TABLES

TABLE 2-1. HYLEBOS WATERWAY AND REFERENCE STATION COORDINATES[a]

Station	Latitude (N)	Longitude (W)
Reference		
DAC-CR-02	47°20'00.0"	122°40'00.0"
DAC-CR-02A	47°20'06.0"	122°39'54.0"
DAC-HY-30	47°17'50.0"	122°25'42.5"
DAC-HY-35	47°17'54.5"	122°26'22.5"
Hylebos Waterway		
DAC-HY-01	47°17'08.0"	122°24'54.0"
DAC-HY-02	47°17'06.1"	122°24'38.0"
DAC-HY-03	47°17'02.0"	122°24'30.5"
DAC-HY-04	47°17'01.0"	122°24'31.0"
DAC-HY-05	47°16'58.0"	122°24'22.0"
DAC-HY-06	47°16'58.0"	122°24'25.0"
DAC-HY-07	47°16'52.0"	122°24'17.5"
DAC-HY-08	47°16'52.0"	122°24'13.0"
DAC-HY-09	47°16'49.5"	122°24'12.5"
DAC-HY-10	47°16'45.0"	122°24'07.0"
DAC-HY-11	47°16'43.5"	122°23'53.5"
DAC-HY-12	47°16'40.0"	122°23'45.5"
DAC-HY-13	47°16'36.5"	122°23'32.0"
DAC-HY-14	47°16'35.0"	122°23'21.0"
DAC-HY-15	47°16'32.0"	122°23'07.0"
DAC-HY-16	47°16'27.5"	122°22'52.5"
DAC-HY-17	47°16'21.0"	122°22'46.5"
DAC-HY-18	47°16'18.0"	122°22'37.5"
DAC-HY-19	47°16'14.5"	122°22'36.0"
DAC-HY-20	47°16'12.5"	122°22'28.0"
DAC-HY-21	47°16'06.0"	122°22'23.0"
DAC-HY-22	47°16'06.5"	122°22'18.5"
DAC-HY-23	47°15'59.5"	122°22'08.0"
DAC-HY-24	47°15'55.0"	122°22'04.0"
DAC-HY-25	47°15'51.5"	122°21'55.0"
DAC-HY-26	47°15'49.5"	122°21'45.0"
DAC-HY-27	47°15'45.5"	122°21'44.0"
DAC-HY-28	47°15'45.0"	122°21'40.0"

[a] Coordinates positioned using the North American Datum (NAD) of 1983.

TABLE 2-2. CURRENT ANALYTES VERSUS ORIGINAL CONTAMINANTS OF CONCERN, AND LABORATORY RESPONSIBLE FOR ANALYSIS

Analyte	Original Contaminant of Concern	Analytical Laboratory
Trace Elements		
Antimony	✓	NMFS
Arsenic	✓	NMFS
Cadmium	✓	NMFS
Chromium	✓	NMFS
Copper	✓	NMFS
Lead	✓	NMFS
Mercury	✓	NMFS
Nickel	✓	NMFS
Silver	✓	NMFS
Zinc	✓	NMFS
Organotin		NMFS
Semivolatile Organic Compounds		
2-Methylnaphthalene		NMFS
Acenaphthene		NMFS
Acenaphthylene		NMFS
Anthracene		NMFS
Fluorene		NMFS
Naphthalene		NMFS
Semivolatile Organic Compounds (continued)		
Phenanthrene		NMFS
Total LPAHs	✓	NMFS
Benz(a)anthracene		NMFS
Benzo(a)pyrene		NMFS
Benzo(g,h,i)perylene		NMFS
Chrysene		NMFS
Dibenz(a,h)anthracene		NMFS
Fluoranthene		NMFS
Indeno(1,2,3-c,d)pyrene		NMFS
Pyrene		NMFS
Total benzofluoranthenes		NMFS
Total HPAHs	✓	NMFS
2-Methylphenol	✓	NMFS
2,4-Dimethylphenol	✓	NMFS
4-Methylphenol	✓	NMFS
Pentachlorophenol	✓	NMFS
Phenol	✓	NMFS
Semivolatile Organic Compounds (continued)		
1,2-Dichlorobenzene	✓	ARI & NMFS
1,2,4-Trichlorobenzene		ARI & NMFS
1,3-Dichlorobenzene	✓	ARI & NMFS
1,4-Dichlorobenzene	✓	ARI & NMFS
Hexachlorobutadiene	✓	NMFS
Dibenzofuran	✓	Not Analyzed
Di-n-octylphthalate		NMFS
Bis(2-ethylhexyl)phthalate	✓	NMFS
Butylbenzylphthalate	✓	NMFS
Diethyl phthalate		NMFS
Dimethyl phthalate	✓	NMFS
Di-n-butyl phthalate	✓	NMFS
Gamma-HCH (Lindane)		NMFS
Hexachlorobenzene	✓	NMFS
Aldrin		NMFS
Alpha-chlordane		NMFS
Gamma-chlordane		NMFS

TABLE 2-2. (CONTINUED)

Analyte	Original Contaminant of Concern	Analytical Laboratory
Semivolatile Organic Compounds (continued)		
Chlordane		NMFS
Dieldrin		NMFS
Heptachlor		NMFS
Chlorobiphenyl 10/209[a]		NMFS
Chlorobiphenyl 3/18[a]		NMFS
Chlorobiphenyl 3/28[a]		NMFS
Chlorobiphenyl 4/44[a]		NMFS
Chlorobiphenyl 4/52[a]		NMFS
Chlorobiphenyl 4/66[a]		NMFS
Chlorobiphenyl 5/101[a]		NMFS
Chlorobiphenyl 5/105[a]		NMFS
Chlorobiphenyl 5/118[a]		NMFS
Chlorobiphenyl 6/128[a]		NMFS
Chlorobiphenyl 6/138[a]		NMFS
Chlorobiphenyl 6/153[a]		NMFS
Chlorobiphenyl 7/170[a]		NMFS
Chlorobiphenyl 7/180[a]		NMFS
Chlorobiphenyl 7/187[a]		NMFS
Chlorobiphenyl 8/195[a]		NMFS
Chlorobiphenyl 9/206[a]		NMFS

Analyte	Original Contaminant of Concern	Analytical Laboratory
Semivolatile Organic Compounds (continued)		
Total PCBs	✓	NMFS
p,p'-DDD	✓	NMFS
p,p'-DDE	✓	NMFS
p,p'-DDT		NMFS
Benzyl alcohol	✓	Not Analyzed
Benzoic acid	✓	Not Analyzed

Analyte	Original Contaminant of Concern	Analytical Laboratory
Volatile Organic Compounds		
Trichloroethene		ARI
Tetrachloroethane	✓	Not Analyzed
Tetrochloroethene		ARI
Ethylbenzene		ARI
Total Xylenes		ARI

NOTES: NMFS = National Marine Fisheries Service
ARI = Analytical Resources, Inc.

[a] PCB congeners reported as chlorobiphenyl A/B, where A = the number of chlorines and B = typical BZ number

TABLE 2-3. CRITERIA FOR STATION CLASSIFICATION UNDER THE SEDIMENT QUALITY TRIAD APPROACH

Contaminants of Concern Exceeding Chemistry Objectives		Laboratory Toxicity Test				Depressed Benthic Abundance Indices				Classification
SQS	SQO	A	E	LP		C	M	P	T	
✓		Fail at least 1			and	Fail at least 1				Adversely affected
✓		Fail at least 1			or	Fail at least 1				Potentially adversely affected
none		Fail at least 1			or	Fail at least 1				Potentially adversely affected
Exceed SQS or SQO		Pass all laboratory bioassays			and	No significant depressions in benthos				Not adversely affected

NOTES: A = Amphipod mortality toxicity test
E = Echinoderm combined mortality test
LP = Larval Polychaete growth test
C = Crustacean abundance
M = Molluscan abundance
P = Polychaete abundance
T = Total abundance

TABLE 3-1. GRAIN SIZE DISTRIBUTION FOR HYLEBOS WATERWAY STATIONS AND REFERENCE STATIONS

Station	Percent Gravel	Percent Sand	Percent Silt	Percent Clay	Percent Fines[a]
Reference					
DAC-CR-02	4	59	32	5	37
DAC-CR-02A	0	25	66	9	73
DAC-HY-30	1	16	47	36	83
DAC-HY-35	3	32	36	29	65
Hylebos Waterway					
DAC-HY-01	4	42	38	16	54
DAC-HY-02	19	37	30	14	44
DAC-HY-03	0	32	43	25	68
DAC-HY-04	1	36	40	23	63
DAC-HY-05	0	39	39	22	61
DAC-HY-06	1	45	36	18	54
DAC-HY-07	1	48	32	19	51
DAC-HY-08	0	13	56	31	87
DAC-HY-09	1	31	45	23	68
DAC-HY-10	1	24	49	26	75
DAC-HY-11	1	31	46	22	68
DAC-HY-12	0	34	44	22	66
DAC-HY-13	28	38	23	11	34
DAC-HY-14	2	55	27	16	43
DAC-HY-15	0	19	52	29	81
DAC-HY-16	0	12	58	30	88
DAC-HY-17	1	36	47	16	63
DAC-HY-18	0	21	51	28	79
DAC-HY-19	0	24	49	27	76
DAC-HY-20	0	7	57	36	93
DAC-HY-21	0	10	57	33	90
DAC-HY-22	1	51	29	19	48
DAC-HY-23	1	32	39	28	67
DAC-HY-24	2	23	52	23	75
DAC-HY-25	0	15	52	33	85
DAC-HY-26	1	10	60	29	89
DAC-HY-27	2	11	57	30	87
DAC-HY-28	0	10	53	37	90

[a] Percent fines is the sum of the percentages of silt and clay.

TABLE 3-2. CONCENTRATIONS OF CONVENTIONAL PARAMETERS MEASURED IN SURFACE SEDIMENTS FROM HYLEBOS WATERWAY STATIONS

Parameter	Units	No. Stations (Detections/Total)	Minimum Concentration	Median Concentration	Maximum Concentration
Ammonia - Nitrogen	mg/kg	28/28	1.8	19.1	30.7
Total Sulfide	mg/kg	28/28	9.44	670	5,650
Total Volatile Solids	%	28/28	2.19	2.91	6.15
Total Solids	%	28/28	35.5	50.8	65.1
Total Organic Carbon	%	28/28	1.47	2.53	6.32

TABLE 3-3. CONCENTRATIONS OF OTHER CONVENTIONAL PARAMETERS MEASURED IN SURFACE SEDIMENT FROM CARR INLET AND COMMENCEMENT BAY REFERENCE STATIONS

		Carr Inlet		Commencement Bay	
Parameter	**Units**	**DAC-CR-02**	**DAC-CR-02A**	**DAC-HY-30**	**DAC-HY-35**
Ammonia - Nitrogen	mg/kg	5.49	2.50	9.66	3.53
Total Sulfide	mg/kg	1.46U	4.03	961	172
Total Volatile Solids	%	1.37	1.61	3.90	2.78
Total Solids	%	68.8	61.1	49.36	55.0
Total Organic Carbon	%	0.981	0.740	2.42	1.71

NOTES: U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

TABLE 3-4. CONCENTRATIONS OF TRACE ELEMENTS AND ORGANOTIN COMPOUNDS MEASURED IN SURFACE SEDIMENTS FROM REFERENCE STATIONS IN CARR INLET AND COMMENCEMENT BAY, DETERMINED BY THE TOTAL ACID DIGESTION METHOD

	Carr Inlet Stations		Commencement Bay Stations			
Parameter	**DAC-CR-02**	**DAC-CR-02A**	**DAC-HY-30**	**DAC-HY-35**	**SQS**	**SQO**
Trace Elements (mg/kg DW)						
Antimony	1.22U	1.22U	1.22U	1.22U	na	150
Arsenic	3.06	1.87	6.41	6.61	57	57
Cadmium	0.348	0.180	0.295	0.217	5.1	5.1
Chromium	61.4	45.8	27.7	20.9	260	na
Copper	16.0	9.80	71.4	52.1	390	390
Lead	10.4	8.49	28.7	40.9	450	450
Mercury	0.038UJ	0.024UJ	0.251UJ	0.169UJ	0.41	0.59
Nickel	33.9	27.5	26.1	24.6	na	140
Silver	0.076	0.043	0.240	0.217	6.1	6.1
Zinc	17.2	15.7U	75.5	64.6	410	410
Organotin Compounds (μg/kg DW)						
Monobutyltin	5.75U	7.26U	10.5U	7.14U	na	na
Dibutyltin	5.75U	7.26U	19.9	7.14U	na	na
Tributyltin	5.75U	7.26U	25.5	7.14U	na	na
Tetrabutyltin	5.75U	7.26U	10.5U	7.14U	na	na

NOTES: None of the measured trace elements or organotin compounds exceeded the SQS or SQO concentrations at any of the reference stations. DW -Dry weight

na - Not applicable

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

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

TABLE 3-5. CONCENTRATIONS OF ORGANIC COMPOUNDS MEASURED IN SURFACE SEDIMENTS FROM REFERENCE STATIONS IN CARR INLET AND COMMENCEMENT BAY

Parameter	Carr Inlet Stations		Commencement Bay Stations			Carr Inlet Stations		Commencement Bay Stations		
	DAC-CR-02 (µg/kg DW)	DAC-CR-02A (µg/kg DW)	DAC-HY-30 (µg/kg DW)	DAC-HY-35 (µg/kg DW)	SQO (µg/kg DW)	DAC-CR-02 (µg/kg OC)	DAC-CR-02A (µg/kg OC)	DAC-HY-30 (µg/kg OC)	DAC-HY-35 (µg/kg OC)	SQS (µg/kg OC)
Semivolatile Organic Compounds										
2-Methylnaphthalene	0.700 U	2.30	68.0	99.0	670	71.4 UJ	311	2,810	5,790	38,000
Acenaphthene	0.820 U	1.90 U	66.0	100	500	83.6 U	257 U	2,730	5,850	16,000
Acenaphthylene	0.480 U	1.10 U	12.0	23.0	1,300	48.9 U	149 U	496	1,350	66,000
Anthracene	0.420 U	1.40	190	230	960	42.8 U	189	7,850	13,500	220,000
Fluorene	0.660 U	1.50 U	82.0	110	540	67.3 U	203 U	3,390	6,430	23,000
Naphthalene	1.30	4.00	94.0	170	2,100	133	541	3,880	9,940	99,000
Phenanthrene	2.90	7.00	550 J	820	1,500	296	946	22,700 J	48,000	100,000
Total LPAHs	<6.58	<16.9	1,062 J	1,450	5,200	<671	<2,280	41,100 J	85,000	370,000
Benz(a)anthracene	0.570 U	3.50	240	340	1,600	58.1 U	473	9,920	19,900	110,000
Benzo(a)pyrene	0.550 U	3.50	260	250	1,600	56.1 U	473	10,700	14,600	99,000
Benzo(g,h,i)perylene	0.680 U	4.90	170	150	720	69.3 U	662	7,020	8,770	31,000
Chrysene	2.10	6.40	340	370	2,800	214	865	14,000	21,600	110,000
Dibenz(a,h)anthracene	0.720 U	1.10 U	43.0	34.0	230	73.4 U	149 U	1,780	1,990	12,000
Fluoranthene	6.10	15.0	670	780	2,500	622	2,030	27,700 J	45,600	160,000
Indeno(1,2,3-c,d)pyrene	0.720 U	3.70	180	140	690	73.4 U	500	7,440	8,190	34,000
Pyrene	4.90	12.0	750	890	3,300	499	1,620	31,000	52,000	1,000,000
Total benzofluoranthenes	1.10	12.0	530	460	3,600	112	1,620	21,900	26,900	230,000
Total HPAHs	<17.4	<62.1	3,183 J	3,410	17,000	<1,780	<8,390	132,000 J	200,000	960,000

TABLE 3-5. (CONTINUED)

Parameter	Carr Inlet Stations		Commencement Bay Stations			Carr Inlet Stations		Commencement Bay Stations		
	DAC-CR-02 (µg/kg DW)	DAC-CR-02A (µg/kg DW)	DAC-HY-30 (µg/kg DW)	DAC-HY-35 (µg/kg DW)	SQO (µg/kg DW)	DAC-CR-02 (µg/kg OC)	DAC-CR-02A (µg/kg OC)	DAC-HY-30 (µg/kg OC)	DAC-HY-35 (µg/kg OC)	SQS (µg/kg OC)
2-Methylphenol	2.00 U	1.90 U	4.60 U	4.50 U	63	na	na	na	na	na
2,4-Dimethylphenol	0.410	1.50	4.40	6.00	29	na	na	na	na	na
4-Methylphenol	3.90	4.00	25.0	32.0	670	na	na	na	na	na
Pentachlorophenol	0.760 J	0.700 J	13.0 J	7.80 J	360	na	na	na	na	na
Phenol	21.0	16.0 U	31.0	31.0	420	na	na	na	na	na
1,2-Dichlorobenzene	0.300 U	0.400 U	1.60	1.80	50	30.6 U	54 U	66.1	105	2,300
1,2,4-Trichlorobenzene	0.270 U	0.320 U	2.50	2.00	51	27.5 U	43.2 U	103	117	810
1,3-Dichlorobenzene	0.260 U	0.380 U	1.00	0.690	170	na	na	na	na	na
1,4-Dichlorobenzene	1.20 U	1.80 U	10.0	7.70 U	110	122 U	243 U	413	450 U	3,100
Hexachlorobutadiene	1.10 U	1.50 U	3.30	3.20	11	112 U	203 U	136	187	3,900
Di-n-octyl phthalate	0.190 U	0.350 U	7.80	1.80	6,200	19.4 U	47.3 U	322	105	58,000
Bis(2-ethylhexyl)phthalate	7.90 U	18.0 UJ	150 J	97.0 J	1,300	805 U	2,430 UJ	6,200 J	5,670 J	47,000
Butylbenzyl phthalate	0.970 UJ	1.90 U	13.0	5.70 UJ	900	98.9 UJ	257 U	537	333 UJ	4,900
Diethyl phthalate	2.10 UJ	2.50 U	3.20 UJ	2.70 UJ	200	214 UJ	338 U	132 UJ	158 UJ	61,000
Dimethyl phthalate	0.210 J	0.420 UJ	20.0	5.50 J	160	21.4 J	56.8 UJ	826	322 J	53,000
Di-n-butyl phthalate	2.70 UJ	5.40 UJ	11.0 UJ	6.80 UJ	1,400	275 UJ	730 UJ	455 UJ	398 UJ	220,000
Gamma-HCH (Lindane)	0.070	0.110 U	0.530	0.210	na	na	na	na	na	na
Hexachlorobenzene	0.110 U	0.180	4.60	4.30	22	11.2 U	24.3	190	251	380

TABLE 3-5. (CONTINUED)

Parameter	Carr Inlet Stations		Commencement Bay Stations		SQO	Carr Inlet Stations		Commencement Bay Stations		SQS
	DAC-CR-02 (µg/kg DW)	DAC-CR-02A (µg/kg DW)	DAC-HY-30 (µg/kg DW)	DAC-HY-35 (µg/kg DW)	(µg/kg DW)	DAC-CR-02 (µg/kg OC)	DAC-CR-02A (µg/kg OC)	DAC-HY-30 (µg/kg OC)	DAC-HY-35 (µg/kg OC)	(µg/kg OC)
Aldrin	0.100	0.082 U	0.090 U	0.120 U	na	na	na	na	na	na
Alpha-chlordane	0.130	0.390	0.540	0.350	na	na	na	na	na	na
Gamma-chlordane	0.110	0.550	0.097 U	1.80	na	na	na	na	na	na
Chlordane	0.240	0.940	0.540	2.20	na	na	na	na	na	na
Dieldrin	0.054	0.086 U	0.570	0.340	na	na	na	na	na	na
Heptachlor	0.100	0.100 U	0.300	0.100	na	na	na	na	na	na
Chlorobiphenyl 10/209[a]	0.055 U	0.150	3.90	1.50	na	na	na	na	na	na
Chlorobiphenyl 3/18[a]	0.190 U	0.280 U	2.30	2.60	na	na	na	na	na	na
Chlorobiphenyl 3/28[a]	0.180 U	0.220 U	0.770 U	0.980 U	na	na	na	na	na	na
Chlorobiphenyl 4/44[a]	0.530 U	0.560 U	2.00 U	1.20 U	na	na	na	na	na	na
Chlorobiphenyl 4/52[a]	0.180	0.210	2.10	1.70	na	na	na	na	na	na
Chlorobiphenyl 4/66[a]	0.080 U	0.200	0.200 U	0.100 U	na	na	na	na	na	na
Chlorobiphenyl 5/101[a]	0.200 U	0.270	2.50	2.90	na	na	na	na	na	na
Chlorobiphenyl 5/105[a]	0.160	0.075 U	0.520	1.30	na	na	na	na	na	na
Chlorobiphenyl 5/118[a]	0.250	0.390	2.70	5.10	na	na	na	na	na	na
Chlorobiphenyl 6/128[a]	0.077	0.071 U	0.710	0.500	na	na	na	na	na	na
Chlorobiphenyl 6/138[a]	0.340 U	0.510 U	2.80	4.10	na	na	na	na	na	na
Chlorobiphenyl 6/153[a]	0.310 U	0.380	3.10	5.40	na	na	na	na	na	na
Chlorobiphenyl 7/170[a]	0.460 U	0.130 U	1.20	0.930	na	na	na	na	na	na
Chlorobiphenyl 7/180[a]	0.160	0.210	2.20	1.70	na	na	na	na	na	na
Chlorobiphenyl 7/187[a]	0.066 U	0.100	2.00	1.10	na	na	na	na	na	na
Chlorobiphenyl 8/195[a]	0.050 U	0.059	0.320	0.087	na	na	na	na	na	na
Chlorobiphenyl 9/206[a]	0.110	0.079	2.30	0.710	na	na	na	na	na	na

TABLE 3-5. (CONTINUED)

Parameter	Carr Inlet Stations DAC-CR-02 (µg/kg DW)	Carr Inlet Stations DAC-CR-02A (µg/kg DW)	Commencement Bay Stations DAC-HY-30 (µg/kg DW)	Commencement Bay Stations DAC-HY-35 (µg/kg DW)	SQO (µg/kg DW)	Carr Inlet Stations DAC-CR-02 (µg/kg OC)	Carr Inlet Stations DAC-CR-02A (µg/kg OC)	Commencement Bay Stations DAC-HY-30 (µg/kg OC)	Commencement Bay Stations DAC-HY-35 (µg/kg OC)	SQS (µg/kg OC)
Total PCBs	6.00	8.00	64.0	63.0	1,000[b]	612	1,080	2,640	3,680	12,000
p,p'-DDD	0.140	0.180	1.30	1.70	16	na	na	na	na	na
p,p'-DDE	0.110	0.210	0.380	0.190	9	na	na	na	na	na
p,p'-DDT	0.057 U	0.140 U	0.210	0.200	34	na	na	na	na	na
Volatile Organic Compounds										
Trichloroethene	1.20 U	1.00 U	1.70 U	1.60 U	na	na	na	na	na	na
Tetrachloroethene	1.20 U	1.00 U	1.70 U	1.60 U	57	na	na	na	na	na
Ethylbenzene	1.20 U	1.00 U	1.70 U	1.60 U	10	na	na	na	na	na
Xylenes	2.40 U	2.00 U	3.30 U	3.20 U	40	na	na	na	na	na

NOTES: None of the measured concentrations of organic compounds exceeded the SQO or SQS concentrations at any of the reference stations.
DW - dry weight
OC - organic carbon normalized
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

[a] PCB congeners reported as chlorobiphenyl A/B, where A = the number of chlorines and B = the typical BZ number.
[b] This table indicates the SQO for PCBs is 1,000 µg/kg. The ROD for the RI selected the human health-based PCB SQO of 150 µg/kg as the PCB decision criterion.

TABLE 3-6. CONCENTRATIONS OF TRACE ELEMENTS AND ORGANOTIN COMPOUNDS MEASURED IN SURFACE SEDIMENTS FROM HYLEBOS WATERWAY, DETERMINED BY THE TOTAL ACID DIGESTION METHOD

Parameter	No. Stations (Detections/Total)	Minimum Concentration	Median Concentration	Maximum Concentration	SQS	No. Stations Exceeding SQS	SQO	No. Stations Exceeding SQO
Trace Elements (mg/kg DW)								
Antimony	28/28	1.73	6.29	16.5	na	na	150	0
Arsenic	28/28	5.45	16.6	120	57	3	57	3
Cadmium	21/28	0.202	0.477	1.95	5.1	0	5.1	0
Chromium	28/28	28.7	33.6	91.7	260	0	na	na
Copper	28/28	53.6	117	230	390	0	390	0
Lead	28/28	23.4	73.8	207	450	0	450	0
Mercury	1/28	0.16	0.16	0.16	0.41	0	0.59	0
Nickel	28/28	24.8	33.6	43.7	na	na	140	0
Silver	28/28	0.095	0.29	0.398	6.1	0	6.1	0
Zinc	28/28	99.4	174	579	410	2	410	2
Organotin Compounds (μg/kg DW)								
Monobutyltin	0/28	<5.78	<9.26	<12.8	na	na	na	na
Dibutyltin	24/28	10.8	46.75	82.8	na	na	na	na
Tributyltin	28/28	14.9	134.5	238	na	na	na	na
Tetrabutyltin	0/28	<5.78	<9.26	<12.8	na	na	na	na

NOTES: DW - dry weight

TABLE 3-7. CONCENTRATIONS OF TRACE ELEMENTS MEASURED IN SURFACE SEDIMENTS FROM HYLEBOS WATERWAY, DETERMINED BY THE STRONG ACID DIGESTION METHOD

Parameter	No. Stations (Detections/Total)	Minimum Concentration	Median Concentration	Maximum Concentration	SQS	No. Stations Exceeding SQS	SQO	No. Stations Exceeding SQO
Trace Elements (mg/kg DW)								
Antimony	10/28	1.12	1.46	2.27	na	na	150	0
Arsenic	23/28	13.9	34.6	63.4	57	1	57	1
Cadmium	27/28	0.184	0.343	1.35	5.1	0	5.1	0
Chromium	28/28	20.3	32.55	50.2	260	0	na	na
Copper	28/28	43.4	112.00	184	390	0	390	0
Lead	28/28	21.5	68.55	176	450	0	450	0
Mercury	0/28	<0.207	<0.427	<0.997	0.41	0	0.59	0
Nickel	28/28	14.6	21.70	39.5	na	na	140	0
Silver	28/28	0.112	0.40	0.507	6.1	0	6.1	0
Zinc	28/28	63.4	131.00	530	410	1	410	1

NOTE: DW - dry weight

TABLE 3-8. CONCENTRATIONS OF ORGANIC COMPOUNDS MEASURED IN SURFACE SEDIMENTS FROM HYLEBOS WATERWAY STATIONS

Parameter	No. Stations (Detections/ Total)	Minimum Conc. (μg/kg DW)	Median Conc. (μg/kg DW)	Maximum Conc. (μg/kg DW)	SQO Conc. (μg/kg DW)	No. Exceeding SQS	Minimum Conc. (μg/kg OC)	Median Conc. (μg/kg OC)	Maximum Conc. (μg/kg OC)	SQS Conc. (μg/kg OC)	No. Exceeding SQO
Semivolatile Organic Compounds											
2-Methylnaphthalene	28/28	21	72.5	190	670	0	691	3,420	7,810	38,000	0
Acenaphthene	28/28	11	48.5	190	500	0	461	2,000	9,900	16,000	0
Acenaphthylene	28/28	5	21	47	1,300	0	232	839	1,630	66,000	0
Anthracene	28/28	60	260	990	960	1	2,630	7,640	40,600	220,000	0
Fluorene	28/28	18	71	310	540	0	789	3,060	16,100	23,000	0
Naphthalene	28/28	54	150	320	2,1000	0	1,280	6,340	16,900	99,000	0
Phenanthrene	28/28	100	485	2,000	1,500	1	4,390	17,000	72,900	100,000	0
Total LPAHs	28/28	248	1,030	2,880	5,200	0	10,900	43,800	150,000	370,000	0
Benz(a)anthracene	28/28	98	520	1,900	1,600	1	5,700	18,200	51,600	110,000	0
Benzo(a)pyrene	28/28	92	570	1,800	1,600	1	6,130	20,700	41,700	99,000	0
Benzo(g,h,i)perylene	28/28	65	410	1,300	720	7	4,330	14,200	24,400	31,000	0
Chrysene	28/28	140	1,050	3,700	2,800	1	9,330	37,900	63,200	110,000	0
Dibenz(a,h)anthracene	28/28	15	102	340	230	3	1,000	3,710	5,810	12,000	0
Fluoranthene	28/28	240	1,200	6,100	2,500	2	13,200	43,700	125,000	160,000	0
Indeno(1,2,3-c,d)pyrene	28/28	61	385	1,100	690	7	4,070	13,000	22,900	34,000	0
Pyrene	28/28	320	1,500	5,700	3,300	3	21,300	58,000	99,000	1,000,000	0
Total benzofluoranthenes	28/28	240	1,750	6,600	3,600	4	16,000	62,500	113,000	230,000	0
Total HPAHs	28/28	1,270	7,400	28,500	17,000	1	84,700	274,000	529,000	960,000	0

TABLE 3-8. (CONTINUED)

Parameter	No. Stations (Detections/ Total)	Minimum Conc. (µg/kg DW)	Median Conc. (µg/kg DW)	Maximum Conc. (µg/kg DW)	SQO Conc. (µg/kg DW)	No. Exceeding SQS	Minimum Conc. (µg/kg OC)	Median Conc. (µg/kg OC)	Maximum Conc. (µg/kg OC)	SQS Conc. (µg/kg OC)	No. Exceeding SQO
2-Methylphenol	16/28	2	8.8	23	63	0	na	na	na	na	0
2,4-Dimethylphenol	28/28	4	8.1	18	29	0	na	na	na	na	0
4-Methylphenol	28/28	16	36.5	120	670	0	na	na	na	na	0
Pentachlorophenol	28/28	13	55	790	360	1	na	na	na	na	1
Phenol	28/28	27	44	68	420	0	na	na	na	na	0
1,2-Dichlorobenzene	28/28	1	4.05	13	50	0	39.5	152	637	2,300	0
1,2,4-Trichlorobenzene	28/28	7	22	110	51	4	163	862	5,390	810	15
1,3-Dichlorobenzene	26/28	1	3.95	14	170	0	na	na	na	na	na
1,4-Dichlorobenzene	21/28	10	23	81	110	0	197	1,060	4,200	3,100	2
Hexachlorobutadiene	28/28	6	24.5	260	11	23	109	890	14,900	3,900	5
Di-n-octylphthalate	28/28	2	7.7	14	6,200	0	83.3	244	686	58,000	0
Bis(2-ethylhexyl)phthalate	27/28	89	520	1,400	1,300	1	4,940	16,600	54,500	47,000	1
Butylbenzylphthalate	24/28	10	54	580	900	0	451	1,610	15,300	4,900	1
Diethyl phthalate	0/28	<0.52	<3.15	<8.30	200	0	<16.2	<135.71	<250	61,000	0
Dimethyl phthalate	28/28	1	16.5	75	160	0	42.1	676	2,300	53,000	0
Di-n-butyl phthalate	2/28	72	74	76	1,400	0	3,860	4,330	4,800	220,000	0
Gamma-HCH (Lindane)	28/28	0	1.05	4.8	na	na	na	na	na	na	na
Hexachlorobenzene	28/28	8	21.5	120	22	12	177	738	5,940	380	21
Aldrin	9/28	1	5.3	8	na	na	na	na	na	na	na

TABLE 3-8. (CONTINUED)

Parameter	No. Stations (Detections/ Total)	Minimum Conc. (µg/kg DW)	Median Conc. (µg/kg DW)	Maximum Conc. (µg/kg DW)	SQO Conc. (µg/kg DW)	No. Exceeding SQS	Minimum Conc. (µg/kg OC)	Median Conc. (µg/kg OC)	Maximum Conc. (µg/kg OC)	SQS Conc. (µg/kg OC)	No. Exceeding SQO
Alpha-chlordane	28/28	1	1.9	5.1	na	na	na	na	na	na	na
Gamma-chlordane	19/28	0	2.5	5.9	na	na	na	na	na	na	na
Chlordane	28/28	1	3.15	8.3	na	na	na	na	na	na	na
Dieldrin	24/28	0	1.4	3.5	na	na	na	na	na	na	na
Heptachlor	28/28	0	0.75	4.1	na	na	na	na	na	na	na
Chlorobiphenyl 10/209[a]	28/28	6	18.5	140	na	na	na	na	na	na	na
Chlorobiphenyl 3/18[a]	28/28	2	6.05	22	na	na	na	na	na	na	na
Chlorobiphenyl 3/28[a]	25/28	1	4.8	12	na	na	na	na	na	na	na
Chlorobiphenyl 4/44[a]	13/28	3	10	13	na	na	na	na	na	na	na
Chlorobiphenyl 4/52[a]	28/28	1	9.05	31	na	na	na	na	na	na	na
Chlorobiphenyl 4/66[a]	21/28	0	7	13	na	na	na	na	na	na	na
Chlorobiphenyl 5/101[a]	27/28	2	18	50	na	na	na	na	na	na	na
Chlorobiphenyl 5/105[a]	24/28	1	7.2	27	na	na	na	na	na	na	na
Chlorobiphenyl 5/118[a]	28/28	2	29.5	63	na	na	na	na	na	na	na
Chlorobiphenyl 6/128[a]	23/28	1	5.1	12	na	na	na	na	na	na	na
Chlorobiphenyl 6/138[a]	28/28	3	21.5	52	na	na	na	na	na	na	na
Chlorobiphenyl 6/153[a]	26/28	3	25	61	na	na	na	na	na	na	na
Chlorobiphenyl 7/170[a]	24/28	0	2.45	6.2	na	na	na	na	na	na	na
Chlorobiphenyl 7/180[a]	28/28	4	18	42	na	na	na	na	na	na	na
Chlorobiphenyl 7/187[a]	28/28	2	5.9	14	na	na	na	na	na	na	na
Chlorobiphenyl 8/195[a]	28/28	1	1.7	5.2	na	na	na	na	na	na	na
Chlorobiphenyl 9/206[a]	28/28	5	11	66	na	na	na	na	na	na	na

TABLE 3-8. (CONTINUED)

Parameter	No. Stations (Detections/ Total)	Minimum Conc. (μg/kg DW)	Median Conc. (μg/kg DW)	Maximum Conc. (μg/kg DW)	SQO Conc. (μg/kg DW)	No. Exceeding SQS	Minimum Conc. (μg/kg OC)	Median Conc. (μg/kg OC)	Maximum Conc. (μg/kg OC)	SQS Conc. (μg/kg OC)	No. Exceeding SQO
Total PCBs	28/28	94	410	790	1,000[b]	0	6,270	15,450	28,500	12,000	19
p,p'-DDD	28/28	1	6.6	21	16	2	na	na	na	na	na
p,p'-DDE	27/28	0	2.1	13	9	3	na	na	na	na	na
p,p'-DDT	25/28	0	2.5	19	34	0	na	na	na	na	na
Volatile Organic Compounds											
Trichloroethene	1/28	2	2.4	2.4	na	na	na	na	na	na	na
Tetrachloroethene	0/28	<1.00	<1.60	<2.30	57	0	na	na	na	na	na
Ethylbenzene	0/28	<1.00	<1.60	<2.30	10	0	na	na	na	na	na
Xylenes	0/28	<2.00	<3.20	<4.70	40	0	na	na	na	na	na

NOTES: DW - Dry weight
OC - Organic carbon

[a] PCB congeners reported as chlorobiphenyl A/B, where A = the number of chlorines and B = the typical BZ number.
[b] This table indicates the SQO for PCBs is 1,000 μg/kg. The ROD for the RI selected the human health-based PCB SQO of 150 μg/kg as the PCB decision criterion.

TABLE 3-9. SUMMARY OF BIOASSAY PERFORMANCE FOR CONTROL STATIONS AND CARR INLET REFERENCE STATIONS

Station	Test Series	Mean Percent Mortality[a] (*Rhepoxynius abronius*)	Mean Percent Combined Mortality[a] (*Dendraster excentricus*)	Mean Individual Biomass (mg)[a] (*Neanthes arenaceodentata*)
Control				
Sediment 1	1	3 ± 1.8	-14.4 ± 4.3	10.9 ± 0.8
	2	4 ± 1.7	-1.2 ± 2.5	10.2 ± 0.2
Seawater 1	1	na	-9.6 ± 4.0	na
	2	na	-7.1 ± 3.7	na
Sediment 2	1	3 ± 1.1	-17.3 ± 4.3	11.7 ± 1.2
	2	7 ± 2.7	-3.2 ± 4.0	9.7 ± 0.7
Seawater 2	1	na	-20.1 ± 3.7	na
	2	na	-5.8 ± 3.1	na
Carr Inlet				
DAC-CR-02	2	14 ± 4.3	39.4 ± 1.3	9.9 ± 0.6
DAC-CR-02A	2	15 ± 0.0[b]	4.8 ± 2.6	9.0 ± 0.5

NOTE: na - not applicable.

[a] Mean and standard error based on five replicate samples.
[b] Mean and standard error based on four replicate samples.

TABLE 3-10. MEAN PERCENT MORTALITY IN *RHEPOXYNIUS ABRONIUS* BIOASSAYS AND SIGNIFICANT RESULTS FOR HYLEBOS WATERWAY STATIONS

Hylebos Waterway Station	Reference Station[a]	Test Series	Mean Percent Mortality[b]	Significant *t*-Test[c]
DAC-HY-01	DAC-CR-2	2	23 ± 3.0	No
DAC-HY-02	DAC-CR-2	2	12 ± 2.3	No
DAC-HY-03	DAC-CR-2A	2	14 ± 2.6[d]	No
DAC-HY-04	DAC-CR-2A	2	21 ± 1.7[d]	Yes
DAC-HY-05	DAC-CR-2A	2	23 ± 3.3[d]	Yes
DAC-HY-06	DAC-CR-2	2	13 ± 1.8	No
DAC-HY-07	DAC-CR-2	2	6 ± 2.9	No
DAC-HY-08	DAC-CR-2A	2	26 ± 1.7	Yes
DAC-HY-09	DAC-CR-2A	2	16 ± 2.6	No
DAC-HY-10	DAC-CR-2A	2	44 ± 3.3	Yes
DAC-HY-11	DAC-CR-2A	2	14 ± 5.0	No
DAC-HY-12	DAC-CR-2A	2	23 ± 4.1	Yes
DAC-HY-13	DAC-CR-2	1	11 ± 3.6	No
DAC-HY-14	DAC-CR-2	1	3 ± 1.1	No
DAC-HY-15	DAC-CR-2A	1	14 ± 1.7	No
DAC-HY-16	DAC-CR-2A	1	12 ± 2.3	No
DAC-HY-17	DAC-CR-2A	1	16 ± 2.6	No
DAC-HY-18	DAC-CR-2A	1	14 ± 1.7	No
DAC-HY-19	DAC-CR-2A	1	9.5 ± 1.6	No
DAC-HY-20	DAC-CR-2A	1	16 ± 3.8	No
DAC-HY-21	DAC-CR-2A	1	27 ± 8.2	No
DAC-HY-22	DAC-CR-2	1	15 ± 5.1	No
DAC-HY-23	DAC-CR-2A	1	16 ± 1.7	No
DAC-HY-24	DAC-CR-2A	1	33 ± 4.1	Yes
DAC-HY-25	DAC-CR-2A	2	13 ± 1.8	No
DAC-HY-26	DAC-CR-2A	2	19 ± 3.8	No
DAC-HY-27	DAC-CR-2A	2	14 ± 3.3	No
DAC-HY-28	DAC-CR-2A	2	28 ± 6.1	No

[a] Corresponding reference station with similar grain size.
[b] Mean percent mortality and standard error for five replicate samples.
[c] Statistically significant increases in mean percent mortality compared to the reference as determined by a *t*-test at the α=0.05 level.
[d] Percent mortality determined for the reference sediment sample DAC-CR-2A is based on four replicates. See Section 3.1.1 for details.

TABLE 3-11. MEAN PERCENT COMBINED MORTALITY IN *DENDRASTER EXCENTRICUS* BIOASSAYS AND SIGNIFICANT RESULTS FOR HYLEBOS WATERWAY STATIONS

Hylebos Waterway Station	Reference Station[a]	Test Series	Mean Percent Combined Mortality[b]	Significant t-Test[c]
DAC-HY-01	DAC-CR-2	2	-0.5 ± 2.1	No
DAC-HY-02	DAC-CR-2	2	2.8 ± 3.2	No
DAC-HY-03	DAC-CR-2A	2	14.7 ± 4.8	No
DAC-HY-04	DAC-CR-2A	2	21.3 ± 3.7	Yes
DAC-HY-05	DAC-CR-2A	2	14.6 ± 3.0	Yes
DAC-HY-06	DAC-CR-2	2	13.2 ± 4.9	No
DAC-HY-07	DAC-CR-2	2	13.5 ± 3.2	No
DAC-HY-08	DAC-CR-2A	1	11.0 ± 2.6	No
DAC-HY-09	DAC-CR-2A	1	7.5 ± 2.6	No
DAC-HY-10	DAC-CR-2A	1	32.9 ± 2.8	Yes
DAC-HY-11	DAC-CR-2A	1	20.5 ± 3.3	Yes
DAC-HY-12	DAC-CR-2A	1	12.3 ± 4.4	No
DAC-HY-13	DAC-CR-2	1	26.5 ± 3.4	No
DAC-HY-14	DAC-CR-2	2	12.1 ± 4.7	No
DAC-HY-15	DAC-CR-2A	1	15.2 ± 2.8	Yes
DAC-HY-16	DAC-CR-2A	1	9.4 ± 3.7	No
DAC-HY-17	DAC-CR-2A	1	-13.9 ± 3.2	No
DAC-HY-18	DAC-CR-2A	1	8.7 ± 1.8	No
DAC-HY-19	DAC-CR-2A	1	-20.8 ± 3.5	No
DAC-HY-20	DAC-CR-2A	1	57.1 ± 2.8	Yes
DAC-HY-21	DAC-CR-2A	1	-28.6 ± 4.8	No
DAC-HY-22	DAC-CR-2	1	7.5 ± 2.8	No
DAC-HY-23	DAC-CR-2A	1	28.1 ± 2.6	Yes
DAC-HY-24	DAC-CR-2A	2	30.5 ± 3.0	Yes
DAC-HY-25	DAC-CR-2A	2	36.7 ± 1.7	Yes
DAC-HY-26	DAC-CR-2A	2	2.7 ± 3.3	No
DAC-HY-27	DAC-CR-2A	2	33.1 ± 3.0	Yes
DAC-HY-28	DAC-CR-2A	2	10.9 ± 8.1	No

[a] Corresponding reference station with similar grain size.
[b] Mean percent combined mortality and standard error based on five replicate samples.
[c] Statistically significant increases in mean percent combined mortality compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 3-12. BIOMASS MEASUREMENTS FOR *NEANTHES ARENACEODENTATA* BIOASSAYS, AND SIGNIFICANT RESULTS FOR HYLEBOS WATERWAY STATIONS

Hylebos Waterway Station	Reference Station[a]	Test Series	Mean Individual Biomass (mg)[b]	Significant *t*-Test[c]
DAC-HY-01	DAC-CR-2	2	10.1 ± 0.3	No
DAC-HY-02	DAC-CR-2	2	7.4 ± 0.6	No
DAC-HY-03	DAC-CR-2A	2	10.4 ± 0.7	No
DAC-HY-04	DAC-CR-2A	2	10.1 ± 0.6	No
DAC-HY-05	DAC-CR-2A	2	12.6 ± 0.5	No
DAC-HY-06	DAC-CR-2	2	11.4 ± 0.4	No
DAC-HY-07	DAC-CR-2	2	12.8 ± 0.4	No
DAC-HY-08	DAC-CR-2A	2	11.5 ± 0.5	No
DAC-HY-09	DAC-CR-2A	2	10.0 ± 1.6	No
DAC-HY-10	DAC-CR-2A	2	9.3 ± 0.4	No
DAC-HY-11	DAC-CR-2A	2	9.1 ± 0.4	No
DAC-HY-12	DAC-CR-2A	2	10.7 ± 1.0	No
DAC-HY-13	DAC-CR-2	1	12.6 ± 0.9	No
DAC-HY-14	DAC-CR-2	1	12.6 ± 0.5	No
DAC-HY-15	DAC-CR-2A	1	12.1 ± 1.0	No
DAC-HY-16	DAC-CR-2A	1	9.4 ± 0.9	No
DAC-HY-17	DAC-CR-2A	1	13.3 ± 0.3	No
DAC-HY-18	DAC-CR-2A	1	11.3 ± 0.8	No
DAC-HY-19	DAC-CR-2A	1	11.8 ± 0.6	No
DAC-HY-20	DAC-CR-2A	1	10.6 ± 0.9	No
DAC-HY-21	DAC-CR-2A	1	13.1 ± 0.4	No
DAC-HY-22	DAC-CR-2	1	10.9 ± 1.5	No
DAC-HY-23	DAC-CR-2A	1	11.5 ± 0.4	No
DAC-HY-24	DAC-CR-2A	1	14.2 ± 0.5	No
DAC-HY-25	DAC-CR-2A	2	9.2 ± 0.6	No
DAC-HY-26	DAC-CR-2A	2	10.1 ± 1.1	No
DAC-HY-27	DAC-CR-2A	2	7.7 ± 0.5	No
DAC-HY-28	DAC-CR-2A	2	10.0 ± 0.7	No

[a] Corresponding reference station with similar grain size.
[b] Mean individual biomass and standard error based on five replicate samples.
[c] Statistically significant decreases in mean individual biomass compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 3-13. TOTAL BENTHIC ABUNDANCE FOR HYLEBOS WATERWAY STATIONS AND COMMENCEMENT BAY REFERENCE STATIONS

Station	Reference Station[a]	Mean Abundance[b] (per m^2)	Significant *t*-Test[c]
Hylebos Waterway			
DAC-HY-01	DAC-HY-35	11,091.7 ± 854.5	Yes
DAC-HY-02	DAC-HY-35	9,362.5 ± 1,081.0	Yes
DAC-HY-03	DAC-HY-35	13,354.2 ± 1,230.4	Yes
DAC-HY-04	DAC-HY-35	6,837.5 ± 901.8	Yes
DAC-HY-05	DAC-HY-35	14,633.3 ± 1,236.7	Yes
DAC-HY-06	DAC-HY-35	7,200.0 ± 844.1	Yes
DAC-HY-07	DAC-HY-35	8,445.8 ± 2,036.0	Yes
DAC-HY-08	DAC-HY-30	5,370.8 ± 1,159.6	Yes
DAC-HY-09	DAC-HY-35	4,883.3 ± 2,329.6	Yes
DAC-HY-10	DAC-HY-30	8,358.3 ± 2,131.8	Yes
DAC-HY-11	DAC-HY-30	5,883.3 ± 1,083.3	Yes
DAC-HY-12	DAC-HY-35	7,512.5 ± 1,052.2	Yes
DAC-HY-13	DAC-HY-35	2,679.2 ± 869.6	Yes
DAC-HY-14	DAC-HY-35	8,570.8 ± 1,215.7	Yes
DAC-HY-15	DAC-HY-30	5,770.8 ± 511.8	Yes
DAC-HY-16	DAC-HY-30	8,633.3 ± 1,064.7	Yes
DAC-HY-17	DAC-HY-35	1,854.2 ± 265.8	Yes
DAC-HY-18	DAC-HY-30	11,583.3 ± 2,145.2	No
DAC-HY-19	DAC-HY-30	15,708.3 ± 2,105.4	No
DAC-HY-20	DAC-HY-30	9,391.7 ± 1,400.0	Yes
DAC-HY-21	DAC-HY-30	14,516.7 ± 2,328.1	No
DAC-HY-22	DAC-HY-30	21,200.0 ± 2,163.6	No
DAC-HY-23	DAC-HY-35	18,895.8 ± 2,666.7	No
DAC-HY-24	DAC-HY-30	11,662.5 ± 560.2	Yes
DAC-HY-25	DAC-HY-30	13,541.7 ± 1,062.2	No
DAC-HY-26	DAC-HY-30	7,745.8 ± 910.3	Yes
DAC-HY-27	DAC-HY-30	6,012.5 ± 149.8	Yes
DAC-HY-28	DAC-HY-30	7,991.7 ± 440.9	Yes
Commencement Bay			
DAC-HY-30	na	16,312.5 ± 824.0	na
DAC-HY-35	na	21,112.5 ± 519.2	na

[a] Corresponding reference station with similar grain size, TOC, and depth.
[b] Mean abundance for four samples.
[c] Statistically significant depressions of abundance compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 3-14. RESULTS USED TO SELECT REFERENCE STATIONS FOR HYLEBOS WATERWAY STATIONS FOR BENTHIC ABUNDANCE

	Grain Size (percent fines)	Total Organic Carbon (percent)	Depth (ft)	Selected Reference Station
Reference Station				
DAC-HY-35	60	0.0171	23	na
DAC-HY-30	82	0.0242	26	na
Hylebos Waterway Station				
DAC-HY-1	53	0.0150	40	DAC-HY-35
DAC-HY-2	44	0.0180	39	DAC-HY-35
DAC-HY-3	68	0.0192	37	DAC-HY-35
DAC-HY-4	61	0.0175	28	DAC-HY-35
DAC-HY-5	58	0.0197	21	DAC-HY-35
DAC-HY-6	53	0.0193	28	DAC-HY-35
DAC-HY-7	48	0.0175	31	DAC-HY-35
DAC-HY-8	84	0.0288	26	DAC-HY-30
DAC-HY-9	66	0.0202	37	DAC-HY-35
DAC-HY-10	72	0.0204	30	DAC-HY-30
DAC-HY-11	67	0.0209	28	DAC-HY-30
DAC-HY-12	64	0.0250	26	DAC-HY-35
DAC-HY-13	34	0.0189	41	DAC-HY-35
DAC-HY-14	39	0.0147	31	DAC-HY-35
DAC-HY-15	75	0.0255	25	DAC-HY-30
DAC-HY-16	85	0.0312	25	DAC-HY-30
DAC-HY-17	59	0.0228	30	DAC-HY-35
DAC-HY-18	77	0.0337	30	DAC-HY-30
DAC-HY-19	73	0.0385	34	DAC-HY-30
DAC-HY-20	91	0.0404	31	DAC-HY-30
DAC-HY-21	87	0.0392	29	DAC-HY-30
DAC-HY-22	46	0.0321	27	DAC-HY-30
DAC-HY-23	65	0.0378	24	DAC-HY-35
DAC-HY-24	71	0.0585	32	DAC-HY-30
DAC-HY-25	82	0.0632	38	DAC-HY-30
DAC-HY-26	86	0.0608	34	DAC-HY-30
DAC-HY-27	86	0.0376	32	DAC-HY-30
DAC-HY-28	87	0.0492	28	DAC-HY-30

TABLE 3-15. BENTHIC ABUNDANCE FOR CRUSTACEA FOR HYLEBOS WATERWAY STATIONS AND COMMENCEMENT BAY REFERENCE STATIONS

Station	Reference Station[a]	Mean Abundance[b] (per m^2)	Significant *t*-Test[c]
Hylebos Waterway			
DAC-HY-01	DAC-HY-35	970.8 ± 213.5	No
DAC-HY-02	DAC-HY-35	779.2 ± 37.4	No
DAC-HY-03	DAC-HY-35	879.2 ± 125.7	No
DAC-HY-04	DAC-HY-35	112.5 ± 30.3	Yes
DAC-HY-05	DAC-HY-35	654.2 ± 79.1	Yes
DAC-HY-06	DAC-HY-35	558.3 ± 164.8	Yes
DAC-HY-07	DAC-HY-35	491.7 ± 102.3	Yes
DAC-HY-08	DAC-HY-30	195.8 ± 41.4	Yes
DAC-HY-09	DAC-HY-35	300.0	Yes
DAC-HY-10	DAC-HY-30	475.0 ± 110.3	Yes
DAC-HY-11	DAC-HY-30	300.0 ± 78.4	Yes
DAC-HY-12	DAC-HY-35	591.7 ± 151.9	Yes
DAC-HY-13	DAC-HY-35	279.2 ± 122.1	Yes
DAC-HY-14	DAC-HY-35	91.7 ± 9.3	Yes
DAC-HY-15	DAC-HY-30	266.7 ± 42.5	Yes
DAC-HY-16	DAC-HY-30	429.2 ± 112.5	Yes
DAC-HY-17	DAC-HY-35	95.8 ± 25.3	Yes
DAC-HY-18	DAC-HY-30	837.5 ± 71.0	No
DAC-HY-19	DAC-HY-30	662.5 ± 171.7	No
DAC-HY-20	DAC-HY-30	237.5 ± 22.3	Yes
DAC-HY-21	DAC-HY-30	191.7 ± 47.7	Yes
DAC-HY-22	DAC-HY-30	708.3 ± 90.0	Yes
DAC-HY-23	DAC-HY-35	1,229.2 ± 526.1	No
DAC-HY-24	DAC-HY-30	341.7 ± 94.7	Yes
DAC-HY-25	DAC-HY-30	175.0 ± 23.9	Yes
DAC-HY-26	DAC-HY-30	37.5 ± 32.5	Yes
DAC-HY-27	DAC-HY-30	33.3 ± 15.6	Yes
DAC-HY-28	DAC-HY-30	133.3 ± 21.2	Yes
Commencement Bay			
DAC-HY-30	na	1,083.3 ± 133.6	na
DAC-HY-35	na	1,466.7 ± 304.7	na

[a] Corresponding reference station with similar grain size, TOC, and depth.
[b] Mean abundance for four replicate samples.
[c] Statistically significant depressions of abundance compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 3-16. BENTHIC ABUNDANCE FOR MOLLUSCA FOR HYLEBOS WATERWAY STATIONS AND COMMENCEMENT BAY REFERENCE STATIONS

Station	Reference Station[a]	Mean Abundance[b] (per m^2)	Significant *t*-Test[c]
Hylebos Waterway			
DAC-HY-01	DAC-HY-35	1,045.8 ± 158.4	Yes
DAC-HY-02	DAC-HY-35	845.8 ± 55.7	Yes
DAC-HY-03	DAC-HY-35	2,254.2 ± 208.1	No
DAC-HY-04	DAC-HY-35	379.2 ± 61.3	Yes
DAC-HY-05	DAC-HY-35	1,845.8 ± 221.8	No
DAC-HY-06	DAC-HY-35	1,091.7 ± 175.4	Yes
DAC-HY-07	DAC-HY-35	729.2 ± 186.0	Yes
DAC-HY-08	DAC-HY-30	275.0 ± 91.4	Yes
DAC-HY-09	DAC-HY-35	891.7 ± 90.8	Yes
DAC-HY-10	DAC-HY-30	1,354.2 ± 267.3	No
DAC-HY-11	DAC-HY-30	2,191.7 ± 387.2	No
DAC-HY-12	DAC-HY-35	1,550.0 ± 362.7	No
DAC-HY-13	DAC-HY-35	350.0 ± 81.9	Yes
DAC-HY-14	DAC-HY-35	525.0 ± 41.9	Yes
DAC-HY-15	DAC-HY-30	2,233.3 ± 256.5	No
DAC-HY-16	DAC-HY-30	2,616.7 ± 301.6	No
DAC-HY-17	DAC-HY-35	158.3 ± 31.5	Yes
DAC-HY-18	DAC-HY-30	2,437.5 ± 311.3	No
DAC-HY-19	DAC-HY-30	4,204.2 ± 268.4	No
DAC-HY-20	DAC-HY-30	1,550.0 ± 103.6	No
DAC-HY-21	DAC-HY-30	2,487.5 ± 445.4	No
DAC-HY-22	DAC-HY-30	2,608.3 ± 496.3	No
DAC-HY-23	DAC-HY-35	2,129.2 ± 385.8	No
DAC-HY-24	DAC-HY-30	312.5 ± 63.6	Yes
DAC-HY-25	DAC-HY-30	483.3 ± 137.8	No
DAC-HY-26	DAC-HY-30	125.0 ± 32.5	Yes
DAC-HY-27	DAC-HY-30	325.0 ± 112.2	Yes
DAC-HY-28	DAC-HY-30	470.8 ± 91.5	No
Commencement Bay			
DAC-HY-30	na	937.5 ± 179.5	na
DAC-HY-35	na	2,087.5 ± 276.2	na

[a] Corresponding reference station with similar grain size, TOC, and depth.
[b] Mean abundance for four replicate samples.
[c] Statistically significant depressions of abundance compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 3-17. BENTHIC ABUNDANCE FOR POLYCHAETA FOR HYLEBOS WATERWAY STATIONS AND COMMENCEMENT BAY REFERENCE STATIONS

Station	Reference Station[a]	Mean Abundance[b] (per m^2)	Significant *t*-Test[c]
Hylebos Waterway			
DAC-HY-01	DAC-HY-35	8,591.7 ± 555.2	Yes
DAC-HY-02	DAC-HY-35	7,441.7 ± 1,111.2	No
DAC-HY-03	DAC-HY-35	9,937.5 ± 950.9	Yes
DAC-HY-04	DAC-HY-35	6,229.2 ± 899.5	Yes
DAC-HY-05	DAC-HY-35	11,908.3 ± 1,139.5	Yes
DAC-HY-06	DAC-HY-35	5,362.5 ± 542.4	Yes
DAC-HY-07	DAC-HY-35	7,095.8 ± 1,805.3	Yes
DAC-HY-08	DAC-HY-30	4,795.8 ± 983.0	Yes
DAC-HY-09	DAC-HY-35	3,579.2 ± 2,172.7	Yes
DAC-HY-10	DAC-HY-30	6,154.2 ± 1,750.9	Yes
DAC-HY-11	DAC-HY-30	3,275.0 ± 777.6	Yes
DAC-HY-12	DAC-HY-35	5,287.5 ± 672.8	Yes
DAC-HY-13	DAC-HY-35	1,983.3 ± 758.0	Yes
DAC-HY-14	DAC-HY-35	7,887.5 ± 1,210.7	No
DAC-HY-15	DAC-HY-30	3,183.3 ± 434.1	Yes
DAC-HY-16	DAC-HY-30	5,500.0 ± 1,011.2	Yes
DAC-HY-17	DAC-HY-35	1,575.0 ± 277.2	Yes
DAC-HY-18	DAC-HY-30	8,179.2 ± 1,915.9	Yes
DAC-HY-19	DAC-HY-30	10,175.0 ± 1,651.8	No
DAC-HY-20	DAC-HY-30	7,575.0 ± 1,310.1	Yes
DAC-HY-21	DAC-HY-30	11,395.8 ± 1,779.4	No
DAC-HY-22	DAC-HY-30	17,495.8 ± 1,632.1	No
DAC-HY-23	DAC-HY-35	14,141.7 ± 1,745.1	No
DAC-HY-24	DAC-HY-30	10,970.8 ± 515.8	Yes
DAC-HY-25	DAC-HY-30	12,870.8 ± 979.3	No
DAC-HY-26	DAC-HY-30	7,583.3 ± 889.0	Yes
DAC-HY-27	DAC-HY-30	5,645.8 ± 168.0	Yes
DAC-HY-28	DAC-HY-30	7,366.7 ± 472.5	Yes
Commencement Bay			
DAC-HY-30	na	13,970.8 ± 665.3	na
DAC-HY-35	na	16,012.5 ± 441.2	na

[a] Corresponding reference station with similar grain size, TOC, and depth.
[b] Mean abundance for four replicate samples.
[c] Statistically significant depressions of abundance compared to the reference as determined by a *t*-test at the α=0.05 level.

TABLE 4-1. STATION BY STATION CONTAMINANTS OF CONCERN THAT EXCEED SQS AND SQO CONCENTRATIONS, AND ENRICHMENT RATIOS FOR SURFACE SEDIMENTS OF HYLEBOS WATERWAY

Station	Parameter	Concentration (µg/kg OC)	SQS (µg/kg OC)	ER	Concentration (µg/kg DW)	/ SQO (µg/kg DW)	ER
DAC-HY-01	Hexachlorobenzene	733	380	1.93			
	Hexachlorobutadiene				14	11	1.27
DAC-HY-02	1,2,4-Trichlorobenzene	1,610	810	1.99			
	Hexachlorobenzene	1,110	380	2.92			
	Hexachlorobutadiene				49	11	4.45
	Total PCBs	18,300	12,000	1.53			
DAC-HY-03	1,2,4-Trichlorobenzene	833	810	1.03			
	1,4-Dichlorobenzene	3,180	3,100	1.03			
	Hexachlorobenzene	1,150	380	3.03			
	Hexachlorobutadiene				25	11	2.27
DAC-HY-04	1,2,4-Trichlorobenzene	1,260	810	1.56			
	Hexachlorobenzene	1,260	380	3.32			
	Hexachlorobutadiene				37	11	3.36
	Total PCBs	12,600	12,000	1.05			
DAC-HY-05	1,2,4-Trichlorobenzene	1,570	810	1.94			
	Hexachlorobenzene	2,080	380	5.47	41	22	1.86
	Hexachlorobutadiene				75	11	6.82
	Total PCBs	17,800	12,000	1.48			
DAC-HY-06	1,2,4-Trichlorobenzene	5,030	810	6.21	97	51	1.9
	1,4-Dichlorobenzene	4,200	3,100	1.35			
	Hexachlorobutadiene	7,770	3,900	1.99	150	11	13.64
	Hexachlorobenzene	3,260	380	8.58	63	22	2.86
	Total PCBs	26,400	12,000	2.2			
DAC-HY-07	1,2,4-Trichlorobenzene	2,570	810	3.17			
	Hexachlorobutadiene	14,900	3,900	3.82	260	11	23.64
	Hexachlorobenzene	3,660	380	9.63	64	22	2.91
	Total PCBs	16,000	12,000	1.33			
DAC-HY-08	1,2,4-Trichlorobenzene	2,570	810	3.17	74	51	1.45
	Hexachlorobutadiene	8,330	3,900	2.14	240	11	21.82
	Hexachlorobenzene	1,880	380	4.95	54	22	2.45
	Total PCBs	27,400	12,000	2.28			

TABLE 4-1. (CONTINUED)

Station	Parameter	Concentration (µg/kg OC)	SQS (µg/kg OC)	ER	Concentration (µg/kg DW)		SQO (µg/kg DW)	ER
DAC-HY-09	Pentachlorophenol	790	360	2.19	790	J	360	2.19
	1,2,4-Trichlorobenzene	2,920	810	3.6	59		51	1.16
	Hexachlorobutadiene	10,900	3,900	2.79	220		11	20
	Bis(2-ethylhexyl)phthalat	54,500	47,000	1.16				
	Hexachlorobenzene	5,940	380	15.63	120		22	5.45
DAC-HY-10	1,2,4-Trichlorobenzene	5,390	810	6.65	110		51	2.16
	Hexachlorobutadiene	5,880	3,900	1.51	120		11	10.91
	Hexachlorobenzene	3,140	380	8.26	64		22	2.91
	Total PCBs	23,000	12,000	1.92				
DAC-HY-11	1,2,4-Trichlorobenzene	2,000	810	2.47				
	Hexachlorobenzene	1,900	380	5	40		22	1.82
	Hexachlorobutadiene				66		11	6
	Total PCBs	18,600	12,000	1.55				
DAC-HY-12	1,2,4-Trichlorobenzene	1,400	810	1.73				
	Hexachlorobenzene	1,800	380	4.74	45		22	2.05
	Hexachlorobutadiene				62		11	5.64
	Total PCBs	16,000	12,000	1.33				
DAC-HY-13	Hexachlorobenzene	635	380	1.67				
	Hexachlorobutadiene				16		11	1.45
DAC-HY-14	1,2,4-Trichlorobenzene	1,020	810	1.26				
	Hexachlorobenzene	1,090	380	2.87				
	Hexachlorobutadiene				23		11	2.09
	Total PCBs	15,600	12,000	1.3				
DAC-HY-15	Hexachlorobenzene	1,100	380	2.89	28		22	1.27
	Hexachlorobutadiene				25		11	2.27
	Total PCBs	16,100	12,000	1.34				
DAC-HY-16	Zinc	579[a]	410	1.41	579		410	1.41
	Hexachlorobenzene	737	380	1.94	23		22	1.05
	Hexachlorobutadiene				25		11	2.27
	Total PCBs	19,200	12,000	1.6				
DAC-HY-17	Hexachlorobenzene	434	380	1.14				
	Total PCBs	28,500	12,000	2.38				

TABLE 4-1. (CONTINUED)

Station	Parameter	Concentration (µg/kg OC)	SQS (µg/kg OC)	ER	Concentration (µg/kg DW)		SQO (µg/kg DW)	ER
DAC-HY-18	1,2,4-Trichlorobenzene	890	810	1.1				
	Hexachlorobenzene	623	380	1.64				
	Hexachlorobutadiene				24		11	2.18
	Total PCBs	17,200	12,000	1.43				
DAC-HY-19	Benzo(g,h,i)perylene				940		720	1.31
	Indeno(1,2,3-c,d)pyrene				800		690	1.16
	Pyrene				3,800		3,300	1.15
	1,2,4-Trichlorobenzene	1,040	810	1.28				
	Hexachlorobenzene	545	380	1.43				
	Hexachlorobutadiene				27	UJ	11	2.45
	Total PCBs	17,400	12,000	1.45				
DAC-HY-20	Benzo(g,h,i)perylene				870		720	1.21
	Indeno(1,2,3-c,d)pyrene				720		690	1.04
	Hexachlorobenzene	569	380	1.5	23		22	1.05
	Hexachlorobutadiene				19		11	1.73
	Total PCBs	14,900	12,000	1.24				
DAC-HY-21	Benzo(g,h,i)perylene				880		720	1.22
	Indeno(1,2,3-c,d)pyrene				780		690	1.13
	1,2,4-Trichlorobenzene	944	810	1.17				
	Hexachlorobenzene	740	380	1.95	29		22	1.32
	Hexachlorobutadiene				24		11	2.18
	Total PCBs	15,300	12,000	1.28				
DAC-HY-22	Total PCBs	12,800	12,000	1.07				
	Phenanthrene				2,000		1,500	1.33
	Fluoranthene				2,900		2,500	1.16
	Hexachlorobutadiene				17		11	1.55
DAC-HY-23	Zinc	434[a]	410	1.06	434		410	1.06
	Butylbenzyl phthalate	15,300	4,900	3.12				
	Total PCBs	14,000	12,000	1.17				
	Benzo(g,h,i)perylene				870		720	1.21
	Indeno(1,2,3-c,d)pyrene				750		690	1.09
	Total				3,900		3,600	1.08
	Hexachlorobutadiene				12		11	1.09

TABLE 4-1. (CONTINUED)

Station	Parameter	Concentration (µg/kg OC)	SQS (µg/kg OC)	ER	Concentration (µg/kg DW)	SQO (µg/kg DW)	ER
DAC-HY-24	Arsenic	120[a]	57	2.11	120	57	2.11
	Anthracene				990	960	1.03
	Dibenz(a,h)anthracene				340	230	1.48
	Benz(a)anthracene				1,900	1,600	1.19
	Benzo(a)pyrene				1,800	1,600	1.13
	Benzo(g,h,i)perylene				1,300	720	1.81
	Chrysene				3,700	2,800	1.32
	Fluoranthene				6,100	2,500	2.44
	Total HPAHs				28,500	17,000	1.68
	Indeno(1,2,3-c,d)pyrene				1,100	690	1.59
	Pyrene				5,700	3,300	1.73
	Total				6,600	3,600	1.83
	Hexachlorobutadiene				12	11	1.09
	Bis(2-ethylhexyl)phthalat				1,400	1300	1.08
	p,p'-DDD				16	16	1
DAC-HY-25	Arsenic	61.4[a]	57	1.08	61.4	57	1.08
	Dibenz(a,h)anthracene				280	230	1.22
	Benzo(g,h,i)perylene				1,000	720	1.39
	Indeno(1,2,3-c,d)pyrene				930	690	1.35
	Pyrene				3,400	3,300	1.03
	Total				4,800	3,600	1.33
	p,p'-DDE				9.6	9	1.07
DAC-HY-26	Dibenz(a,h)anthracene				240	230	1.04
	Benzo(g,h,i)perylene				870	720	1.21
	Indeno(1,2,3-c,d)pyrene				800	690	1.16
	Total				3,900	3,600	1.08
	p,p'-DDE				13	9	1.44
DAC-HY-27	Arsenic	97.6[a]	57	1.71	97.6	57	1.71
DAC-HY-28	p,p'-DDD				21	16	1.31
	p,p'-DDE				12	9	1.33

TABLE 4-1. (CONTINUED)

NOTES: na - Not applicable; the detection limit for this analyte exceeded the SQS.
OC - Organic carbon
ER - Enrichment ratio
DW - Dry weight
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

[a] Metals are in mg/kg dry weight.

TABLE 4-2. CLASSIFICATION OF HYLEBOS WATERWAY STATIONS BASED ON SEDIMENT QUALITY TRIAD ANALYSIS

Station	Number of Contaminants of Concern That Exceed Chemistry Objectives		Failed Laboratory Toxicity Test			Depressed Benthic Abundance Indices				Classification
	SQS (ER)[a]	SQO (ER)[a]	A	E	LP	C	M	P	T	
DAC-HY-01	1 (1.9)	1 (1.3)					✓	✓	✓	Potentially adversely affected
DAC-HY-02	3 (2.9)	1 (4.5)					✓		✓	Potentially adversely affected
DAC-HY-03	3 (3.0)	1 (2.3)						✓	✓	Potentially adversely affected
DAC-HY-04	3 (3.3)	1 (3.4)	✓	✓		✓	✓	✓	✓	Adversely affected
DAC-HY-05	3 (5.5)	2 (6.8)	✓	✓		✓		✓	✓	Adversely affected
DAC-HY-06	5 (8.6)	3 (13.6)				✓	✓	✓	✓	Potentially adversely affected
DAC-HY-07	4 (9.6)	2 (23.6)				✓	✓	✓	✓	Potentially adversely affected
DAC-HY-08	4 (5.0)	3 (21.8)	✓			✓	✓	✓	✓	Adversely affected
DAC-HY-09	5 (15.6)	4 (2.2)	✓			✓	✓	✓	✓	Adversely affected
DAC-HY-10	4 (8.3)	3 (10.9)	✓	✓		✓		✓	✓	Adversely affected
DAC-HY-11	3 (2.5)	2 (6.0)		✓		✓		✓	✓	Adversely affected
DAC-HY-12	3 (4.7)	2 (5.6)	✓			✓		✓	✓	Adversely affected
DAC-HY-13	1 (1.7)	1 (1.5)				✓	✓	✓	✓	Potentially adversely affected
DAC-HY-14	3 (2.9)	1 (2.1)				✓	✓		✓	Potentially adversely affected
DAC-HY-15	2 (2.9)	2 (2.3)		✓		✓		✓	✓	Adversely affected
DAC-HY-16	3 (1.9)	3 (2.3)				✓		✓	✓	Potentially adversely affected
DAC-HY-17	2 (2.4)	0				✓	✓	✓	✓	Potentially adversely affected
DAC-HY-18	3 (1.6)	1 (2.18)						✓		Potentially adversely affected
DAC-HY-19	3 (1.5)	4 (2.5)								Not adversely affected
DAC-HY-20	2 (1.5)	4 (1.7)		✓		✓		✓	✓	Adversely affected
DAC-HY-21	3 (2.0)	3 (2.2)				✓				Potentially adversely affected
DAC-HY-22	1 (1.1)	3 (1.6)				✓				Potentially adversely affected
DAC-HY-23	3 (3.1)	5 (1.2)		✓						Potentially adversely affected
DAC-HY-24	1 (2.1)	15 (2.4)	✓	✓		✓	✓	✓	✓	Adversely affected
DAC-HY-25	1 (1.1)	7 (1.4)		✓		✓				Adversely affected
DAC-HY-26	0	5 (1.4)				✓	✓	✓	✓	Potentially adversely affected
DAC-HY-27	1 (1.7)	1 (1.7)		✓		✓	✓	✓	✓	Adversely affected
DAC-HY-28	0	2 (1.3)				✓		✓	✓	Potentially adversely affected

TABLE 4-2. (CONTINUED)

NOTES: ER - Enrichment ratio
A - Amphipod mortality toxicity test
E - Echinoderm mortality/abnormality test
LP - Larval Polychaete growth test
C - Crustacean abundance
M - Molluscan abundance
P - Polychaete abundance
T - Total abundance

[a] Maximum enrichment ratio measured for contaminants exceeding the SQS for each station.