Appendix D

Summary of Consensus and ER-M Screening Values

of Selected Chemicals in Sediment

(From 2006 Assessment Guidance Manual)

These screening values will remain effective until the publication of the 2008 Assessment Guidance Manual.

This page intentionally left almost blank!

Consensus Based Sediment Screening Values (SVs) for use in the assessment of freshwater aquatic life support. (From 2006 305[b]/303[d] Assessment Guidance)

Freshwater Consensus- Based Sediment Screening Values (SVs)

Analyte (Metals)	Consensus PEC (ppm) dry weight	99th Percentile
Arsenic	33	
Cadmium	4.98	
Chromium	111	
Copper	149	
Lead	128	
Mercury	1.06	
Nickel	48.6	
Silver	NA	2.6
Zinc	459	
Analyte (Organics/Pesticides)	**Consensus PEC (ppb) dry weight**	**99th Percentile**
Acenaphthene	NA	170
Acenaphthylene	NA	121
Anthracene	845	
Benzo-a-pyrene	1,450	
Benz(a)Anthracene	1,050	
Chrysene	1,290	
Dibenz[a,h]Anthracene	NA	318
Fluoranthene	2230	
Fluorene	536	
Methylnaphthalene, 2-	NA	83
Naphthalene	561	
Phenanthrene	1,170	
Pyrene	1,520	
LMW PAHs	NA	
HMW PAHs	NA	
Total PAHs	22,800	
Chlordane	17.6	
DDD	28	
DDE	31.3	
DDT	62.9	
DDT, total	572	
Dieldrin	61.8	
Total PCBs	676	
Endrin	207	
Heptachlor Epoxide	16	
Lindane	4.99	
PECs taken from MacDonald et al. 2000		
NA = Not Available		

Estuarine NOAA-based ER-M Sediment Screening Values (SVs)

• **Trace Elements –parts per million (ppm), dry weight**		
Substance	**ER-M Value**	**99th %tile**
(Metals)	**ppm (dry weight)**	(dry weight)
Antimony (Sb)	NA	
Arsenic (As)	70	
Beryllium	NA	5.0
Cadmium (Cd)	9.6	
Chromium (Cr)	370	
Copper (Cu)	270	
Lead (Pb)	218	
Manganese (Mn)	NA	
Mercury (Hg)	0.71	
Nickel (Ni)	51.6	
Selenium (Se)	NA	20.0
Silver (Ag)	3.7	
Thallium	NA	13.5
Zinc (Zn)	410	

• Pesticides and Other Organic Substances –parts per billion dry weight			
CAS #	Substance	ER-M Value (dry weight) (ppb)	99th %tile (dry weight)
1336363	Polychlorinated Biphenyls (PCBs)	180	
309002	Aldrin	NA	
57749	Chlordane	6	
NA	total DDT (include metabolites46.1		
72548	DDD	20	
50293	DDT	7	
72559	DDE	27	
60571	Dieldrin (EPA proposed criteria)	8	
72208	Endrin	NA	
76448	Heptachlor	NA	
1024573	Heptachlor epoxide	NA	
118741	Hexachlorobenzene	NA	
608731	Hexachlorocyclohexane	NA	
58899	Lindane	NA	
2385855	Mirex	NA	
108952	Phenol	NA	
117817	Di (2-Ehtylhexyl) Phthalate	NA	
84742	N-Butyl Phthalate	NA	
83329	Acenapthene	500	LMW PAH
208968	Acenapthylene	640	LMW PAH
120127	Anthracene	1100	LMW PAH
50328	Benzo-A-Pyrene	1600	HMW PAH
191242	Benzo [GHI] Perylene	NA	HMW PAH
56553	Benz[A] Anthracene	1600	HMW PAH
218019	Chrysene	2800	HMW PAH
53703	Dibenz [A,H] Anthracene	260	HMW PAH
206440	Fluoranthene	5100	HMW PAH
86737	Fluorene	540	LMW PAH
193395	Indeno (1,2,3-CD) Pyrene	NA	HMW PAH
91576	Methylnaphthalene , 2	670	LMW PAH
91203	Naphthalene	2100	LMW PAH
85018	Phenanthrene	1500	LMW PAH
129000	Pyrene	2600	HMW PAH
NA	Low Molecular Weight (LMW) PAH's	3160	
NA	High Molecular Weight (HMW) PAH's	9600	
NA	Total PAH's	44,792	

* Changes or updates to any of the ER-M or PEC screening values should be updated in the assessment spreadsheet used to calculate the estuarine weight of evidence.

DEQ acknowledges the use of the ER-M or PEC may be limited (for several reasons) in their ability to accurately predict biological effects. Given that DEQ continues to employ the collection of bulk sediment with chemical analysis as a cost-effective way to monitor a great number of sediment sites, these thresholds are an appropriate tool for assessing sediment data relative to its potential harm to aquatic life.

Citation:

Freshwater PECs: MacDonald, D.D., C.G. Ingersoll, T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. *Arch. Environ. Contam. Toxicol.* 39:20-31.

Estuarine ER-Ms: MacDonald, D.D., Long, E.R., Smith, S.L., Calder, F.D. 1993. Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments.