

**Table 4**  
**Port of Vancouver - Analytical Data**

Analyte	Screening Levels											Analytical results											
	Sediment Mgt. Standards <sup>1</sup>	Dredged Material Evaluation Framework			Model Toxic Control Act		NOAA SQuiRT <sup>2</sup>	WA Ecology Freshwater SQS		MacDonald <sup>3</sup>	POV-0102	POV-0308	POV-0409	POV-0510	POV-0611	POV-0712	POV-1318						
	SQS	SL	ML	MTCA1	MTCA2	Freshwater TEL	2003 LAET	2003 2LAET	Consensus-based PEC	10/13/06	10/12/06	10/12/06	10/12/06	10/13/06	10/13/06	10/13/06	10/13/06	10/13/06	10/13/06	10/18/06			
<b>Conventional Parameters</b>																							
Ammonia (mg/kg)	--	--	--	--	--	--	--	--	--	16	44	23	50	16	18								
Total Solids (%)	--	--	--	--	--	--	--	--	--	87	88	85	84	88	78								
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	--	0.74	J	0.93	0.84	1.0	0.62	J	0.66	J	0.67	J			
Total Organic Carbon (%) <sup>4</sup>	--	--	--	--	--	9.82	--	--	0.0502	U	0.0503	U	0.097	J	0.067	J	0.0503	U	0.0502	U	0.344	J	
Total Sulfides (mg/kg)	--	--	--	--	--	702	941	--	6.0	UJ	5.9	UJ	6.2	UJ	6.1	UJ	5.9	UJ	6.3	UJ	6.1	UJ	
<b>Metals (mg/kg)</b>																							
Antimony	--	150	200	--	--	--	0.6	1.9	--	0.069	JB M	0.09	M	0.085	M	0.081	M	0.038	JB M	0.074	JB M	0.084	M
Arsenic	57	57	700	20	20	5.9	31.4	50.9	33	1.3		1.1		0.89		1		1		1.1		0.98	
Cadmium	5.1	5.1	14	2	25	0.596	2.39	2.9	4.98	0.0039	U	0.0029	U	0.0043	U	0.0033	U	0.0042	U	0.0044	U	0.0044	U
Chromium	260	--	--	19	42	37.3	95	133	111	8.7		9.1		8.2		8.3		8.5		10		7.4	
Copper	390	390	1,300	--	100	35.7	619	829	149	8.1		7.1		7.3		6.9		8.6		8.7		6.8	
Lead	450	450	1,200	1,000	220	35.0	335	431	128	1.8		2		1.5		1.6		1.7		2		1.5	
Mercury	0.41	0.41	2.3	2	9	0.174	0.8	3.04	1.06	0.0078	U	0.0087	U	0.0078	U	0.042		0.02		0.019	M	0.0071	U
Nickel	--	140	370	--	1000	18.0	53.1	113	48.6	9.8		9.1		7.8		9.1		9.3		11		7.4	
Silver	6.1	6.1	8.4	--	--	0.545	3.5	--	0.04	M	0.032	M	0.041	M	0.034	M	0.034	M	0.038	M	0.038	M	
Zinc	410	410	3,800	--	270	123.1	683	1080	459	24		26		20		22		24		29		19	
<b>Organotins (ug/kg, bulk)</b>																							
Dibutyltin	--	--	--	--	--	--	--	--	--	0.13	UJ	0.13	UJ	0.14	UJ	0.14	UJ	0.13	UJ	0.15	UJ	0.14	UJ
Monobutyltin	--	--	--	--	--	--	--	--	--	0.08	UJ	0.082	UJ	0.084	UJ	0.087	UJ	0.081	UJ	0.089	UJ	0.088	UJ
Tetra-n-butyltin	--	--	--	--	--	--	--	--	--	0.4	UJ	0.41	UJ	0.43	UJ	0.44	UJ	0.41	UJ	0.45	UJ	0.45	UJ
Tributyltin (bulk)	--	75 (SEF)	--	--	--	--	--	--	--	0.43	UJ	0.44	UJ	0.45	UJ	0.47	UJ	0.43	UJ	0.47	UJ	0.47	UJ
<b>Polynuclear Aromatic Hydrocarbons (ug/kg)</b>																							
2-Methylnaphthalene	38	670	1,900	--	--	--	469	555	--	3.5	U	3.3	U	3.4	U	3.5	U	3.3	U	3.8	U	3.7	U
Acenaphthene	16	500	2,000	--	--	--	1060	1320	--	6.4	U	6.1	U	6.3	U	6.4	U	6.1	U	7	U	6.8	U
Acenaphthylene	66	560	1,300	--	--	--	470	640	--	2.6	U	2.5	U	2.6	U	2.6	U	2.5	U	2.8	U	2.8	U
Anthracene	220	960	13,000	--	--	--	1230	1580	845	4.9	U	4.6	U	4.8	U	4.8	U	4.6	U	5.3	U	5.2	U
Fluorene	23	540	3,600	--	--	--	1070	3850	536	2.9	U	2.8	U	2.9	U	2.9	U	2.8	U	3.2	U	3.1	U
Naphthalene	99	2,100	2,400	5,000	--	--	529	1310	561	6.4	U	6.1	U	6.3	U	6.4	U	6.1	U	7	U	6.8	U
Phenanthrene	100	1,500	21,000	--	30,000	41.9	6,100	7,570	1170	4.5	U	4.3	U	4.4	U	4.5	U	4.3	U	4.9	U	4.8	U
Total LPAH	370	5,200	29,000	--	--	--	6590	9200	--														
Benzo[a]anthracene	110	1,300	5,100	--	--	31.7	4260	5800	1050	7.3	U	6.9	U	7.2	U	7.3	U	6.9	U	8	U	7.8	U
Benzo[a]pyrene	99	1,600	3,600	2,000	--	31.9	3300	4810	1450	9.6	U	9.1	U	9.4	U	9.5	U	9.1	U	10	U	10	U
Benzo[g,h,i]perylene	31	670	3,200	--	--	--	4020	5200	--	8.2	U	7.8	U	8.1	U	8.2	U	7.8	U	9	U	8.8	U
Benzofluoranthene (b + k)	230	3,200	9,900	--	--	--	11000	13800	--	11	U	11	U	11	U	11	U	11	U	12	U	12	U
Chrysene	110	1,400	21,000	--	--	57.1	5940	6400	1290	8.5	U	8	U	8.3	U	8.4	U	8	U	9.3	U	9	U
Dibenzo(a,h)anthracene	12	230	1,900	--	--	--	800	839	--	14	U	13	U	13	U	13	U	13	U	15	U	1	

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## Note

Sediment samples are composites of material from two adjacent sampling stations. For example, POV-0102 is a composite of sediment collected at sampling stations POV-01 and POV-02, POV-0308 is a composite from stations POV-03 and POV-08, and so on.

-- Indicates no numerical criterion of this type for this chemical. nm = not measured

<sup>1</sup>Sediment Management Standard (WAC 173-204)

<sup>2</sup>NOAA SQuRT - NOAA Screening Quick Reference Tables, developed by the Coastal Protection & Restoration Division of NOAA

<sup>3</sup>MacDonald - *Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines*, EPA 905/R-00/007, June 2000

<sup>4</sup>TOC analyzed via two different methods; STI used the PSEEP Modified Lloyd-Kahn method; ABI used the Plumb, 1981 method.

SL = screening level, MI = maximum level, TEL = threshold effects level, LAET = lowest Apparent Effects Threshold

LL = compound not detected above the RL. H<sub>c</sub> sample analyzed outside holding time. L<sub>c</sub> estimated value. M<sub>c</sub> result is less than the RL but greater than or equal to

U = compound not detected above the RL. H = sample analyzed outside holding time. J = estimated value. M = result is less than the MDL and the concentration is an approximate value.

B = analyte detected in sample and method blank (organics). Result is less than the RL, but greater than detection limit (inorganics)

\* - duplicate sample analysis is not within control limits (inorganics)

- duplicate sample

January 2007

Table 4

# Port of Vancouver - Gateway Expansion Analytical Data

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Analyte	Screening Levels											Analytical results									
	Sediment Mgt. Standards <sup>1</sup>	Dredged Material Evaluation Framework	Model Toxic Control Act		NOAA SQuIRT <sup>2</sup>	WA Ecology Freshwater SQS		MacDonald <sup>3</sup>	POV-1419	POV-1520	POV-1621	POV-1722	POV-2328	POV-2328 DUP	POV-2429						
	SQS	SL	ML	MTCA1	MTCA2	Freshwater TEL	2003 LAET	2003 2LAET	Consensus-based PEC	10/18/06	10/17/06	10/17/06	10/16/06	10/19/06	10/19/06	10/19/06					
<b>Conventional Parameters</b>																					
Ammonia (mg/kg)	--	--	--	--	--	--	--	--	18	17	17	19	17	17	18						
Total Solids (%)	--	--	--	--	--	--	--	--	80	85	84	78	82	82	78						
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	0.63 J	0.63	0.6	1.2	0.63	0.64	0.63						
Total Organic Carbon (%) <sup>4</sup>	--	--	--	--	--	9.82	--	--	0.066 J	0.055 J	0.094 J	0.0503 U	0.158 J	0.074 J	0.142 J						
Total Sulfides (mg/kg)	--	--	--	--	--	702	941	--	6.2 UJ	6.0 UJ	6.0 UJ	6.8 UJ	6.8 UJ	6.2 UJ	6.0 UJ						
<b>Metals (mg/kg)</b>																					
Antimony	--	150	200	--	--	0.6	1.9	--	0.067 M	0.055 JB M	0.069 JB M	0.042 JB M	0.091 JB M	0.13 JB M	0.1 JB M						
Arsenic	57	57	700	20	20	5.9	31.4	50.9	33	1	1.3	1.3	2	1.2	1.1	1.5					
Cadmium	5.1	5.1	14	2	25	0.596	2.39	2.9	4.98	0.0043 U	0.0042 U	0.0043 U	0.0043 U	0.0045 U	0.0041 U	0.0046 U					
Chromium	260	--	--	19	42	37.3	95	133	111	7.2	7.2	7.9	11	7.4	8.5	8.6					
Copper	390	390	1,300	--	100	35.7	619	829	149	7	7.3	6.4	9.2	6.7	7.2	7.7					
Lead	450	450	1,200	1,000	220	35.0	335	431	128	1.6	1.7	1.7	2	2	2.3						
Mercury	0.41	0.41	2.3	2	9	0.174	0.8	3.04	1.06	0.0083 U	0.0076 U	0.0086 U	0.0083 U	0.0077 U	0.0071 U	0.0091 U					
Nickel	--	140	370	--	1000	18.0	53.1	113	48.6	7.9	9.3	8.3	11	8	8	9.5					
Silver	6.1	6.1	8.4	--	--	0.545	3.5	--	0.037 M	0.03 M	0.027 M	0.048 M	0.035 M	0.041 M	0.044 M						
Zinc	410	410	3,800	--	270	123.1	683	1080	459	21	22	22	30	25	27	27					
<b>Organotins (ug/kg, bulk)</b>																					
Dibutyltin	--	--	--	--	--	--	--	--	0.15 UJ	0.14 UJ	0.14 UJ	0.15 UJ	0.15 UJ	0.14 UJ	0.15 UJ						
Monobutyltin	--	--	--	--	--	--	--	--	0.089 UJ	0.085 UJ	0.083 UJ	0.089 UJ	0.088 UJ	0.086 UJ	0.093 UJ						
Tetra-n-butyltin	--	--	--	--	--	--	--	--	0.45 UJ	0.43 UJ	0.42 UJ	0.45 UJ	0.45 UJ	0.44 UJ	0.47 UJ						
Tributyltin (bulk)	--	75 (SEF)	--	--	--	--	--	--	0.48 UJ	0.46 UJ	0.44 UJ	0.47 UJ	0.47 UJ	0.46 UJ	0.49 UJ						
<b>Polynuclear Aromatic Hydrocarbons (ug/kg)</b>																					
2-Methylnaphthalene	38	670	1,900	--	--	469	555	--	3.8 U	3.2 U	3.6 U	3.8 U	3.5 U	3.7 U	3.9 U						
Acenaphthene	16	500	2,000	--	--	1060	1320	--	6.9 U	5.9 U	6.5 U	7 U	6.4 U	6.7 U	7.2 U						
Acenaphthylene	66	560	1,300	--	--	470	640	--	2.8 U	2.4 U	2.6 U	2.8 U	2.6 U	2.7 U	2.9 U						
Anthracene	220	960	13,000	--	--	1230	1580	845	5.2 U	4.4 U	4.9 U	5.3 U	4.8 U	5.1 U	5.4 U						
Fluorene	23	540	3,600	--	--	1070	3850	536	3.2 U	2.7 U	3 U	3.2 U	2.9 U	3.1 U	3.3 U						
Naphthalene	99	2,100	2,400	5,000	--	529	1310	561	6.9 U	5.9 U	6.5 U	7 U	6.4 U	6.7 U	7.2 U						
Phenanthrene	100	1,500	21,000	--	30,000	41.9	6,100	7,570	1170	4.8 U	4.1 U	4.6 U	4.9 U	4.5 U	4.7 U	5.1 U					
Total LPAH	370	5,200	29,000	--	--	6590	9200	--													
Benzo[a]anthracene	110	1,300	5,100	--	--	31.7	4260	5800	1050	7.9 U	6.7 U	7.4 U	8 U	7.3 U	7.7 U	8.2 U					
Benzo[a]pyrene	99	1,600	3,600	2,000	--	31.9	3300	4810	1450	10 U	8.7 U	9.7 U	10 U	9.6 U	10 U	11 U					
Benzo[g,h,i]perylene	31	670	3,200	--	--	4020	5200	--	8.8 U	7.5 U	8.4 U	9 U	8.2 U	8.6 U	9.2 U						
Benzofluoranthene (b + k)	230	3,200	9,900	--	--	11000	13800	--	12 U	10 U	11 U	12 U	11 U	12 U	13 U						
Chrysene	110	1,400	21,000	--	--	57.1	5940	6400	1290	9.1 U	7.7 U	8.6 U	9.2 U	8.4 U	8.9 U	9.5 U					
Dibenzo(a,h)anthracene	12	230	1,900	--	--	800	839	--	15 U	12 U	14 U	15 U	14 U	14 U	15 U						
Fluoranthene	160	1,700	30,000	--	--	111	11100	15000	2230	3.8 U	3.2 U	3.6 U	3.8 U	3.5 U	3.7 U	6.1 JM					
Indeno[1,2,3-cd]pyrene	34	600	16,000	--	--	4120	5300	--	15 U	12 U	14 U	15 U	14 U	14 U	15 U						
Pyrene	1,000	2,600	16,000	--	--	53	8790	16000	1520	3.3 U	2.8 U	3.1 U	3.3 U	3 U	3.2 U	7.6 JM					
Total HPAH	960	12,000	69,000	--	--	31640	54800	--													
<b>Chlorinated Hydrocarbons (ug/kg)</b>																					
1,2,4-Trichlorobenzene	0.81	31	64	--	--	--	--	--	12 U	10 U	11 U	12 U	11 U	12 U	13 U						
1,2-Dichlorobenzene	2.3	35	110	--	--	--	--	--	21 U	17 U	19 U	21 U	19 U	20 U	21 U						
1,4-Dichlorobenzene	3.1	110	120	--	--	--	--	--	9.2 U	7.8 U	8.7 U	9.3 U	8.6 U	9 U	9.6 U						
Hexachlorobenzene	0.38	22	230	--	--	--	--	--	0.18 UJ	0.17 U	0.16 U	0.23 U	0.21 U	0.22 U	0.23 U						

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	SQS	SL	ML	MTCA1	MTCA2	Freshwater TEL	2003 LAET	2003 2LAET	Consensus-based PEC	10/18/06	10/17/06	10/17/06	10/16/06	10/19/06	10/19/06	10/19/06				
<b>Phthalates (ug/kg)</b>																				
Bis(2-ethylhexyl) phthalate	47	8,300	--	--	--	--	2520	6380	--	290 U	250 U	270 U	300 U	270 U	280 U	300 U	300 U	300 U		
Butyl benzyl phthalate	4.9	970	--	--	--	--	260	366	--	35 U	30 U	33 U	36 U	33 U	34 U	37 U	34 U	37 U		
Diethyl phthalate	61	1,200	--	--	--	--	--	--	--	8.7 U	7.4 U	8.2 U	8.9 UJ	8.1 U	8.5 U	9.1 U	9.1 U	9.1 U		
Dimethyl phthalate	53	1,400	--	--	--	--	311	436	--	9.3 U	7.9 U	8.8 U	9.5 U	8.7 U	9.1 U	9.7 U	9.1 U	9.7 U		
Di-n-butyl phthalate	220	5,100	--	--	200,000	--	103	--	--	16 U	58 JB M	62 JB M	16 U	65 JB M	66 JB M	71 JB M	71 JB M	71 JB M		
Di-n-octyl phthalate	58	6,200	--	--	--	--	11	201	--	40 U	34 U	190 M	41 U	37 U	39 U	42 U	39 U	42 U		
<b>Phenols (ug/kg)</b>																				
2,4-Dimethylphenol	29	29	210	--	--	--	--	--	--	23 U	20 U	22 U	23 U	21 U	22 U	24 U	22 U	24 U		
2-Methylphenol	63	63	77	--	--	--	--	--	--	34 U	29 U	32 U	34 U	32 U	33 U	35 U	33 U	35 U		
3 & 4 Methylphenol	670	670	3,600	--	--	--	760	2360	--	64 U	55 U	61 U	65 U	60 U	63 U	67 U	63 U	67 U		
Pentachlorophenol	360	400	690	--	11,000	--	--	--	--	38 U	32 U	36 U	38 U	35 U	37 U	39 U	37 U	39 U		
Phenol	420	420	1,200	--	--	--	--	--	--	33 U	28 U	31 U	33 U	30 U	32 U	34 U	32 U	34 U		
<b>Miscellaneous Extractables (ug/kg)</b>																				
Benzoic acid	650	650	760	--	--	--	2910	3790	--	1000 U	850 U	950 U	1000 U	940 UJ	980 UJ	1000 UJ	980 UJ	1000 UJ		
Benzyl alcohol	57	57	870	--	--	--	--	--	--	36 U	31 U	34 U	37 U	34 U	35 U	38 U	35 U	38 U		
Dibenzofuran	15	540	1,700	--	--	--	399	443	--	21 U	17 U	19 U	21 U	19 U	20 U	21 U	20 U	21 U		
Hexachlorobutadiene	3.9	29	270	--	--	--	--	--	--	0.11 UJ	0.1 U	0.097 U	0.13 U	0.12 U	0.13 U	0.14 U	0.13 U	0.14 U		
N-Nitrosodiphenylamine	11	28	130	--	--	--	--	--	--	18 U	15 UJ	17 UJ	18 UJ	17 U	18 U	19 U	18 U	19 U		
<b>Pesticides (ug/kg)</b>																				
4,4'-DDD	--	--	--	--	--	3.54	96	--	28.0	0.27 UJ	0.25 U	0.24 U	0.33 U	0.31 U	0.33 U	0.34 U	0.33 U	0.34 U		
4,4'-DDE	--	--	--	--	--	1.42	21	--	31.3	0.23 UJ	0.21 U	0.21 U	0.29 U	0.26 U	0.28 U	0.29 U	0.28 U	0.29 U		
4,4'-DDT	--	--	--	--	--	--	19	--	62.9	0.26 UJ	0.25 U	0.24 U	0.33 U	0.3 U	0.32 U	0.34 U	0.32 U	0.34 U		
Total DDT	--	6.9	69	4,000	1,000	6.98	--	--	572	--	--	--	--	--	--	--	--	--		
Aldrin	--	10	--	--	170	--	--	--	--	0.11 UJ	0.1 U	0.097 U	0.13 U	0.12 U	0.13 U	0.14 U	0.13 U	0.14 U		
alpha-Chlordane	--	10	--	--	1,000	4.5	--	--	17.6	0.12 UJ	0.11 U	0.22 M	0.15 U	0.14 U	0.15 U	0.15 U	0.15 U	0.15 U		
Dieldrin	--	10	--	--	170	2.85	--	--	61.8	0.22 UJ	0.21 U	0.2 U	0.28 U	0.25 U	0.27 U	0.28 U	0.27 U	0.28 U		
gamma-BHC (Lindane)	--	10	--	10	--	0.94	--	--	4.99	0.12 UJ	0.11 U	0.11 U	0.15 U	0.13 U	0.14 U	0.15 U	0.14 U	0.15 U		
Heptachlor	--	10	--	--	--	0.6	--	--	16.0	0.13 UJ	0.13 U	0.12 U	0.17 U	0.15 U	0.16 U	0.17 U	0.16 U	0.17 U		
<b>Polychlorinated biphenyls (mg/kg)</b>																				
PCB-1016	--	--	--	--	--	--	--	--	--	0.0071 U	0.0062 U	0.0065 U	0.0072 UJ	0.007 U	0.0065 U	0.0074 U	0.0065 U	0.0074 U		
PCB-1221	--	--	--	--	--	--	--	--	--	0.0071 U	0.0062 U	0.0065 U	0.0072 U	0.007 U	0.0065 U	0.0074 U	0.0065 U	0.0074 U		
PCB-1232	--	--	--	--	--	--	--	--	--	0.0071 U	0.0062 U	0.0065 U	0.0072 U	0.007 U	0.0065 U	0.0074 U	0.0065 U	0.0074 U		
PCB-1242	--	--	--	--	--	--	--	--	--	0.0071 U	0.0062 U	0.0065 U	0.0072 U	0.007 U	0.0065 U	0.0074 U	0.0065 U	0.0074 U		
PCB-1248	--	--	--	--	--	--	--	--	--	0.0071 U	0.0062 U	0.0065 U	0.0072 U	0.007 U	0.0065 U	0.0074 U	0.0065 U	0.0074 U		
PCB-1254	--	--	--	--	--	--	230	294	--	0.0018 U	0.0016 U	0.0017 U	0.0019 U	0.0018 U	0.0017 U	0.0019 U	0.0017 U	0.0019 U		
PCB-1260	--	--	--	--	--	--	138	140	--	0.0018 U	0.0016 U	0.0017 U	0.0019 UJ	0.0018 U	0.0017 U	0.0019 U	0.0017 U	0.0019 U		
Total PCBs	12	0.13	3.1	10.0	2.0	0.0341	62	354	676	--	--	--	--	--	--	--	--	--		

Notes:

Sediment samples are composites of material from two adjacent sampling stations. For example, POV-0102 is a composite of sediment collected at sampling stations

POV-01 and POV-02, POV-0308 is a composite from stations POV-03 and POV-08, and so on.

-- Indicates no numerical criterion of this type for this chemical. nm = not measured

<sup>1</sup>Sediment Management Standard (WAC 173-204)

<sup>2</sup>NOAA SQuiRT - NOAA Screening Quick Reference Tables, developed by the Coastal Protection & Restoration Division of NOAA

<sup>3</sup>MacDonald - *Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines*, EPA 905/R-00/007. June 2000

<sup>4</sup>TOC analyzed via two different methods: STL used the PSEP Modified Lloyd-Kahn method; ARI used the Plumb, 1981 method.

**Table 4**  
**Port of Vancouver - Analytical Data**

Analyte	Screening Levels											Analytical results											
	Sediment Mgt. Standards <sup>1</sup>	Dredged Material Evaluation Framework			Model Toxic Control Act		NOAA SQuiRT <sup>2</sup> Freshwater	WA Ecology Freshwater SQS		MacDonald <sup>3</sup> Consensus-based PEC	POV-2530 10/18/06	POV-2631 10/17/06	POV-2732 10/16/06	POV-3338 10/19/06	POV-3439 10/18/06	POV-3540 10/17/06	POV-3641 10/17/06						
		SQS	SL	ML	MTCA1	MTCA2		TEL	2003 LAET														
<b>Conventional Parameters</b>																							
Ammonia (mg/kg)	--	--	--	--	--	--	--	--	--	18		17		18		17		18		17		17	
Total Solids (%)	--	--	--	--	--	--	--	--	--	79		83		78		82		78		84		83	
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	--	0.64	J	0.59		0.43		0.69		0.6	J	0.56		0.53	
Total Organic Carbon (%) <sup>4</sup>	--	--	--	--	--	9.82	--	--	nm		0.050	J	nm		0.208	J	0.179	J	0.084	J	0.126	J	
Total Sulfides (mg/kg)	--	--	--	--	--	702	941	--	6.3	UJ	6.2	UJ	6.3	UJ	6.6	UJ	6.4	UJ	6.1	UJ	6.1	UJ	
<b>Metals (mg/kg)</b>																							
Antimony	--	150	200	--	--	--	0.6	1.9	--	0.17	M	0.1	M	0.052	JB M	0.19	JB M	0.12	M	0.06	M	0.16	M
Arsenic	57	57	700	20	20	5.9	31.4	50.9	33	1.2		1		1.5		1.4		1.8		1.2		1.1	
Cadmium	5.1	5.1	14	2	25	0.596	2.39	2.9	4.98	0.0045	U	0.0043	U	0.0045	U	0.0034	U	0.0046	U	0.0044	U	0.0043	U
Chromium	260	--	--	19	42	37.3	95	133	111	6.9		7.3		9.8		8.2		7.6		7.2		7.9	
Copper	390	390	1,300	--	100	35.7	619	829	149	7		6.2		8.7		6.9		6.3		6.8		6.2	
Lead	450	450	1,200	1,000	220	35.0	335	431	128	1.7		1.9		2		2.6		2		2.1		2.1	
Mercury	0.41	0.41	2.3	2	9	0.174	0.8	3.04	1.06	0.0094	U	0.0074	U	0.0085	M	0.0074	U	0.01	U	0.009	U	0.068	
Nickel	--	140	370	--	1000	18.0	53.1	113	48.6	7.2		8.6		11		10		8		8.3		8	
Silver	6.1	6.1	8.4	--	--	0.545	3.5	--	0.049	M	0.027	M	0.042	M	0.04	M	0.036	M	0.038	M	0.022	M	
Zinc	410	410	3,800	--	270	123.1	683	1080	459	23		25		28		32		26		27		29	
<b>Organotins (ug/kg, bulk)</b>																							
Dibutyltin	--	--	--	--	--	--	--	--	--	0.15	UJ	0.14	UJ	0.15	UJ	0.14	UJ	0.15	UJ	0.14	UJ	0.14	UJ
Monobutyltin	--	--	--	--	--	--	--	--	--	0.091	UJ	0.083	UJ	0.089	UJ	0.086	UJ	0.092	UJ	0.086	UJ	0.083	UJ
Tetra-n-butyltin	--	--	--	--	--	--	--	--	--	0.46	UJ	0.42	UJ	0.45	UJ	0.44	UJ	0.47	UJ	0.44	UJ	0.42	UJ
Tributyltin (bulk)	--	75 (SEF)	--	--	--	--	--	--	--	0.49	UJ	0.45	UJ	0.48	UJ	0.46	UJ	0.49	UJ	0.46	UJ	0.44	UJ
<b>Polynuclear Aromatic Hydrocarbons (ug/kg)</b>																							
2-Methylnaphthalene	38	670	1,900	--	--	--	469	555	--	3.7	U	3	U	3.8	U	3.6	U	3.7	U	3.7	U	2.6	U
Acenaphthene	16	500	2,000	--	--	--	1060	1320	--	6.8	U	5.6	U	6.9	U	6.6	U	6.9	U	6.8	U	4.8	U
Acenaphthylene	66	560	1,300	--	--	--	470	640	--	2.7	U	2.3	U	2.8	U	2.7	U	2.8	U	2.7	U	2	U
Anthracene	220	960	13,000	--	--	--	1230	1580	845	5.1	U	4.2	U	5.2	U	5	U	5.2	U	5.1	U	3.6	U
Fluorene	23	540	3,600	--	--	--	1070	3850	536	3.1	U	2.6	U	3.2	U	3	U	3.1	U	3.1	U	2.2	U
Naphthalene	99	2,100	2,400	5,000	--	--	529	1310	561	6.8	U	5.6	U	6.9	U	6.6	U	6.9	U	6.8	U	4.8	U
Phenanthrene	100	1,500	21,000	--	30,000	41.9	6,100	7,570	1170	4.8	U	3.9	U	4.9	U	4.6	U	4.8	U	4.8	U	3.4	U
Total LPAH	370	5,200	29,000	--	--	--	6590	9200	--														
Benzo[a]anthracene	110	1,300	5,100	--	--	31.7	4260	5800	1050	7.7	U	6.4	U	7.9	U	7.5	U	7.9	U	7.7	U	5.5	U
Benzo[a]pyrene	99	1,600	3,600	2,000	--	31.9	3300	4810	1450	10	U	8.3	U	10	U	9.9	U	10	U	10	U	7.2	U
Benzo[g,h,i]perylene	31	670	3,200	--	--	--	4020	5200	--	8.7	U	7.2	U	8.9	U	8.5	U	8.8	U	8.7	U	6.2	U
Benzofluoranthene (b + k)	230	3,200	9,900	--	--	--	11000	13800	--	12	U	9.8	U	12	U	12	U	12	U	12	U	8.5	U
Chrysene	110	1,400	21,000	--	--	57.1	5940	6400	1290	8.9	U	7.4	U	9.1	U	8.7	U	9.1	U	8.9	U	6.4	U
Dibenzo(a,h)anthracene	12	230	1,900	--</td																			

**Table 4**  
**Port of Vancouver - Analytical Data**

## Note

Sediment samples are composites of material from two adjacent sampling stations. For example, POV-0102 is a composite of sediment collected at sampling stations POV-01 and POV-02, POV-0308 is a composite from stations POV-03 and POV-08, and so on.

-- Indicates no numerical criterion of this type for this chemical. nm = not measured

<sup>1</sup>Sediment Management Standard (WAC 173-204)

<sup>2</sup>NOAA SQuRT - NOAA Screening Quick Reference Tables, developed by the Coastal Protection & Restoration Division of NOAA

<sup>3</sup>MacDonald - *Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines*, EPA 905/R-00/007, June 2000

<sup>4</sup>TOC analyzed via two different methods: STI used the PSEP Modified Lloyd-Kahn method; ABI used the Plumb, 1981 method.

SL = screening level, MI = maximum level, TEL = threshold effects level, LAET = lowest Apparent Effects Threshold

SI = screening level; ME = maximum level; TEE = threshold effects level; LAET = Lowest Apparent Effects Threshold.

LL = compound not detected above the BL; H = sample analyzed outside holding time; L = estimated value; M = result is less than the reporting limit.

$\text{U}$  = compound not detected above the RE;  $\text{H}$  = sample analyzed outside holding time;  $\text{J}$  = estimated value;  $\text{M}$  = the MDL and the concentration is an approximate value.

B = analyte detected in sample and method blank (organics). Result is less than the RI, but greater than detection limit (inorganics).

B = analyte detected in sample and method blank (organics). Result is less than the RE but greater than detection limit (inorganics)

- duplicate sample analysis is not within control limits (inorganics)

Table 4

**Table 4**  
**Port of Vancouver - Analytical Data**

Analyte	Screening Levels											Analytical results									
	Sediment Mgt. Standards <sup>1</sup>	Dredged Material Evaluation Framework		Model Toxic Control Act		NOAA SQuiRT <sup>2</sup>	WA Ecology Freshwater SQS		MacDonald <sup>3</sup>	POV-3742		POV-4344		POV-4546		POV-4748		POV-4952		POV-5051	
	SQS	SL	ML	MTCA1	MTCA2	Freshwater TEL	2003 LAET	2003 2LAET	Consensus-based PEC	10/16/06	10/19/06	10/19/06	10/19/06	10/17/06	10/19/06	10/19/06	10/19/06	10/19/06	10/19/06	10/19/06	
<b>Conventional Parameters</b>																					
Ammonia (mg/kg)	--	--	--	--	--	--	--	--	--	17	17	17	17	17	17	18	17				
Total Solids (%)	--	--	--	--	--	--	--	--	--	85	84	84	83	J	80		85				
Total Volatile Solids (%)	--	--	--	--	--	--	--	--	--	0.55	0.65	0.61	0.66		0.62		0.63				
Total Organic Carbon (%) <sup>4</sup>	--	--	--	--	--	9.82	--	--	0.0502	U	nm	0.111	J	0.0504	U	0.061	J	0.091	J		
Total Sulfides (mg/kg)	--	--	--	--	--	702	941	--	6.9	UJ	5.9	UJ	6.6	UJ	6.8	UJ	6.5	UJ	6.5	UJ	
<b>Metals (mg/kg)</b>																					
Antimony	--	150	200	--	--	0.6	1.9	--	0.045	JB M	0.12	JB M	0.095	JB M	0.041	JB M	0.076	JB M	0.094	JB M	
Arsenic	57	57	700	20	20	5.9	31.4	50.9	33	1.3	0.93		1		1.2		1.2		1.2		
Cadmium	5.1	5.1	14	2	25	0.596	2.39	2.9	4.98	0.0042	U	0.0041	U	0.0045	U	0.0043	U	0.0042	U	0.0038	U
Chromium	260	--	--	19	42	37.3	95	133	111	9.9	7.2		8.4		8.1		8		7.5		
Copper	390	390	1,300	--	100	35.7	619	829	149	7.4	6.2		6.8		6.3		6.7		6.7		
Lead	450	450	1,200	1,000	220	35.0	335	431	128	2.1	2.3		2.2		2		2		2.7		
Mercury	0.41	0.41	2.3	2	9	0.174	0.8	3.04	1.06	0.0086	U	0.0086	U	0.0075	U	0.0071	U	0.0071	U	0.0088	U
Nickel	--	140	370	--	1000	18.0	53.1	113	48.6	10	7.2		9.1		9.2		9.8		7.5		
Silver	6.1	6.1	8.4	--	--	--	0.545	3.5	--	0.038	M	0.035	M	0.037	M	0.025	M	0.045	M	0.039	M
Zinc	410	410	3,800	--	270	123.1	683	1080	459	31	28		29		25		25		35		
<b>Organotins (ug/kg, bulk)</b>																					
Dibutyltin	--	--	--	--	--	--	--	--	--	0.14	UJ	0.14	UJ	0.14	UJ	0.14	UJ	0.14	UJ	0.13	UJ
Monobutyltin	--	--	--	--	--	--	--	--	--	0.082	UJ	0.084	UJ	0.084	UJ	0.085	UJ	0.088	UJ	0.081	UJ
Tetra-n-butyltin	--	--	--	--	--	--	--	--	--	0.42	UJ	0.43	UJ	0.43	UJ	0.43	UJ	0.44	UJ	0.41	UJ
Tributyltin (bulk)	--	75 (SEF)	--	--	--	--	--	--	--	0.44	UJ	0.45	UJ	0.45	UJ	0.46	UJ	0.47	UJ	0.43	UJ
<b>Polynuclear Aromatic Hydrocarbons (ug/kg)</b>																					
2-Methylnaphthalene	38	670	1,900	--	--	--	469	555	--	3.5	U	3.5	U	3.6	U	2.5	U	3.7	U	3.6	U
Acenaphthene	16	500	2,000	--	--	--	1060	1320	--	6.5	U	6.5	U	6.6	U	4.6	U	6.8	U	6.6	U
Acenaphthylene	66	560	1,300	--	--	--	470	640	--	2.6	U	2.6	U	2.7	U	1.9	U	2.8	U	2.6	U
Anthracene	220	960	13,000	--	--	--	1230	1580	845	4.9	U	4.9	U	5	U	3.5	U	5.2	U	5	U
Fluorene	23	540	3,600	--	--	--	1070	3850	536	3	U	2.9	U	3	U	2.1	U	3.1	U	3	U
Naphthalene	99	2,100	2,400	5,000	--	--	529	1310	561	6.5	U	6.5	U	6.6	U	4.6	U	6.8	U	6.6	U
Phenanthrene	100	1,500	21,000	--	30,000	41.9	6,100	7,570	1170	4.6	U	4.5	U	4.6	U	3.3	U	4.8	U	4.6	U
Total LPAH	370	5,200	29,000	--	--	--	6590	9200	--												
Benzo[a]anthracene	110	1,300	5,100	--	--	31.7	4260	5800	1050	7.4	U	7.4	U	7.5	U	5.3	U	7.8	U	7.5	U
Benzo[a]pyrene	99	1,600	3,600	2,000	--	31.9	3300	4810	1450	9.7	U	9.6	U	9.8	U	6.9	U	10	U	9.8	U
Benzo[g,h,i]perylene	31	670	3,200	--	--	--	4020	5200	--	8.3	U	8.3	U	8.4	U	6	U	8.8	U	8.4	U
Benzofluoranthene (b + k)	230	3,200	9,900	--	--	--	11000	13800	--	11	U	11	U	12	U	8.2	U	12	U	12	U
Chrysene	110	1,400	21,000	--	--	57.1	5940	6400	1290	8.6	U	8.5	U	8.7	U	6.1	U	9	U	8.6	U
Dibenzo(a,h)anthracene	12	230	1,900	--	--	--	800	839	--	14	U	14	U	14	U	9.8	U	14	U	14	U
Fluoranthene	160	1,700	30,000	--	--	111	11100	15000	2230	3.5	U	3.5	U	3.6	U	2.5	U	3.7	U	3.6	U
Indeno[1,2,3-cd]pyrene	34	600	16,000	--	--	--	4120	5300	--	14	U	14	U	14	U	9.8	U	14	U	14	U
Pyrene	1,000	2,600	16,000	--	--	53	8790	16000	1520	3.1	U	3.1	U	3.1	U	2.2	U	3.2	U	3.1	U
Total HPAH	960	12,000	69,000	--	--	--	31640	54800	--												
<b>Chlorinated Hydrocarbons (ug/kg)</b>																					
1,2,4-Trichlorobenzene	0.81	31	64	--	--	--	--	--	--	11	U	11	U	11	U	8.1	U	12	U	11	U
1,2-Dichlorobenzene	2.3	35	110	--	--	--	--	--	--	19	U	19	U	20	U	14	U	20	U	20	U
1,4-Dichlorobenzene	3.1	110	120	--	--	--	--	--	--	8.7	U	8.6	U	8.8	U	6.2	U	9.1	U	8.8	U
Hexachlorobenzene	0.38	22	230	--	--	--	--	--	--	0.2	U	0.2	U	0.2	U	0.18	U	0.23	U	0.2	U

Table 4

# Port of Vancouver - Gateway Expansion Analytical Data

**Table 4**  
**Port of Vancouver - Analytical Data**

Analyte	Screening Levels											Analytical results									
	Sediment Mgt. Standards <sup>1</sup>	Dredged Material Evaluation Framework		Model Toxic Control Act		NOAA SQuiRT <sup>2</sup> Freshwater TEL	WA Ecology Freshwater SQS		MacDonald <sup>3</sup> Consensus-based PEC	POV-3742		POV-4344		POV-4546		POV-4748		POV-4952		POV-5051	
		SQS	SL	ML	MTCA1	MTCA2	2003 LAET	2003 2LAET		10/16/06	10/19/06	10/19/06	10/17/06	10/19/06	10/19/06	10/19/06	10/19/06	10/19/06	10/19/06	10/19/06	
<b>Phthalates (ug/kg)</b>																					
Bis(2-ethylhexyl) phthalate	47	8,300	--	--	--	--	2520	6380	--	270	U	270	U	280	U	200	U	290	U	280	U
Butyl benzyl phthalate	4.9	970	--	--	--	--	260	366	--	33	U	33	U	33	U	24	U	35	U	33	U
Diethyl phthalate	61	1,200	--	--	--	--	--	--	--	8.2	UJ	8.2	U	8.3	U	5.9	U	8.6	U	8.3	U
Dimethyl phthalate	53	1,400	--	--	--	--	311	436	--	8.8	U	8.7	U	8.9	U	6.3	U	9.2	U	8.9	U
Di-n-butyl phthalate	220	5,100	--	--	200,000	--	103	--	--	15	U	63	JB M	66	JB M	48	JB M	71	JB M	65	JB M
Di-n-octyl phthalate	58	6,200	--	--	--	--	11	201	--	38	U	37	U	38	U	140	M	200	JB M	38	U
<b>Phenols (ug/kg)</b>																					
2,4-Dimethylphenol	29	29	210	--	--	--	--	--	--	22	U	22	U	22	U	15	U	23	U	22	U
2-Methylphenol	63	63	77	--	--	--	--	--	--	32	U	32	U	32	U	23	U	34	U	32	U
3 & 4 Methylphenol	670	670	3,600	--	--	--	760	2360	--	61	U	60	U	61	U	43	U	64	U	61	U
Pentachlorophenol	360	400	690	--	11,000	--	--	--	--	35	U	35	U	36	U	25	U	37	U	36	U
Phenol	420	420	1,200	--	--	--	--	--	--	31	U	31	U	31	U	22	U	32	U	31	U
<b>Miscellaneous Extractables (ug/kg)</b>																					
Benzoic acid	650	650	760	--	--	--	2910	3790	--	950	U	940	UJ	960	UJ	680	U	1000	UJ	960	UJ
Benzyl alcohol	57	57	870	--	--	--	--	--	--	34	U	34	U	35	U	24	U	36	U	35	U
Dibenzofuran	15	540	1,700	--	--	--	399	443	--	19	U	19	U	20	U	14	U	20	U	20	U
Hexachlorobutadiene	3.9	29	270	--	--	--	--	--	--	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.12	U
N-Nitrosodiphenylamine	11	28	130	--	--	--	--	--	--	17	UJ	17	U	17	U	12	UJ	18	U	17	U
<b>Pesticides (ug/kg)</b>																					
4,4'-DDD	--	--	--	--	--	3.54	96	--	28.0	0.3	U	0.3	U	0.29	U	0.26	U	0.33	U	0.3	U
4,4'-DDE	--	--	--	--	--	1.42	21	--	31.3	0.25	U	0.26	U	0.25	U	0.22	U	0.29	U	0.26	U
4,4'-DDT	--	--	--	--	--	--	19	--	62.9	0.29	U	0.3	U	0.29	U	0.26	U	0.33	U	0.3	U
Total DDT	--	6.9	69	4,000	1,000	6.98	--	--	572	--	--	--	--	--	--	--	--	--	--	--	--
Aldrin	--	10	--	--	170	--	--	--	--	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.12	U
alpha-Chlordane	--	10	--	--	1,000	4.5	--	--	17.6	0.13	U	0.13	U	0.13	U	0.12	U	0.15	U	0.13	U
Dieldrin	--	10	--	--	170	2.85	--	--	61.8	0.25	U	0.25	U	0.24	U	0.22	U	0.28	U	0.25	U
gamma-BHC (Lindane)	--	10	--	10	--	0.94	--	--	4.99	0.13	U	0.13	U	0.13	U	0.11	U	0.15	U	0.13	U
Heptachlor	--	10	--	--	--	0.6	--	--	16.0	0.15	U	0.15	U	0.15	U	0.13	U	0.17	U	0.15	U
<b>Polychlorinated biphenyls (mg/kg)</b>																					
PCB-1016	--	--	--	--	--	--	--	--	--	0.0067	UJ	0.0066	U	0.0065	U	0.0068	U	0.007	U	0.0064	U
PCB-1221	--	--	--	--	--	--	--	--	--	0.0067	U	0.0066	U	0.0065	U	0.0068	U	0.007	U	0.0064	U
PCB-1232	--	--	--	--	--	--	--	--	--	0.0067	U	0.0066	U	0.0065	U	0.0068	U	0.007	U	0.0064	U
PCB-1242	--	--	--	--	--	--	--	--	--	0.0067	U	0.0066	U	0.0065	U	0.0068	U	0.007	U	0.0064	U
PCB-1248	--	--	--	--	--	--	--	--	--	0.0067	U	0.0066	U	0.0065	U	0.0068	U	0.007	U	0.0064	U
PCB-1254	--	--	--	--	--	--	230	294	--	0.0017	U	0.0017	U	0.0017	U	0.0018	U	0.0018	U	0.0016	U
PCB-1260	--	--	--	--	--	--	138	140	--	0.0017	UJ	0.0017	U	0.0017	U	0.0018	U	0.0018	U	0.0016	U
Total PCBs	12	0.13	3.1	10.0	2.0	0.0341	62	354	676	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Sediment samples are composites of material from two adjacent sampling stations. For example, POV-0102 is a composite of sediment