APPENDIX B
RESULTS OF CHEMICAL ANALYSES

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This appendix presents summary tables of the results of chemical analyses for sediment and surface water samples collected for the Whatcom Waterway Project. Analyses were conducted by MultiChem Analytical Services. The tables compile the qualified data based on validation and review of analytical results (refer to Appendix C).

DATA QUALIFIER DEFINITIONS

The following data qualifiers have been used in the text and the following tables based on a quality assurance review of the laboratory procedures and results:

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UE - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

E - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision-making processes.

B - Analyte detected in associated method blank.

Blanks in the tables indicate analysis not conducted for specific analyte.

COMPARISON TO SMS CRITERIA

Surface and subsurface sediment data were normalized to organic carbon, when applicable, and compared to the Washington State Department of Ecology Sediment Management Standards; these standards are included at the end of Tables B-1, B-2, and B-3. Dashed boxes outline concentrations which exceed the Sediment Quality Standard (SQS) criteria. Solid boxes outline concentrations which exceed the Minimum Cleanup Level (MCUL) criteria. Duplicate results are not boxed.

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	SQS	MCUL	9609011-1	9609011-2	9609024-4	9609011-3	9609011-4	9609024-5	9609011-5
Sample-ID			HC-SS-01	HC-SS-02	HC-SS-03	HC-SS-04	HC-SS-05	HC-SS-06	HC-SS-07
Depth			0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date			9/03/96	9/03/96	9/06/96	9/03/96	9/03/96	9/06/96	9/03/96
Conventionals in pct. (dry)									
Moisture			70	70	67	66	63	68	62
Total Organic Carbon			2.8	3.4	2.8	3.5	2.1	2.9	2.8
Metals in mg/kg (dry)									
Arsenic	57	93			8.6			12	
Cadmium	5.1	6.7			1.5 U			1.6 U	
Chromium	260	270			55			65	
Copper	390	390			37			45	
Lead	450	530			9 U			11	
Mercury	0.41	0.59	0.32 U	0.47	0.32	0.35	0.32	0.39	0.47
Silver	6.1	6.1			1.5 U			1.6 U	
Zinc	410	960			72			81	
HPAHs in µg/kg (dry)									
Benz(a)anthracene					66 UE			27 E	
Benzo(a)pyrene					19 E			30 E	
Benzo(b)fluoranthene					37 EC			31 E	
Benzo(k)fluoranthene					37 EC			23 E	
Total benzofluoranthenes					37			54	
Benzo(ghi)perylene					93 UE			32 E	
Chrysene					28 E			43 E	
Dibenz(a,h)anthracene					93 UE			96 UE	
Fluoranthene					73 E			88 E	
Indeno(1,2,3-cd)pyrene					90 UE			93 UE	
Pyrene					78 E			98 E	
Total HPAHs					235			372	
HPAHs in mg/kg (OC)									
Benz(a)anthracene	110	270			2.36 UE			0.93 E	
Benzo(a)pyrene	99	210			0.68 E			1.03 E	
Benzo(b)fluoranthene					1.32 EC			1.07 E	
Benzo(k)fluoranthene					1.32 EC			0.79 E	
Total benzofluoranthenes	230	450			1.32			1.86	
Benzo(ghi)perylene	31	78			3.32 UE			1.10 E	
Chrysene	110	460			1.00 E			1.48 E	
Dibenz(a,h)anthracene	12	33			3.32 UE			3.31 UE	
Fluoranthene	160	1200			2.61 E			3.03 E	
Indeno(1,2,3-cd)pyrene	34	88			3.21 UE			3.21 UE	
Pyrene	1000	1400			2.79 E			3.38 E	
Total HPAHs	960	5300			8.39			12.83	

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	SQS	MCUL	9609011-1	9609011-2	9609024-4	9609011-3	9609011-4	9609024-5	9609011-5
Sample-ID			HC-SS-01	HC-SS-02	HC-SS-03	HC-SS-04	HC-SS-05	HC-SS-06	HC-SS-07
Depth			0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date			9/03/96	9/03/96	9/06/96	9/03/96	9/03/96	9/06/96	9/03/96
LPAHs in µg/kg (dry)									
2-Methylnaphthalene					50 UE			52 UE	
Acenaphthene					51 UE			53 UE	
Acenaphthylene					46 UE			48 UE	
Anthracene					54 UE			56 UE	
Fluorene					59 UE			61 UE	
Naphthalene					150 E			140 E	
Phenanthrene					81 E			88 E	
Total LPAHs					231			228	
LPAHs in mg/kg (OC)									
2-Methylnaphthalene	38	64			1.79 UE			1.79 UE	
Acenaphthene	16	57			1.82 UE			1.83 UE	
Acenaphthylene	66	66			1.64 UE			1.66 UE	
Anthracene	220	1200			1.93 UE			1.93 UE	
Fluorene	23	79			2.11 UE			2.10 UE	
Naphthalene	99	170			5.36 E			4.83 E	
Phenanthrene	100	480			2.89 E			3.03 E	
Total LPAHs	370	780			8.25			7.86	
Semivolatiles in µg/kg (dry)									
1,2,4-Trichlorobenzene					47 UE			48 UE	
1,2-Dichlorobenzene					55 UE			57 UE	
1,4-Dichlorobenzene					50 UE			52 UE	
Benzoic Acid	650	650			220 EB			340 EB	
Benzyl Alcohol	57	73			4.4 E			5.1 E	
Dibenzofuran					21 E			21 E	
Hexachlorobenzene					5.1 U			5.2 U	
Hexachlorobutadiene					5.1 U			5.2 U	
N-Nitroso diphenylamine					62 UE			64 UE	
Semivolatiles in mg/kg (OC)									
1,2,4-Trichlorobenzene	0.81	1.8			1.68 UE			1.66 UE	
1,2-Dichlorobenzene	2.3	2.3			1.96 UE			1.97 UE	
1,4-Dichlorobenzene	3.1	9			1.79 UE			1.79 UE	
Benzoic Acid					7.86 EB			11.72 EB	
Benzyl Alcohol					0.16 E			0.18 E	
Dibenzofuran	15	58			0.75 E			0.72 E	
Hexachlorobenzene	0.38	2.3			0.18 U			0.18 U	
Hexachlorobutadiene	3.9	6.2			0.18 U			0.18 U	
N-Nitroso diphenylamine	11	11			2.21 UE			2.21 UE	

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	SQS	MCUL	9609011-1	9609011-2	9609024-4	9609011-3	9609011-4	9609024-5	9609011-5
Sample-ID			HC-SS-01	HC-SS-02	HC-SS-03	HC-SS-04	HC-SS-05	HC-SS-06	HC-SS-07
Depth			0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date			9/03/96	9/03/96	9/06/96	9/03/96	9/03/96	9/06/96	9/03/96
Phthalates in µg/kg (dry)									
Bis(2-ethylhexyl)phthalate					210 B			83 B	
Butyl benzyl phthalate					93 UE			96 UE	
Di-n-butyl phthalate					72 UE			74 UE	
Di-n-octyl phthalate					87 UE			89 UE	
Diethyl phthalate					120 UE			130 UE	
Dimethyl phthalate					100 UE			110 UE	
Phthalates in mg/kg (OC)									
Bis(2-ethylhexyl)phthalate	47	78			7.50 B			2.86 B	
Butyl benzyl phthalate	4.9	64			3.32 UE			3.31 UE	
Di-n-butyl phthalate	220	1700			2.57 UE			2.55 UE	
Di-n-octyl phthalate	58	4500			3.11 UE			3.07 UE	
Diethyl phthalate	61	110			4.29 UE			4.48 UE	
Dimethyl phthalate	53	53			3.57 UE			3.79 UE	
PCBs in µg/kg (dry)									
PCB-1016					150 U			160 U	
PCB-1221					150 U			160 U	
PCB-1232					150 U			160 U	
PCB-1242					150 U			160 U	
PCB-1248					150 U			160 U	
PCB-1254					150 U			160 U	
PCB-1260					150 U			160 U	
Total PCBs					150 U			160 U	
PCBs in mg/kg (OC)									
PCB-1016					5.36 U			5.52 U	
PCB-1221					5.36 U			5.52 U	
PCB-1232					5.36 U			5.52 U	
PCB-1242					5.36 U			5.52 U	
PCB-1248					5.36 U			5.52 U	
PCB-1254					5.36 U			5.52 U	
PCB-1260					5.36 U			5.52 U	
Total PCBs	12	65			5.36 U			5.52 U	
Phenols in µg/kg (dry)									
2,4-Dimethylphenol	29	29			23 UE			24 UE	
2-Methylphenol	63	63			9.1 E			13 E	
4-Methylphenol	670	670			1600 E			1900 E	
Pentachlorophenol	360	690			6.5 E			4.7 E	
Phenol	420	1200			900 E			2200 E	
Total Phenols(detects only)					2516			4118	

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-6	9609011-6	9609011-7	9609011-8	9609011-9	9609011-10	9609011-11	9609011-12
Sample-ID	HC-SS-08	HC-SS-09	HC-SS-10	HC-SS-11	HC-SS-12	HC-SS-13	HC-SS-14	HC-SS-15
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/03/96	9/03/96	9/03/96	9/03/96	9/04/96	9/04/96	9/04/96
Conventionals in pct. (dry)								
Moisture	61	64	66	61	56	60	70	60
Total Organic Carbon	2.3	2.4	. 2.4	2	2.2	2.2	2.6	2.3
Metals in mg/kg (dry)								
Arsenic	9.5							
Cadmium	1.3 U							
Chromium	57							
Copper	43							
Lead	11							
Mercury	0.53	0.5	0.44	0.47	0.23 U	1	0.77	0.67
Silver	1.3 U							
Zinc	78							
HPAHs in µg/kg (dry)								
Benz(a)anthracene	56 UE							
Benzo(a)pyrene	56 E							
Benzo(b)fluoranthene	61 E							
Benzo(k)fluoranthene	54 E							
Total benzofluoranthenes	115							
Benzo(ghi)perylene	93 E							
Chrysene	73 E							
Dibenz(a,h)anthracene	79 UE							
Fluoranthene	200 E							
Indeno(1,2,3-cd)pyrene	59 E							
Pyrene	230 E							
Total HPAHs	826							
HPAHs in mg/kg (OC)								
Benz(a)anthracene	2.43 UE							
Benzo(a)pyrene	2.43 E							
Benzo(b)fluoranthene	2.65 E							
Benzo(k)fluoranthene	2.35 E							
Total benzofluoranthenes	5.00							
Benzo(ghi)perylene	4.04 E							
Chrysene	3.17 E							
Dibenz(a,h)anthracene	3.43 UE							
Fluoranthene	8.70 E							
Indeno(1,2,3-cd)pyrene	2.57 E							
Pyrene	10.00 E							
Total HPAHs	35.91							

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-6	9609011-6	9609011-7	9609011-8	9609011-9	9609011-10	9609011-11	9609011-12
Sample-ID	HC-SS-08	HC-SS-09	HC-SS-10	HC-SS-11	HC-SS-12	HC-SS-13	HC-SS-14	HC-SS-15
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/03/96	9/03/96	9/03/96	9/03/96	9/04/96	9/04/96	9/04/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	41 E							
Acenaphthene	43 UE							
Acenaphthylene	44 E							
Anthracene	37 E							
Fluorene	21 E							
Naphthalene	320 E							
Phenanthrene	220 E							
Total LPAHs	642							
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	1.78 E							
Acenaphthene	1.87 UE							
Acenaphthylene	1.91 E							
Anthracene	1.61 E							
Fluorene	0.91 E							
Naphthalene	13.91 E							
Phenanthrene	9.57 E							
Total LPAHs	27.91							
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	39 UE							
1,2-Dichlorobenzene	47 UE							
1,4-Dichlorobenzene	42 UE							
Benzoic Acid	250 EB							
Benzyl Alcohol	7.1 E							
Dibenzofuran	63 E							
Hexachlorobenzene	4.3 U							
Hexachlorobutadiene	4.3 U							
N-Nitroso diphenylamine	53 UE							
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.70 UE							
1,2-Dichlorobenzene	2.04 UE							
1,4-Dichlorobenzene	1.83 UE							
Benzoic Acid	10.87 EB							
Benzyl Alcohol	0.31 E							
Dibenzofuran	2.74 E							
Hexachlorobenzene	0.19 U							
Hexachlorobutadiene	0.19 U							
N-Nitroso diphenylamine	2.30 UE							

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-6	9609011-6	9609011-7	9609011-8	9609011-9	9609011-10	9609011-11	9609011-12
Sample-ID	HC-SS-08	HC-SS-09	HC-SS-10	HC-SS-11	HC-SS-12	HC-SS-13	HC-SS-14	HC-SS-15
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/03/96	9/03/96	9/03/96	9/03/96	9/04/96	9/04/96	9/04/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	160 B							
Butyl benzyl phthalate	23 E							
Di-n-butyl phthalate	24 E							
Di-n-octyl phthalate	73 UE							
Diethyl phthalate	100 UE							
Dimethyl phthalate	88 UE							
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	6.96 B							
Butyl benzyl phthalate	1.00 E							
Di-n-butyl phthalate	1.04 E							
Di-n-octyl phthalate	3.17 UE							
Diethyl phthalate	4.35 UE							
Dimethyl phthalate	3.83 UE							
PCBs in µg/kg (dry)								
PCB-1016	130 U							
PCB-1221	130 U							
PCB-1232	130 U							
PCB-1242	130 U							
PCB-1248	130 U							
PCB-1254	130 U							
PCB-1260	130 U							
Total PCBs	130 U							
PCBs in mg/kg (OC)								
PCB-1016	5.65 U							
PCB-1221	5.65 U							
PCB-1232	5.65 U							
PCB-1242	5.65 U							
PCB-1248	5.65 U							
PCB-1254	5.65 U							
PCB-1260	5.65 U							
Total PCBs	5.65 U							
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	2.3 E							
2-Methylphenol	3 E							
4-Methylphenol	870 E							
Pentachlorophenol	8.2 E							
Phenol	1000 E							
Total Phenols(detects only)	1884							

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609011-13	9609011-14	9609011-15	9609021-11	9609011-16	9609021-12	9609021-8	9609021-6
Sample-ID	HC-SS-16	HC-SS-17	HC-SS-18	HC-SS-19	HC-SS-20	HC-SS-21	HC-SS-22	HC-SS-23
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/04/96	9/04/96	9/06/96	9/04/96	9/06/96	9/06/96	9/06/96
Conventionals in pct. (dry)								
Moisture	58	59	58	64	64	63	67	59
Total Organic Carbon	2	2.1	2.2	2.6	3.4	3.7	2.7	3
Metals in mg/kg (dry)								
Arsenic				11	11	11	11	9.9
Cadmium				1.4 U	1.4 U	1.4 U	1.5 U	1.3
Chromium				67 E	72	66 E	61 E	69 E
Copper				52	61	56	51	56
Lead				15	22	19	14	21
Mercury	0.47	0.58	0.38	0.62	0.44	1.2	0.93	2
Silver				1.4 U	1.4 U	1.4 U	1.5 U	1.3 U
Zinc				95	110	100	90	100
HPAHs in µg/kg (dry)								
Benz(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(k)fluoranthene								
Total benzofluoranthenes								
Benzo(ghi)perylene								
Chrysene								
Dibenz(a,h)anthracene								
Fluoranthene								
Indeno(1,2,3-cd)pyrene								
Pyrene								
Total HPAHs								
HPAHs in mg/kg (OC)								
Benz(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(k)fluoranthene								
Total benzofluoranthenes								
Benzo(ghi)perylene								
Chrysene								
Dibenz(a,h)anthracene								
Fluoranthene								
Indeno(1,2,3-cd)pyrene								
Pyrene								
Total HPAHs								

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609011-13	9609011-14	9609011-15	9609021-11	9609011-16	9609021-12	9609021-8	9609021-6
Sample-ID	HC-SS-16	HC-SS-17	HC-SS-18	HC-SS-19	HC-SS-20	HC-SS-21	HC-SS-22	HC-SS-23
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/04/96	9/04/96	9/06/96	9/04/96	9/06/96	9/06/96	9/06/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene								
Acenaphthene								
Acenaphthylene								
Anthracene								
Fluorene								
Naphthalene								
Phenanthrene								
Total LPAHs								
LPAHs in mg/kg (OC)								
2-Methylnaphthalene								
Acenaphthene								
Acenaphthylene								
Anthracene								
Fluorene								
Naphthalene								
Phenanthrene								
Total LPAHs								
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								
Benzoic Acid								
Benzyl Alcohol								
Dibenzofuran								
Hexachlorobenzene								
Hexachlorobutadiene								
N-Nitroso diphenylamine								
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								
Benzoic Acid								
Benzyl Alcohol								
Dibenzofuran								
Hexachlorobenzene								
Hexachlorobutadiene								
N-Nitroso diphenylamine								

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609011-13	9609011-14	9609011-15	9609021-11	9609011-16	9609021-12	9609021-8	9609021-6
Sample-ID	HC-SS-16	HC-SS-17	HC-SS-18	HC-SS-19	HC-SS-20	HC-SS-21	HC-SS-22	HC-SS-23
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/04/96	9/04/96	9/06/96	9/04/96	9/06/96	9/06/96	9/06/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate								
Butyl benzyl phthalate								
Di-n-butyl phthalate								
Di-n-octyl phthalate								
Diethyl phthalate								
Dimethyl phthalate								
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate								
Butyl benzyl phthalate								
Di-n-butyl phthalate								
Di-n-octyl phthalate								
Diethyl phthalate								
Dimethyl phthalate								
PCBs in µg/kg (dry)								
PCB-1016								
PCB-1221								
PCB-1232								
PCB-1242								
PCB-1248								
PCB-1254								
PCB-1260								
Total PCBs								
PCBs in mg/kg (OC)								
PCB-1016								
PCB-1221								
PCB-1232								
PCB-1242								
PCB-1248								
PCB-1254								
PCB-1260								
Total PCBs								
Phenols in µg/kg (dry)								
2,4-Dimethylphenol								
2-Methylphenol								
4-Methylphenol								
Pentachlorophenol								
Phenol								
Total Phenols(detects only)								

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609021-7	9609021-9	9609021-10	9609021-3	9609011-17	9609021-5	9609024-2	9609024-1
Sample-ID	HC-SS-24	HC-SS-25	HC-SS-202	HC-SS-26	HC-SS-27	HC-SS-28	HC-SS-29	HC-SS-30
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/06/96	9/06/96	9/05/96	9/04/96	9/06/96	9/06/96	9/06/96
			Dup of HC-SS-25					
Conventionals in pct. (dry)								
Moisture	60	62	61	46	36	65	62	63
Total Organic Carbon	4	4.1	4.4	3.9	2.7	3.8	4.4	2.4
Metals in mg/kg (dry)								
Arsenic	10	11	11	7.1		10	8.8	8.4
Cadmium	1.3 U	1.3 U	1.3 U	0.94 U		1.7	1.4	1.4 U
Chromium	54 E	57 E	59 E	35 E		84 E	57	72
Copper	55	53	58	29		83	58	61
Lead	18	16	16	8		43	23	16
Mercury	1.9	1	1.1	0.38	0.23	0.47	0.7	0.49
Silver	1.3 U	1.3 U	1.3 U	0.94 U		1.5 U	1.4 U	1.4 U
Zinc	92	88	93	51		160	120	110
HPAHs in µg/kg (dry)								
Benz(a)anthracene							240 E	150 E
Benzo(a)pyrene							220 E	82 E
Benzo(b)fluoranthene							220 E	110 E
Benzo(k)fluoranthene							230 E	110 E
Total benzofluoranthenes							450	220
Benzo(ghi)perylene							240 E	68 E
Chrysene							410 E	240 E
Dibenz(a,h)anthracene							88 E	83 UE
Fluoranthene							630 E	300 E
Indeno(1,2,3-cd)pyrene							200 E	58 E
Pyrene							950 E	320 E
Total HPAHs							3428	1438
HPAHs in mg/kg (OC)								
Benz(a)anthracene							5.45 E	6.25 E
Benzo(a)pyrene							5.00 E	3.42 E
Benzo(b)fluoranthene							5.00 E	4.58 E
Benzo(k)fluoranthene							5.23 E	4.58 E
Total benzofluoranthenes							10.23	9.17
Benzo(ghi)perylene							5.45 E	2.83 E
Chrysene							9.32 E	10.00 E
Dibenz(a,h)anthracene							2.00 E	3.46 UE
Fluoranthene							14.32 E	12.50 E
Indeno(1,2,3-cd)pyrene							4.55 E	2.42 E
Pyrene							21.59 E	13.33 E
Total HPAHs							77.91	59.92

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609021-7	9609021-9	9609021-10	9609021-3	9609011-17	9609021-5	9609024-2	9609024-1
Sample-ID	HC-SS-24	HC-SS-25	HC-SS-202	HC-SS-26	HC-SS-27	HC-SS-28	HC-SS-29	HC-SS-30
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/06/96	9/06/96	9/05/96	9/04/96	9/06/96	9/06/96	9/06/96
			Dup of HC-SS-25					
LPAHs in µg/kg (dry)								
2-Methylnaphthalene							120 E	15 E
Acenaphthene							62 E	46 UE
Acenaphthylene							40 E	41 UE
Anthracene							130 E	50 E
Fluorene							93 E	24 E
Naphthalene							410 E	42 E
Phenanthrene							470 E	140 E
Total LPAHs							1205	256
LPAHs in mg/kg (OC)								
2-Methylnaphthalene							2.73 E	0.63 E
Acenaphthene							1.41 E	1.92 UE
Acenaphthylene							0.91 E	1.71 UE
Anthracene							2.95 E	2.08 E
Fluorene							2.11 E	1.00 E
Naphthalene							9.32 E	1.75 E
Phenanthrene							10.68 E	5.83 E
Total LPAHs							27.39	10.67
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene							41 UE	42 UE
1,2-Dichlorobenzene							48 UE	49 UE
1,4-Dichlorobenzene							44 UE	45 UE
Benzoic Acid							230 EB	260 EB
Benzyl Alcohol							12 E	49 E
Dibenzofuran							79 E	20 E
Hexachlorobenzene							4.4 U	4.5 U
Hexachlorobutadiene							4.4 U	4.5 U
N-Nitroso diphenylamine							54 UE	55 UE
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene							0.93 UE	1.75 UE
1,2-Dichlorobenzene							1.09 UE	2.04 UE
1,4-Dichlorobenzene							1.00 UE	1.88 UE
Benzoic Acid							5.23 EB	10.83 EB
Benzyl Alcohol							0.27 E	2.04 E
Dibenzofuran							1.80 E	0.83 E
Hexachlorobenzene							0.10 U	0.19 U
Hexachlorobutadiene							0.10 U	0.19 U
N-Nitroso diphenylamine							1.23 UE	2.29 UE

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609021-7	9609021-9	9609021-10	9609021-3	9609011-17	9609021-5	9609024-2	9609024-1
Sample-ID	HC-SS-24	HC-SS-25	HC-SS-202	HC-SS-26	HC-SS-27	HC-SS-28	HC-SS-29	HC-SS-30
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/06/96	9/06/96	9/05/96	9/04/96	9/06/96	9/06/96	9/06/96
			Dup of HC-SS-25					
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate							230 B	100 B
Butyl benzyl phthalate							81 UE	18 E
Di-n-butyl phthalate							24 E	26 E
Di-n-octyl phthalate							75 UE	77 UE
Diethyl phthalate							110 UE	110 UE
Dimethyl phthalate							90 UE	92 UE
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate							5.23 B	4.17 B
Butyl benzyl phthalate							1.84 UE	0.75 E
Di-n-butyl phthalate							0.55 E	1.08 E
Di-n-octyl phthalate							1.70 UE	3.21 UE
Diethyl phthalate							2.50 UE	4.58 UE
Dimethyl phthalate							2.05 UE	3.83 UE
PCBs in µg/kg (dry)								
PCB-1016							130 U	140 U
PCB-1221							130 U	140 U
PCB-1232							130 U	140 U
PCB-1242							130 U	140 U
PCB-1248							130 U	140 U
PCB-1254							130 U	140 U
PCB-1260							130 U	140 U
Total PCBs							130 U	140 U
PCBs in mg/kg (OC)								
PCB-1016							2.95 U	5.83 U
PCB-1221							2.95 U	5.83 U
PCB-1232							2.95 U	5.83 U
PCB-1242							2.95 U	5.83 U
PCB-1248							2.95 U	5.83 U
PCB-1254							2.95 U	5.83 U
PCB-1260							2.95 U	5.83 U
Total PCBs							2.95 U	5.83 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol							6.3 E	2.1 E
2-Methylphenol							8 E	3.9 E
4-Methylphenol							410 E	680 E
Pentachlorophenol							100 E	24 E
Phenol							1000 E	1300 E
Total Phenols(detects only)							1524.3	2010

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-3	9609021-13	9609021-4	9609024-7	9609024-8	9609012-1	9609012-6	9609012-2
Sample-ID	HC-SS-203	HC-SS-31	HC-SS-32	HC-SS-33	HC-SS-34	HC-SS-35	HC-SS-36	HC-SS-37
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/09/96	9/05/96	9/09/96	9/09/96	9/03/96	9/05/96	9/03/96
	Dup of HC-SS-30							
Conventionals in pct. (dry)								
Moisture	64	67	45	60	52	67	51	56
Total Organic Carbon	2.6	2.9	3.9	3.5	3.8	3.5	1.8	3.5
Metals in mg/kg (dry)								
Arsenic	7.7	8.6	5.7	6	6.4	11 E	9.5 E	9.5 E
Cadmium	1.4 U	1.6 U	0.92 U	1.3 U	1.1	1.6	1.2	1.4
Chromium	71	75 E	24 E	27	33	65	48	53
Copper	59	54	26	36	43	85	53	110
Lead	15	14	14	11	31	38	27	37
Mercury	0.55	0.37	0.73	0.89	1.5	0.73	0.5	0.43
Silver	1.4 U	1.6 U	0.92 U	1.3 U	1.1 U	1.4 U	0.92 U	1.1 U
Zinc	110	100	48	54	78	150	110	160
HPAHs in µg/kg (dry)								
Benz(a)anthracene	100 E			79	170	130	100	300
Benzo(a)pyrene	63 E			51	110	98	71	220
Benzo(b)fluoranthene	100 E			160 C	150	250 C	170 C	510 C
Benzo(k)fluoranthene	74 E			160 C	94	250 C	170 C	510 C
Total benzofluoranthenes	174			160	244	250	170	510
Benzo(ghi)perylene	52 E			39 E	96	110	68	220
Chrysene	210 E			200	200	210	150	480
Dibenz(a,h)anthracene	86 UE			77 U	35 E	55 E	49	92
Fluoranthene	260 E			320	430	260	190	580
Indeno(1,2,3-cd)pyrene	46 E			36 E	75	95	60	190
Pyrene	270 E			340	600	270	240	680
Total HPAHs	1175			1225	1960	1478	1098	3272
HPAHs in mg/kg (OC)								
Benz(a)anthracene	3.85 E			2.26	4.47	3.71	5.56	8.57
Benzo(a)pyrene	2.42 E			1.46	2.89	2.80	3.94	6.29
Benzo(b)fluoranthene	3.85 E			4.57 C	3.95	7.14 C	9.44 C	14.57 C
Benzo(k)fluoranthene	2.85 E			4.57 C	2.47	7.14 C	9.44 C	14.57 C
Total benzofluoranthenes	6.69			4.57	6.42	7.14	9.44	14.57
Benzo(ghi)perylene	2.00 E			1.11 E	2.53	3.14	3.78	6.29
Chrysene	8.08 E			5.71	5.26	6.00	8.33	13.71
Dibenz(a,h)anthracene	3.31 UE			2.20 U	0.92 E	1.57 E	2.72	2.63
Fluoranthene	10.00 E			9.14	11.32	7.43	10.56	16.57
Indeno(1,2,3-cd)pyrene	1.77 E			1.03 E	1.97	2.71	3.33	5.43
Pyrene	10.38 E			9.71	15.79	7.71	13.33	19.43
Total HPAHs	45.19			35.00	51.58	42.23	61.00	93.49

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-3	9609021-13	9609021-4	9609024-7	9609024-8	9609012-1	9609012-6	9609012-2
Sample-ID	HC-SS-203	HC-SS-31	HC-SS-32	HC-SS-33	HC-SS-34	HC-SS-35	HC-SS-36	HC-SS-37
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/09/96	9/05/96	9/09/96	9/09/96	9/03/96	9/05/96	9/03/96
	Dup of HC-SS-30							
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	46 UE			10 E	93	29 E	25 E	280
Acenaphthene	47 UE			42 U	49	51 U	20 E	72
Acenaphthylene	42 UE			38 U	20 E	46 U	31 U	17 E
Anthracene	39 E			26 E	110	50 E	38	240
Fluorene	27 E			15 E	92	24 E	27 E	140
Naphthalene	47 UE			43 U	200	52 U	61	240
Phenanthrene	150 E			72	310	160	120	450
Total LPAHs	216			113	781	234	266	1159
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	1.77 UE			0.29 E	2.45	0.83 E	1.39 E	8.00
Acenaphthene	1.81 UE			1.20 U	1.29	1.46 U	1.11 E	2.06
Acenaphthylene	1.62 UE			1.09 U	0.53 E	1.31 U	1.72 U	0.49 E
Anthracene	1.50 E			0.74 E	2.89	1.43 E	2.11	6.86
Fluorene	1.04 E			0.43 E	2.42	0.69 E	1.50 E	4.00
Naphthalene	1.81 UE			1.23 U	5.26	1.49 U	3.39	6.86
Phenanthrene	5.77 E			2.06	8.16	4.57	6.67	12.86
Total LPAHs	8.31			3.23	20.55	6.69	14.78	33.11
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	43 UE			39 U	8.9 E	47 U	31 U	35 U
1,2-Dichlorobenzene	51 UE			46 U	23 E	55 U	37 U	41 U
1,4-Dichlorobenzene	46 UE			41 U	20 E	50 U	34 U	38 U
Benzoic Acid	240 EB			180 EB	160 EB	390 B	180 EB	340 B
Benzyl Alcohol	31 E			4.6 E	4.2 E	19 E	9.5 E	30 E
Dibenzofuran	19 E			12 E	83	22 E	22 E	120
Hexachlorobenzene	4.6 U			4.2 U	20	11	3.4 U	3.8 U
Hexachlorobutadiene	4.6 U			4.2 U	3.5 U	5.1 U	3.4 U	3.8 U
N-Nitroso diphenylamine	57 UE			51 U	43 U	62 U	42 U	47 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.65 UE			1.11 U	0.23 E	1.34 U	1.72 U	1.00 U
1,2-Dichlorobenzene	1.96 UE			1.31 U	0.61 E	1.57 U	2.06 U	1.17 U
1,4-Dichlorobenzene	1.77 UE			1.17 U	0.53 E	1.43 U	1.89 U	1.09 U
Benzoic Acid	9.23 EB			5.14 EB	4.21 EB	11.14 B	10.00 EB	9.71 B
Benzyl Alcohol	1.19 E			0.13 E	0.11 E	0.54 E	0.53 E	0.86 E
Dibenzofuran	0.73 E			0.34 E	2.18	0.63 E	1.22 E	3.43
Hexachlorobenzene	0.18 U			0.12 U	0.53	0.31	0.19 U	0.11 U
Hexachlorobutadiene	0.18 U			0.12 U	0.09 U	0.15 U	0.19 U	0.11 U
N-Nitroso diphenylamine	2.19 UE			1.46 U	1.13 U	1.77 U	2.33 U	1.34 U

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609024-3	9609021-13	9609021-4	9609024-7	9609024-8	9609012-1	9609012-6	9609012-2
Sample-ID	HC-SS-203	HC-SS-31	HC-SS-32	HC-SS-33	HC-SS-34	HC-SS-35	HC-SS-36	HC-SS-37
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/06/96	9/09/96	9/05/96	9/09/96	9/09/96	9/03/96	9/05/96	9/03/96
	Dup of HC-SS-30							
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	110 B			74 B	1300 B	340 B	150 B	590 B
Butyl benzyl phthalate	85 UE			77 U	64 U	32 E	15 E	46 E
Di-n-butyl phthalate	66 UE			59 U	49 U	72 U	48 U	54 U
Di-n-octyl phthalate	79 UE			72 U	60 U	87 U	58 U	65 U
Diethyl phthalate	110 UE			100 U	84 U	120 U	82 U	91 U
Dimethyl phthalate	95 UE			86 U	71 U	30 E	11 E	75 E
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	4.23 B			2.11 B	34.21 B	9.71 B	8.33 B	16.86 B
Butyl benzyl phthalate	3.27 UE			2.20 U	1.68 U	0.91 E	0.83 E	1.31 E
Di-n-butyl phthalate	2.54 UE			1.69 U	1.29 U	2.06 U	2.67 U	1.54 U
Di-n-octyl phthalate	3.04 UE			2.06 U	1.58 U	2.49 U	3.22 U	1.86 U
Diethyl phthalate	4.23 UE			2.86 U	2.21 U	3.43 U	4.56 U	2.60 U
Dimethyl phthalate	3.65 UE			2.46 U	1.87 U	0.86 E	0.61 E	2.14 E
PCBs in µg/kg (dry)								
PCB-1016	140 U			130 U	100 U	150 U	100 U	110 U
PCB-1221	140 U			130 U	100 U	150 U	100 U	110 U
PCB-1232	140 U			130 U	100 U	150 U	100 U	110 U
PCB-1242	140 U			130 U	100 U	150 U	100 U	110 U
PCB-1248	140 U			130 U	100 U	150 U	100 U	110 U
PCB-1254	140 U			130 U	80 E	150 U	100 U	110 U
PCB-1260	140 U			130 U	100 U	150 U	100 U	110 U
Total PCBs	140 U			130 U	80 E	150 U	100 U	110 U
PCBs in mg/kg (OC)								
PCB-1016	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
PCB-1221	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
PCB-1232	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
PCB-1242	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
PCB-1248	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
PCB-1254	5.38 U			3.71 U	2.11 E	4.29 U	5.56 U	3.14 U
PCB-1260	5.38 U			3.71 U	2.63 U	4.29 U	5.56 U	3.14 U
Total PCBs	5.38 U			3.71 U	2.11 E	4.29 U	5.56 U	3.14 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	42 UE			2.3 E	4.2 E	23 U	1.7 E	10 E
2-Methylphenol	17 E			3.2 E	7.4 E	4.1 E	2.1 E	7.1 E
4-Methylphenol	1100 E			200	870	340	320	630
Pentachlorophenol	19 E			5.9 E	14 E	38 E	20 E	35 E
Phenol	1500 E			270	230	1500	880	900
Total Phenols(detects only)	2636			481.4	1126	1882	1224	1582

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-7	9609012-8	9609022-2	9609021-2	9609021-1	9609011-18	9609022-1	9609011-19
Sample-ID	HC-SS-38	HC-SS-39	HC-SS-40	HC-SS-41	HC-SS-204	HC-SS-42	HC-SS-43	HC-SS-44
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/09/96	9/09/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96
					Dup of HC-SS-41			
Conventionals in pct. (dry)								
Moisture	48	50	60	28	23	53	33	69
Total Organic Carbon	3.6	2.9	6	1.5	1.4	2.4	1.4	2.7
Metals in mg/kg (dry)								
Arsenic	6.3 E	7.2 E		3	2.6			
Cadmium	0.89	0.99 U		0.7 U	0.66 U			
Chromium	29	26		10 E	9.5 E			
Copper	38	34		10	8.6			
Lead	57	48		4.2 U	3.9 U			
Mercury	0.19 U	0.2 U	11.8	0.13 U	0.13 U	0.42	0.15 U	0.59
Silver	1.2	2.9		0.7 U	0.66 U			
Zinc	140	130		20	19			
HPAHs in µg/kg (dry)								
Benz(a)anthracene	420	240						
Benzo(a)pyrene	440	280						
Benzo(b)fluoranthene	860 C	580 C						
Benzo(k)fluoranthene	860 C	580 C						
Total benzofluoranthenes	860	580						
Benzo(ghi)perylene	400	320						
Chrysene	630	340						
Dibenz(a,h)anthracene	180	130						
Fluoranthene	910	600						
Indeno(1,2,3-cd)pyrene	360	270						
Pyrene	960	700						
Total HPAHs	5160	3460						
HPAHs in mg/kg (OC)								
Benz(a)anthracene	11.67	8.28						
Benzo(a)pyrene	12.22	9.66						
Benzo(b)fluoranthene	23.89 C	20.00 C						
Benzo(k)fluoranthene	23.89 C	20.00 C						
Total benzofluoranthenes	23.89	20.00						
Benzo(ghi)perylene	11.11	11.03						
Chrysene	17.50	11.72						
Dibenz(a,h)anthracene	5.00	4.48						
Fluoranthene	25.28	20.69						
Indeno(1,2,3-cd)pyrene	10.00	9.31						
Pyrene	26.67	24.14						
Total HPAHs	143.33	119.31						

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-7	9609012-8	9609022-2	9609021-2	9609021-1	9609011-18	9609022-1	9609011-19
Sample-ID	HC-SS-38	HC-SS-39	HC-SS-40	HC-SS-41	HC-SS-204	HC-SS-42	HC-SS-43	HC-SS-44
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/09/96	9/09/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96
					Dup of HC-SS-41			
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	30 E	68						
Acenaphthene	41	29 E						
Acenaphthylene	9.5 E	31 U						
Anthracene	140	95						
Fluorene	66	40						
Naphthalene	51	72						
Phenanthrene	550	390						
Total LPAHs	857.5	626						
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	0.83 E	2.34						
Acenaphthene	1.14	1.00 E						
Acenaphthylene	0.26 E	1.07 U						
Anthracene	3.89	3.28						
Fluorene	1.83	1.38						
Naphthalene	1.42	2.48						
Phenanthrene	15.28	13.45						
Total LPAHs	23.82	21.59						
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	30 U	31 U						
1,2-Dichlorobenzene	35 U	36 U						
1,4-Dichlorobenzene	32 U	33 U						
Benzoic Acid	350 B	59 EB						
Benzyl Alcohol	55	23 E						
Dibenzofuran	37	30 E						
Hexachlorobenzene	3.2 U	3.3 U						
Hexachlorobutadiene	3.2 U	3.3 U						
N-Nitroso diphenylamine	39 U	41 U						
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.83 U	1.07 U						
1,2-Dichlorobenzene	0.97 U	1.24 U						
1,4-Dichlorobenzene	0.89 U	1.14 U						
Benzoic Acid	9.72 B	2.03 EB						
Benzyl Alcohol	1.53	0.79 E						
Dibenzofuran	1.03	1.03 E						
Hexachlorobenzene	0.09 U	0.11 U						
Hexachlorobutadiene	0.09 U	0.11 U						
N-Nitroso diphenylamine	1.08 U	1.41 U						

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-7	9609012-8	9609022-2	9609021-2	9609021-1	9609011-18	9609022-1	9609011-19
Sample-ID	HC-SS-38	HC-SS-39	HC-SS-40	HC-SS-41	HC-SS-204	HC-SS-42	HC-SS-43	HC-SS-44
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/09/96	9/09/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96	9/05/96
					Dup of HC-SS-41			
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	1400 B	974 B						
Butyl benzyl phthalate	62	75						
Di-n-butyl phthalate	34 E	39 E						
Di-n-octyl phthalate	100	57 U						
Diethyl phthalate	77 U	47 E						
Dimethyl phthalate	66 U	16 E						
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	38.89 B	33.59 B						
Butyl benzyl phthalate	1.72	2.59						
Di-n-butyl phthalate	0.94 E	1.34 E						
Di-n-octyl phthalate	2.78	1.97 U						
Diethyl phthalate	2.14 U	1.62 E						
Dimethyl phthalate	1.83 U	0.55 E						
PCBs in µg/kg (dry)								
PCB-1016	96 U	100 U						
PCB-1221	96 U	100 U						
PCB-1232	96 U	100 U						
PCB-1242	96 U	100 U						
PCB-1248	96 U	100 U						
PCB-1254	96 U	100 U						
PCB-1260	96 U	100 U						
Total PCBs	96 U	100 U						
PCBs in mg/kg (OC)								
PCB-1016	2.67 U	3.45 U						
PCB-1221	2.67 U	3.45 U						
PCB-1232	2.67 U	3.45 U						
PCB-1242	2.67 U	3.45 U						
PCB-1248	2.67 U	3.45 U						
PCB-1254	2.67 U	3.45 U						
PCB-1260	2.67 U	3.45 U						
Total PCBs	2.67 U	3.45 U						
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	29 U	2.1 E						
2-Methylphenol	6.7 E	3.3 E						
4-Methylphenol	95	55						
Pentachlorophenol	35 E	19 E						
Phenol	29 U	24 E						
Total Phenols(detects only)	136.7	103.4						

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-3	9609011-20	9609012-4	9609012-5
Sample-ID	HC-SS-45	HC-SS-46	HC-SS-47	HC-SS-48
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/05/96	9/04/96	9/05/96
Conventionals in pct. (dry)				
Moisture	60	55	50	23
Total Organic Carbon	3.4	2.6	4	0.82
Metals in mg/kg (dry)				
Arsenic	11 E		9.2 E	3.2 E
Cadmium	1.6		1.3	0.59 U
Chromium	71		49	17
Copper	73		51	16
Lead	19		24	11
Mercury	0.36	0.36	0.29	0.13 U
Silver	1.2 U		1 U	0.59 U
Zinc	130		190	51
HPAHs in µg/kg (dry)				
Benz(a)anthracene	180		1700	150
Benzo(a)pyrene	110		540	170
Benzo(b)fluoranthene	290 C		1400 C	170
Benzo(k)fluoranthene	290 C		1400 C	160
Total benzofluoranthenes	290		1400	330
Benzo(ghi)perylene	76 E		230	160
Chrysene	300		1900	240
Dibenz(a,h)anthracene	45 E		150	76
Fluoranthene	350		5000	390
Indeno(1,2,3-cd)pyrene	76		230	150
Pyrene	340		4700	390
Total HPAHs	1767		15850	2056
HPAHs in mg/kg (OC)				
Benz(a)anthracene	180		1700	150
Benzo(a)pyrene	110		540	170
Benzo(b)fluoranthene	290 C		1400 C	170
Benzo(k)fluoranthene	290 C		1400 C	160
Total benzofluoranthenes	290		1400	330
Benzo(ghi)perylene	76 E		230	160
Chrysene	300		1900	240
Dibenz(a,h)anthracene	45 E		150	76
Fluoranthene	350		5000	390
Indeno(1,2,3-cd)pyrene	76		230	150
Pyrene	340		4700	390
Total HPAHs	1767		15850	2056

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-3	9609011-20	9609012-4	9609012-5
Sample-ID	HC-SS-45	HC-SS-46	HC-SS-47	HC-SS-48
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/05/96	9/04/96	9/05/96
LPAHs in µg/kg (dry)				
2-Methylnaphthalene	32 E		160	56
Acenaphthene	16 E		1600	17 E
Acenaphthylene	38 U		86	9.5 E
Anthracene	53		1400	49
Fluorene	32 E		300	33
Naphthalene	52		150	61
Phenanthrene	150		1200	200
Total LPAHs	303		4736	369.5
LPAHs in mg/kg (OC)				
2-Methylnaphthalene	0.941 E		4.00	6.829
Acenaphthene	0.471 E		40.00	2.073 E
Acenaphthylene	1.118 U		2.15	1.159 E
Anthracene	1.559		35.00	5.976
Fluorene	0.941 E		7.50	4.024
Naphthalene	1.529		3.75	7.439
Phenanthrene	4.412		30.00	24.39
Total LPAHs	8.912		118.40	45.06
Semivolatiles in µg/kg (dry)				
1,2,4-Trichlorobenzene	39 U		31 U	20 U
1,2-Dichlorobenzene	46 U		36 U	24 U
1,4-Dichlorobenzene	41 U		33 U	21 U
Benzoic Acid	230 EB		290 B	89 EB
Benzyl Alcohol	5.7 E		7.7 E	34 U
Dibenzofuran	31 E		180	40
Hexachlorobenzene	4.2 U		3.3 U	2.2 U
Hexachlorobutadiene	4.2 U		3.3 U	2.2 U
N-Nitroso diphenylamine	51 U		41 U	27 U
Semivolatiles in mg/kg (OC)				
1,2,4-Trichlorobenzene	1.15 U		0.78 U	2.44 U
1,2-Dichlorobenzene	1.35 U		0.90 U	2.93 U
1,4-Dichlorobenzene	1.21 U		0.83 U	2.56 U
Benzoic Acid	6.76 EB		7.25 B	10.85 EB
Benzyl Alcohol	0.17 E		0.19 E	4.15 U
Dibenzofuran	0.91 E		4.50	4.88
Hexachlorobenzene	0.12 U		0.08 U	0.27 U
Hexachlorobutadiene	0.12 U		0.08 U	0.27 U
N-Nitroso diphenylamine	1.50 U		1.03 U	3.29 U

Table B-1 - Analytical Results for Surface Sediment Samples

Lab-ID	9609012-3	9609011-20	9609012-4	9609012-5
Sample-ID	HC-SS-45	HC-SS-46	HC-SS-47	HC-SS-48
Depth	0 to .3 ft	0 to .3 ft	0 to .3 ft	0 to .3 ft
Sampling Date	9/04/96	9/05/96	9/04/96	9/05/96
Phthalates in µg/kg (dry)				
Bis(2-ethylhexyl)phthalate	450 B		28000 B	210 B
Butyl benzyl phthalate	20 E		61 U	15 E
Di-n-butyl phthalate	59 U		47 U	11 E
Di-n-octyl phthalate	72 U		57 U	37 U
Diethyl phthalate	100 U		80 U	52 U
Dimethyl phthalate	86 U		29 E	44 U
Phthalates in mg/kg (OC)				
Bis(2-ethylhexyl)phthalate	13.24 B		700.00 B	25.61 B
Butyl benzyl phthalate	0.59 E		1.53 U	1.83 E
Di-n-butyl phthalate	1.74 U		1.18 U	1.34 E
Di-n-octyl phthalate	2.12 U		1.43 U	4.51 U
Diethyl phthalate	2.94 U		2.00 U	6.34 U
Dimethyl phthalate	2.53 U		0.73 E	5.37 U
PCBs in µg/kg (dry)				
PCB-1016	130 U		100 U	65 U
PCB-1221	130 U		100 U	65 U
PCB-1232	130 U		100 U	65 U
PCB-1242	130 U		100 U	65 U
PCB-1248	130 U		100 U	65 U
PCB-1254	130 U		100 U	65 U
PCB-1260	130 U		130	65 U
Total PCBs	130 U		130	65 U
PCBs in mg/kg (OC)				
PCB-1016	3.82 U		2.50 U	7.93 U
PCB-1221	3.82 U		2.50 U	7.93 U
PCB-1232	3.82 U		2.50 U	7.93 U
PCB-1242	3.82 U		2.50 U	7.93 U
PCB-1248	3.82 U		2.50 U	7.93 U
PCB-1254	3.82 U		2.50 U	7.93 U
PCB-1260	3.82 U		3.25	7.93 U
Total PCBs	3.82 U		3.25	7.93 U
Phenols in µg/kg (dry)				
2,4-Dimethylphenol	14 E		16 E	10 E
2-Methylphenol	9 E		11 E	5.9 E
4-Methylphenol	220		210	42
Pentachlorophenol	15 E		18 E	10 E
Phenol	1500		460	72
Total Phenols(detects only)	1758		715	139.9

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	SQS	MCUL	9609012-12	9609024-19	9609024-20	9609042-2	9609012-13	9609024-15
Sample-ID			HC-SC-70	HC-VC-70-S1	HC-VC-70-S2	HC-VC-70-S3	HC-SC-71	HC-VC-71-S1
Depth			0 to .3 ft	0 to 1.5 ft	3.7 to 5.8 ft	1.5 to 3.7 ft	0 to .3 ft	0 to 1.6 ft
Sampling Date			9/09/96	9/12/96	9/12/96	9/11/96	9/09/96	9/12/96
Conventionals in pct. (dry)								
Moisture			61	55	47	42	66	57
Total Organic Carbon			2.2	2	1.2		2.5	2.7
Metals in mg/kg (dry)								
Arsenic	57	93	17 E	11	9.9		11 E	9.7
Cadmium	5.1	6.7	1.4	1.4	0.97 U		1.5 U	1.3
Chromium	260	270	65	65	52		68	66
Copper	390	390	49	51	46		52	58
Lead	450	530	15	17	5.8 U		15	26
Mercury	0.41	0.59	0.88	2.3	0.18 U	0.17 U	0.62	4.3
Silver	6.1	6.1	1.2 U	1.1 U	0.97 U		1.5 U	1.2 U
Zinc	410	960	95	94	72		100	100
HPAHs in µg/kg (dry)								
Benz(a)anthracene			63	28 E	41 U		270	270
Benzo(a)pyrene			56	29 E	36 U		150	130
Benzo(b)fluoranthene			130 C	31 E	45 U		190	150
Benzo(k)fluoranthene			130 C	29 E	56 U		150	160
Total benzofluoranthenes			130	60	56 U		340	310
Benzo(ghi)perylene			60 E	68 U	58 U		64 E	95
Chrysene			110	46 E	42 U		350	380
Dibenz(a,h)anthracene			79 U	68 U	58 U		41 E	56 E
Fluoranthene			220	64	35 U		460	430
Indeno(1,2,3-cd)pyrene			43 E	22 E	56 U		66 E	84
Pyrene			250	110	44 U		440	650
Total HPAHs			932	359	58 U		2181	2405
HPAHs in mg/kg (OC)								
Benz(a)anthracene	110	270	2.86	1.40 E	3.42 U		10.80	10.00
Benzo(a)pyrene	99	210	2.55	1.45 E	3.00 U		6.00	4.81
Benzo(b)fluoranthene			5.91 C	1.55 E	3.75 U		7.60	5.56
Benzo(k)fluoranthene			5.91 C	1.45 E	4.67 U		6.00	5.93
Total benzofluoranthenes	230	450	5.91	3.00	4.67 U		13.60	11.48
Benzo(ghi)perylene	31	78	2.73 E	3.40 U	4.83 U		2.56 E	3.52
Chrysene	110	460	5.00	2.30 E	3.50 U		14.00	14.07
Dibenz(a,h)anthracene	12	33	3.59 U	3.40 U	4.83 U		1.64 E	2.07 E
Fluoranthene	160	1200	10.00	3.20	2.92 U		18.40	15.93
Indeno(1,2,3-cd)pyrene	34	88	1.95 E	1.10 E	4.67 U		2.64 E	3.11
Pyrene	1000	1400	11.36	5.50	3.67 U		17.60	24.07
Total HPAHs	960	5300	42.36	17.95	4.83 U		87.24	89.07

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	SQS	MCUL	9609012-12	9609024-19	9609024-20	9609042-2	9609012-13	9609024-15
Sample-ID			HC-SC-70	HC-VC-70-S1	HC-VC-70-S2	HC-VC-70-S3	HC-SC-71	HC-VC-71-S1
Depth			0 to .3 ft	0 to 1.5 ft	3.7 to 5.8 ft	1.5 to 3.7 ft	0 to .3 ft	0 to 1.6 ft
Sampling Date			9/09/96	9/12/96	9/12/96	9/11/96	9/09/96	9/12/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene			30 E	20 E	31 U		26 E	28 E
Acenaphthene			43 U	38 U	32 U		37 E	36 E
Acenaphthylene			25 E	15 E	29 U		45 U	11 E
Anthracene			35 E	16 E	34 U		140	100
Fluorene			22 E	12 E	37 U		56 E	58
Naphthalene			170	91	32 U		78	95
Phenanthrene			160	68	37 U		240	180
Total LPAHs			412	202	37 U		551	480
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	38	64	1.36 E	1.00 E	2.58 U		1.04 E	1.04 E
Acenaphthene	16	57	1.95 U	1.90 U	2.67 U		1.48 E	1.33 E
Acenaphthylene	66	66	1.14 E	0.75 E	2.42 U		1.80 U	0.41 E
Anthracene	220	1200	1.59 E	0.80 E	2.83 U		5.60	3.70
Fluorene	23	79	1.00 E	0.60 E	3.08 U		2.24 E	2.15
Naphthalene	99	170	7.73	4.55	2.67 U		3.12	3.52
Phenanthrene	100	480	7.27	3.40	3.08 U		9.60	6.67
Total LPAHs	370	780	18.73	10.10	3.08 U		22.04	17.78
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene			39 U	34 U	29 U		45 U	36 U
1,2-Dichlorobenzene			47 U	40 U	34 U		54 U	42 U
1,4-Dichlorobenzene			42 U	37 U	31 U		49 U	22 E
Benzoic Acid	650	650	160 EB	100 EB	120 EB		170 EB	160 EB
Benzyl Alcohol	57	73	3.5 E	2.2 E	50 U		5.4 E	4.9 E
Dibenzofuran			42 E	17 E	33 U		48 E	44
Hexachlorobenzene			4.3 U	4.2	3.1 U		4.9 U	3.9 U
Hexachlorobutadiene			4.3 U	3.7 U	3.1 U		4.9 U	3.9 U
N-Nitroso diphenylamine			53 U	46 U	39 U		60 U	48 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.81	1.8	1.77 U	1.70 U	2.42 U		1.80 U	1.33 U
1,2-Dichlorobenzene	2.3	2.3	2.14 U	2.00 U	2.83 U		2.16 U	1.56 U
1,4-Dichlorobenzene	3.1	9	1.91 U	1.85 U	2.58 U		1.96 U	0.81 E
Benzoic Acid			7.27 EB	5.00 EB	10.00 EB		6.80 EB	5.93 EB
Benzyl Alcohol			0.16 E	0.11 E	4.17 U		0.22 E	0.18 E
Dibenzofuran	15	58	1.91 E	0.85 E	2.75 U		1.92 E	1.63
Hexachlorobenzene	0.38	2.3	0.20 U	0.21	0.26 U		0.20 U	0.14 U
Hexachlorobutadiene	3.9	6.2	0.20 U	0.19 U	0.26 U		0.20 U	0.14 U
N-Nitroso diphenylamine	11	11	2.41 U	2.30 U	3.25 U		2.40 U	1.78 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	SQS	MCUL	9609012-12	9609024-19	9609024-20	9609042-2	9609012-13	9609024-15
Sample-ID			HC-SC-70	HC-VC-70-S1	HC-VC-70-S2	HC-VC-70-S3	HC-SC-71	HC-VC-71-S1
Depth			0 to .3 ft	0 to 1.5 ft	3.7 to 5.8 ft	1.5 to 3.7 ft	0 to .3 ft	0 to 1.6 ft
Sampling Date			9/09/96	9/12/96	9/12/96	9/11/96	9/09/96	9/12/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate			98 B	74 B	43 B		260 B	43 B
Butyl benzyl phthalate			21 E	11 E	58 U		90 U	71 U
Di-n-butyl phthalate			34 E	52 U	45 U		68 E	55 U
Di-n-octyl phthalate			73 U	64 U	54 U		84 U	67 U
Diethyl phthalate			100 U	89 U	76 U		120 U	93 U
Dimethyl phthalate			88 U	76 U	65 U		100 U	80 U
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	47	78	4.45 B	3.70 B	3.58 B		10.40 B	1.59 B
Butyl benzyl phthalate	4.9	64	0.95 E	0.55 E	4.83 U		3.60 U	2.63 U
Di-n-butyl phthalate	220	1700	1.55 E	2.60 U	3.75 U		2.72 E	2.04 U
Di-n-octyl phthalate	58	4500	3.32 U	3.20 U	4.50 U		3.36 U	2.48 U
Diethyl phthalate	61	110	4.55 U	4.45 U	6.33 U		4.80 U	3.44 U
Dimethyl phthalate	53	53	4.00 U	3.80 U	5.42 U		4.00 U	2.96 U
PCBs in µg/kg (dry)								
PCB-1016			130 U	110 U	94 U		150 U	120 U
PCB-1221			130 U	110 U	94 U		150 U	120 U
PCB-1232			130 U	110 U	94 U		150 U	120 U
PCB-1242			130 U	110 U	94 U		150 U	120 U
PCB-1248			130 U	110 U	94 U		150 U	120 U
PCB-1254			130 U	110 U	94 U		150 U	120 U
PCB-1260			130 U	110 U	94 U		150 U	120 U
Total PCBs			130 U	110 U	94 U		150 U	120 U
PCBs in mg/kg (OC)								
PCB-1016			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1221			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1232			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1242			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1248			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1254			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
PCB-1260			5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
Total PCBs	12	65	5.91 U	5.50 U	7.83 U		6.00 U	4.44 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	29	29	1.8 E	3 E	29 U		1.5 E	5.5 E
2-Methylphenol	63	63	2.2 E	2.3 E	31 U		2.2 E	6.1 E
4-Methylphenol	670	670	470	170	5 E		450	270
Pentachlorophenol	360	690	7.7 E	5 E	55 U		6.8 E	19 E
Phenol	420	1200	79	34 U	29 U		34 E	26 E
Total Phenols(detects only)			560.7	180.3	5		494.5	326.6

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609024-16	9609024-17	9609024-18	9609012-14	9609041-1	9609041-2	9609041-3	9609041-4
Sample-ID	HC-VC-71-S2	HC-VC-71-S3	HC-VC-71-S4	HC-SC-72	HC-VC-72-S1	HC-VC-72-S2	HC-VC-72-S3	HC-VC-72-S4
Depth	1.6 to 4.8 ft	6 to 7.6 ft	9.8 to 11.4 ft	0 to .3 ft	0 to 3.2 ft	3.2 to 4 ft	4 to 7 ft	8.4 to 10 ft
Sampling Date	9/12/96	9/12/96	9/12/96	9/09/96	9/12/96	9/12/96	9/12/96	9/12/96
Conventionals in pct. (dry)								
Moisture	45	16	17	68	54	24	19	27
Total Organic Carbon	2.6	0.21	0.32	3.2	3.1	0.94	0.16	0.21
Metals in mg/kg (dry)								
Arsenic	8.6	3.6	3.7	11 E	9.3	4.4	3.8	6.6
Cadmium	1.5	0.61 U	0.6 U	1.5 U	1.7	0.65 U	0.64 U	0.87
Chromium	54	14	17	69	62	26	20	46
Copper	55	9.5	11	57	61	18	10	49
Lead	65	3.7 U	3.6 U	17	37	7.6	3.8 U	4.5
Mercury	4.5	0.11 U	0.12 U	1	2.6	0.13 U	0.12 U	0.14 U
Silver	0.95 U	0.61 U	0.6 U	1.5 U	1.1 U	0.65 U	0.64 U	0.69 U
Zinc	100	19	22	110	120	38	25	77
HPAHs in µg/kg (dry)								
Benz(a)anthracene	1200	6 E	26 U	270	340	57	27 U	30 U
Benzo(a)pyrene	490	23 U	23 U	140	190	54	5.2 E	26 U
Benzo(b)fluoranthene	1200 C	28 U	28 U	170	420 C	98 C	9.3 C	32 U
Benzo(k)fluoranthene	1200 C	35 U	36 U	150	420 C	98 C	9.3 C	41 U
Total benzofluoranthenes	1200	35 U	36 U	320	420	98	9.3	41 U
Benzo(ghi)perylene	280	36 U	37 U	74 E	180	54	38 U	42 U
Chrysene	1500	6.7 E	27 U	360	440	79	7.4 E	30 U
Dibenz(a,h)anthracene	160	7.3 U	37 U	37 E	64 E	8.8 E	5.3 E	7 U
Fluoranthene	2400	21 E	23 U	570	960	200	17 E	26 U
Indeno(1,2,3-cd)pyrene	270	35 U	36 U	68 E	130	37 E	37 U	41 U
Pyrene	2300	20 E	28 U	520	1200	230	18 E	32 U
Total HPAHs	9800	53.7	37 U	2359	3924	817.8	62.2	42 U
HPAHs in mg/kg (OC)								
Benz(a)anthracene	46.15	2.86 E	8.13 U	8.44	10.97	6.06	16.88 U	14.29 U
Benzo(a)pyrene	18.85	10.95 U	7.19 U	4.38	6.13	5.74	3.25 E	12.38 U
Benzo(b)fluoranthene	46.15 C	13.33 U	8.75 U	5.31	13.55 C	10.43 C	5.81 C	15.24 U
Benzo(k)fluoranthene	46.15 C	16.67 U	11.25 U	4.69	13.55 C	10.43 C	5.81 C	19.52 U
Total benzofluoranthenes	46.15	16.67 U	11.25 U	10.00	13.55	10.43	5.81	19.52 U
Benzo(ghi)perylene	10.77	17.14 U	11.56 U	2.31 E	5.81	5.74	23.75 U	20.00 U
Chrysene	57.69	3.19 E	8.44 U	11.25	14.19	8.40	4.63 E	14.29 U
Dibenz(a,h)anthracene	6.15	3.48 U	11.56 U	1.16 E	2.06 E	0.94 E	3.31 E	3.33 U
Fluoranthene	92.31	10.00 E	7.19 U	17.81	30.97	21.28	10.63 E	12.38 U
Indeno(1,2,3-cd)pyrene	10.38	16.67 U	11.25 U	2.13 E	4.19	3.94 E	23.13 U	19.52 U
Pyrene	88.46	9.52 E	8.75 U	16.25	38.71	24.47	11.25 E	15.24 U
Total HPAHs	376.92	25.57	11.56 U	73.72	126.58	87.00	38.88	20.00 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609024-16	9609024-17	9609024-18	9609012-14	9609041-1	9609041-2	9609041-3	9609041-4
Sample-ID	HC-VC-71-S2	HC-VC-71-S3	HC-VC-71-S4	HC-SC-72	HC-VC-72-S1	HC-VC-72-S2	HC-VC-72-S3	HC-VC-72-S4
Depth	1.6 to 4.8 ft	6 to 7.6 ft	9.8 to 11.4 ft	0 to .3 ft	0 to 3.2 ft	3.2 to 4 ft	4 to 7 ft	8.4 to 10 ft
Sampling Date	9/12/96	9/12/96	9/12/96	9/09/96	9/12/96	9/12/96	9/12/96	9/12/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	160	20 U	20 U	55	150	45	6 E	13 E
Acenaphthene	730	20 U	20 U	98	170	33	21 U	23 U
Acenaphthylene	39	18 U	18 U	48 U	100	47	19 U	21 U
Anthracene	560	21 U	22 U	180	230	48	22 U	24 U
Fluorene	570	23 U	23 U	130	230	47	24 U	27 U
Naphthalene	350	20 U	21 U	120	520	240	14 E	23 U
Phenanthrene	1500	15 E	23 U	450	620	170	15 E	13 E
Total LPAHs	3749	15	23 U	978	1870	585	29	13
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	6.15	9.52 U	6.25 U	1.72	4.84	4.79	3.75 E	6.19 E
Acenaphthene	28.08	9.52 U	6.25 U	3.06	5.48	3.51	13.13 U	10.95 U
Acenaphthylene	1.50	8.57 U	5.63 U	1.50 U	3.23	5.00	11.88 U	10.00 U
Anthracene	21.54	10.00 U	6.88 U	5.63	7.42	5.11	13.75 U	11.43 U
Fluorene	21.92	10.95 U	7.19 U	4.06	7.42	5.00	15.00 U	12.86 U
Naphthalene	13.46	9.52 U	6.56 U	3.75	16.77	25.53	8.75 E	10.95 U
Phenanthrene	57.69	7.14 E	7.19 U	14.06	20.00	18.09	9.38 E	6.19 E
Total LPAHs	144.19	7.14	7.19 U	30.56	60.32	62.23	18.13	6.19
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	28 U	3.7 U	4.6 U	48 U	33 U	20 U	3.2 U	3.5 U
1,2-Dichlorobenzene	33 U	4.3 U	5.5 U	57 U	40 U	24 U	3.7 U	4.2 U
1,4-Dichlorobenzene	30 U	3.9 U	5 U	52 U	11 E	22 U	3.4 U	3.8 U
Benzoic Acid	140 EB	51 EB	50 EB	160 EB	140 EB	82 EB	42 EB	63 EB
Benzyl Alcohol	48 U	31 U	32 U	4.2 E	57 U	35 U	32 U	36 U
Dibenzofuran	310	21 U	21 U	98	160	30	21 U	24 U
Hexachlorobenzene	3 U	0.79 U	0.8 U	5.2 U	6	2.2 U	0.51 U	0.57 U
Hexachlorobutadiene	3 U	0.79 U	0.8 U	5.2 U	3.6 U	2.2 U	0.51 U	0.57 U
N-Nitroso diphenylamine	37 U	4.9 U	25 U	64 U	45 U	27 U	4.2 U	4.7 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.08 U	1.76 U	1.44 U	1.50 U	1.06 U	2.13 U	2.00 U	1.67 U
1,2-Dichlorobenzene	1.27 U	2.05 U	1.72 U	1.78 U	1.29 U	2.55 U	2.31 U	2.00 U
1,4-Dichlorobenzene	1.15 U	1.86 U	1.56 U	1.63 U	0.35 E	2.34 U	2.13 U	1.81 U
Benzoic Acid	5.38 EB	24.29 EB	15.63 EB	5.00 EB	4.52 EB	8.72 EB	26.25 EB	30.00 EB
Benzyl Alcohol	1.85 U	14.76 U	10.00 U	0.13 E	1.84 U	3.72 U	20.00 U	17.14 U
Dibenzofuran	11.92	10.00 U	6.56 U	3.06	5.16	3.19	13.13 U	11.43 U
Hexachlorobenzene	0.12 U	0.38 U	0.25 U	0.16 U	0.19	0.23 U	0.32 U	0.27 U
Hexachlorobutadiene	0.12 U	0.38 U	0.25 U	0.16 U	0.12 U	0.23 U	0.32 U	0.27 U
N-Nitroso diphenylamine	1.42 U	2.33 U	7.81 U	2.00 U	1.45 U	2.87 U	2.63 U	2.24 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609024-16	9609024-17	9609024-18	9609012-14	9609041-1	9609041-2	9609041-3	9609041-4
Sample-ID	HC-VC-71-S2	HC-VC-71-S3	HC-VC-71-S4	HC-SC-72	HC-VC-72-S1	HC-VC-72-S2	HC-VC-72-S3	HC-VC-72-S4
Depth	1.6 to 4.8 ft	6 to 7.6 ft	9.8 to 11.4 ft	0 to .3 ft	0 to 3.2 ft	3.2 to 4 ft	4 to 7 ft	8.4 to 10 ft
Sampling Date	9/12/96	9/12/96	9/12/96	9/09/96	9/12/96	9/12/96	9/12/96	9/12/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	59 B	21 B	33 B	130 B	200 B	16 EB	32 B	40 B
Butyl benzyl phthalate	56 U	7.3 U	9.3 U	96 U	67 U	40 U	2.5 E	7 U
Di-n-butyl phthalate	43 U	28 U	28 U	74 U	51 U	31 U	29 U	32 U
Di-n-octyl phthalate	52 U	34 U	34 U	89 U	62 U	38 U	35 U	39 U
Diethyl phthalate	73 U	48 U	48 U	130 U	87 U	53 U	50 U	55 U
Dimethyl phthalate	62 U	41 U	41 U	110 U	74 U	45 U	42 U	47 U
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	2.27 B	10.00 B	10.31 B	4.06 B	6.45 B	1.70 EB	20.00 B	19.05 B
Butyl benzyl phthalate	2.15 U	3.48 U	2.91 U	3.00 U	2.16 U	4.26 U	1.56 E	3.33 U
Di-n-butyl phthalate	1.65 U	13.33 U	8.75 U	2.31 U	1.65 U	3.30 U	18.13 U	15.24 U
Di-n-octyl phthalate	2.00 U	16.19 U	10.63 U	2.78 U	2.00 U	4.04 U	21.88 U	18.57 U
Diethyl phthalate	2.81 U	22.86 U	15.00 U	4.06 U	2.81 U	5.64 U	31.25 U	26.19 U
Dimethyl phthalate	2.38 U	19.52 U	12.81 U	3.44 U	2.39 U	4.79 U	26.25 U	22.38 U
PCBs in µg/kg (dry)								
PCB-1016	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1221	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1232	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1242	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1248	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1254	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCB-1260	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
Total PCBs	91 U	24 U	24 U	160 U	110 U	66 U	15 U	17 U
PCBs in mg/kg (OC)								
PCB-1016	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1221	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1232	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1242	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1248	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1254	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
PCB-1260	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
Total PCBs	3.50 U	11.43 U	7.50 U	5.00 U	3.55 U	7.02 U	9.38 U	8.10 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	16 E	18 U	18 U	2 E	4.1 E	2.7 E	19 U	21 U
2-Methylphenol	7.7 E	20 U	20 U	2.1 E	4.3 E	3.1 E	20 U	22 U
4-Methylphenol	280	4.5 E	21 U	310	73	53	3 E	24 U
Pentachlorophenol	13 E	35 U	35 U	5.6 E	63 U	38 U	36 U	40 U
Phenol	28 U	18 U	19 U	26 E	15 EB	10 EB	3.5 EB	3.9 EB
Total Phenols(detects only)	316.7	4.5		345.7	96.4	68.8	6.5	3.9

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-15	9609048-1	9609048-2	9609042-13	9609042-14	9609024-11	9609041-19	9609042-11
Sample-ID	HC-SC-73	HC-VC-73-S1	HC-VC-73-S2	HC-VC-73-S3	HC-VC-73-S4	HC-SC-74	HC-VC-74-S1	HC-VC-74-S2
Depth	0 to .3 ft	0 to 1.9 ft	1.9 to 4.6 ft	5.1 to 7.4 ft	7.4 to 9.7 ft	0 to .3 ft	0 to 2.4 ft	2.4 to 4.1 ft
Sampling Date	9/09/96	9/16/96	9/16/96	9/12/96	9/12/96	9/10/96	9/16/96	9/13/96
Conventionals in pct. (dry)								
Moisture	66	62	53	47	47	75	67	64
Total Organic Carbon	3.6	3.7	4.7			8.3	15	
Metals in mg/kg (dry)								
Arsenic	10 E	9.1	7.3			11	8.2	
Cadmium	1.5 U	1.5	2.3			2.1 U	1.6 U	
Chromium	62	62 E	66 E			61	51	
Copper	51	61 E	84 E			68	55	
Lead	15	22 E	50 E			21	25	
Mercury	0.84	2	3.9	0.56	0.5	4.9	10.5	69
Silver	1.5 U	1.4 U	1.1 U			2.1 U	1.6 U	
Zinc	97	110	140			160	130	
HPAHs in µg/kg (dry)								
Benz(a)anthracene	210	370	180			420	1600	
Benzo(a)pyrene	100	260	100			280	1700	
Benzo(b)fluoranthene	260 C	340	190 C			610 C	3100 C	
Benzo(k)fluoranthene	260 C	260	190 C			610 C	3100 C	
Total benzofluoranthenes	260	600	190			610	3100	
Benzo(ghi)perylene	62 E	260	110			230	1000	
Chrysene	250	510	220			580	1900	
Dibenz(a,h)anthracene	32 E	99	43 E			120 E	500	
Fluoranthene	490	640	640			1200	2900	
Indeno(1,2,3-cd)pyrene	56 E	210	76			220	1100	
Pyrene	430	1000	520			1100	3000	
Total HPAHs	1890	3949	2079			4760	16800	
HPAHs in mg/kg (OC)								
Benz(a)anthracene	5.83	10.00	3.83			5.06	10.67	
Benzo(a)pyrene	2.78	7.03	2.13			3.37	11.33	
Benzo(b)fluoranthene	7.22 C	9.19	4.04 C			7.35 C	20.67 C	
Benzo(k)fluoranthene	7.22 C	7.03	4.04 C			7.35 C	20.67 C	
Total benzofluoranthenes	7.22	16.22	4.04			7.35	20.67	
Benzo(ghi)perylene	1.72 E	7.03	2.34			2.77	6.67	
Chrysene	6.94	13.78	4.68			6.99	12.67	
Dibenz(a,h)anthracene	0.89 E	2.68	0.91 E			1.45 E	3.33	
Fluoranthene	13.61	17.30	13.62			14.46	19.33	
Indeno(1,2,3-cd)pyrene	1.56 E	5.68	1.62			2.65	7.33	
Pyrene	11.94	27.03	11.06			13.25	20.00	
Total HPAHs	52.50	106.73	44.23			57.35	112.00	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-15	9609048-1	9609048-2	9609042-13	9609042-14	9609024-11	9609041-19	9609042-11
Sample-ID	HC-SC-73	HC-VC-73-S1	HC-VC-73-S2	HC-VC-73-S3	HC-VC-73-S4	HC-SC-74	HC-VC-74-S1	HC-VC-74-S2
Depth	0 to .3 ft	0 to 1.9 ft	1.9 to 4.6 ft	5.1 to 7.4 ft	7.4 to 9.7 ft	0 to .3 ft	0 to 2.4 ft	2.4 to 4.1 ft
Sampling Date	9/09/96	9/16/96	9/16/96	9/12/96	9/12/96	9/10/96	9/16/96	9/13/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	33 E	82	200			66 U	120	
Acenaphthene	41 E	110	130			84	480	
Acenaphthylene	45 U	34 E	37			61 U	49	
Anthracene	98	170	160			230	460	
Fluorene	62	130	200			110	360	
Naphthalene	81	260	340			68 U	410	
Phenanthrene	280	410	700			300	1200	
Total LPAHs	562	1114	1567			724	2959	
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	0.92 E	2.22	4.26			0.80 U	0.80	
Acenaphthene	1.14 E	2.97	2.77			1.01	3.20	
Acenaphthylene	1.25 U	0.92 E	0.79			0.73 U	0.33	
Anthracene	2.72	4.59	3.40			2.77	3.07	
Fluorene	1.72	3.51	4.26			1.33	2.40	
Naphthalene	2.25	7.03	7.23			0.82 U	2.73	
Phenanthrene	7.78	11.08	14.89			3.61	8.00	
Total LPAHs	15.61	30.11	33.34			8.72	19.73	
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	45 U	41 U	33 U			62 U	47 U	
1,2-Dichlorobenzene	54 U	48 U	39 U			73 U	55 U	
1,4-Dichlorobenzene	49 U	44 U	11 E			66 U	50 U	
Benzoic Acid	180 EB	72 EB	200 EB			290 E	220 EB	
Benzyl Alcohol	4.7 E	9 E	8.8 E			13 E	9.8 E	
Dibenzofuran	50 E	140	120			69 U	260	
Hexachlorobenzene	4.9 U	4.9	3.5 U			6.7 U	5.1 U	
Hexachlorobutadiene	4.9 U	4.4 U	3.5 U			6.7 U	5.1 U	
N-Nitroso diphenylamine	60 U	54 U	74			82 U	62 U	
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.25 U	1.11 U	0.70 U			0.75 U	0.31 U	
1,2-Dichlorobenzene	1.50 U	1.30 U	0.83 U			0.88 U	0.37 U	
1,4-Dichlorobenzene	1.36 U	1.19 U	0.23 E			0.80 U	0.33 U	
Benzoic Acid	5.00 EB	1.95 EB	4.26 EB			3.49 E	1.47 EB	
Benzyl Alcohol	0.13 E	0.24 E	0.19 E			0.16 E	0.07 E	
Dibenzofuran	1.39 E	3.78	2.55			0.83 U	1.73	
Hexachlorobenzene	0.14 U	0.13	0.07 U			0.08 U	0.03 U	
Hexachlorobutadiene	0.14 U	0.12 U	0.07 U			0.08 U	0.03 U	
N-Nitroso diphenylamine	1.67 U	1.46 U	1.57			0.99 U	0.41 U	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-15	9609048-1	9609048-2	9609042-13	9609042-14	9609024-11	9609041-19	9609042-11
Sample-ID	HC-SC-73	HC-VC-73-S1	HC-VC-73-S2	HC-VC-73-S3	HC-VC-73-S4	HC-SC-74	HC-VC-74-S1	HC-VC-74-S2
Depth	0 to .3 ft	0 to 1.9 ft	1.9 to 4.6 ft	5.1 to 7.4 ft	7.4 to 9.7 ft	0 to .3 ft	0 to 2.4 ft	2.4 to 4.1 ft
Sampling Date	9/09/96	9/16/96	9/16/96	9/12/96	9/12/96	9/10/96	9/16/96	9/13/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	150 B	250 EB	190 B			160 B	490 B	
Butyl benzyl phthalate	90 U	35 E	65 U			120 U	60 E	
Di-n-butyl phthalate	38 E	28 EB	50 U			94 U	44 E	
Di-n-octyl phthalate	84 U	75 U	61 U			110 U	87 U	
Diethyl phthalate	120 U	110 U	86 U			160 U	120 U	
Dimethyl phthalate	101 U	90 U	73 U			140 U	100 U	
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	4.17 B	6.76 EB	4.04 B			1.93 B	3.27 B	
Butyl benzyl phthalate	2.50 U	0.95 E	1.38 U			1.45 U	0.40 E	
Di-n-butyl phthalate	1.06 E	0.76 EB	1.06 U			1.13 U	0.29 E	
Di-n-octyl phthalate	2.33 U	2.03 U	1.30 U			1.33 U	0.58 U	
Diethyl phthalate	3.33 U	2.97 U	1.83 U			1.93 U	0.80 U	
Dimethyl phthalate	2.81 U	2.43 U	1.55 U			1.69 U	0.67 U	
PCBs in µg/kg (dry)								
PCB-1016	150 U	130 U	110 U			200 U	150 U	
PCB-1221	150 U	130 U	110 U			200 U	150 U	
PCB-1232	150 U	130 U	110 U			200 U	150 U	
PCB-1242	150 U	130 U	110 U			200 U	150 U	
PCB-1248	150 U	130 U	110 U			200 U	150 U	
PCB-1254	150 U	130 U	110 E			200 U	150 U	
PCB-1260	150 U	130 U	110 U			200 U	150 U	
Total PCBs	150 U	130 U	110 E			200 U	150 U	
PCBs in mg/kg (OC)								
PCB-1016	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
PCB-1221	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
PCB-1232	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
PCB-1242	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
PCB-1248	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
PCB-1254	4.17 U	3.51 U	2.34 E			2.41 U	1.00 U	
PCB-1260	4.17 U	3.51 U	2.34 U			2.41 U	1.00 U	
Total PCBs	4.17 U	3.51 U	2.34 E			2.41 U	1.00 U	
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	1.7 E	6.4 E	19 E			2.4 E	7.7 E	
2-Methylphenol	2.1 E	9.1 E	30 E			4.2 E	11 E	
4-Methylphenol	320	480	1500			220	360	
Pentachlorophenol	9.1 E	13 E	22 E			12 E	14 E	
Phenol	25 E	41 U	33 U			1800	47 U	
Total Phenols(detects only)	357.9	508.5	1571			2039	392.7	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-20	9609042-12	9609024-13	9609041-7	9609041-8	9609024-12	9609048-10	9609048-11
Sample-ID	HC-VC-74-S3	HC-VC-74-S4	HC-SC-75	HC-VC-75-S1	HC-VC-75-S2	HC-SC-76	HC-VC-76-S1	HC-VC-76-S2
Depth	4.5 to 6.9 ft	9 to 11.5 ft	0 to .3 ft	0 to 3.3 ft	3.6 to 5.8 ft	0 to .3 ft	0 to 3.5 ft	3.5 to 7.9 ft
Sampling Date	9/16/96	9/13/96	9/10/96	9/12/96	9/12/96	9/10/96	9/16/96	9/16/96
Conventionals in pct. (dry)								
Moisture	60	15	67	63	12	71	69	59
Total Organic Carbon	6.6		6.9	9.9	0.54	4.6	10	9.5
Metals in mg/kg (dry)								
Arsenic	8.2		8.4	6.8	3	10	6.1	4.3
Cadmium	2.6		1.6 U	1.6	0.57 U	1.7 U	1.8	1.3
Chromium	56		60	55	16	70	53 E	39 E
Copper	150		57	62	8.6	72	60 E	42 E
Lead	80		18	39	3.4 U	28	31 E	23 E
Mercury	8.4	0.12 U	1.7	6.4	0.11 U	1.1	1.3	0.96
Silver	1.3 U		1.6 U	1.4 U	0.57 U	1.7 U	1.7 U	1.2 U
Zinc	240		110	130	22	140	140	100
HPAHs in µg/kg (dry)								
Benz(a)anthracene	660		610	530 E	25 UE	620	450	400
Benzo(a)pyrene	370		380	270 E	22 UE	360	260	180
Benzo(b)fluoranthene	350		900 C	660 EC	27 UE	930 C	340	450 C
Benzo(k)fluoranthene	340		900 C	660 EC	34 UE	930 C	290	450 C
Total benzofluoranthenes	690		900	660	34 UE	930	630	450
Benzo(ghi)perylene	270		260	200 E	35 UE	260	230	140
Chrysene	800		840	790 E	25 UE	840	630	530
Dibenz(a,h)anthracene	110		130	99 E	35 UE	130	100	58 E
Fluoranthene	1700		1100	2000 E	21 UE	1300	1400	1800
Indeno(1,2,3-cd)pyrene	220		250	190 E	34 UE	260	210	120
Pyrene	2000		1600	1500 E	27 UE	1500	1300	1400
Total HPAHs	6820		6070	6239	35 U	6200	5210	5078
HPAHs in mg/kg (OC)								
Benz(a)anthracene	10.00		8.84	5.35 E	4.63 UE	13.48	4.50	4.21
Benzo(a)pyrene	5.61		5.51	2.73 E	4.07 UE	7.83	2.60	1.89
Benzo(b)fluoranthene	5.30		13.04 C	6.67 EC	5.00 UE	20.22 C	3.40	4.74 C
Benzo(k)fluoranthene	5.15		13.04 C	6.67 EC	6.30 UE	20.22 C	2.90	4.74 C
Total benzofluoranthenes	10.45		13.04	6.67	6.30 UE	20.22	6.30	4.74
Benzo(ghi)perylene	4.09		3.77	2.02 E	6.48 UE	5.65	2.30	1.47
Chrysene	12.12		12.17	7.98 E	4.63 UE	18.26	6.30	5.58
Dibenz(a,h)anthracene	1.67		1.88	1.00 E	6.48 UE	2.83	1.00	0.61 E
Fluoranthene	25.76		15.94	20.20 E	3.89 UE	28.26	14.00	18.95
Indeno(1,2,3-cd)pyrene	3.33		3.62	1.92 E	6.30 UE	5.65	2.10	1.26
Pyrene	30.30		23.19	15.15 E	5.00 UE	32.61	13.00	14.74
Total HPAHs	103.33		87.97	63.02	6.48 U	134.78	52.10	53.45

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-20	9609042-12	9609024-13	9609041-7	9609041-8	9609024-12	9609048-10	9609048-11
Sample-ID	HC-VC-74-S3	HC-VC-74-S4	HC-SC-75	HC-VC-75-S1	HC-VC-75-S2	HC-SC-76	HC-VC-76-S1	HC-VC-76-S2
Depth	4.5 to 6.9 ft	9 to 11.5 ft	0 to .3 ft	0 to 3.3 ft	3.6 to 5.8 ft	0 to .3 ft	0 to 3.5 ft	3.5 to 7.9 ft
Sampling Date	9/16/96	9/13/96	9/10/96	9/12/96	9/12/96	9/10/96	9/16/96	9/16/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	370		93	130 E	19 UE	98	67	130
Acenaphthene	740		120	290 E	19 UE	79	80	1000
Acenaphthylene	110		32 E	31 E	17 UE	39 E	22 E	34 E
Anthracene	580		300	420 E	20 UE	280	250	550
Fluorene	920		170	440 E	22 UE	150	110	950
Naphthalene	1400		220	310 E	19 UE	200	190	320
Phenanthrene	1600		460	1200 E	22 UE	470	350	2000
Total LPAHs	5350		1302	2691	22 U	1218	1002	4854
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	5.61		1.35	1.31 E	3.52 UE	2.13	0.67	1.37
Acenaphthene	11.21		1.74	2.93 E	3.52 UE	1.72	0.80	10.53
Acenaphthylene	1.67		0.46 E	0.31 E	3.15 UE	0.85 E	0.22 E	0.36 E
Anthracene	8.79		4.35	4.24 E	3.70 UE	6.09	2.50	5.79
Fluorene	13.94		2.46	4.44 E	4.07 UE	3.26	1.10	10.00
Naphthalene	21.21		3.19	3.13 E	3.52 UE	4.35	1.90	3.37
Phenanthrene	24.24		6.67	12.12 E	4.07 UE	10.22	3.50	21.05
Total LPAHs	81.06		18.87	27.18	4.07 U	26.48	10.02	51.09
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	39 U		47 U	42 UE	9 UE	53 U	50 U	38 U
1,2-Dichlorobenzene	46 U		55 U	49 UE	11 UE	63 U	59 U	44 U
1,4-Dichlorobenzene	10 E		50 U	45 UE	10 UE	57 U	53 U	40 U
Benzoic Acid	200 EB		310 EB	290 EB	38 EB	770 B	230 EB	220 EB
Benzyl Alcohol	4 E		10 E	5.6 E	30 UE	46	11 E	8.8 E
Dibenzofuran	670		160	260 E	20 UE	150	140	660
Hexachlorobenzene	5.4		5.1 U	14	1.9 U	5.7 U	5.9	4.2
Hexachlorobutadiene	4.2 U		5.1 U	4.5 U	1.9 U	5.7 U	5.4 U	4.1 U
N-Nitroso diphenylamine	51 U		62 U	55 UE	23 UE	71 U	18 E	50 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.59 U		0.68 U	0.42 UE	1.67 UE	1.15 U	0.50 U	0.40 U
1,2-Dichlorobenzene	0.70 U		0.80 U	0.49 UE	2.04 UE	1.37 U	0.59 U	0.46 U
1,4-Dichlorobenzene	0.15 E		0.72 U	0.45 UE	1.85 UE	1.24 U	0.53 U	0.42 U
Benzoic Acid	3.03 EB		4.49 EB	2.93 EB	7.04 EB	16.74 B	2.30 EB	2.32 EB
Benzyl Alcohol	0.06 E		0.14 E	0.06 E	5.56 UE	1.00	0.11 E	0.09 E
Dibenzofuran	10.15		2.32	2.63 E	3.70 UE	3.26	1.40	6.95
Hexachlorobenzene	0.08		0.07 U	0.14	0.35 U	0.12 U	0.06	0.04
Hexachlorobutadiene	0.06 U		0.07 U	0.05 U	0.35 U	0.12 U	0.05 U	0.04 U
N-Nitroso diphenylamine	0.77 U		0.90 U	0.56 UE	4.26 UE	1.54 U	0.18 E	0.53 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-20	9609042-12	9609024-13	9609041-7	9609041-8	9609024-12	9609048-10	9609048-11
Sample-ID	HC-VC-74-S3	HC-VC-74-S4	HC-SC-75	HC-VC-75-S1	HC-VC-75-S2	HC-SC-76	HC-VC-76-S1	HC-VC-76-S2
Depth	4.5 to 6.9 ft	9 to 11.5 ft	0 to .3 ft	0 to 3.3 ft	3.6 to 5.8 ft	0 to .3 ft	0 to 3.5 ft	3.5 to 7.9 ft
Sampling Date	9/16/96	9/13/96	9/10/96	9/12/96	9/12/96	9/10/96	9/16/96	9/16/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	780 B		380 B	260 EB	16 EB	610 B	240 B	230 B
Butyl benzyl phthalate	77 U		93 U	33 E	18 UE	110 U	41 E	75 U
Di-n-butyl phthalate	53 E		72 U	64 UE	7 E	81 U	40 EB	45 EB
Di-n-octyl phthalate	72 U		87 U	77 UE	33 UE	99 U	92 U	70 U
Diethyl phthalate	100 U		120 U	110 UE	46 UE	140 U	130 U	98 U
Dimethyl phthalate	86 U		100 U	92 UE	39 UE	120 U	110 U	83 U
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	11.82 B		5.51 B	2.63 EB	2.96 EB	13.26 B	2.40 B	2.42 B
Butyl benzyl phthalate	1.17 U		1.35 U	0.33 E	3.33 UE	2.39 U	0.41 E	0.79 U
Di-n-butyl phthalate	0.80 E		1.04 U	0.65 UE	1.30 E	1.76 U	0.40 EB	0.47 EB
Di-n-octyl phthalate	1.09 U		1.26 U	0.78 UE	6.11 UE	2.15 U	0.92 U	0.74 U
Diethyl phthalate	1.52 U		1.74 U	1.11 UE	8.52 UE	3.04 U	1.30 U	1.03 U
Dimethyl phthalate	1.30 U		1.45 U	0.93 UE	7.22 UE	2.61 U	1.10 U	0.87 U
PCBs in µg/kg (dry)								
PCB-1016	130 U		150 U	140 U	57 U	170 U	160 U	120 U
PCB-1221	130 U		150 U	140 U	57 U	170 U	160 U	120 U
PCB-1232	130 U		150 U	140 U	57 U	170 U	160 U	120 U
PCB-1242	130 U		150 U	140 U	57 U	170 U	160 U	120 U
PCB-1248	170		150 U	130 E	57 U	170 U	160 U	120 U
PCB-1254	130 U		150 U	140 U	57 U	170 U	160 U	120 U
PCB-1260	91 E		150 U	140 U	57 U	170 U	160 U	120 U
Total PCBs	261		150 U	130 E	57 U	170 U	160 U	120 U
PCBs in mg/kg (OC)								
PCB-1016	1.97 U		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1221	1.97 U		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1232	1.97 U		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1242	1.97 U		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1248	2.58		2.17 U	1.31 E	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1254	1.97 U		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
PCB-1260	1.38 E		2.17 U	1.41 U	10.56 U	3.70 U	1.60 U	1.26 U
Total PCBs	3.95		2.17 U	1.31 E	10.56 U	3.70 U	1.60 U	1.26 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	36 E		7.1 E	5.5 E	17 UE	6.3 E	5.6 E	5.5 E
2-Methylphenol	28 E		11 E	7.2 E	19 UE	19 E	6.3 E	11 E
4-Methylphenol	1900		420	830 E	20 UE	490 E	440	1500
Pentachlorophenol	23 E		18 E	12 E	33 UE	25 E	17 E	13 E
Phenol	100 B		960	310 EB	3.1 EB	1100	50 U	38 U
Total Phenols(detects only)	2087		1416	1165	3.1	1640	468.9	1530

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-18	9609042-19	9609012-16	9609048-6	9609048-7	9609048-8	9609048-9	9609012-17
Sample-ID	HC-VC-76-S3	HC-VC-76-S4	HC-SC-77	HC-VC-77-S1	HC-VC-77-S2	HC-VC-77-S3	HC-VC-77-S4	HC-SC-78
Depth	8.9 to 13.8 ft	14.2 to 15.5 ft	0 to .3 ft	0 to 2.1 ft	2.1 to 3.9 ft	3.9 to 5.4 ft	5.4 to 8.6 ft	0 to .3 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/16/96	9/16/96	9/16/96	9/16/96	9/09/96
Conventionals in pct. (dry)								
Moisture	20	15	67	62	51	21	22	70
Total Organic Carbon			3.2	4.8	49	0.38	0.4	3.5
Metals in mg/kg (dry)								
Arsenic			12 E	9.3	8.1	5.1	8.8	11 E
Cadmium			1.4	2	1.9	0.65 U	0.85	1.5 U
Chromium			76	69 E	59 E	23 E	27 E	70
Copper			66	75 E	64 E	20 E	38 E	60
Lead			20	42 E	37 E	3.9 UE	3.9 UE	19
Mercury	0.12 U	0.12 U	0.7	11	7	0.12 U	0.12 U	0.96
Silver			1.4 U	1.3 U	1 U	0.65 U	1.3 U	1.5 U
Zinc			120	140	120	36	65	120
HPAHs in µg/kg (dry)								
Benz(a)anthracene			93	1200	370	5.3 E	28 U	170
Benzo(a)pyrene			58	630	260	24 U	24 U	110
Benzo(b)fluoranthene			140 C	1500 C	540 C	10 C	7.9 C	280 C
Benzo(k)fluoranthene			140 C	1500 C	540 C	10 C	7.9 C	280 C
Total benzofluoranthenes			140	1500	540	10	7.9	280
Benzo(ghi)perylene			37 E	430	280	39 U	11 E	96 E
Chrysene			140	1700	540	8.4 E	10 E	260
Dibenz(a,h)anthracene			93 U	210	98	39 U	39 U	45 E
Fluoranthene			230	1500	870	19 E	24 U	390
Indeno(1,2,3-cd)pyrene			36 E	380	210	37 U	38 U	81 E
Pyrene			200	1700	970	21 E	15 E	400
Total HPAHs			934	9250	4138	63.7	43.9	1832
HPAHs in mg/kg (OC)								
Benz(a)anthracene			2.91	25.00	0.76	1.39 E	7.00 U	4.86
Benzo(a)pyrene			1.81	13.13	0.53	6.32 U	6.00 U	3.14
Benzo(b)fluoranthene			4.38 C	31.25 C	1.10 C	2.63 C	1.98 C	8.00 C
Benzo(k)fluoranthene			4.38 C	31.25 C	1.10 C	2.63 C	1.98 C	8.00 C
Total benzofluoranthenes			4.38	31.25	1.10	2.63	1.98	8.00
Benzo(ghi)perylene			1.16 E	8.96	0.57	10.26 U	2.75 E	2.74 E
Chrysene			4.38	35.42	1.10	2.21 E	2.50 E	7.43
Dibenz(a,h)anthracene			2.91 U	4.38	0.20	10.26 U	9.75 U	1.29 E
Fluoranthene			7.19	31.25	1.78	5.00 E	6.00 U	11.14
Indeno(1,2,3-cd)pyrene			1.13 E	7.92	0.43	9.74 U	9.50 U	2.31 E
Pyrene			6.25	35.42	1.98	5.53 E	3.75 E	11.43
Total HPAHs			29.19	192.71	8.44	16.76	10.98	52.34

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-18	9609042-19	9609012-16	9609048-6	9609048-7	9609048-8	9609048-9	9609012-17
Sample-ID	HC-VC-76-S3	HC-VC-76-S4	HC-SC-77	HC-VC-77-S1	HC-VC-77-S2	HC-VC-77-S3	HC-VC-77-S4	HC-SC-78
Depth	8.9 to 13.8 ft	14.2 to 15.5 ft	0 to .3 ft	0 to 2.1 ft	2.1 to 3.9 ft	3.9 to 5.4 ft	5.4 to 8.6 ft	0 to .3 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/16/96	9/16/96	9/16/96	9/16/96	9/09/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene			50 U	150	130	9.2 E	26	37 E
Acenaphthene			51 U	190	130	21 U	22 U	56 U
Acenaphthylene			46 U	51	73	19 U	20 U	51 U
Anthracene			42 E	760	200	5.7 E	23 U	71
Fluorene			23 E	340	190	6.8 E	13 E	50 E
Naphthalene			44 E	320	580	21 E	7.3 E	86
Phenanthrene			130	860	620	24 E	35	220
Total LPAHs			239	2521	1793	57.5	55.3	427
LPAHs in mg/kg (OC)								
2-Methylnaphthalene			1.56 U	3.13	0.27	2.42 E	6.50	1.06 E
Acenaphthene			1.59 U	3.96	0.27	5.53 U	5.50 U	1.60 U
Acenaphthylene			1.44 U	1.06	0.15	5.00 U	5.00 U	1.46 U
Anthracene			1.31 E	15.83	0.41	1.50 E	5.75 U	2.03
Fluorene			0.72 E	7.08	0.39	1.79 E	3.25 E	1.43 E
Naphthalene			1.38 E	6.67	1.18	5.53 E	1.83 E	2.46
Phenanthrene			4.06	17.92	1.27	6.32 E	8.75	6.29
Total LPAHs			7.47	52.52	3.66	15.13	13.83	12.20
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene			47 U	41 U	31 U	4.9 U	4.9 U	51 U
1,2-Dichlorobenzene			55 U	48 U	12 E	5.8 U	5.8 U	61 U
1,4-Dichlorobenzene			50 U	11 E	9.6 E	5.2 U	5.3 U	55 U
Benzoic Acid			200 EB	170 EB	180 EB	35 EB	48 EB	240 EB
Benzyl Alcohol			7.3 E	7.6 E	5.9 E	33 U	34 U	12 E
Dibenzofuran			20 E	200	150	5.3 E	22 U	51 E
Hexachlorobenzene			5.1 U	12	8.8	1.1 U	1.1 U	5.6 U
Hexachlorobutadiene			5.1 U	4.4 U	3.4 U	1.1 U	1.1 U	5.6 U
N-Nitroso diphenylamine			62 U	54 U	42 U	26 U	26 U	68 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene			1.47 U	0.85 U	0.06 U	1.29 U	1.23 U	1.46 U
1,2-Dichlorobenzene			1.72 U	1.00 U	0.02 E	1.53 U	1.45 U	1.74 U
1,4-Dichlorobenzene			1.56 U	0.23 E	0.02 E	1.37 U	1.33 U	1.57 U
Benzoic Acid			6.25 EB	3.54 EB	0.37 EB	9.21 EB	12.00 EB	6.86 EB
Benzyl Alcohol			0.23 E	0.16 E	0.01 E	8.68 U	8.50 U	0.34 E
Dibenzofuran			0.63 E	4.17	0.31	1.39 E	5.50 U	1.46 E
Hexachlorobenzene			0.16 U	0.25	0.02	0.29 U	0.28 U	0.16 U
Hexachlorobutadiene			0.16 U	0.09 U	0.01 U	0.29 U	0.28 U	0.16 U
N-Nitroso diphenylamine			1.94 U	1.13 U	0.09 U	6.84 U	6.50 U	1.94 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-18	9609042-19	9609012-16	9609048-6	9609048-7	9609048-8	9609048-9	9609012-17
Sample-ID	HC-VC-76-S3	HC-VC-76-S4	HC-SC-77	HC-VC-77-S1	HC-VC-77-S2	HC-VC-77-S3	HC-VC-77-S4	HC-SC-78
Depth	8.9 to 13.8 ft	14.2 to 15.5 ft	0 to .3 ft	0 to 2.1 ft	2.1 to 3.9 ft	3.9 to 5.4 ft	5.4 to 8.6 ft	0 to .3 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/16/96	9/16/96	9/16/96	9/16/96	9/09/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate			150 B	260 B	210 B	19 EB	22 EB	300 B
Butyl benzyl phthalate			32 E	83	62 U	2.5 E	9.9 U	32 E
Di-n-butyl phthalate			39 E	62 U	48 U	12 EB	9.7 EB	47 E
Di-n-octyl phthalate			87 U	75 U	58 U	36 U	37 U	95 U
Diethyl phthalate			120 U	110 U	82 U	51 U	52 U	130 U
Dimethyl phthalate			100 U	90 U	70 U	43 U	44 U	110 U
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate			4.69 B	5.42 B	0.43 B	5.00 EB	5.50 EB	8.57 B
Butyl benzyl phthalate			1.00 E	1.73	0.13 U	0.66 E	2.48 U	0.91 E
Di-n-butyl phthalate			1.22 E	1.29 U	0.10 U	3.16 EB	2.43 EB	1.34 E
Di-n-octyl phthalate			2.72 U	1.56 U	0.12 U	9.47 U	9.25 U	2.71 U
Diethyl phthalate			3.75 U	2.29 U	0.17 U	13.42 U	13.00 U	3.71 U
Dimethyl phthalate			3.13 U	1.88 U	0.14 U	11.32 U	11.00 U	3.14 U
PCBs in µg/kg (dry)								
PCB-1016			150 U	130 U	100 U	32 U	32 U	170 U
PCB-1221			150 U	130 U	100 U	32 U	32 U	170 U
PCB-1232			150 U	130 U	100 U	32 U	32 U	170 U
PCB-1242			150 U	130 U	100 U	32 U	32 U	170 U
PCB-1248			150 U	130 U	100 U	32 U	32 U	170 U
PCB-1254			150 U	70 E	61 E	32 U	32 U	170 U
PCB-1260			150 U	130 U	100 U	32 U	32 U	170 U
Total PCBs			150 U	70 E	61 E	32 U	32 U	170 U
PCBs in mg/kg (OC)								
PCB-1016			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
PCB-1221			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
PCB-1232			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
PCB-1242			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
PCB-1248			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
PCB-1254			4.69 U	1.46 E	0.12 E	8.42 U	8.00 U	4.86 U
PCB-1260			4.69 U	2.71 U	0.20 U	8.42 U	8.00 U	4.86 U
Total PCBs			4.69 U	1.46 E	0.12 E	8.42 U	8.00 U	4.86 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol			1.6 E	10 E	17 E	19 U	19 U	3 E
2-Methylphenol			2 E	7.9 E	12 E	21 U	21 U	3.5 E
4-Methylphenol			400	1000	1200	11 E	23 U	440
Pentachlorophenol			4.7 E	18 E	14 E	37 U	37 U	14 E
Phenol			42 E	41 U	31 U	19 U	20 U	38 E
Total Phenols(detects only)			450.3	1036	1243	11		498.5

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-17	9609041-18	9609012-18	9609012-19	9609041-9	9609041-10	9609041-11	9609041-12
Sample-ID	HC-VC-78-S1	HC-VC-78-S2	HC-SC-79	HC-SC-205	HC-VC-79-S1	HC-VC-79-S2	HC-VC-79-S3	HC-VC-79-S4
Depth	0 to 2.4 ft	2.7 to 4 ft	0 to .3 ft	0 to .3 ft	0 to 2 ft	2 to 3.8 ft	4 to 4.9 ft	4.9 to 7 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/09/96	9/12/96	9/12/96	9/12/96	9/12/96
				Dup of HC-SC-79				
Conventionals in pct. (dry)								
Moisture	59	33	64	65	55	46	25	21
Total Organic Carbon	5.6	2	4.2	4.3	5.7	4.5	0.45	0.33
Metals in mg/kg (dry)								
Arsenic	7.2	5.8	13 E	11 E	12	11	7.6	6.8
Cadmium	1.8	0.81	2.4	2.2	4.6	4.7	0.9	0.9
Chromium	72	39	66	67	65	50	28	28
Copper	66	31	78	77	180	96	41	42
Lead	42	22	74	79	270	220	6.2	3.8 U
Mercury	2.1	0.42	1.8	1.5	8.1	2.2	0.13 U	0.14
Silver	1.2 U	0.75 U	1.3 U	1.3 U	1.1 U	0.95 U	0.68 U	0.64 U
Zinc	130	61	190	180	460	570	82	74
HPAHs in µg/kg (dry)								
Benz(a)anthracene	200 E	73 E	230	250	200 E	240 E	29 UE	28 UE
Benzo(a)pyrene	160 E	35 E	130	150	140 E	180 E	6.2 E	24 UE
Benzo(b)fluoranthene	360 EC	71 EC	290 C	390 C	260 EC	310 EC	15 EC	7.4 EC
Benzo(k)fluoranthene	360 EC	71 EC	290 C	390 C	260 EC	310 EC	15 EC	7.4 EC
Total benzofluoranthenes	360	71	290	390	260	310	15	7.4
Benzo(ghi)perylene	180 E	46 UE	84 E	120	130 E	140 E	19 E	15 E
Chrysene	290 E	81 E	270	390	280 E	320 E	30 UE	11 E
Dibenz(a,h)anthracene	63 E	46 UE	47 E	56 E	52 E	57 UE	41 UE	39 UE
Fluoranthene	460 E	290 E	380	430	590 E	730 E	27 E	24 UE
Indeno(1,2,3-cd)pyrene	140 E	21 E	74 E	110	100 E	120 E	39 UE	37 UE
Pyrene	560 E	220 E	370	470	460 E	650 E	47 E	14 E
Total HPAHs	2413	791	1875	2366	2212	2690	114.2	47.4
HPAHs in mg/kg (OC)								
Benz(a)anthracene	3.57 E	3.65 E	5.48	5.81	3.51 E	5.33 E	6.44 UE	8.48 UE
Benzo(a)pyrene	2.86 E	1.75 E	3.10	3.49	2.46 E	4.00 E	1.38 E	7.27 UE
Benzo(b)fluoranthene	6.43 EC	3.55 EC	6.90 C	9.07 C	4.56 EC	6.89 EC	3.33 EC	2.24 EC
Benzo(k)fluoranthene	6.43 EC	3.55 EC	6.90 C	9.07 C	4.56 EC	6.89 EC	3.33 EC	2.24 EC
Total benzofluoranthenes	6.43	3.55	6.90	9.07	4.56	6.89	3.33	2.24
Benzo(ghi)perylene	3.21 E	2.30 UE	2.00 E	2.79	2.28 E	3.11 E	4.22 E	4.55 E
Chrysene	5.18 E	4.05 E	6.43	9.07	4.91 E	7.11 E	6.67 UE	3.33 E
Dibenz(a,h)anthracene	1.13 E	2.30 UE	1.12 E	1.30 E	0.91 E	1.27 UE	9.11 UE	11.82 UE
Fluoranthene	8.21 E	14.50 E	9.05	10.00	10.35 E	16.22 E	6.00 E	7.27 UE
Indeno(1,2,3-cd)pyrene	2.50 E	1.05 E	1.76 E	2.56	1.75 E	2.67 E	8.67 UE	11.21 UE
Pyrene	10.00 E	11.00 E	8.81	10.93	8.07 E	14.44 E	10.44 E	4.24 E
Total HPAHs	43.09	39.55	44.64	55.02	38.81	59.78	25.38	14.36

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-17	9609041-18	9609012-18	9609012-19	9609041-9	9609041-10	9609041-11	9609041-12
Sample-ID	HC-VC-78-S1	HC-VC-78-S2	HC-SC-79	HC-SC-205	HC-VC-79-S1	HC-VC-79-S2	HC-VC-79-S3	HC-VC-79-S4
Depth	0 to 2.4 ft	2.7 to 4 ft	0 to .3 ft	0 to .3 ft	0 to 2 ft	2 to 3.8 ft	4 to 4.9 ft	4.9 to 7 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/09/96 Dup of HC-SC-79	9/12/96	9/12/96	9/12/96	9/12/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	76 E	69 E	65	82	250 E	380 E	41 E	35 E
Acenaphthene	51 E	54 E	32 E	52	170 E	210 E	6.9 E	21 UE
Acenaphthylene	31 E	8.6 E	12 E	20 E	45 E	77 E	20 UE	19 UE
Anthracene	110 E	59 E	180	110	170 E	220 E	8.1 E	44 E
Fluorene	86 E	80 E	62	86	220 E	280 E	21 E	15 E
Naphthalene	250 E	100 E	110	170	540 E	800 E	35 E	8.8 E
Phenanthrene	320 E	340 E	240	290	820 E	1100 E2	70 E	43 E
Total LPAHs	848	641.6	636	728	1965	2687	141	110.8
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	1.36 E	3.45 E	1.55	1.91	4.39 E	8.44 E	9.11 E	10.61 E
Acenaphthene	0.91 E	2.70 E	0.76 E	1.21	2.98 E	4.67 E	1.53 E	6.36 UE
Acenaphthylene	0.55 E	0.43 E	0.29 E	0.47 E	0.79 E	1.71 E	4.44 UE	5.76 UE
Anthracene	1.96 E	2.95 E	4.29	2.56	2.98 E	4.89 E	1.80 E	13.33 E
Fluorene	1.54 E	4.00 E	1.48	2.00	3.86 E	6.22 E	4.67 E	4.55 E
Naphthalene	4.46 E	5.00 E	2.62	3.95	9.47 E	17.78 E	7.78 E	2.67 E
Phenanthrene	5.71 E	17.00 E	5.71	6.74	14.39 E	24.44 E2	15.56 E	13.03 E
Total LPAHs	15.14	32.08	15.14	16.93	34.47	59.71	31.33	33.58
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	38 UE	23 UE	43 U	44 U	34 UE	29 UE	5.1 UE	4.9 UE
1,2-Dichlorobenzene	44 UE	27 UE	51 U	52 U	13 E	11 E	6.1 UE	5.8 UE
1,4-Dichlorobenzene	12 E	25 UE	46 U	47 U	24 E	20 E	5.5 UE	5.2 UE
Benzoic Acid	170 EB	97 EB	180 EB	210 EB	170 EB	180 EB	66 EB	44 EB
Benzyl Alcohol	8.1 E	1.6 E	6 E	7.6 E	4.6 E	4.5 E	35 UE	33 UE
Dibenzofuran	84 E	49 E	34 E	54	120 E	160 E	7.3 E	22 UE
Hexachlorobenzene	10	2.5 U	4.6 U	4.8 U	12	3.1 U	1.1 U	1.1 U
Hexachlorobutadiene	4.1 U	2.5 U	4.6 U	4.8 U	3.7 U	3.1 U	1.1 U	1.1 U
N-Nitroso diphenylamine	50 UE	96 E	57 U	59 U	46 UE	110 E	27 UE	26 UE
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.68 UE	1.15 UE	1.02 U	1.02 U	0.60 UE	0.64 UE	1.13 UE	1.48 UE
1,2-Dichlorobenzene	0.79 UE	1.35 UE	1.21 U	1.21 U	0.23 E	0.24 E	1.36 UE	1.76 UE
1,4-Dichlorobenzene	0.21 E	1.25 UE	1.10 U	1.09 U	0.42 E	0.44 E	1.22 UE	1.58 UE
Benzoic Acid	3.04 EB	4.85 EB	4.29 EB	4.88 EB	2.98 EB	4.00 EB	14.67 EB	13.33 EB
Benzyl Alcohol	0.14 E	0.08 E	0.14 E	0.18 E	0.08 E	0.10 E	7.78 UE	10.00 UE
Dibenzofuran	1.50 E	2.45 E	0.81 E	1.26	2.11 E	3.56 E	1.62 E	6.67 UE
Hexachlorobenzene	0.18	0.13 U	0.11 U	0.11 U	0.21	0.07 U	0.24 U	0.33 U
Hexachlorobutadiene	0.07 U	0.13 U	0.11 U	0.11 U	0.06 U	0.07 U	0.24 U	0.33 U
N-Nitroso diphenylamine	0.89 UE	4.80 E	1.36 U	1.37 U	0.81 UE	2.44 E	6.00 UE	7.88 UE

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609041-17	9609041-18	9609012-18	9609012-19	9609041-9	9609041-10	9609041-11	9609041-12
Sample-ID	HC-VC-78-S1	HC-VC-78-S2	HC-SC-79	HC-SC-205	HC-VC-79-S1	HC-VC-79-S2	HC-VC-79-S3	HC-VC-79-S4
Depth	0 to 2.4 ft	2.7 to 4 ft	0 to .3 ft	0 to .3 ft	0 to 2 ft	2 to 3.8 ft	4 to 4.9 ft	4.9 to 7 ft
Sampling Date	9/13/96	9/13/96	9/09/96	9/09/96	9/12/96	9/12/96	9/12/96	9/12/96
				Dup of HC-SC-79				
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	310 EB	110 EB	240 B	210 B	350 EB	160 EB	15 EB	18 EB
Butyl benzyl phthalate	52 E	46 UE	34 E	30 E	68 UE	57 UE	3.7 E	18 E
Di-n-butyl phthalate	58 UE	35 UE	66 U	67 U	52 UE	44 UE	10 E	8.4 E
Di-n-octyl phthalate	20 E	43 UE	79 U	82 U	64 UE	53 UE	38 UE	36 UE
Diethyl phthalate	98 UE	60 UE	110 U	20 E	89 UE	74 UE	54 UE	51 UE
Dimethyl phthalate	10 E	51 UE	95 U	98 U	76 UE	63 UE	46 UE	43 UE
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	5.54 EB	5.50 EB	5.71 B	4.88 B	6.14 EB	3.56 EB	3.33 EB	5.45 EB
Butyl benzyl phthalate	0.93 E	2.30 UE	0.81 E	0.70 E	1.19 UE	1.27 UE	0.82 E	5.45 E
Di-n-butyl phthalate	1.04 UE	1.75 UE	1.57 U	1.56 U	0.91 UE	0.98 UE	2.22 E	2.55 E
Di-n-octyl phthalate	0.36 E	2.15 UE	1.88 U	1.91 U	1.12 UE	1.18 UE	8.44 UE	10.91 UE
Diethyl phthalate	1.75 UE	3.00 UE	2.62 U	0.47 E	1.56 UE	1.64 UE	12.00 UE	15.45 UE
Dimethyl phthalate	0.18 E	2.55 UE	2.26 U	2.28 U	1.33 UE	1.40 UE	10.22 UE	13.03 UE
PCBs in µg/kg (dry)								
PCB-1016	120 U	75 U	140 U	140 U	110 U	93 U	33 U	32 U
PCB-1221	120 U	75 U	140 U	140 U	110 U	93 U	33 U	32 U
PCB-1232	120 U	75 U	140 U	140 U	110 U	93 U	33 U	32 U
PCB-1242	120 U	75 U	140 U	140 U	110 U	93 U	33 U	32 U
PCB-1248	120 U	48 E	140 U	140 U	180	64 E	33 U	32 U
PCB-1254	120 U	75 U	230	140 U	110 U	93 U	33 U	32 U
PCB-1260	120 U	75 U	140 U	140	120	85 E	33 U	32 U
Total PCBs	120 U	48 E	230	140	300	149	33 U	32 U
PCBs in mg/kg (OC)								
PCB-1016	2.14 U	3.75 U	3.33 U	3.26 U	1.93 U	2.07 U	7.33 U	9.70 U
PCB-1221	2.14 U	3.75 U	3.33 U	3.26 U	1.93 U	2.07 U	7.33 U	9.70 U
PCB-1232	2.14 U	3.75 U	3.33 U	3.26 U	1.93 U	2.07 U	7.33 U	9.70 U
PCB-1242	2.14 U	3.75 U	3.33 U	3.26 U	1.93 U	2.07 U	7.33 U	9.70 U
PCB-1248	2.14 U	2.40 E	3.33 U	3.26 U	3.16	1.42 E	7.33 U	9.70 U
PCB-1254	2.14 U	3.75 U	5.48	3.26 U	1.93 U	2.07 U	7.33 U	9.70 U
PCB-1260	2.14 U	3.75 U	3.33 U	3.26	2.11	1.89 E	7.33 U	9.70 U
Total PCBs	2.14 U	2.40 E	5.48	3.26	5.26	3.31	7.33 U	9.70 U
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	4.5 E	3.9 E	8.4 E	10 E	27 E	27 E	20 UE	19 UE
2-Methylphenol	5.1 E	2.8 E	15 E	16 E	16 E	17 E	22 UE	21 UE
4-Methylphenol	610 E	810 E	1600	2000	3200 E	3400 E	74 E	22 UE
Pentachlorophenol	10 E	6.7 E	16 E	19 E	22 E	23 E	39 UE	37 UE
Phenol	310 EB	54 EB	48	70	130 EB	62 EB	5 EB	19 UE
Total Phenols(detects only)	939.6	877.4	1687	2115	3395	3529	79	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-20	9609048-13	9609048-14	9609048-15	9609042-20	9609024-9	9609048-3	9609048-5
Sample-ID	HC-SC-80	HC-VC-80-S1	HC-VC-80-S2	HC-VC-206	HC-VC-80-S3	HC-SC-81	HC-VC-81-S1	HC-VC-207
Depth	0 to .3 ft	0 to 1.7 ft	1.9 to 5.3 ft	1.9 to 5.3 ft	6.3 to 9 ft	0 to .3 ft	0 to 1.6 ft	0 to 1.6 ft
Sampling Date	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96	9/09/96	9/16/96	9/12/96
				Dup of HC-VC-80-S2				Dup of HC-VC-81-S1
Conventionals in pct. (dry)								
Moisture	64	58	71	74	27	66	56	55
Total Organic Carbon	3.5	4.5	14	14		4.2	4	4.5
Metals in mg/kg (dry)								
Arsenic	10 E	9.7	19	21		10	9.1	8.9
Cadmium	1.4	2	5.6	7.7		1.5 U	1.6	1.5
Chromium	70	68 E	140 E	150 E		61	59 E	54 E
Copper	64	73 E	120 E	140 E		71	68 E	67 E
Lead	29	73 E	260 E	300 E		50	75 E	69 E
Mercury	0.56	1	12	14	0.19	0.42	0.93	0.84
Silver	1.3 U	1.2 U	1.8 U	2 U		1.7	1.1 U	1.2 U
Zinc	130	150	280	340		160	160	160
HPAHs in µg/kg (dry)								
Benz(a)anthracene	160	410	150 U	170 U		710	710	630
Benzo(a)pyrene	110	330	260	290		550	670	540
Benzo(b)fluoranthene	260 C	690 C	460 C	510 C		660	1300 C	1100 C
Benzo(k)fluoranthene	260 C	690 C	460 C	510 C		550	1300 C	1100 C
Total benzofluoranthenes	260	690	460	510		1210	1300	1100
Benzo(ghi)perylene	100	380	180	180		440	650	590
Chrysene	240	550	620	650		920	1000	910
Dibenz(a,h)anthracene	17 E	120	90	91 E		180	70 U	230
Fluoranthene	330	970	1200	1000		1400	1400	1200
Indeno(1,2,3-cd)pyrene	81 E	290	150	150		380	560	470
Pyrene	310	1200	850	180 U		2000	2200	1700
Total HPAHs	1608	4940	3810	2871		7790	8490	7370
HPAHs in mg/kg (OC)								
Benz(a)anthracene	4.57	9.11	1.07 U	1.21 U		16.90	17.75	14.00
Benzo(a)pyrene	3.14	7.33	1.86	2.07		13.10	16.75	12.00
Benzo(b)fluoranthene	7.43 C	15.33 C	3.29 C	3.64 C		15.71	32.50 C	24.44 C
Benzo(k)fluoranthene	7.43 C	15.33 C	3.29 C	3.64 C		13.10	32.50 C	24.44 C
Total benzofluoranthenes	7.43	15.33	3.29	3.64		28.81	32.50	24.44
Benzo(ghi)perylene	2.86	8.44	1.29	1.29		10.48	16.25	13.11
Chrysene	6.86	12.22	4.43	4.64		21.90	25.00	20.22
Dibenz(a,h)anthracene	0.49 E	2.67	0.64	0.65 E		4.29	1.75 U	5.11
Fluoranthene	9.43	21.56	8.57	7.14		33.33	35.00	26.67
Indeno(1,2,3-cd)pyrene	2.31 E	6.44	1.07	1.07		9.05	14.00	10.44
Pyrene	8.86	26.67	6.07	1.29 U		47.62	55.00	37.78
Total HPAHs	45.94	109.78	27.21	20.51		185.48	212.25	163.78

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-20	9609048-13	9609048-14	9609048-15	9609042-20	9609024-9	9609048-3	9609048-5
Sample-ID	HC-SC-80	HC-VC-80-S1	HC-VC-80-S2	HC-VC-206	HC-VC-80-S3	HC-SC-81	HC-VC-81-S1	HC-VC-207
Depth	0 to .3 ft	0 to 1.7 ft	1.9 to 5.3 ft	1.9 to 5.3 ft	6.3 to 9 ft	0 to .3 ft	0 to 1.6 ft	0 to 1.6 ft
Sampling Date	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96	9/09/96	9/16/96	9/12/96
				Dup of HC-VC-80-S2				Dup of HC-VC-81-S1
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	20 E	270	850	730		190	240	330
Acenaphthene	19 E	180	430	450		170	220	440
Acenaphthylene	42 U	120	53 U	59 U		67	120	100
Anthracene	51	290	120 U	140 U		340	370	670
Fluorene	34 E	250	730	630		240	270	350
Naphthalene	57	1100	940	840		540	830	960
Phenanthrene	190	890	3100	2700		980	1000	960
Total LPAHs	351	2830	5200	4620		2337	2810	3480
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	0.57 E	6.00	6.07	5.21		4.52	6.00	7.33
Acenaphthene	0.54 E	4.00	3.07	3.21		4.05	5.50	9.78
Acenaphthylene	1.20 U	2.67	0.38 U	0.42 U		1.60	3.00	2.22
Anthracene	1.46	6.44	0.86 U	1.00 U		8.10	9.25	14.89
Fluorene	0.97 E	5.56	5.21	4.50		5.71	6.75	7.78
Naphthalene	1.63	24.44	6.71	6.00		12.86	20.75	21.33
Phenanthrene	5.43	19.78	22.14	19.29		23.33	25.00	21.33
Total LPAHs	10.03	62.89	37.14	33.00		55.64	70.25	77.33
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	43 U	37 U	53 U	100		45 U	35 U	34 U
1,2-Dichlorobenzene	51 U	43 U	150	140		54 U	9.5 E	40 U
1,4-Dichlorobenzene	46 U	32 E	160	130		49 U	15 E	19 E
Benzoic Acid	220 EB	250 EB	510 B	500 B		480 B	250 EB	250 EB
Benzyl Alcohol	15 E	18 E	11 E	14 E		54 E	28 E	21 E
Dibenzofuran	29 E	270	60 U	67 U		230	280	340
Hexachlorobenzene	4.6 U	11	110	210		4.9 U	10	10
Hexachlorobutadiene	4.6 U	4 U	5.7 U	6.4 U		4.9 U	3.8 U	3.7 U
N-Nitroso diphenylamine	57 U	49 U	140 U	190		60 U	47 U	46 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.23 U	0.82 U	0.38 U	0.71		1.07 U	0.88 U	0.76 U
1,2-Dichlorobenzene	1.46 U	0.96 U	1.07	1.00		1.29 U	0.24 E	0.89 U
1,4-Dichlorobenzene	1.31 U	0.71 E	1.14	0.93		1.17 U	0.38 E	0.42 E
Benzoic Acid	6.29 EB	5.56 EB	3.64 B	3.57 B		11.43 B	6.25 EB	5.56 EB
Benzyl Alcohol	0.43 E	0.40 E	0.08 E	0.10 E		1.29 E	0.70 E	0.47 E
Dibenzofuran	0.83 E	6.00	0.43 U	0.48 U		5.48	7.00	7.56
Hexachlorobenzene	0.13 U	0.24	0.791	1.50		0.12 U	0.25	0.22
Hexachlorobutadiene	0.13 U	0.09 U	0.04 U	0.05 U		0.12 U	0.10 U	0.08 U
N-Nitroso diphenylamine	1.63 U	1.09 U	1.00 U	1.36		1.43 U	1.18 U	1.02 U

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-20	9609048-13	9609048-14	9609048-15	9609042-20	9609024-9	9609048-3	9609048-5
Sample-ID	HC-SC-80	HC-VC-80-S1	HC-VC-80-S2	HC-VC-206	HC-VC-80-S3	HC-SC-81	HC-VC-81-S1	HC-VC-207
Depth	0 to .3 ft	0 to 1.7 ft	1.9 to 5.3 ft	1.9 to 5.3 ft	6.3 to 9 ft	0 to .3 ft	0 to 1.6 ft	0 to 1.6 ft
Sampling Date	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96	9/09/96	9/16/96	9/12/96
				Dup of HC-VC-80-S2				Dup of HC-VC-81-S1
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	290 B	840 B	910 B	910 B		2300 B	1700 B	1200 B
Butyl benzyl phthalate	23 E	230	210 U	240 U		160	170	190
Di-n-butyl phthalate	38 E	64 EB	160 U	180 U		68 E	50 EB	44 EB
Di-n-octyl phthalate	79 U	37 E	200 U	110 U		84 U	61 E	51 E
Diethyl phthalate	110 U	12 E	140 U	150 U		120 U	91 U	89 U
Dimethyl phthalate	95 U	19 E	120 U	130 U		63 E	26 E	31 E
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	8.29 B	18.67 B	6.50 B	6.50 B		54.76 B	42.50 B	26.67 B
Butyl benzyl phthalate	0.66 E	5.11	1.50 U	1.71 U		3.81	4.25	4.22
Di-n-butyl phthalate	1.09 E	1.42 EB	1.14 U	1.29 U		1.62 E	1.25 EB	0.98 EB
Di-n-octyl phthalate	2.26 U	0.82 E	1.43 U	0.79 U		2.00 U	1.53 E	1.13 E
Diethyl phthalate	3.14 U	0.27 E	1.00 U	1.07 U		2.86 U	2.28 U	1.98 U
Dimethyl phthalate	2.71 U	0.42 E	0.86 U	0.93 U		1.50 E	0.65 E	0.69 E
PCBs in µg/kg (dry)								
PCB-1016	140 U	120 U	170 U	190 U		150 U	110 U	110 U
PCB-1221	140 U	120 U	170 U	190 U		150 U	110 U	110 U
PCB-1232	140 U	120 U	170 U	190 U		150 U	110 U	110 U
PCB-1242	140 U	120 U	170 U	190 U		150 U	110 U	110 U
PCB-1248	140 U	120 U	170 U	190 U		150 U	110 U	110 U
PCB-1254	140 U	98 E	460	690		150 U	96 E	66 E
PCB-1260	140 U	120 U	170 U	190 U		150 U	110 U	110 U
Total PCBs	140 U	98 E	460	690		150 U	96 E	66 E
PCBs in mg/kg (OC)								
PCB-1016	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
PCB-1221	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
PCB-1232	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
PCB-1242	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
PCB-1248	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
PCB-1254	4.00 U	2.18 E	3.29	4.93		3.57 U	2.40 E	1.47 E
PCB-1260	4.00 U	2.67 U	1.21 U	1.36 U		3.57 U	2.75 U	2.44 U
Total PCBs	4.00 U	2.18 E	3.29	4.93		3.57 U	2.40 E	1.47 E
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	2.1 E	8.1 E	31 E	30 E		6.1 E	7.4 E	6.3 E
2-Methylphenol	3 E	25 E	50 E	26 E		8.1 E	9.9 E	7.1 E
4-Methylphenol	290	3200	21000	18000		460	1100	1300
Pentachlorophenol	12 E	28 E	150	130		62 E	33 E	36 E
Phenol	41 E	120	440	360		960	35 U	34 U
Total Phenols(detects only)	348.1	3381	21671	18546		1496	1150	1349

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609048-4	9609042-15	9609042-16	9609024-10	9609048-16	9609048-17	9609047-1	9609047-2
Sample-ID	HC-VC-81-S2	HC-VC-81-S3	HC-VC-81-S4	HC-SC-82	HC-VC-82-S1	HC-VC-82-S2	HC-VC-82-S3	HC-VC-82-S4
Depth	1.6 to 3.2 ft	3.2 to 4.7 ft	5.3 to 8 ft	0 to .3 ft	0 to 2.3 ft	2.6 to 5.2 ft	5.3 to 6.8 ft	7 to 10.1 ft
Sampling Date	9/16/96	9/12/96	9/12/96	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96
Conventionals in pct. (dry)								
Moisture	58	21	20	68	59	65	62	14
Total Organic Carbon	5.5			4.2	6.7	11		
Metals in mg/kg (dry)								
Arsenic	9.4			11	8.6	11		
Cadmium	2.3			1.6 U	2.3	3.1		
Chromium	87 E			66	78 E	110 E		
Copper	84 E			68	83 E	360 E		
Lead	110 E			41	140 E	140 E		
Mercury	1.2	0.12 U	0.12 U	0.33	1.4	2	1.3	0.11 U
Silver	1.2 U			1.6 U	1.2 U	1.5		
Zinc	210			150	210	250		
HPAHs in µg/kg (dry)								
Benz(a)anthracene	840			240	500	520 E		
Benzo(a)pyrene	600			200	430	390 E		
Benzo(b)fluoranthene	1200 C			470 C	850 C	380 E		
Benzo(k)fluoranthene	1200 C			470 C	850 C	330 E		
Total benzofluoranthenes	1200			470	850	710		
Benzo(ghi)perylene	570			230	420	260 E		
Chrysene	1300			360	710	750 E		
Dibenz(a,h)anthracene	210			96 U	160	120 E		
Fluoranthene	2100			510	1300	1700 E		
Indeno(1,2,3-cd)pyrene	460			180	340	220 E		
Pyrene	2500			620	1400	870 E		
Total HPAHs	9780			2810	6110	5540		
HPAHs in mg/kg (OC)								
Benz(a)anthracene	15.27			5.71	7.46	4.73 E		
Benzo(a)pyrene	10.91			4.76	6.42	3.55 E		
Benzo(b)fluoranthene	21.82 C			11.19 C	12.69 C	3.45 E		
Benzo(k)fluoranthene	21.82 C			11.19 C	12.69 C	3.00 E		
Total benzofluoranthenes	21.82			11.19	12.69	6.45		
Benzo(ghi)perylene	10.36			5.48	6.27	2.36 E		
Chrysene	23.64			8.57	10.60	6.82 E		
Dibenz(a,h)anthracene	3.82			2.29 U	2.39	1.09 E		
Fluoranthene	38.18			12.14	19.40	15.45 E		
Indeno(1,2,3-cd)pyrene	8.36			4.29	5.07	2.00 E		
Pyrene	45.45			14.76	20.90	7.91 E		
Total HPAHs	177.82			66.90	91.19	50.36		

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609048-4	9609042-15	9609042-16	9609024-10	9609048-16	9609048-17	9609047-1	9609047-2
Sample-ID	HC-VC-81-S2	HC-VC-81-S3	HC-VC-81-S4	HC-SC-82	HC-VC-82-S1	HC-VC-82-S2	HC-VC-82-S3	HC-VC-82-S4
Depth	1.6 to 3.2 ft	3.2 to 4.7 ft	5.3 to 8 ft	0 to .3 ft	0 to 2.3 ft	2.6 to 5.2 ft	5.3 to 6.8 ft	7 to 10.1 ft
Sampling Date	9/16/96	9/12/96	9/12/96	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	570			16 E	290	1100 E		
Acenaphthene	630			21 E	260	540 E		
Acenaphthylene	310			48 U	120	170 E		
Anthracene	560			98	330	500 E		
Fluorene	680			35 E	350	690 E		
Naphthalene	1700			31 E	930	2200 E		
Phenanthrene	1900			280	1100	2400 E		
Total LPAHs	5780			465	3090	6500		
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	10.36			0.38 E	4.33	10.00 E		
Acenaphthene	11.45			0.50 E	3.88	4.91 E		
Acenaphthylene	5.64			1.14 U	1.79	1.55 E		
Anthracene	10.18			2.33	4.93	4.55 E		
Fluorene	12.36			0.83 E	5.22	6.27 E		
Naphthalene	30.91			0.74 E	13.88	20.00 E		
Phenanthrene	34.55			6.67	16.42	21.82 E		
Total LPAHs	105.09			11.07	46.12	59.09		
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	37 U			48 U	38 U	44 UE		
1,2-Dichlorobenzene	92			57 U	12 E	52 UE		
1,4-Dichlorobenzene	47			52 U	40 U	21 E		
Benzoic Acid	570 B			230 EB	260 EB	370 EB		
Benzyl Alcohol	46 E			24 E	27 E	20 E		
Dibenzofuran	650			25 E	320	400 E		
Hexachlorobenzene	8.9			5.2 U	15	20		
Hexachlorobutadiene	4 U			5.2 U	4.1 U	4.8 U		
N-Nitroso diphenylamine	49 U			64 U	50 U	430 E		
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.67 U			1.14 U	0.57 U	0.40 UE		
1,2-Dichlorobenzene	1.67			1.36 U	0.18 E	0.47 UE		
1,4-Dichlorobenzene	0.85			1.24 U	0.60 U	0.19 E		
Benzoic Acid	10.36 B			5.48 EB	3.88 EB	3.36 EB		
Benzyl Alcohol	0.84 E			0.57 E	0.40 E	0.18 E		
Dibenzofuran	11.82			0.60 E	4.78	3.64 E		
Hexachlorobenzene	0.16			0.12 U	0.22	0.18		
Hexachlorobutadiene	0.07 U			0.12 U	0.06 U	0.04 U		
N-Nitroso diphenylamine	0.89 U			1.52 U	0.75 U	3.91 E		

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609048-4	9609042-15	9609042-16	9609024-10	9609048-16	9609048-17	9609047-1	9609047-2
Sample-ID	HC-VC-81-S2	HC-VC-81-S3	HC-VC-81-S4	HC-SC-82	HC-VC-82-S1	HC-VC-82-S2	HC-VC-82-S3	HC-VC-82-S4
Depth	1.6 to 3.2 ft	3.2 to 4.7 ft	5.3 to 8 ft	0 to .3 ft	0 to 2.3 ft	2.6 to 5.2 ft	5.3 to 6.8 ft	7 to 10.1 ft
Sampling Date	9/16/96	9/12/96	9/12/96	9/09/96	9/17/96	9/17/96	9/12/96	9/12/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	1300 B			580 B	1300 B	690 EB		
Butyl benzyl phthalate	280			57 E	200	95 E		
Di-n-butyl phthalate	56 U			74 U	72 B	100 EB		
Di-n-octyl phthalate	54 E			89 U	46 E	82 UE		
Diethyl phthalate	14 E			130 U	98 U	110 UE		
Dimethyl phthalate	81 U			110 U	32 E	98 UE		
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	23.64 B			13.81 B	19.40 B	6.27 EB		
Butyl benzyl phthalate	5.09			1.36 E	2.99	0.86 E		
Di-n-butyl phthalate	1.02 U			1.76 U	1.07 B	0.91 EB		
Di-n-octyl phthalate	0.98 E			2.12 U	0.69 E	0.75 UE		
Diethyl phthalate	0.25 E			3.10 U	1.46 U	1.00 UE		
Dimethyl phthalate	1.47 U			2.62 U	0.48 E	0.89 UE		
PCBs in µg/kg (dry)								
PCB-1016	120 U			160 U	120 U	140 U		
PCB-1221	120 U			160 U	120 U	140 U		
PCB-1232	120 U			160 U	120 U	140 U		
PCB-1242	120 U			160 U	120 U	140 U		
PCB-1248	120 U			160 U	120 U	140 U		
PCB-1254	230			160 U	140	180		
PCB-1260	120 U			160 U	120 U	140 U		
Total PCBs	230			160 U	140	180		
PCBs in mg/kg (OC)								
PCB-1016	2.18 U			3.81 U	1.79 U	1.27 U		
PCB-1221	2.18 U			3.81 U	1.79 U	1.27 U		
PCB-1232	2.18 U			3.81 U	1.79 U	1.27 U		
PCB-1242	2.18 U			3.81 U	1.79 U	1.27 U		
PCB-1248	2.18 U			3.81 U	1.79 U	1.27 U		
PCB-1254	4.18			3.81 U	2.09	1.64		
PCB-1260	2.18 U			3.81 U	1.79 U	1.27 U		
Total PCBs	4.18			3.81 U	2.09	1.64		
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	21 E			2.7 E	12 E	43		
2-Methylphenol	52			4.2 E	30 E	45 E		
4-Methylphenol	5600			340	3100	18000		
Pentachlorophenol	42 E			27 E	28 E	81 E		
Phenol	330			1100	130	680		
Total Phenols(detects only)	6045			1474	3300	18849		

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-9	9609041-5	9609041-6	9609042-4	9609012-10	9609041-13	9609041-14	9609042-6
Sample-ID	HC-SC-83	HC-VC-83-S1	HC-VC-83-S2	HC-VC-83-S3	HC-SC-84	HC-VC-84-S1	HC-VC-84-S2	HC-VC-84-S3
Depth	0 to .3 ft	0 to 2.6 ft	5.9 to 7.9 ft	2.6 to 5.3 ft	0 to .3 ft	0 to 1.4 ft	2 to 4.9 ft	5.3 to 6.3 ft
Sampling Date	9/09/96	9/12/96	9/12/96	9/10/96	9/09/96	9/11/96	9/11/96	9/11/96
Conventionals in pct. (dry)								
Moisture	62	54	52	52	60	51	49	46
Total Organic Carbon	3	3.8	2.3		2.7	2.9	7	
Metals in mg/kg (dry)								
Arsenic	12 E	11	10		12 E	10	11	
Cadmium	1.3 U	1.4	1.6		1.3	1.1	2.1	
Chromium	69	67	50		71	59	85	
Copper	55	63	44		62	58	78	
Lead	14	21	8.7		15	16	44	
Mercury	0.72	1.4	0.21 U	3.6	0.5	0.65	2.2	6.7
Silver	1.3 U	1.1 U	1.1 U		1.1 U	1 U	0.97 U	
Zinc	97	110	78		110	100	140	
HPAHs in µg/kg (dry)								
Benz(a)anthracene	12 E	82	45 U		44 E	56 E	130 E	
Benzo(a)pyrene	14 E	67	40		32 E	45 E	89 E	
Benzo(b)fluoranthene	62 U	150 C	64 C		81 C	120 EC	170 EC	
Benzo(k)fluoranthene	78 U	150 C	64 C		81 C	120 EC	170 EC	
Total benzofluoranthenes	78 U	150	64		81	120	170	
Benzo(ghi)perylene	81 U	84	57 E		34 E	49 E	100 E	
Chrysene	25 E	110	40 E		79	94 E	170 E	
Dibenz(a,h)anthracene	81 U	27 E	64 U		19 E	19 E	40 E	
Fluoranthene	21 E	230	140		120	160 E	390 E	
Indeno(1,2,3-cd)pyrene	78 U	61 E	29 E		26 E	39 E	76 E	
Pyrene	26 E	340	180		130	200 E	430 E	
Total HPAHs	98	1151	550		565	782	1595	
HPAHs in mg/kg (OC)								
Benz(a)anthracene	0.40 E	2.16	1.96 U		1.63 E	1.93 E	1.86 E	
Benzo(a)pyrene	0.47 E	1.76	1.74		1.19 E	1.55 E	1.27 E	
Benzo(b)fluoranthene	2.07 U	3.95 C	2.78 C		3.00 C	4.14 EC	2.43 EC	
Benzo(k)fluoranthene	2.60 U	3.95 C	2.78 C		3.00 C	4.14 EC	2.43 EC	
Total benzofluoranthenes	2.60 U	3.95	2.78		3.00	4.14	2.43	
Benzo(ghi)perylene	2.70 U	2.21	2.48 E		1.26 E	1.69 E	1.43 E	
Chrysene	0.83 E	2.89	1.74 E		2.93	3.24 E	2.43 E	
Dibenz(a,h)anthracene	2.70 U	0.71 E	2.78 U		0.70 E	0.66 E	0.57 E	
Fluoranthene	0.70 E	6.05	6.09		4.44	5.52 E	5.57 E	
Indeno(1,2,3-cd)pyrene	2.60 U	1.61 E	1.26 E		0.96 E	1.34 E	1.09 E	
Pyrene	0.87 E	8.95	7.83		4.81	6.90 E	6.14 E	
Total HPAHs	3.27	30.29	23.91		20.93	26.97	22.79	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-9	9609041-5	9609041-6	9609042-4	9609012-10	9609041-13	9609041-14	9609042-6
Sample-ID	HC-SC-83	HC-VC-83-S1	HC-VC-83-S2	HC-VC-83-S3	HC-SC-84	HC-VC-84-S1	HC-VC-84-S2	HC-VC-84-S3
Depth	0 to .3 ft	0 to 2.6 ft	5.9 to 7.9 ft	2.6 to 5.3 ft	0 to .3 ft	0 to 1.4 ft	2 to 4.9 ft	5.3 to 6.3 ft
Sampling Date	9/09/96	9/12/96	9/12/96	9/10/96	9/09/96	9/11/96	9/11/96	9/11/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	44 U	95	34 E		30 E	56 E	220 E	
Acenaphthene	44 U	30 E	23 E		42 U	15 E	63 E	
Acenaphthylene	40 U	30 E	58		38 U	14 E	30 E	
Anthracene	47 U	66	32 E		21 E	35 E	120 E	
Fluorene	51 U	57	31 E		18 E	30 E	140 E	
Naphthalene	45 U	200	170		49	120 E	350 E	
Phenanthrene	15 E	200	140		73	120 E	320 E	
Total LPAHs	15	583	454		161	334	1023	
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	1.47 U	2.50	1.48 E		1.11 E	1.93 E	3.14 E	
Acenaphthene	1.47 U	0.79 E	1.00 E		1.56 U	0.52 E	0.90 E	
Acenaphthylene	1.33 U	0.79 E	2.52		1.41 U	0.48 E	0.43 E	
Anthracene	1.57 U	1.74	1.39 E		0.78 E	1.21 E	1.71 E	
Fluorene	1.70 U	1.50	1.35 E		0.67 E	1.03 E	2.00 E	
Naphthalene	1.50 U	5.26	7.39		1.81	4.14 E	5.00 E	
Phenanthrene	0.50 E	5.26	6.09		2.70	4.14 E	4.57 E	
Total LPAHs	0.50	15.34	19.74		5.96	11.52	14.61	
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	41 U	33 U	32 U		39 U	31 UE	30 UE	
1,2-Dichlorobenzene	48 U	40 U	38 U		46 U	37 UE	36 UE	
1,4-Dichlorobenzene	44 U	36 U	34 U		41 U	34 UE	16 E	
Benzoic Acid	160 EB	220 EB	130 EB		190 EB	130 EB	220 EB	
Benzyl Alcohol	2.5 E	57 U	55 U		5.1 E	2.4 E	4.1 E	
Dibenzofuran	46 U	71	29 E		22 E	41 E	140 E	
Hexachlorobenzene	4.4 U	6.7	3.5 U		4.2 U	4.5	18	
Hexachlorobutadiene	4.4 U	3.6 U	3.5 U		4.2 U	3.4 U	3.3 U	
N-Nitroso diphenylamine	54 U	45 U	43 U		51 U	42 UE	40 UE	
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	1.37 U	0.87 U	1.39 U		1.44 U	1.07 UE	0.43 UE	
1,2-Dichlorobenzene	1.60 U	1.05 U	1.65 U		1.70 U	1.28 UE	0.51 UE	
1,4-Dichlorobenzene	1.47 U	0.95 U	1.48 U		1.52 U	1.17 UE	0.23 E	
Benzoic Acid	5.33 EB	5.79 EB	5.65 EB		7.04 EB	4.48 EB	3.14 EB	
Benzyl Alcohol	0.08 E	1.50 U	2.39 U		0.19 E	0.08 E	0.06 E	
Dibenzofuran	1.53 U	1.87	1.26 E		0.81 E	1.41 E	2.00 E	
Hexachlorobenzene	0.15 U	0.18	0.15 U		0.16 U	0.16	0.26	
Hexachlorobutadiene	0.15 U	0.09 U	0.15 U		0.16 U	0.12 U	0.05 U	
N-Nitroso diphenylamine	1.80 U	1.18 U	1.87 U		1.89 U	1.45 UE	0.57 UE	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609012-9	9609041-5	9609041-6	9609042-4	9609012-10	9609041-13	9609041-14	9609042-6
Sample-ID	HC-SC-83	HC-VC-83-S1	HC-VC-83-S2	HC-VC-83-S3	HC-SC-84	HC-VC-84-S1	HC-VC-84-S2	HC-VC-84-S3
Depth	0 to .3 ft	0 to 2.6 ft	5.9 to 7.9 ft	2.6 to 5.3 ft	0 to .3 ft	0 to 1.4 ft	2 to 4.9 ft	5.3 to 6.3 ft
Sampling Date	9/09/96	9/12/96	9/12/96	9/10/96	9/09/96	9/11/96	9/11/96	9/11/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	50 B	190 B	33 EB		100 B	150 EB	330 EB	
Butyl benzyl phthalate	81 U	67 U	64 U		12 E	20 E	24 E	
Di-n-butyl phthalate	17 E	51 U	11 E		27 E	17 E	46 UE	
Di-n-octyl phthalate	75 U	62 U	60 U		72 U	13 E	56 UE	
Diethyl phthalate	106 U	87 U	84 U		100 U	82 UE	79 UE	
Dimethyl phthalate	90 U	74 U	71 U		86 U	9.9 E	67 UE	
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	1.67 B	5.00 B	1.43 EB		3.70 B	5.17 EB	4.71 EB	
Butyl benzyl phthalate	2.70 U	1.76 U	2.78 U		0.44 E	0.69 E	0.34 E	
Di-n-butyl phthalate	0.57 E	1.34 U	0.48 E		1.00 E	0.59 E	0.66 UE	
Di-n-octyl phthalate	2.50 U	1.63 U	2.61 U		2.67 U	0.45 E	0.80 UE	
Diethyl phthalate	3.53 U	2.29 U	3.65 U		3.70 U	2.83 UE	1.13 UE	
Dimethyl phthalate	3.00 U	1.95 U	3.09 U		3.19 U	0.34 E	0.96 UE	
PCBs in µg/kg (dry)								
PCB-1016	130 U	110 U	100 U		130 U	100 U	98 U	
PCB-1221	130 U	110 U	100 U		130 U	100 U	98 U	
PCB-1232	130 U	110 U	100 U		130 U	100 U	98 U	
PCB-1242	130 U	110 U	100 U		130 U	100 U	98 U	
PCB-1248	130 U	110 U	100 U		130 U	100 U	110	
PCB-1254	130 U	110 U	100 U		130 U	100 U	98 U	
PCB-1260	130 U	110 U	100 U		130 U	100 U	84 E	
Total PCBs	130 U	110 U	100 U		130 U	100 U	194	
PCBs in mg/kg (OC)								
PCB-1016	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.40 U	
PCB-1221	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.40 U	
PCB-1232	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.40 U	
PCB-1242	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.40 U	
PCB-1248	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.57	
PCB-1254	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.40 U	
PCB-1260	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	1.20 E	
Total PCBs	4.33 U	2.89 U	4.35 U		4.81 U	3.45 U	2.77	
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	6.3 E	26 E	5.5 E		16 E	16 E	74 E	
2-Methylphenol	4.5 E	17 E	3.8 E		17 E	10 E	46 E	
4-Methylphenol	110	160	78		1200	100 E	490 E	
Pentachlorophenol	4.8 E	9.9 E	60 U		4 E	3.9 E	13 E	
Phenol	21 E	300 B	22 EB		720	100 EB	86 EB	
Total Phenols(detects only)	146.6	512.9	109.3		1957	229.9	709	

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-7	9609012-11	9609041-15	9609041-16
Sample-ID	HC-VC-84-S4	HC-SC-85	HC-VC-85-S1	HC-VC-85-S2
Depth	6.6 to 9.6 ft	0 to .3 ft	0 to 4.5 ft	4.7 to 7.1 ft
Sampling Date	9/11/96	9/09/96	9/13/96	9/13/96
Conventionals in pct. (dry)				
Moisture	26	65	57	41
Total Organic Carbon		3.1	4.2	13
Metals in mg/kg (dry)				
Arsenic		9.6 E	9.9	4.7
Cadmium		1.3	1.4	0.86 U
Chromium		66	69	24
Copper		61	66	28
Lead		20	33	15
Mercury	0.13 U	0.45	0.88	0.16 U
Silver		1.3 U	1.2 U	0.86 U
Zinc		120	130	54
HPAHs in µg/kg (dry)				
Benz(a)anthracene		140	280 E	220 E
Benzo(a)pyrene		97	210 E	160 E
Benzo(b)fluoranthene		140	270 E	250 EC
Benzo(k)fluoranthene		120	240 E	250 EC
Total benzofluoranthenes		260	510	250
Benzo(ghi)perylene		70 E	230 E	98 E
Chrysene		250	430 E	270 E
Dibenz(a,h)anthracene		31 E	81 E	52 UE
Fluoranthene		390	550 E	760 E
Indeno(1,2,3-cd)pyrene		67 E	180 E	76 E
Pyrene		390	860 E	430 E
Total HPAHs		1695	3331	2264
HPAHs in mg/kg (OC)				
Benz(a)anthracene		4.52	6.67 E	1.69 E
Benzo(a)pyrene		3.13	5.00 E	1.23 E
Benzo(b)fluoranthene		4.52	6.43 E	1.92 EC
Benzo(k)fluoranthene		3.87	5.71 E	1.92 EC
Total benzofluoranthenes		8.39	12.14	1.92
Benzo(ghi)perylene		2.26 E	5.48 E	0.75 E
Chrysene		8.06	10.24 E	2.08 E
Dibenz(a,h)anthracene		1.00 E	1.93 E	0.40 UE
Fluoranthene		12.58	13.10 E	5.85 E
Indeno(1,2,3-cd)pyrene		2.16 E	4.29 E	0.58 E
Pyrene		12.58	20.48 E	3.31 E
Total HPAHs		54.68	79.31	17.42

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-7	9609012-11	9609041-15	9609041-16
Sample-ID	HC-VC-84-S4	HC-SC-85	HC-VC-85-S1	HC-VC-85-S2
Depth	6.6 to 9.6 ft	0 to .3 ft	0 to 4.5 ft	4.7 to 7.1 ft
Sampling Date	9/11/96	9/09/96	9/13/96	9/13/96
LPAHs in µg/kg (dry)				
2-Methylnaphthalene		21 E	210 E	1000 E
Acenaphthene		26 E	79 E	240 E
Acenaphthylene		44 U	34 E	170 E
Anthracene		36 E	140 E	280 E
Fluorene		39 E	120 E	390 E
Naphthalene		35 E	270 E	1200 E
Phenanthrene		240	340 E	990 E
Total LPAHs		376	983	3270
LPAHs in mg/kg (OC)				
2-Methylnaphthalene		0.68 E	5.00 E	7.69 E
Acenaphthene		0.84 E	1.88 E	1.85 E
Acenaphthylene		1.42 U	0.81 E	1.31 E
Anthracene		1.16 E	3.33 E	2.15 E
Fluorene		1.26 E	2.86 E	3.00 E
Naphthalene		1.13 E	6.43 E	9.23 E
Phenanthrene		7.74	8.10 E	7.62 E
Total LPAHs		12.13	23.40	25.15
Semivolatiles in µg/kg (dry)				
1,2,4-Trichlorobenzene		44 U	36 UE	26 UE
1,2-Dichlorobenzene		52 U	42 UE	7 E
1,4-Dichlorobenzene		47 U	38 UE	10 E
Benzoic Acid		190 EB	200 EB	47 EB
Benzyl Alcohol		6.4 E	4.8 E	4.4 E
Dibenzofuran		29 E	160 E	610 E
Hexachlorobenzene		4.8 U	7	2.8 U
Hexachlorobutadiene		4.8 U	3.9 U	2.8 U
N-Nitroso diphenylamine		59 U	23 E	120 E
Semivolatiles in mg/kg (OC)				
1,2,4-Trichlorobenzene		1.42 U	0.86 UE	0.20 UE
1,2-Dichlorobenzene		1.68 U	1.00 UE	0.05 E
1,4-Dichlorobenzene		1.52 U	0.90 UE	0.08 E
Benzoic Acid		6.13 EB	4.76 EB	0.36 EB
Benzyl Alcohol		0.21 E	0.11 E	0.03 E
Dibenzofuran		0.94 E	3.81 E	4.69 E
Hexachlorobenzene		0.15 U	0.17	0.02 U
Hexachlorobutadiene		0.15 U	0.09 U	0.02 U
N-Nitroso diphenylamine		1.90 U	0.55 E	0.92 E

Table B-2 - Analytical Results for Vibracore Samples and Co-located Surface Sediment Samples

Lab-ID	9609042-7	9609012-11	9609041-15	9609041-16
Sample-ID	HC-VC-84-S4	HC-SC-85	HC-VC-85-S1	HC-VC-85-S2
Depth	6.6 to 9.6 ft	0 to .3 ft	0 to 4.5 ft	4.7 to 7.1 ft
Sampling Date	9/11/96	9/09/96	9/13/96	9/13/96
Phthalates in µg/kg (dry)				
Bis(2-ethylhexyl)phthalate		220 B	2100 EB	160 EB
Butyl benzyl phthalate		87 U	72 E	52 UE
Di-n-butyl phthalate		67 U	36 E	19 E
Di-n-octyl phthalate		130	110 E	48 UE
Diethyl phthalate		120 U	93 UE	30 E
Dimethyl phthalate		98 U	21 E	54 E
Phthalates in mg/kg (OC)				
Bis(2-ethylhexyl)phthalate		7.10 B	50.00 EB	1.23 EB
Butyl benzyl phthalate		2.81 U	1.71 E	0.40 UE
Di-n-butyl phthalate		2.16 U	0.86 E	0.15 E
Di-n-octyl phthalate		4.19	2.62 E	0.37 UE
Diethyl phthalate		3.87 U	2.21 UE	0.23 E
Dimethyl phthalate		3.16 U	0.50 E	0.42 E
PCBs in µg/kg (dry)				
PCB-1016		140 U	120 U	85 U
PCB-1221		140 U	120 U	85 U
PCB-1232		140 U	120 U	85 U
PCB-1242		140 U	120 U	85 U
PCB-1248		140 U	120 U	85 U
PCB-1254		140 U	120 U	85 U
PCB-1260		140 U	120 U	85 U
Total PCBs		140 U	120 U	85 U
PCBs in mg/kg (OC)				
PCB-1016		4.52 U	2.86 U	0.65 U
PCB-1221		4.52 U	2.86 U	0.65 U
PCB-1232		4.52 U	2.86 U	0.65 U
PCB-1242		4.52 U	2.86 U	0.65 U
PCB-1248		4.52 U	2.86 U	0.65 U
PCB-1254		4.52 U	2.86 U	0.65 U
PCB-1260		4.52 U	2.86 U	0.65 U
Total PCBs		4.52 U	2.86 U	0.65 U
Phenols in µg/kg (dry)				
2,4-Dimethylphenol		9.3 E	38 E	610 E
2-Methylphenol		6.8 E	23 E	400 E
4-Methylphenol		190	200 E	1500 E
Pentachlorophenol		11 E	9.8 E	28 E
Phenol		26 E	280 EB	370 EB
Total Phenols(detects only)		243.1	550.8	2908

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	SQS	MCUL	9609062-11	9609062-12	9609062-9	9609062-13	9609062-10	9609062-7	9609062-8
Sample-ID			HC-DC-86-S1	HC-DC-86-S2	HC-DC-87-S1	HC-DC-208	HC-DC-87-S2	HC-DC-88-S1	HC-DC-88-S2
Depth			0 to 1.9 ft	1.9 to 3.8 ft	0 to 2.3 ft	0 to 2.3 ft	2.3 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft
Sampling Date			9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
					Dup of HC-DC-87-S1				
Conventionals in pct. (dry)									
Moisture			60	55	55	54	51	43	49
Total Organic Carbon			2.3	2.3	3.4	3.2	4.2	3.7	5.5
Metals in mg/kg (dry)									
Arsenic	57	93	4.5 E	3.4 E	11 E	4.8 E	9.5 E	5.1 E	10 E
Cadmium	5.1	6.7	1.3 U	1.1 U	1.5	1.4	2.1	0.9 U	1.5
Chromium	260	270	32	32	76	44	65	30	46
Copper	390	390	29	31	46	54	68	30	56
Lead	450	530	15 U	14	30	40	52	14	35
Mercury	0.41	0.59	0.24 U	0.51	1.2	1.5	7.5	0.67	2.2
Silver	6.1	6.1	1.3 U	1.1 U	1.1 U	1.1 U	1 U	0.9 U	0.99 U
Zinc	410	960	61	73	190	93	150	68	110
HPAHs in µg/kg (dry)									
Benz(a)anthracene			1900	1800	7400	2300	3100	3500	2400
Benzo(a)pyrene			1300	1200	3100	1400	1300	2000	1800
Benzo(b)fluoranthene			2400 C	2200 C	11000 C	2700 C	2700 C	5000 C	3500 C
Benzo(k)fluoranthene			2400 C	2200 C	11000 C	2700 C	2700 C	5000 C	3500 C
Total benzofluoranthenes			2400	2200	11000	2700	2700	5000	3500
Benzo(ghi)perylene			390	390	910	420	340	620	800
Chrysene			2800	2300	14000	2900	3700	4900	3400
Dibenz(a,h)anthracene			300	290	630	300	260	380	370
Fluoranthene			3200	2800	49000	3200	6700	6200	4700
Indeno(1,2,3-cd)pyrene			510	490	1200	500	420	670	800
Pyrene			3500	2900	41000	6600	7600	9100	46 U
Total HPAHs			16300	14370	1E+05	20320	26120	32370	17770
HPAHs in mg/kg (OC)									
Benz(a)anthracene	110	270	82.61	78.26	217.65	71.88	73.81	94.59	43.64
Benzo(a)pyrene	99	210	56.52	52.17	91.18	43.75	30.95	54.05	32.73
Benzo(b)fluoranthene			104.35 C	95.65 C	323.53 C	84.38 C	64.29 C	135.14 C	63.64 C
Benzo(k)fluoranthene			104.35 C	95.65 C	323.53 C	84.38 C	64.29 C	135.14 C	63.64 C
Total benzofluoranthenes	230	450	104.35	95.65	323.53	84.38	64.29	135.14	63.64
Benzo(ghi)perylene	31	78	16.96	16.96	26.76	13.13	8.10	16.76	14.55
Chrysene	110	460	121.74	100.00	411.76	90.63	88.10	132.43	61.82
Dibenz(a,h)anthracene	12	33	13.04	12.61	18.53	9.38	6.19	10.27	6.73
Fluoranthene	160	1200	139.13	121.74	1441.2	100.00	159.52	167.57	85.45
Indeno(1,2,3-cd)pyrene	34	88	22.17	21.30	35.29	15.63	10.00	18.11	14.55
Pyrene	1000	1400	152.17	126.09	1205.9	206.25	180.95	245.95	0.84 U
Total HPAHs	960	5300	708.70	624.78	3771.8	635.00	621.90	874.86	323.09

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	SQS	MCUL	9609062-11	9609062-12	9609062-9	9609062-13	9609062-10	9609062-7	9609062-8
Sample-ID			HC-DC-86-S1	HC-DC-86-S2	HC-DC-87-S1	HC-DC-208	HC-DC-87-S2	HC-DC-88-S1	HC-DC-88-S2
Depth			0 to 1.9 ft	1.9 to 3.8 ft	0 to 2.3 ft	0 to 2.3 ft	2.3 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft
Sampling Date			9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
						Dup of HC-DC-87-S1			
LPAHs in µg/kg (dry)									
2-Methylnaphthalene			120	39	160	190	280	140	250
Acenaphthene			200	130	1400	360	620	200	660
Acenaphthylene			64	46	570	83	93	150	250
Anthracene			1000	650	2700	760	4000	2300	1200
Fluorene			380	200	2800	500	660	460	690
Naphthalene			150	78	500	600	810	350	680
Phenanthrene			1400	510	42000	1400	1700	1600	1900
Total LPAHs			3194	1614	49970	3703	7883	5060	5380
LPAHs in mg/kg (OC)									
2-Methylnaphthalene	38	64	5.22	1.70	4.71	5.94	6.67	3.78	4.55
Acenaphthene	16	57	8.70	5.65	[41.18]	11.25	14.76	5.41	12.00
Acenaphthylene	66	66	2.78	2.00	16.76	2.59	2.21	4.05	4.55
Anthracene	220	1200	43.48	28.26	79.41	23.75	95.24	62.16	21.82
Fluorene	23	79	16.52	8.70	[82.35]	15.63	15.71	12.43	12.55
Naphthalene	99	170	6.52	3.39	14.71	18.75	19.29	9.46	12.36
Phenanthrene	100	480	60.87	22.17	[1235.3]	43.75	40.48	43.24	34.55
Total LPAHs	370	780	138.87	70.17	1469.7	115.72	187.69	136.76	97.82
Semivolatiles in µg/kg (dry)									
1,2,4-Trichlorobenzene			39 U	34 U	34 U	33 U	31 U	27 U	30 U
1,2-Dichlorobenzene			46 U	40 U	40 U	40 U	37 U	32 U	36 U
1,4-Dichlorobenzene			41 U	37 U	37 U	36 U	34 U	29 U	32 U
Benzoic Acid	650	650	190 EB	130 EB	170 EB	170 EB	240 EB	120 EB	370 B
Benzyl Alcohol	57	73	4.6 E	2.9 E	4.9 E	5.2 E	3 E	3.5 E	5.8 E
Dibenzofuran			220	96	1300	340	430	270	430
Hexachlorobenzene			4.2 U	3.7 U	7.7	6.8	5.5	2.9 U	8.3
Hexachlorobutadiene			4.2 U	3.7 U	3.7 U	3.6 U	3.4 U	2.9 U	3.3 U
N-Nitroso diphenylamine			51 U	46 U	230 U	45 U	42 U	36 U	40
Semivolatiles in mg/kg (OC)									
1,2,4-Trichlorobenzene	0.81	1.8	1.70 U	1.48 U	1.00 U	1.03 U	0.74 U	0.73 U	0.55 U
1,2-Dichlorobenzene	2.3	2.3	2.00 U	1.74 U	1.18 U	1.25 U	0.88 U	0.86 U	0.65 U
1,4-Dichlorobenzene	3.1	9	1.78 U	1.61 U	1.09 U	1.13 U	0.81 U	0.78 U	0.58 U
Benzoic Acid			8.26 EB	5.65 EB	5.00 EB	5.31 EB	5.71 EB	3.24 EB	6.73 B
Benzyl Alcohol			0.20 E	0.13 E	0.14 E	0.16 E	0.07 E	0.09 E	0.11 E
Dibenzofuran	15	58	9.57	4.17	[38.24]	10.63	10.24	7.30	7.82
Hexachlorobenzene	0.38	2.3	0.18 U	0.16 U	0.23	0.21	0.13	0.08 U	0.15
Hexachlorobutadiene	3.9	6.2	0.18 U	0.16 U	0.11 U	0.11 U	0.08 U	0.08 U	0.06 U
N-Nitroso diphenylamine	11	11	2.22 U	2.00 U	6.76 U	1.41 U	1.00 U	0.97 U	0.73

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	SQS	MCUL	9609062-11	9609062-12	9609062-9	9609062-13	9609062-10	9609062-7	9609062-8
Sample-ID			HC-DC-86-S1	HC-DC-86-S2	HC-DC-87-S1	HC-DC-208	HC-DC-87-S2	HC-DC-88-S1	HC-DC-88-S2
Depth			0 to 1.9 ft	1.9 to 3.8 ft	0 to 2.3 ft	0 to 2.3 ft	2.3 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft
Sampling Date			9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
						Dup of HC-DC-87-S1			
Phthalates in µg/kg (dry)									
Bis(2-ethylhexyl)phthalate			87 B	70 B	120 B	160 B	110 B	190 B	120 B
Butyl benzyl phthalate			77 U	14 E	68 U	67 U	62 U	54 U	60 U
Di-n-butyl phthalate			16 E	14 E	260 U	20 E	48 U	14 E	46 U
Di-n-octyl phthalate			72 U	64 U	64 U	62 U	58 U	50 U	56 U
Diethyl phthalate			100 U	89 U	89 U	87 U	82 U	71 U	79 U
Dimethyl phthalate			86 U	76 U	76 U	74 U	70 U	60 U	67 U
Phthalates in mg/kg (OC)									
Bis(2-ethylhexyl)phthalate	47	78	3.78 B	3.04 B	3.53 B	5.00 B	2.62 B	5.14 B	2.18 B
Butyl benzyl phthalate	4.9	64	3.35 U	0.61 E	2.00 U	2.09 U	1.48 U	1.46 U	1.09 U
Di-n-butyl phthalate	220	1700	0.70 E	0.61 E	7.65 U	0.63 E	1.14 U	0.38 E	0.84 U
Di-n-octyl phthalate	58	4500	3.13 U	2.78 U	1.88 U	1.94 U	1.38 U	1.35 U	1.02 U
Diethyl phthalate	61	110	4.35 U	3.87 U	2.62 U	2.72 U	1.95 U	1.92 U	1.44 U
Dimethyl phthalate	53	53	3.74 U	3.30 U	2.24 U	2.31 U	1.67 U	1.62 U	1.22 U
PCBs in µg/kg (dry)									
PCB-1016			130 U	110 U	110 U	110 U	100 U	88 U	98 U
PCB-1221			130 U	110 U	110 U	110 U	100 U	88 U	98 U
PCB-1232			130 U	110 U	110 U	110 U	100 U	88 U	98 U
PCB-1242			130 U	110 U	110 U	110 U	100 U	88 U	98 U
PCB-1248			130 U	110 U	110 U	110 U	100 U	130	98 U
PCB-1254			130 U	110 U	110 U	110 U	100 U	88 U	49 E
PCB-1260			130 U	110 U	110 U	110 U	100 U	88 U	98 U
Total PCBs			130 U	110 U	110 U	110 U	100 U	130	49 E
PCBs in mg/kg (OC)									
PCB-1016			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	1.78 U
PCB-1221			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	1.78 U
PCB-1232			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	1.78 U
PCB-1242			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	1.78 U
PCB-1248			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	3.51	1.78 U
PCB-1254			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	0.89 E
PCB-1260			5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	2.38 U	1.78 U
Total PCBs	12	65	5.65 U	4.78 U	3.24 U	3.44 U	2.38 U	3.51	0.89 E
Phenols in µg/kg (dry)									
2,4-Dimethylphenol	29	29	38 U	34 U	8.6 E	10 E	25 E	3.6 E	13 E
2-Methylphenol	63	63	41 U	36 U	5.7 E	6 E	12 E	3.3 E	10 E
4-Methylphenol	670	670	150	120	250	430	880	140 E	690
Pentachlorophenol	360	690	27 E	49 E	38 E	70	30 E	460 E	41 E
Phenol	420	1200	47	26 E	42	55	57	47 E	59
Total Phenols(detects only)			224	195	344.3	571	1004	653.9	813

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609062-5	9609062-6	9609062-3	9609062-4	9609062-1	9609062-2	9609048-19	9609048-20
Sample-ID	HC-DC-89-S1	HC-DC-89-S2	HC-DC-90-S1	HC-DC-90-S2	HC-DC-91-S1	HC-DC-91-S2	HC-DC-92-S1	HC-DC-92-S2
Depth	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3 ft	0 to 1.4 ft	1.4 to 2.8 ft
Sampling Date	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
Conventionals in pct. (dry)								
Moisture	38	56	62	65	46	62	30	35
Total Organic Carbon	3.4	9.4	8	12	6.1	11	3	5.7
Metals in mg/kg (dry)								
Arsenic	6 E	6.4 E	8.9 E	17 E	11 E	6.6 E	24	11
Cadmium	0.86	2.5	2.5	2.7	1.4	2.5	1.3	1.2
Chromium	31	79	78	91	55	55	40 E	46 E
Copper	87	97	87	110	80	54	180 E	180 E
Lead	33	85	81	120	180	120	130 E	190 E
Mercury	6.4	43	3.8	12	0.93	1.6	0.31	0.5
Silver	0.83 U	1.1 U	1.4 U	1.4 U	0.93 U	1.4 U	1.5 U	1.6 U
Zinc	140	230	210	310	140	170	270	140
HPAHs in µg/kg (dry)								
Benz(a)anthracene	2400	2800	860	1000	2000	530	2200	620
Benzo(a)pyrene	2200	1100	500	440	1300	340	1100	510
Benzo(b)fluoranthene	4300	2600 C	1200 C	970 C	2900 C	760 C	3000 C	1100 C
Benzo(k)fluoranthene	4300	2600 C	1200 C	970 C	2900 C	760 C	3000 C	1100 C
Total benzofluoranthenes	8600	2600	1200	970	2900	760	3000	1100
Benzo(ghi)perylene	860	280	160	130	480	110	530	510
Chrysene	3400	2900	970	1200	2200	580	2900	820
Dibenz(a,h)anthracene	490	210	100	91	270	27 E	280	37 E
Fluoranthene	2500	13000	2000	3800	2700	1700	6100	2000
Indeno(1,2,3-cd)pyrene	930	320	180	140	500	110	560	380
Pyrene	6200	13000	2300	1900	7200	2100	6100	3100
Total HPAHs	27580	36210	8270	9671	19550	6257	22770	9077
HPAHs in mg/kg (OC)								
Benz(a)anthracene	70.59	29.79	10.75	8.33	32.79	4.82	73.33	10.88
Benzo(a)pyrene	64.71	11.70	6.25	3.67	21.31	3.09	36.67	8.95
Benzo(b)fluoranthene	126.47	27.66 C	15.00 C	8.08 C	47.54 C	6.91 C	100.00 C	19.30 C
Benzo(k)fluoranthene	126.47	27.66 C	15.00 C	8.08 C	47.54 C	6.91 C	100.00 C	19.30 C
Total benzofluoranthenes	252.94	27.66	15.00	8.08	47.54	6.91	100.00	19.30
Benzo(ghi)perylene	25.29	2.98	2.00	1.08	7.87	1.00	17.67	8.95
Chrysene	100.00	30.85	12.13	10.00	36.07	5.27	96.67	14.39
Dibenz(a,h)anthracene	14.41	2.23	1.25	0.76	4.43	0.25 E	9.33	0.65 E
Fluoranthene	73.53	138.30	25.00	31.67	44.26	15.45	203.33	35.09
Indeno(1,2,3-cd)pyrene	27.35	3.40	2.25	1.17	8.20	1.00	18.67	6.67
Pyrene	182.35	138.30	28.75	15.83	118.03	19.09	203.33	54.39
Total HPAHs	811.18	385.21	103.38	80.59	320.49	56.88	759.00	159.25

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609062-5	9609062-6	9609062-3	9609062-4	9609062-1	9609062-2	9609048-19	9609048-20
Sample-ID	HC-DC-89-S1	HC-DC-89-S2	HC-DC-90-S1	HC-DC-90-S2	HC-DC-91-S1	HC-DC-91-S2	HC-DC-92-S1	HC-DC-92-S2
Depth	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3 ft	0 to 1.4 ft	1.4 to 2.8 ft
Sampling Date	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
LPAHs in µg/kg (dry)								
2-Methylnaphthalene	230	1600	190	1200	150	160	410	380
Acenaphthene	590	3400	180	2700	420	210	670	290
Acenaphthylene	150	170	63	74	150	46	590	1300
Anthracene	1100	2800	510	1300	780	1200	1200	530
Fluorene	510	2900	260	2000	480	300	670	360
Naphthalene	590	3200	460	1800	510	360	1400	2900
Phenanthrene	1700	6200	670	6000	1300	680	2100	2100
Total LPAHs	4640	18670	2143	13874	3640	2796	6630	7480
LPAHs in mg/kg (OC)								
2-Methylnaphthalene	6.76	17.02	2.38	10.00	2.46	1.45	13.67	6.67
Acenaphthene	17.35	36.17	2.25	22.50	6.89	1.91	22.33	5.09
Acenaphthylene	4.41	1.81	0.79	0.62	2.46	0.42	19.67	22.81
Anthracene	32.35	29.79	6.38	10.83	12.79	10.91	40.00	9.30
Fluorene	15.00	30.85	3.25	16.67	7.87	2.73	22.33	6.32
Naphthalene	17.35	34.04	5.75	15.00	8.36	3.27	46.67	50.88
Phenanthrene	50.00	65.96	8.38	50.00	21.31	6.18	70.00	36.84
Total LPAHs	136.47	198.62	26.79	115.62	59.67	25.42	221.00	131.23
Semivolatiles in µg/kg (dry)								
1,2,4-Trichlorobenzene	19 E	23 E	41 U	30 E	29 U	41 U	22 U	24 U
1,2-Dichlorobenzene	29 U	41 U	48 U	33 E	34 U	12 E	16 E	29
1,4-Dichlorobenzene	10 E	43	44 U	37 E	31 U	13 E	18 E	21 E
Benzoic Acid	170 EB	330 B	77 EB	680 B	180 EB	220 EB	110 EB	150 EB
Benzyl Alcohol	3 E	7.7 E	7.6 E	6.9 E	11 E	17 E	4 E	9.4 E
Dibenzofuran	380	2100	260	1300	480	240	730	650
Hexachlorobenzene	8.3	61	83	57	15	52	16	19
Hexachlorobutadiene	2.7 U	3.8 U	4.4 U	4.8 U	3.1 U	4.4 U	2.4 U	2.6 U
N-Nitroso diphenylamine	33 U	47 U	54 U	59 U	38 U	54 U	29 U	32 U
Semivolatiles in mg/kg (OC)								
1,2,4-Trichlorobenzene	0.56 E	0.24 E	0.51 U	0.25 E	0.48 U	0.37 U	0.73 U	0.42 U
1,2-Dichlorobenzene	0.85 U	0.44 U	0.60 U	0.28 E	0.56 U	0.11 E	0.53 E	0.51
1,4-Dichlorobenzene	0.29 E	0.46	0.55 U	0.31 E	0.51 U	0.12 E	0.60 E	0.37 E
Benzoic Acid	5.00 EB	3.51 B	0.96 EB	5.67 B	2.95 EB	2.00 EB	3.67 EB	2.63 EB
Benzyl Alcohol	0.09 E	0.08 E	0.10 E	0.06 E	0.18 E	0.15 E	0.13 E	0.16 E
Dibenzofuran	11.18	22.34	3.25	10.83	7.87	2.18	24.33	11.40
Hexachlorobenzene	0.24	0.65	1.04	0.48	0.25	0.47	0.53	0.33
Hexachlorobutadiene	0.08 U	0.04 U	0.06 U	0.04 U	0.05 U	0.04 U	0.08 U	0.05 U
N-Nitroso diphenylamine	0.97 U	0.50 U	0.68 U	0.49 U	0.62 U	0.49 U	0.97 U	0.56 U

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609062-5	9609062-6	9609062-3	9609062-4	9609062-1	9609062-2	9609048-19	9609048-20
Sample-ID	HC-DC-89-S1	HC-DC-89-S2	HC-DC-90-S1	HC-DC-90-S2	HC-DC-91-S1	HC-DC-91-S2	HC-DC-92-S1	HC-DC-92-S2
Depth	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3.8 ft	0 to 1.6 ft	1.6 to 3 ft	0 to 1.4 ft	1.4 to 2.8 ft
Sampling Date	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96
Phthalates in µg/kg (dry)								
Bis(2-ethylhexyl)phthalate	730 B	270 B	290 B	510 B	2400 B	620 B	320 B	570 B
Butyl benzyl phthalate	230	70 U	47 E	87 U	240	95	44 U	51
Di-n-butyl phthalate	640	54 U	62 U	67 U	40 E	62 U	23 EB	34 EB
Di-n-octyl phthalate	46 U	65 U	75 U	82 U	64	75 U	41 U	44 U
Diethyl phthalate	65 U	91 U	110 U	110 U	74 U	110 U	57 U	6.8 E
Dimethyl phthalate	55 U	78 U	90 U	98 U	26 E	90 U	37 E	20 E
Phthalates in mg/kg (OC)								
Bis(2-ethylhexyl)phthalate	21.47 B	2.87 B	3.63 B	4.25 B	39.34 B	5.64 B	10.67 B	10.00 B
Butyl benzyl phthalate	6.76	0.74 U	0.59 E	0.73 U	3.93	0.86	1.47 U	0.89
Di-n-butyl phthalate	18.82	0.57 U	0.78 U	0.56 U	0.66 E	0.56 U	0.77 EB	0.60 EB
Di-n-octyl phthalate	1.35 U	0.69 U	0.94 U	0.68 U	1.05	0.68 U	1.37 U	0.77 U
Diethyl phthalate	1.91 U	0.97 U	1.38 U	0.92 U	1.21 U	1.00 U	1.90 U	0.12 E
Dimethyl phthalate	1.62 U	0.83 U	1.13 U	0.82 U	0.43 E	0.82 U	1.23 E	0.35 E
PCBs in µg/kg (dry)								
PCB-1016	81 U	110 U	130 U	140 U	93 U	130 U	71 U	77 U
PCB-1221	81 U	110 U	130 U	140 U	93 U	130 U	71 U	77 U
PCB-1232	81 U	110 U	130 U	140 U	93 U	130 U	71 U	77 U
PCB-1242	81 U	110 U	130 U	140 U	93 U	130 U	71 U	77 U
PCB-1248	81 U	110 U	130 U	630	93 U	130 U	71 U	77 U
PCB-1254	76 E	230	100 E	280	340	100 E	90	90
PCB-1260	81 U	110 U	130 U	140 U	93	130 U	71 U	89
Total PCBs	76 E	230	100 E	910	433	100 E	90	179
PCBs in mg/kg (OC)								
PCB-1016	2.38 U	1.17 U	1.63 U	1.17 U	1.52 U	1.18 U	2.37 U	1.35 U
PCB-1221	2.38 U	1.17 U	1.63 U	1.17 U	1.52 U	1.18 U	2.37 U	1.35 U
PCB-1232	2.38 U	1.17 U	1.63 U	1.17 U	1.52 U	1.18 U	2.37 U	1.35 U
PCB-1242	2.38 U	1.17 U	1.63 U	1.17 U	1.52 U	1.18 U	2.37 U	1.35 U
PCB-1248	2.38 U	1.17 U	1.63 U	5.25	1.52 U	1.18 U	2.37 U	1.35 U
PCB-1254	2.24 E	2.45	1.25 E	2.33	5.57	0.91 E	3.00	1.58
PCB-1260	2.38 U	1.17 U	1.63 U	1.17 U	1.52	1.18 U	2.37 U	1.56
Total PCBs	2.24 E	2.45	1.25 E	7.58	7.10	0.91 E	3.00	3.14
Phenols in µg/kg (dry)								
2,4-Dimethylphenol	7.9 E	35	14 E	21 E	4 E	4 E	4.3 E	5.6 E
2-Methylphenol	5.4 E	18 E	9.1 E	18 E	7.3 E	5.5 E	7.6 E	20 E
4-Methylphenol	590	4600	1200	2900	300	1000	560	1200
Pentachlorophenol	170	69	48 E	47 E	93	76 E	60	44 E
Phenol	42	82	41 U	99	78	64	83	170
Total Phenols(detects only)	815.3	4804	1271	3085	482.3	1150	714.9	1440

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609048-18	
Sample-ID	HC-DC-93-S1	
Depth	0 to 2 ft	
Sampling Date	9/18/96	
Conventionals in pct. (dry)		
Moisture	31	
Total Organic Carbon	2.6	
Metals in mg/kg (dry)		
Arsenic	13	
Cadmium	0.74	U
Chromium	22	E
Copper	46	E
Lead	26	E
Mercury	0.14	U
Silver	0.74	U
Zinc	440	
HPAHs in µg/kg (dry)		
Benz(a)anthracene	170	
Benzo(a)pyrene	150	
Benzo(b)fluoranthene	350	C
Benzo(k)fluoranthene	350	C
Total benzofluoranthenes	350	
Benzo(ghi)perylene	110	
Chrysene	260	
Dibenz(a,h)anthracene	45	U
Fluoranthene	340	
Indeno(1,2,3-cd)pyrene	25	E
Pyrene	470	
Total HPAHs	1875	
HPAHs in mg/kg (OC)		
Benz(a)anthracene	6.54	
Benzo(a)pyrene	5.77	
Benzo(b)fluoranthene	13.46	C
Benzo(k)fluoranthene	13.46	C
Total benzofluoranthenes	13.46	
Benzo(ghi)perylene	4.23	
Chrysene	10.00	
Dibenz(a,h)anthracene	1.73	U
Fluoranthene	13.08	
Indeno(1,2,3-cd)pyrene	0.96	E
Pyrene	18.08	
Total HPAHs	72.12	

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609048-18
Sample-ID	HC-DC-93-S1
Depth	0 to 2 ft
Sampling Date	9/18/96
LPAHs in µg/kg (dry)	
2-Methylnaphthalene	300
Acenaphthene	31
Acenaphthylene	38
Anthracene	110
Fluorene	28 U
Naphthalene	210
Phenanthrene	300
Total LPAHs	689
LPAHs in mg/kg (OC)	
2-Methylnaphthalene	11.54
Acenaphthene	1.19
Acenaphthylene	1.46
Anthracene	4.23
Fluorene	1.08 U
Naphthalene	8.08
Phenanthrene	11.54
Total LPAHs	26.50
Semivolatiles in µg/kg (dry)	
1,2,4-Trichlorobenzene	22 U
1,2-Dichlorobenzene	26 U
1,4-Dichlorobenzene	24 U
Benzoic Acid	150 EB
Benzyl Alcohol	7 E
Dibenzofuran	91
Hexachlorobenzene	2.4 U
Hexachlorobutadiene	2.4 U
N-Nitroso diphenylamine	30 U
Semivolatiles in mg/kg (OC)	
1,2,4-Trichlorobenzene	0.85 U
1,2-Dichlorobenzene	1.00 U
1,4-Dichlorobenzene	0.92 U
Benzoic Acid	5.77 EB
Benzyl Alcohol	0.27 E
Dibenzofuran	3.50
Hexachlorobenzene	0.09 U
Hexachlorobutadiene	0.09 U
N-Nitroso diphenylamine	1.15 U

Table B-3 - Analytical Results for Diver Core Samples

Lab-ID	9609048-18
Sample-ID	HC-DC-93-S1
Depth	0 to 2 ft
Sampling Date	9/18/96
Phthalates in µg/kg (dry)	
Bis(2-ethylhexyl)phthalate	340 B
Butyl benzyl phthalate	24 E
Di-n-butyl phthalate	60 B
Di-n-octyl phthalate	41 U
Diethyl phthalate	58 U
Dimethyl phthalate	50 U
Phthalates in mg/kg (OC)	
Bis(2-ethylhexyl)phthalate	13.08 B
Butyl benzyl phthalate	0.92 E
Di-n-butyl phthalate	2.31 B
Di-n-octyl phthalate	1.58 U
Diethyl phthalate	2.23 U
Dimethyl phthalate	1.92 U
PCBs in µg/kg (dry)	
PCB-1016	72 U
PCB-1221	72 U
PCB-1232	72 U
PCB-1242	72 U
PCB-1248	72 U
PCB-1254	100
PCB-1260	72 U
Total PCBs	100
PCBs in mg/kg (OC)	
PCB-1016	2.77 U
PCB-1221	2.77 U
PCB-1232	2.77 U
PCB-1242	2.77 U
PCB-1248	2.77 U
PCB-1254	3.85
PCB-1260	2.77 U
Total PCBs	3.85
Phenols in µg/kg (dry)	
2,4-Dimethylphenol	12 E
2-Methylphenol	6.8 E
4-Methylphenol	58
Pentachlorophenol	380
Phenol	49
Total Phenols(detects only)	505.8

Table B-4 - Analytical Results for Natural Recovery Samples

Lab ID	Sample ID	Sampling Date	Depth Interval in cm (compaction corrected)	Cesium-137 in dpm/g	Lead-210 in dpm/g	Mercury in mg/kg
9609050-1	HC-NR-100-S01	9/17/96	0 to 2.5	0.631	2.93	1.3 E
9609050-2	HC-NR-100-S02	9/17/96	2.5 to 5	0.592	2.78	1 E
9609050-3	HC-NR-100-S03	9/17/96	5 to 7.5	0.101 U	3.3	1.1 E
9609050-4	HC-NR-100-S04	9/17/96	7.5 to 10	0.84	2.94	1.1 E
9609050-5	HC-NR-100-S05	9/17/96	10 to 12.5	0.698	1.93	1.4 E
9609050-6	HC-NR-100-S06	9/17/96	12.5 to 15	0.718	2.21	1.3 E
9609050-7	HC-NR-100-S07	9/17/96	15 to 17.5	0.672	2.48	1.3 E
9609050-8	HC-NR-100-S08	9/17/96	17.5 to 20	0.615	2.56	1.3 E
9609050-9	HC-NR-100-S09	9/17/96	20 to 22.5	0.657	1.43	1.4 E
9609050-10	HC-NR-100-S10	9/17/96	22.5 to 25	0.683	3.23	1.3 E
9609053-1	HC-NR-100-S11	9/17/96	25 to 27.5	0.693		
9609050-11	HC-NR-100-S13	9/17/96	30 to 32.5	0.932	2.44	2.2 E
9609053-4	HC-NR-100-S15	9/17/96	35 to 37.5	0.798		
9609050-12	HC-NR-100-S16/17	9/17/96	37.5 to 42.5	0.873	2.02	7.2 E
9609050-13	HC-NR-209 Dup of HC-NR-100-S16/17	9/17/96	37.5 to 42.5	0.85	2.07	6.4 E
9609053-5	HC-NR-100-S18	9/17/96	42.5 to 45	0.812		
9609050-14	HC-NR-100-S19	9/17/96	45 to 47.5	0.979	2.18	1.7 E
9609050-20	HC-NR-210 Dup of HC-NR-100-S19	9/17/96				2.5 E
9609053-6	HC-NR-100-S20	9/17/96	47.5 to 50	1.011		
9609050-15	HC-NR-100-S22	9/17/96	52.5 to 55	0.845	1.96	1.4 E
9609050-16	HC-NR-100-S25	9/17/96	60 to 62.5	0.458	1.72	0.53 E
9609053-13	HC-NR-100-S29	9/17/96	70 to 72.5	0.174		
9609050-17	HC-NR-100-S33	9/17/96	80 to 82.5	0.066 U	1.49	0.27 E
9609050-18	HC-NR-100-S40	9/17/96	97.5 to 100	0.074 U	1.5	0.43 E
9609050-19	HC-NR-100-S45	9/17/96	110 to 112.5	0.063 U	1.21	0.21 E
9609051-1	HC-NR-101-S01	9/17/96	0 to 2.6	0.537	2.61	1.7
9609051-2	HC-NR-101-S02	9/17/96	2.6 to 5.2	0.468	1.82	1.3
9609051-3	HC-NR-101-S03	9/17/96	5.2 to 7.8	0.73	2.66	1.4
9609051-4	HC-NR-101-S04	9/17/96	7.8 to 10.4	0.56	2.33	1.6
9609051-5	HC-NR-101-S05	9/17/96	10.4 to 13	0.592	2.2	1.7
9609051-6	HC-NR-101-S06	9/17/96	13 to 15.6	0.538	1.86	1.7
9609051-7	HC-NR-101-S07	9/17/96	15.6 to 18.2	0.484	1.94	1.7
9609051-8	HC-NR-101-S08	9/17/96	18.2 to 20.8	0.626	2.3	1.6
9609051-9	HC-NR-101-S09	9/17/96	20.8 to 23.4	0.763	1.88	2.1
9609051-10	HC-NR-101-S10	9/17/96	23.4 to 26	0.569	2.26	2
9609051-11	HC-NR-101-S13	9/17/96	31.2 to 33.8	0.68	1.52	1.8
9609051-12	HC-NR-101-S16/17	9/17/96	39 to 44.2	0.614	1.61	3.1

Table B-4 - Analytical Results for Natural Recovery Samples

Lab ID	Sample ID	Sampling Date	Depth Interval in cm (compaction corrected)	Cesium-137 in dpm/g	Lead-210 in dpm/g	Mercury in mg/kg
9609051-13	HC-NR-211 Dup of HC-NR-101-S16/17	9/17/96		0.745	1.33	3.2
9609051-14	HC-NR-101-S19	9/17/96	46.8 to 49.4	0.834	1.31	5.1
9609051-15	HC-NR-101-S22	9/17/96	54.6 to 57.2	0.806	1.95	3.1
9609051-16	HC-NR-101-S25	9/17/96	62.4 to 65	0.714	1.33	4.6
9609054-19	HC-NR-101-S29	9/17/96	72.8 to 75.4	0.651		
9609054-20	HC-NR-101-S30	9/17/96	75.4 to 78			1.7
9609051-17	HC-NR-101-S33	9/17/96	83.2 to 85.8	0.837	0.88	1.7
9609055-6	HC-NR-101-S37	9/17/96	93.6 to 96.2	0.056 U		
9609055-7	HC-NR-101-S38	9/17/96	96.2 to 98.8			0.59
9609051-18	HC-NR-101-S40	9/17/96	101.4 to 104	0.075 U	0.795	0.3
9609051-19	HC-NR-101-S45	9/17/96	114.4 to 117	0.06 U	0.056 U	0.22
9609051-20	HC-NR-102-S01	9/17/96	0 to 2.4	0.469	3.17	0.34
9609052-1	HC-NR-102-S02	9/17/96	2.4 to 4.8	0.436	2.04	0.42
9609052-2	HC-NR-102-S03	9/17/96	4.8 to 7.2	0.543	2.01	0.37
9609052-3	HC-NR-102-S04	9/17/96	7.2 to 9.6	0.531	2.1	0.68
9609052-4	HC-NR-102-S05	9/17/96	9.6 to 12	0.524	2.9	0.49
9609052-5	HC-NR-102-S06	9/17/96	12 to 14.4	0.644	2.29	0.5
9609052-6	HC-NR-102-S07	9/17/96	14.4 to 16.8	0.521	2.24	0.54
9609052-7	HC-NR-102-S08	9/17/96	16.8 to 19.2	0.657	2.42	0.56
9609052-8	HC-NR-102-S09	9/17/96	19.2 to 21.6	0.705	2.09	0.69
9609052-9	HC-NR-102-S10	9/17/96	21.6 to 24	0.716	2.05	0.56
9609052-10	HC-NR-102-S13	9/17/96	28.8 to 31.2	0.67	1.9	1
9609052-11	HC-NR-102-S16/17	9/17/96	36 to 40.8	0.724	1.55	0.83
9609052-12	HC-NR-212 Dup of HC-NR-102-S16/17	9/17/96		0.606	1.88	0.79
9609052-13	HC-NR-102-S19	9/17/96	43.2 to 45.6	0.883	1.58	1.3
9609052-14	HC-NR-102-S22	9/17/96	50.4 to 52.8	1	1.7	4.5
9609052-15	HC-NR-102-S25	9/17/96	57.6 to 60	0.821	1.53	0.79
9609052-16	HC-NR-102-S33	9/17/96	76.8 to 79.2	0.071 U	1.31	0.19 U
9609052-17	HC-NR-102-S40	9/17/96	93.6 to 96	0.059 U	1.29	0.19
9609052-18	HC-NR-102-S45	9/17/96	105.6 to 108	0.055 U	1.15	0.28

Table B-5 - Analytical Results for Pore Water Samples

Lab ID	Sample ID	Sampling Date	Depth Interval in Feet	Ammonia Nitrogen in mg/L	Sulfide in mg/L	Salinity in ppt	pH	Temperature in °C
9609011-1	HC-SS-01	9/3/96	0 to 0.3	2.57	0.025 UE	25.95	7.1	8.7
9609011-2	HC-SS-02	9/3/96	0 to 0.3	2.18	0.025 UE	26.21	7.6	13.2
9609024-4	HC-SS-03	9/6/96	0 to 0.3	1.87	0.025 U	26.7	7.3	13.8
9609011-3	HC-SS-04	9/3/96	0 to 0.3	2.86	0.025 UE	25.48	7.3	14.2
9609011-4	HC-SS-05	9/3/96	0 to 0.3	1.39	0.025 UE	25.31	7.4	15.3
9609024-5	HC-SS-06	9/6/96	0 to 0.3	2.66	0.025 U	26.48	7.3	15.7
9609011-5	HC-SS-07	9/3/96	0 to 0.3	1.74	0.025 UE	25.04	7.5	16.9
9609024-6	HC-SS-08	9/6/96	0 to 0.3	2.12	0.025 U	26.14	7.3	15.1
9609011-6	HC-SS-09	9/3/96	0 to 0.3	1.48	0.025 UE	24.59	7.5	16.9
9609011-7	HC-SS-10	9/3/96	0 to 0.3	1.62	0.025 UE	26.13	7.3	15.7
9609011-8	HC-SS-11	9/3/96	0 to 0.3	1.35	0.025 UE	27.31	7.2	17.2
9609011-9	HC-SS-12	9/3/96	0 to 0.3	1.18	0.025 UE	25.97	7.2	18.5
9609011-1	HC-SS-13	9/4/96	0 to 0.3	0.96	0.025 UE	26.46	6.5	14.1
9609011-1	HC-SS-14	9/4/96	0 to 0.3	2.91	0.025 UE	26.75	6.9	14.7
9609011-1	HC-SS-15	9/4/96	0 to 0.3	0.94	0.025 UE	26.7	7	15.4
9609011-1	HC-SS-16	9/4/96	0 to 0.3	0.55	0.025 UE	26.98	7.1	16
9609011-1	HC-SS-17	9/4/96	0 to 0.3	0.71	0.025 UE	26.81	7.2	16.6
9609011-1	HC-SS-18	9/4/96	0 to 0.3	1.02	0.025 UE	26.38	7.1	16.7
9609021-1	HC-SS-19	9/6/96	0 to 0.3	1.41	0.025 U	26.28	7.2	17
9609011-1	HC-SS-20	9/4/96	0 to 0.3	5.44	0.025 UE	26.92	7.1	17.3
9609021-1	HC-SS-21	9/6/96	0 to 0.3	3.03	0.025 U	26.17	7.2	18.7
9609021-8	HC-SS-22	9/6/96	0 to 0.3	1.24	0.025 U	26.36	7.2	15.8
9609021-6	HC-SS-23	9/6/96	0 to 0.3	1.63	0.025 U	25.75	7.3	17.5
9609021-7	HC-SS-24	9/6/96	0 to 0.3	1.77	0.025 U	25.5	7.3	18
9609021-9	HC-SS-25	9/6/96	0 to 0.3	1.9	0.025 U	25.44	7.3	15.8
9609021-1	HC-SS-202 Dup of HC-SS-25	9/6/96	0 to 0.3	1.74	0.025 U	25.39	7.3	18.9
9609021-3	HC-SS-26	9/5/96	0 to 0.3	1.54	0.025 UE	24.6	7.4	16.9
9609011-1	HC-SS-27	9/4/96	0 to 0.3	2.25	0.025 UE	26.35	7.4	17.5
9609021-5	HC-SS-28	9/6/96	0 to 0.3	5.34	0.025 U	25.85	7.2	16.8
9609024-2	HC-SS-29	9/6/96	0 to 0.3	4.64	0.025 U	25.51	7.4	14.4
9609024-1	HC-SS-30	9/6/96	0 to 0.3	4.43	0.025 U	25.86	7.1	15.8
9609024-3	HC-SS-203 Dup of HC-SS-30	9/6/96	0 to 0.3	4.23	0.025 U	26.09	7.3	14
9609021-1	HC-SS-31	9/9/96	0 to 0.3	4.08	0.025 U	26.07	7.1	15.7
9609021-4	HC-SS-32	9/5/96	0 to 0.3	2.11	0.025 UE	25.19	7.4	18.5
9609024-7	HC-SS-33	9/9/96	0 to 0.3	2.46	0.025 U	24.2	7.2	15.1
9609024-8	HC-SS-34	9/9/96	0 to 0.3	4.85	0.025 U	24.44	7.2	18
9609012-1	HC-SS-35	9/3/96	0 to 0.3	5.83	0.025 UE	24.75	7.6	18.2
9609012-6	HC-SS-36	9/5/96	0 to 0.3	3.6	0.025 UE	26.83	7.3	19.7

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Table B-5 - Analytical Results for Pore Water Samples

Lab ID	Sample ID		Sampling Date	Depth Interval in Feet	Ammonia Nitrogen in mg/L	Sulfide in mg/L	Salinity in ppt	pH	Temperature in °C
9609012-2	HC-SS-37		9/3/96	0 to 0.3	5.35	0.025 UE	25.17	7.6	18.5
9609012-7	HC-SS-38		9/9/96	0 to 0.3	2.53	0.025 U	19.98	7.1	13.5
9609012-8	HC-SS-39		9/9/96	0 to 0.3	3.53	0.025 U	17.43	6.9	13.6
9609022-2	HC-SS-40		9/5/96	0 to 0.3	2.89	0.025 U	25.97	7.2	16.3
9609021-2	HC-SS-41		9/5/96	0 to 0.3	1.92	0.025 UE	19.92	8.2	20.2
9609021-1	HC-SS-204	Dup of HC-SS-41	9/5/96	0 to 0.3	1.86	0.025 UE	23.37	7.4	17.5
9609011-1	HC-SS-42		9/5/96	0 to 0.3	2.49	0.025 UE	25.34	7.1	20.5
9609022-1	HC-SS-43		9/5/96	0 to 0.3	4.53	0.025 U	24.12	7.3	13.5
9609011-1	HC-SS-44		9/5/96	0 to 0.3	6.76	0.025 UE	25.14	6.8	14.7
9609012-3	HC-SS-45		9/4/96	0 to 0.3	6.73	0.025 UE	26.51	7.3	18.5
9609011-2	HC-SS-46		9/5/96	0 to 0.3	3.98	0.025 UE	24.75	7.1	14.7
9609012-4	HC-SS-47		9/4/96	0 to 0.3	5.76	0.025 UE	25	7.3	18.3
9609012-5	HC-SS-48		9/5/96	0 to 0.3	3.32	0.025 UE	23.03	7.5	17.2

Table B-6 - Analytical Results for Rinse Blank (QC) Samples

Lab-ID	9609022-3	9609024-14	9609062-14	9609062-15	9609048-12
Sample-ID	HC-RB-01	HC-RB-02	HC-RB-03	HC-RB-04	HC-RB-05
Sampling Date	9/06/96	9/10/96	9/19/96	9/19/96	9/16/96
Conventionals in mg/L					
Total Organic Carbon	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.001 U	0.0017	0.0041	0.001 U	0.0017
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Zinc	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
HPAHs in µg/L					
Benz(a)anthracene	9 U	9 U	9 U	9 U	9 U
Benzo(a)pyrene	9 U	9 U	9 U	9 U	9 U
Benzo(b)fluoranthene	9 U	9 U	9 U	9 U	9 U
Benzo(k)fluoranthene	9 U	9 U	9 U	9 U	9 U
Total benzofluoranthenes	9 U	9 U	9 U	9 U	9 U
Benzo(ghi)perylene	9 U	9 U	9 U	9 U	9 U
Chrysene	9 U	9 U	9 U	9 U	9 U
Dibenz(a,h)anthracene	9 U	9 U	9 U	9 U	9 U
Fluoranthene	9 U	9 U	9 U	9 U	9 U
Indeno(1,2,3-cd)pyrene	9 U	9 U	9 U	9 U	9 U
Pyrene	9 U	9 U	9 U	9 U	9 U
Total HPAHs	9 U	9 U	9 U	9 U	9 U
LPAHs in µg/L					
2-Methylnaphthalene	9 U	9 U	9 U	9 U	9 U
Acenaphthene	9 U	9 U	9 U	9 U	9 U
Acenaphthylene	9 U	9 U	9 U	9 U	9 U
Anthracene	9 U	9 U	9 U	9 U	9 U
Fluorene	9 U	9 U	9 U	9 U	9 U
Naphthalene	9 U	9 U	9 U	9 U	9 U
Phenanthrene	9 U	9 U	9 U	9 U	9 U
Total LPAHs	9 U	9 U	9 U	9 U	9 U
Semivolatiles in µg/L					
1,2,4-Trichlorobenzene	9 U	9 U	9 U	9 U	9 U
1,2-Dichlorobenzene	9 U	9 U	9 U	9 U	9 U
1,4-Dichlorobenzene	9 U	9 U	9 U	9 U	9 U
Benzoic Acid	47 U	9 U	9 U	9 U	9 U
Benzyl Alcohol	9 U	9 U	9 U	9 U	9 U
Dibenzofuran	9 U	9 U	9 U	9 U	9 U

Table B-6 - Analytical Results for Rinse Blank (QC) Samples

Lab-ID	9609022-3	9609024-14	9609062-14	9609062-15	9609048-12
Sample-ID	HC-RB-01	HC-RB-02	HC-RB-03	HC-RB-04	HC-RB-05
Sampling Date	9/06/96	9/10/96	9/19/96	9/19/96	9/16/96
Hexachlorobenzene	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
Hexachlorobutadiene	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
N-Nitroso diphenylamine	9 U	9 U	9 U	9 U	9 U
Phthalates in µg/L					
Bis(2-ethylhexyl)phthalate	1 EB	2 B	1 EB	1 EB	1 EB
Butyl benzyl phthalate	9 U	9 U	9 U	9 U	9 U
Di-n-butyl phthalate	9 U	9 U	9 U	9 U	9 U
Di-n-octyl phthalate	9 U	9 U	9 U	9 U	9 U
Diethyl phthalate	9 U	9 U	9 U	9 U	9 U
Dimethyl phthalate	9 U	9 U	9 U	9 U	9 U
PCBs in µg/L					
PCB-1016	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1221	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1232	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1242	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1248	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1254	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
PCB-1260	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
Total PCBs	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
Phenols in µg/L					
2,4-Dimethylphenol	9 U	9 U	9 U	9 U	9 U
2-Methylphenol	9 U	9 U	9 U	9 U	9 U
3/4-Methylphenol	9 U				
4-Methylphenol		9 U	9 U	9 U	9 U
Pentachlorophenol	9 U	9 U	9 U	9 U	9 U
Phenol	9 U	9 U	9 U	9 U	9 U

Table B-7 - Analytical Results for Surface Water Samples

Lab-ID	9609096-2	9604062-1	9609096-1	9604062-2	9609096-3
Sample-ID	HC-SW-1D	HC-SW-1W	HC-SW-2D	HC-SW-2W	HC-SW-4A-D
Sampling Date	9/26/96	4/23/96	9/26/96	4/23/96	9/26/96
Conventionals in mg/L					
Total Suspended Solids	10 U	32	10	10 U	10 U
Total Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.008	0.06	0.001 U	0.0036	0.0015
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 UE	0.0002 U	0.0002 UE	0.0002 U
Zinc	0.01	0.031	0.021	0.072	0.01 U
Dissolved Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.004	0.033	0.001 U	0.0029	0.001 U
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.0045
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 UE	0.0002 U	0.0002 UE	0.0002 U
Zinc	0.017	0.022	0.012	0.049	0.01 U
HPAHs in µg/L					
Benz(a)anthracene	0.012 U	0.012 U	0.012 UE	0.021	0.012 U
Benzo(a)pyrene	0.012 U	0.012 U	0.012 UE	0.018	0.012 U
Benzo(b)fluoranthene	0.024 U	0.024 UE	0.024 UE	0.024 U	0.024 U
Benzo(ghi)perylene	0.024 U	0.024 U	0.024 UE	0.024 U	0.024 U
Benzo(k)fluoranthene	0.012 U	0.012 UE	0.012 UE	0.012 U	0.012 U
Chrysene	0.012 U	0.012 U	0.012 UE	0.019	0.012 U
Dibenz(a,h)anthracene	0.024 U	0.024 U	0.024 UE	0.024 U	0.024 U
Fluoranthene	0.024 U	0.15	0.024 UE	0.13	0.024 U
Indeno(1,2,3-cd)pyrene	0.012 U	0.012 U	0.012 UE	0.012 U	0.012 U
Pyrene	0.044	0.091	0.012 UE	0.084	0.012 U
LPAHs in µg/L					
2-Methylnaphthalene	0.12 U	0.15	0.12 UE	0.12 U	0.12 U
Acenaphthene	0.12 U	0.19	0.12 UE	0.12 U	0.12 U
Acenaphthylene	0.24 U	0.24 U	0.24 UE	0.24 U	0.24 U
Anthracene	0.012 U	0.012 U	0.012 UE	0.012 U	0.012 U
Fluorene	0.024 U	0.13	0.024 UE	0.04	0.024 U
Naphthalene	0.12 U	0.12 U	0.12 UE	0.12 U	0.12 U
Phenanthrene	0.012 U	0.062	0.012 UE	0.025	0.012 U

Table B-7 - Analytical Results for Surface Water Samples

Lab-ID	9604062-4	9609096-4	9604062-10	9604062-3	9609096-8
Sample-ID	HC-SW-4A-W	HC-SW-4B-D	HC-SW-4B-W	HC-SW-6W	HC-SW-7D
Sampling Date	4/23/96	9/26/96	4/24/96	4/23/96	9/26/96
Conventionals in mg/L					
Total Suspended Solids	75	10 U	47	290	11
Total Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.015	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.001	0.0009
Chromium	0.01 U	0.01 U	0.01 U	0.021	0.01 U
Copper	0.011	0.0029	0.003	1.1	0.14
Lead	0.016	0.0092	0.003 U	0.059	0.014
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002	0.0002 U
Silver	0.36 E	0.0002	0.0002 UE	0.21 E	0.0003
Zinc	0.049	0.013	0.022	0.37	0.068
Dissolved Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0009
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.0018	0.0019	0.002	0.0067	0.034
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.0043
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 E	0.0002 U	0.0002 UE	0.0002 UE	0.0002 U
Zinc	0.049	0.018	0.01 U	0.01 U	0.043
HPAHs in µg/L					
Benz(a)anthracene	0.012 U	0.012 UE	0.012 U	0.012 U	0.012 UE
Benzo(a)pyrene	0.012 U	0.012 UE	0.012 U	0.016	0.012 UE
Benzo(b)fluoranthene	0.025 UE	0.024 UE	0.024 U	0.024 U	0.024 UE
Benzo(ghi)perylene	0.025 U	0.024 UE	0.024 U	0.024 U	0.024 UE
Benzo(k)fluoranthene	0.012 UE	0.012 UE	0.012 U	0.012 U	0.012 UE
Chrysene	0.012 U	0.012 UE	0.012 U	0.039	0.012 UE
Dibenz(a,h)anthracene	0.025 U	0.024 UE	0.024 U	0.024 U	0.024 UE
Fluoranthene	0.025 U	0.024 UE	0.024 U	0.3 U	0.029 UE
Indeno(1,2,3-cd)pyrene	0.012 U	0.012 UE	0.012 U	0.012 U	0.012 UE
Pyrene	0.013	0.012 UE	0.013	0.17	0.036 E
LPAHs in µg/L					
2-Methylnaphthalene	0.12 U	0.12 UE	0.12 U	0.13	0.12 UE
Acenaphthene	0.12 U	0.12 UE	0.12 U	0.12 U	0.12 UE
Acenaphthylene	0.25 U	0.24 UE	0.24 U	0.24 U	0.24 UE
Anthracene	0.012 U	0.012 UE	0.012 U	0.012 U	0.012 UE
Fluorene	0.025 U	0.024 UE	0.024 U	0.024 U	0.024 UE
Naphthalene	0.12 U	0.12 UE	0.12 U	0.12 U	0.12 UE
Phenanthrene	0.012 U	0.012 UE	0.012 U	0.18	0.023 E

Table B-7 - Analytical Results for Surface Water Samples

Lab-ID	9604062-5	9604062-6	9609096-9	9604062-7	9609096-6
Sample-ID	HC-SW-7W	HC-SW-100	HC-SW-10D	HC-SW-10W	HC-SW-11D
Sampling Date	4/23/96	4/23/96	9/26/96	4/23/96	9/26/96
		Dup of HC-SW-7W			
Conventionals in mg/L					
Total Suspended Solids	38	40	240	110	10 U
Total Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.064	0.35	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0038	0.019	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.0098	0.01	0.13	1	0.0011
Lead	0.0033	0.0042	0.003 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 UE	0.0002 UE	0.001	0.015 E	0.0002 U
Zinc	0.038	0.036	0.55	0.61	0.016
Dissolved Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.061	0.54	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0028	0.032	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.0033	0.006	0.11	1.6	0.001 U
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 UE	0.0002 UE	0.0009	0.028 E	0.0002 U
Zinc	0.012	0.012	0.32	0.83	0.01 U
HPAHs in µg/L					
Benz(a)anthracene	0.013 U	0.013 U	0.012 UE	0.012 UE	0.012 U
Benzo(a)pyrene	0.013 U	0.013 U	0.012 UE	0.012 UE	0.012 U
Benzo(b)fluoranthene	0.026 U	0.025 U	0.024 UE	0.024 UE	0.024 U
Benzo(ghi)perylene	0.026 U	0.025 U	0.024 UE	0.024 UE	0.024 U
Benzo(k)fluoranthene	0.013 U	0.013 U	0.012 UE	0.012 UE	0.012 U
Chrysene	0.013 U	0.013 U	0.012 UE	0.012 UE	0.012 U
Dibenz(a,h)anthracene	0.026 U	0.025 U	0.024 UE	0.024 UE	0.024 U
Fluoranthene	0.03 U	0.035 U	0.063	0.024 UE	0.031
Indeno(1,2,3-cd)pyrene	0.013 U	0.013 U	0.012 UE	0.012 UE	0.012 U
Pyrene	0.018	0.013 U	0.012 UE	0.012 UE	0.017
LPAHs in µg/L					
2-Methylnaphthalene	0.13 U	0.13 U	0.12 UE	0.12 UE	0.12 U
Acenaphthene	0.13 U	0.13 U	0.12 UE	0.12 UE	0.12 U
Acenaphthylene	0.26 U	0.25 U	0.24 UE	0.24 UE	0.24 U
Anthracene	0.013 U	0.013 U	0.012 UE	0.012 U	0.012 U
Fluorene	0.026 U	0.025 U	0.024 UE	0.024 UE	0.024 U
Naphthalene	0.13 U	0.13 U	0.12 UE	0.12 UE	0.12 U
Phenanthrene	0.017	0.017	0.046 E	0.03 E	0.012 U

Table B-7 - Analytical Results for Surface Water Samples

Lab-ID	9609096-7	9604062-8	9609096-10	9604062-9	9609096-5
Sample-ID	HC-SW-101	HC-SW-11W	HC-SW-12D	HC-SW-12W	HC-SW-FB-D
Sampling Date	9/26/96	4/23/96	9/26/96	4/23/96	9/26/96
	Dup of HC-SW-11D				Field Blank
Conventionals in mg/L					
Total Suspended Solids	10 U	10 U	19	27	10 U
Total Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0004 U	0.0002 U	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.0016	0.0051	0.001 U	0.001 U	0.001 U
Lead	0.003 U	0.003 U	0.015 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 UE	0.0002 U	0.0002 UE	0.0002 U
Zinc	0.017	0.025	0.01 U	0.01 U	0.01 U
Dissolved Metals in mg/L					
Arsenic	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Copper	0.001 U	0.0033	0.0018	0.001 U	0.001 U
Lead	0.003 U	0.003 U	0.015 U	0.003 U	0.003 U
Mercury	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 UE	0.0004 U	0.0002 UE	0.0002 U
Zinc	0.01	0.02	0.01 U	0.01 U	0.01 U
HPAHs in µg/L					
Benz(a)anthracene	0.74	0.012 U	0.012 U	0.012 U	0.012 U
Benzo(a)pyrene	0.43	0.019	0.012 U	0.012 U	0.012 U
Benzo(b)fluoranthene	0.79	0.024 U	0.024 U	0.025 U	0.024 U
Benzo(ghi)perylene	0.17	0.024 U	0.024 U	0.025 U	0.024 U
Benzo(k)fluoranthene	0.39	0.012 U	0.012 U	0.012 U	0.012 U
Chrysene	1.2	0.012 U	0.012 U	0.012 U	0.012 U
Dibenz(a,h)anthracene	0.024 U	0.024 U	0.024 U	0.025 U	0.024 U
Fluoranthene	1.2	0.077	0.024 U	0.025 U	0.024 U
Indeno(1,2,3-cd)pyrene	0.21	0.012 U	0.012 U	0.012 U	0.012 U
Pyrene	0.95	0.055	0.012 U	0.012 U	0.012 U
LPAHs in µg/L					
2-Methylnaphthalene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Acenaphthene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Acenaphthylene	0.24 U	0.24 U	0.24 U	0.25 U	0.24 U
Anthracene	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U
Fluorene	0.024 U	0.024 U	0.024 U	0.025 U	0.024 U
Naphthalene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Phenanthrene	0.049	0.012 U	0.012 U	0.012 U	0.012 U

Table B-7 - Analytical Results for Surface Water Samples

Lab-ID	9604062-11
Sample-ID	HC-SW-FB-W
Sampling Date	4/24/96
	Field Blank
Conventionals in mg/L	
Total Suspended Solids	10 U
Total Metals in mg/L	
Arsenic	0.005 U
Cadmium	0.0002 U
Chromium	0.01 U
Copper	0.001 U
Lead	0.003 U
Mercury	0.0002 U
Silver	0.0002 UE
Zinc	0.01 U
Dissolved Metals in mg/L	
Arsenic	0.005 U
Cadmium	0.0002 U
Chromium	0.01 U
Copper	0.001 U
Lead	0.003 U
Mercury	0.0002 U
Silver	0.0002 UE
Zinc	0.01 U
HPAHs in µg/L	
Benz(a)anthracene	0.013 U
Benzo(a)pyrene	0.013 U
Benzo(b)fluoranthene	0.026 U
Benzo(ghi)perylene	0.026 U
Benzo(k)fluoranthene	0.013 U
Chrysene	0.013 U
Dibenz(a,h)anthracene	0.026 U
Fluoranthene	0.026 U
Indeno(1,2,3-cd)pyrene	0.013 U
Pyrene	0.013 U
LPAHs in µg/L	
2-Methylnaphthalene	0.13 U
Acenaphthene	0.13 U
Acenaphthylene	0.26 U
Anthracene	0.013 U
Fluorene	0.026 U
Naphthalene	0.13 U
Phenanthrene	0.013 U

Table B-8 - Low-Level Mercury Analytical Results for Surface Water Samples

Sample ID	Station	Reported Dissolved Hg in ng/L	Total Suspended Solids in mg/L	Field Blank Corrected Dissolved Hg in ng/L
HC-BC-101R1	Rosario Strait	0.30	0.667 E	0.08
HC-BC-101R2		0.26	0.667 E	0.04
HC-BC-100-R1	Nooksack River	3.90	31.7 E	3.68
HC-BC-100-R2		2.99	31.7 E	2.77
HC-SW-100-R1	Whatcom Waterway	0.51	0.75 E	0.29
HC-SW-100-R2		0.34	0.75 E	0.12
HC-SW-101-R1	Whatcom Waterway	0.55	2.33 E	0.33
HC-SW-101-R2		0.65	2.33 E	0.43
HC-SW-99-R1	GP Outfall	2.07	98 E	1.85
HC-SW-99-R2		2.62	98 E	2.40
HC-FB-03		0.22	1 E	

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Table B-9 - Analytical Results for Sediment Trap Samples

Sample-ID	HC-ST-100	HC-ST-101	HC-ST-100	HC-ST-100	HC-ST-101
Sampling Date	2/02/97	2/01/97	5/20/97	9/25/97	9/26/97
Conventionals in percent					
Moisture	41	45	59	52	39
Total Organic Carbon	2.9	3		4.6	3.8
Metals in mg/kg					
Mercury	0.5	0.64	0.35	0.2 U	0.21 U
Phenols in µg/kg					
2,4-Dimethylphenol	26 U	2.8 J	370 U	32 U	1.9 J
2-Methylphenol	11 J	30 U	6.8 J	51 J	4.8 J
4-Methylphenol	3700	12000	27000	140000	2300
Pentachlorophenol	11 J	7.5 J	4.9 J	60 U	3.9 J
Phenol	26 U	28 U	490	12000	310
Semivolatiles in µg/kg					
Benzoic Acid	880	1300	560 J	1500	820
Benzyl Alcohol	15 J	48 U	47 J	550 U	13 J

APPENDIX C
DATA QUALITY REVIEW
FOR CHEMICAL ANALYSES

APPENDIX C
DATA QUALITY REVIEW FOR CHEMICAL ANALYSES

This appendix summarizes the results of the data quality review of chemical analysis results for the sediment and surface water samples collected for the RI/FS at the Whatcom Waterway Site in September 1996 through February 1997. It provides a detailed outline of the data validation effort and discusses the results in terms of achieving data quality objectives outlined in the project QAPP. The detailed data validation reports, conducted by EcoChem of Seattle, WA, are presented in Attachment C-1. The data validation report for phenols in sediment trap particulate matter (a late submission of archived samples) was conducted by Hart Crowser and is presented in Attachment C-2. Methods of analysis and reporting limits are presented in Tables C-1and C-2 for sediment and water samples, respectively. Data summary tables including data qualifiers, organized by sample type, are presented in Tables B-1 through B-9 in Appendix B. The laboratory certificates of analysis from MultiChem Analytical Services are on file at Hart Crowser and are available upon request.

Overall Data Quality

The overall data quality objectives are met, as set forth in the QAPP of the Whatcom Waterway Site (Hart Crowser, 1996a), and the data for this project are acceptable for use as qualified.

Description of Data Validation Effort

The review of results was performed in accordance with EPA Laboratory Data Validation Functional Guidelines (1994a and 1994b), as applicable to Level III analyses. In general, the chemical data were reviewed with regard to the following:

- Analytical Methodology;
- Detection Limits;
- Method and Field Blank Contamination;
- Surrogate Recoveries;
- Standard Reference Material (SRM) Recovery;
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries; and
- Laboratory and Field duplicate relative percent differences (RPDs).

In total, 229 sediment samples, 17 surface water samples, 13 field duplicates, 5 replicate samples, 3 field blanks, and 5 rinse blank samples were collected by Hart Crowser between April 23, 1996, and February 2, 1997. Sediment samples

were received by MultiChem Analytical Services (formerly Analytical Technologies, Inc.) of Renton, WA for analysis of the following:

- Total Solids (CLP ILM 03.0);
- Total Organic Carbon (EPA Method 9060);
- Total Metals (EPA Method 6000/7000);
- Total Mercury (EPA Method 7471);
- Semivolatile Organics (EPA Method 8270/ 8270 SIM);
- Total PCBs (EPA Method 8080);
- Cesium-137 (EPA Method 901.1);
- Lead-210 (EPA Method 00-03-01);
- Pore Water Ammonia (EPA Method 350.1);
- Pore Water Sulfide (EPA Method 376.1); and
- Pore Water Salinity (SM 2520 B).

Surface water samples were submitted to MultiChem for analysis of:

- Total Suspended Solids (EPA Method 160.2);
- Total and Dissolved Metals (EPA Method 6000/7000); and
- Polycyclic Aromatic Hydrocarbons (PAHs) (EPA Method 8310).

Split samples were submitted to Battelle Marine Sciences Laboratory (Sequim, WA) for analysis of:

- Low-Level Mercury, Dissolved and Particulate Fractions (EPA Draft Method 1631).

All samples for this project were received by the laboratories in good condition and in the proper containers. The following sections present the quality assurance objectives and findings.

Quality Assurance Objectives

Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average values. Analytical precision is measured through matrix spike/matrix spike duplicate (MS/MSD) and/or laboratory duplicate samples. Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the MS/MSD or duplicate samples. Field precision is measured through field duplicate samples and is expressed as the RPD between field duplicate samples.

Sediment. Analytical precision measurements were carried out at a minimum frequency of one per laboratory analysis group or one in twenty samples, whichever was more frequent, per matrix analyzed. In general, MS/MSD RPDs were acceptable. However, MS/MSD RPDs were above control limits for six semivolatile organic compounds, hexachlorobenzene, arsenic, and lead in sediment samples. The MS/MSD RPD for mercury only was above control limits for natural recovery samples. Associated sample results were qualified as estimated values (E/UE).

Surface Water. Analytical precision measurements were carried out at a minimum frequency of one per laboratory analysis group or one in twenty samples. In general, MS/MSD RPDs were acceptable for semivolatile organics. Laboratory duplicate RPDs were acceptable for metals and TSS analyses.

Field precision is discussed in the ***Field Duplicate*** section.

Accuracy

Accuracy measures the closeness of the measured value to the true value. Analytical accuracy is assessed by "spiking" samples with known standards (surrogates and/or matrix spikes) and measuring the percent recovery.

Sediment. In general, accuracy measurements were carried out at a minimum frequency of one per laboratory analysis group. Spike recoveries were within laboratory control limits, with the following exceptions. Recoveries of dimethyl phthalate, diethyl phthalate, 2,4-dimethylphenol, hexachlorobenzene, copper, and lead in some sediment MS samples, and mercury in natural recovery were below control limits. Pyrene, bis(2-ethylhexyl)phthalate, pentachlorophenol, fluorene, benzo(a)anthracene, benzo(b,k)fluoranthene, di-n-octyl phthalate, and arsenic in sediment samples were above control limits for some sediment MS samples. Sample results were qualified as estimate values (E/UE) based on these recoveries. Surrogate recoveries were within laboratory control limits, with the following exception. Recoveries of the PCB surrogate decachlorobiphenyl were below control limits for some sediment samples. However, no action was taken because the value was slightly less than the lower control limit and the %R of the other surrogate, TCMX, was acceptable.

Surface Water. In general, accuracy measurements were carried out at a minimum frequency of one per laboratory analysis group. Spike recoveries were within laboratory control limits, with the following exceptions. Silver recoveries in both total and dissolved metals were not within the QAPP acceptance limits for matrix spike samples. Associated sample results were

qualified as estimated values (E/UE). Surrogate recoveries were within laboratory control limits, with the following exception. PAH surrogate recoveries were below control limits. Associated detected samples results were qualified as estimated (E/UE).

Representativeness

Representativeness measures how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the matrix sampled. Sample handling protocols (e.g., storage, preservation, and transportation) have been developed to assure representative samples. Sample handling protocols were followed as outlined in the Sampling and Analysis Plan (Hart Crowser, 1996b).

Sediment. All sediment samples were frozen, increasing the holding times for all compounds to one year. However, the 7-day extraction holding time for semivolatile analysis was exceeded for several thawed sediments. Holding time exceedences of 1 to 6 days occurred for the analysis of sulfide, pH, and salinity in pore water. The analysis date of pore water samples was constrained by sample preparation time; all samples were analyzed as soon as possible by the laboratory.

Surface Water. Several seep samples were re-extracted 14 days outside of holding times due to surrogate recovery problems. Sample results were reextracted outside of recommended holding times and were qualified as estimated (UE/E).

Field duplicates/replicates were used to assess field and method variation. In general, field duplicate precision was acceptable (see ***Field Duplicate/Field Replicates*** sections).

Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness of the data is defined as the number of acceptable data points divided by the total number of data points multiplied by 100. No data were rejected for this project and results for all requested analyses were provided; therefore, the completeness for this project is 100 percent.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A "B" qualifier was assigned to results that had associated method blank contamination. The use of standard techniques for both sample collection and laboratory analysis should make data collected comparable to both internal and other data generated.

Analysis of a sediment Standard Reference Material (SRM) was performed for metals and total organic carbon at a frequency of 1 per 50 samples. In general, recoveries of the SRM were acceptable. However, recovery of chromium was below control limits for one SRM sample. No data were qualified based on SRM recovery alone.

Field Duplicates

No contract requirement or technical criteria are established for field duplicate RPDs; therefore, no data qualifiers were assigned based on field duplicates results. Field duplicate RPDs were generally below 50%, with the following exceptions.

Sediment. The four sediment duplicate pairs submitted for semivolatile analysis had RPDs ranging from 0 to 187%. Compounds with elevated field duplicate RPDs were: dibenzofuran, pentachlorophenol, 2-methylphenol, 4-methyphenol, and benzyl alcohol. One field duplicate pair had an RPD greater than 50% for arsenic, chromium, and zinc. RPDs were below 50% for sediment samples submitted for PCBs with the following exceptions. One field duplicate pair had an RPD of 64% for hexachlorobenzene. In addition, two different Aroclor identifications were assigned for one field duplicate pair. However, the RPD between the concentrations of Total PCBs for the field duplicate pair were acceptable. In all cases, sampling protocol was followed; elevated RPDs would then suggest high field variability of these compounds

Surface Water. Field duplicate RPDs were greater than 50% for fluoranthene, pyrene, and copper, at 189, 193, and 68%, respectively. Some of the field duplicate results were reported as not detected, thus no RPDs were calculated. In all cases, sampling protocol was followed; elevated RPDs would then suggest high field variability of these compounds.

Field Replicates

Field Replicates were performed for the low level mercury analysis of surface water. Replicate RPDs were acceptable, ranging from 16 to 40%.

Rinse Blanks

Four rinse blanks were submitted with the water samples. Copper was detected in two rinse blanks, and mercury was detected in one rinse blank, but were at concentrations less than the reporting limits. No data qualifiers were assigned, since sample results were greater than five times the blank contamination.

Field Blanks

Two field blanks were submitted with the surface water samples. No analytes were detected in the blank, so no data qualifiers are required. One field blank was submitted with the low level mercury samples. Mercury was detected at a whole-water concentration of 0.54 ng/L in the field blank, which represents a significant fraction of the total mercury (up to 60 percent) in some background and inner bay samples. Particulate and dissolved sample results associated with this field blank were blank corrected by Hart Crowser.

Reporting Limits

Reporting limits were adjusted correctly for sample size and dilution factors. Reporting limits achieved for sample results generally met the reporting limit goals established in the QAPP (Hart Crowser, 1996a) with the following exceptions. The reporting limits for 1,2 dichlorobenzene in four sediment samples were above both the SQS criteria and reporting limit goals due to high moisture content and/or TOC concentration. The reporting limits for 2,4 dimethyphenol in three sediment samples, and 1,2,4- trichlorobenzene in 58 of 86 sediment samples were greater than the SQS criteria, but were below the reporting limit goals.

For surface water samples, the reporting limits for benzo(g,h,i)perylene and dibenzo(a,h)anthracene were slightly greater than the source screening action level. In addition, the reporting limits for lead in two surface water samples were greater than the source screening action level.

References for Appendix C

EPA, 1994a, Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1994b, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Washington, D.C.

Hart Crowser, 1996a. Final Remedial Investigation/Feasibility Study Quality Assurance Project Plan, Whatcom Waterway Site, Bellingham, Washington, September 3, 1996, J-4478-04.

Hart Crowser, 1996b. Final Remedial Investigation/Feasibility Study Sampling and Analysis Plan, Whatcom Waterway Site, Bellingham, Washington, September 3, 1996, J-4478-04.

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Table C-1 - Methods of Analysis and Reporting Limits for Sediment Samples

Analyte	Ecology SQS Criteria	Reporting Limit	Analytical Method
Conventionals			
Percent Solids in %	NA	NA	CLP ILM 03.0
Total Organic Carbon in %	NA	0.015	EPA Method 9060
Porewater Ammonia in mg/L	NA	10	EPA Method 350.1
Porewater Sulfide in mg/L	NA	25	EPA Method 376.1
Porewater Salinity in mg/L		1,000	SM 2520 B
pH	NA	NA	EPA Method 150.1
Metals in mg/kg			
Arsenic	57	0.50	EPA Method 7061
Cadmium	5.1	0.50	EPA Method 6010
Chromium	260	1.0	EPA Method 6010
Copper	390	1.0	EPA Method 6010
Lead	450	3.0	EPA Method 6010
Mercury	0.41	0.2	EPA Method 7471
Silver	6.1	0.5	EPA Method 6010
Zinc	410	1.0	EPA Method 6010
LPAHs in mg/kg TOC			
Naphthalene	99	4	EPA SW-846 Method 8270
Acenaphthylene	66	4	EPA SW-846 Method 8270
Acenaphthene	16	4	EPA SW-846 Method 8270
Fluorene	23	4	EPA SW-846 Method 8270
Phenanthrene	100	4	EPA SW-846 Method 8270
Anthracene	220	4	EPA SW-846 Method 8270
2-Methylnaphthalene [1]	38	4	EPA SW-846 Method 8270
Total LPAHs	370[2]		
HPAHs in mg/kg TOC			
Fluoranthene	160	4	EPA SW-846 Method 8270
Pyrene	1,000	4	EPA SW-846 Method 8270
Benzo(a)anthracene	110	4	EPA SW-846 Method 8270
Chrysene	110	4	EPA SW-846 Method 8270
Benzo(b)fluoranthene	NA	4	EPA SW-846 Method 8270
Benzo(k)fluoranthene	NA	4	EPA SW-846 Method 8270
Total Benzofluoranthene	230[3]		
Benzo(a)pyrene	99	4	EPA SW-846 Method 8270
Indeno(1,2,3-cd)pyrene	34	4	EPA SW-846 Method 8270
Dibenzo(a,h)anthracene	12	4	EPA SW-846 Method 8270
Benzo (g,h,i) Perylene	31	4	EPA SW-846 Method 8270
Total HPAHs	370[4]		

Table C-1 - Methods of Analysis and Reporting Limits for Sediment Samples

Analyte	Ecology SQS Criteria	Reporting Limit	Analytical Method
Semivolatiles in mg/kg TOC			
1,2-Dichlorobenzene	2.3	1.9	EPA SW-846 Method 8270
1,4-Dichlorobenzene	3.1	1.7	EPA SW-846 Method 8270
1,2,4-Trichlorobenzene	0.81	2.2	EPA SW-846 Method 8270
Hexachlorobenzene	0.38	0.38	EPA SW-846 Method 8080
Dibenzofuran	15	4	EPA SW-846 Method 8270
Hexachlorobutadiene	3.9	3.9	EPA SW-846 Method 8080
N-Nitroso-Diphenylamine	11	10	EPA SW-846 Method 8270
Phthalates in mg/kg TOC			
Dimethyl Phthalate	53	4	EPA SW-846 Method 8270
Diethyl Phthalate	61	4	EPA SW-846 Method 8270
Di-n-butyl Phthalate	220	4	EPA SW-846 Method 8270
Butyl Benzyl Phthalate	4.9	4	EPA SW-846 Method 8270
Bis(2-ethylhexyl) Phthalate	47	4	EPA SW-846 Method 8270
Di-n-ocryl Phthalate	58	4	EPA SW-846 Method 8270
Semivolatiles in mg/kg (Dry Weight)			
Phenol	420	400	EPA SW-846 Method 8270
2-Methylphenol	63	60	EPA SW-846 Method 8270
4-Methylphenol	670	600	EPA SW-846 Method 8270
2,4-Dimethylphenol	29	62	EPA SW-846 Method 8270
Pentachlolorphenol	360	300	EPA SW-846 Method 8270
Benzyl Alcohol	57	58	EPA SW-846 Method 8270
Benzoic Acid	650	600	EPA SW-846 Method 8270
Total PCBs in mg/kg TOC[5]	12	10	EPA SW-846 Method 8080
Radiochemistry in dpm/g			
Cesium-137	NA	0.1	EPA Method 901.1
Lead-210	NA	0.1	EPA Method 00-03-01

Reporting limits for bolded analytes exceed the Ecology Marine SQS.

(1) EPA SW-846 Method 8270 modified to quantify 2-methylnaphthalene.

(2) The LPAH criteria represents the sum of the factoring "low molecular weight polycyclic aromatic hydrocarbon" compounds: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, and Anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.

(3) The total benzofluoranthene criterion represents the sum of the concentrations of the B and K isomers.

(4) The HPAH criterion represents the sum of the following "high molecular weight polycyclic aromatic hydrocarbon" compounds: Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Total Benzofluoranthenes, Benzo(a)pyrene, Ideno(1,2,3-c,d)pyrene, Dibenzo(a,b)anthracene, and Benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criterion values for the individual HPAH compounds listed.

(5) The total PCB Criterion represents the sum of PCBs according to PSDDA/SMS protocols. Total PCBs is calculated as the sum of detected results or as the highest non-detected value if results are all non-detects.

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Table C-2 - Methods of Analysis and Reporting Limits for Water Samples

Analyte	Source Screening Action Level [6]	Reporting Limit	Analytical Method[1]
Conventionals in mg/L (ppm)			
Total Suspended Solids		10.0	EPA Method 160.2
Metals in mg/L (ppb)			
Arsenic	36[3]	5.0	EPA Method 7060
Cadmium	8.0[3]	0.2	EPA Method 7131
Chromium	50[3]	10.0	EPA Method 6010
Copper	2.5[3]	2.0	EPA Method 7211
Lead	5.8[3]	3.0	EPA Method 7421
Mercury	0.2[4]	0.2	EPA Method 7470
Silver	1.2[3]	0.2	EPA Method 7761
Zinc	77[3]	10.0	EPA Method 6010
Low Level Mercury in ng/L	NA	0.1	EPA Draft Method 1631
LPAHs in mg/L (ppb)			
Naphthalene	105[5]	0.1	EPA SW-846 Method 8310
Acenaphthylene	26[5]	0.2	EPA SW-846 Method 8310
Acenaphthene	3.5[5]	0.1	EPA SW-846 Method 8310
Fluorene	3.2[5]	0.02	EPA SW-846 Method 8310
Phenanthrene	4.6[5]	0.01	EPA SW-846 Method 8310
Anthracene	16[5]	0.01	EPA SW-846 Method 8310
2-Methylnaphthalene [2]	8.4[5]	0.1	EPA SW-846 Method 8310
HPAHs in mg/L (ppb)			
Fluoranthene	4.2[5]	0.05 [1]	EPA SW-846 Method 8310
Pyrene	26[5]	0.01 [1]	EPA SW-846 Method 8310
Benzo(a)anthracene	0.03[5]	0.01 [1]	EPA SW-846 Method 8310
Chrysene	0.03[5]	0.01 [1]	EPA SW-846 Method 8310
Benzo(b)fluoranthene	0.03[5]	0.02	EPA SW-846 Method 8310
Benzo(k)fluoranthene	0.03[5]	0.01 [1]	EPA SW-846 Method 8310
Benzo(a)pyrene	0.03[5]	0.01 [1]	EPA SW-846 Method 8310
Indeno(1,2,3-cd)pyrene	0.02[5]	0.01 [1]	EPA SW-846 Method 8310
Dibenzo(a,h)anthracene	0.02[5]	0.02 [1]	EPA SW-846 Method 8310
Benzo(g,h,i)perylene	0.02[5]	0.02 [1]	EPA SW-846 Method 8310

(1) EPA SW-846 Method 8310 reporting limit equal to 4 times MDL.
(2) EPA SW-846 Method 8310 modified to quantify 2-methylnaphthalene.
(3) Marine Chronic/Human Health Water Quality Protection Criteria.
(4) Analytical Method Reporting Limit.
(5) Sediment Protection Criteria, based on partitioning theory.
(6) Human Health criteria as set forth in 40 CFR 131 (December 22, 1992).

Table-C-2.doc

Table C-3 - Summary of Field QA/QC Samples for Sediment and Surface Water

Sample ID(2)	Matrix	Duplicate Sample ID	TOC (3)	TS (3)	Grain Size	Hg	SMS Metals (1)	Semivolatiles	Cs-137	Pb-210	PCBs	NH3	Sulfide	pH	PAH	Low Level Hg	TSS
HC-SS-25	Sediment	HC-SS-202	X	X	X	X						X	X	X			
HC-SS-30	Sediment	HC-SS-203	X	X	X		X	X			X	X	X	X			
HC-SS-41	Sediment	HC-SS-204	X	X	X	X						X	X	X			
HC-SC-79	Sediment	HC-SC-205	X	X	X		X	X			X						
HC-VC-80-S2	Sediment	HC-IC-206	X	X	X		X	X			X						
HC-VC-81-S1	Sediment	HC-IC-207	X	X	X		X	X			X						
HC-DC-87-S1	Sediment	HC-DC-208	X	X	X		X	X			X						
HC-SW-7W	Water	HC-SW-100					X(5)								X		X
HC-SW-11D	Water	HC-SW-101					X(5)								X		X
HC-BC-101r1	Water	HC-BC-101r2														X	
HC-BC-100r1	Water	HC-BC-100r2														X	
HC-SW-100r1	Water	HC-SW-100r2														X	
HC-SW-101r1	Water	HC-SW-101r2														X	
HC-SW-99r1	Water	HC-SW-99r2														X	
HC-NR-100-S16/S17	Sediment	HC-NR-209		X		X			X	X							
HC-NR-100-S19	Sediment	HC-NR-210		X		X			NA	NA							
HC-NR-101-S16/S17	Sediment	HC-NR-211		X		X			X	X							
HC-NR-102-S16/S17	Sediment	HC-NR-212		X		X			X	X							
HC-RB-1	Sediment	SS Samples	X				X	X			X						
HC-RB-2	Sediment	SC Samples	X				X	X			X						
HC-RB-3	Sediment	VC Samples	X				X	X			X						
HC-RB-4	Sediment	DC Samples	X				X	X			X						
HC-RB-5	Sediment	NR Samples				X											
HC-SW-FB-D	Water	Dry Season					X(5)								X		X
HC-SW-FB-W	Water	Wet Season					X(5)								X		X
HC-FB-03	Water	Low Level Sampling														X	

Notes:

(1) SMS metals include As, Cd, Cr, Cu, Pb, Hg, Ag, and Zn

(2) SS= Surface VC= Vibra Core DC= Diver Core NR= Natural Recovery Core RB=Rinse Blank SW=Surface Water FB=Field Blank

(3) TOC = Total carbon TS=Total Solids

(4) No duplicate sample will be collected for sediment trap samples.

(5) Total and Dissolved Metals.

NH3, Sulfide, and pH for pore-water samples.

NA Not submitted for analysis due to small sample volume recovery.

4478-06\table-C-3.xls

ATTACHMENT C-1
DATA VALIDATION REPORT
ECOCHEM, INC.

EcoChem, Inc.

Environmental Science and Chemistry

DATA VALIDATION REPORT

Whatcom Waterway Remedial Investigation
Hart Crowser Project No. J-4478-05

Prepared for:

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102

Prepared by:

EcoChem, Inc.
1401 Norton Building
801 Second Avenue
Seattle, Washington 98104

EcoChem Project Number: C4421-1-01

April 8, 1997

Approved for Release:

Bob Olsiewski
Project Manager
EcoChem, Inc.

PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of data validation performed on seep, sediment, and natural resource samples in 18 sample delivery groups (SDG). The SDG and analyses validated by EcoChem, Inc. are detailed in **TABLE 1, SDG INDEX**.

Samples were analyzed by MultiChem Analytical Services, Inc. (MAS). Analytical methods and EcoChem project chemists are listed below.

Analysis	Method	Primary Review	Secondary Review
Semivolatile Organics	SW 8270	Sherri Wunderlich	Alison Bodkin
Pesticides/PCBs	SW 8080	Bruce Tiffany	Alison Bodkin
Polynuclear Aromatic Hydrocarbons (PAHs)	SW 8310	Alison Bodkin	Bob Olsiewski
Metals	SW 6010/7000	Bob Olsiewski	Bruce Tiffany
Mercury	SW 7471	Bob Olsiewski	Bruce Tiffany
Low Level Mercury	EPA 1631	Bob Olsiewski	Shawna Kennedy
Cesium-137 & Lead-210	EPA 901.1	Bruce Tiffany	Bob Olsiewski
TSS	EPA 160.2	Bob Olsiewski	Bruce Tiffany/ Shawna Kennedy
TOC	SW 9060	Bob Olsiewski	Bruce Tiffany
Ammonia, pH, Salinity, Sulfide, %M	EPA 350.1, 150.1, SM 2520-B, EPA 376.1, CLP SOW ILM03.0	Bob Olsiewski	Bruce Tiffany

The data validation is based on the *Whatcom Waterway Remedial Investigation Quality Assurance Project Plan* (QAPP); quality control (QC) criteria documented in the methods listed above; *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (February, 1994); and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (February, 1994).

Data qualifier definitions are located in **APPENDIX A**. **APPENDIX B** contains the Data Qualifier Summary Table. **APPENDIX C** contains all sample result summaries (Forms 1). Data Validation Worksheets and Communication Records are submitted as **APPENDIX D** and **APPENDIX E**, respectively.

Table 1
SAMPLE INDEX

SDG Nos.: 604062, 609011, 609012, 609021, 609022, 609024, 609041, 609042, 609047, 609048, 609050, 609051, 609052, 609053, 609054, 609055, 609062, 609096, 1066BELL, and 702001

SDG	Matrix	SVOC	PAH	PCB	Metals (T/D)	Total Metals	Mercury	Cs-137 & Pb-210	TSS	TOC	Conventionals*	Low-Level Mercury (T/D)
604062	Seep		✓		✓				✓			
609011	Sediment					✓				✓	✓	
609012	Sediment	✓		✓		✓				✓	✓	
609021	Sediment					✓				✓	✓	
609022	Sediment	✓		✓		✓				✓	✓	
609024	Sediment	✓		✓		✓				✓	✓	
609041	Sediment	✓		✓		✓				✓	✓	
609042	Sediment						✓					
609047	Sediment						✓					
609048	Sediment	✓		✓		✓				✓	✓	
609050	Sediment (Natural Recovery)						✓	✓				
609051	Sediment (Natural Recovery)						✓	✓				
609052	Sediment (Natural Recovery)						✓	✓				
609053	Sediment (Natural Recovery)							✓				
609054	Sediment (Natural Recovery)						✓	✓				
609055	Sediment (Natural Recovery)						✓	✓				
609062	Sediment	✓		✓		✓				✓	✓	
609096	Seep		✓		✓				✓			
1066BELL	Water/Filter								✓			✓
702001	Sediment						✓			✓		

T=Total
D=Dissolved
*Salinity, pH, temperature, ammonia, and sulfide.

DATA VALIDATION REPORT
Semivolatile Organic Compound Analysis
Whatcom Waterway RI
SDG Nos.: 609012, 609022, 609024, 609041, 609048, and 609062
Matrix: Sediment

I. CHAIN-OF-CUSTODY

The field Chain-of-Custody (COC) forms were present and complete. The forms were signed and dated, indicating that custody of the samples was maintained. The laboratory stated that Sample HC-DC-86-S2 (SDG 609062) was incorrectly listed in the COC as HC-DC-86-S1. The laboratory corrected the COC to match the identification on the sample bottle. No other problem with sample receipt conditions was indicated on the COC forms or in the laboratory narratives. All samples listed on the COC forms were analyzed as indicated.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for semivolatile analyses were provided by the laboratory. Good documentation practices were observed by the laboratory in the following areas: changes and corrections are struck out by a single line and the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

Results for five pairs of field duplicate samples (HC-SS-30/HC-SS-203, HC-SS-79/HC-SC-205, HC-VC-80-S2/HC-VC-206, HC-VC-81-S1/HC-VC-207, and HC-DC-87-S1/HC-DC-208) were reviewed. Positive results were reported for several compounds in each of the samples. The positive results and relative percent difference (RPD) values are listed in the Data Validation Worksheets. Several RPD values were greater than the recommended control limit of 50%. The RPD values are listed on the following table:

Field Duplicate Pair	RPD Value Range
HC-SS-79/HC-SS-205	8.3% to 50.0%
HC-DC-87-S1/HC-DC-208	0.0% to 187%
HC-VC-81-S1/HC-VC-207	0.0% to 66.7%
HC-VC-80-S2/HC-VC-206	0.0% to 63.4%
HC-SS-30/HC-SS-203	4.4% to 176%

No qualifier was assigned on the basis of field duplicate results.

See **Section 2.0, Blanks Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

The extraction holding time criterion is 14 days from the date of collection to the date of extraction for refrigerated sediment samples and 7 days for water samples. The recommended holding time criterion for frozen sediment samples is 1 year. Six sediment samples in SDG 609024 and 12 sediment samples in SDG 609041 were extracted after being refrigerated 16 days. The samples in SDG 609024 with extraction holding time exceedances were sampled on 9/6/96, frozen on 9/9/96 (3 days after collection), thawed on 9/13/96, and extracted on 9/26/96 (13 days after thawing). The samples in SDG 609041 with extraction holding time exceedances were sampled on 9/13/96, frozen on 9/16/96 (3 days after collection), thawed on 9/17/96, and extracted on 9/30/96 (13 days after thawing). Results for the 16 samples were qualified as estimated (E/UE). All other water samples and refrigerated sediment samples were extracted within acceptable holding times.

All samples were analyzed within the 40-day analytical holding time criterion.

2.0 Blank Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Positive results were reported in several method blanks. The method blank contaminants and concentrations are listed in the following table:

SDG	Matrix	Extraction Date	Analyte(s)	Concentration
609012	Sediment	9/19/96	bis(2-ethyhexyl)phthalate	.0097mg/Kg
			benzoic acid	96 µg/Kg
609041	Sediment	9/30/96	bis(2-ethyhexyl)phthalate	.019mg/Kg
			phenol	22 µg/Kg
			benzoic acid	46 µg/Kg
		10/31/96	bis(2-ethyhexyl)phthalate	.014 mg/Kg
609062	Water	9/20/96	bis(2-ethyhexyl)phthalate	1 µg/L
	Sediment	10/31/96	bis(2-ethyhexyl)phthalate	.024mg/Kg
			benzoic acid	66 µg/Kg

SDG	Matrix	Extraction Date	Analyte(s)	Concentration
609048	Water	9/19/96	bis(2-ethyhexyl)phthalate	1 µg/L
	Sediment	10/1/96	bis(2-ethyhexyl)phthalate	.028mg/Kg
			di-n-butylphthalate	.0084 mg/Kg
			benzoic acid	40 µg/Kg
		10/31/96	bis(2-ethyhexyl)phthalate	.014mg/Kg
609024	Water	9/12/96	bis(2-ethyhexyl)phthalate	1 µg/L
	Sediment	10/31/96	bis(2-ethyhexyl)phthalate	.014mg/Kg
		9/26/96	benzoic acid	52 µg/Kg
609022	Water	9/12/96	bis(2-ethyhexyl)phthalate	1 µg/L

Associated results were assigned a B-qualifier by the laboratory. At the request of the client, no further action was taken. Concentrations less than the reporting limits for sediment samples could not be elevated to the reporting limit because the specific reporting limits could not be determined.

The data for five field blanks (HC-RB-01, HC-RB-02, HC-RB-03, HC-RB-04, and HC-RB-05) were reviewed. Positive results for bis(2-ethylhexyl)phthalate were reported in all field blanks and were assigned U-qualifiers due to method blank contamination. See the **DATA QUALIFIER SUMMARY TABLE** for a listing of samples qualified. Since the field blank results for this compound were at concentrations less than the reporting limit, the results were elevated to the reporting limit. No other target compound was detected in the field blanks.

SDG 609024: Several results for bis(2-ethylhexyl)phthalate in sediment samples were B-flagged by the laboratory to indicate that this compound was present in the associated method blank. However, bis(2-ethylhexyl)phthalate was not reported in the associated sediment method blank (extracted on 9/26/96). Since bis(2-ethylhexyl)phthalate was not present in the associated method blank, no qualifier was issued to any bis(2-ethylhexyl)phthalate results from the sediment samples of this SDG on the basis of method blank contamination.

3.0 Surrogate Recovery: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE**.

Discussion:

Most of the surrogate compound percent recovery (%R) values were within the QAPP-specific control limits. The outliers are listed in the Data Validation Worksheets. No qualifier was assigned on the basis of surrogate recovery unless two or more %R values per fraction (acid or base neutral) were outside of control limits. Two base neutral surrogate %R values were outside of the control limits in Sample HC-VC-82-S2, and two acid surrogate %R values were outside of

the control limits in Sample HC-DC-88-S1. The base neutral compounds in Sample HC-VC-82-S2 and the acid compounds in Sample HC-DC-88-S1 were qualified as estimated (E/UE), per project specifications.

No surrogate %R value was less than 10%. Surrogate %R values in the acid fraction ranged from 42% to 134% for the sediment samples. Surrogate %R values in the base/neutral fraction ranged from 33% to 161% for the sediment samples. For the rinsate blanks, surrogate %R values in the acid fraction ranged from 92% to 122%, and surrogate %R values in the base/neutral fraction ranged from 85% to 117%.

4.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/With the following discussion.

Sediment Samples HC-SC-83, HC-VC-7A-S3, HC-VC-72-S3, HC-VC-77-S4, and HC-DC-91-S1 were selected for matrix spike/matrix spike duplicate (MS/MSD) analyses. Most %R and RPD values were within the laboratory-specific control limits. The %R and RPD values are listed in the table below:

SDG	Compound	MS%R	MSD%R	MS/MSD %R Control Limits	RPD	RPD Control Limits
609012	Pyrene	133	141	53-129	Acceptable	20
	Dimethylphthalate	Acceptable	5	40-160	171	40
	Diethylphthalate	Acceptable	25	40-160	113	40
609024	1,2,4-trichlorobenzene	Acceptable	Acceptable	26-123	21	20
609041	1,4-dichlorobenzene	Acceptable	Acceptable	32-109	52	22
	1,2,4-trichlorobenzene	Acceptable	Acceptable	26-123	57	20
	Dimethylphthalate	1	Acceptable	40-160	197	40
	Diethylphthalate	11	Acceptable	40-160	158	40
	Butylbenzylphthalate	Acceptable	Acceptable	40-160	74	40
	Bis(2-ethylhexyl)phthalate	218	Acceptable	40-160	56	40
	Pentachlorophenol	106	115	20-93	Acceptable	28
609048	2,4-dimethylphenol	Acceptable	33	40-160	Acceptable	40
	Pentachlorophenol	Acceptable	Acceptable	20-93	45	28
609062	Fluoranthene	Acceptable	163	40-160	Acceptable	40
	Benzo(a)anthracene	Acceptable	175	40-160	Acceptable	40
	Benzo(b)fluoranthene	195G	G	40-160	Acceptable	40
	Benzo(k)fluoranthene	195G	G	40-160	Acceptable	40
	Bis(2-ethylhexyl)phthalate	Acceptable	30G	40-160	Acceptable	40
	Di-n-octylphthalate	Acceptable	165G	40-160	Acceptable	40

For organic analyses, results are not qualified solely on the basis of matrix spike values; however, the MS/MSD values are used for evaluating accuracy in conjunction with other accuracy indicators (e.g., surrogates or LCS analyses). No qualification is recommended on the basis of the MS/MSD %R or RPD values. The %R values for target analytes ranged from 1% to 218%. The RPD values ranged from 0% to 197%.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/With the following discussion.

Laboratory control sample (LCS) analyses were performed at the required frequency. Most %R values were within the laboratory-specific control limits. The %R values are listed in the table below:

SDG	Compound	LCS %R	LCS %R Control Limits
609012	2,4-dimethylphenol	5	40-160
	Pentachlorophenol	133	25-107
609024	2,4-dimethylphenol	7	40-160
	n-nitrosodiphenylamine	38	40-160
609041	Dimethylphthalate	1	40-160
	Diethylphthalate	20	40-160
	n-nitrosodiphenylamine	38	40-160
	2,4-dimethylphenol	7	40-160
609048	Dimethylphthalate	22	40-160
	n-nitrosodiphenylamine	38	40-160
	2,4-dimethylphenol	4	40-160
609062	2,4-dimethylphenol	5	40-160

No qualification is recommended on the basis of the LCS %R values. The %R values for target analytes in the sediment LCS analyses ranged from 1% to 133%. The %R values for target analytes in the water LCS/LCSD analyses ranged from 61% to 115%, and the RPD values ranged from 1% to 16%.

6.0 Compound Quantitation and Sample Detection Limits: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Several samples were reported with target analyte concentrations less than the reporting limits. These compounds were J-flagged by the laboratory. Laboratory flags were changed to reflect the SEDQUAL requirements. No additional action was necessary.

Several positive results for benzo(b)fluoranthene and benzo(k)fluoranthene were T-flagged by the laboratory to indicate that the value reported is the sum of these two compounds. These results were assigned C-qualifiers, per project specifications.

The detection limits of 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, and 2,4-dimethylphenol exceeded the reporting limit specified in the QAPP because of the high moisture content in the samples.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical method.

Precision was acceptable, as indicated by the RPD values for most of the field duplicate and most of the MS/MSD analyses. Accuracy was also acceptable, as demonstrated by the %R values for most of the surrogates, and most of the MS/MSD and LCS spiking compounds.

Data qualifiers were assigned as a result of holding time exceedances, method blank contamination, surrogate %R outliers, and unresolved peaks for benzo(b)fluoranthene and benzo(k)fluoranthene.

The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Hexachlorobenzene, Hexachlorobutadiene, and PCB Analyses
Whatcom Waterway RI
SDG Nos.: 609012, 609022, 609024, 609041, 609048, and 609062
Matrix: Sediment

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. The field COC forms indicated no problem with sample receipt conditions. All samples listed on the COC forms were analyzed as indicated.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for hexachlorobenzene, hexachlorobutadiene, and PCB analyses were provided by the laboratory. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by the analyst and proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for five sets of field duplicates (HC-SS-203/HC-SS-30, HC-SC-205/HC-SC-79, HC-VC-206/HC-VC-80-S2, HC-VC-207/HC-VC-81-S1, and HC-DC-208/HC-DC-87-S1) were submitted for review. Overall field duplicate precision is judged as acceptable.

For most of the detected analytes, the relative percent difference (RPD) value between the field duplicate samples was less than 50% and was judged as acceptable. Exceptions are noted for the following two cases:

SDG 609012: For field duplicate set HC-SC-205/HC-SC-79, Aroclor 1254 was detected at 0.23 mg/Kg for Sample HC-SC-79 and Aroclor 1260 was detected at 0.14 mg/Kg for Sample HC-SC-205. The RPD value of 48.6% was acceptable for these PCB mixtures, but it is noted that there is a discrepancy between the Aroclor identifications. Since these PCB mixtures are relatively similar, and the weathering of these Aroclors can make positive identifications difficult, no further action was taken.

SDG 609048: For field duplicate set HC-VC-206/HC-VC-80-S2, the RPD value of hexachlorobenzene (64%) was greater than the 50% acceptance limit. No further action was taken because the remaining field duplicate RPD values for this SDG were acceptable.

See **Section3.0, Blank Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The recommended extraction holding time criterion is 14 days for soil and solid matrices from date of sampling to date of extraction. All soil and solid samples were extracted within the recommended 14 day holding time. All samples were analyzed within the recommended 40-day analytical holding time criterion.

Criteria for aqueous matrices were applied to the rinsate blank samples. The recommended extraction holding time criterion is 7 days for aqueous matrices from date of sampling to date of extraction. All rinsate blank samples were extracted within 6 days of sampling. All samples were analyzed within the recommended 40-day analytical holding time criterion.

2.0 Initial and Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

A method blank was analyzed at the proper frequency of one per extraction batch. No target compound was detected in the method blank at concentrations greater than or equal to the reporting limits.

The data for five field blanks (HC-RB-01, HC-RB-02, HC-RB-03, HC-RB-04, and HC-RB-05) were reviewed. No target compound was detected in the field blanks.

4.0 Surrogate Recovery: ACCEPTABLE/With the following discussion.

The laboratory used decachlorobiphenyl (DCBP) and 2,4,5,6-tetrachloro-*meta*-xylene (TCMX) as surrogate compounds for these samples as required by the method.

The surrogate percent recovery (%R) value (51%) of DCBP for Sample HC-VC-80-S2 was less than the lower control limit of 54%. No action was taken because the value was only slightly less than the lower control limit, and the %R value of TCMX was acceptable for this sample. All other surrogate %R values for the sediment samples ranged from 54% to 109% and were within the laboratory control limits of 54% to 116% for TCMX and 54% to 136% for DCBP.

All surrogate percent recovery (%R) values for the aqueous rinsate blank samples ranged from 34% to 95% and were within the laboratory control limits of 32% to 117% for TCMX and 20% to 146% for DCBP.

5.0 Matrix Spike/Matrix Spike Duplicate Analyses: ACCEPTABLE/With the following discussion.

Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed at the proper frequency of one per extraction batch. In SDG 609062, the %R value (1%) for hexachlorobenzene in the MS analysis of Sample HC-DC-89-S2 was extremely low. With a %R value of 39% for the MSD analysis, the resulting RPD value (190%)was extremely large. Since the LCS and the other MS/MSD results were acceptable, the low %R value from the MS analysis was judged to be a potential anomaly, and no further action was taken. For the remaining samples, the MS/MSD %R values ranged from 39% to 97%, and the RPD values ranged from 0% to 18%.

6.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

The laboratory prepared and analyzed a laboratory control sample (LCS) with each extraction batch, as required by the method. For the sediment samples, the %R values ranged from 65% to 97% and were within the laboratory control limits.

For the aqueous rinsate blank samples, the laboratory prepared and analyzed a laboratory control sample (LCS) with each extraction batch, as required by the method. The LCS were evaluated in the form of blank spike/blank spike duplicate (BS/BSD) analyses. The %R values ranged from 62% to 110% and were within the laboratory control limits. The relative percent difference (RPD) values ranged from 1% to 17% and were within the laboratory control limits.

7.0 Sample Detection Limits: ACCEPTABLE/All criteria met.

All results were calculated correctly and adjusted for sample size and percent moisture. All sample reporting limits on the sample results summary sheets met the target reporting limits. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical method.

Accuracy was acceptable, as demonstrated by most of the %R values of the LCS, MS/MSD, and surrogate spiking compounds. Precision was acceptable, as demonstrated by most of the RPD values of the MS/MSD analyses.

All data, as reported, are acceptable for use.

DATA VALIDATION REPORT
Total Metals Analyses
Whatcom Waterway RI
SDG No.: 609011, 609012, 609021, 609022, 609024, 609041, 609042, 609047, 609048, and 609062
Matrix: Sediment

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms, and all samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for seven pairs of field duplicate samples (HC-SS-202/HC-SS-25, HC-SS-203/HC-SS-30, HC-SS-204/HC-SS-41, HC-SC-205/HC-SC-79, HC-VC-206/HC-VC-80-S2, HC-VC-207/HC-VC-81-S1 and HC-DC-208/HC-DC-87-S1) were submitted and reviewed.

The relative percent difference (RPD) values for the seven pairs of field duplicate samples were less than the QAPP acceptance limit of 50% [except for arsenic (78.5%), chromium (53.3%), and zinc (68.6%) in the field duplicate pair HC-DC-208/HC-DC-87-S1]. No action was taken on the basis of the outliers for the field duplicate pair HC-DC-208/HC-DC-87-S1. The RPD value ranges for the field duplicate pairs are listed in the following table:

Field Duplicate Pair	RPD Value Range
HC-SS-202/HC-SS-25	0.0% to 9.5%
HC-SS-203/HC-SS-30	0.0% to 11.5%
HC-SS-204/HC-SS-41	5.1% to 15.1%
HC-SC-205/HC-SC-79	1.3% to 18.2%
HC-VC-206/HC-VC-80-S2	6.9% to 19.4%
HC-VC-207/HC-VC-81-S1	0.0% to 10.2%
HC-DC-208/HC-DC-87-S1	6.9% to 78.5%

See **Section 3.0, Blank Analyses** for a discussion of field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/With the following discussion.

All samples were analyzed within the required holding times (28 days for mercury and 180 days for all other metals) with the following exceptions: For SDG 609021, the mercury analyses were performed 30 to 34 days after sampling for ten samples. For SDGs 609042 and 609047, the mercury analyses were performed 64 to 69 days after sampling. Because the samples in these SDGs were frozen, the maximum holding time is 1 year, and no qualification was made.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were digested with every batch of 20 samples or less, as required. No analyte was detected in the blanks at a concentration greater than or equal to the reporting limits.

Five field blanks, HC-RB-01, HC-RB-02, HC-RB-03, HC-RB-04, and HC-RB-05, were submitted with these SDGs; no analyte was detected at a concentration greater than or equal to the reporting limits, except in HC-RB-02, HC-RB-03, and HC-RB-05. Copper (0.0017 mg/L) and mercury (0.00020 mg/L) were detected in the field blank HC-RB-02. Copper (0.0041 mg/L) was detected in the field blank HC-RB-03. Copper (0.0017 mg/L) was detected in the field blank HC-RB-05. No action was taken on this basis.

4.0. Matrix Spike Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Matrix spike (MS) samples were prepared and analyzed by the laboratory at the required frequency (one for every 20 samples). In SDG 609024, matrix spike data were not reported for mercury; only blank spike data were reported. No action was taken on this basis. The following are ranges of the %R values by SDG:

SDG	MS Samples	MS %R Value Range
609011	HC-SS-20, HC-SS-01 and 609021-5 (from another SDG)	81% to 128%
609012	HC-SS-48, HC-SS-35, HC-SS-38 and 609021-5 (from another SDG)	79% to 118%
609021	HC-SS-28, HC-SS-41 and HC-SS-204	80% to 115%
609022	HC-RB-01 and HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	85% to 113%
	HC-SS-28 (from SDG 609021) - for sediment samples*	106%
609024	HC-RB-02 - for aqueous rinsate blank	85% to 113%
	HC-SS-30 and HC-VC-71-S4 - for sediment samples	83% to 116%
609041	HC-VC-75-S2 and HC-VC-72-S1	56% to 102%

SDG	MS Samples	MS %R Value Range
609042 & 609047	HC-VC-74-S4 and 820797-1 (from another SDG)	111% to 113%
609048	HC-RB-02 (from SDG 609024) and HC-RB-03 (from SDG 609062) - for aqueous rinsate blank	84% to 113%
	HC-DC-92-S2 and HC-VC-73-S1 - for sediment samples	-162%+ to 114%
609062	HC-RB-02 (from SDG 609024) and HC-RB-03 - for aqueous rinsate blank	84% to 113%
	HC-DC-89-S2 and HC-DC-208 - for sediment samples	76% to 163%+

*Total Mercury only.

+See the following paragraph for an explanation of outliers.

The %R values not within the QAPP acceptance limits are listed in the following table (all associated samples were qualified as shown):

SDG	MS Sample(s)	Analyte(s)	MS %R Value	Limits	Qualifier
609048	HC-DC-92-S2 and HC-VC-73-S1 - for sediment samples	Arsenic	-162%	33% to 134%	None*
		Copper	14%	73% to 107%	E/UE
		Lead	-35%	70% to 100%	E/UE
609062	HC-DC-89-S2 and HC-DC-208 - for sediment samples	Arsenic	163%	33% to 134%	E

*The native sample concentration was greater than four times the spike amount, and no action was taken.

5.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Laboratory duplicate samples were prepared and analyzed by the laboratory at the required frequency (one per 20 samples). The relative percent difference (RPD) values for all SDGs were less than the advisory acceptance limit of 35%.

In SDG 609024, sample matrix duplicate data were not reported for mercury; only blank spike/blank spike duplicate data were reported. The RPD of 4% was acceptable; thus, no action was taken on this basis. The ranges of RPD values for each SDG are listed in the following table:

SDG	RPD Samples	RPD Value Range
609011	HC-SS-20, HC-SS-01 and 609021-5 (from another SDG)	1% to 7%
609012	HC-SS-48, HC-SS-35, HC-SS-38 and 609021-5 (from another SDG)	1% to 37%♦
609021	HC-SS-28, HC-SS-41 and HC-SS-204	1% to 18%
609022	HC-RB-01 and HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	NA*
	HC-SS-28 (from SDG 609021)+ - for sediment samples	1%+

SDG	RPD Samples	RPD Value Range
609024	HC-RB-02 - for aqueous rinsate blank	NA*, 4%+
	HC-SS-30 and HC-VC-71-S4 - for sediment samples	1% to 6%
609041	HC-VC-75-S2 and HC-VC-72-S1	3% to 23%
609042 & 609047	HC-VC-74-S4 and 820797-1 (from another SDG)	NA*
609048	HC-RB-02 (from SDG 609024) and HC-RB-03 (from SDG 609062)- for aqueous rinsate blank	NA*
	HC-DC-92-S2 and HC-VC-73-S1 - for sediment samples	7% to 36%♦
609062	HC-RB-02 (from SDG 609024) and HC-RB-03 - for aqueous rinsate blank	NA♣
	HC-DC-89-S2 and HC-DC-208 - for sediment samples	2% to 17%

♦See the following paragraph for an explanation of outliers.

*Because the sample and duplicate values were less than the reporting limits, the RPD values were not calculable.

+Total Mercury only.

♣ Because the sample and duplicate values were less than the reporting limits, the RPD values were not calculable (except for copper in Sample HC-RB-02 at 0.00172 mg/L).

The relative percent difference (RPD) values for all SDGs were less than the advisory acceptance limit of 35% except for those listed in the following table (all associated samples were qualified as shown):

SDG	RPD Sample(s)	Analyte(s)	RPD Value	Qualifier
609012	HC-SS-48, HC-SS-35, HC-SS-38 and 609021-5 (from another SDG)	Arsenic	37%	E/UE
609048	HC-DC-92-S2 and HC-VC-73-S1 - for sediment samples	Lead	36%	E/UE

6.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of 20 samples or less, as required. All %R values for all SDGs were within the QAPP acceptance limits for each analyte. The ranges of %R values for each SDG are listed in the following table:

SDG	LCS %R Value Range
609011	87% to 102%
609012	93% to 109%
609021	91% to 101%
609022	aqueous - 96% to 112%
	sediment - 99%*
609024	aqueous - 94% to 111%
	sediment - 87% to 104%
609041	91% to 106%
609042 & 609047	105% to 110%*
609048	aqueous - 86% to 111%
	sediment - 88% to 116%

SDG	LCS %R Value Range
609062	aqueous - 86% to 111%
	sediment - 93% to 103%

*Total Mercury only.

7.0 Standard Reference Material Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Standard reference material (SRM) samples were prepared and analyzed by the laboratory at the required frequency (one per 50 samples). Standard reference material results were not reported for SDGs 609022 and 609041. The %R values for the SDGs in the table below were all within the QAPP acceptance limits.

SDG	Analyte	%R Value Range
609011	Mercury	83%
609012	All Analytes*	52% to 102%
609021	All Analytes*	57% to 107%+
609024	Mercury	89%
609042 & 609047	Mercury (sediment)	117%
609048	All Analytes*	55% to 107%+
609062	Mercury (sediment)	95%

*Except mercury and silver.
+See the following paragraph for an explanation of outliers.

The %R values not within the QAPP acceptance limits are listed in the following table (all associated samples were qualified as shown):

SDG	Analyte	%R Value	Limit	Qualifier
609021	Chromium	57%	65% to 102%	E/UE
609048	Cadmium	107%	74% to 97%	None*
	Chromium	55%	65% to 102%	E/UE

*Since this %R value was judged acceptable, no action was taken on this basis.

8.0 Serial Dilution Analyses: NOT EVALUATED.

9.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the MS/MSD, LCS and SRM results, except where previously noted. Precision was acceptable, as demonstrated by the laboratory duplicate and MS/MSD sets.

Data were qualified as estimated (E/UE) because of matrix spike and standard reference material percent recovery value outliers and for laboratory duplicate relative percent difference value outliers.

The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Conventionals Analyses
Whatcom Waterway RI
SDG No.: 609011, 609012, 609021, 609022, 609024, 609041, 609042, 609047, 609048, and 609062
Matrix: Sediment

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms signed and dated. The field COC forms indicate no problem with sample receipt conditions. All samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for conventional analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for seven pairs of field duplicate samples (HC-SS-202/HC-SS-25, HC-SS-203/HC-SS-30, HC-SS-204/HC-SS-41, HC-SC-205/HC-SC-79, HC-VC-206/HC-VC-80-S2, HC-VC-207/HC-VC-81-S1 and HC-DC-208/HC-DC-87-S1) were submitted and reviewed.

The relative percent difference (RPD values for the seven pairs of field duplicate samples were less than the QAPP acceptance limit of 50%. The RPD value ranges for the field duplicate pairs are listed in the following table:

Field Duplicate Pair	RPD Range
HC-SC-205/HC-SC-79	1.6% to 2.4%
HC-SS-204/HC-SS-41	3.2% to 19.6%
HC-SS-202/HC-SS-25	0.2% to 8.8%
HC-SS-203/HC-SS-30	0.9% to 8.0%
HC-VC-206/HC-VC-80-S2	0.0% to 4.1%
HC-VC-207/HC-VC-81-S1	1.8% to 11.8%
HC-DC-208/HC-DC-87-S1	1.8% to 6.1%

See **Section 3.0, Blank Analyses** for a discussion of field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

The holding time criterion of 28 days from sample collection to analysis for the TOC analysis; 6 months for the total solids analysis; 28 days for the ammonia analysis; 7 days for the sulfide analysis; and, 24 hours for the pH and salinity analyses were met for all samples, except for the following:

SDG	Sample(s)	Analyte(s)	Holding Time Exceedance	Qualifier
609011	All samples	Sulfides	1 to 3 days	E/UE
	All samples	pH & Salinity	1 to 3 days	None*
609012	All samples	pH & Salinity	2 to 8 days	None*
	6 samples	Sulfides	1 to 3 days	E/UE
609021	All samples	pH & Salinity	2 to 6 days	None*
	4 samples	Sulfides	1 day	E/UE
609022	All samples	pH & Salinity	6 days	None*
609024	All samples	pH & Salinity	2 to 5 days	None*

*Impact to data judged to be not significant.

2.0 Initial and Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were analyzed with every batch of 20 samples or less, as required. No analyte was detected in the blanks at concentrations greater than or equal to the reporting limits.

Five field blanks, HC-RB-01, HC-RB-02, HC-RB-03, HC-RB-04, and HC-RB-05, were submitted with these SDGs; no analyte was detected at concentrations greater than or equal to the reporting limits.

4.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of twenty samples or less, as required. The %R values for all SDGs were within the advisory acceptance limits of 75% to 125%. The %R ranges for each SDG are listed in the following table:

SDG	LCS %R Range
609011	95% to 103%
609012	97% to 101%
609021	97% to 102%
609022	97% to 99%, 109%*
609024	97% to 101%, 109%*
609041	99% to 104%
609048	99% to 103%, 109%*
609062	100%, 109%*

*TOC %R value for aqueous rinsate blank.

5.0 Matrix Spike Analyses: ACCEPTABLE/All criteria met.

Matrix spike sample (MS) analysis was completed for every batch of twenty samples or less, as required. The MS %R results were within the advisory acceptance limits of 75% to 125% with a few exceptions for ammonia. Since the negative ammonia concentration was greater than 4× the amount spiked in, no qualifier was assigned. The MS %R ranges for each SDG are listed in the following table:

SDG	MS Samples	MS %R Range
609011	HC-SS-01, HC-SS-14, HC-SS-01, and HC-SS-02	80% to 125%
609012	HC-SS-35, HC-SS-85, HC-SS-44, and HC-SS-38	30%* to 112%
609021	HC-SS-19, HC-SS-204, HC-SS-32, and HC-SS-29	40%* to 110%
609022	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	118%+
	HC-SS-43, HC-SS-44 (from SDG 609012), and HC-SS-32 (from SDG 609021) - for sediment samples	30%* to 110%
609024	HC-RB-02 - for aqueous rinsate blank	118%+
	HC-SS-30, HC-SC-74, HC-SS-29, and HC-SS-38 (from SDG 609012) - for sediment samples	40%* to 114%
609041	HC-VC-72-S1 and HC-VC-79-S3	102% to 114%
609048	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	118%+
	HC-VC-73-S1 and HC-DC-92-S2 - for sediment samples	102% to 104%
609062	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	118%+
	HC-DC-91-S1 and HC-DC-86-S1 - for sediment samples	105% to 112%

*Ammonia - native sample concentration >4× spike amount
+Total Organic Carbon %R value

6.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory duplicate samples were prepared and analyzed by the laboratory at the required frequency (one per 20 samples). The relative percent difference (RPD) values for all SDGs were less than the advisory acceptance limit of 35%. The ranges of RPD values for each SDG are listed in the following table:

SDG	Duplicate Samples	RPD Range
609011	HC-SS-01, HC-SS-14, HC-SS-12, HC-SS-45, HC-SS-48, HC-SS-01, and HC-SS-02	0% to 16%
609012	HC-SS-35, HC-SS-85, HC-SS-37, HC-SS-45, HC-SS-48, HC-SS-38, HC-SS-79, HC-SS-44 and HC-SS-30	1% to 16%
609021	HC-SS-19, HC-SS-204, HC-SS-31, HC-SS-21, and HC-SS-32	0% to 8%
609022	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	NA*
	HC-SS-43, HC-SS-48 (from SDG 609012), HC-SS-44 (from SDG 609012), and HC-SS-32 (from SDG 609021) - for sediment samples	0.7% to 1.0%
609024	HC-RB-02 - for aqueous rinsate blank	NA*
	HC-SS-30, HC-SC-74, HC-SS-03, HC-SC-75, HC-VC-71-S3, HC-SS-29, 608065-38 (from another SDG), and 609045-19 (from another SDG) - for sediment samples	0.0% to 24%
609041	HC-VC-72-S1, HC-VC-79-S3, HC-VC-72-S3, HC-VC-78-S2, and HC-VC-74-S3	0% to 9%
609042 & 609047	HC-VC-81-S3 and 611033-2 (from another SDG)	0% to 5%
609048	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	NA*
	HC-VC-73-S1, HC-VC-81-S2, HC-VC-82-S2, HC-DC-92-S1, and HC-DC-92-S2 - for sediment samples	0.0% to 8%
609062	HC-RB-02 (from SDG 609024) - for aqueous rinsate blank	NA*
	HC-DC-91-S1, HC-DC-86-S1, HC-DC-87-S2, and 820750-8 (from another SDG) - for sediment samples	0.0% to 13%

*Because the sample and duplicate values were less than the reporting limits, the RPD values were not calculable.

7.0 Standard Reference Material Sample Analyses: ACCEPTABLE/All criteria met.

Standard reference material (SRM) samples for TOC were prepared and analyzed by the laboratory at the required frequency (one per 50 samples). No SRM result was reported for the following SDGs: 609012, 609021, 609022, 609041, and 609048; since the overall frequency requirement was met, no qualifier was assigned. The %R values for the SDGs with SRM results reported were all within the advisory acceptance limits of 75% to 125%.

SDG	SRM %R
609011	103%
609024	102%
609062	101%

8.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP and were adjusted correctly for sample size and dilution factors. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

The accuracy was acceptable as demonstrated by the MS, LCS and SRM results. The precision was acceptable as demonstrated by the RPD values of the duplicate sample results.

Several sample values for sulfide and total organic carbon were qualified as estimated (E/UE) for exceeding holding time criteria.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Mercury Analyses
Whatcom Waterway RI
SDG No.: 609050, 609051, 609052, 609054, and 609055
Matrix: Sediment (Natural Recovery)

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms, and all samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for three pairs of field duplicate samples (NC-NR-100-S16/17/HC-NR-209, HC-NR-101-S16/17/HC-NR-211, and HC-NR-102-S16/17/HC-NR-212) were submitted for review.

The relative percent difference (RPD) values for the three pairs of field duplicate samples were less than the QAPP acceptance limit of 50%. The RPD values for the field duplicate pairs are listed in the following table:

Field Duplicate Pair	RPD Value
HC-NR-100-S16/17 & HC-NR-209	11.8%
HC-NR-101-S16/17 & HC-NR-211	3.2%
HC-NR-102-S16/17 & HC-NR-212	4.9%

Field blanks were not submitted.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The analytical holding time criteria of 28 days for mercury from the date of sampling to the date of analysis was met for all samples, except for the samples in SDGs 609054 and 609055. Since

the samples in these SDGs were frozen, the maximum holding time is 1 year. No action was necessary.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were digested with every batch of 20 samples or less, as required. No analyte was detected in the blanks at a concentration greater than or equal to the reporting limits.

4.0. Matrix Spike Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Matrix spike (MS) samples were prepared and analyzed by the laboratory at the required frequency (one for every 20 samples). The %R values in all SDG were within the QAPP acceptance limits of 70% to 150%, except in SDG 609050. Because the recovery value of the matrix spike in SDG 609050 was less than the lower control limit, all results in SDG 609050 were qualified as estimated (E/UE). The MS %R values and the samples used for the MS analysis are listed in the following table:

SDG	MS Sample	MS %R Value
609050	HC-NR-100-S1	65%
609051	HC-NR-101-S1	91%
609052	HC-NR-102-S2	92%
609054 & 609055	HC-VC-74-S4 (from SDG 609042)	113%

5.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Laboratory duplicate samples were prepared and analyzed by the laboratory at the required frequency (one per 20 samples). The relative percent difference (RPD) values for all SDG were less than the advisory acceptance limit of 35%, except in SDG 609050. Because the RPD value in SDG 609050 was greater than the acceptance limit, all results in SDG 609050 were qualified as estimated (E/UE). The RPD values and the samples used for the duplicate analysis are listed in the following table:

SDG	Duplicate Sample	RPD Value
609050	HC-NR-100-S1	41%
609051	HC-NR-101-S1	21%
609052	HC-NR-102-S2	13%
609054 & 609055	HC-VC-74-S4 (from SDG 609042)	NC

6.0 Laboratory Control Sample Analysis: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of 20 samples or less, as required. All %R values for all SDGs were within the QAPP acceptance limits of 70% to 150%. The %R value for each SDG is listed in the following table:

SDG	LCS %R Value
609050	106%
609051	110%
609052	111%
609054 & 609055	110%

7.0 Standard Reference Material Sample Analyses: ACCEPTABLE/All criteria met.

Standard reference material (SRM) samples were prepared and analyzed by the laboratory at the required frequency (one for every 50 samples). The %R values ranged from 93% to 117%.

8.0 Serial Dilution Analyses: NOT EVALUATED.

9.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the MS, LCS, and SRM results, except where previously noted. Precision was acceptable, as demonstrated by the laboratory duplicates, except where previously noted.

Data in SDG 609050 were qualified as estimated (E/UE) because of matrix spike %R value outliers and for laboratory duplicate RPD value outliers.

The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Cesium-137 and Lead-210 Analyses
Whatcom Waterway RI
SDG No.: 609050, 609051, 609052, 609053, 609054, and 609055
Matrix: Sediment (Natural Recovery)

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms. Sample HC-NR-210 was not analyzed for cesium-137 and lead-210, as indicated on the COC form, because of insufficient volume to perform the analysis. Since this sample is a field duplicate of Sample HC-NR-100-S19, no loss of data was observed, and no further action taken. All other samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for two pairs of field duplicate samples (HC-NR-101-S16/17/HC-NR-211 and HC-NR-102-S16/17/HC-NR-212) were submitted for review. The field duplicate set NC-NR-100-S19/HC-NR-210 could not be evaluated as Sample HC-NR-210 was not analyzed.

The relative percent difference (RPD) values for the two pairs of field duplicate samples were less than the QAPP acceptance limit of 50%. The RPD values for the field duplicate pairs are listed in the following table:

Field Duplicate Pair	Cesium RPD Value	Lead RPD Value
HC-NR-100-S19 & HC-NR-210	NA: HC-NR-210 Not Analyzed	NA: HC-NR-210 Not Analyzed
HC-NR-101-S16/17 & HC-NR-211	44.7%	19.0%
HC-NR-102-S16/17 & HC-NR-212	0.0%	19.2%

Field blanks were not submitted.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The sediment analytical holding time criteria of 1 year (frozen) from the date of sampling to the date of analysis was met for all samples.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were prepared with every batch of 20 samples or less, as required. No analyte was detected in the blanks at a concentration greater than or equal to the reporting limits.

4.0. Matrix Spike Sample Analyses: NOT EVALUATED.

Matrix spike (MS) samples were not analyzed by the laboratory. For an assessment of analytical accuracy, see **Section 6.0, Laboratory Control Sample Analyses.**

5.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/With the following discussion.

No laboratory duplicate sample was analyzed for the cesium-137 analyses as a result of volume constraints. Samples were prepared and analyzed in duplicate by the laboratory at the required frequency (one per 20 samples) for the lead-210 analyses. The RPD values for all SDGs were less than the advisory acceptance limit of 35%. The RPD values and the samples used for the duplicate analysis are listed in the following table:

SDG	Duplicate Sample	Cs RPD Value	Pb RPD Value
609050	HC-NR-100-S10	Not Analyzed	21.2%
609050	HC-NR-100-S13	Not Analyzed	2.8%
609051	HC-NR-101-S1	Not Analyzed	13.5%
609051	HC-NR-102-S1	Not Analyzed	8.6%
609052	HC-NR-102-S2	Not Analyzed	13.7%
609052	HC-NR-102-S45	Not Analyzed	13.8%
609053, 609054, & 609055	None	NA	NA

6.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of 20 samples or less, as required. All percent recovery (%R) values for all SDGs were within the laboratory control limits of 85% to 115% for cesium-137 and 75% to 125% for lead-210. The %R values from each SDG are listed in the following table:

SDG	Cs LCS %R Value	Pb LCS %R Value
609050	95.7%	111%
609051	99.7%	83%
609052	99.7%	86%
609053, 609054, & 609055	102%	No lead-210 analysis performed

7.0 Standard Reference Material Sample Analyses: NOT EVALUATED.

Standard reference material (SRM) samples were not analyzed by the laboratory. For an assessment of analytical accuracy, see **Section 6.0, Laboratory Control Sample Analyses.**

8.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the LCS results. Precision was acceptable, as demonstrated by the laboratory duplicate analyses for lead-210. No laboratory duplicate sample was analyzed for cesium-137; therefore, analytical precision could not be assessed for the cesium-137 analyses.

The data, as reported, are acceptable for use.

DATA VALIDATION REPORT
Polynuclear Aromatic Hydrocarbon Analyses
Whatcom Waterway RI
SDG No.: 604062 and 609096
Matrix: Seep

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete. All forms were signed and dated. The field COC forms indicated that the sample cooler for SDG 609096 was received by the laboratory at a temperature greater than the upper limit of 6°C (7.8°C). Since the samples were subjected to these temperatures for less than 48 hours, the potential for thermal degradation was judged to be negligible, and no further action was taken. All samples listed on the COC forms were analyzed as indicated.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for polynuclear aromatic hydrocarbon (PAH) analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for two sets of field duplicate samples (HC-SW-101D/HC-SW-11D in SDG 609096 and HC-SW-100/HC-SW-7 in SDG 604062) were submitted and reviewed. For SDG 604062, the relative percent difference (RPD) for phenanthrene was 0% which was within the control limit of 30%. Pyrene was detected in Sample HC-SW-7 but was not reported in Sample HC-SW-100; therefore, the RPD could not be calculated. For SDG 609096, the RPD for fluoranthene and pyrene were 189% and 193%, respectively and were outside the control limit of 30%. Phenanthrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene were detected in Sample HC-SW-101D but were not reported in Sample HC-SW-11D; therefore, the RPD could not be calculated. No qualifier was assigned on the basis of field duplicate results.

See **Section 2.0, Blank Analyses** for a discussion of field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

The extraction holding time criterion for water samples is 7 days from date of collection to date of extraction. Because Samples HC-SW-7D, HC-SW-10D, HC-SW-2-D and HC-SW-4B-D from SDG 609096 were re-extracted 21 days after collection due to surrogate outliers, positive results and detection limits were qualified as estimated (E/UE) for the re-extraction analyses. Sample HC-SW-10W from SDG 604062 was also re-extracted outside of the 7 day holding time as a result of surrogate outliers. The re-extraction yielded similar surrogate recovery values and was not reported; therefore, no action was taken on the basis of holding time criteria. Initial extractions for all samples were performed within 2 to 6 days. All water samples were analyzed between 6 and 13 days from extraction, within the 40-day analytical holding time criterion. A holding time table is included with the Data Validation Worksheets in **APPENDIX C**.

2.0 Blank Analyses: ACCEPTABLE/All criteria met.

Method blanks were analyzed at the proper frequency (one per extraction batch). No positive result was detected in the method blanks.

Two field blanks (Sample HC-SW-FB from SDG 604062 and Sample HC-SW-FB-D from SDG 609096) were analyzed. No positive result was detected in the field blanks.

3.0 Surrogate Recovery: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Surrogate compound percent recovery (%R) values were outside the laboratory control limits of 33% to 123% for the following samples:

SDG 604062: For Sample HC-SW-10W, the %R value was 12%. The sample was re-extracted outside of the extraction holding time limit yielding similar results. Only the results from the initial extraction were reported. Positive results and detection limits were qualified as estimated (E/UE).

SDG 609096: For Samples HC-SW-7D and HC-SW-10D, the %R values were 3% and 5%, respectively. Positive results and detection limits were qualified as estimated (EX/UEX) due to a surrogate %R value less than 10%. Both samples were re-extracted outside of the extraction holding time limit, yielding %R values of 32% and 14%. Since the results from the re-extractions were qualified on the basis of holding time criteria, no further action was taken. Results from the re-extracted samples should be used.

For Samples HC-SW-2-D and HC-SW-4B-D, the %R values were less than the lower control limit of 33%. Both samples were re-extracted outside of the extraction holding time limit, yielding %R values of 71% and 82%, respectively. Only the results from the re-extractions were reported. The results are qualified on the basis of holding time criteria.

All other surrogate %R values from both SDGs, ranging from 42% to 97%, were within laboratory control limits.

4.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

Two water samples (HC-SW-12W from SDG 604062 and HC-SW-12D from SDG 609096) were selected for matrix spike/matrix spike duplicate (MS/MSD) analyses. In addition, blank spike/blank spike duplicate samples were analyzed with the samples that required re-extraction as a result of surrogate outliers. All matrix spike recovery values were within control limits. The %R values ranged from 39% to 87%. Matrix spike RPD values ranged from 4% to 25%.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/With the following discussion.

The data for two water laboratory control samples (LCS) were reviewed. The %R value for dibenzo(a,h)anthracene (49%) for the LCS associated with samples in SDG 604062 was outside the control limits of 50% to 120%. Since there was no positive result in the associated samples, and since detection limits were judged as not significantly affected, no action was taken. All other %R values were within the control limits and ranged from 45% to 73%.

6.0 Compound Quantitation and Sample Detection Limits: ACCEPTABLE/With the following discussion.

Compound quantitation limits were calculated correctly and adjusted for sample size and dilutions.

The original analysis of Sample HC-SW-101D contained two target compounds at concentrations which exceeded the linear range of the instrument. The sample was diluted 5× and reanalyzed. The compounds, flagged D3 by the laboratory, were within the linear range. The results in the original analysis that exceeded the linear range were not reported. Results for all compounds except those that exceeded the linear range were reported from the original analysis. All results in the diluted analysis except those qualified for linear range exceedance in the original analysis were not reported. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical method.

The MS/MSD RPD values indicate acceptable laboratory precision. Accuracy is also acceptable, as demonstrated by acceptable %R values for the surrogates, the MS/MSDs, and most of the LCS spike results.

Data qualifiers were assigned as a result of a holding time exceedance and low surrogate %R values.

Data that are qualified as estimated (EX/UEX) as a result of surrogate %R values less than 10% should not be used. All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Total and Dissolved Metals Analyses
Whatcom Waterway RI
SDG No.: 604062 & 609096
Matrix: Seep

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms, and all samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for two pairs of field duplicate samples (HC-SW-100/HC-SW-7 and HC-SW-101D/ HC-SW-11D) were submitted and reviewed.

The relative percent difference (RPD) values for the total metals results for the HC-SW-100/ HC-SW-7 pair ranged from 2.0% to 24% and were less than the QAPP acceptance limit of 50%. The RPD values for the dissolved metals results for the HC-SW-100/HC-SW-7 pair were 0.0% for zinc and 58% for copper (the results for the other analytes were reported as not detected). Since these are only advisory limits, no action was taken for the copper outlier.

The relative percent difference (RPD) values for the total metals results for the HC-SW-11D/ HC-SW-101D pair ranged from 6.1% to 37% and were less than the QAPP acceptance limit of 50%. Since all results for the dissolved metals for the HC-SW-11D/HC-SW-101D pair were reported as not detected, RPD values were not calculated. No action was taken on this basis.

See **Section 3.0, Blank Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The analytical holding time criteria of 28 days for mercury and 180 days for all other metals from the date of sampling to the date of analysis was met for all samples.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were digested with every batch of 20 or fewer samples, as required. No analyte was detected in the blanks at concentrations greater than or equal to the reporting limits.

Two field blanks, HC-SW-FB and HC-SW-FB-D, were submitted with this analytical batch; no analyte was detected at concentrations greater than or equal to the reporting limits.

4.0. Matrix Spike Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

Matrix spike (MS) samples were prepared and analyzed by the laboratory at the required frequency (one for every 20 samples) for water samples.

SDG 604062: The matrix spike analysis for both the total and dissolved metals was performed on Sample HC-SW-12W. The %R values for the total metals ranged from 60% to 123%. Only the silver %R value was not within the QAPP acceptance limits (75% to 125% for silver). Total silver results for all associated samples were qualified as estimated (E/UE). The %R values for the dissolved metals ranged from 62% to 101%. Only the silver %R value was not within the QAPP acceptance limits (75% to 125% for silver). Dissolved silver results for all associated samples were qualified as estimated (E/UE).

SDG 609096: The matrix spike analysis for total arsenic, cadmium, copper, and lead was performed on Sample HC-SW-FB-D; for total chromium, copper, silver, and zinc on Sample HC-SW-101-D; and, for total mercury on Sample HC-SW-2-D. The %R values for the total metals ranged from 72% to 104% and were within the QAPP acceptance limits for each analyte. A separate matrix spike analysis was not performed for the dissolved metals; the same MS/MSD recovery information was reported twice. No action was taken on this basis.

5.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory duplicate samples were prepared and analyzed by the laboratory at the required frequency (one per 20 samples).

SDG 604062: The duplicate analysis for total and dissolved metals was performed on Sample HC-SW-12W. Because all results for this sample and the duplicate analysis were reported as not detected, the RPD values were not calculable. No action was taken.

SDG 609096: The duplicate analysis for total arsenic, cadmium, copper, and lead was performed on Sample HC-SW-FB-D; for total chromium, copper, silver, and zinc on Sample HC-SW-101-D; and, for total mercury on Sample HC-SW-2-D. Only total copper and zinc in Sample HC-SW-101-D were detected at levels greater than the reporting limit. The RPD value for both copper and zinc in this sample was 13%, within the QAPP acceptance limit of 20%. A separate duplicate analysis was not performed for the dissolved metals; the same duplicate information was reported twice. No action was taken on this basis.

6.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control samples (LCS) were analyzed with every batch of 20 or fewer samples.

SDG 604062: The %R values for the total metals ranged from 98% to 114%. The %R values for the dissolved metals ranged from 98% to 108%. All %R values were within the QAPP acceptance limits for each analyte.

SDG 609096: The %R values for the LCS reported for both the total and dissolved metals ranged from 88% to 105%. All %R values were within the QAPP acceptance limits for each analyte.

7.0 Serial Dilution Analyses: NOT EVALUATED.

8.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. The reporting limits were adjusted correctly for sample size and dilution factors. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the %R values of the MS/MSD and LCS results, except where previously noted. Precision was acceptable, as demonstrated by compliant RPD values for the laboratory duplicate and MS/MSD sets.

All results for total and dissolved silver in SDG 604062 were qualified as estimated (E/UE) because of low matrix spike percent recovery values.

The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Total Suspended Solids Analysis
Whatcom Waterway RI
SDG No.: 604062 & 609096
Matrix: Seep

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms signed and dated. The field COC forms indicated no problem with sample receipt conditions. All samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for conventional analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for two pairs of field duplicate samples (HC-SW-100/HC-SW-7 and HC-SW-101D/ HC-SW-11D) were submitted and reviewed.

The relative percent difference (RPD) values for the total suspended solids (TSS) results for the HC-SW-100/HC-SW-7 pair was 5.1% and was less than the QAPP acceptance limit of 50%.

Since the TSS results for the HC-SW-11D/HC-SW-101D pair were reported as not detected, no RPD value was calculable. No action was taken on this basis.

See **Section 3.0, Blank Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The holding time criterion of 7 days from sample collection to analysis was met for all samples.

2.0 Initial and Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were analyzed with every batch of 20 samples or less, as required. No analyte was detected in the blanks at concentrations greater than or equal to the reporting limits.

Two field blanks, HC-SW-FB and HC-SW-FB-D, were submitted with this analytical batch; no analyte was detected at concentrations greater than or equal to the reporting limits.

4.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control samples (LCS) were analyzed for every batch of 20 or fewer samples.

SDG 604062: The %R value of 96% was within the advisory acceptance limits of 75% to 125%.

SDG 609096: The %R value of 94% was within the advisory acceptance limits of 75% to 125%.

5.0 Matrix Spike Analyses: NOT EVALUATED.

6.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory duplicate samples were prepared and analyzed by the laboratory at the required frequency (one per 20 samples).

SDG 604062: The duplicate analysis for TSS was performed on Sample HC-SW-12W. The RPD value of 14% was within the QAPP acceptance limit of 20%.

SDG 609096: The duplicate analysis for TSS was performed on Sample HC-SW-2-D. The RPD value was not calculable because the result for the original sample was 10 mg/L, but the duplicate value was reported as not detected at the reporting limit of 10 mg/L. No action was taken on this basis.

7.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP and were adjusted correctly for sample size and dilution factors. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the LCS results. The precision was acceptable, as demonstrated by the RPD values of the duplicate sample results.

All data, as reported, are acceptable for use.

DATA VALIDATION REPORT
Dissolved and Particulate Mercury Analyses
Whatcom Waterway RI
SDG No.: 1066BELL
Matrix: Water & Filter

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms, and all samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

The data for five pairs of field duplicate samples (HC-BC-101/HC-BC-101R, HC-BC-100/ HC-BC-100R, HC-SW-100/HC-SW-100R, HC-SW-101/HC-SW-101R, and HC-SW-99/ HC-SW-99R) were submitted and reviewed.

The relative percent difference (RPD) values for the dissolved mercury results ranged from 15.8% to 39.7% and were less than the QAPP acceptance limit of 50%. The RPD values for the particulate mercury results ranged from 5.5% to 68.3% with the following exception. The RPD value for the HC-SW-101/ HC-SW-101R (68.3%) was greater than the QAPP acceptance limit of 50%. Because these are only advisory limits, no action was taken.

See **Section 2.0, Blank Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The analytical holding time criterion of 28 days for mercury from the date of sampling to the date of analysis was met for all samples.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/With the following discussion.

Preparation blanks were digested with every batch of 20 or fewer samples, as required. Mercury was detected in the reagent blank for both the particulate mercury blank (0.000417 µg/filter) and the dissolved mercury blank (0.052 ng/L). The laboratory corrects all sample results for these blanks as part of their normal procedure. No action was taken on this basis.

One field blank, HC-FB-03, was submitted with this analytical batch. Mercury was detected at a concentration of 0.057 ng/L. The client performed field blank correction.

4.0. Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

Matrix spike (MS) and matrix spike duplicate (MSD) samples were prepared and analyzed by the laboratory at the required frequency (one for every 20 samples) for water samples.

The MS/MSD analysis for dissolved mercury was performed on Sample HC-BC-100. The %R values were 96% and 94%, MS/MSD, respectively, and were within the QAPP acceptance limits. A separate matrix spike analysis was not performed for the particulate mercury. No action was taken on this basis.

The MS/MSD RPD value (2%) was less than the QAPP acceptance limit of 20%.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control samples (LCS) and standard reference material (SRM) samples were analyzed with every batch of 20 or fewer samples.

The laboratory control sample %R value (99%) was acceptable.

Three SRMs, 1641c, PACS-1, and DOLT-2, were analyzed. The percent difference values (from the certified values) ranged from 1% to 22% and were within the acceptance limits for each SRM.

6.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. The reporting limits were adjusted correctly for sample size and dilution factors. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the %R values of the MS/MSD, LCS, and SRM results. Precision was acceptable, as demonstrated by compliant RPD values for the MS/MSD set.

The data, as reported, are acceptable for use.

DATA VALIDATION REPORT
TSS Analyses
Whatcom Waterway RI
SDG No.: 1066BELL
Matrix: Water

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms signed and dated. The field COC forms indicated no problem with sample receipt conditions. All samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for conventional analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

Although five pairs of field duplicate samples (HC-BC-101/HC-BC-101R, HC-BC-100/ HC-BC-100R, HC-SW-100/HC-SW-100R, HC-SW-101/HC-SW-101R, and HC-SW-99/ HC-SW-99R) were submitted to the laboratory, only one sample in each pair was analyzed for TSS. No action was taken.

See **Section 2.0, Blank Analyses** for a discussion of the field blanks.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **DATA QUALIFIER SUMMARY TABLE.**

Discussion:

The holding time criterion of 7 days from sample collection to analysis was exceeded by two days for all samples. All TSS results were qualified as estimated (E).

2.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were analyzed with every batch of 20 samples or less, as required. No analyte was detected in the blanks at concentrations greater than or equal to the reporting limits.

One field blank, HC-FB-03, was submitted with this analytical batch. As the TSS analysis was not originally requested, the laboratory used 1.0 mg/L as an estimated value for the field blank TSS result for purposes of calculating the particulate mercury value. This value was qualified as estimated (E).

3.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods. Accuracy was not evaluated since no information was available. The precision was acceptable, as demonstrated by the RPD values of the field duplicate sample results.

All sample results were qualified because holding times were greater than the holding time criterion.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Mercury Analyses
Whatcom Waterway RI
SDG No.: 702001
Matrix: Sediment

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms were signed and dated. No problem with sample receipt conditions was indicated on the field COC forms, and all samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for metal analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

Neither field duplicate samples, nor field blanks were submitted with this SDG.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The analytical holding time criteria of 28 days for mercury from the date of sampling to the date of analysis was met for all samples.

2.0 Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were digested with every batch of 20 samples or less, as required. No analyte was detected in the blanks at a concentration greater than or equal to the reporting limits.

4.0. Matrix Spike Sample Analyses: ACCEPTABLE/All criteria met.

A matrix spike (MS) sample was prepared and analyzed by the laboratory at the required frequency (one for every 20 samples). Sample HC-ST-101 in SDG 702001 was used as the matrix spike sample. The percent recovery (%R) was 132%, within the QAPP acceptance limits of 70% to 150%.

5.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

A laboratory duplicate sample was prepared and analyzed by the laboratory at the required frequency (one per 20 samples). Sample HC-ST-101 in SDG 702001 was used as the duplicate sample. The relative percent difference (RPD) was 10%, within the QAPP acceptance limit of 35%.

6.0 Laboratory Control Sample Analysis: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of 20 samples or less, as required. The %R value for this SDG was within the QAPP acceptance limits of 70% to 150%, at 110%. A blank spike sample was also analyzed, and the %R value was 101%.

7.0 Standard Reference Material Sample Analyses: NOT EVALUATED.

Standard reference material (SRM) samples were not prepared and analyzed by the laboratory for this SDG. No action was taken.

8.0 Serial Dilution Analyses: NOT EVALUATED.

9.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

Accuracy was acceptable, as demonstrated by the MS, LCS, and BS results. Precision was acceptable, as demonstrated by the laboratory duplicates.

The data, as reported, are acceptable for use.

DATA VALIDATION REPORT
Total Organic Carbon Analyses
Whatcom Waterway RI
SDG No.: 702001
Matrix: Sediment

I. CHAIN-OF-CUSTODY

Field Chain-of-Custody (COC) forms were present and complete, and all forms signed and dated. The field COC forms indicate no problem with sample receipt conditions. All samples listed were analyzed.

II. DELIVERABLES/DOCUMENTATION

All necessary data and documentation for conventional analyses were provided by the laboratory to meet QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line and the entry initialed and dated by analyst; correction fluid or tape was not found on any of the raw data; and, proper units for numerical values were used.

III. FIELD QUALITY CONTROL

Neither field duplicate samples, nor field blanks were submitted with this SDG.

IV. TECHNICAL ASSESSMENT

1.0 Sample Holding Times: ACCEPTABLE/All criteria met.

The holding time criterion of 28 days from sample collection to analysis for the TOC analysis was met for all samples.

2.0 Initial and Continuing Calibration: NOT EVALUATED.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Preparation blanks were analyzed with every batch of 20 samples or less, as required. No analyte was detected in the blanks at concentrations greater than or equal to the reporting limits.

4.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control sample (LCS) analysis was completed for every batch of twenty samples or less, as required. The %R value (96%) was within the advisory acceptance limits of 75% to 125%.

5.0 Matrix Spike Analyses: ACCEPTABLE/All criteria met.

A matrix spike (MS) sample was prepared and analyzed by the laboratory at the required frequency (one for every 20 samples). Sample HC-ST-101 in SDG 702001 was used as the matrix spike sample. The percent recovery (%R) was 110%, within the advisory limits of 75% to 125%.

6.0 Laboratory Duplicate Sample Analyses: ACCEPTABLE/All criteria met.

A duplicate sample was prepared and analyzed by the laboratory at the required frequency (one for every 20 samples). Sample HC-ST-101 in SDG 702001 was used as the duplicate sample. The relative percent difference (RPD) was 1%, within the advisory limit of 35%.

7.0 Standard Reference Material Sample Analyses: NOT EVALUATED.

Standard reference material (SRM) samples were not prepared and analyzed by the laboratory for this SDG. No action was taken.

8.0 Reporting Limits: ACCEPTABLE/All criteria met.

The reporting limits met those specified in the QAPP and were adjusted correctly for sample size and dilution factors. Laboratory flags were changed to reflect the SEDQUAL requirements.

V. OVERALL ASSESSMENT OF THE DATA

On the basis of this evaluation, the laboratory followed the specified analytical methods.

The accuracy was acceptable as demonstrated by the MS and BS results. The precision was acceptable as demonstrated by the RPD values of the duplicate sample results.

All data, as reported, are acceptable for use.

EcoChem, Inc.

Environmental Science and Chemistry

APPENDIX A
DATA QUALIFIER DEFINITIONS

DATA VALIDATION QUALIFIER CODES

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

B	Blank-corrected down to the detection limit.
C	Combined with unresolved substances.
E	Estimate.
U	Undetected at the detection limit shown.
W	Post digestion spike outside the control limits.
X	Recovery value less than 10%.
Z	Blank-corrected, still greater than the detection limit.

ATTACHMENT C-2
DATA VALIDATION REPORT
PHENOL ANALYSIS
SEDIMENT TRAP PARTICULATE MATTER

ATTACHMENT C-2
DATA VALIDATION REPORT
PHENOL ANALYSIS
SEDIMENT TRAP PARTICULATE MATTER

I. Deliverables/Documentation

The necessary data and documentation for analysis of phenols were provided by the laboratory to meet Whatcom Waterway project requirements.

II. Sample Holding Times Acceptable / All criteria met.

The extraction holding time criterion for frozen sediment samples is one year from the date of collection. The SPM samples were extracted within 77 days of sampling. All analyses were performed after extraction within the 40-day analytical holding time.

III. Blank Analyses Acceptable with the following discussion.

Method blanks were analyzed at the proper frequency of one per extraction batch. Benzoic acid was detected in the method blank at a concentration of 12 µg/kg, below the reporting limit. Associated sample results were greater than five times the blank contamination, so no data were qualified.

IV. Surrogate Recoveries Acceptable with the following discussion.

Surrogate recoveries were within control limits with the following exception. Recovery of 2,4,6-tribromophenol was above control limits for both project samples and MS/MSD samples. No data qualifiers were assigned based upon surrogates since all other surrogate recoveries for these samples were acceptable.

V. Matrix Spike/Matrix Spike Duplicate Analysis Acceptable with the following discussion.

Matrix spike and blank spike analysis were performed at the proper frequency of one per extraction batch. The MS/MSD analysis was performed on a project-specific sample. The recovery of 2,4-dimethyphenol in the blank spike was below control limits at 3%. However, MS/MSD recovery for this compound was acceptable, so no data were qualified based on blank spike recovery. Recovery of pentachlorophenol and phenol was above control limits in the MS/MSD. Sample results were not detected, so no data were qualified.

Recovery of 4-methyphenol in the MS/MSD was above control limits. However, the sample result was greater than the spike value, so no data were qualified. Benzyl alcohol was not recovered in the MS/MSD, but recovery of this compound in the blank spike was acceptable, so no data were qualified.

VI. Compound Quantitation and Sample Detection Limits Acceptable / All criteria met.

The sample detection limits on the sample results summary sheets met the project detection limit goals.

VII. Overall Assessment of the Data

On the basis of this evaluation, the laboratory followed the specified analytical method.

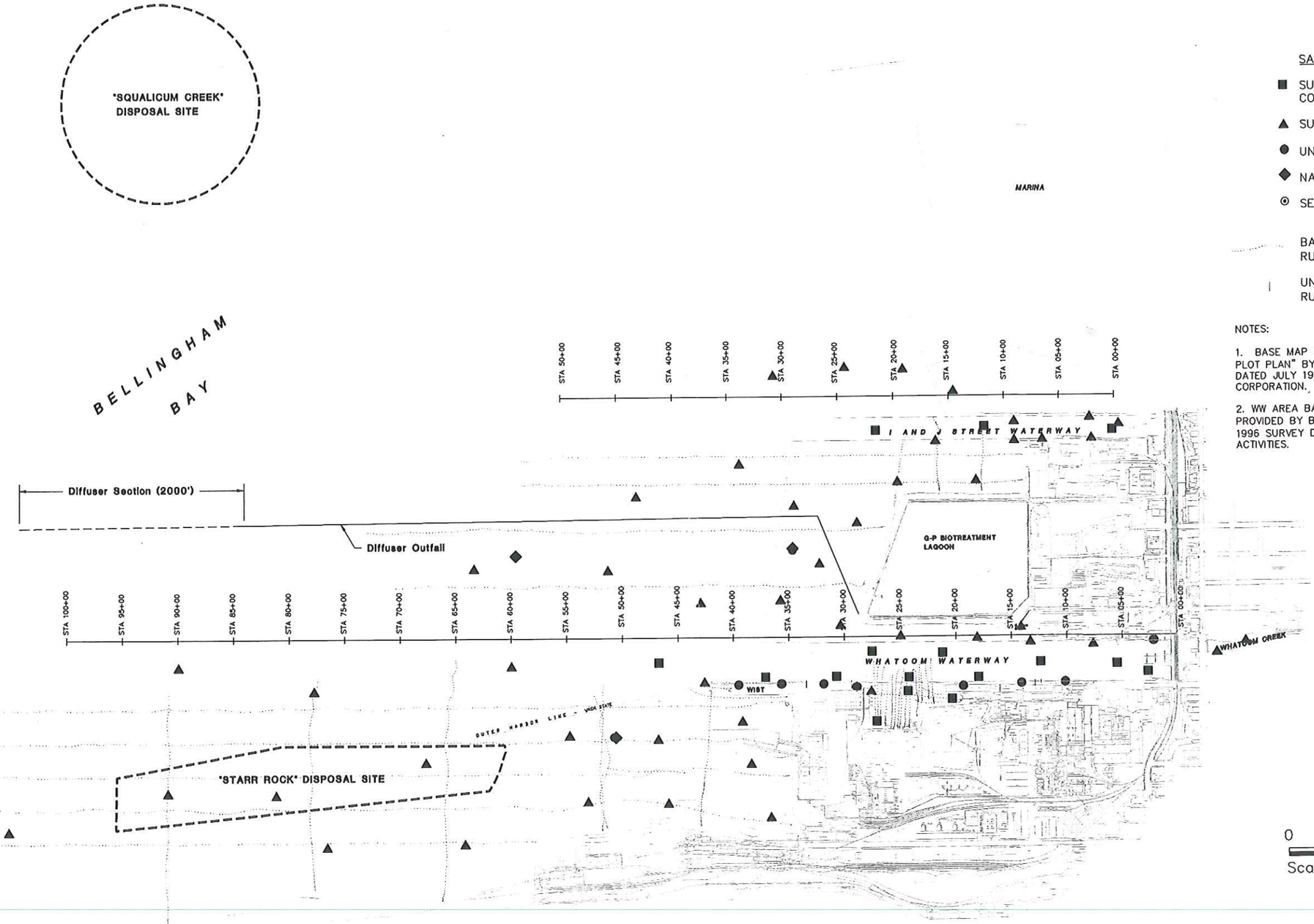
Accuracy was acceptable, as demonstrated by surrogate recovery. Several spike recoveries were out of control limits, but most blank spike recoveries were acceptable, so no data were qualified.

The data, as reported, are acceptable for use.

ATTACHMENT-C-2.DOC

Bathymetric Trackline Location Plan

Whatcom Waterway Area



SAMPLE LOCATION

- ■ SUBSURFACE SEDIMENT VIBRA CORE
- ▲ SURFACE SEDIMENT
- ● UNDERPIER/SLOPE DIVER CORE
- ◆ NATURAL RECOVERY CORE
- ⊙ SEDIMENT TRAP DEPLOYMENT

BATHYMETRIC TRANSECT SURVEY RUN LINE (BWE, 1996)

UNDERPIER TRANSECT SURVEY RUN LINE (BWE, 1996)

NOTES:

1. BASE MAP GENERATED FROM "BELLINGHAM MILLSITE PLOT PLAN" BY CASCADE AERIAL MAPS AND SURVEYS, INC. DATED JULY 1990, SUPPLIED BY GEORGIA-PACIFIC CORPORATION.

2. WW AREA BATHYMETRIC DATA AND TRANSECT LOCATIONS PROVIDED BY BLUE WATER ENGINEERING (BWE) SEPTEMBER 1996 SURVEY DURING WHATCOM WATERWAY RI/FS ACTIVITIES.

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0 1000 2000

Scale in Feet

HARTCROWSER

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Figure A-29

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