APPENDIX B-3

RELATIVE RISK COMPARISON VALUES

MARINE AND AQUATIC SEDIMENTS

The Relative Risk Comparison Values presented should be used to rank marine, estuarine, and fresh water sediments that may impact potential ecological receptors in these habitats. (Concerns regarding human exposures to contaminated sediments should be addressed using the data presented in Appendix B-1) These Comparison Values represent relatively conservative screening values and are not to be considered as "clean-up goals." Concentrations greater than the Comparison Value generally indicates the need for a more extensive, site-specific assessment. The National Oceanic and Atmospheric Administration [NOAA] values apply to marine and estuarine environments, while the data, obtained from the Ontario Ministry of Environment and Energy, have been widely used within DOD to assess fresh water systems.

Please note that synonyms have been added to Appendix B-3 to facilitate its use. In instances where no Chemical Abstract System (CAS) number was available, a unique identifier has been assigned to the analyte for database function purposes.

The Relative Risk Comparison Values will be formally updated as part of future Primer revisions to address new data issued from EPA or other sources. The Relative Risk Comparison Values will be posted on the Internet through the U.S. Army Center for Health Promotion and Preventative Medicine home page.

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RELATIVE RISK COMPARISON VALUES
Marine and Aquatic Sediment

Analyte	CAS Number	Marine ER-L (mg/kg) [a]	Freshwater LEL (mg/kg) [b]
Acenaphthene	83-32-9	1.50E-01	NA
Acenaphthylene	207-08-9	NA	2.40E-01
Aldrin	309-00-2	NA	2.00E-03
Anthracene	120-12-7	8.50E-02	2.20E-01
Anthracin	120-12-7	8.50E-02	2.20E-01
Antimony	7440-36-0	2.00E+00	NA
Arochlor 1016	12674-11-2	NA	7.00E-03
Arochlor 1248	RRSE-030	NA	3.00E-02
Arochlor 1254	11097-69-1	NA	6.00E-02
Arochlor 1260	RRSE-031	NA	5.00E-03
Aroclor	1336-36-3	5.00E-02	7.00E-02
Aroclor 1016	12674-11-2	NA	7.00E-03
Arsenic	7440-38-2	3.30E+01	6.00E+00
1,2-Benzacenaphthene	206-44-0	6.00E-01	7.50E-01
Benzene,1,2-(1,8-naphthylene)-	206-44-0	6.00E-01	7.50E-01
Benzo(a)Anthracene	56-55-3	2.30E-01	3.20E-01
Benzo(a)Pyrene	50-32-8	4.00E-01	3.70E-01
Benzo(def)Phenanthrene	129-00-0	3.50E-01	4.90E-01
Benzo(g,h,i)Perylene	198-55-0	NA	1.70E-01
Benzo(jk)Fluorene	206-44-0	6.00E-01	7.50E-01
Benzo(k)Fluoranthene	207-08-9	NA	2.40E-01
11,12-Benzofluoranthene	207-08-9	NA	2.40E-01
8,9-Benzofluoranthene	207-08-9	NA	2.40E-01
beta-Pyrene	129-00-0	3.50E-01	4.90E-01
BHC	608-73-1	NA	3.00E-03
alpha-BHC	319-84-6	NA	6.00E-03
beta-BHC	319-85-7	NA	5.00E-03
2,3,1',8'-Binaphthylene	207-08-9	NA	2.40E-01
Biphenyl, polychloro-	1336-36-3	5.00E-02	7.00E-02
Cadmium	7440-43-9	5.00E+00	6.00E-01
Carbazole	86-74-8	4.00E-01	3.40E-01
Chlordane	57-74-9	5.00E-04	7.00E-03
Chlordane, alpha- (2)	57-74-9	5.00E-04	7.00E-03
Chlordane, gamma-	57-74-9	5.00E-04	7.00E-03
Chlorinated Biphenyl	1336-36-3	5.00E-02	7.00E-02
Chromium	7440-47-3	8.00E+01	2.60E+01
Chrysene	218-01-9	6.00E-02	6.00E-02
Copper	7440-50-8	7.00E+01	1.60E+01
1,8-Cyclopenta(de)naphthalene	207-08-9	NA	2.40E-01
DDD	6088-51-3	1.00E-03	8.00E-03
4,4-DDD	6088-51-3	1.00E-03	8.00E-03
DDE	72-55-9	2.00E-03	5.00E-03
4,4-DDE	72-55-9	2.00E-03	5.00E-03
DDT	50-29-3	2.00E-03	8.00E-03
4,4-DDT	50-29-3	2.00E-03	8.00E-03
Dibenzo(a,h)Anthracene	218-01-9	6.00E-02	6.00E-02
Dibenzo(b,jk)fluorene	207-08-9	NA	2.40E-01
1,2,5,6-Dibenzonaphthalene	218-01-9	6.00E-02	6.00E-02
Dieldrin	60-57-1	2.00E-05	2.00E-03
Endrin	72-20-8	2.00E-05	3.00E-03
Fluoranthene	206-44-0	6.00E-01	7.50E-01
Fluorene	86-73-7	3.50E-02	1.90E-01

RELATIVE RISK COMPARISON VALUES
Marine and Aquatic Sediment

Analyte	CAS Number	Marine ER-L (mg/kg) [a]	Freshwater LEL (mg/kg) [b]
gamma-BHC	58-89-9	NA	3.00E-03
HCB	RRSE-032	NA	2.00E-02
HCH (alpha)	319-84-6	NA	6.00E-03
HCH (beta)	319-85-7	NA	5.00E-03
HCH (gamma) Lindane	58-89-9	NA	3.00E-03
HCH -technical	58-89-9	NA	3.00E-03
Heptachlor Epoxide	1024-57-3	NA	5.00E-03
1,2,3,4,5,6-Hexachlorocyclo-hexane (HCH) - Technical	608-73-1	NA	3.00E-03
1,2,3,4,5,6-Hexachlorocyclo-hexane (HCH), Alpha	319-84-6	NA	6.00E-03
1,2,3,4,5,6-Hexachlorocyclo-hexane (HCH), Beta	319-85-7	NA	5.00E-03
1,2,3,4,5,6-Hexachlorocyclo-hexane (HCH), Gamma - Lindane	58-89-9	NA	3.00E-03
Indeno(1,2,3-cd)Pyrene	86-73-7	NA	2.00E-01
Iron	7439-89-6	NA	2.00E+04
Lead	7439-92-1	3.50E+01	3.10E+01
Lindane	58-89-9	NA	3.00E-03
Manganese	7439-96-5	NA	4.60E+02
Mercury	7439-97-6	1.50E-01	2.00E-01
2-Methylnapthalene	91-57-6	6.50E-02	NA
Mirex	2385-85-5	NA	7.00E-03
Naphthalene	91-20-3	3.40E-01	NA
Nickel	7440-02-0	3.00E+01	1.60E+01
PAHs (total)	RRSE-033	4.00E+00	4.00E+00
Paranaphthalate	120-12-7	8.50E-02	2.20E-01
PCB	1336-36-3	5.00E-02	7.00E-02
PCB 1016	12674-11-2	NA	7.00E-03
PCBs	1336-36-3	5.00E-02	7.00E-02
Phenanthrene	85-01-8	2.25E-01	5.60E-01
Polychlorinated Biphenyls (PCBs)	1336-36-3	5.00E-02	7.00E-02
Polychlorobiphenyl	1336-36-3	5.00E-02	7.00E-02
Pyrene	129-00-0	3.50E-01	4.90E-01
Silver	7440-22-4	1.00E+00	NA
Total Kjeldahl Nitrogen	RRSE-034	NA	5.50E+02
Total Organic Carbon (%)	RRSE-035	NA	1.00E+00
Total Phosphorus	RRSE-036	NA	6.00E+02
Zinc	7440-66-6	1.20E+02	1.20E+02

RELATIVE RISK COMPARISON VALUES
Marine and Aquatic Sediment

Notes -

[a] - Obtained from: Long, Edward R. and Lee G. Morgan, NOAA Technical Memorandum NOS OMA 52, ***The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program***, August 1990.

ER-L - Environmental Response-Low, which represents a no-effects level (i.e., response noted in less than 5% of the observations)

[b] - Obtained from: Persaud, D., R. Jaagumagi, and A Hayton, Ontario Ministry of Environment and Energy, ***Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario***, August 1993.

LEL - Lowest Effect Level, which indicates a level of contamination which has an effect on less than 5% of the sediment-dwelling organisms observed