	UJ	1150	U	1070	U	910	UJ	1110	UJ	1080	U	--	--	--
	n-Nitrosodiphenylamine	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Nitrobenzene	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	--	--	--
	Pentachlorophenol	ug/kg	202	UJ	231	U	214	U	182	UJ	223	UJ	217	U	1000	--	97
	Phenol	ug/kg	*202*	*UJ*	*231*	*U*	*214*	*U*	*182*	*UJ*	*223*	*UJ*	*217*	*U*	50	--	20
Chlorinated Herbicides																	
	2,4,5-T	ug/kg	3.3	U	NA		NA		3.21	U	NA		NA		--	--	--
	2,4,5-TP	ug/kg	2.7	U	NA		NA		2.62	U	NA		NA		--	--	--
	2,4-D	ug/kg	2.8	U	NA		NA		2.72	U	NA		NA		--	--	3.3
	2,4-Db	ug/kg	2.02	U	NA		NA		1.96	U	NA		NA		--	--	5
	4-Nitrophenol	ug/kg	1.61	U	NA		NA		1.56	U	NA		NA		--	--	--
	Dalapon	ug/kg	1.62	U	NA		NA		1.57	U	NA		NA		--	--	--
	Dicamba	ug/kg	1.65	U	NA		NA		1.61	U	NA		NA		--	--	--
	Dichloroprop	ug/kg	2.67	U	NA		NA		2.59	U	NA		NA		--	--	--
	Mcpa	ug/kg	3.16	U	NA		NA		3.07	U	NA		NA		--	--	--
	Mcpp	ug/kg	1.41	U	NA		NA		1.37	U	NA		NA		--	--	--
	Pentachlorophenol	ug/kg	15.1		NA		NA		2.01	U	NA		NA		1000	--	97

TABLE

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Outfall Sediment Analytical Data Adjacent to City Outfalls 19 and 19A
2002 City Source Control Sediment Investigation

			Outfall 19A						Outfall 19								
			At Outfall		Offshore from Outfall		Downstream		At Outfall		Downstream		Upstream				
	Location (ft from OF along shore)						75' down				95' down		110' up				
	(ft offshore)		Next to OF		35' offshore		150' offshore		Next to OF		125' offshore		75' offshore				
	Sample ID		SI0119A010		SI0119A020		SI0119A030		SI0119010		SI0119020		SI0119030				
	Sample Date		10/18/2002		10/18/2002		10/18/2002		10/18/2002		10/18/2002		10/18/2002				
	Analyte	**Units[a]**	Normal		Normal		Normal		Normal		Normal		Normal		**JSCS Catch Basin Toxicity SLVs[b]**	**JSCS Catch Basin Bioacc SLVs[b]**	**DEQ Inriver Baseline[c]**
PCBs as Congeners																	
	PCB-008	ug/kg	0.4	U	0.43	U	0.55	JP	0.41	PU	10.1		0.37	PU	--	--	--
	PCB-018	ug/kg	1.4	P	0.42	U	0.99	P	0.55	JP	17.5	P	1.83		--	--	--
	PCB-028	ug/kg	3.52		1.27	P	2.95		4.35		27.2		2.22		--	--	--
	PCB-044	ug/kg	3.15		0.75	P	2.75		2.41		14.9		1.9		--	--	--
	PCB-052	ug/kg	10	P	2.29	P	0.35	U	3.48		20.4		2.73	P	--	--	--
	PCB-066	ug/kg	10.1		3.32		3.45	P	4.05	P	30.9	P	2.12	P	--	--	--
	PCB-101	ug/kg	8.48		2.41	P	4.91		4.48		4.64	P	2.02		--	--	--
	PCB-105	ug/kg	0.17	U	0.18	U	0.17	U	0.18	U	0.18	U	0.16	U	--	--	--
	PCB-118	ug/kg	6.57		1.17	P	2.04	P	3.31		0.22	U	0.96	P	--	--	--
	PCB-128	ug/kg	1.21	P	0.4	JP	1.5		1.02		6.68	P	0.72	J	--	--	--
	PCB-138	ug/kg	10.1		3.22		5.1	P	3.34	P	31.9	P	3.32		--	--	--
	PCB-153	ug/kg	8.46	P	3.16	P	12.6		6.44	P	0.26	U	5.19		--	--	--
	PCB-170	ug/kg	1.76	P	0.63	JP	4.26		1.54	P	0.2	U	1.57		--	--	--
	PCB-180	ug/kg	4.87		1.59		7.32		3.93		0.18	U	2.7		--	--	--
	PCB-187	ug/kg	4.61		2.04		6.16		3.96		0.22	U	2.62		--	--	--
	Estimated Total PCBs[1,5]	ug/kg	146.8		45.5		108.5		85.7		322.3		60.4		676	--	180
Pesticides																	
	2,4'-DDD	ug/kg	23.6	C1 J	2.95	UJ	3.28	UJ	3.78	J C2	42.5	C1 J	6.17	C2 J	--	--	--
	2,4'-DDE	ug/kg	4.88	J C2	2.95	UJ	3.28	UJ	3.24	UJ	7.87	C2 J	2.99	UJ	--	--	--
	2,4'-DDT	ug/kg	2.65	UJ	2.95	UJ	3.28	UJ	3.24	UJ	7.22	UJ	2.99	UJ	--	--	--
	4,4'-DDD	ug/kg	*0.515*	*UJ*	**5.69**	J C1	**6.07**	J C1	**5.3**	J C2	*7.22*	*UJ*	**6.38**	C1 J	28	0.3	--
	4,4'-DDE	ug/kg	**10.7**	C2 J	**5.94**	C2 J	**6.03**	J C1	**7.54**	C1 J	**24**	C1 J	**4.2**	J C2	31.3	0.3	--
	4,4'-DDT	ug/kg	**17.3**	C1 J	*0.764*	*UJ*	*0.851*	*UJ*	*0.838*	*UJ*	**10.5**	C1 J	**4.97**	J C2	62.9	0.3	--
	Estimated Total DDTs[1,6]	ug/kg	**28.00**		**11.63**		**12.10**		**12.84**		**34.50**		**15.55**		--	0.3	220
	4,4'-Methoxychlor	ug/kg	3.65	UJ	4.06	UJ	4.52	UJ	4.46	UJ	36.1	UJ	4.12	UJ	--	--	--
	Aldrin	ug/kg	1.14	UJ	1.27	UJ	1.42	UJ	1.4	UJ	3.61	UJ	1.29	UJ	40	--	--
	Alpha-BHC	ug/kg	0.823	UJ	0.917	UJ	1.02	UJ	1.01	UJ	3.61	UJ	0.929	UJ	--	--	--
	beta-BHC	ug/kg	1.12	UJ	1.25	UJ	1.39	UJ	1.37	UJ	3.61	UJ	1.27	UJ	--	--	--
	Beta-Chlordane	ug/kg	1.08	UJ	1.2	UJ	1.33	UJ	1.31	UJ	4.21	C2 J	1.21	UJ	17.6	--	--
	Chlordane	ug/kg	3.73	UJ	4.15	UJ	4.62	UJ	4.55	UJ	*36.1*	*UJ*	4.21	UJ	17.6	--	--
	cis-Chlordane	ug/kg	1.05	UJ	1.17	UJ	1.31	UJ	1.29	UJ	3.61	UJ	1.19	UJ	17.6	--	--
	cis-Nonachlor	ug/kg	2.65	UJ	7.96	C1 J	3.28	UJ	8.24	C1 J	60.1	C1 J	10.2	C1 J	--	--	--
	delta-BHC	ug/kg	1.02	UJ	1.13	UJ	1.26	UJ	1.24	UJ	3.61	UJ	1.15	UJ	--	--	--
	Dieldrin	ug/kg	0.869	UJ	1.52	J C2	1.08	UJ	1.72	J C2	27.8	C1 J	2.8	J C2	61.8	--	--
	Endosulfan I	ug/kg	1.13	UJ	1.26	UJ	1.4	UJ	1.38	UJ	6.53	C2 J	1.27	UJ	--	--	--
	Endosulfan II	ug/kg	1.02	UJ	1.14	UJ	1.27	UJ	1.25	UJ	7.22	UJ	1.16	UJ	--	--	--
	Endosulfan Sulfate	ug/kg	0.964	UJ	1.07	UJ	1.19	UJ	1.18	UJ	7.22	UJ	1.09	UJ	--	--	--
	Endrin	ug/kg	0.956	UJ	1.06	UJ	1.19	UJ	1.17	UJ	14.7	C1 J	1.08	UJ	207	--	--
	Endrin Aldehyde	ug/kg	1.08	UJ	1.2	UJ	1.34	UJ	1.32	UJ	7.22	UJ	1.22	UJ	--	--	--
	Endrin Ketone	ug/kg	0.745	UJ	0.829	UJ	0.923	UJ	0.909	UJ	7.22	UJ	0.84	UJ	--	--	--
	Heptachlor	ug/kg	1.08	J C1	1.02	UJ	1.13	UJ	1.11	UJ	3.61	UJ	1.03	UJ	10	--	--
	Heptachlor Epoxide	ug/kg	1.77	J C2	1.08	UJ	1.2	UJ	1.18	UJ	4.53	C2 J	1.09	UJ	16	--	--
	Hexachlorobenzene	ug/kg	1.38	J C2	1.48	UJ	1.64	UJ	1.62	UJ	3.61	UJ	1.5	UJ	--	--	--
	Hexachlorobutadiene	ug/kg	1.33	UJ	1.48	UJ	1.64	UJ	1.62	UJ	3.61	UJ	1.5	UJ	--	--	--
	Hexachloroethane	ug/kg	1.33	UJ	1.48	UJ	1.64	UJ	1.62	UJ	3.61	UJ	1.5	UJ	--	--	--
	Lindane	ug/kg	1.01	UJ	1.13	UJ	1.26	UJ	1.24	UJ	3.61	UJ	1.14	UJ	4.99	--	--
	Oxychlordane	ug/kg	2.65	UJ	2.95	UJ	3.28	UJ	3.24	UJ	7.22	UJ	2.99	UJ	--	--	--
	Toxaphene	ug/kg	16.6	UJ	18.5	UJ	20.6	UJ	20.3	UJ	361	UJ	18.7	UJ	--	--	--
	Trans-Nonachlor	ug/kg	2.65	UJ	2.95	UJ	3.28	UJ	3.24	UJ	7.22	UJ	2.99	UJ	--	--	--
TPH																	
	Diesel	mg/kg	342		119		127		426		3790		46.2		--	--	--
	Lube Oil - NWTPH	mg/kg	1290		339		345		922		2310		116		--	--	--

Notes:

[a] All results reported on a dry-weight basis.

[b] Portland Harbor Joint Source Control Strategy (DEQ/EPA Final, December 2005) levels are presented for comparison to sediment sample results.

[c] DEQ baseline values are used here for comparison purposes only.

italic The method reporting limit exceeds JSCS Screening Levels.

bold The detected concentration exceeds JSCS Bioaccumulation Screening Level.

shaded The reported value exceeds JSCS Toxicity Screening Level.

[1] Total parameters (i.e., LPAHs, HPAHs, PAHs, PCBs, and DDTs) were calculated based on detections only. Qualifiers are not included on total parameters as it is implied that these are estimated quantities.

[2] Total LPAHs: low molecular weight polycyclic aromatic hydrocarbons includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and 2-methylnaphthalene.

[3] Total HPAHs: High molecular weight polycyclic aromatic hydrocarbons includes fluoranthene, pyrene, benz[a]anthracene, chrysene, benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[ghi]perylene.

[4] Total PAHs: Represents the sum of Total LPAHs and HPAHs.

[5] Total PCBs: The list of PCB congeners is based on EPA recommendations provided in *QA/QC Guidance for Sampling and Analysis of Sediment, Water, and Tissues for Dredged Material Evaluations,* EPA 823-B-95-001 (April 1995). This list can be used to estimate total PCBs in accordance with the NOAA method provided in NOAA Technical Memorandum NOA OMA 49 (August 1989). Calculations follow the Battelle method:
Total PCB = 1.95 (Σ congeners listed) + 2.1.

[6] Total DDTs: Sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Qualifiers:

B1 This analyte was detected in the associated method blank. The concentration was determined not to be significantly higher than the associated method blank (less than 10 times the concentration reported in the blank).

B2 This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than 10 times the concentration reported in the blank).

C1 Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2 Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

D5 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

D10 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

J The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

U The analyte was not detected above the reported method detection limit.

UJ The analyte was not detected above the reported method detection limit. However, the reported method detection limit is approximate and may or may not represent the actual method detection limit necessary to accurately and precisely measure the analyte in the sample.

P The difference between the analyte detected in the front and back column is greater than 40%.

Abbreviations/Definitions:

-- Not available or applicable

ug/kg micrograms per kilogram

mg/kg milligrams per kilogram

NA Not analyzed

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl

TPH total petroleum hydrocarbon

TABLE

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Outfall Sediment Analytical Data Adjacent to City Outfall 22B
2002 City Source Control Sediment Investigation

			Upstream		Outfall Discharge Channel							
	Location (ft from OF along shore)		55' up						20' up			
	(ft offshore)		65' offshore		53' from OF		125' from OF		75' offshore			
	Sample ID		SI0122B020		SI0122B040		SI0122B030		SI0122B010			
	Sample Date		10/16/2002		10/16/2002		10/16/2002		10/16/2002			
	Analyte	**Units[a]**	Normal		Normal		Normal		Normal		**JSCS Catch Basin Toxicity SLVs[b]**	**JSCS Catch Basin Bioacc SLVs[b]**	**DEQ Inriver Baseline[c]**
	Total Organic Carbon	mg/kg	4180		15500		20100		770		--	--	20000
Total Metals													
	Aluminum	mg/kg	8860		5700		23600		9170		--	--	42800
	Antimony	mg/kg	1.45	J	**32.1**		4.47	J	0.623	J	64	10	5
	Arsenic	mg/kg	20.8		47.5		22.9		3.55		33	--	5
	Cadmium	mg/kg	*0.0088*	*U*	**0.78**		*0.0131*	*U*	0.00189	U	4.98	0.003	0.6
	Chromium	mg/kg	101		74		199		16.7		111	4200	41
	Copper	mg/kg	**82.6**	B2	**116**	B2	**271**	B2	**17.2**	B2	149	10	60
	Lead	mg/kg	102	B2	**266**	B2	**197**	B2	19.6	B2	128	128	30
	Mercury	mg/kg	0.0409		0.098		0.625		0.0207	J	1.06	--	0.1
	Nickel	mg/kg	91.9	B2	101	B2	138	B2	16.6	B2	48.6	316	32
	Selenium	mg/kg	*0.477*	*U*	**9.42**		*0.712*	*U*	*0.102*	*U*	5	0.1	15
	Silver	mg/kg	0.701		0.932		4.24		0.136		5	--	1.4
	Zinc	mg/kg	**322**	B2	**689**	B2	**666**	B2	**62.4**	B2	459	3	118
PAHs													
	2-Methylnaphthalene	ug/kg	13.3		8.61		24.8		4.14		200	--	150
	Acenaphthene	ug/kg	18.5		12		17.3		6.18		300	--	180
	Acenaphthylene	ug/kg	22		10.8		143		17.4		200	--	60
	Anthracene	ug/kg	20.9		17.6		85.4		13.8		845	--	150
	Benzo (a) anthracene	ug/kg	95.9		61.2		189		59.2		1050	--	360
	Benzo (a) pyrene	ug/kg	157		67.1		404		78.4		1450	--	500
	Benzo [g,h,i] perylene	ug/kg	213		108		443		116		300	--	250
	Benzofluoranthenes	ug/kg	129		61.8		400		71.1		--	--	--
	Chrysene	ug/kg	92.1		77.2		339		94.3		1290	--	425
	Dibenzo (a,h) anthracene	ug/kg	24.5		29.5		91.3		21.3		1300	--	125
	Fluoranthene	ug/kg	199		93.7		176		92.7		2230	--	600
	Fluorene	ug/kg	11.2		8.18		22.6		5.74		536	--	125
	Indeno (1,2,3-cd) pyrene	ug/kg	89.6		46.4		248		48.7		100	--	225
	Naphthalene	ug/kg	43.4		10.4		60.1		14.1		561	--	200
	Phenanthrene	ug/kg	86.2		35.7		68		18.1		1170	--	700
	Pyrene	ug/kg	253		113		362		129		1520	--	700
	Estimated Total LPAHs[1,2]	ug/kg	215.5		103.29		421.2		79.46		--	--	--
	Estimated Total HPAHs[1,3]	ug/kg	1253.1		657.9		2652.3		710.7		--	--	--
	Estimated Total PAHs[1,4]	ug/kg	1468.6		761.19		3073.5		790.16		--	--	--
Phthalates													
	Bis(2-Ethylhexyl) Phthalate	ug/kg	114		250		24.3	U	20.9	JU	800	330	390
	Butyl Benzyl Phthalate	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	20
	Diethyl Phthalate	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	600	--	--
	Dimethyl Phthalate	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	20
	Di-n-Butyl Phthalate	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	100	--	20
	Di-n-Octyl Phthalate	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	20
Other Semivolatile Organics													
	1,2,4-Trichlorobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	9200	--	--
	1,2-Dichlorobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	1700	--	--
	1,3-Dichlorobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	300	--	--
	1,4-Dichlorobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	300	--	--
	2,3,4,6-Tetrachlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,3,5,6-Tetrachlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,4,5-Trichlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,4,6-Trichlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,4-Dichlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,4-Dimethylphenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,4-Dinitrophenol	ug/kg	90.9	U	96.1	U	121	U	84.3	U	--	--	--
	2,4-Dinitrotoluene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2,6-Dinitrotoluene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2-Chloronaphthalene	ug/kg	1.82	U	1.92	U	2.43	U	1.69	U	--	--	--
	2-Chlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2-Methylphenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2-Nitroaniline	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	2-Nitrophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	3,3'-Dichlorobenzidine	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	3-Nitroaniline	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4,6-Dinitro-2-Methylphenol	ug/kg	90.9	U	96.1	U	121	U	84.3	U	--	--	--
	4-Bromophenyl Phenyl Ether	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4-Chloro-3-Methylphenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4-Chloroaniline	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4-Chlorophenyl Phenyl Ether	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4-Methylphenol	ug/kg	36.3	U	38.4	U	48.5	U	33.7	U	--	--	680
	4-Nitroaniline	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	4-Nitrophenol	ug/kg	90.9	U	96.1	U	121	U	84.3	U	--	--	--
	Aniline	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Benzoic Acid	ug/kg	90.9	U	96.1	U	121	U	84.3	U	--	--	200
	Benzyl Alcohol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	20
	Bis(2-Chloroethoxy) Methane	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Bis(2-Chloroethyl) Ether	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Bis(2-Chloroisopropyl) Ether	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Carbazole	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	1600	--	100
	Dibenzofuran	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	100
	Hexachlorobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	100	--	--
	Hexachlorobutadiene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	600	--	--
	Hexachlorocyclopentadiene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	400	--	--
	Hexachloroethane	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Isophorone	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	n-Nitrosodi-n-Propylamine	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	n-Nitrosodimethylamine	ug/kg	90.9	U	96.1	U	121	U	84.3	U	--	--	--
	n-Nitrosodiphenylamine	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Nitrobenzene	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	--	--	--
	Pentachlorophenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	1000	--	97
	Phenol	ug/kg	18.2	U	19.2	U	24.3	U	16.9	U	50	--	20
Chlorinated Herbicides													
	2,4,5-T	ug/kg	3.83	U	3.82	U	4.92	U	3.91	U	--	--	--
	2,4,5-TP	ug/kg	3.13	U	3.12	U	4.02	U	3.19	U	--	--	--
	2,4-D	ug/kg	3.25	U	3.24	U	4.18	U	3.32	U	--	--	3.3
	2,4-Db	ug/kg	2.34	U	2.34	U	3.01	U	18.7		--	--	5
	4-Nitrophenol	ug/kg	1.86	U	1.86	U	2.4	U	1.9	U	--	--	--
	Dalapon	ug/kg	1.88	U	1.87	U	2.41	U	1.91	U	--	--	--
	Dicamba	ug/kg	1.92	U	1.91	U	2.47	U	1.96	U	--	--	--
	Dichloroprop	ug/kg	3.09	U	3.08	U	3.97	U	3.15	U	--	--	--
	Mcpa	ug/kg	3.67	U	3.66	U	4.71	U	3.74	U	--	--	--
	Mcpp	ug/kg	1.63	U	1.63	U	2.1	U	1.67	U	--	--	--
	Pentachlorophenol	ug/kg	2.4	U	2.39	U	9.66	J	2.44	U	1000	--	97

TABLE

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Outfall Sediment Analytical Data Adjacent to City Outfall 22B
2002 City Source Control Sediment Investigation

			Upstream		Outfall Discharge Channel								
	Location (ft from OF along shore)		55' up						20' up				
	(ft offshore)		65' offshore		53' from OF		125' from OF		75' offshore				
	Sample ID		SI0122B020		SI0122B040		SI0122B030		SI0122B010				
	Sample Date		10/16/2002		10/16/2002		10/16/2002		10/16/2002				
	Analyte	**Units[a]**	Normal		Normal		Normal		Normal		**JSCS Catch Basin Toxicity SLVs[b]**	**JSCS Catch Basin Bioacc SLVs[b]**	**DEQ Inriver Baseline[c]**
PCBs as Congeners													
	PCB-008	ug/kg	0.39	JP	3.69	P	0.45	U	1.21	P	--	--	--
	PCB-018	ug/kg	0.35	U	0.61	JP	0.44	U	0.32	U	--	--	--
	PCB-028	ug/kg	0.24	JP	2.65	P	0.28	U	0.22	JP	--	--	--
	PCB-044	ug/kg	1.21	P	1.56	P	0.25	U	0.44	P	--	--	--
	PCB-052	ug/kg	0.86	P	6.11		0.4	U	0.41	JP	--	--	--
	PCB-066	ug/kg	0.18	U	1.27	P	2.88		0.72	P	--	--	--
	PCB-101	ug/kg	0.25	U	1.12		0.98		0.76		--	--	--
	PCB-105	ug/kg	0.15	U	0.25	U	0.2	U	0.14	U	--	--	--
	PCB-118	ug/kg	0.19	U	0.3	U	0.24	U	0.17	U	--	--	--
	PCB-128	ug/kg	0.2	JP	0.34	JP	0.53	JP	0.15	U	--	--	--
	PCB-138	ug/kg	0.17	U	0.99	JP	3.2		1.42	P	--	--	--
	PCB-153	ug/kg	2.12		2.24		5.41		2.8		--	--	--
	PCB-170	ug/kg	0.73	P	0.28	U	2.31	P	0.68	P	--	--	--
	PCB-180	ug/kg	1.7		0.69	J	5.71		1.45		--	--	--
	PCB-187	ug/kg	0.72		0.31	U	4.36		0.58		--	--	--
	Estimated Total PCBs[1,5]	ug/kg	18.0		43.6		51.6		22.9		676	--	180
Pesticides													
	2,4'-DDD	ug/kg	73.4	C1	117	C1	115	C1	154	C1	--	--	--
	2,4'-DDE	ug/kg	11.5	C2	22.6	C2	15.3	C2	17.8	C2	--	--	--
	2,4'-DDT	ug/kg	9.8	C1	39.6	C1	11.5	C1	33.5	C1	--	--	--
	4,4'-DDD	ug/kg	**121**	C1	**195**	C1	**250**	C1	**315**	C1	28	0.3	--
	4,4'-DDE	ug/kg	**21.2**	C1	**67.9**	C1	**19.5**	C1	**52.2**	C1	31.3	0.3	--
	4,4'-DDT	ug/kg	**36.6**	C1	**75.4**	C2	**58.8**	C1	**54.6**	C1	62.9	0.3	--
	Estimated Total DDTs[1,6]	ug/kg	**178.8**		**338.3**		**328.3**		**421.8**		--	0.3	220
	4,4'-Methoxychlor	ug/kg	3.99	U	17.3	J C1	5.15	U	3.44	U	--	--	--
	Aldrin	ug/kg	1.25	U	1.28	U	1.61	U	1.08	U	40	--	--
	Alpha-BHC	ug/kg	0.9	U	1.52	J C2	1.16	U	0.777	U	--	--	--
	beta-BHC	ug/kg	15.2	C1	1.25	U	1.58	U	1.06	U	--	--	--
	Beta-Chlordane	ug/kg	1.18	U	8.55	C2	8.87	C2	2.13	J C2	17.6	--	--
	Chlordane	ug/kg	4.08	U	4.17	U	5.27	U	3.52	U	17.6	--	--
	cis-Chlordane	ug/kg	1.15	U	16.4	C1	1.49	U	0.994	U	17.6	--	--
	cis-Nonachlor	ug/kg	2.9	U	21.1	C1	3.74	U	2.5	U	--	--	--
	delta-BHC	ug/kg	1.11	U	5.33	C2	1.44	U	0.96	U	--	--	--
	Dieldrin	ug/kg	0.95	U	2.78	J C1	1.23	U	0.82	U	61.8	--	--
	Endosulfan I	ug/kg	1.23	U	1.26	U	1.59	U	1.06	U	--	--	--
	Endosulfan II	ug/kg	1.12	U	1.14	U	1.45	U	0.967	U	--	--	--
	Endosulfan Sulfate	ug/kg	1.05	U	1.08	U	1.36	U	0.91	U	--	--	--
	Endrin	ug/kg	1.05	U	1.07	U	1.35	U	0.902	U	207	--	--
	Endrin Aldehyde	ug/kg	1.18	U	1.21	U	1.53	U	1.02	U	--	--	--
	Endrin Ketone	ug/kg	0.814	U	0.831	U	1.05	U	0.703	U	--	--	--
	Heptachlor	ug/kg	0.997	U	1.02	U	1.29	U	0.861	U	10	--	--
	Heptachlor Epoxide	ug/kg	1.06	U	14	C1	8.9	C2	0.914	U	16	--	--
	Hexachlorobenzene	ug/kg	1.45	U	2.59	J C2	5.94	C2	1.25	U	--	--	--
	Hexachlorobutadiene	ug/kg	1.45	U	1.48	U	1.87	U	1.25	U	--	--	--
	Hexachloroethane	ug/kg	3.52	C2	2.53	J C2	1.87	U	1.25	U	--	--	--
	Lindane	ug/kg	1.11	U	1.13	U	1.43	U	0.956	U	4.99	--	--
	Oxychlordane	ug/kg	2.9	U	10.7	C2	3.74	U	2.5	U	--	--	--
	Toxaphene	ug/kg	18.2	U	18.5	U	23.4	U	15.7	U	--	--	--
	Trans-Nonachlor	ug/kg	2.9	U	2.96	U	3.74	U	2.5	U	--	--	--
TPH													
	Diesel	mg/kg	24.8		77.9		159		27.2		--	--	--
	Lube Oil - NWTPH	mg/kg	114		357		482		297		--	--	--

Notes:

[a]All results reported on a dry-weight basis.

[b]Portland Harbor Joint Source Control Strategy (DEQ/EPA Final, December 2005) levels are presented for comparison to sediment sample results.

[c]DEQ baseline values are used here for comparison purposes only.

italic The method reporting limit exceeds JSCS Screening Levels.

bold The detected concentration exceeds JSCS Bioaccumulation Screening Level.

shaded The reported value exceeds JSCS Toxicity Screening Level.

[1] Total parameters (i.e., LPAHs, HPAHs, PAHs, PCBs, and DDTs) were calculated based on detections only. Qualifiers are not included on total parameters as it is implied that these are estimated quantities.

[2] Total LPAHs: low molecular weight polycyclic aromatic hydrocarbons includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and 2-methylnaphthalene.

[3] Total HPAHs: High molecular weight polycyclic aromatic hydrocarbons includes fluoranthene, pyrene, benz[a]anthracene, chrysene, benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[ghi]perylene.

[4] Total PAHs: Represents the sum of Total LPAHs and HPAHs.

[5] Total PCBs: The list of PCB congeners is based on EPA recommendations provided in *QA/QC Guidance for Sampling and Analysis of Sediment, Water, and Tissues for Dredged* Material Evaluations, EPA 823-B-95-001 (April 1995).

This list can be used to estimate total PCBs in accordance with the NOAA method provided in NOAA Technical Memorandum NOA OMA 49 (August 1989). Calculations follow the Battelle method: Total PCB = 1.95 (Σ congeners listed) + 2.1.

[6] Total DDTs: Sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Qualifiers:

B1 This analyte was detected in the associated method blank. The concentration was determined not to be significantly higher than the associated method blank (less than 10 times the concentration reported in the blank).

B2 This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than 10 times the concentration reported in the blank).

C1 Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2 Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

D5 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

D10 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

J The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

U The analyte was not detected above the reported method detection limit.

UJ The analyte was not detected above the reported method detection limit. However, the reported method detection limit is approximate and may or may not represent the actual method detection limit necessary to accurately and precisely measure the analyte in the sample.

P The difference between the analyte detected in the front and back column is greater than 40%.

Abbreviations/Definitions:

-- Not available or applicable

ug/kg micrograms per kilogram

mg/kg milligrams per kilogram

NA Not analyzed

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl

TPH total petroleum hydrocarbon

TABLE

Outfall Sediment Analytical Data Adjacent to City Outfall 22C
2002 City Source Control Sediment Investigation

DRAFT

			Offshore from OF				Outfall Discharge Channel								
	Location (ft from OF along shore)		105' offshore		175' offshore		100' from OF		100' from OF		At Outfall		JSCS Catch Basin Toxicity SLVs[b]	JSCS Catch Basin Bioacc SLVs[b]	DEQ Inriver Baseline[c]
	(ft offshore)														
	Sample ID		SI0122C010		SI0122C020		SI0122C030		SI0122C031		SI0122C040				
	Sample Date		10/16/2002		10/16/2002		10/17/2002		10/17/2002		10/17/2002				
	Analyte	**Units[a]**	Normal		Normal		Normal		Duplicate		Normal				
	Total Organic Carbon	mg/kg	84200		910		3040		3140		7320		--	--	20000
Total Metals															
	Aluminum	mg/kg	12200		9730		10100		8740		1630		--	--	42800
	Antimony	mg/kg	4	J	1.6	J	0.261		0.292		0.579		64	10	5
	Arsenic	mg/kg	27.7		19.7		5.6		4.92		53.7		33	--	5
	Cadmium	mg/kg	*0.0174*	*U*	*0.0085*	*U*	*0.272*	*U*	*0.266*	*U*	*1.1*	*U*	4.98	0.003	0.6
	Chromium	mg/kg	106		67.2		15.4		13.1		7.84		111	4200	41
	Copper	mg/kg	**168**	B2	**123**	B2	**22.6**		**19**		**18.3**		149	10	60
	Lead	mg/kg	**161**	B2	122	B2	18.9	B2	20.7	B2	13.3	B2	128	128	30
	Mercury	mg/kg	0.101		0.012	J	0.0205	J	0.0181	J	0.0372	U	1.06	--	0.1
	Nickel	mg/kg	83.2	B2	75.5	B2	15		12.2		7.03		48.6	316	32
	Selenium	mg/kg	*0.941*	*U*	*0.46*	*U*	*0.453*	*U*	*0.444*	*U*	*1.83*	*U*	5	0.1	15
	Silver	mg/kg	1.3		0.744		0.141		6.14		0.573		5	--	1.4
	Zinc	mg/kg	**432**	B2	**319**	B2	**87.3**		**71**		**48**		459	3	118
PAHs															
	2-Methylnaphthalene	ug/kg	136		17.5	J	9.95		11.2		6.5	UJ	200	--	150
	Acenaphthene	ug/kg	1380		119	J	95.8		57.2		12.8	J	300	--	180
	Acenaphthylene	ug/kg	201		71.2	J	37.8		40.1		7	J	200	--	60
	Anthracene	ug/kg	1150		250	D10 J	131		77.1		12.8	J	845	--	150
	Benzo (a) anthracene	ug/kg	7050		283	J	611	D10	321	D10	30	J	1050	--	360
	Benzo (a) pyrene	ug/kg	8220	D10	294	J	635	D10	355	D10	64.2	J	1450	--	500
	Benzo [g,h,i] perylene	ug/kg	6390		195	J	639	D10	381		59.6	J	300	--	250
	Benzofluoranthenes	ug/kg	13300		400	J	1220	D10	756		127	J	--	--	--
	Chrysene	ug/kg	7140		297	J	584	D10	349	D10	59.1	J	1290	--	425
	Dibenzo (a,h) anthracene	ug/kg	2850		65.7	J	109		77.6		17	J	1300	--	125
	Fluoranthene	ug/kg	10400	D10	499	D10 J	837	D10	548	D10	89.4	J	2230	--	600
	Fluorene	ug/kg	501		38.3	J	40		30.9		6.5	UJ	536	--	125
	Indeno (1,2,3-cd) pyrene	ug/kg	5120		148	J	629	D10	338		53.4	J	100	--	225
	Naphthalene	ug/kg	268		29.5	J	23.4		13.6		14.4	J	561	--	200
	Phenanthrene	ug/kg	4300		283	J	411	D10	309		28.8	J	1170	--	700
	Pyrene	ug/kg	10800	D10	596	D10 J	962	D10	635	D10	95.9	J	1520	--	700
	Estimated Total LPAHs[1,2]	ug/kg	7936		808.5		748.95		539.1		75.8		--	--	--
	Estimated Total HPAHs[1,3]	ug/kg	71270		2777.7		6226		3760.6		595.6		--	--	--
	Estimated Total PAHs[1,4]	ug/kg	79206		3586.2		6974.95		4299.7		671.4		--	--	--
Phthalates															
	Bis(2-Ethylhexyl) Phthalate	ug/kg	*341*	*U*	19.9	UJ	49.1		48.6		65	UJ	800	330	390
	Butyl Benzyl Phthalate	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	20
	Diethyl Phthalate	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	102	J	600	--	--
	Dimethyl Phthalate	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	20
	Di-n-Butyl Phthalate	ug/kg	*341*	*U*	15.3	UJ	16.2	U	15.3	U	65	UJ	100	--	20
	Di-n-Octyl Phthalate	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	20
Other Semivolatile Organics															
	1,2,4-Trichlorobenzene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	9200	--	--
	1,2-Dichlorobenzene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	1700	--	--
	1,3-Dichlorobenzene	ug/kg	*341*	*U*	15.3	UJ	16.2	U	15.3	U	65	UJ	300	--	--
	1,4-Dichlorobenzene	ug/kg	*341*	*U*	15.3	UJ	16.2	U	15.3	U	65	UJ	300	--	--
	2,3,4,6-Tetrachlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,3,5,6-Tetrachlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,4,5-Trichlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,4,6-Trichlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,4-Dichlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,4-Dimethylphenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,4-Dinitrophenol	ug/kg	1700	U	76.6	UJ	80.8	U	76.5	U	325	UJ	--	--	--
	2,4-Dinitrotoluene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2,6-Dinitrotoluene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2-Chloronaphthalene	ug/kg	34.1	U	1.53	UJ	1.62	U	1.53	U	6.5	UJ	--	--	--
	2-Chlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2-Methylphenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	179	J	--	--	--
	2-Nitroaniline	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	2-Nitrophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	3,3'-Dichlorobenzidine	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	3-Nitroaniline	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4,6-Dinitro-2-Methylphenol	ug/kg	1700	U	76.6	UJ	80.8	U	76.5	U	325	UJ	--	--	--
	4-Bromophenyl Phenyl Ether	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4-Chloro-3-Methylphenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4-Chloroaniline	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4-Chlorophenyl Phenyl Ether	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4-Methylphenol	ug/kg	681	U	30.6	UJ	32.3	U	30.6	U	130	UJ	--	--	680
	4-Nitroaniline	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	4-Nitrophenol	ug/kg	1700	U	76.6	UJ	80.8	U	76.5	U	325	UJ	--	--	--
	Aniline	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Benzoic Acid	ug/kg	1700	U	76.6	UJ	80.8	U	76.5	U	325	UJ	--	--	200
	Benzyl Alcohol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	20
	Bis(2-Chloroethoxy) Methane	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Bis(2-Chloroethyl) Ether	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Bis(2-Chloroisopropyl) Ether	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Carbazole	ug/kg	952		54.5	J	73.3		50.3		65	UJ	1600	--	100
	Dibenzofuran	ug/kg	341	U	15.3	UJ	18.4	J	15.3	U	65	UJ	--	--	100
	Hexachlorobenzene	ug/kg	*341*	*U*	15.3	UJ	16.2	U	15.3	U	65	UJ	100	--	--
	Hexachlorobutadiene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	600	--	--
	Hexachlorocyclopentadiene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	400	--	--
	Hexachloroethane	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Isophorone	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	n-Nitrosodi-n-Propylamine	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	n-Nitrosodimethylamine	ug/kg	1700	U	76.6	UJ	80.8	U	76.5	U	325	UJ	--	--	--
	n-Nitrosodiphenylamine	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Nitrobenzene	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	--	--	--
	Pentachlorophenol	ug/kg	341	U	15.3	UJ	16.2	U	15.3	U	65	UJ	1000	--	97
	Phenol	ug/kg	*341*	*U*	15.3	UJ	16.2	U	15.3	U	*65*	*UJ*	50	--	20
Chlorinated Herbicides															
	2,4,5-T	ug/kg	NA		NA		NA		NA		10.5	UJ	--	--	--
	2,4,5-TP	ug/kg	NA		NA		NA		NA		8.6	UJ	--	--	--
	2,4-D	ug/kg	NA		NA		NA		NA		8.93	UJ	--	--	3.3
	2,4-Db	ug/kg	NA		NA		NA		NA		6.44	UJ	--	--	5
	4-Nitrophenol	ug/kg	NA		NA		NA		NA		5.12	UJ	--	--	--
	Dalapon	ug/kg	NA		NA		NA		NA		5.16	UJ	--	--	--
	Dicamba	ug/kg	NA		NA		NA		NA		5.27	UJ	--	--	--
	Dichloroprop	ug/kg	NA		NA		NA		NA		8.5	UJ	--	--	--
	Mcpa	ug/kg	NA		NA		NA		NA		10.1	UJ	--	--	--
	Mcpp	ug/kg	NA		NA		NA		NA		4.49	UJ	--	--	--
	Pentachlorophenol	ug/kg	NA		NA		NA		NA		6.59	UJ	1000	--	97

TABLE

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Outfall Sediment Analytical Data Adjacent to City Outfall 22C
2002 City Source Control Sediment Investigation

			Offshore from OF				Outfall Discharge Channel								
Location (ft from OF along shore)			105' offshore		175' offshore		100' from OF		100' from OF		At Outfall		JSCS Catch Basin Toxicity SLVs[b]	JSCS Catch Basin Bioacc SLVs[b]	DEQ Inriver Baseline[c]
(ft offshore)			SI0122C010		SI0122C020		SI0122C030		SI0122C031		SI0122C040				
Sample ID			10/16/2002		10/16/2002		10/17/2002		10/17/2002		10/17/2002				
Sample Date			Normal		Normal		Normal		Duplicate		Normal				
Analyte		**Units[a]**													
PCBs as Congeners															
	PCB-008	ug/kg	2.34		0.54	J	0.52	JP	1.04		1.26	U	--	--	--
	PCB-018	ug/kg	0.82	J	0.31	U	0.33	U	0.34	U	1.23	U	--	--	--
	PCB-028	ug/kg	2.82		0.22	J	0.31	JP	0.52	P	1.44	P	--	--	--
	PCB-044	ug/kg	0.41	U	0.26	J	0.19	U	0.28	JP	0.71	U	--	--	--
	PCB-052	ug/kg	4.48		0.48	J	0.65	J	0.81	P	1.11	U	--	--	--
	PCB-066	ug/kg	4.72		0.76		0.56	P	1.54		0.65	U	--	--	--
	PCB-101	ug/kg	0.52	U	0.22	U	0.24	U	0.25	U	0.9	U	--	--	--
	PCB-105	ug/kg	0.32	U	0.14	U	0.15	U	0.15	U	0.55	U	--	--	--
	PCB-118	ug/kg	0.67	J	0.17	U	0.18	U	0.24	JP	0.67	U	--	--	--
	PCB-128	ug/kg	0.7	J	0.14	U	0.27	JP	0.28	JP	0.57	U	--	--	--
	PCB-138	ug/kg	3.1		0.53	J	0.79	P	0.95	P	0.62	U	--	--	--
	PCB-153	ug/kg	6.51		1.09		1.18	P	2.12		0.79	U	--	--	--
	PCB-170	ug/kg	0.98	J	0.26	J	0.17	U	0.32	J	0.62	U	--	--	--
	PCB-180	ug/kg	3.17		0.14	U	0.32	JP	0.71		0.55	U	--	--	--
	PCB-187	ug/kg	1.88		0.17	U	0.34	JP	0.66		0.68	U	--	--	--
	Estimated Total PCBs[1,5]	ug/kg	64.9		10.2		11.7		20.6		4.9		676	--	180
Pesticides															
	2,4'-DDD	ug/kg	162	C1	12.9	C1	20.6	C1	31.6	C1	8.62	U	--	--	--
	2,4'-DDE	ug/kg	23.8	C2	3.51	J C2	4.45	J C2	9.31	C2	8.62	U	--	--	--
	2,4'-DDT	ug/kg	25.2	C1	22.4	C1	7.88	C1	88.4	C1	8.62	U	--	--	--
	4,4'-DDD	ug/kg	**296**	C1	**19.4**	C1	**22.6**	C1	**45.7**	C1	**7.34**	J C1	28	0.3	--
	4,4'-DDE	ug/kg	**58**	C1	**20.3**	C1	**18.9**	C1	**37**	C1	*1.98*	*U*	31.3	0.3	--
	4,4'-DDT	ug/kg	**48.2**	C1	**22.9**	C1	**31.5**	C1	**258**	C1	*2.23*	*U*	62.9	0.3	--
	Estimated Total DDTs[1,6]	ug/kg	**402.2**		**62.6**		**73**		**340.7**		**7.34**		--	0.3	220
	4,4'-Methoxychlor	ug/kg	24.3	J C1	3.48	U	3.24	U	2.94	U	11.9	U	--	--	--
	Aldrin	ug/kg	2.28	U	1.09	U	1.01	U	0.923	U	3.72	U	40	--	--
	Alpha-BHC	ug/kg	1.64	U	0.784	U	0.731	U	0.664	U	2.68	U	--	--	--
	beta-BHC	ug/kg	2.24	U	1.07	U	0.995	U	0.905	U	3.65	U	--	--	--
	Beta-Chlordane	ug/kg	2.15	U	1.02	U	0.955	U	0.868	U	3.5	U	17.6	--	--
	Chlordane	ug/kg	7.44	U	3.55	U	3.31	U	3.01	U	12.1	U	17.6	--	--
	cis-Chlordane	ug/kg	2.1	U	1	U	0.935	U	0.85	U	3.43	U	17.6	--	--
	cis-Nonachlor	ug/kg	5.29	U	2.52	U	2.35	U	2.14	U	8.62	U	--	--	--
	delta-BHC	ug/kg	2.03	U	0.969	U	0.903	U	0.821	U	3.31	U	--	--	--
	Dieldrin	ug/kg	1.73	U	0.828	U	0.771	U	0.701	U	2.83	U	61.8	--	--
	Endosulfan I	ug/kg	2.25	U	1.07	U	1	U	0.91	U	3.67	U	--	--	--
	Endosulfan II	ug/kg	2.04	U	0.975	U	0.909	U	0.826	U	3.33	U	--	--	--
	Endosulfan Sulfate	ug/kg	1.92	U	0.918	U	0.856	U	0.778	U	3.14	U	--	--	--
	Endrin	ug/kg	1.91	U	0.911	U	0.849	U	0.772	U	3.11	U	207	--	--
	Endrin Aldehyde	ug/kg	6.59	J C2	1.03	U	0.959	U	0.872	U	3.52	U	--	--	--
	Endrin Ketone	ug/kg	4.39	J C2	0.709	U	0.661	U	0.601	U	2.42	U	--	--	--
	Heptachlor	ug/kg	4.1	J C2	0.869	U	0.81	U	0.736	U	2.97	U	10	--	--
	Heptachlor Epoxide	ug/kg	1.93	U	0.922	U	0.859	U	0.781	U	3.15	U	16	--	--
	Hexachlorobenzene	ug/kg	6.91	C1	1.26	U	1.18	U	1.07	U	4.31	U	--	--	--
	Hexachlorobutadiene	ug/kg	3.37	J C2	1.26	U	1.18	U	1.07	U	4.31	U	--	--	--
	Hexachloroethane	ug/kg	2.64	U	1.26	U	1.18	U	1.07	U	4.31	U	--	--	--
	Lindane	ug/kg	2.02	U	0.965	U	0.899	U	0.817	U	3.3	U	4.99	--	--
	Oxychlordane	ug/kg	5.29	U	2.52	U	2.35	U	2.14	U	8.62	U	--	--	--
	Toxaphene	ug/kg	33.1	U	15.8	U	14.7	U	13.4	U	54	U	--	--	--
	Trans-Nonachlor	ug/kg	5.29	U	2.52	U	2.35	U	2.14	U	8.62	U	--	--	--
TPH															
	Diesel	mg/kg	53.5		11.2		32.3		32.7		38.4		--	--	--
	Lube Oil - NWTPH	mg/kg	200		64.9		331		108		226		--	--	--

Notes:

[a]All results reported on a dry-weight basis.

[b]Portland Harbor Joint Source Control Strategy (DEQ/EPA Final, December 2005) levels are presented for comparison to sediment sample results.

[c]DEQ baseline values are used here for comparison purposes only.

italic The method reporting limit exceeds JSCS Screening Levels.

bold The detected concentration exceeds JSCS Bioaccumulation Screening Level.

shaded The reported value exceeds JSCS Toxicity Screening Level.

[1] Total parameters (i.e., LPAHs, HPAHs, PAHs, PCBs, and DDTs) were calculated based on detections only. Qualifiers are not included on total parameters as it is implied that these are estimated quantities.

[2] Total LPAHs: low molecular weight polycyclic aromatic hydrocarbons includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and 2-methylnaphthalene.

[3] Total HPAHs: High molecular weight polycyclic aromatic hydrocarbons includes fluoranthene, pyrene, benz[a]anthracene, chrysene, benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, and benzo[ghi]perylene.

[4] Total PAHs: Represents the sum of Total LPAHs and HPAHs.

[5] Total PCBs: The list of PCB congeners is based on EPA recommendations provided in *QA/QC Guidance for Sampling and Analysis of Sediment, Water, and Tissues for Dredged* Material Evaluations, EPA 823-B-95-001 (April 1995).

This list can be used to estimate total PCBs in accordance with the NOAA method provided in NOAA Technical Memorandum NOA OMA 49 (August 1989). Calculations follow the Battelle method: Total PCB = 1.95 (Σ congeners listed) + 2.1.

[6] Total DDTs: Sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Qualifiers:

B1 This analyte was detected in the associated method blank. The concentration was determined not to be significantly higher than the associated method blank (less than 10 times the concentration reported in the blank).

B2 This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than 10 times the concentration reported in the blank).

C1 Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2 Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

D5 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

D10 The analyte exceeded the linear calibration range and the sample was diluted and reanalyzed. The reported result for the analyte has been flagged with "D" and a number representing the additional dilution required to bring the analyte within the calibration range.

J The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

U The analyte was not detected above the reported method detection limit.

UJ The analyte was not detected above the reported method detection limit. However, the reported method detection limit is approximate and may or may not represent the actual method detection limit necessary to accurately and precisely measure the analyte in the sample.

P The difference between the analyte detected in the front and back column is greater than 40%.

Abbreviations/Definitions:

-- Not available or applicable
ug/kg micrograms per kilogram
mg/kg milligrams per kilogram
NA Not analyzed
PAH polycyclic aromatic hydrocarbon
PCB polychlorinated biphenyl
TPH total petroleum hydrocarbon