US EPA ARCHIVE DOCUMENT

Superfund Records Center
SITE: Centredale
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APPENDIX J

CHEMICAL-SPECIFIC BIOACCUMULATION FACTORS

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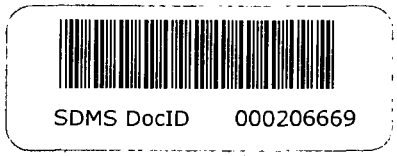

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TABLE J-1
SUMMARY OF BIOACCUMULATION FACTORS FOR WILDLIFE-BASED COPC SCREENING

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Analyte	log K_{ow} [a]	Terrestrial Plant [b]		Terrestrial Invertebrate [c]		Aquatic Plant [b]		Aquatic Invertebrate [d]		BSAF Fish [e]	
1,1'-Biphenyl	3.98	3.9E-02	2	1.0E+00	2	3.9E-02	2	1.0E+00	2	2.9E-01	4
Ethylbenzene	3.15	1.2E-01	2	1.1E+00	2	1.2E-01	2	1.1E+00	2	1.0E+00	4
n-Propylbenzene	3.69	5.7E-02	2	1.0E+00	2	5.7E-02	2	1.0E+00	2	5.9E-01	6
n-Butylbenzene	4.38	2.3E-02	2	1.0E+00	2	2.3E-02	2	1.0E+00	2	1.5E-01	6
m&p-Xylene	3.18	1.1E-01	2	1.1E+00	2	1.1E-01	2	1.1E+00	2	1.6E+00	6
1,3,5-Trimethylbenzene	3.42	8.2E-02	2	1.0E+00	2	8.2E-02	2	1.0E+00	2	1.0E+00	6
Total Xylenes	3.16	1.2E-01	2	1.1E+00	2	1.2E-01	2	1.1E+00	2	1.0E+00	4
sec-Butylbenzene	4.57	1.8E-02	2	1.0E+00	2	1.8E-02	2	1.0E+00	2	1.0E-01	6
o-Xylene	3.12	1.2E-01	2	1.1E+00	2	1.2E-01	2	1.1E+00	2	1.0E+00	4
1,2,4-Trimethylbenzene	3.63	6.2E-02	2	1.0E+00	2	6.2E-02	2	1.0E+00	2	6.7E-01	6
tert-Butylbenzene	4.11	3.3E-02	2	1.0E+00	2	3.3E-02	2	1.0E+00	2	2.6E-01	6
Isopropylbenzene	3.66	5.9E-02	2	1.0E+00	2	5.9E-02	2	1.0E+00	2	6.3E-01	6
p-Isopropyltoluene	4.10	3.3E-02	2	1.0E+00	2	3.3E-02	2	1.0E+00	2	2.6E-01	6
4-Bromophenyl-phenylether	4.94	1.1E-02	2	1.0E+00	2	1.1E-02	2	1.0E+00	2	1.0E+00	4
4-Chlorotoluene	3.33	9.2E-02	2	1.0E+00	2	9.2E-02	2	1.0E+00	2	1.2E+00	6
1,4-Dichlorobenzene	3.44	8.0E-02	2	1.0E+00	2	8.0E-02	2	1.0E+00	2	1.0E+00	4
Hexachlorobenzene	5.73	4.5E-03	2	1.1E+00	2	4.5E-03	2	1.1E+00	2	9.0E-02	2
1,2,4-Trichlorobenzene	4.02	3.8E-02	2	1.0E+00	2	3.8E-02	2	1.0E+00	2	1.0E+00	4
2,4-Dichlorophenol	3.06	1.3E-01	2	1.1E+00	2	1.3E-01	2	1.1E+00	2	2.0E+00	6
1,3-Dichlorobenzene	3.53	7.1E-02	2	1.0E+00	2	7.1E-02	2	1.0E+00	2	1.0E+00	4
4-Chloro-3-methylphenol	3.10	1.3E-01	2	1.1E+00	2	1.3E-01	2	1.1E+00	2	1.8E+00	6
1,2,3-Trichlorobenzene	4.05	3.3E-02	2	1.0E+00	2	3.3E-02	2	1.0E+00	2	2.6E-01	6
Pentachlorophenol	5.12	8.5E-03	2	1.0E+00	2	8.5E-03	2	1.0E+00	2	3.4E-02	6
2,4,6-Trichlorophenol	3.69	5.7E-02	2	1.0E+00	2	5.7E-02	2	1.0E+00	2	5.9E-01	6
2-Chlorotoluene	3.42	8.2E-02	2	1.0E+00	2	8.2E-02	2	1.0E+00	2	1.0E+00	6
1,2-Dichlorobenzene	3.43	8.1E-02	2	1.0E+00	2	8.1E-02	2	1.0E+00	2	1.0E+00	4
2,4,5-Trichlorophenol	3.72	5.5E-02	2	1.0E+00	2	5.5E-02	2	1.0E+00	2	5.6E-01	6
Anthracene	4.45	2.1E-02	2	1.0E+00	2	2.1E-02	2	1.0E+00	2	1.1E-01	3
Pyrene	4.88	1.2E-02	2	1.0E+00	2	1.2E-02	2	1.0E+00	2	5.1E-01	3
Benzo(g,h,i)perylene	6.63	1.1E-03	2	1.1E+00	2	1.1E-03	2	1.1E+00	2	4.7E-02	3
Indeno(1,2,3-cd)pyrene	6.70	1.0E-03	2	1.1E+00	2	1.0E-03	2	1.1E+00	2	2.8E-01	3
Benzo(b)fluoranthene	5.78	3.5E-03	2	1.1E+00	2	3.5E-03	2	1.1E+00	2	4.2E-01	3
Fluoranthene	5.16	8.1E-03	2	1.1E+00	2	8.1E-03	2	1.1E+00	2	8.0E-01	3
Benzo(k)fluoranthene	6.11	2.3E-03	2	1.1E+00	2	2.3E-03	2	1.1E+00	2	2.9E-01	3
Acenaphthylene	3.94	4.1E-02	2	1.0E+00	2	4.1E-02	2	1.0E+00	2	7.6E-01	3
Chrysene	5.81	3.4E-03	2	1.1E+00	2	3.4E-03	2	1.1E+00	2	4.4E-01	3
Benzo(a)pyrene	6.13	2.2E-03	2	1.1E+00	2	2.2E-03	2	1.1E+00	2	2.2E-01	3
Dibenzo(a,h)anthracene	6.75	9.7E-04	2	1.1E+00	2	9.7E-04	2	1.1E+00	2	3.8E-01	3
Benzo(a)anthracene	5.76	3.6E-03	2	1.1E+00	2	3.6E-03	2	1.1E+00	2	3.4E-01	3
Acenaphthene	3.92	4.2E-02	2	1.0E+00	2	4.2E-02	2	1.0E+00	2	3.0E-02	3
Phenanthrene	4.46	2.0E-02	2	1.0E+00	2	2.0E-02	2	1.0E+00	2	3.0E-01	3
Fluorene	4.18	3.0E-02	2	1.0E+00	2	3.0E-02	2	1.0E+00	2	9.6E-01	3
Naphthalene	3.30	9.6E-02	2	1.0E+00	2	9.6E-02	2	1.0E+00	2	2.6E+00	3
Dibenzofuran	4.12	3.2E-02	2	1.0E+00	2	3.2E-02	2	1.0E+00	2	1.0E+00	4
Perylene	6.25	1.9E-03	2	1.1E+00	2	1.9E-03	2	1.1E+00	2	1.6E+00	3
2,6-Dimethylnaphthalene	4.31	2.5E-02	2	1.0E+00	2	2.5E-02	2	1.0E+00	2	1.7E-01	6
1-Methylnaphthalene	3.87	4.5E-02	2	1.0E+00	2	4.5E-02	2	1.0E+00	2	4.2E-01	6
2-Methylnaphthalene	3.86	4.5E-02	2	1.0E+00	2	4.5E-02	2	1.0E+00	2	4.7E+00	3
2-Chloronaphthalene	3.90	4.3E-02	2	1.0E+00	2	4.3E-02	2	1.0E+00	2	3.9E-01	6
Bis(2-ethylhexyl)phthalate	7.60	3.1E-04	2	1.1E+00	2	3.1E-04	2	1.1E+00	2	1.0E+00	4
Di-n-octylphthalate	8.10	1.6E-04	2	1.1E+00	2	1.6E-04	2	1.1E+00	2	1.0E+00	4

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Di-n-Butylphthalate	4.50	1.9E-02	2	1.0E+00	2	1.9E-02	2	1.0E+00	2	1.0E+00	4
Butylbenzylphthalate	4.73	1.4E-02	2	1.0E+00	2	1.4E-02	2	1.0E+00	2	1.0E+00	4
3,3'-Dichlorobenzidine	3.51	7.2E-02	2	1.0E+00	2	7.2E-02	2	1.0E+00	2	8.4E-01	6
N-Nitroso-diphenylamine	3.13	1.2E-01	2	1.1E+00	2	1.2E-01	2	1.1E+00	2	1.7E+00	6
alpha-BHC	3.80	5.1E-02	2	1.0E+00	2	5.1E-02	2	1.0E+00	2	2.5E+00	2
beta-BHC	3.78	5.1E-02	2	1.0E+00	2	5.1E-02	2	1.0E+00	2	1.8E+00	4
delta-BHC	4.14	3.1E-02	2	1.0E+00	2	3.1E-02	2	1.0E+00	2	1.2E+00	3
4,4'-DDT	6.91	1.4E-03	2	1.1E+00	2	1.4E-03	2	1.1E+00	2	1.7E+00	2
gamma-BHC	3.72	5.9E-02	2	1.0E+00	2	5.9E-02	2	1.0E+00	2	6.9E-01	2
Methoxychlor	5.08	9.0E-03	2	1.0E+00	2	9.0E-03	2	1.0E+00	2	1.2E+00	3
4,4'-DDD	6.02	2.4E-03	2	1.1E+00	2	2.4E-03	2	1.1E+00	2	2.8E-01	2
4,4'-DDE	6.51	9.6E-04	2	1.1E+00	2	9.6E-04	2	1.1E+00	2	7.7E+00	2
Toxaphene	5.90	3.0E-03	2	1.1E+00	2	3.0E-03	2	1.1E+00	2	1.8E+00	4
Heptachlor epoxide	4.98	1.0E-02	2	1.0E+00	2	1.0E-02	2	1.0E+00	2	6.5E-01	3
Endosulfan sulfate	3.66	5.9E-02	2	1.0E+00	2	5.9E-02	2	1.0E+00	2	2.7E+00	3
Aldrin	6.50	1.4E-03	2	1.1E+00	2	1.4E-03	2	1.1E+00	2	1.8E+00	4
Endosulfan II	3.83	4.7E-02	2	1.0E+00	2	4.7E-02	2	1.0E+00	2	1.8E+00	4
alpha-Chlordane	6.10	2.6E-03	2	1.1E+00	2	2.6E-03	2	1.1E+00	2	4.8E+00	2
gamma-Chlordane	6.22	2.6E-03	2	1.1E+00	2	2.6E-03	2	1.1E+00	2	2.2E+00	2
gamma-Chlordane	6.22	2.6E-03	2	1.1E+00	2	2.6E-03	2	1.1E+00	2	2.2E+00	2
Endrin ketone	4.99	1.0E-02	2	1.0E+00	2	1.0E-02	2	1.0E+00	2	4.4E-02	6
Technical Chlordane	6.16	2.6E-03	2	1.1E+00	2	2.6E-03	2	1.1E+00	2	2.0E+00	2
Dieldrin	5.40	6.7E-03	2	1.1E+00	2	6.7E-03	2	1.1E+00	2	6.7E+00	2
Endrin	5.20	7.6E-03	2	1.1E+00	2	7.6E-03	2	1.1E+00	2	1.8E+00	4
Endrin aldehyde	4.80	1.3E-02	2	1.0E+00	2	1.3E-02	2	1.0E+00	2	6.5E-02	6
Heptachlor	6.10	2.3E-03	2	1.1E+00	2	2.3E-03	2	1.1E+00	2	1.8E+00	4
Endosulfan I	3.83	4.7E-02	2	1.0E+00	2	4.7E-02	2	1.0E+00	2	1.8E+00	4
Dinoseb	3.56	6.8E-02	2	1.0E+00	2	6.8E-02	2	1.0E+00	2	7.6E-01	6
2,4,5-T	3.31	9.5E-02	2	1.0E+00	2	9.5E-02	2	1.0E+00	2	1.2E+00	6
MCPA	3.25	1.0E-01	2	1.0E+00	2	1.0E-01	2	1.0E+00	2	1.4E+00	6
2,4-DB	3.53	7.1E-02	2	1.0E+00	2	7.1E-02	2	1.0E+00	2	8.1E-01	6
Dichlorprop	3.43	8.1E-02	2	1.0E+00	2	8.1E-02	2	1.0E+00	2	9.8E-01	6
MCPP	3.13	1.2E-01	2	1.1E+00	2	1.2E-01	2	1.1E+00	2	1.7E+00	6
2,4,5-TP (Silvex)	3.80	4.9E-02	2	1.0E+00	2	4.9E-02	2	1.0E+00	2	4.8E-01	6
Aroclor-1260	7.55	3.4E-04	2	1.1E+00	2	3.4E-04	2	1.1E+00	2	2.3E-01	5
Aroclor-1254	6.50	1.4E-03	2	1.1E+00	2	1.4E-03	2	1.1E+00	2	8.1E-01	3
Aroclor-1268	7.55	3.4E-04	2	1.1E+00	2	3.4E-04	2	1.1E+00	2	2.3E-01	5
Aroclor-1221	4.65	1.6E-02	2	1.0E+00	2	1.6E-02	2	1.0E+00	2	1.6E-02	5
Aroclor-1232	4.40	2.2E-02	2	1.0E+00	2	2.2E-02	2	1.0E+00	2	3.8E-03	5
Aroclor-1248	6.20	2.0E-03	2	1.1E+00	2	2.0E-03	2	1.1E+00	2	1.6E+00	5
Aroclor-1016	5.69	4.0E-03	2	1.1E+00	2	4.0E-03	2	1.1E+00	2	7.7E-01	5
Aroclor, Total	7.10	6.1E-04	2	1.1E+00	2	6.1E-04	2	1.1E+00	2	8.0E-01	5
Polychlorinated biphenyls (PCBs)	7.10	2.2E-03	2	1.1E+00	2	2.2E-03	2	1.1E+00	2	1.9E+00	2
Aroclor-1262	7.55	3.4E-04	2	1.1E+00	2	3.4E-04	2	1.1E+00	2	2.3E-01	5
Aroclor-1242	6.34	1.7E-03	2	1.1E+00	2	1.7E-03	2	1.1E+00	2	1.7E+00	5
Mercury (methyl)	0.08	1.8E-01	3	3.4E-01	3	1.8E-01	3	3.4E-01	4	-	
Aluminum	-	5.7E-04	3	8.6E-03	3	5.7E-04	3	8.6E-03	4	-	
Lead	0.73	1.9E-02	3	1.0E-01	3	1.9E-02	3	6.6E-02	3	6.6E-02	7
Magnesium	-0.57	1.6E-01	3	3.4E-02	3	1.6E-01	3	3.4E-02	4	-	
Manganese	0.23	1.6E-02	3	4.3E-02	3	1.6E-02	3	4.3E-02	4	-	
Mercury	0.62	2.6E-02	3	4.7E-02	3	2.6E-02	3	4.0E+00	3	4.0E+00	7

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Molybdenum	0.23	5.0E-02	3	1.9E-01	3	5.0E-02	3	1.9E-01	4	-	
Nickel	-0.57	1.2E-02	3	2.1E-01	3	1.2E-02	3	4.6E+00	3	4.6E+00	7
Silver	0.23	2.8E-03	3	4.1E-01	3	2.8E-03	3	4.1E-01	4	-	
Thallium	0.23	8.0E-04	3	-		8.0E-04	3	-		-	
Antimony	0.73	2.0E-03	3	-		2.0E-03	3	-		-	
Arsenic	0.68	1.0E-02	3	2.5E-02	3	1.0E-02	3	1.3E-01	3	1.3E-01	7
Barium	0.23	3.1E-02	3	1.8E-02	3	3.1E-02	3	1.8E-02	4	-	
Beryllium	-0.57	2.0E-03	3	9.0E-03	3	2.0E-03	3	9.0E-03	4	-	
Cadmium	-0.07	4.4E-02	3	1.0E+00	3	4.4E-02	3	4.6E-01	3	4.6E-01	7
Chromium	0.23	8.2E-03	3	6.1E-02	3	8.2E-03	3	1.2E+01	3	1.2E+01	7
Cobalt	0.23	1.5E-03	3	2.4E-02	3	1.5E-03	3	2.4E-02	4	-	
Copper	-0.57	9.7E-02	3	2.0E-01	3	9.7E-02	3	7.4E+01	3	7.4E+01	7
Vanadium	-	9.7E-04	3	8.4E-03	3	9.7E-04	3	8.4E-03	4	-	
Zinc	-0.47	3.5E-01	3	3.6E+00	3	3.5E-01	3	2.2E+02	3	2.2E+02	7
Selenium	0.24	1.3E-01	3	1.0E-01	3	1.3E-01	3	1.0E-01	4	-	
Carbazole	3.72	5.5E-02	2	1.0E+00	2	5.5E-02	2	1.0E+00	2	5.6E-01	6

NOTES:

Units for bioaccumulation factors (BAFs) are mg/kg wet weight tissue over mg/kg dry weight sediment/soil.

Assumed that organic compounds with LogK_{ow} < 3.0 do not significantly accumulate in biological tissue.

[a] Octanol-water partition coefficients obtained from the SRS Interactive LogK_{ow} database.

[b] Basis for plant uptake factors:

1. Bioaccumulation assumed to be zero for organic analytes with LogK_{ow}s <3.0.
2. Calculated using the following equation from Travis and Arms (1988): log (Plant Uptake Factor) = 1.588 - 0.578 Log10K_{ow}. Estimate converted to wet-weight by multiplying by a factor of 0.2 assuming forage is 80% water.
3. Selected BAFs for uptake of inorganics from soil to plants were derived from information provided in Sample et al., 1998 and Baes et al., 1984. Preference was given to recommended regression estimates, then median values derived for the full ORNL dataset. Available Baes et al.(1984) Bv values were used for those analytes lacking ORNL data. Estimates based on the following soil concentrations (ug/g dw): 10,10,10,10,10,10,10 and 10 for, arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc, respectively.

[c] Basis for terrestrial invertebrate uptake factors:

1. Bioaccumulation assumed to be zero for organic analytes with LogK_{ow}s <3.0.
2. Calculated using soil water to invertebrate equilibrium partitioning model (Jager, 1998); model estimated BCFs were divided by the soil partition coefficient to derive the BSAF. Units in kgsoil/kgworm. Model was parameterized with bulk density (water,lipid) and fraction water values as presented in Jager, 1998. Soil organic carbon content assumed to be 0 percent. BSAF not estimated for analytes with LogK_{ow}s < 1 (Jager, 1998).
3. BAFs for uptake of inorganics from soil to invertebrates were derived from information summarized in Sample et al., 1998. ORNL regression estimates based on the following soil concentrations (ug/g dw): 10,10,10,10,10,10,10,10 and 10 for, arsenic, cadmium, copper, lead, manganese, mercury, nickel, selenium, and zinc, respectively.

[d] Basis for aquatic invertebrate uptake factors:

1. Bioaccumulation assumed to be zero for organic analytes with LogK_{ow}s <3.0.
2. Calculated using soil water to invertebrate equilibrium partitioning model (Jager, 1998); model estimated BCFs were divided by the soil partition coefficient to derive the BSAF. Units in kgsoil/kgworm. Model was parameterized with bulk density (water,lipid) and fraction water values as presented in Jager, 1998. Soil organic carbon content assumed to be 0 percent. BSAF not estimated for analytes with LogK_{ow}s < 1 (Jager, 1998).
3. Values as recommended in Sample et al., (1998); regression estimates based on the following sediment concentrations (ug/g dry weight): 10,10,10 and 10 for chromium, copper, nickel and zinc, respectively.
4. BAFs for uptake of inorganics from soil to invertebrates were derived from information summarized in Sample et al., 1998. Regression estimates based on the following soil concentrations (ug/g dw): 10,10,10,10,,10,10,10 and 10 for, arsenic, cadmium, copper, lead, manganese, mercury, nickel, selenium, and zinc, respectively.

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[e] Basis for BSAFs for fish:

1. Bioaccumulation assumed to be zero for organic analytes with LogK_{ow}s <3.0.
2. Selected BSAFs as summarized in USEPA (1998).
3. Overall mean value from USCOE, 2003 (www.wes.army.mil/el/bsaf/bsaf.html)
4. BSAFs presented in USEPA, 1997.
5. BSAFs derived using regression equations provided in PTI (2000).
6. BSAFs calculated using equilibrium-partitioning assumptions and a water-fish QSAR prediction model.
7. BSAFs for inorganic analytes were derived for aquatic invertebrates based on recommended values in Sample et al., 1998.

Prepared by: SGD
Checked by: NAR

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TABLE J-2

SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS											
	CRAYFISH[a]				SEDIMENT[b]				STUDY AREA BSAFs[c]			
PARAMETER	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
HCX	7	12	8.5E-03	2.4E-03	11	11	2.5E+00	4.5E-01	1.1E+00	2.3E-01	1.4E-01	160%
2,3,7,8-TCDD	10	12	9.8E-03	3.1E-03	8	11	6.0E-02	1.3E-02	1.8E+00	6.2E-01	2.9E-01	86%
1,2,3,7,8-PeCDD	2	12	9.7E-05	5.0E-05	7	11	1.1E-04	3.7E-05	1.9E+01	3.5E+00	2.9E+01	153%
1,2,3,4,7,8-HxCDD	2	12	1.0E-04	5.5E-05	10	11	1.5E-04	6.5E-05	5.3E+00	1.2E+00	2.1E+00	118%
1,2,3,6,7,8-HxCDD	6	12	1.0E-04	3.8E-05	10	11	7.2E-04	2.6E-04	2.3E+00	3.4E-01	4.6E-01	196%
1,2,3,7,8,9-HxCDD	4	12	1.0E-04	4.5E-05	9	11	5.3E-04	2.2E-04	1.5E+00	3.6E-01	1.9E-01	121%
1,2,3,4,6,7,8-HpCDD	10	12	1.1E-04	5.9E-05	10	11	1.6E-02	5.0E-03	1.1E-01	2.2E-02	8.6E-04	131%
OCDD	4	12	3.9E-04	1.7E-04	10	11	1.1E-01	3.6E-02	2.0E-02	8.7E-03	2.8E-05	61%
2,3,7,8-TCDF	11	12	3.2E-05	2.4E-05	10	11	3.7E-04	1.5E-04	5.1E-01	2.5E-01	2.8E-02	68%
1,2,3,7,8-PeCDF	2	12	1.0E-04	5.4E-05	7	11	5.0E-05	3.0E-05	2.1E+01	3.5E+00	3.4E+01	166%
2,3,4,7,8-PeCDF	3	12	1.0E-04	5.1E-05	9	11	2.5E-04	7.4E-05	4.8E+00	1.3E+00	2.5E+00	121%
1,2,3,4,7,8-HxCDF	9	12	6.3E-05	2.0E-05	10	11	3.7E-04	1.7E-04	8.4E-01	1.7E-01	6.7E-02	149%
1,2,3,6,7,8-HxCDF	5	12	1.0E-04	4.2E-05	10	11	2.8E-04	1.3E-04	5.3E+00	6.9E-01	2.4E+00	225%
2,3,4,6,7,8-HxCDF	4	12	1.0E-04	4.6E-05	10	11	2.4E-04	9.9E-05	1.5E+00	5.5E-01	2.5E-01	92%
1,2,3,4,6,7,8-HpCDF	11	12	1.0E-04	2.9E-05	11	11	1.1E-02	2.5E-03	4.4E-02	1.6E-02	1.3E-04	71%
1,2,3,4,7,8,9-HpCDF	2	12	1.0E-04	5.6E-05	9	11	1.8E-04	8.1E-05	9.8E+00	1.6E+00	7.6E+00	172%
OCDF	10	12	1.7E-04	5.2E-05	11	11	9.4E-03	3.2E-03	9.9E-02	2.6E-02	8.1E-04	110%
Total TCDD	11	12	9.8E-03	3.1E-03	8	11	6.0E-02	1.3E-02	1.8E+00	6.6E-01	3.1E-01	85%
Total PeCDD	3	12	9.7E-05	4.6E-05	10	11	3.0E-04	1.5E-04	9.9E-01	4.2E-01	8.3E-02	69%
Total HxCDD	8	12	1.0E-04	4.2E-05	9	11	4.5E-03	1.8E-03	2.0E-01	4.3E-02	3.2E-03	132%
Total HpCDD	8	12	1.2E-04	7.6E-05	9	11	3.5E-02	1.1E-02	2.7E-02	1.2E-02	5.3E-05	62%
Total TCDF	12	12	1.2E-04	6.1E-05	10	11	1.6E-03	7.0E-04	6.0E-01	1.7E-01	2.9E-02	102%
Total PeCDF	12	12	3.4E-04	2.0E-04	10	11	3.9E-03	2.0E-03	5.5E-01	1.5E-01	2.1E-02	96%
Total HxCDF	9	12	1.1E-04	6.3E-05	10	11	7.4E-03	2.6E-03	1.1E-01	4.0E-02	1.0E-03	80%
Total HpCDF	12	12	6.3E-05	3.5E-05	10	11	1.9E-02	5.0E-03	4.4E-02	1.4E-02	1.3E-04	82%
Toxicity Equivalency - Birds	12	12	9.9E-03	3.2E-03	11	11	6.1E-02	1.4E-02	2.4E+00	6.5E-01	5.6E-01	116%
Toxicity Equivalency - Fish	12	12	9.9E-03	3.2E-03	11	11	6.1E-02	1.4E-02	3.9E+00	8.2E-01	1.3E+00	139%
Toxicity Equivalency - Mammals	12	12	9.9E-03	3.2E-03	11	11	6.1E-02	1.4E-02	3.0E+00	7.0E-01	8.1E-01	128%
Aluminum	3	12	2.6E+00	9.2E-01	13	13	2.5E+04	1.3E+04	3.7E-04	9.8E-05	1.0E-08	103%
Antimony	8	12	1.7E-02	1.5E-02	4	13	5.2E-01	1.6E-01	1.0E+00	2.3E-01	8.2E-02	125%
Barium	12	12	4.0E+01	2.6E+01	13	13	3.8E+02	1.7E+02	6.2E-01	2.3E-01	2.8E-02	73%
Cadmium	12	12	1.6E-01	8.8E-02	12	13	4.9E+00	1.9E+00	1.2E+00	2.2E-01	1.2E-01	157%
Chromium	9	12	4.0E-01	2.4E-01	13	13	2.1E+02	1.1E+02	1.0E-02	3.6E-03	1.1E-05	92%

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TABLE J-2
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North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS											
	CRAYFISH[a]				SEDIMENT[b]				STUDY AREA BSAFs[c]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
Cobalt	12	12	3.5E-01	2.2E-01	13	13	1.8E+01	8.4E+00	1.7E-01	4.6E-02	2.3E-03	104%
Copper	12	12	3.5E+01	2.8E+01	13	13	1.7E+02	6.0E+01	1.6E+00	6.7E-01	2.3E-01	70%
Iron	12	12	1.8E+02	8.5E+01	13	13	3.3E+04	1.9E+04	1.0E-02	5.2E-03	7.7E-06	53%
Lead	12	12	1.2E+00	6.2E-01	13	13	5.4E+02	2.1E+02	2.3E-02	6.8E-03	5.9E-05	113%
Manganese	12	12	2.1E+02	1.1E+02	13	13	1.7E+03	7.0E+02	6.1E-01	2.4E-01	4.2E-02	85%
Mercury	12	12	3.9E-02	2.4E-02	13	13	1.1E+00	3.8E-01	1.8E+00	4.1E-01	3.6E-01	145%
Mercury (methyl)	12	12	3.9E-02	2.1E-02	12	12	9.6E-03	1.5E-03	3.1E+02	6.6E+01	9.5E+03	148%
Molybdenum	12	12	2.5E-01	1.2E-01	13	13	3.0E+01	1.1E+01	9.0E-02	2.3E-02	6.0E-04	109%
Nickel	12	12	5.8E-01	3.6E-01	13	13	4.3E+01	2.0E+01	2.9E-01	7.9E-02	1.2E-02	137%
Selenium	12	12	1.6E-01	1.3E-01	5	13	1.1E+00	5.3E-01	1.2E+00	4.7E-01	1.2E-01	73%
Silver	12	12	3.1E-01	2.2E-01	11	13	3.3E+00	1.3E+00	4.7E+00	7.9E-01	1.9E+00	176%
Thallium	10	12	1.4E-02	9.3E-03	13	13	7.0E-01	3.2E-01	1.7E-01	5.4E-02	2.8E-03	98%
Vanadium	11	12	3.6E-01	2.1E-01	13	13	6.0E+01	3.7E+01	1.5E-02	6.3E-03	1.0E-05	51%
Zinc	12	12	3.3E+01	2.3E+01	13	13	2.1E+03	5.3E+02	3.5E-01	1.0E-01	9.6E-03	96%
2-Monochlorobiphenyl (1)	3	3	3.3E-04	2.6E-04	3	3	1.1E-02	7.2E-03	3.1E-02	3.1E-02		
4-Chlorobiphenyl (3)	3	3	3.3E-04	2.5E-04	2	3	2.4E-02	1.4E-02	1.4E-02	1.4E-02		
2,2'-Dichlorobiphenyl (4)	2	3	2.2E-03	1.2E-03	3	3	2.1E-02	1.3E-02	3.2E-02	3.2E-02		
2,3'-Dichlorobiphenyl (6)	1	3	1.2E-03	5.4E-04	3	3	1.3E-02	7.2E-03	5.1E-01	5.1E-01		
2,4'-Dichlorobiphenyl (8)	1	3	2.2E-03	1.6E-03	3	3	1.1E-01	6.9E-02	7.0E-03	7.0E-03		
3,4-Dichlorobiphenyl (12)	1	3	6.4E-04	4.9E-04	3	3	2.3E-02	1.1E-02	2.8E-02	2.8E-02		
2,2',3'-Trichlorobiphenyl (16)	3	3	8.4E-04	5.1E-04	3	3	6.1E-02	3.5E-02	1.4E-02	1.4E-02		
2,2',4-Trichlorobiphenyl (17)	3	3	6.5E-04	4.2E-04	3	3	6.3E-02	3.6E-02	1.0E-02	1.0E-02		
2,2',5-Trichlorobiphenyl (18)	3	3	9.2E-03	5.0E-03	3	3	4.6E-02	3.0E-02	2.0E-01	2.0E-01		
2,2',6-Trichlorobiphenyl (19)	3	3	8.6E-05	6.8E-05	3	3	1.3E-02	7.7E-03	6.8E-03	6.8E-03		
2,3,3'-Trichlorobiphenyl (20)	3	3	4.2E-02	2.3E-02	3	3	3.8E-01	2.0E-01	1.1E-01	1.1E-01		
2,3,4'-Trichlorobiphenyl (22)	2	3	6.9E-04	5.0E-04	3	3	9.8E-02	5.7E-02	7.0E-03	7.0E-03		
2,3',4-Trichlorobiphenyl (25)	3	3	5.4E-04	2.9E-04	3	3	1.9E-02	9.8E-03	2.9E-02	2.9E-02		
2,3',5-Trichlorobiphenyl (26)	3	3	3.3E-03	2.0E-03	3	3	4.2E-02	2.2E-02	7.9E-02	7.9E-02		
2,4',5-Trichlorobiphenyl (31)	3	3	1.8E-02	1.0E-02	3	3	1.8E-01	9.8E-02	1.0E-01	1.0E-01		
2,4',6-Trichlorobiphenyl (32)	3	3	3.6E-04	2.2E-04	3	3	3.1E-02	1.9E-02	1.2E-02	1.2E-02		
2,2',3,3'-Tetrachlorobiphenyl (40)	3	3	3.0E-03	1.8E-03	3	3	2.0E-01	1.4E-01	1.5E-02	1.5E-02		
2,2',3,4'-Tetrachlorobiphenyl (42)	3	3	1.5E-03	8.2E-04	3	3	9.6E-02	5.5E-02	1.6E-02	1.6E-02		
2,2',3,5-Tetrachlorobiphenyl (43)	3	3	1.7E-01	9.0E-02	3	3	2.5E-01	1.6E-01	2.1E+01	2.1E+01		

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TABLE J-2

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS											
	CRAYFISH[a]				SEDIMENT[b]				STUDY AREA BSAFs[c]			
PARAMETER	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5'-Tetrachlorobiphenyl (44)	3	3	3.5E-02	1.9E-02	3	3	3.4E-01	2.1E-01	1.0E-01	1.0E-01		
2,2',3,6-Tetrachlorobiphenyl (45)	3	3	3.9E-04	2.7E-04	3	3	4.4E-02	2.3E-02	8.8E-03	8.8E-03		
2,2',3,6'-Tetrachlorobiphenyl (46)	3	3	1.0E-04	6.4E-05	3	3	1.7E-02	1.0E-02	5.8E-03	5.8E-03		
2,2',4,5-Tetrachlorobiphenyl (48)	3	3	1.7E-03	9.2E-04	3	3	4.9E-02	2.6E-02	3.5E-02	3.5E-02		
2,2',4,5'-Tetrachlorobiphenyl (49)	3	3	2.3E-02	1.1E-02	3	3	2.0E-01	1.2E-01	1.1E-01	1.1E-01		
2,2',4,6-Tetrachlorobiphenyl (50)	3	3	4.6E-04	3.1E-04	3	3	4.1E-02	2.6E-02	1.1E-02	1.1E-02		
2,3,3',4'-Tetrachlorobiphenyl (56)	2	3	1.1E-02	5.4E-03	3	3	1.3E-01	8.4E-02	8.2E-02	8.2E-02		
2,3,3',6-Tetrachlorobiphenyl (59)	3	3	2.6E-03	1.5E-03	3	3	2.6E-02	1.4E-02	9.9E-02	9.9E-02		
2,3,4,4'-Tetrachlorobiphenyl (60)	3	3	9.2E-03	5.3E-03	3	3	3.7E-02	1.5E-02	2.5E-01	2.5E-01		
2,3,4,5-Tetrachlorobiphenyl (61)	3	3	9.6E-02	5.1E-02	3	3	5.4E-01	3.3E-01	1.8E-01	1.8E-01		
2,3,4',5-Tetrachlorobiphenyl (63)	3	3	4.3E-03	2.1E-03	2	3	7.3E-03	3.9E-03	5.9E-01	5.9E-01		
2,3,4',6-Tetrachlorobiphenyl (64)	3	3	2.5E-03	1.4E-03	3	3	1.3E-01	7.5E-02	2.0E-02	2.0E-02		
2,3',4,4'-Tetrachlorobiphenyl (66)	3	3	1.1E-01	5.5E-02	3	3	3.8E-01	2.4E-01	2.9E-01	2.9E-01		
3,3',4,4'-Tetrachlorobiphenyl (77)	3	3	6.3E-03	3.2E-03	3	3	3.6E-02	2.0E-02	1.7E-01	1.7E-01		
3,4,4',5-Tetrachlorobiphenyl (81)	3	3	2.9E-04	1.5E-04	0	2	1.8E-03	1.3E-03	3.5E-01	3.5E-01		
2,2',3,3',4-Pentachlorobiphenyl (82)	2	3	1.9E-03	1.4E-03	3	3	1.4E-01	1.1E-01	1.4E-02	1.4E-02		
2,2',3,3',5-Pentachlorobiphenyl (83)	3	3	1.7E-01	8.0E-02	3	3	3.8E-01	2.8E-01	4.5E-01	4.5E-01		
2,2',3,3',6-Pentachlorobiphenyl (84)	3	3	6.6E-03	3.9E-03	3	3	2.7E-01	2.4E-01	2.6E-02	2.6E-02		
2,2',3,4,4'-Pentachlorobiphenyl (85)	3	3	4.5E-02	2.1E-02	3	3	1.4E-01	1.1E-01	3.5E-01	3.5E-01		
2,2',3,4,5-Pentachlorobiphenyl (86)	3	3	1.2E-01	5.5E-02	3	3	6.7E-01	5.5E-01	1.7E-01	1.7E-01		
2,2',3,4,6-Pentachlorobiphenyl (88)	3	3	9.7E-03	5.6E-03	3	3	1.2E-01	9.9E-02	8.8E-02	8.8E-02		
2,2',3,4,6'-Pentachlorobiphenyl (89)	3	3	7.3E-05	4.7E-05	0	2	1.8E-03	1.3E-03	8.8E-02	8.8E-02		
2,2',3,4',5-Pentachlorobiphenyl (90)	3	3	3.3E-01	1.6E-01	3	3	7.0E-01	5.5E-01	4.7E-01	4.7E-01		
2,2',3,5,5'-Pentachlorobiphenyl (92)	3	3	4.8E-02	2.3E-02	3	3	1.4E-01	1.1E-01	3.4E-01	3.4E-01		
2,2',3,5,6-Pentachlorobiphenyl (93)	3	3	6.5E-04	4.8E-04	3	3	7.1E-01	5.9E-01	9.9E-04	9.9E-04		
2,2',3,5',6-Pentachlorobiphenyl (95)	3	3	7.1E-02	3.6E-02								
2,3,3',4,4'-Pentachlorobiphenyl (105)	3	3	7.3E-02	3.6E-02	3	3	2.2E-01	1.7E-01	3.4E-01	3.4E-01		
2,3,3',4,5-Pentachlorobiphenyl (106)	3	3	2.4E-02	1.1E-02	3	3	7.4E-02	5.1E-02	3.3E-01	3.3E-01		
2,3,3',4',5'-Pentachlorobiphenyl (108)	3	3	1.3E-02	6.0E-03	3	3	2.9E-02	2.3E-02	4.5E-01	4.5E-01		
2,3,3',4',6-Pentachlorobiphenyl (110)	3	3	3.6E-02	1.8E-02	3	3	1.3E+00	1.0E+00	3.2E-02	3.2E-02		
2,3,4,4',5-Pentachlorobiphenyl (114)	3	3	4.3E-03	2.1E-03	2	2	1.1E-02	1.0E-02	3.8E-01	3.8E-01		
2,3',4,4',5-Pentachlorobiphenyl (118)	3	3	2.7E-01	1.3E-01	3	3	8.9E-01	6.4E-01	3.1E-01	3.1E-01		
3,3',4,4',5-Pentachlorobiphenyl (126)	3	3	6.0E-04	3.2E-04	2	3	1.1E-02	5.8E-03	3.6E-01	3.6E-01		

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PARAMETER	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	3	3	3.2E-02	1.5E-02	3	3	2.3E-01	1.8E-01	1.4E-01	1.4E-01		
2,2',3,3',4,5-Hexachlorobiphenyl (129)	3	3	3.4E-01	1.6E-01	3	3	1.1E+00	8.0E-01	3.1E-01	3.1E-01		
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	3	3	2.3E-02	1.0E-02	3	3	8.7E-02	6.1E-02	2.6E-01	2.6E-01		
2,2',3,3',4,6-Hexachlorobiphenyl (131)	3	3	1.7E-03	8.0E-04	3	3	1.7E-02	1.3E-02	9.6E-02	9.6E-02		
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	3	3	2.6E-02	1.3E-02	2	3	4.5E-01	2.2E-01	3.1E+01	3.1E+01		
2,2',3,3',5,6-Hexachlorobiphenyl (134)	3	3	1.1E-02	5.0E-03	3	3	7.7E-02	5.8E-02	1.4E-01	1.4E-01		
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	3	3	3.4E-02	1.8E-02	3	3	2.8E-01	2.0E-01	1.2E-01	1.2E-01		
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	3	3	8.7E-03	4.6E-03	3	3	1.6E-01	1.3E-01	5.3E-02	5.3E-02		
2,2',3,4,4',5-Hexachlorobiphenyl (137)	3	3	4.6E-02	2.1E-02	3	3	1.4E-01	1.0E-01	3.3E-01	3.3E-01		
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	3	3	4.7E-02	2.3E-02	3	3	1.3E-01	9.3E-02	3.6E-01	3.6E-01		
2,2',3,4,5',6-Hexachlorobiphenyl (144)	3	3	7.3E-03	3.6E-03	0	2	1.8E-03	1.3E-03	8.8E+00	8.8E+00		
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	3	3	4.1E-02	2.1E-02	3	3	6.6E-02	4.8E-02	6.6E-01	6.6E-01		
2,2',3,4',5,6-Hexachlorobiphenyl (147)	3	3	1.4E-01	6.9E-02	3	3	6.9E-01	5.2E-01	2.0E-01	2.0E-01		
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	3	3	2.4E-01	1.2E-01	3	3	4.1E-01	2.6E-01	5.9E-01	5.9E-01		
2,3,3',4,4',5-Hexachlorobiphenyl (156)	3	3	3.2E-02	1.5E-02	3	3	9.7E-02	7.6E-02	3.3E-01	3.3E-01		
2,3,3',4,4',6-Hexachlorobiphenyl (158)	3	3	1.7E-02	8.4E-03	2	3	8.2E-02	3.7E-02	5.2E+01	5.2E+01		
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3	3	1.2E-02	5.9E-03	3	3	3.9E-02	3.0E-02	3.3E-01	3.3E-01		
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	3	3	2.8E-03	1.5E-03	0	2	1.8E-03	1.3E-03	3.4E+00	3.4E+00		
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	3	3	2.0E-02	1.1E-02	3	3	1.6E-01	1.4E-01	1.2E-01	1.2E-01		
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	3	3	2.4E-03	1.5E-03	3	3	5.1E-02	4.3E-02	4.6E-02	4.6E-02		
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	3	3	5.2E-03	3.2E-03	3	3	1.3E-02	1.1E-02	4.1E-01	4.1E-01		
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	3	3	3.3E-02	1.7E-02	3	3	1.7E-01	1.5E-01	2.0E-01	2.0E-01		
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	3	3	5.2E-04	3.6E-04	2	2	4.0E-03	3.5E-03	1.3E-01	1.3E-01		
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	3	3	1.4E-03	8.7E-04	3	3	1.9E-02	1.6E-02	7.1E-02	7.1E-02		
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	3	3	1.5E-02	8.3E-03	3	3	7.4E-02	6.5E-02	2.0E-01	2.0E-01		
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	3	3	8.3E-03	5.3E-03	3	3	2.2E-02	1.5E-02	3.9E-01	3.9E-01		
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	3	3	5.3E-02	3.3E-02	3	3	1.3E-01	1.0E-01	3.9E-01	3.9E-01		
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	3	3	2.0E-04	1.6E-04	0	2	3.6E-03	2.6E-03	1.2E-01	1.2E-01		
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	3	3	1.0E-04	6.1E-05	0	2	3.6E-03	2.6E-03	3.5E-02	3.5E-02		
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	3	3	5.2E-02	3.1E-02	3	3	8.8E-02	6.2E-02	5.9E-01	5.9E-01		
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	3	3	1.2E-03	6.5E-04	3	3	4.1E-03	3.2E-03	2.9E-01	2.9E-01		
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	3	3	4.1E-03	2.4E-03	3	3	2.3E-02	1.7E-02	1.8E-01	1.8E-01		
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	3	3	9.2E-04	5.2E-04	3	3	3.7E-03	2.8E-03	2.5E-01	2.5E-01		

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TABLE J-2
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS											
	CRAYFISH[a]				SEDIMENT[b]				STUDY AREA BSAFs[c]			
PARAMETER	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	3	3	5.0E-03	3.3E-03	3	3	3.8E-02	2.4E-02	1.3E-01	1.3E-01		
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	3	3	1.8E-03	1.2E-03	3	3	1.6E-02	1.3E-02	1.1E-01	1.1E-01		
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	3	3	3.9E-03	2.8E-03	3	3	2.9E-02	1.8E-02	1.4E-01	1.4E-01		
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	3	3	1.3E-03	9.7E-04	3	3	6.4E-04	5.9E-04	2.1E+00	2.1E+00		
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	3	3	4.2E-02	2.6E-02	3	3	1.5E-01	9.1E-02	2.8E-01	2.8E-01		
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	3	3	4.2E-02	2.6E-02	3	3	1.1E-02	6.1E-03	3.9E+00	3.9E+00		
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	3	3	2.1E-03	1.6E-03	3	3	6.4E-03	5.8E-03	3.6E-01	3.6E-01		
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	3	3	1.1E-02	8.2E-03	3	3	4.9E-02	2.8E-02	2.3E-01	2.3E-01		
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	3	3	3.7E-04	2.7E-04	3	3	2.2E-03	1.4E-03	1.7E-01	1.7E-01		
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	3	3	1.8E-02	1.1E-02	3	3	2.3E-01	1.3E-01	7.7E-02	7.7E-02		
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	3	3	1.9E-03	1.3E-03	3	3	1.7E-02	9.1E-03	1.1E-01	1.1E-01		
Decachlorobiphenyl (209)	2	3	1.1E-02	5.2E-03	3	3	2.8E-01	1.6E-01	3.8E-02	3.8E-02		
PCB Congeners, Total	3	3	3.1E+00	1.6E+00	3	3	1.4E+01	1.1E+01	2.2E-01	2.2E-01		
Toxicity Equivalency (PCB) - Birds	3	3	4.2E-04	2.1E-04	3	3	2.1E-03	1.7E-03	2.0E-01	2.0E-01		
Toxicity Equivalency (PCB) - Fish	3	3	5.9E-06	3.0E-06	3	3	6.1E-05	3.6E-05	3.2E-01	3.2E-01		
Toxicity Equivalency (PCB) - Mammals	3	3	1.4E-04	7.3E-05	3	3	1.2E-03	7.2E-04	4.1E-01	4.1E-01		
Technical Chlordane	12	12	1.1E+00	7.0E-01	12	12	1.9E+01	8.5E+00	2.7E-01	1.1E-01	4.4E-03	61%
Heptachlor	1	12	2.0E-02	1.5E-02	0	12	2.5E-02	1.5E-02	2.3E+00	1.1E+00	2.4E-01	44%
Heptachlor Epoxide	1	12	2.0E-02	1.4E-02	0	12	2.5E-02	1.5E-02	2.3E+00	1.1E+00	3.3E-01	52%
Dieldrin	2	12	3.2E-02	1.7E-02	12	12	1.2E-01	7.0E-02	1.2E+00	3.1E-01	8.8E-02	95%
4,4'-DDE	12	12	2.6E-01	1.5E-01	12	12	2.6E-01	1.5E-01	4.3E+00	1.4E+00	1.3E+00	81%
4,4'-DDD	4	12	2.0E-02	1.4E-02	12	12	4.3E-01	1.9E-01	4.5E+01	4.2E+00	1.8E+02	324%
Endosulfan Sulfate	2	12	4.1E-02	1.8E-02	1	12	1.3E-01	2.4E-02	4.4E+00	1.3E+00	1.3E+00	89%
alpha-Chlordane	9	12	2.3E-02	1.2E-02	12	12	1.2E+00	3.3E-01	6.9E-01	1.4E-01	5.2E-02	167%
gamma-Chlordane	3	12	2.1E-02	1.4E-02	8	12	1.8E-01	6.2E-02	2.3E+00	7.7E-01	7.8E-01	115%
Aroclor-1254	12	12	4.9E+00	2.2E+00	12	12	2.1E+01	5.3E+00	2.7E+00	7.2E-01	4.8E-01	97%
Aroclor-1268	12	12	3.4E-01	2.0E-01	12	12	2.1E+00	1.2E+00	6.8E-01	2.5E-01	3.3E-02	71%
Aroclor, Total	12	12	5.2E+00	2.4E+00	12	12	2.2E+01	6.5E+00	2.3E+00	6.1E-01	3.6E-01	99%
Lipid_percent	16	16										

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TABLE J-2
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS									
	CRAYFISH[a]			SEDIMENT[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection	Maximum Detect	Average	Frequency of Detection	Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation

Notes:

a. Crayfish tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. Sediment concentrations are expressed on a carbon normalized basis (i.e., mg/kg_{oc}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

c. BSAFs are expressed on a lipid- and carbon-normalized basis (i.e., kg_{oc}/kg_{lip}). BSAF statistics based on paired crayfish/sediment sample sets (see Table J-3).

All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

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TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND								
PARAMETER	CMS-CF-4003-0000-01 7/20/2001 NORMAL	CMS-SD-4003-0000-01 7/12/2001 NORMAL	BSAF*	CMS-CF-4006-0000-01 7/20/2001 NORMAL	CMS-SD-4006-0000-01 7/12/2001 NORMAL	BSAF	CMS-CF-4007-0000-01 7/20/2001 NORMAL	CMS-SD-4007-0000-01 7/12/2001 NORMAL	BSAF
HCX	6.32E-04 JB	2.39E-01 J	2.7E-03	8.47E-03 J	2.54E+00 J	3.3E-03	7.03E-03 B	1.56E-01 J	4.5E-02
2,3,7,8-TCDD	1.37E-03	5.95E-03	2.3E-01	8.97E-03	5.99E-02	1.5E-01	9.77E-03	5.50E-03	1.8E+00
1,2,3,7,8-PeCDD	3.95E-05 U	8.44E-06 U	4.7E+00	4.30E-05 U	8.35E-05 J	5.1E-01	5.34E-05 U	2.39E-05 J	2.2E+00
1,2,3,4,7,8-HxCDD	3.95E-05 U	3.03E-05 J	1.3E+00	3.78E-06 J	1.06E-04	3.6E-02	5.34E-05 U	8.11E-05	6.6E-01
1,2,3,6,7,8-HxCDD	3.95E-05 U	1.08E-04	3.6E-01	7.56E-06 J	4.68E-04	1.6E-02	7.73E-06 J	2.06E-04	3.7E-02
1,2,3,7,8,9-HxCDD	3.95E-05 U	9.80E-05	4.0E-01	7.90E-06 J	4.34E-04	1.8E-02	6.01E-06 J	3.46E-04	1.7E-02
1,2,3,4,6,7,8-HpCDD	2.77E-05 J	2.01E-03	1.4E-02	4.33E-05 J	1.09E-02	4.0E-03	4.55E-05 J	3.55E-03	1.3E-02
OCDD	9.19E-05 U	1.28E-02	7.2E-03	1.24E-04 U	9.71E-02	1.3E-03	1.32E-04 U	1.72E-02	7.7E-03
2,3,7,8-TCDF	1.37E-05 J	1.29E-04 $	1.1E-01	2.85E-05 E	3.72E-04 J$	7.7E-02	2.49E-05 E	1.76E-04 J$	1.4E-01
1,2,3,7,8-PeCDF	3.95E-05 U	8.98E-06 U	4.4E+00	4.30E-05 U	4.38E-05 J	9.8E-01	5.34E-05 U	3.76E-05 J	1.4E+00
2,3,4,7,8-PeCDF	3.95E-05 U	4.50E-05 J	8.8E-01	4.30E-05 U	7.28E-05 J	5.9E-01	5.34E-05 U	9.35E-05	5.7E-01
1,2,3,4,7,8-HxCDF	3.82E-06 J	1.04E-04	3.7E-02	1.10E-05 J	2.25E-04	4.9E-02	8.58E-06 J	1.97E-04	4.4E-02
1,2,3,6,7,8-HxCDF	3.95E-05 U	9.33E-05	4.2E-01	7.22E-06 J	1.99E-04	3.6E-02	4.72E-06 J	1.67E-04	2.8E-02
2,3,4,6,7,8-HxCDF	3.95E-05 U	6.37E-05 J	6.2E-01	5.50E-06 J	1.27E-04	4.3E-02	4.29E-06 J	1.43E-04	3.0E-02
1,2,3,4,6,7,8-HpCDF	9.87E-06 J	1.23E-03	8.0E-03	2.23E-05 J	3.63E-03	6.1E-03	2.75E-05 J	1.70E-03	1.6E-02
1,2,3,4,7,8,9-HpCDF	3.95E-05 U	5.01E-05 J	7.9E-01	2.06E-06 J	1.46E-04	1.4E-02	5.34E-05 U	7.13E-05 J	7.5E-01
OCDF	1.97E-05 J	1.35E-03	1.5E-02	2.27E-05 J	7.60E-03	3.0E-03	3.18E-05 J	2.32E-03	1.4E-02
Total TCDD	1.37E-03 J	5.95E-03 J	2.3E-01	8.97E-03 J	5.99E-02 J	1.5E-01	9.77E-03 J	5.50E-03 J	1.8E+00
Total PeCDD	3.95E-05 U	1.21E-04 J	3.3E-01	4.30E-05 U	1.65E-04 J	2.6E-01	5.34E-05 U	2.66E-04 J	2.0E-01
Total HxCDD	3.95E-05 U	7.94E-04 J	5.0E-02	3.30E-05 J	3.02E-03 J	1.1E-02	3.52E-05 J	2.33E-03 J	1.5E-02
Total HpCDD	4.68E-05 J	3.65E-03 J	1.3E-02	7.97E-05 J	3.08E-02 J	2.6E-03	8.84E-05 J	7.22E-03 J	1.2E-02
Total TCDF	2.32E-05 J	3.37E-04 J	6.9E-02	6.46E-05 J	1.19E-03 J	5.4E-02	7.55E-05	0.0016 J	4.7E-02
Total PeCDF	1.06E-04 J	1.74E-03 J	6.1E-02	2.86E-04 J	2.71E-03 J	1.1E-01	3.04E-04 J	3.90E-03 J	7.8E-02
Total HxCDF	3.09E-05 J	1.81E-03 J	1.7E-02	5.60E-05 UJ	3.54E-03 J	1.6E-02	5.69E-05 UJ	3.31E-03 J	1.7E-02
Total HpCDF	1.56E-05 J	2.35E-03 J	6.6E-03	3.57E-05 J	9.02E-03 J	4.0E-03	4.64E-05 J	3.68E-03 J	1.3E-02
Toxicity Equivalency - Birds	1.49E-03	6.24E-03	2.4E-01	9.11E-03	6.10E-02	1.5E-01	9.91E-03	5.94E-03	1.7E+00
Toxicity Equivalency - Fish	1.46E-03	6.10E-03	2.4E-01	9.04E-03	6.07E-02	1.5E-01	9.87E-03	5.73E-03	1.7E+00
Toxicity Equivalency - Mammals	1.46E-03	6.13E-03	2.4E-01	9.07E-03	6.09E-02	1.5E-01	9.87E-03	5.79E-03	1.7E+00
Aluminum	0.55 U	8367 J	6.6E-05	1.52 J	11211 J	1.4E-04	2.63 J	17343 J	1.5E-04
Antimony	0.016 U	0.135 U	1.2E-01	0.0171 J	0.157 U	1.1E-01	0.017 J	0.522 J	3.3E-02
Barium	24.2 J	88.6 J	2.7E-01	20.8 J	189 J	1.1E-01	17.8 J	151 J	1.2E-01
Cadmium	0.0934 J	0.08 U	1.2E+00	0.0802 J	4.93 J	1.6E-02	0.101 J	2.98 J	3.4E-02
Chromium	0.176 J	179 J	9.8E-04	0.399 J	121 J	3.3E-03	0.271 J	167 J	1.6E-03
Cobalt	0.194 J	6.74	2.9E-02	0.147 J	11.1	1.3E-02	0.18 J	8.8	2.0E-02
Copper	27.9	59.2	4.7E-01	28.2	112	2.5E-01	34.7	171	2.0E-01
Iron	30.8 J	10939	2.8E-03	90.4 J	20567	4.4E-03	66.8 J	18164	3.7E-03
Lead	0.29 J	223 J	1.3E-03	0.814 J	251 J	3.2E-03	0.663 J	260 J	2.6E-03
Manganese	90.8	369 J	2.5E-01	52.7	1266 J	4.2E-02	71.5	543 J	1.3E-01
Mercury	0.0259	0.383	6.8E-02	0.0178	0.00988 J	1.8E+00	0.0302	1.08	2.8E-02
Mercury (methyl)	0.0261	0.000701 J	3.7E+01	0.0144	0.000447 J	3.2E+01	0.0271	0.00155 J	1.7E+01
Molybdenum	0.105 J	29.6	3.5E-03	0.142 J	17.9	7.9E-03	0.136 J	10.4	1.3E-02
Nickel	0.259 J	0.883 J	2.9E-01	0.326	42.9 J	7.6E-03	0.366	24.4	1.5E-02
Selenium	0.112 J	0.2985 U	3.8E-01	0.125 J	0.283 U	4.4E-01	0.141 J	0.986 J	1.4E-01
Silver	0.185	0.545	3.4E-01	0.196	0.995	2.0E-01	0.246	2.44	1.0E-01
Thallium	0.00885 J	0.248 J	3.6E-02	0.0105 U	0.356 J	2.9E-02	0.00731 J	0.478 J	1.5E-02
Vanadium	0.182 J	35.6	5.1E-03	0.219 J	36.9	5.9E-03	0.257 J	41.2	6.2E-03
Zinc	20	175 J	1.1E-01	20.6	462 J	4.5E-02	22.2	2088 J	1.1E-02

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TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND								
	CMS-CF-4003-0000-01 7/20/2001 NORMAL	CMS-SD-4003-0000-01 7/12/2001 NORMAL	BSAF[a]	CMS-CF-4006-0000-01 7/20/2001 NORMAL	CMS-SD-4006-0000-01 7/12/2001 NORMAL	BSAF	CMS-CF-4007-0000-01 7/20/2001 NORMAL	CMS-SD-4007-0000-01 7/12/2001 NORMAL	BSAF
2-Monochlorobiphenyl (1)									
4-Chlorobiphenyl (3)									
2,2'-Dichlorobiphenyl (4)									
2,3'-Dichlorobiphenyl (6)									
2,4'-Dichlorobiphenyl (8)									
3,4-Dichlorobiphenyl (12)									
2,2',3'-Trichlorobiphenyl (16)									
2,2',4-Trichlorobiphenyl (17)									
2,2',5-Trichlorobiphenyl (18)									
2,2',6-Trichlorobiphenyl (19)									
2,3,3'-Trichlorobiphenyl (20)									
2,3,4'-Trichlorobiphenyl (22)									
2,3',4-Trichlorobiphenyl (25)									
2,3',5-Trichlorobiphenyl (26)									
2,4',5-Trichlorobiphenyl (31)									
2,4',6-Trichlorobiphenyl (32)									
2,2',3,3'-Tetrachlorobiphenyl (40)									
2,2',3,4'-Tetrachlorobiphenyl (42)									
2,2',3,5-Tetrachlorobiphenyl (43)									
2,2',3,5'-Tetrachlorobiphenyl (44)									
2,2',3,6-Tetrachlorobiphenyl (45)									
2,2',3,6'-Tetrachlorobiphenyl (46)									
2,2',4,5-Tetrachlorobiphenyl (48)									
2,2',4,5'-Tetrachlorobiphenyl (49)									
2,2',4,6-Tetrachlorobiphenyl (50)									
2,3,3',4'-Tetrachlorobiphenyl (56)									
2,3,3',6-Tetrachlorobiphenyl (59)									
2,3,4,4'-Tetrachlorobiphenyl (60)									
2,3,4,5-Tetrachlorobiphenyl (61)									
2,3,4',5-Tetrachlorobiphenyl (63)									
2,3,4',6-Tetrachlorobiphenyl (64)									
2,3',4,4'-Tetrachlorobiphenyl (66)									
3,3',4,4'-Tetrachlorobiphenyl (77)									
3,4,4',5-Tetrachlorobiphenyl (81)									
2,2',3,3',4-Pentachlorobiphenyl (82)									
2,2',3,3',5-Pentachlorobiphenyl (83)									
2,2',3,3',6-Pentachlorobiphenyl (84)									
2,2',3,4,4'-Pentachlorobiphenyl (85)									
2,2',3,4,5-Pentachlorobiphenyl (86)									
2,2',3,4,6-Pentachlorobiphenyl (88)									
2,2',3,4,6'-Pentachlorobiphenyl (89)									
2,2',3,4',5-Pentachlorobiphenyl (90)									
2,2',3,5,5'-Pentachlorobiphenyl (92)									
2,2',3,5,6-Pentachlorobiphenyl (93)									
2,2',3,5',6-Pentachlorobiphenyl (95)									
2,3,3',4,4'-Pentachlorobiphenyl (105)									
2,3,3',4,5-Pentachlorobiphenyl (106)									

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North Providence, Rhode Island

PARAMETER	ALLENDALE POND											
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2,3,3',4',5'-Pentachlorobiphenyl (108)															
2,3,3',4',6-Pentachlorobiphenyl (110)															
2,3,4,4',5-Pentachlorobiphenyl (114)															
2,3',4,4',5-Pentachlorobiphenyl (118)															
3,3',4,4',5-Pentachlorobiphenyl (126)															
2,2',3,3',4,4'-Hexachlorobiphenyl (128)															
2,2',3,3',4,5-Hexachlorobiphenyl (129)															
2,2',3,3',4,5'-Hexachlorobiphenyl (130)															
2,2',3,3',4,6-Hexachlorobiphenyl (131)															
2,2',3,3',4,6'-Hexachlorobiphenyl (132)															
2,2',3,3',5,6-Hexachlorobiphenyl (134)															
2,2',3,3',5,6'-Hexachlorobiphenyl (135)															
2,2',3,3',6,6'-Hexachlorobiphenyl (136)															
2,2',3,4,4',5-Hexachlorobiphenyl (137)															
2,2',3,4,5,5'-Hexachlorobiphenyl (141)															
2,2',3,4,5',6-Hexachlorobiphenyl (144)															
2,2',3,4',5,5'-Hexachlorobiphenyl (146)															
2,2',3,4',5,6-Hexachlorobiphenyl (147)															
2,2',4,4',5,5'-Hexachlorobiphenyl (153)															
2,3,3',4,4',5-Hexachlorobiphenyl (156)															
2,3,3',4,4',6-Hexachlorobiphenyl (158)															
2,3',4,4',5,5'-Hexachlorobiphenyl (167)															
3,3',4,4',5,5'-Hexachlorobiphenyl (169)															
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)															
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)															
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)															
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)															
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)															
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)															
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)															
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)															
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)															
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)															
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)															
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)															
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)															
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)															
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)															
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)															
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)															
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)															
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)															
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)															
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)															
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)															
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)															
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)															
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl															

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND															
	CMS-CF-4003-0000-01 7/20/2001 NORMAL		CMS-SD-4003-0000-01 7/12/2001 NORMAL		BSAF[a]	CMS-CF-4006-0000-01 7/20/2001 NORMAL		CMS-SD-4006-0000-01 7/12/2001 NORMAL		BSAF	CMS-CF-4007-0000-01 7/20/2001 NORMAL		CMS-SD-4007-0000-01 7/12/2001 NORMAL		BSAF
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl																
Decachlorobiphenyl (209)																
PCB Congeners, Total																
Toxicity Equivalency (PCB) - Birds																
Toxicity Equivalency (PCB) - Fish																
Toxicity Equivalency (PCB) - Mammals																
Technical Chlordane	4.22E-01	J	5.43E+00		7.77E-02	6.76E-01	J	9.26E+00		7.31E-02	7.06E-01	J	4.05E+00		1.7E-01
Heptachlor	1.21E-02	U	1.17E-02	UJ	1.03E+00	1.31E-02	U	1.65E-02	UJ	7.92E-01	1.63E-02	U	1.15E-02	UJ	1.4E+00
Heptachlor Epoxide	1.21E-02	U	1.17E-02	UJ	1.03E+00	1.31E-02	U	1.65E-02	UJ	7.92E-01	1.63E-02	U	1.15E-02	UJ	1.4E+00
Dieldrin	1.21E-02	U	9.91E-02		1.22E-01	2.23E-02	J	8.48E-02		2.63E-01	1.63E-02	U	5.61E-02		2.9E-01
4,4'-DDE	9.01E-02		4.75E-02		1.90E+00	1.18E-01		1.71E-01		6.86E-01	1.45E-01		1.97E-01		7.4E-01
4,4'-DDD	1.21E-02	U	2.21E-01		5.47E-02	1.68E-02	J	3.75E-04	J	4.50E+01	1.03E-02	J	3.00E-01		3.4E-02
Endosulfan Sulfate	1.21E-02	U	1.17E-02	U	1.03E+00	1.31E-02	U	1.65E-02	U	7.92E-01	1.63E-02	U	1.15E-02	U	1.4E+00
alpha-Chlordane	2.87E-03	J	1.03E-01		2.79E-02	1.48E-02	J	2.27E-01		6.52E-02	1.63E-02	U	3.41E-02		4.8E-01
gamma-Chlordane	1.21E-02	U	8.06E-02		1.50E-01	1.31E-02	U	1.39E-01		9.37E-02	1.63E-02	U	4.67E-02		3.5E-01
Aroclor-1254	1.15E+00		3.12E+00		3.67E-01	3.47E+00		8.18E+00		4.25E-01	3.12E+00		2.11E+01		1.5E-01
Aroclor-1268	1.52E-01	J	1.85E+00		8.21E-02	2.62E-01	J	1.76E+00		1.49E-01	2.38E-01	J	1.12E+00		2.1E-01
Aroclor, Total	1.30E+00	J	4.97E+00		2.61E-01	3.74E+00		9.93E+00		3.76E-01	3.36E+00		2.22E+01		1.5E-01
Lipid_percent																

Notes:

a. Biota-Sediment Accumulation Factors (BSAFs) for paired crayfish and sediment samples were derived as the ratio of the lipid-normalized crayfish tissue and carbon-normalized sediment concentrations (i.e., kg_{oc}/kg_{lip}).

All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Lipid and organic carbon data for individual samples were used as reported in the Data Evaluation Report (MACTEC, 2003).

Normalized crayfish tissue concentrations are reported in units of mg/kg lipid. Normalized sediment sample concentrations (organics only) are in units of mg/kg organic carbon.

Prepared by: KJA
Checked by: SGH

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND			LYMAN MILL POND					
PARAMETER	GMP-CF-5002-0000-01 7/20/2001 NORMAL	GMP-SD-5002-0000-01 7/11/2001 NORMAL	BSAF	LPX-CF-4001-0000-01 7/20/2001 NORMAL	LPX-SD-4001-0000-01 7/12/2001 NORMAL	BSAF	LPX-CF-4002-0000-01 7/20/2001 NORMAL	LPX-SD-4002-0000-01 7/12/2001 NORMAL	BSAF
HCX	9.15E-04 B	1.29E-03 J	7.1E-01	1.54E-03 UJ	7.08E-01 J	2.2E-03	0.000524219 J	3.94E-02 J	1.3E-02
2,3,7,8-TCDD	1.28E-05 J	2.32E-05 J	5.5E-01	5.38E-03	4.54E-02	1.2E-01	0.001196094	2.28E-03 J	5.3E-01
1,2,3,7,8-PeCDD	4.66E-05 U	1.80E-05 J	2.6E+00	8.62E-05 U	6.42E-05 J	1.3E+00	0.000096875 U	1.09E-04	8.9E-01
1,2,3,4,7,8-HxCDD	7.52E-06 J	2.11E-05 J	3.6E-01	8.62E-05 U	7.89E-05 J	1.1E+00	0.000096875 U	1.45E-04	6.7E-01
1,2,3,6,7,8-HxCDD	1.20E-05 J	8.45E-05 J	1.4E-01	7.59E-06 J	2.88E-04	2.6E-02	0.000096875 U	7.18E-04	1.3E-01
1,2,3,7,8,9-HxCDD	8.27E-06 J	6.89E-05 J	1.2E-01	6.55E-06 J	2.67E-04	2.5E-02	0.000096875 U	5.35E-04	1.8E-01
1,2,3,4,6,7,8-HpCDD	5.75E-05 J	1.74E-03 J	3.3E-02	5.97E-05 J	6.25E-03	9.5E-03	0.000111719 J	1.57E-02	7.1E-03
OCDD	1.61E-04 U	1.34E-02 J	1.2E-02	1.82E-04 U	4.27E-02	4.3E-03	3.86E-04 U	1.13E-01 J	3.4E-03
2,3,7,8-TCDF	2.89E-05 #	5.66E-05 J$	5.1E-01	2.93E-05 J#	1.79E-04 $	1.6E-01	1.93E-05 U#	6.59E-05 J$	2.9E-01
1,2,3,7,8-PeCDF	4.66E-05 U	2.28E-05 J	2.0E+00	8.62E-05 U	3.69E-05 J	2.3E+00	0.000096875 U	4.38E-05 J	2.2E+00
2,3,4,7,8-PeCDF	7.89E-06 J	3.29E-05 J	2.4E-01	8.62E-05 U	8.22E-05 J	1.0E+00	0.000096875 U	2.58E-05 U	3.7E+00
1,2,3,4,7,8-HxCDF	8.27E-06 J	8.52E-05 J	9.7E-02	8.97E-06 J	2.08E-04 J	4.3E-02	1.09375E-05 J	2.06E-04	5.3E-02
1,2,3,6,7,8-HxCDF	5.64E-06 J	6.82E-05 J	8.3E-02	8.62E-05 U	1.81E-04 J	4.8E-01	0.000096875 U	2.01E-04	4.8E-01
2,3,4,6,7,8-HxCDF	4.66E-05 U	4.02E-05 J	1.2E+00	8.62E-05 U	1.24E-04 J	7.0E-01	0.000096875 U	1.44E-04	6.7E-01
1,2,3,4,6,7,8-HpCDF	3.01E-05 J	6.91E-04 J	4.4E-02	2.45E-05 J	2.25E-03	1.1E-02	3.79E-05 J	3.51E-03	1.1E-02
1,2,3,4,7,8,9-HpCDF	2.48E-05 J	3.71E-05 J	6.7E-01	8.62E-05 U	1.05E-04 J	8.2E-01	0.000096875 U	1.84E-04 J	5.3E-01
OCDF	1.10E-04 J	1.12E-03 J	9.9E-02	1.72E-04 U	2.85E-03	6.1E-02	8.63E-05 J	9.41E-03 J	9.2E-03
Total TCDD	4.17E-05 J	7.37E-05 J	5.7E-01	5.38E-03 J	4.54E-02 J	1.2E-01	0.001196094 J	2.28E-03 J	5.3E-01
Total PeCDD	4.66E-05 U	6.40E-05 J	7.3E-01	8.62E-05 U	2.69E-04 J	3.2E-01	0.000096875 U	1.30E-04 J	7.4E-01
Total HxCDD	5.38E-05 J	6.09E-04 J	8.8E-02	4.38E-05 J	1.94E-03 J	2.3E-02	0.000034375 J	4.46E-03 J	7.7E-03
Total HpCDD	8.95E-05 J	3.36E-03 J	2.7E-02	1.19E-04 J	1.13E-02 J	1.0E-02	1.21E-04 UJ	3.52E-02 J	3.4E-03
Total TCDF	7.93E-05 J	3.33E-04 J	2.4E-01	1.01E-04	1.31E-03 J	7.7E-02	2.42188E-05 J	1.10E-04 J	2.2E-01
Total PeCDF	1.93E-04 J	7.14E-04 J	2.7E-01	2.72E-04 J	3.12E-03 J	8.7E-02	2.11E-04 J	1.52E-03 J	1.4E-01
Total HxCDF	8.16E-05 J	9.12E-04 J	8.9E-02	9.10E-05 J	3.29E-03 J	2.8E-02	0.0000875 J	3.51E-03 J	2.5E-02
Total HpCDF	6.24E-05 J	1.42E-03 J	4.4E-02	4.59E-05 J	4.69E-03 J	9.8E-03	0.0000625 J	7.49E-03 J	8.3E-03
Toxicity Equivalency - Birds	1.14E-04	1.72E-04	6.6E-01	5.62E-03	4.61E-02	1.2E-01	1.46E-03	2.68E-03	5.5E-01
Toxicity Equivalency - Fish	8.27E-05	1.04E-04	8.0E-01	5.59E-03	4.59E-02	1.2E-01	1.43E-03	2.62E-03	5.5E-01
Toxicity Equivalency - Mammals	8.35E-05	1.28E-04	6.5E-01	5.55E-03	4.59E-02	1.2E-01	1.41E-03	2.82E-03	5.0E-01
Aluminum	0.55 U	24690 J	2.2E-05	0.55 U	15413 J	3.6E-05	0.55 U	14793 J	3.7E-05
Antimony	0.0155 J	0.367 J	4.2E-02	0.0149 J	0.0443 J	3.4E-01	0.0108 J	0.1 U	1.1E-01
Barium	26.6 J	374 J	7.1E-02	26 J	240 J	1.1E-01	30.1 J	170 J	1.8E-01
Cadmium	0.048 J	4.35	1.1E-02	0.0749 J	0.415 J	1.8E-01	0.0511 J	2.3	2.2E-02
Chromium	0.221 J	171 J	1.3E-03	0.346 J	166 J	2.1E-03	0.277 J	95.5 J	2.9E-03
Cobalt	0.209 J	12.9	1.6E-02	0.254 J	1.5	1.7E-01	0.2 J	7.71	2.6E-02
Copper	29.7	94.1 J	3.2E-01	33.2	42.3 J	7.8E-01	22.2	47.5 J	4.7E-01
Iron	158 J	28019	5.6E-03	181 J	23108	7.8E-03	104 J	24489	4.2E-03
Lead	0.646 J	543 J	1.2E-03	0.912 J	39 J	2.3E-02	0.646 J	260 J	2.5E-03
Manganese	146	1004 J	1.5E-01	107	714 J	1.5E-01	71.6	633 J	1.1E-01
Mercury	0.0203	0.757	2.7E-02	0.0235	0.611	3.8E-02	0.00976	0.00743 J	1.3E+00
Mercury (methyl)	0.0186	0.000658 J	2.8E+01	0.0215	0.00211 J	1.0E+01	0.0083	0.00114 J	7.3E+00
Molybdenum	0.0864 J	8.26	1.0E-02	0.144 J	1.6 J	9.0E-02	0.0633 J	2.51	2.5E-02
Nickel	0.283 J	39.3 J	7.2E-03	0.426	23.5 J	1.8E-02	0.444	28.2	1.6E-02
Selenium	0.139 J	1.03 J	1.3E-01	0.162 J	0.773 J	2.1E-01	0.116 J	0.2715 U	4.3E-01
Silver	0.245	3.26	7.5E-02	0.252	1.84	1.4E-01	0.252	1.06	2.4E-01
Thallium	0.00804 J	0.696 J	1.2E-02	0.00947 J	0.0543 J	1.7E-01	0.0105 U	0.405 J	2.6E-02
Vanadium	0.169 J	49.2	3.4E-03	0.255 J	42.2	6.0E-03	0.23 J	41.1	5.6E-03
Zinc	28.1	854 J	3.3E-02	2.49E+01	5.70E+02 J	4.4E-02	2.01E+01	449 J	4.5E-02

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PARAMETER	GREYSTONE MILL POND						LYMAN MILL POND					
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2-Monochlorobiphenyl (1)							3.26E-04	J	1.06E-02		3.07E-02	
4-Chlorobiphenyl (3)							3.26E-04	J	2.36E-02		1.39E-02	
2,2'-Dichlorobiphenyl (4)							6.73E-04	J	2.13E-02		3.17E-02	
2,3'-Dichlorobiphenyl (6)							1.21E-03		2.35E-03	J	5.15E-01	
2,4'-Dichlorobiphenyl (8)							7.71E-04	J	1.11E-01		6.96E-03	
3,4-Dichlorobiphenyl (12)							6.41E-04	JC	2.27E-02	J	2.83E-02	
2,2',3'-Trichlorobiphenyl (16)							8.41E-04	C	6.11E-02		1.38E-02	
2,2',4-Trichlorobiphenyl (17)							6.49E-04	J	6.34E-02		1.02E-02	
2,2',5-Trichlorobiphenyl (18)							9.18E-03	C	4.56E-02	J	2.01E-01	
2,2',6-Trichlorobiphenyl (19)							8.55E-05	J	1.26E-02		6.76E-03	
2,3,3'-Trichlorobiphenyl (20)							4.18E-02	C	3.79E-01	J	1.10E-01	
2,3,4'-Trichlorobiphenyl (22)							6.89E-04	U	9.80E-02		7.04E-03	
2,3',4-Trichlorobiphenyl (25)							0.00054	J	1.87E-02		2.89E-02	
2,3',5-Trichlorobiphenyl (26)							3.35E-03	C	4.23E-02	J	7.91E-02	
2,4',5-Trichlorobiphenyl (31)							0.01791	J	1.80E-01		9.96E-02	
2,4',6-Trichlorobiphenyl (32)							3.58E-04	J	3.09E-02		1.16E-02	
2,2',3,3'-Tetrachlorobiphenyl (40)							0.00297	JC	1.97E-01	J	1.51E-02	
2,2',3,4'-Tetrachlorobiphenyl (42)							1.53E-03		9.58E-02	J	1.59E-02	
2,2',3,5-Tetrachlorobiphenyl (43)							1.75E-01	C	8.45E-03	J	2.07E+01	
2,2',3,5'-Tetrachlorobiphenyl (44)							3.51E-02	C	3.38E-01	J	1.04E-01	
2,2',3,6-Tetrachlorobiphenyl (45)							3.90E-04	JC	4.43E-02	J	8.81E-03	
2,2',3,6'-Tetrachlorobiphenyl (46)							1.01E-04	J	1.73E-02	J	5.83E-03	
2,2',4,5-Tetrachlorobiphenyl (48)							1.70E-03		4.94E-02		3.45E-02	
2,2',4,5'-Tetrachlorobiphenyl (49)							2.25E-02	C	2.01E-01	J	1.12E-01	
2,2',4,6-Tetrachlorobiphenyl (50)							4.64E-04	JC	4.10E-02	J	1.13E-02	
2,3,3',4'-Tetrachlorobiphenyl (56)							1.07E-02		1.30E-01	J	8.23E-02	
2,3,3',6-Tetrachlorobiphenyl (59)							2.59E-03	C	2.63E-02	J	9.86E-02	
2,3,4,4'-Tetrachlorobiphenyl (60)							9.16E-03		3.69E-02	J	2.49E-01	
2,3,4,5-Tetrachlorobiphenyl (61)							9.64E-02	C	5.36E-01	J	1.80E-01	
2,3,4',5-Tetrachlorobiphenyl (63)							4.31E-03		7.28E-03		5.93E-01	
2,3,4',6-Tetrachlorobiphenyl (64)							2.45E-03		1.26E-01	J	1.95E-02	
2,3',4,4'-Tetrachlorobiphenyl (66)							1.09E-01		3.77E-01	J	2.88E-01	
3,3',4,4'-Tetrachlorobiphenyl (77)							6.26E-03		3.61E-02		1.73E-01	
3,4,4',5-Tetrachlorobiphenyl (81)							2.87E-04	J	8.31E-04	U	3.45E-01	
2,2',3,3',4-Pentachlorobiphenyl (82)							1.86E-03	J	1.36E-01	J	1.36E-02	
2,2',3,3',5-Pentachlorobiphenyl (83)							1.71E-01	C	3.85E-01	J	4.45E-01	
2,2',3,3',6-Pentachlorobiphenyl (84)							6.61E-03		2.54E-01	J	2.60E-02	
2,2',3,4,4'-Pentachlorobiphenyl (85)							4.54E-02	C	1.28E-01	J	3.54E-01	
2,2',3,4,5-Pentachlorobiphenyl (86)							1.16E-01	C	6.69E-01	J	1.73E-01	
2,2',3,4,6-Pentachlorobiphenyl (88)							9.68E-03	C	1.10E-01	J	8.82E-02	
2,2',3,4,6'-Pentachlorobiphenyl (89)							7.31E-05	J	8.31E-04	U	8.79E-02	
2,2',3,4',5-Pentachlorobiphenyl (90)							3.30E-01	C	7.05E-01	J	4.68E-01	
2,2',3,5,5'-Pentachlorobiphenyl (92)							4.75E-02		1.41E-01	J	3.37E-01	
2,2',3,5,6-Pentachlorobiphenyl (93)							6.48E-04	JC	6.54E-01	J	9.91E-04	
2,2',3,5',6-Pentachlorobiphenyl (95)							7.11E-02					
2,3,3',4,4'-Pentachlorobiphenyl (105)							7.29E-02		2.17E-01		3.36E-01	
2,3,3',4,5-Pentachlorobiphenyl (106)							2.43E-02	C	7.40E-02	J	3.28E-01	

US EPA ARCHIVE DOCUMENT

TABLE J-3

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND						LYMAN MILL POND					
	GMP-CF-5002-0000-01 7/20/2001 NORMAL		GMP-SD-5002-0000-01 7/11/2001 NORMAL		BSAF		LPX-CF-4001-0000-01 7/20/2001 NORMAL		LPX-SD-4001-0000-01 7/12/2001 NORMAL		BSAF	
2,3,3',4',5'-Pentachlorobiphenyl (108)							1.31E-02	C	2.91E-02	J	4.51E-01	
2,3,3',4',6-Pentachlorobiphenyl (110)							3.57E-02	C	1.12E+00	J	3.20E-02	
2,3,4,4',5-Pentachlorobiphenyl (114)							4.31E-03		1.13E-02	J	3.81E-01	
2,3',4,4',5-Pentachlorobiphenyl (118)							2.73E-01		8.90E-01		3.07E-01	
3,3',4,4',5-Pentachlorobiphenyl (126)							6.04E-04	J	1.66E-03	UJ	3.64E-01	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)							3.21E-02	C	2.33E-01	J	1.38E-01	
2,2',3,3',4,5-Hexachlorobiphenyl (129)							3.38E-01	C	1.08E+00	J	3.13E-01	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)							2.30E-02		8.73E-02		2.63E-01	
2,2',3,3',4,6-Hexachlorobiphenyl (131)							1.66E-03	J	1.74E-02	J	9.57E-02	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)							2.60E-02		8.31E-04	U	3.12E+01	
2,2',3,3',5,6-Hexachlorobiphenyl (134)							1.11E-02	C	7.73E-02	J	1.43E-01	
2,2',3,3',5,6'-Hexachlorobiphenyl (135)							3.43E-02	C	2.81E-01	J	1.22E-01	
2,2',3,3',6,6'-Hexachlorobiphenyl (136)							8.72E-03		1.63E-01	J	5.34E-02	
2,2',3,4,4',5-Hexachlorobiphenyl (137)							4.57E-02	C	1.37E-01	J	3.34E-01	
2,2',3,4,5,5'-Hexachlorobiphenyl (141)							4.75E-02		1.31E-01		3.61E-01	
2,2',3,4,5',6-Hexachlorobiphenyl (144)							7.33E-03		8.31E-04	U	8.81E+00	
2,2',3,4',5,5'-Hexachlorobiphenyl (146)							4.15E-02	C	6.29E-02	J	6.60E-01	
2,2',3,4',5,6-Hexachlorobiphenyl (147)							1.36E-01	C	6.86E-01	J	1.98E-01	
2,2',4,4',5,5'-Hexachlorobiphenyl (153)							2.42E-01	C	4.14E-01	J	5.85E-01	
2,3,3',4,4',5-Hexachlorobiphenyl (156)							3.21E-02	C	9.74E-02	J	3.29E-01	
2,3,3',4,4',6-Hexachlorobiphenyl (158)							1.73E-02		3.33E-04	U	5.19E+01	
2,3',4,4',5,5'-Hexachlorobiphenyl (167)							1.21E-02		3.68E-02	J	3.29E-01	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)							0.00281	J	8.31E-04	U	3.38E+00	
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)							0.020236207		1.62E-01	J	1.25E-01	
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)							2.36E-03	JC	5.11E-02	J	4.62E-02	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)							5.22E-03	J	1.27E-02		4.11E-01	
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)							3.26E-02	C	1.62E-01	J	2.02E-01	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)							5.21E-04	J	4.02E-03		1.30E-01	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)							1.37E-03	J	1.95E-02	J	7.06E-02	
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)							1.46E-02		7.43E-02	J	1.97E-01	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)							8.29E-03		2.15E-02	J	3.85E-01	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)							5.32E-02	C	1.35E-01	J	3.94E-01	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)							2.04E-04	J	1.66E-03	U	1.23E-01	
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)							5.86E-05	J	1.66E-03	U	3.53E-02	
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)							0.05201		8.80E-02	J	5.91E-01	
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)							1.17E-03	J	4.11E-03		2.86E-01	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)							4.08E-03		2.28E-02	J	1.79E-01	
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)							9.22E-04	J	3.70E-03		2.49E-01	
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)							5.01E-03		3.76E-02	J	1.33E-01	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)							1.81E-03	J	1.58E-02	J	1.14E-01	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)							3.91E-03	J	2.88E-02	J	1.36E-01	
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)							1.32E-03	JC	6.41E-04	J	2.05E+00	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)							0.04164	C	1.50E-01	J	2.77E-01	
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)							0.04164		1.07E-02		3.90E+00	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)							2.10E-03	J	5.80E-03	J	3.63E-01	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)							1.15E-02		4.94E-02		2.32E-01	
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)							3.73E-04	J	2.20E-03	J	1.70E-01	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl							1.77E-02		2.29E-01		7.73E-02	

PARAMETER	LYMAN MILL POND					
	LPX-CF-4002-0000-01 7/20/2001 NORMAL		LPX-SD-4002-0000-01 7/12/2001 NORMAL		BSAF	
2,3,3',4',5'-Pentachlorobiphenyl (108)	0.003600781	JC				
2,3,3',4',6-Pentachlorobiphenyl (110)	0.009880469	C				
2,3,4,4',5-Pentachlorobiphenyl (114)	0.00128125	J				
2,3',4,4',5-Pentachlorobiphenyl (118)	0.083854688					
3,3',4,4',5-Pentachlorobiphenyl (126)	2.32E-04	J				
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	0.008364063	C				
2,2',3,3',4,5-Hexachlorobiphenyl (129)	0.088201563	C				
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	0.005811719					
2,2',3,3',4,6-Hexachlorobiphenyl (131)	4.69E-04	J				
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	8.35E-03					
2,2',3,3',5,6-Hexachlorobiphenyl (134)	0.002734375	JC				
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	0.009728906	C				
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	3.18E-03					
2,2',3,4,4',5-Hexachlorobiphenyl (137)	0.013060938	C				
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	0.014073438					
2,2',3,4,5',6-Hexachlorobiphenyl (144)	1.98E-03	J				
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	0.012163281	C				
2,2',3,4',5,6-Hexachlorobiphenyl (147)	0.041602344	C				
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	0.066121875	C				
2,3,3',4,4',5-Hexachlorobiphenyl (156)	0.009515625	C				
2,3,3',4,4',6-Hexachlorobiphenyl (158)	0.004460938					
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3.75E-03	J				
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	4.01E-04	J				
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	5.80E-03					
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	0.000679688	JC				
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	0.001803516	J				
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	0.010373438	C				
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	0.000161719	J				
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	0.000523438	J				
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	0.004292969					
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	0.0025125	J				
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	0.01931875	C				
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	9.60938E-05	J				
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	0.000021875	J				
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	0.014803125					
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	0.00039375	J				
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	0.001528125	J				
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2.84E-04	J				
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	0.001834375	J				
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	5.96E-04	J				
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	1.24E-03	J				
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	0.00045625	JC				
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	0.010967969	C				
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	0.010967969					
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	0.000632813	J				
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	3.60E-03	J				
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.41E-04	J				
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	4.58E-03	J				

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TABLE J-3
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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND					LYMAN MILL POND						
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2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl						1.93E-03 J	1.70E-02	1.14E-01	5.29E-04 J		
Decachlorobiphenyl (209)						1.08E-02 J	2.84E-01 J	3.81E-02	2.51E-03 J		
PCB Congeners, Total						3.14E+00	1.41E+01 J	2.22E-01	0.987638281		
Toxicity Equivalency (PCB) - Birds						4.17E-04	2.09E-03	1.99E-01	1.61E-04		
Toxicity Equivalency (PCB) - Fish						5.90E-06	1.86E-05	3.16E-01	2.09E-06		
Toxicity Equivalency (PCB) - Mammals						1.42E-04	3.44E-04	4.14E-01	4.38E-05		
Technical Chlordane	6.92E-01 J		5.04E+00		1.37E-01	9.46E-01 J	6.99E+00	1.35E-01	1.07421875 J	1.70E+01	6.3E-02
Heptachlor	1.43E-02 U		1.24E-02 UJ		1.15E+00	1.29E-02 U	1.19E-02 UJ	1.09E+00	0.00859375 J	9.32E-03 UJ	9.2E-01
Heptachlor Epoxide	1.43E-02 U		1.24E-02 UJ		1.15E+00	1.29E-02 U	1.19E-02 UJ	1.09E+00	0.01484375 U	9.32E-03 UJ	1.6E+00
Dieldrin	1.43E-02 U		4.27E-02 J		3.35E-01	1.29E-02 U	7.05E-02	1.83E-01	0.01484375 U	6.51E-02	2.3E-01
4,4'-DDE	1.42E-01		2.62E-01		5.43E-01	1.21E-01	2.08E-01	5.84E-01	0.109765625	1.86E-01	5.9E-01
4,4'-DDD	1.43E-02 U		1.62E-01 J		8.85E-02	9.31E-03 J	2.75E-01 J	3.38E-02	0.01484375 U	3.69E-01 J	4.0E-02
Endosulfan Sulfate	1.99E-02 J		1.24E-02 UJ		1.61E+00	1.29E-02 U	1.19E-02 U	1.09E+00	0.041015625	9.32E-03 U	4.4E+00
alpha-Chlordane	1.05E-02 J		1.18E-01		8.91E-02	1.69E-02 J	2.43E-01	6.94E-02	0.0234375 J	1.20E+00	1.9E-02
gamma-Chlordane	3.36E-03 J		8.50E-02		3.98E-02	5.17E-03 J	1.19E-02 U	4.34E-01	0.021484375 J	9.32E-03 U	2.3E+00
Aroclor-1254	1.09E+00		1.52E+00		7.17E-01	3.47E+00	8.71E+00	3.99E-01	1.16015625	1.31E+00	8.9E-01
Aroclor-1268	3.38E-01 J		2.06E+00		1.64E-01	2.66E-01 J	1.61E+00	1.65E-01	0.0984375 J	3.99E-01	2.5E-01
Aroclor, Total	1.43E+00 J		3.58E+00		3.98E-01	3.74E+00	1.03E+01	3.62E-01	1.25859375 J	1.71E+00 J	7.4E-01
Lipid_percent											

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TABLE J-3
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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND			ASSAPUMPSETT BROOK			GREYSTONE MILL POND		
PARAMETER	LPX-CF-4004-0000-01 7/20/2001 NORMAL	LPX-SD-4004-0000-01 7/12/2001 NORMAL	BSAF	RAB-CF-5004-0000-01 7/20/2001 NORMAL	RAB-SD-5004-0000-01 7/12/2001 NORMAL	BSAF	RWR-CF-5003-0000-01 7/20/2001 NORMAL	RWR-SD-5003-0000-01 7/12/2001 NORMAL	BSAF
HCX	2.59E-03 B	1.04E+00 J	2.5E-03	4.32E-04 U	3.87E-04 J	1.1E+00	4.00E-04 U	1.13E-03 J	3.5E-01
2,3,7,8-TCDD	3.64E-03	1.82E-02 J	2.0E-01	1.70E-05 J	1.17E-05 U	1.5E+00	1.65E-05 J	2.54E-05 U	6.5E-01
1,2,3,7,8-PeCDD	5.44E-05 U	3.49E-05 J	1.6E+00	5.39E-05 U	2.81E-06 U	1.9E+01	7.63E-06 J	2.61E-05 U	2.9E-01
1,2,3,4,7,8-HxCDD	5.44E-05 U	5.27E-05 J	1.0E+00	5.39E-05 U	1.01E-05 U	5.3E+00	0.00005 U	7.11E-05 J	7.0E-01
1,2,3,6,7,8-HxCDD	7.86E-06 J	1.67E-04 J	4.7E-02	5.39E-05 U	2.33E-05 U	2.3E+00	4.82E-06 J	2.56E-04 J	1.9E-02
1,2,3,7,8,9-HxCDD	5.44E-05 U	1.59E-04 J	3.4E-01	5.39E-05 U	3.63E-05 U	1.5E+00	0.00005 U	8.88E-05 U	5.6E-01
1,2,3,4,6,7,8-HpCDD	6.55E-05 J	3.59E-03 J	1.8E-02	5.39E-05 U	5.02E-04 U	1.1E-01	3.33E-05 J	3.35E-03 J	1.0E-02
OCDD	1.95E-04 U	2.36E-02 J	8.3E-03	5.22E-05 J	2.66E-03 U	2.0E-02	1.71E-04 J	2.34E-02 J	7.3E-03
2,3,7,8-TCDF	3.10E-05 #	1.14E-04 J	2.7E-01	1.22E-05 J	2.80E-05 U	4.4E-01	2.13E-05 #	2.08E-04 $	1.0E-01
1,2,3,7,8-PeCDF	4.80E-06 J	3.42E-05 J	1.4E-01	5.39E-05 U	2.58E-06 U	2.1E+01	6.02E-06 J	0.00005 U	1.2E-01
2,3,4,7,8-PeCDF	6.55E-06 J	4.67E-05 J	1.4E-01	5.39E-05 U	1.12E-05 U	4.8E+00	7.63E-06 J	2.54E-04 J	3.0E-02
1,2,3,4,7,8-HxCDF	5.44E-05 U	1.06E-04 J	5.1E-01	1.74E-06 J	2.65E-05 U	6.6E-02	1.04E-05 J	2.18E-04 J	4.8E-02
1,2,3,6,7,8-HxCDF	4.37E-06 J	8.43E-05 J	5.2E-02	5.39E-05 U	1.01E-05 U	5.3E+00	0.00005 U	1.27E-04 J	3.9E-01
2,3,4,6,7,8-HxCDF	5.44E-05 U	5.75E-05 J	9.5E-01	1.74E-06 J	1.28E-05 U	1.4E-01	3.61E-06 J	8.66E-05 J	4.2E-02
1,2,3,4,6,7,8-HpCDF	2.62E-05 J	1.08E-03 J	2.4E-02	3.48E-06 J	1.80E-04	1.9E-02	1.85E-05 J	1.30E-03	1.4E-02
1,2,3,4,7,8,9-HpCDF	5.44E-05 U	5.71E-05 J	9.5E-01	5.39E-05 U	5.51E-06 U	9.8E+00	0.00005 U	3.36E-05 U	1.5E+00
OCDF	3.62E-05 J	1.78E-03 J	2.0E-02	5.65E-06 J	2.40E-04	2.4E-02	1.97E-05 J	2.24E-03	8.8E-03
Total TCDD	3.64E-03 J	1.82E-02 J	2.0E-01	1.65E-05 J	1.45E-05 UJ	1.1E+00	3.61E-05 J	2.54E-05 UJ	1.4E+00
Total PeCDD	1.09E-05 J	1.65E-04 J	6.6E-02	5.39E-05 U	5.46E-05 J	9.9E-01	7.63E-06 J	2.61E-05 UJ	2.9E-01
Total HxCDD	2.31E-05 J	1.08E-03 J	2.1E-02	5.39E-05 U	2.71E-04 UJ	2.0E-01	1.37E-05 J	9.21E-04 UJ	1.5E-02
Total HpCDD	6.03E-05 UJ	6.51E-03 J	9.3E-03	7.83E-06 J	9.34E-04 UJ	8.4E-03	5.94E-05 J	3.51E-03 UJ	1.7E-02
Total TCDF	1.22E-04 J	8.42E-04 J	1.4E-01	2.39E-05	3.20E-04 J	7.5E-02	5.46E-05 J	9.03E-05 UJ	6.0E-01
Total PeCDF	2.28E-04 J	1.57E-03 J	1.4E-01	1.83E-05 J	1.68E-04 UJ	1.1E-01	2.18E-04 J	2.39E-03 J	9.1E-02
Total HxCDF	7.95E-05 J	1.57E-03 J	5.1E-02	5.65E-06 J	1.54E-04 UJ	3.7E-02	8.31E-05 J	1.89E-03 J	4.4E-02
Total HpCDF	4.24E-05 J	2.27E-03 J	1.9E-02	3.48E-06 J	1.78E-04 UJ	2.0E-02	2.85E-05 J	2.65E-03 J	1.1E-02
Toxicity Equivalency - Birds	3.76E-03	1.88E-02	2.0E-01	1.63E-04	6.67E-05	2.4E+00	7.35E-05	6.02E-04	1.2E-01
Toxicity Equivalency - Fish	3.74E-03	1.86E-02	2.0E-01	1.41E-04	3.57E-05	3.9E+00	6.71E-05	2.97E-04	2.3E-01
Toxicity Equivalency - Mammals	3.73E-03	1.87E-02	2.0E-01	1.30E-04	4.29E-05	3.0E+00	5.34E-05	3.40E-04	1.6E-01
Aluminum	0.55 U	24263 J	2.3E-05	0.55 UJ	13961 J	3.9E-05	1.95 J	5267 J	3.7E-04
Antimony	0.016 U	0.167 U	9.6E-02	0.016 U	0.0155 U	1.0E+00	0.0141 J	0.04 U	3.5E-01
Barium	25.8 J	380 J	6.8E-02	39.7 J	139 J	2.9E-01	25.1 J	40.6 J	6.2E-01
Cadmium	0.065 J	3.15 J	2.1E-02	0.0819 J	0.692 J	1.2E-01	0.109 J	0.238 J	4.6E-01
Chromium	0.126 U	214 J	5.9E-04	0.126 U	13.8 J	9.1E-03	0.368 J	36.4 J	1.0E-02
Cobalt	0.244 J	17.7	1.4E-02	0.0829 J	8.41	9.9E-03	0.278 J	4.7	5.9E-02
Copper	31.6	93.1 J	3.4E-01	15	18.3 J	8.2E-01	29.4	18.9	1.6E+00
Iron	77 J	32713	2.4E-03	29.4 J	17910	1.6E-03	73.2 J	8351	8.8E-03
Lead	0.717 J	500 J	1.4E-03	0.14 J	49.6 J	2.8E-03	0.673 J	37.1 J	1.8E-02
Manganese	108	1655 J	6.5E-02	112	908 J	1.2E-01	99.3	162 J	6.1E-01
Mercury	0.022	0.946	2.3E-02	0.0389	0.114	3.4E-01	0.027	0.0458	5.9E-01
Mercury (methyl)	0.0131	0.000387 J	3.4E+01	0.0389	0.000863 J	4.5E+01	0.0286	0.000141 J	2.0E+02
Molybdenum	0.0907 J	13.4	6.8E-03	0.0425 J	1.56 J	2.7E-02	0.247 J	15	1.6E-02
Nickel	0.487	42.4 J	1.1E-02	0.25 J	20 J	1.3E-02	0.374	3.98 J	9.4E-02
Selenium	0.13 J	0.934 J	1.4E-01	0.125 J	0.247 U	5.1E-01	0.121 J	0.103 U	1.2E+00
Silver	0.236	2.94	8.0E-02	0.215	0.1185 U	1.8E+00	0.31	0.066 U	4.7E+00
Thallium	0.00717 J	0.679 J	1.1E-02	0.00712 J	0.285 J	2.5E-02	0.01 J	0.079 J	1.3E-01
Vanadium	0.232 J	60.1	3.9E-03	0.084 U	23.6	3.6E-03	0.278 J	18.6	1.5E-02
Zinc	32.5	9.23E+02 J	3.5E-02	22.9	150 J	1.5E-01	21.8	6.23E+01 J	3.5E-01

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Centredale Manor Restoration Project Superfund Site
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2-Monochlorobiphenyl (1)		9.40E-03 J						1.57E-03 J	
4-Chlorobiphenyl (3)		1.84E-02 J						1.00E-03 UJ	
2,2'-Dichlorobiphenyl (4)		1.00E-02 J						7.36E-03 J	
2,3'-Dichlorobiphenyl (6)		1.28E-02 J						6.39E-03 J	
2,4'-Dichlorobiphenyl (8)		6.44E-02 J						3.32E-02 J	
3,4-Dichlorobiphenyl (12)		1.01E-02 J						1.59E-03 J	
2,2',3'-Trichlorobiphenyl (16)		2.38E-02 J						2.11E-02 J	
2,2',4-Trichlorobiphenyl (17)		2.34E-02 J						2.13E-02 J	
2,2',5-Trichlorobiphenyl (18)		2.28E-02 J						2.05E-02 J	
2,2',6-Trichlorobiphenyl (19)		5.02E-03 J						5.46E-03 J	
2,3,3'-Trichlorobiphenyl (20)		1.23E-01 J						1.07E-01 J	
2,3,4'-Trichlorobiphenyl (22)		3.88E-02 J						3.28E-02 J	
2,3',4-Trichlorobiphenyl (25)		5.90E-03 J						4.88E-03 J	
2,3',5-Trichlorobiphenyl (26)		1.12E-02 J						1.15E-02 J	
2,4',5-Trichlorobiphenyl (31)		6.03E-02 J						5.24E-02 J	
2,4',6-Trichlorobiphenyl (32)		1.60E-02 J						9.60E-03 J	
2,2',3,3'-Tetrachlorobiphenyl (40)		1.77E-01 J						5.13E-02 J	
2,2',3,4'-Tetrachlorobiphenyl (42)		4.62E-02 J						2.32E-02 J	
2,2',3,5-Tetrachlorobiphenyl (43)		2.17E-01 J						2.54E-01 J	
2,2',3,5'-Tetrachlorobiphenyl (44)		1.59E-01 J						1.19E-01 J	
2,2',3,6-Tetrachlorobiphenyl (45)		1.93E-02 J						5.67E-03 J	
2,2',3,6'-Tetrachlorobiphenyl (46)		9.43E-03 J						4.46E-03 J	
2,2',4,5-Tetrachlorobiphenyl (48)		1.74E-02 J						1.03E-02 J	
2,2',4,5'-Tetrachlorobiphenyl (49)		8.29E-02 J						6.61E-02 J	
2,2',4,6-Tetrachlorobiphenyl (50)		2.53E-02 J						1.27E-02 J	
2,3,3',4'-Tetrachlorobiphenyl (56)		8.49E-02 J						3.71E-02 J	
2,3,3',6-Tetrachlorobiphenyl (59)		1.08E-02 J						5.39E-03 J	
2,3,4,4'-Tetrachlorobiphenyl (60)		3.65E-03 J						5.04E-03 J	
2,3,4,5-Tetrachlorobiphenyl (61)		2.38E-01 J						2.28E-01 J	
2,3,4',5-Tetrachlorobiphenyl (63)		2.52E-03 J						1.78E-03 UJ	
2,3,4',6-Tetrachlorobiphenyl (64)		6.04E-02 J						3.83E-02 J	
2,3',4,4'-Tetrachlorobiphenyl (66)		2.18E-01 J						1.28E-01 J	
3,3',4,4'-Tetrachlorobiphenyl (77)		1.73E-02 J						7.62E-03 J	
3,4,4',5-Tetrachlorobiphenyl (81)								1.78E-03 UJ	
2,2',3,3',4-Pentachlorobiphenyl (82)		0.075064877 J						1.25E-01 J	
2,2',3,3',5-Pentachlorobiphenyl (83)		1.54E-01 J						2.88E-01 J	
2,2',3,3',6-Pentachlorobiphenyl (84)		1.80E-01 J						2.73E-01 J	
2,2',3,4,4'-Pentachlorobiphenyl (85)		6.38E-02 J						1.41E-01 J	
2,2',3,4,5-Pentachlorobiphenyl (86)		3.55E-01 J						6.18E-01 J	
2,2',3,4,6-Pentachlorobiphenyl (88)		7.03E-02 J						1.18E-01 J	
2,2',3,4,6'-Pentachlorobiphenyl (89)								1.78E-03 UJ	
2,2',3,4',5-Pentachlorobiphenyl (90)		3.44E-01 J						5.88E-01 J	
2,2',3,5,5'-Pentachlorobiphenyl (92)		6.93E-02 J						1.14E-01 J	
2,2',3,5,6-Pentachlorobiphenyl (93)		4.16E-01 J						7.13E-01 J	
2,2',3,5',6-Pentachlorobiphenyl (95)									
2,3,3',4,4'-Pentachlorobiphenyl (105)		9.32E-02 J						2.07E-01 J	
2,3,3',4,5-Pentachlorobiphenyl (106)		2.94E-02 J						4.88E-02 J	

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	LPX-CF-4004-0000-01 7/20/2001 NORMAL	LPX-SD-4004-0000-01 7/12/2001 NORMAL	BSAF	RAB-CF-5004-0000-01 7/20/2001 NORMAL	RAB-SD-5004-0000-01 7/12/2001 NORMAL	BSAF	RWR-CF-5003-0000-01 7/20/2001 NORMAL	RWR-SD-5003-0000-01 7/12/2001 NORMAL	BSAF
2,3,3',4',5'-Pentachlorobiphenyl (108)		1.14E-02 J						2.93E-02 J	
2,3,3',4',6-Pentachlorobiphenyl (110)		6.69E-01 J						1.27E+00 J	
2,3,4,4',5-Pentachlorobiphenyl (114)								9.56E-03 J	
2,3',4,4',5-Pentachlorobiphenyl (118)		3.74E-01 J						6.63E-01 J	
3,3',4,4',5-Pentachlorobiphenyl (126)		5.05E-03 J						1.08E-02 J	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		9.15E-02 J						2.18E-01 J	
2,2',3,3',4,5-Hexachlorobiphenyl (129)		3.79E-01 J						9.54E-01 J	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		2.80E-02 J						6.85E-02 J	
2,2',3,3',4,6-Hexachlorobiphenyl (131)		5.91E-03 J						1.59E-02 J	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		2.08E-01 J						4.45E-01 J	
2,2',3,3',5,6-Hexachlorobiphenyl (134)		3.19E-02 J						6.41E-02 J	
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		9.84E-02 J						2.15E-01 J	
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		7.77E-02 J						1.44E-01 J	
2,2',3,4,4',5-Hexachlorobiphenyl (137)		4.31E-02 J						1.20E-01 J	
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		3.49E-02 J						1.12E-01 J	
2,2',3,4,5',6-Hexachlorobiphenyl (144)								1.78E-03 UJ	
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		1.55E-02 J						6.59E-02 J	
2,2',3,4',5,6-Hexachlorobiphenyl (147)		2.58E-01 J						6.04E-01 J	
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		9.46E-02 J						2.59E-01 J	
2,3,3',4,4',5-Hexachlorobiphenyl (156)		3.56E-02 J						9.64E-02 J	
2,3,3',4,4',6-Hexachlorobiphenyl (158)		2.69E-02 J						8.23E-02 J	
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.53E-02 J						3.89E-02 J	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)								1.78E-03 UJ	
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		0.095393222 J						1.58E-01 J	
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		2.89E-02 J						4.89E-02 J	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		0.007156954 J						1.26E-02 J	
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		1.28E-01 J						1.65E-01 J	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)								3.02E-03 J	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		1.13E-02 J						1.64E-02 J	
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		4.72E-02 J						7.21E-02 J	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		9.86E-03 J						1.30E-02 J	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		5.91E-02 J						1.07E-01 J	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)								3.56E-03 UJ	
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)								3.56E-03 UJ	
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		4.26E-02 J						5.65E-02 J	
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		1.76E-03 J						3.62E-03 J	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		1.07E-02 J						1.75E-02 J	
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		1.46E-03 J						3.17E-03 J	
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		1.73E-02 J						0.0184 J	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		1.13E-02 J						1.12E-02 J	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		1.48E-02 J						1.19E-02 J	
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		5.36E-04 J						5.79E-04 J	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		6.53E-02 J						5.74E-02 J	
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)		3.96E-03 J						3.63E-03 J	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		6.35E-03 J						5.21E-03 J	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		1.70E-02 J						1.81E-02 J	
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		9.33E-04 J						1.10E-03 J	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		8.94E-02 J						8.61E-02 J	

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2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		5.33E-03 J						5.14E-03 J	
Decachlorobiphenyl (209)		1.04E-01 J						8.95E-02 J	
PCB Congeners, Total		7.16E+00 J						1.11E+01 J	
Toxicity Equivalency (PCB) - Birds		1.38E-03						1.68E-03	
Toxicity Equivalency (PCB) - Fish		2.96E-05						6.07E-05	
Toxicity Equivalency (PCB) - Mammals		5.71E-04						1.24E-03	
Technical Chlordane	7.21E-01 J	1.95E+01	3.70E-02	3.84E-01 J	1.43E+00 J	2.68E-01	6.56E-01 J	1.12E+01	5.8E-02
Heptachlor	1.64E-02 U	1.18E-02 UJ	1.38E+00	1.65E-02 U	2.03E-02 UJ	8.12E-01	1.53E-02 U	2.26E-02 UJ	6.7E-01
Heptachlor Epoxide	1.64E-02 U	1.18E-02 UJ	1.38E+00	3.91E-03 J	2.03E-02 UJ	1.92E-01	1.53E-02 U	2.26E-02 UJ	6.7E-01
Dieldrin	1.64E-02 U	6.93E-02	2.36E-01	1.65E-02 U	1.39E-02 J	1.19E+00	1.53E-02 U	9.75E-02	1.6E-01
4,4'-DDE	2.10E-01	2.51E-01	8.38E-01	1.57E-01	8.90E-02	1.76E+00	1.34E-01	5.32E-02	2.5E+00
4,4'-DDD	1.64E-02 U	4.29E-01	3.82E-02	1.65E-02 U	4.67E-02	3.53E-01	1.53E-02 U	1.07E-01	1.4E-01
Endosulfan Sulfate	1.64E-02 U	1.18E-02 U	1.38E+00	1.65E-02 U	2.03E-02 U	8.12E-01	1.53E-02 U	2.26E-02 U	6.7E-01
alpha-Chlordane	3.49E-03 J	1.24E+00	2.82E-03	1.65E-02 U	2.40E-02 J	6.87E-01	4.82E-03 J	2.68E-01	1.8E-02
gamma-Chlordane	1.64E-02 U	1.18E-02 U	1.38E+00	1.65E-02 U	1.46E-02 J	1.13E+00	1.53E-02 U	1.81E-01	8.5E-02
Aroclor-1254	2.55E+00	2.75E+00	9.28E-01	4.50E-01	5.64E-01	7.97E-01	2.07E+00	5.87E+00	3.5E-01
Aroclor-1268	2.03E-01 J	4.15E-01	4.91E-01	0.03 J	1.02E-01 J	2.93E-01	2.02E-01 J	1.10E+00	1.8E-01
Aroclor, Total	2.76E+00 J	3.16E+00	8.71E-01	4.79E-01 J	6.66E-01 J	7.19E-01	2.27E+00 J	6.96E+00	3.3E-01
Lipid_percent									

US EPA ARCHIVE DOCUMENT

TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND			LYMAN MILL POND		
	RWR-CF-5004-0000-01 7/20/2001 NORMAL	RWR-SD-5004-0000-01 7/12/2001 NORMAL	BSAF	WRL-CF-4005-0000-01 7/20/2001 NORMAL	WRL-SD-4005-0000-01 7/12/2001 NORMAL	BSAF
HCX	3.67E-04 U	1.33E-03 J	2.8E-01	5.36E-03 B	2.63E-01 J	2.0E-02
2,3,7,8-TCDD	9.26E-06 U	1.88E-05 U	4.9E-01	6.57E-03	9.05E-03	7.3E-01
1,2,3,7,8-PeCDD	4.59E-05 U	1.71E-05 U	2.7E+00	6.33E-05 U	2.44E-05 J	2.6E+00
1,2,3,4,7,8-HxCDD	4.59E-05 U	8.71E-05 J	5.3E-01	6.33E-05 U	3.61E-05 J	1.8E+00
1,2,3,6,7,8-HxCDD	4.59E-05 U	3.82E-04	1.2E-01	6.33E-05 U	1.12E-04	5.7E-01
1,2,3,7,8,9-HxCDD	4.59E-05 U	3.38E-04	1.4E-01	6.33E-05 U	0.0001	6.3E-01
1,2,3,4,6,7,8-HpCDD	6.04E-05 J	5.28E-03	1.1E-02	4.21E-05 J	2.32E-03	1.8E-02
OCDD	2.78E-04 U	2.89E-02	9.6E-03	2.42E-04 J	1.62E-02	1.5E-02
2,3,7,8-TCDF	2.44E-05 E	2.10E-04 $	1.2E-01	3.18E-05 #	6.26E-05 $	5.1E-01
1,2,3,7,8-PeCDF	4.59E-05 U	2.77E-05 U	1.7E+00	6.33E-05 U	2.26E-05 J	2.8E+00
2,3,4,7,8-PeCDF	4.59E-05 U	1.18E-04 J	3.9E-01	6.33E-05 U	3.43E-05 J	1.8E+00
1,2,3,4,7,8-HxCDF	4.59E-05 U	3.67E-04	1.3E-01	6.33E-05 U	7.56E-05	8.4E-01
1,2,3,6,7,8-HxCDF	4.59E-05 U	2.83E-04	1.6E-01	6.15E-06 J	5.64E-05 J	1.1E-01
2,3,4,6,7,8-HxCDF	4.59E-05 U	2.43E-04	1.9E-01	6.33E-05 U	4.28E-05 J	1.5E+00
1,2,3,4,6,7,8-HpCDF	2.04E-05 J	1.12E-02	1.8E-03	2.15E-05 J	8.50E-04	2.5E-02
1,2,3,4,7,8,9-HpCDF	4.59E-05 U	1.60E-04 J	2.9E-01	6.33E-05 U	4.03E-05 J	1.6E+00
OCDF	9.17E-05 U	5.08E-03	1.8E-02	2.36E-05 J	1.56E-03	1.5E-02
Total TCDD	2.41E-05 J	6.73E-05 UJ	3.6E-01	6.57E-03 J	9.05E-03 J	7.3E-01
Total PeCDD	4.59E-05 U	2.95E-04 J	1.6E-01	6.33E-05 U	1.29E-04 J	4.9E-01
Total HxCDD	4.59E-05 U	3.10E-03 J	1.5E-02	2.21E-05 J	7.58E-04 J	2.9E-02
Total HpCDD	5.44E-05 UJ	1.02E-02 J	5.3E-03	8.15E-05 J	4.15E-03 J	2.0E-02
Total TCDF	2.44E-05 J	1.19E-03 J	2.1E-02	1.17E-04 J	4.12E-04 J	2.9E-01
Total PeCDF	1.17E-04 J	3.34E-03 J	3.5E-02	3.43E-04 J	6.24E-04 J	5.5E-01
Total HxCDF	4.59E-05 U	7.37E-03 J	6.2E-03	1.09E-04 J	1.04E-03 J	1.1E-01
Total HpCDF	4.26E-05 J	1.89E-02 J	2.3E-03	3.33E-05 J	1.84E-03 J	1.8E-02
Toxicity Equivalency - Birds	1.57E-04	6.39E-04	2.5E-01	6.77E-03	9.27E-03	7.3E-01
Toxicity Equivalency - Fish	1.25E-04	3.86E-04	3.2E-01	6.72E-03	9.19E-03	7.3E-01
Toxicity Equivalency - Mammals	1.16E-04	4.73E-04	2.5E-01	6.72E-03	9.23E-03	7.3E-01
Aluminum	0.55 U	4545 J	1.2E-04	0.55 U	6949 J	7.9E-05
Antimony	0.0101 J	0.0805 U	1.3E-01	0.0166 J	0.0995 U	1.7E-01
Barium	21.5 J	59.3 J	3.6E-01	30.5 J	86.3 J	3.5E-01
Cadmium	0.0695 J	0.374 J	1.9E-01	0.164 J	0.894	1.8E-01
Chromium	0.179 J	95.7 J	1.9E-03	0.23 J	43.2 J	5.3E-03
Cobalt	0.308 J	4.83	6.4E-02	0.35 J	4.21	8.3E-02
Copper	23.7	34.5	6.9E-01	33	21.7 J	1.5E+00
Iron	44.8 J	8475	5.3E-03	127 J	12266	1.0E-02
Lead	0.53 J	87.7 J	6.0E-03	1.16 J	96.1 J	1.2E-02
Manganese	109	222 J	4.9E-01	214	403 J	5.3E-01
Mercury	0.0256	0.109	2.3E-01	0.0259	0.279	9.3E-02
Mercury (methyl)	0.0243	0.000079 J	3.1E+02	0.0182	0.00959 J	1.9E+00
Molybdenum	0.182 J	17.2	1.1E-02	0.198 J	5.44	3.6E-02
Nickel	0.243 J	2.03 J	1.2E-01	0.584	2.14 J	2.7E-01
Selenium	0.102 J	0.1055 U	9.7E-01	0.142 J	0.228 U	6.2E-01
Silver	0.144	0.371	3.9E-01	0.23	0.364	6.3E-01
Thallium	0.00766 J	0.105 J	7.3E-02	0.0113 J	0.174 J	6.5E-02
Vanadium	0.143 J	23.9	6.0E-03	0.361 J	42.8	8.4E-03
Zinc	15.9	113 J	1.4E-01	27.2	172 J	1.6E-01

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TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND			LYMAN MILL POND		
	RWR-CF-5004-0000-01 7/20/2001 NORMAL	RWR-SD-5004-0000-01 7/12/2001 NORMAL	BSAF	WRL-CF-4005-0000-01 7/20/2001 NORMAL	WRL-SD-4005-0000-01 7/12/2001 NORMAL	BSAF
2-Monochlorobiphenyl (1)						
4-Chlorobiphenyl (3)						
2,2'-Dichlorobiphenyl (4)						
2,3'-Dichlorobiphenyl (6)						
2,4'-Dichlorobiphenyl (8)						
3,4-Dichlorobiphenyl (12)						
2,2',3'-Trichlorobiphenyl (16)						
2,2',4-Trichlorobiphenyl (17)						
2,2',5-Trichlorobiphenyl (18)						
2,2',6-Trichlorobiphenyl (19)						
2,3,3'-Trichlorobiphenyl (20)						
2,3,4'-Trichlorobiphenyl (22)						
2,3',4-Trichlorobiphenyl (25)						
2,3',5-Trichlorobiphenyl (26)						
2,4',5-Trichlorobiphenyl (31)						
2,4',6-Trichlorobiphenyl (32)						
2,2',3,3'-Tetrachlorobiphenyl (40)						
2,2',3,4'-Tetrachlorobiphenyl (42)						
2,2',3,5-Tetrachlorobiphenyl (43)						
2,2',3,5'-Tetrachlorobiphenyl (44)						
2,2',3,6-Tetrachlorobiphenyl (45)						
2,2',3,6'-Tetrachlorobiphenyl (46)						
2,2',4,5-Tetrachlorobiphenyl (48)						
2,2',4,5'-Tetrachlorobiphenyl (49)						
2,2',4,6-Tetrachlorobiphenyl (50)						
2,3,3',4'-Tetrachlorobiphenyl (56)						
2,3,3',6-Tetrachlorobiphenyl (59)						
2,3,4,4'-Tetrachlorobiphenyl (60)						
2,3,4,5-Tetrachlorobiphenyl (61)						
2,3,4',5-Tetrachlorobiphenyl (63)						
2,3,4',6-Tetrachlorobiphenyl (64)						
2,3',4,4'-Tetrachlorobiphenyl (66)						
3,3',4,4'-Tetrachlorobiphenyl (77)						
3,4,4',5-Tetrachlorobiphenyl (81)						
2,2',3,3',4-Pentachlorobiphenyl (82)						
2,2',3,3',5-Pentachlorobiphenyl (83)						
2,2',3,3',6-Pentachlorobiphenyl (84)						
2,2',3,4,4'-Pentachlorobiphenyl (85)						
2,2',3,4,5-Pentachlorobiphenyl (86)						
2,2',3,4,6-Pentachlorobiphenyl (88)						
2,2',3,4,6'-Pentachlorobiphenyl (89)						
2,2',3,4',5-Pentachlorobiphenyl (90)						
2,2',3,5,5'-Pentachlorobiphenyl (92)						
2,2',3,5,6-Pentachlorobiphenyl (93)						
2,2',3,5',6-Pentachlorobiphenyl (95)						
2,3,3',4,4'-Pentachlorobiphenyl (105)						
2,3,3',4,5-Pentachlorobiphenyl (106)						

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TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND			LYMAN MILL POND		
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2,3,3',4',5'-Pentachlorobiphenyl (108)						
2,3,3',4',6-Pentachlorobiphenyl (110)						
2,3,4,4',5-Pentachlorobiphenyl (114)						
2,3',4,4',5-Pentachlorobiphenyl (118)						
3,3',4,4',5-Pentachlorobiphenyl (126)						
2,2',3,3',4,4'-Hexachlorobiphenyl (128)						
2,2',3,3',4,5-Hexachlorobiphenyl (129)						
2,2',3,3',4,5'-Hexachlorobiphenyl (130)						
2,2',3,3',4,6-Hexachlorobiphenyl (131)						
2,2',3,3',4,6'-Hexachlorobiphenyl (132)						
2,2',3,3',5,6-Hexachlorobiphenyl (134)						
2,2',3,3',5,6'-Hexachlorobiphenyl (135)						
2,2',3,3',6,6'-Hexachlorobiphenyl (136)						
2,2',3,4,4',5-Hexachlorobiphenyl (137)						
2,2',3,4,5,5'-Hexachlorobiphenyl (141)						
2,2',3,4,5',6-Hexachlorobiphenyl (144)						
2,2',3,4',5,5'-Hexachlorobiphenyl (146)						
2,2',3,4',5,6-Hexachlorobiphenyl (147)						
2,2',4,4',5,5'-Hexachlorobiphenyl (153)						
2,3,3',4,4',5-Hexachlorobiphenyl (156)						
2,3,3',4,4',6-Hexachlorobiphenyl (158)						
2,3',4,4',5,5'-Hexachlorobiphenyl (167)						
3,3',4,4',5,5'-Hexachlorobiphenyl (169)						
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)						
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)						
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)						
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)						
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)						
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)						
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)						
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)						
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)						
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)						
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)						
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)						
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)						
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)						
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)						
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)						
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)						
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)						
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)						
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)						
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)						
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)						
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)						
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)						
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl						

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TABLE J-3
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR CRAYFISH TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND					LYMAN MILL POND				
	RWR-CF-5004-0000-01 7/20/2001 NORMAL		RWR-SD-5004-0000-01 7/12/2001 NORMAL		BSAF	WRL-CF-4005-0000-01 7/20/2001 NORMAL		WRL-SD-4005-0000-01 7/12/2001 NORMAL		BSAF
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl										
Decachlorobiphenyl (209)										
PCB Congeners, Total										
Toxicity Equivalency (PCB) - Birds										
Toxicity Equivalency (PCB) - Fish										
Toxicity Equivalency (PCB) - Mammals										
Technical Chlordane	0.59	J	7.52E+00		7.85E-02	9.53E-01	J	1.02E+01		9.3E-02
Heptachlor	1.41E-02	U	2.55E-02	UJ	5.52E-01	1.95E-02	U	8.42E-03	UJ	2.3E+00
Heptachlor Epoxide	1.41E-02	U	2.55E-02	UJ	5.52E-01	1.95E-02	U	8.42E-03	UJ	2.3E+00
Dieldrin	1.41E-02	U	8.76E-02		1.61E-01	3.23E-02	J	1.21E-01		2.7E-01
4,4'-DDE	1.17E-01		9.41E-02		1.25E+00	2.57E-01		5.97E-02		4.3E+00
4,4'-DDD	1.41E-02	U	2.41E-01		5.84E-02	1.18E-02	J	7.73E-02		1.5E-01
Endosulfan Sulfate	1.41E-02	U	2.55E-02	U	5.52E-01	1.95E-02	U	1.27E-01		1.5E-01
alpha-Chlordane	2.22E-03	J	1.53E-01		1.45E-02	6.15E-03	J	2.54E-01		2.4E-02
gamma-Chlordane	1.41E-02	U	9.50E-02		1.48E-01	1.95E-02	U	8.42E-03	U	2.3E+00
Aroclor-1254	1.75E+00		7.93E+00		2.21E-01	4.94E+00		1.86E+00		2.7E+00
Aroclor-1268	2.08E-01	J	1.87E+00		1.11E-01	3.05E-01	J	4.45E-01		6.8E-01
Aroclor, Total	1.96	J	9.80E+00		2.00E-01	5.25E+00		2.31E+00		2.3E+00
Lipid_percent										

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS																	
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
PARAMETER	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
HCX	18	36	1.7E-03	4.6E-04	42	45	9.8E+00	7.6E-01	7	7	1.3E-03	7.9E-04	27	34	1.8E+00	2.2E-01
2,3,7,8-TCDD	33	36	2.2E-02	5.9E-03	144	147	3.1E+00	1.4E-01	8	11	7.9E-04	1.5E-04	45	46	9.9E-02	2.9E-02
1,2,3,7,8-PeCDD	10	36	2.9E-05	8.8E-06	50	61	2.0E-03	2.0E-04	8	11	1.2E-04	4.2E-05	36	45	9.1E-04	1.4E-04
1,2,3,4,7,8-HxCDD	13	36	4.7E-05	5.5E-06	55	62	4.5E-04	1.8E-04	8	11	2.3E-04	8.8E-05	37	46	1.5E-03	1.6E-04
1,2,3,6,7,8-HxCDD	22	36	4.9E-05	7.3E-06	58	61	2.4E-03	5.9E-04	9	11	7.8E-04	3.1E-04	40	44	5.3E-03	5.5E-04
1,2,3,7,8,9-HxCDD	8	36	4.6E-05	4.8E-06	59	62	1.5E-03	5.5E-04	7	11	6.3E-04	2.6E-04	42	45	4.1E-03	4.7E-04
1,2,3,4,6,7,8-HpCDD	14	36	3.8E-04	2.4E-05	57	62	2.3E-02	9.9E-03	11	11	1.3E-02	5.3E-03	35	46	1.5E-01	1.2E-02
OCDD	3	36	3.6E-04	4.2E-05	58	62	1.7E-01	6.5E-02	11	11	1.0E-01	3.7E-02	36	46	1.1E+00	7.8E-02
2,3,7,8-TCDF	34	36	1.9E-04	4.8E-05	59	62	1.4E-03	3.6E-04	9	11	6.4E-04	2.5E-04	39	45	8.4E-04	2.7E-04
1,2,3,7,8-PeCDF	17	36	5.0E-05	5.4E-06	50	58	1.4E-03	2.0E-04	5	11	1.4E-04	4.9E-05	36	42	3.1E-04	8.6E-05
2,3,4,7,8-PeCDF	20	36	3.2E-04	1.5E-05	56	62	7.3E-04	1.7E-04	8	8	2.5E-04	1.4E-04	37	45	2.8E-04	1.1E-04
1,2,3,4,7,8-HxCDF	5	36	5.7E-05	6.4E-06	55	59	1.2E-03	3.5E-04	9	11	6.8E-04	2.9E-04	38	41	1.5E-03	3.4E-04
1,2,3,6,7,8-HxCDF	7	36	5.7E-05	6.4E-06	58	61	8.3E-04	2.7E-04	9	11	4.6E-04	2.0E-04	39	41	1.1E-03	2.4E-04
2,3,4,6,7,8-HxCDF	10	36	5.0E-05	4.2E-06	55	61	1.2E-03	2.1E-04	9	11	5.7E-04	2.1E-04	39	41	1.6E-03	2.6E-04
1,2,3,7,8,9-HxCDF	1	36	4.4E-05	4.9E-06	27	53	5.7E-04	1.1E-04	1	11	1.6E-04	4.0E-05	16	36	1.1E-04	2.9E-05
1,2,3,4,6,7,8-HpCDF	3	36	4.8E-05	6.4E-06	57	59	1.5E-02	3.7E-03	11	11	1.1E-02	3.7E-03	41	46	2.3E-02	3.1E-03
1,2,3,4,7,8,9-HpCDF	0	36	5.1E-05	5.9E-06	53	61	7.6E-04	2.0E-04	10	11	2.4E-04	1.1E-04	34	45	2.7E-03	2.3E-04
OCDF	1	36	2.4E-04	1.2E-05	53	59	1.3E-02	5.6E-03	11	11	5.6E-03	3.4E-03	33	45	1.4E-01	8.5E-03
Total TCDD	28	36	2.2E-02	5.9E-03	50	52	3.1E+00	1.8E-01	9	11	1.3E-03	3.5E-04	35	35	1.0E-01	3.6E-02
Total PeCDD	9	36	1.0E-04	1.6E-05	50	52	4.5E-03	9.0E-04	5	8	9.1E-04	2.4E-04	31	34	1.8E-03	6.6E-04
Total HxCDD	12	36	3.6E-04	1.7E-05	48	52	8.3E-03	3.8E-03	9	11	6.0E-03	2.3E-03	32	35	2.6E-02	4.5E-03
Total HpCDD	11	36	6.2E-04	3.5E-05	51	52	4.3E-02	2.0E-02	10	11	2.7E-02	1.0E-02	33	35	2.3E-01	3.0E-02
Total TCDF	34	36	1.9E-04	3.8E-05	51	52	1.9E-02	4.0E-03	10	11	5.8E-03	1.8E-03	35	35	1.1E-02	4.1E-03
Total PeCDF	30	36	2.7E-04	2.7E-05	50	52	2.2E-02	4.6E-03	9	10	5.1E-03	2.4E-03	35	35	1.3E-02	4.2E-03
Total HxCDF	14	36	3.3E-04	1.8E-05	52	52	2.9E-02	5.9E-03	11	11	9.4E-03	4.2E-03	34	35	1.8E-02	5.4E-03
Total HpCDF	5	36	1.1E-04	1.5E-05	52	52	1.9E-02	7.2E-03	11	11	1.9E-02	7.3E-03	34	35	8.8E-02	1.1E-02
Toxicity Equivalency - Birds	36	36	2.2E-02	6.0E-03	148	148	3.1E+00	1.4E-01	11	11	2.1E-03	7.4E-04	46	46	1.0E-01	2.9E-02
Toxicity Equivalency - Fish	36	36	2.2E-02	5.9E-03	148	148	3.1E+00	1.4E-01	11	11	1.5E-03	4.5E-04	46	46	1.0E-01	2.9E-02
Toxicity Equivalency - Mammals	36	36	2.2E-02	6.0E-03	148	148	3.1E+00	1.4E-01	11	11	1.6E-03	5.3E-04	46	46	1.0E-01	2.9E-02
Aluminum	30	30	1.2E+02	2.9E+01	51	51	2.2E+04	1.0E+04	13	13	2.5E+04	8.2E+03	39	39	2.8E+04	1.0E+04
Antimony	9	30	1.7E-02	1.3E-02	24	51	1.4E+01	2.3E+00	4	13	4.3E+00	7.3E-01	19	38	5.3E+00	1.3E+00
Arsenic	1	30	7.2E-02	2.9E-02	48	51	1.8E+01	5.8E+00	12	13	1.4E+01	3.9E+00	37	39	1.8E+01	5.2E+00
Barium	30	30	2.1E+00	9.2E-01	48	51	3.2E+02	1.4E+02	13	13	3.7E+02	1.3E+02	39	39	3.8E+02	1.3E+02

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
Beryllium	15	30	1.4E-02	4.4E-03	42	50	4.2E+00	1.5E+00	13	13	5.1E+00	1.8E+00	38	39	4.4E+00	1.6E+00
Cadmium	27	30	1.0E-01	2.7E-02	30	49	5.2E+00	1.2E+00	7	13	4.4E+00	8.1E-01	26	38	2.4E+01	2.1E+00
Chromium	22	30	5.1E-01	1.7E-01	51	51	5.4E+02	1.4E+02	13	13	2.7E+02	9.9E+01	39	39	3.1E+02	9.9E+01
Cobalt	29	30	3.9E-01	8.2E-02	48	51	2.3E+01	7.1E+00	10	13	2.4E+01	8.1E+00	26	39	2.7E+01	7.8E+00
Copper	30	30	2.2E+00	9.1E-01	51	51	4.2E+02	1.2E+02	11	13	4.4E+02	7.3E+01	38	39	1.1E+03	1.1E+02
Iron	30	30	1.7E+02	4.9E+01	51	51	5.2E+04	1.8E+04	13	13	2.8E+04	1.3E+04	39	39	4.1E+04	1.6E+04
Lead	17	30	1.0E+00	2.0E-01	51	51	1.1E+03	3.3E+02	13	13	5.7E+02	1.8E+02	39	39	7.2E+02	2.4E+02
Manganese	30	30	1.2E+01	6.8E+00	51	51	2.0E+03	4.3E+02	13	13	2.0E+03	6.0E+02	39	39	2.0E+03	5.5E+02
Mercury	30	30	2.8E-01	1.4E-01	37	49	3.6E+00	4.7E-01	13	13	7.6E-01	2.1E-01	33	38	9.5E-01	2.9E-01
Mercury (methyl)	30	30	3.0E-01	1.4E-01	10	10	2.9E-03	8.0E-04	4	4	6.6E-04	2.6E-04	7	7	9.6E-03	2.1E-03
Molybdenum	12	30	1.6E-01	1.1E-01	11	11	3.0E+01	1.3E+01	5	5	1.7E+01	1.3E+01	7	7	1.3E+01	6.5E+00
Nickel	30	30	2.5E-01	1.2E-01	49	51	9.5E+01	2.7E+01	10	13	2.6E+02	3.1E+01	26	39	1.9E+02	3.3E+01
Selenium	19	30	3.5E-01	2.4E-01	13	49	5.3E+00	1.1E+00	7	13	3.6E+00	1.1E+00	14	38	5.0E+00	9.6E-01
Silver	5	30	3.8E-02	2.8E-02	37	51	1.5E+01	2.8E+00	8	13	9.2E+00	2.6E+00	19	39	1.3E+01	2.9E+00
Thallium	5	30	1.1E-02	9.4E-03	14	49	3.1E+02	7.3E+00	6	13	7.1E-01	3.7E-01	9	38	5.0E+00	5.8E-01
Vanadium	19	30	3.0E-01	1.1E-01	51	51	8.9E+01	3.6E+01	13	13	1.3E+02	3.8E+01	39	39	9.2E+01	3.6E+01
Zinc	30	30	2.6E+01	1.9E+01	50	51	2.1E+03	3.5E+02	12	13	8.5E+02	2.2E+02	38	39	1.7E+03	3.9E+02
Naphthalene	21	30	5.8E-02	3.9E-02	8	45	3.9E+02	3.9E+01	1	9	4.5E+01	1.8E+01	6	37	1.0E+02	2.3E+01
2-Methylnaphthalene	30	30	1.2E-01	5.9E-02	7	44	3.9E+02	4.1E+01	1	9	4.5E+01	1.8E+01	4	36	1.0E+02	2.4E+01
Acenaphthylene	30	30	6.0E-02	3.8E-02	12	46	3.9E+02	4.0E+01	1	9	4.5E+01	1.9E+01	10	40	1.0E+02	2.3E+01
Acenaphthene	30	30	9.6E-02	5.2E-02	14	45	3.9E+02	3.8E+01	4	9	4.5E+01	1.5E+01	11	39	8.1E+01	2.0E+01
Dibenzofuran	30	30	8.3E-02	4.1E-02	9	44	3.9E+02	4.0E+01	2	9	4.5E+01	1.8E+01	10	38	8.1E+01	1.9E+01
Fluorene	30	30	1.5E-01	6.7E-02	16	45	3.9E+02	3.6E+01	4	9	4.5E+01	1.6E+01	12	40	8.1E+01	2.0E+01
Phenanthrene	30	30	4.4E-01	1.8E-01	41	47	3.7E+02	8.1E+01	9	9	6.1E+01	2.4E+01	33	40	6.1E+02	6.4E+01
Anthracene	30	30	6.9E-02	4.5E-02	26	47	3.9E+02	3.8E+01	4	9	4.5E+01	1.7E+01	17	40	8.1E+01	2.0E+01
Fluoranthene	30	30	7.2E-01	2.0E-01	47	48	7.9E+02	1.6E+02	9	9	9.5E+01	4.3E+01	38	40	1.0E+03	9.8E+01
Pyrene	25	30	3.3E-01	8.2E-02	46	48	4.8E+02	1.2E+02	9	9	8.8E+01	3.9E+01	35	40	9.6E+02	9.0E+01
Benzo(a)anthracene	28	30	1.7E-01	3.5E-02	43	48	2.6E+02	6.0E+01	8	9	4.7E+01	2.0E+01	33	40	4.9E+02	5.1E+01
Chrysene	28	30	3.4E-01	6.2E-02	47	48	3.5E+02	7.9E+01	9	9	5.5E+01	2.6E+01	35	40	4.8E+02	5.4E+01
Benzo(b)fluoranthene	24	30	3.1E-01	4.5E-02	45	48	3.3E+02	7.2E+01	9	9	4.2E+01	2.2E+01	34	40	7.6E+02	7.4E+01
Benzo(k)fluoranthene	24	30	2.6E-01	4.0E-02	46	48	2.5E+02	6.0E+01	8	9	4.9E+01	2.2E+01	34	40	2.4E+02	3.2E+01
Benzo(a)pyrene	20	30	2.2E-01	3.3E-02	45	48	2.0E+02	5.4E+01	8	9	4.2E+01	2.0E+01	34	40	4.1E+02	4.7E+01
Indeno(1,2,3-cd)pyrene	20	30	2.0E-01	3.0E-02	43	48	1.4E+02	4.4E+01	8	9	2.3E+01	1.3E+01	31	40	3.6E+02	4.1E+01
Dibenzo(a,h)anthracene	24	30	4.0E-02	8.6E-03	26	47	3.9E+02	3.7E+01	4	9	4.5E+01	1.9E+01	17	40	8.1E+01	1.8E+01

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
Benzo(g,h,i)perylene	11	30	1.7E-01	2.6E-02	33	48	3.9E+02	5.5E+01	8	9	2.2E+01	1.2E+01	27	40	2.6E+02	3.5E+01
Total PAH	30	30	3.7E+00	1.1E+00	47	48	3.2E+03	7.7E+02	9	9	5.4E+02	2.5E+02	30	32	1.5E+03	2.5E+02
1,1'-Biphenyl	30	30	2.5E-02	1.5E-02	7	22	6.9E+00	1.5E+00	1	1	2.2E-01	2.2E-01	3	9	1.0E+02	2.7E+01
2-Monochlorobiphenyl (1)	5	7	1.6E-03	8.8E-04					1	1	1.6E-03	1.6E-03	2	2	1.1E-02	1.0E-02
4-Chlorobiphenyl (3)	1	7	9.0E-04	2.3E-04					0	1	1.0E-03	1.0E-03	2	2	2.4E-02	2.1E-02
2,2'-Dichlorobiphenyl (4)	7	7	7.8E-03	5.1E-03					1	1	7.4E-03	7.4E-03	2	2	2.1E-02	1.6E-02
2,3-Dichlorobiphenyl (5)	5	7	3.3E-04	2.1E-04					0	1	1.8E-04	1.8E-04	1	1	2.5E-03	2.5E-03
2,3'-Dichlorobiphenyl (6)	7	7	4.8E-03	3.4E-03					1	1	6.4E-03	6.4E-03	2	2	1.3E-02	7.6E-03
2,4-Dichlorobiphenyl (7)	7	7	7.4E-04	5.3E-04					0	1	1.8E-04	1.8E-04	2	2	5.7E-03	3.9E-03
2,4'-Dichlorobiphenyl (8)	7	7	1.9E-02	1.3E-02					1	1	3.3E-02	3.3E-02	2	2	1.1E-01	8.8E-02
2,5-Dichlorobiphenyl (9)	7	7	1.7E-03	1.2E-03					0	1	1.8E-04	1.8E-04	2	2	7.3E-03	5.3E-03
2,6-Dichlorobiphenyl (10)	6	7	8.2E-04	3.6E-04					0	1	1.8E-04	1.8E-04	2	2	1.2E-03	9.5E-04
3,4-Dichlorobiphenyl (12)	5	7	2.6E-04	1.7E-04					1	1	1.6E-03	1.6E-03	2	2	2.3E-02	1.6E-02
2,2',3'-Trichlorobiphenyl (16)	7	7	2.1E-02	1.4E-02					1	1	2.1E-02	2.1E-02	2	2	6.1E-02	4.2E-02
2,2',4-Trichlorobiphenyl (17)	7	7	2.8E-02	2.1E-02					1	1	2.1E-02	2.1E-02	2	2	6.3E-02	4.3E-02
2,2',5-Trichlorobiphenyl (18)	7	7	4.1E-02	2.9E-02					1	1	2.0E-02	2.0E-02	2	2	4.6E-02	3.4E-02
2,2',6-Trichlorobiphenyl (19)	7	7	6.4E-03	4.3E-03					1	1	5.5E-03	5.5E-03	2	2	1.3E-02	8.8E-03
2,3,3'-Trichlorobiphenyl (20)	7	7	2.1E-01	1.7E-01					1	1	1.1E-01	1.1E-01	2	2	3.8E-01	2.5E-01
2,3,4'-Trichlorobiphenyl (22)	7	7	3.6E-02	2.8E-02					1	1	3.3E-02	3.3E-02	2	2	9.8E-02	6.8E-02
2,3,6-Trichlorobiphenyl (24)	7	7	6.2E-03	4.3E-03					1	1	1.3E-02	1.3E-02	2	2	3.9E-02	2.7E-02
2,3',4-Trichlorobiphenyl (25)	7	7	2.8E-03	2.3E-03					1	1	4.9E-03	4.9E-03	2	2	1.9E-02	1.2E-02
2,3',5-Trichlorobiphenyl (26)	7	7	1.3E-02	1.1E-02					1	1	1.2E-02	1.2E-02	2	2	4.2E-02	2.7E-02
2,4',5-Trichlorobiphenyl (31)	7	7	6.1E-02	5.5E-02					1	1	5.2E-02	5.2E-02	2	2	1.8E-01	1.2E-01
2,4',6-Trichlorobiphenyl (32)	7	7	2.1E-02	1.5E-02					1	1	9.6E-03	9.6E-03	2	2	3.1E-02	2.3E-02
2,2',3,3'-Tetrachlorobiphenyl (40)	7	7	1.2E-01	8.4E-02					1	1	5.1E-02	5.1E-02	2	2	2.0E-01	1.9E-01
2,2',3,4'-Tetrachlorobiphenyl (42)	7	7	8.4E-02	6.1E-02					1	1	2.3E-02	2.3E-02	2	2	9.6E-02	7.1E-02
2,2',3,5-Tetrachlorobiphenyl (43)	7	7	2.4E-01	1.6E-01					1	1	2.5E-01	2.5E-01	2	2	2.2E-01	1.1E-01
2,2',3,5'-Tetrachlorobiphenyl (44)	7	7	3.4E-01	1.8E-01					1	1	1.2E-01	1.2E-01	2	2	3.4E-01	2.5E-01
2,2',3,6-Tetrachlorobiphenyl (45)	7	7	3.0E-02	2.2E-02					1	1	5.7E-03	5.7E-03	2	2	4.4E-02	3.2E-02
2,2',3,6'-Tetrachlorobiphenyl (46)	6	7	9.7E-03	6.6E-03					1	1	4.5E-03	4.5E-03	2	2	1.7E-02	1.3E-02
2,2',4,5-Tetrachlorobiphenyl (48)	7	7	3.3E-02	2.6E-02					1	1	1.0E-02	1.0E-02	2	2	4.9E-02	3.3E-02
2,2',4,5'-Tetrachlorobiphenyl (49)	7	7	2.8E-01	1.8E-01					1	1	6.6E-02	6.6E-02	2	2	2.0E-01	1.4E-01
2,2',4,6-Tetrachlorobiphenyl (50)	7	7	3.0E-02	2.0E-02					1	1	1.3E-02	1.3E-02	2	2	4.1E-02	3.3E-02
2,3,3',4'-Tetrachlorobiphenyl (56)	7	7	8.0E-02	5.7E-02					1	1	3.7E-02	3.7E-02	2	2	1.3E-01	1.1E-01

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	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,3,3',6-Tetrachlorobiphenyl (59)	7	7	2.2E-01	7.9E-02					1	1	5.4E-03	5.4E-03	2	2	2.6E-02	1.9E-02
2,3,4,4'-Tetrachlorobiphenyl (60)	7	7	4.7E-02	3.8E-02					1	1	5.0E-03	5.0E-03	2	2	3.7E-02	2.0E-02
2,3,4,5-Tetrachlorobiphenyl (61)	7	7	4.9E-01	3.8E-01					1	1	2.3E-01	2.3E-01	2	2	5.4E-01	3.9E-01
2,3,4',5-Tetrachlorobiphenyl (63)	7	7	1.5E-02	1.1E-02					0	1	1.8E-03	1.8E-03	2	2	7.3E-03	4.9E-03
2,3,4',6-Tetrachlorobiphenyl (64)	7	7	1.5E-01	1.1E-01					1	1	3.8E-02	3.8E-02	2	2	1.3E-01	9.3E-02
2,3',4,4'-Tetrachlorobiphenyl (66)	7	7	5.5E-01	3.4E-01					1	1	1.3E-01	1.3E-01	2	2	3.8E-01	3.0E-01
3,3',4,4'-Tetrachlorobiphenyl (77)	13	13	2.4E-01	3.2E-02	2	2	1.5E-02	1.5E-02	1	1	7.6E-03	7.6E-03	3	3	3.6E-02	2.3E-02
3,4,4',5-Tetrachlorobiphenyl (81)	6	13	4.5E-02	8.3E-03					0	1	1.8E-03	1.8E-03	0	1	8.3E-04	8.3E-04
2,2',3,3',4-Pentachlorobiphenyl (82)	7	7	1.2E-01	8.2E-02					1	1	1.2E-01	1.2E-01	2	2	1.4E-01	1.1E-01
2,2',3,3',5-Pentachlorobiphenyl (83)	7	7	7.9E-01	5.4E-01					1	1	2.9E-01	2.9E-01	2	2	3.8E-01	2.7E-01
2,2',3,3',6-Pentachlorobiphenyl (84)	7	7	1.8E-01	1.3E-01					1	1	2.7E-01	2.7E-01	2	2	2.5E-01	2.2E-01
2,2',3,4,4'-Pentachlorobiphenyl (85)	7	7	2.6E-01	1.4E-01					1	1	1.4E-01	1.4E-01	2	2	1.3E-01	9.6E-02
2,2',3,4,5-Pentachlorobiphenyl (86)	7	7	8.6E-01	6.2E-01					1	1	6.2E-01	6.2E-01	2	2	6.7E-01	5.1E-01
2,2',3,4,6-Pentachlorobiphenyl (88)	7	7	1.5E-01	1.1E-01					1	1	1.2E-01	1.2E-01	2	2	1.1E-01	9.0E-02
2,2',3,4,6'-Pentachlorobiphenyl (89)	6	7	7.1E-03	4.4E-03					0	1	1.8E-03	1.8E-03	0	1	8.3E-04	8.3E-04
2,2',3,4',5-Pentachlorobiphenyl (90)	7	7	1.1E+00	7.7E-01					1	1	5.9E-01	5.9E-01	2	2	7.0E-01	5.2E-01
2,2',3,5,5'-Pentachlorobiphenyl (92)	7	7	1.5E-01	1.2E-01					1	1	1.1E-01	1.1E-01	2	2	1.4E-01	1.1E-01
2,2',3,5,6-Pentachlorobiphenyl (93)	7	7	7.6E-01	4.7E-01					1	1	7.1E-01	7.1E-01	2	2	6.5E-01	5.4E-01
2,3,3',4,4'-Pentachlorobiphenyl (105)	13	13	3.5E+00	7.0E-01					1	1	2.1E-01	2.1E-01	2	2	2.2E-01	1.6E-01
2,3,3',4,5-Pentachlorobiphenyl (106)	7	7	5.5E-01	1.6E-01					1	1	4.9E-02	4.9E-02	2	2	7.4E-02	5.2E-02
2,3,3',4',5'-Pentachlorobiphenyl (108)	7	7	3.5E-02	2.6E-02					1	1	2.9E-02	2.9E-02	2	2	2.9E-02	2.0E-02
2,3,3',4',6-Pentachlorobiphenyl (110)	7	7	1.4E+00	9.2E-01					1	1	1.3E+00	1.3E+00	2	2	1.1E+00	8.9E-01
2,3,4,4',5-Pentachlorobiphenyl (114)	13	13	1.8E-01	4.2E-02					1	1	9.6E-03	9.6E-03	1	1	1.1E-02	1.1E-02
2,3',4,4',5-Pentachlorobiphenyl (118)	13	13	1.5E+01	3.1E+00					1	1	6.6E-01	6.6E-01	2	2	8.9E-01	6.3E-01
2,3',4,4',5'-Pentachlorobiphenyl (123)	6	6	2.8E-01	9.5E-02												
3,3',4,4',5-Pentachlorobiphenyl (126)	13	13	2.5E-01	3.2E-02					1	1	1.1E-02	1.1E-02	1	2	5.0E-03	3.4E-03
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	7	7	3.8E-01	2.4E-01					1	1	2.2E-01	2.2E-01	2	2	2.3E-01	1.6E-01
2,2',3,3',4,5-Hexachlorobiphenyl (129)	7	7	2.4E+00	1.6E+00					1	1	9.5E-01	9.5E-01	2	2	1.1E+00	7.3E-01
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	7	7	1.3E-01	8.2E-02					1	1	6.9E-02	6.9E-02	2	2	8.7E-02	5.8E-02
2,2',3,3',4,6-Hexachlorobiphenyl (131)	6	7	2.7E-02	1.4E-02					1	1	1.6E-02	1.6E-02	2	2	1.7E-02	1.2E-02
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	7	7	5.4E-01	3.3E-01					1	1	4.5E-01	4.5E-01	1	2	2.1E-01	1.0E-01
2,2',3,3',5,6-Hexachlorobiphenyl (134)	7	7	7.1E-02	3.9E-02					1	1	6.4E-02	6.4E-02	2	2	7.7E-02	5.5E-02
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	7	7	3.9E-01	1.8E-01					1	1	2.2E-01	2.2E-01	2	2	2.8E-01	1.9E-01
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	7	7	8.7E-02	5.3E-02					1	1	1.4E-01	1.4E-01	2	2	1.6E-01	1.2E-01

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TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,2',3,4,4',5-Hexachlorobiphenyl (137)	7	7	2.3E-01	1.5E-01					1	1	1.2E-01	1.2E-01	2	2	1.4E-01	9.0E-02
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	7	7	1.8E-01	1.1E-01					1	1	1.1E-01	1.1E-01	2	2	1.3E-01	8.3E-02
2,2',3,4,5',6-Hexachlorobiphenyl (144)	7	7	4.2E-02	2.3E-02					0	1	1.8E-03	1.8E-03	0	1	8.3E-04	8.3E-04
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	7	7	2.0E-01	1.3E-01					1	1	6.6E-02	6.6E-02	2	2	6.3E-02	3.9E-02
2,2',3,4',5,6-Hexachlorobiphenyl (147)	7	7	2.0E+00	8.9E-01					1	1	6.0E-01	6.0E-01	2	2	6.9E-01	4.7E-01
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	7	7	1.3E+00	8.0E-01					1	1	2.6E-01	2.6E-01	2	2	4.1E-01	2.5E-01
2,3,3',4,4',5-Hexachlorobiphenyl (156)	13	13	1.2E+00	2.3E-01					1	1	9.6E-02	9.6E-02	2	2	9.7E-02	6.7E-02
2,3,3',4,4',5'-Hexachlorobiphenyl (157)	6	6	1.2E+00	3.7E-01												
2,3,3',4,4',6-Hexachlorobiphenyl (158)	7	7	2.0E-01	1.2E-01					1	1	8.2E-02	8.2E-02	1	2	2.7E-02	1.4E-02
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	13	13	9.4E-01	1.6E-01					1	1	3.9E-02	3.9E-02	2	2	3.7E-02	2.6E-02
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	5	13	9.2E-03	3.5E-03					0	1	1.8E-03	1.8E-03	0	1	8.3E-04	8.3E-04
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	7	7	2.7E-01	1.6E-01					1	1	1.6E-01	1.6E-01	2	2	1.6E-01	1.3E-01
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	7	7	7.8E-02	4.8E-02					1	1	4.9E-02	4.9E-02	2	2	5.1E-02	4.0E-02
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	7	7	3.6E-02	2.6E-02					1	1	1.3E-02	1.3E-02	2	2	1.3E-02	9.9E-03
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	7	7	1.4E-01	8.5E-02					1	1	1.7E-01	1.7E-01	2	2	1.6E-01	1.4E-01
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	7	7	6.9E-03	4.2E-03					1	1	3.0E-03	3.0E-03	1	1	4.0E-03	4.0E-03
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	7	7	1.8E-02	1.0E-02					1	1	1.6E-02	1.6E-02	2	2	1.9E-02	1.5E-02
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	7	7	1.2E-01	7.3E-02					1	1	7.2E-02	7.2E-02	2	2	7.4E-02	6.1E-02
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	7	7	4.4E-02	2.7E-02					1	1	1.3E-02	1.3E-02	2	2	2.2E-02	1.6E-02
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	7	7	3.3E-01	2.3E-01					1	1	1.1E-01	1.1E-01	2	2	1.3E-01	9.7E-02
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	1	7	2.3E-03	1.6E-03					0	1	3.6E-03	3.6E-03	0	1	1.7E-03	1.7E-03
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	7	7	8.4E-02	5.5E-02					1	1	3.1E-02	3.1E-02	2	2	4.8E-02	3.4E-02
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	7	7	8.4E-04	3.6E-04					0	1	3.6E-03	3.6E-03	0	1	1.7E-03	1.7E-03
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	7	7	1.3E-02	8.7E-03					1	1	5.6E-03	5.6E-03	2	2	8.1E-03	5.6E-03
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	7	7	4.3E-01	2.2E-01					1	1	5.7E-02	5.7E-02	2	2	8.6E-02	6.5E-02
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	13	13	1.9E-01	2.2E-02					1	1	3.6E-03	3.6E-03	2	2	4.1E-03	2.9E-03
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	7	7	4.6E-02	3.6E-02					1	1	1.7E-02	1.7E-02	2	2	2.3E-02	1.7E-02
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	7	7	7.5E-03	4.8E-03					1	1	3.2E-03	3.2E-03	2	2	3.7E-03	2.6E-03
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	7	7	8.5E-02	4.3E-02					1	1	1.8E-02	1.8E-02	2	2	3.8E-02	2.7E-02
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	7	7	1.9E-02	1.4E-02					1	1	1.1E-02	1.1E-02	2	2	1.6E-02	1.4E-02
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	7	7	7.8E-02	2.9E-02					1	1	1.2E-02	1.2E-02	2	2	2.9E-02	2.2E-02
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	6	7	5.4E-03	2.0E-03					1	1	5.8E-04	5.8E-04	2	2	6.4E-04	5.9E-04
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	7	7	5.3E-01	2.3E-01					1	1	5.7E-02	5.7E-02	2	2	1.5E-01	1.1E-01
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	7	7	7.9E-03	4.6E-03												

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TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	7	7	3.6E-02	1.2E-02					1	1	5.2E-03	5.2E-03	2	2	6.4E-03	6.1E-03
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	7	7	2.8E-01	9.0E-02					1	1	1.8E-02	1.8E-02	2	2	4.9E-02	3.3E-02
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	7	7	6.1E-03	2.6E-03					1	1	1.1E-03	1.1E-03	2	2	2.2E-03	1.6E-03
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	7	7	6.3E-01	2.2E-01					1	1	8.6E-02	8.6E-02	2	2	2.3E-01	1.6E-01
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	7	7	6.8E-02	2.0E-02					1	1	5.1E-03	5.1E-03	2	2	1.7E-02	1.1E-02
Decachlorobiphenyl (209)	7	7	3.9E-01	1.3E-01					1	1	8.9E-02	8.9E-02	2	2	2.8E-01	1.9E-01
PCB Congeners, Total	7	7	1.9E+01	1.4E+01					1	1	1.1E+01	1.1E+01	2	2	1.4E+01	1.1E+01
Toxicity Equivalency (PCB) - Birds	13	13	4.2E-02	5.8E-03	2	2	7.4E-04	7.4E-04	1	1	1.7E-03	1.7E-03	3	3	2.1E-03	1.4E-03
Toxicity Equivalency (PCB) - Fish	13	13	1.4E-03	1.9E-04	2	2	1.5E-06	1.5E-06	1	1	6.1E-05	6.1E-05	3	3	3.0E-05	1.7E-05
Toxicity Equivalency (PCB) - Mammals	13	13	2.8E-02	3.9E-03	2	2	1.5E-06	1.5E-06	1	1	1.2E-03	1.2E-03	3	3	5.7E-04	3.1E-04
alpha-BHC	0	30	1.7E-02	6.2E-03	0	52	9.4E-01	8.6E-02	0	12	5.3E-02	2.2E-02	0	43	1.0E+00	9.0E-02
Technical Chlordane	30	30	2.5E+01	8.6E+00	10	11	3.3E+01	1.1E+01	4	4	1.1E+01	7.1E+00	7	7	1.9E+01	1.2E+01
beta-BHC	0	30	1.7E-02	6.2E-03	1	49	9.4E-01	7.2E-02	0	12	5.3E-02	2.2E-02	0	42	1.0E+00	9.5E-02
delta-BHC	0	30	1.7E-02	6.2E-03	1	53	9.4E-01	8.4E-02	0	12	5.3E-02	2.2E-02	0	41	1.0E+00	9.4E-02
gamma-BHC	21	30	1.7E-02	5.0E-03	2	52	9.4E-01	8.6E-02	0	12	5.3E-02	2.2E-02	1	42	1.0E+00	8.2E-02
Heptachlor	0	30	1.7E-02	6.2E-03	4	52	9.4E-01	8.7E-02	0	12	5.3E-02	2.2E-02	2	43	1.0E+00	8.5E-02
Aldrin	0	30	1.7E-02	6.2E-03	0	52	9.4E-01	8.6E-02	0	12	5.3E-02	2.2E-02	1	43	1.0E+00	8.4E-02
Heptachlor Epoxide	23	30	3.6E-02	1.3E-02	1	50	9.4E-01	8.6E-02	0	12	5.3E-02	2.2E-02	2	41	1.2E+00	1.2E-01
Endosulfan I	0	30	1.7E-02	6.2E-03	0	52	9.4E-01	8.6E-02	0	12	5.3E-02	2.2E-02	0	41	1.2E+00	1.3E-01
Dieldrin	23	30	2.7E-01	6.8E-02	19	53	9.1E+00	5.6E-01	4	12	1.0E-01	6.0E-02	12	44	2.0E+00	1.7E-01
4,4'-DDE	30	30	2.5E+00	9.0E-01	29	58	1.3E+00	2.1E-01	4	12	2.6E-01	1.0E-01	20	44	1.0E+00	2.0E-01
Endrin	0	30	1.7E-02	6.2E-03	4	52	1.8E+00	1.8E-01	1	12	1.0E-01	3.5E-02	2	43	2.0E+00	1.8E-01
Endosulfan II	0	30	1.7E-02	6.2E-03	16	54	3.8E+00	3.3E-01	0	12	1.0E-01	3.3E-02	8	43	2.0E+00	2.0E-01
4,4'-DDD	30	30	9.0E-01	3.1E-01	18	52	1.8E+00	2.6E-01	4	12	2.4E-01	1.1E-01	15	44	2.0E+00	2.7E-01
Endosulfan Sulfate	0	30	1.7E-02	6.2E-03	4	50	1.8E+00	1.7E-01	0	12	1.0E-01	3.3E-02	3	42	2.3E+00	2.4E-01
4,4'-DDT	26	30	4.5E-01	8.2E-02	16	54	1.8E+00	2.0E-01	5	12	1.0E-01	5.0E-02	15	45	2.0E+00	2.1E-01
Methoxychlor	0	30	1.7E-02	6.2E-03	9	56	4.1E+00	5.5E-01	0	12	5.3E-01	1.3E-01	2	42	1.0E+01	8.3E-01
Endrin Ketone	0	30	1.7E-02	6.2E-03	5	53	1.8E+00	1.7E-01	0	12	1.0E-01	3.3E-02	0	39	2.0E+00	1.8E-01
Endrin Aldehyde	0	30	1.7E-02	6.2E-03	4	52	9.7E-01	1.3E-01	0	12	1.0E-01	3.3E-02	0	41	2.0E+00	1.8E-01
alpha-Chlordane	30	30	9.6E-01	3.5E-01	36	54	9.4E-01	2.6E-01	8	12	2.7E-01	1.1E-01	26	47	2.9E+00	4.2E-01
gamma-Chlordane	30	30	5.9E-01	2.2E-01	35	54	9.4E-01	1.7E-01	8	12	1.8E-01	8.4E-02	20	45	2.4E+00	3.4E-01
Toxaphene	0	30	4.3E-01	1.5E-01	0	52	9.4E+01	8.3E+00	0	12	5.3E+00	1.4E+00	0	43	1.0E+02	8.8E+00
Aroclor-1016	0	30	2.2E-01	7.7E-02	0	80	1.8E+01	1.6E+00	0	12	1.0E+00	3.6E-01	0	43	2.0E+01	1.7E+00
Aroclor-1221	0	30	2.2E-01	7.7E-02	0	80	3.7E+01	3.3E+00	1	12	2.1E+00	5.9E-01	0	43	4.1E+01	3.4E+00

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	WHITE SUCKER[a]				ALLENDALE SEDIMENT[b]				GREYSTONE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
Aroclor-1232	0	30	2.2E-01	7.7E-02	0	80	1.8E+01	1.6E+00	0	12	1.0E+00	3.6E-01	0	43	2.0E+01	1.8E+00
Aroclor-1242	0	30	2.2E-01	7.7E-02	1	81	1.8E+01	1.6E+00	0	12	1.0E+00	3.6E-01	0	43	2.0E+01	1.7E+00
Aroclor-1248	0	30	2.2E-01	7.7E-02	6	80	1.8E+01	1.8E+00	0	12	1.0E+00	3.6E-01	7	43	2.0E+01	1.8E+00
Aroclor-1254	30	30	6.8E+01	2.8E+01	84	88	2.6E+02	1.6E+01	10	12	7.9E+00	3.2E+00	30	46	2.9E+01	5.3E+00
Aroclor-1260	0	30	2.2E-01	7.7E-02	2	80	1.8E+01	1.8E+00	1	12	1.0E+00	4.6E-01	5	43	2.0E+01	1.8E+00
Aroclor-1268	30	30	1.4E+00	5.3E-01	11	11	3.3E+00	1.4E+00	4	4	2.1E+00	1.7E+00	8	8	4.0E+00	1.3E+00
Aroclor, Total	30	30	6.9E+01	2.9E+01	84	88	2.6E+02	1.7E+01	10	12	9.8E+00	4.3E+00	26	39	4.1E+01	6.4E+00

Notes:

a. Fish tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. Sediment concentrations of organic analytes are expressed on a carbon normalized basis (i.e., mg/kg_{oc}). Half the detection level used to calculate normalized concentrations for values reported as non-detects. Frequency of detection based on entire dataset; maximum and average statistics based only on those samples analyzed for organic carbon.

c. BSAFs are expressed on a lipid- and carbon-normalized basis (i.e., kg_{oc}/kg_{lip}). BSAF statistics based on paired fish and Exposure Area average sediment concentration sample sets (See Table J-5).

All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
HCX	5.8E-01	4.2E-02	1.1E-02	252%
2,3,7,8-TCDD	4.6E-01	1.3E-01	1.6E-02	97%
1,2,3,7,8-PeCDD	4.5E-01	7.9E-02	9.0E-03	120%
1,2,3,4,7,8-HxCDD	2.6E-01	3.4E-02	2.1E-03	133%
1,2,3,6,7,8-HxCDD	8.3E-02	1.4E-02	1.9E-04	98%
1,2,3,7,8,9-HxCDD	8.4E-02	1.0E-02	2.1E-04	143%
1,2,3,4,6,7,8-HpCDD	3.8E-02	2.4E-03	3.9E-05	265%
OCDD	4.6E-03	6.0E-04	9.3E-07	160%
2,3,7,8-TCDF	6.6E-01	1.7E-01	1.7E-02	78%
1,2,3,7,8-PeCDF	2.4E-01	4.6E-02	2.0E-03	96%
2,3,4,7,8-PeCDF	1.9E+00	9.8E-02	9.8E-02	319%
1,2,3,4,7,8-HxCDF	1.6E-01	1.8E-02	1.4E-03	203%
1,2,3,6,7,8-HxCDF	2.1E-01	2.4E-02	2.3E-03	197%
2,3,4,6,7,8-HxCDF	2.4E-01	1.9E-02	1.6E-03	214%
1,2,3,7,8,9-HxCDF	3.9E-01	7.8E-02	7.7E-03	112%
1,2,3,4,6,7,8-HpCDF	1.3E-02	1.8E-03	6.8E-06	145%
1,2,3,4,7,8,9-HpCDF	2.5E-01	3.1E-02	2.4E-03	159%
OCDF	4.2E-02	1.9E-03	4.9E-05	370%
Total TCDD	3.6E-01	9.7E-02	1.1E-02	108%
Total PeCDD	4.3E-01	3.7E-02	7.2E-03	232%
Total HxCDD	9.6E-02	4.6E-03	2.5E-04	346%
Total HpCDD	3.1E-02	1.6E-03	2.7E-05	320%
Total TCDF	5.3E-02	1.3E-02	1.4E-04	90%
Total PeCDF	5.9E-02	7.3E-03	1.1E-04	144%
Total HxCDF	5.6E-02	3.2E-03	8.5E-05	292%
Total HpCDF	1.5E-02	1.5E-03	8.9E-06	196%
Toxicity Equivalency - Birds	4.5E-01	1.4E-01	1.4E-02	83%
Toxicity Equivalency - Fish	4.5E-01	1.3E-01	1.5E-02	97%
Toxicity Equivalency - Mammals	4.5E-01	1.3E-01	1.5E-02	97%
Aluminum	1.1E-02	3.0E-03	8.2E-06	96%
Antimony	2.3E-02	1.0E-02	5.7E-05	72%
Arsenic	1.4E-02	5.7E-03	7.0E-06	46%
Barium	1.6E-02	6.7E-03	9.1E-06	45%

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
Beryllium	8.4E-03	2.6E-03	3.1E-06	69%
Cadmium	1.2E-01	2.5E-02	1.2E-03	137%
Chromium	5.2E-03	1.5E-03	1.2E-06	74%
Cobalt	4.8E-02	1.0E-02	6.3E-05	77%
Copper	2.1E-02	9.2E-03	1.9E-05	47%
Iron	1.1E-02	3.1E-03	4.7E-06	71%
Lead	4.3E-03	7.6E-04	1.1E-06	136%
Manganese	2.9E-02	1.3E-02	3.4E-05	46%
Mercury	1.3E+00	5.0E-01	1.1E-01	66%
Mercury (methyl)	1.2E+03	4.2E+03	1.2E+05	8%
Molybdenum	1.3E-02	9.1E-03	1.5E-05	42%
Nickel	8.3E-03	4.0E-03	3.3E-06	45%
Selenium	3.3E-01	2.2E-01	1.6E-03	18%
Silver	1.5E-02	9.8E-03	7.9E-06	29%
Thallium	3.0E-02	1.2E-02	1.2E-04	91%
Vanadium	7.9E-03	2.9E-03	2.1E-06	51%
Zinc	9.6E-02	6.0E-02	1.6E-04	21%
Naphthalene	2.6E-03	1.5E-03	3.0E-07	37%
2-Methylnaphthalene	6.5E-03	2.3E-03	9.5E-07	42%
Acenaphthylene	3.2E-03	1.5E-03	3.8E-07	41%
Acenaphthene	4.9E-03	2.3E-03	8.0E-07	40%
Dibenzofuran	4.4E-03	1.7E-03	6.2E-07	46%
Fluorene	7.2E-03	3.0E-03	1.8E-06	45%
Phenanthrene	1.0E-02	4.0E-03	6.3E-06	63%
Anthracene	4.0E-03	2.0E-03	7.1E-07	43%
Fluoranthene	7.4E-03	2.3E-03	2.7E-06	71%
Pyrene	3.7E-03	1.1E-03	8.7E-07	84%
Benzo(a)anthracene	3.4E-03	8.3E-04	5.2E-07	88%
Chrysene	6.3E-03	1.3E-03	1.8E-06	106%
Benzo(b)fluoranthene	4.1E-03	7.7E-04	7.8E-07	115%
Benzo(k)fluoranthene	8.0E-03	1.2E-03	3.0E-06	145%
Benzo(a)pyrene	4.7E-03	7.8E-04	9.1E-07	122%
Indeno(1,2,3-cd)pyrene	4.9E-03	8.7E-04	1.1E-06	119%
Dibenzo(a,h)anthracene	2.3E-03	4.2E-04	2.4E-07	117%

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PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
Benzo(g,h,i)perylene	4.9E-03	8.7E-04	1.1E-06	122%
Total PAH	1.5E-02	3.4E-03	9.9E-06	94%
1,1'-Biphenyl	1.2E-01	2.5E-02	9.3E-04	124%
2-Monochlorobiphenyl (1)	1.4E-01	9.1E-02	4.3E-04	23%
4-Chlorobiphenyl (3)	4.3E-02	3.5E-02	3.1E-03	157%
2,2'-Dichlorobiphenyl (4)	5.0E-01	3.4E-01	5.9E-03	22%
2,3-Dichlorobiphenyl (5)	1.3E-01	2.1E-01	7.0E-02	126%
2,3'-Dichlorobiphenyl (6)	6.3E-01	3.6E-01	2.2E-02	41%
2,4-Dichlorobiphenyl (7)	1.7E-01	6.5E-01	8.5E-01	141%
2,4'-Dichlorobiphenyl (8)	2.0E-01	1.2E-01	1.0E-03	26%
2,5-Dichlorobiphenyl (9)	2.9E-01	1.9E+00	4.5E+00	109%
2,6-Dichlorobiphenyl (10)	8.6E-01	5.8E-01	2.4E-01	85%
3,4-Dichlorobiphenyl (12)	9.0E-03	3.8E-02	5.8E-03	199%
2,2',3'-Trichlorobiphenyl (16)	5.0E-01	3.3E-01	8.0E-03	28%
2,2',4-Trichlorobiphenyl (17)	6.4E-01	4.6E-01	4.7E-03	15%
2,2',5-Trichlorobiphenyl (18)	1.2E+00	7.8E-01	5.2E-02	29%
2,2',6-Trichlorobiphenyl (19)	7.3E-01	4.7E-01	2.3E-02	32%
2,3,3'-Trichlorobiphenyl (20)	8.5E-01	6.6E-01	5.6E-03	11%
2,3,4'-Trichlorobiphenyl (22)	5.0E-01	3.8E-01	1.3E-02	30%
2,3,6-Trichlorobiphenyl (24)	2.3E-01	1.6E-01	9.7E-04	20%
2,3',4-Trichlorobiphenyl (25)	1.8E-01	2.0E-01	1.9E-02	69%
2,3',5-Trichlorobiphenyl (26)	5.0E-01	4.0E-01	1.9E-02	35%
2,4',5-Trichlorobiphenyl (31)	4.9E-01	4.8E-01	7.8E-02	58%
2,4',6-Trichlorobiphenyl (32)	9.2E-01	6.1E-01	1.9E-02	23%
2,2',3,3'-Tetrachlorobiphenyl (40)	6.6E-01	5.4E-01	2.5E-02	29%
2,2',3,4'-Tetrachlorobiphenyl (42)	1.2E+00	9.7E-01	1.5E-02	13%
2,2',3,5-Tetrachlorobiphenyl (43)	2.1E+00	1.3E+00	5.7E-01	59%
2,2',3,5'-Tetrachlorobiphenyl (44)	1.4E+00	7.4E-01	2.7E-01	71%
2,2',3,6-Tetrachlorobiphenyl (45)	9.3E-01	8.7E-01	1.1E-01	39%
2,2',3,6'-Tetrachlorobiphenyl (46)	7.2E-01	4.8E-01	3.3E-02	38%
2,2',4,5-Tetrachlorobiphenyl (48)	9.8E-01	8.9E-01	9.2E-02	34%
2,2',4,5'-Tetrachlorobiphenyl (49)	2.0E+00	1.4E+00	3.8E-02	14%
2,2',4,6-Tetrachlorobiphenyl (50)	9.0E-01	6.4E-01	1.1E-02	16%
2,3,3',4'-Tetrachlorobiphenyl (56)	7.4E-01	6.8E-01	1.1E-01	49%

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TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
2,3,3',6-Tetrachlorobiphenyl (59)	1.2E+01	2.0E+01	6.9E+01	41%
2,3,4,4'-Tetrachlorobiphenyl (60)	2.3E+00	5.8E+00	1.3E+01	63%
2,3,4,5-Tetrachlorobiphenyl (61)	1.3E+00	1.1E+00	5.4E-02	22%
2,3,4',5-Tetrachlorobiphenyl (63)	3.0E+00	3.4E+00	2.6E+00	48%
2,3,4',6-Tetrachlorobiphenyl (64)	1.6E+00	1.3E+00	4.7E-02	17%
2,3',4,4'-Tetrachlorobiphenyl (66)	1.8E+00	1.3E+00	4.6E-02	16%
3,3',4,4'-Tetrachlorobiphenyl (77)	1.0E+01	2.3E+00	8.4E+00	128%
3,4,4',5-Tetrachlorobiphenyl (81)	5.4E+01	7.6E+01	4.5E+02	28%
2,2',3,3',4-Pentachlorobiphenyl (82)	1.2E+00	7.3E-01	1.4E-01	52%
2,2',3,3',5-Pentachlorobiphenyl (83)	2.9E+00	2.0E+00	7.0E-01	43%
2,2',3,3',6-Pentachlorobiphenyl (84)	8.4E-01	5.4E-01	8.6E-02	55%
2,2',3,4,4'-Pentachlorobiphenyl (85)	2.7E+00	1.6E+00	1.4E+00	73%
2,2',3,4,5-Pentachlorobiphenyl (86)	1.7E+00	1.1E+00	3.2E-01	49%
2,2',3,4,6-Pentachlorobiphenyl (88)	1.7E+00	1.1E+00	3.5E-01	54%
2,2',3,4,6'-Pentachlorobiphenyl (89)	8.6E+00	7.4E+00	1.1E+01	46%
2,2',3,4',5-Pentachlorobiphenyl (90)	2.1E+00	1.4E+00	4.0E-01	44%
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.5E+00	9.7E-01	1.5E-01	40%
2,2',3,5,6-Pentachlorobiphenyl (93)	1.1E+00	7.1E-01	1.5E-01	54%
2,3,3',4,4'-Pentachlorobiphenyl (105)	2.2E+01	1.5E+01	7.0E+01	57%
2,3,3',4,5-Pentachlorobiphenyl (106)	1.1E+01	7.1E+00	1.8E+01	61%
2,3,3',4',5'-Pentachlorobiphenyl (108)	1.7E+00	1.2E+00	2.6E-01	44%
2,3,3',4',6-Pentachlorobiphenyl (110)	1.6E+00	9.1E-01	3.9E-01	69%
2,3,4,4',5-Pentachlorobiphenyl (114)	1.6E+01	8.3E+00	3.1E+01	67%
2,3',4,4',5-Pentachlorobiphenyl (118)	2.3E+01	1.6E+01	7.4E+01	55%
2,3',4,4',5'-Pentachlorobiphenyl (123)				
3,3',4,4',5-Pentachlorobiphenyl (126)	7.4E+01	1.4E+02	8.7E+02	22%
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	2.4E+00	1.4E+00	7.6E-01	61%
2,2',3,3',4,5-Hexachlorobiphenyl (129)	3.2E+00	2.0E+00	1.4E+00	58%
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	2.3E+00	1.4E+00	6.0E-01	55%
2,2',3,3',4,6-Hexachlorobiphenyl (131)	2.3E+00	1.3E+00	6.1E-01	61%
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	5.2E+00	3.6E+00	4.8E+00	61%
2,2',3,3',5,6-Hexachlorobiphenyl (134)	1.3E+00	6.6E-01	2.0E-01	67%
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	1.3E+00	6.5E-01	1.5E-01	59%
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	7.2E-01	4.0E-01	7.3E-02	67%

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
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PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,4,4',5-Hexachlorobiphenyl (137)	2.5E+00	1.5E+00	8.3E-01	59%
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	2.1E+00	1.3E+00	4.9E-01	53%
2,2',3,4,5',6-Hexachlorobiphenyl (144)	5.1E+01	9.5E+01	3.5E+02	20%
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	5.2E+00	3.2E+00	2.7E+00	51%
2,2',3,4',5,6-Hexachlorobiphenyl (147)	2.2E+00	1.4E+00	6.9E-01	60%
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	5.1E+00	3.1E+00	1.6E+00	40%
2,3,3',4,4',5-Hexachlorobiphenyl (156)	1.7E+01	9.7E+00	4.0E+01	66%
2,3,3',4,4',5'-Hexachlorobiphenyl (157)				
2,3,3',4,4',6-Hexachlorobiphenyl (158)	1.5E+01	1.5E+01	3.8E+01	41%
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3.6E+01	3.4E+01	1.9E+02	40%
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	5.2E+00	2.9E+00	3.7E+00	67%
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	2.1E+00	1.2E+00	5.4E-01	59%
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	1.9E+00	1.2E+00	5.1E-01	61%
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	3.5E+00	2.4E+00	2.8E-01	22%
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	8.7E-01	4.8E-01	4.8E-02	45%
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	1.5E+00	1.2E+00	3.8E-01	50%
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.2E+00	6.7E-01	2.0E-01	66%
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	1.9E+00	1.1E+00	3.3E-01	52%
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	2.2E+00	1.9E+00	9.5E-01	51%
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	3.4E+00	2.2E+00	3.7E-01	28%
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	8.9E-01	5.8E-01	1.7E-02	23%
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	2.5E+00	1.6E+00	1.6E-01	25%
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	2.7E-01	1.6E-01	4.4E-03	41%
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	2.3E+00	1.4E+00	2.4E-01	35%
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	3.5E+00	2.4E+00	4.9E-01	29%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	6.5E+01	1.1E+02	6.7E+02	24%
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	2.6E+00	1.9E+00	1.8E-01	23%
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2.9E+00	1.8E+00	4.9E-01	39%
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	1.7E+00	2.3E+00	2.4E+00	67%
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	1.4E+00	9.8E-01	1.1E-01	33%
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	1.3E+00	3.5E+00	7.4E+00	78%
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	3.2E+00	5.7E+00	1.1E+01	59%
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	1.7E+00	5.7E+00	1.5E+01	68%
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)				

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North Providence, Rhode Island

PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	2.1E+00	3.9E+00	7.3E+00	70%
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	2.2E+00	1.3E+01	4.4E+01	51%
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.6E+00	2.8E+00	4.5E+00	75%
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	1.3E+00	4.0E+00	9.7E+00	78%
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	1.5E+00	1.1E+01	3.6E+01	57%
Decachlorobiphenyl (209)	6.1E-01	1.9E+00	3.8E+00	101%
PCB Congeners, Total	1.8E+00	1.2E+00	2.0E-01	37%
Toxicity Equivalency (PCB) - Birds	2.9E+01	1.1E+01	7.4E+01	79%
Toxicity Equivalency (PCB) - Fish	2.4E+02	5.6E+02	6.6E+03	15%
Toxicity Equivalency (PCB) - Mammals	4.9E+03	2.2E+05	2.9E+06	1%
alpha-BHC	7.8E-01	1.6E-01	3.3E-02	113%
Technical Chlordane	2.0E+00	7.7E-01	3.7E-01	79%
beta-BHC	7.8E-01	1.6E-01	3.2E-02	110%
delta-BHC	7.8E-01	1.6E-01	3.3E-02	113%
gamma-BHC	7.8E-01	1.5E-01	4.0E-02	130%
Heptachlor	7.8E-01	1.6E-01	3.3E-02	112%
Aldrin	7.8E-01	1.6E-01	3.2E-02	112%
Heptachlor Epoxide	7.8E-01	2.2E-01	2.5E-02	73%
Endosulfan I	7.8E-01	1.6E-01	3.4E-02	119%
Dieldrin	4.5E+00	4.5E-01	6.4E-01	179%
4,4'-DDE	1.2E+01	5.5E+00	1.4E+01	67%
Endrin	4.9E-01	9.6E-02	1.4E-02	123%
Endosulfan II	5.2E-01	9.4E-02	1.6E-02	136%
4,4'-DDD	3.4E+00	1.4E+00	7.3E-01	59%
Endosulfan Sulfate	5.2E-01	9.8E-02	1.6E-02	128%
4,4'-DDT	6.0E+00	8.0E-01	1.4E+00	147%
Methoxychlor	1.4E-01	2.6E-02	1.0E-03	123%
Endrin Ketone	5.2E-01	1.0E-01	1.5E-02	123%
Endrin Aldehyde	5.2E-01	1.0E-01	1.5E-02	118%
alpha-Chlordane	3.7E+00	1.4E+00	3.8E-01	45%
gamma-Chlordane	3.3E+00	1.1E+00	2.8E-01	47%
Toxaphene	3.0E-01	5.7E-02	5.3E-03	128%
Aroclor-1016	6.0E-01	1.2E-01	2.0E-02	120%
Aroclor-1221	3.7E-01	6.9E-02	7.7E-03	126%

US EPA ARCHIVE DOCUMENT

TABLE J-4
SUMMARY OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STUDY AREA BSAFs[c]			
	Maximum	Mean	Variance	Coefficient of Variation
Aroclor-1232	6.0E-01	1.2E-01	2.0E-02	120%
Aroclor-1242	6.0E-01	1.2E-01	2.0E-02	120%
Aroclor-1248	6.0E-01	1.2E-01	2.0E-02	122%
Aroclor-1254	1.3E+01	4.9E+00	2.3E+01	96%
Aroclor-1260	4.7E-01	9.7E-02	1.2E-02	113%
Aroclor-1268	8.0E-01	3.6E-01	2.9E-02	47%
Aroclor, Total	1.1E+01	4.1E+00	1.5E+01	95%

Prepared by: SGD
Checked by: NAR

US EPA ARCHIVE DOCUMENT

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND										
	GREYSTONE AVERAGE SEDIMENT[a]	GMP-WS-5001-0000-01-W 6/22/2001 NORMAL	BSAF[b]	GMP-WS-5002-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5003-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5004-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5005-0000-01-W 6/22/2001 NORMAL	BSAF
HCX	7.91E-04	4.57E-04 UJ	5.8E-01	8.07E-05 UJ	1.0E-01	7.62E-05 UJ	9.6E-02	1.12E-04 UJ	1.4E-01	1.15E-04 UJ	1.5E-01
2,3,7,8-TCDD	1.53E-04	1.41E-05 UJ	9.2E-02	6.94E-06 J	4.5E-02	6.03E-06 J	3.9E-02	2.24E-06 UJ	1.5E-02	6.56E-06 J	4.3E-02
1,2,3,7,8-PeCDD	4.25E-05	1.63E-05 J	3.8E-01	2.46E-06 UJ	5.8E-02	2.10E-06 UJ	4.9E-02	1.29E-06 UJ	3.0E-02	2.42E-06 UJ	5.7E-02
1,2,3,4,7,8-HxCDD	8.80E-05	5.06E-06 UJ	5.7E-02	2.10E-06 J	2.4E-02	1.07E-06 UJ	1.2E-02	8.96E-07 UJ	1.0E-02	1.61E-06 UJ	1.8E-02
1,2,3,6,7,8-HxCDD	3.13E-04	7.13E-06 J	2.3E-02	3.95E-06 J	1.3E-02	4.43E-06 J	1.4E-02	1.57E-06 J	5.0E-03	3.68E-06 J	1.2E-02
1,2,3,7,8,9-HxCDD	2.55E-04	4.83E-06 UJ	1.9E-02	6.87E-07 J	3.5E-03	8.40E-07 J	3.3E-03	5.60E-07 J	2.2E-03	1.50E-06 UJ	5.9E-03
1,2,3,4,6,7,8-HpCDD	5.29E-03	8.62E-06 UJ	1.6E-03	3.35E-06 UJ	6.3E-04	4.24E-06 UJ	8.0E-04	2.18E-06 UJ	4.1E-04	4.49E-06 UJ	8.5E-04
OCDD	3.74E-02	2.94E-05 UJ	7.9E-04	6.77E-06 UJ	1.8E-04	8.09E-06 UJ	2.2E-04	6.61E-06 UJ	1.8E-04	1.90E-05 UJ	5.1E-04
2,3,7,8-TCDF	2.49E-04	1.65E-04 J#	6.6E-01	4.78E-05 J#	1.9E-01	4.83E-05 J#	1.9E-01	2.35E-05 J#	9.4E-02	4.36E-05 J#	1.8E-01
1,2,3,7,8-PeCDF	4.88E-05	7.82E-06 UJ	1.6E-01	2.02E-06 J	4.1E-02	2.67E-06 J	5.5E-02	1.23E-06 J	2.5E-02	2.70E-06 UJ	5.5E-02
2,3,4,7,8-PeCDF	1.39E-04	7.36E-06 UJ	5.3E-02	4.19E-06 J	3.0E-02	4.35E-06 J	3.1E-02	2.91E-06 J	2.1E-02	4.03E-06 J	2.9E-02
1,2,3,4,7,8-HxCDF	2.95E-04	5.06E-06 UJ	1.7E-02	1.69E-06 J	5.7E-03	2.06E-06 J	7.0E-03	8.40E-07 UJ	2.8E-03	1.67E-06 UJ	5.7E-03
1,2,3,6,7,8-HxCDF	2.04E-04	5.06E-06 UJ	2.5E-02	1.53E-06 J	7.5E-03	1.76E-06 J	8.6E-03	5.60E-07 J	2.7E-03	1.61E-06 UJ	7.9E-03
2,3,4,6,7,8-HxCDF	2.09E-04	5.52E-06 UJ	2.6E-02	1.05E-06 J	5.0E-03	6.49E-07 UJ	3.1E-03	8.40E-07 UJ	4.0E-03	1.73E-06 UJ	8.2E-03
1,2,3,7,8,9-HxCDF	3.99E-05	6.21E-06 UJ	1.6E-01	6.85E-07 UJ	1.7E-02	7.63E-07 UJ	1.9E-02	1.01E-06 UJ	2.5E-02	2.01E-06 UJ	5.1E-02
1,2,3,4,6,7,8-HpCDF	3.74E-03	2.18E-06 UJ	5.8E-04	1.13E-06 UJ	3.0E-04	1.56E-06 UJ	4.2E-04	9.52E-07 UJ	2.5E-04	2.01E-06 UJ	5.4E-04
1,2,3,4,7,8,9-HpCDF	1.14E-04	6.09E-06 UJ	5.4E-02	7.66E-07 UJ	6.7E-03	6.11E-07 UJ	5.4E-03	1.01E-06 UJ	8.9E-03	1.32E-06 UJ	1.2E-02
OCDF	3.39E-03	3.10E-06 UJ	9.2E-04	8.06E-07 UJ	2.4E-04	7.63E-07 UJ	2.3E-04	8.40E-07 UJ	2.5E-04	4.09E-06 UJ	1.2E-03
Total TCDD	3.46E-04	1.41E-05 UJ	4.1E-02	3.47E-06 UJ	1.0E-02	3.17E-06 UJ	9.2E-03	2.24E-06 UJ	6.5E-03	3.28E-06 UJ	9.5E-03
Total PeCDD	2.41E-04	7.29E-05 J	3.0E-01	2.46E-06 UJ	1.0E-02	2.10E-06 UJ	8.7E-03	1.29E-06 UJ	5.3E-03	2.42E-06 UJ	1.0E-02
Total HxCDD	2.31E-03	3.56E-06 UJ	1.5E-03	8.47E-06 J	3.7E-03	7.40E-06 J	3.2E-03	2.24E-06 J	9.7E-04	3.91E-06 J	1.7E-03
Total HpCDD	9.97E-03	8.62E-06 UJ	8.7E-04	4.19E-06 UJ	4.2E-04	5.42E-06 UJ	5.4E-04	2.18E-06 UJ	2.2E-04	7.77E-06 UJ	7.8E-04
Total TCDF	1.79E-03	9.45E-05 J	5.3E-02	4.37E-05 J	2.4E-02	5.44E-05 J	3.0E-02	2.27E-05 J	1.3E-02	3.87E-05 J	2.2E-02
Total PeCDF	2.44E-03	7.98E-05 J	3.3E-02	2.94E-05 J	1.2E-02	2.93E-05 J	1.2E-02	1.41E-05 J	5.8E-03	2.16E-05 J	8.9E-03
Total HxCDF	4.23E-03	1.82E-05 UJ	4.3E-03	1.18E-05 J	2.8E-03	1.41E-05 J	3.3E-03	3.25E-06 J	7.7E-04	6.90E-06 J	1.6E-03
Total HpCDF	7.28E-03	1.26E-05 UJ	1.7E-03	2.34E-06 UJ	3.2E-04	2.10E-06 UJ	2.9E-04	1.62E-06 UJ	2.2E-04	5.75E-06 UJ	7.9E-04
Toxicity Equivalency - Birds	7.45E-04	2.07E-04	2.8E-01	6.24E-05	8.4E-02	6.18E-05	8.3E-02	3.06E-05	4.1E-02	5.79E-05	7.8E-02
Toxicity Equivalency - Fish	4.53E-04	4.78E-05	1.1E-01	1.56E-05	3.5E-02	1.40E-05	3.1E-02	7.05E-06	1.6E-02	1.50E-05	3.3E-02
Toxicity Equivalency - Mammals	5.29E-04	5.52E-05	1.0E-01	1.77E-05	3.3E-02	1.65E-05	3.1E-02	8.09E-06	1.5E-02	1.69E-05	3.2E-02
Aluminum	8.21E+03	2.10E+01	2.6E-03	5.28E+01	6.4E-03	1.66E+01	2.0E-03	2.16E+01	2.6E-03	5.27E+01	6.4E-03
Antimony	7.35E-01	1.70E-02 U	2.3E-02	1.05E-03 J	1.4E-03	9.43E-04 J	1.3E-03	1.70E-02 U	2.3E-02	1.70E-02 U	2.3E-02
Arsenic	3.90E+00	4.59E-02 U	1.2E-02	4.57E-02 U	1.2E-02	1.86E-02 U	4.8E-03	3.84E-02 U	9.8E-03	2.07E-02 U	5.3E-03
Barium	1.34E+02	1.25E+00	9.3E-03	1.21E+00	9.0E-03	4.98E-01	3.7E-03	1.07E+00	8.0E-03	1.19E+00	8.9E-03
Beryllium	1.78E+00	3.90E-03 J	2.2E-03	7.20E-03	4.0E-03	4.55E-03	2.6E-03	4.91E-03	2.8E-03	5.71E-03	3.2E-03
Cadmium	8.06E-01	1.64E-02 J	2.0E-02	1.40E-02 J	1.7E-02	3.42E-03 J	4.2E-03	1.00E-01 U	1.2E-01	5.60E-03 J	6.9E-03
Chromium	9.93E+01	1.19E-01 J	1.2E-03	1.63E-01 J	1.6E-03	1.35E-02 U	1.4E-04	1.05E-01 J	1.1E-03	1.35E-01 U	1.4E-03
Cobalt	8.06E+00	5.57E-02 J	6.9E-03	5.80E-02 J	7.2E-03	3.88E-01 J	4.8E-02	5.06E-02 J	6.3E-03	4.63E-02 J	5.7E-03
Copper	7.28E+01	1.09E+00 J	1.5E-02	1.22E+00 J	1.7E-02	8.83E-01 J	1.2E-02	1.52E+00 J	2.1E-02	8.82E-01 J	1.2E-02
Iron	1.34E+04	4.90E+01	3.6E-03	5.84E+01	4.3E-03	3.49E+01	2.6E-03	6.10E+01	4.5E-03	5.83E+01	4.3E-03
Lead	1.79E+02	1.10E-02 U	6.1E-05	2.20E-02 J	1.2E-04	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05
Manganese	5.99E+02	1.21E+01 J	2.0E-02	7.63E+00 J	1.3E-02	3.35E+00 J	5.6E-03	1.19E+01 J	2.0E-02	5.16E+00 J	8.6E-03
Mercury	2.11E-01	2.20E-01	1.0E+00	1.29E-01	6.1E-01	1.41E-01	6.7E-01	2.13E-01	1.0E+00	1.22E-01	5.8E-01
Mercury (methyl)	2.55E-04	2.33E-01	9.1E+02	1.48E-01	5.8E+02	1.37E-01	5.4E+02	1.90E-01	7.5E+02	1.38E-01	5.4E+02
Molybdenum	1.26E+01	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02
Nickel	3.12E+01	6.56E-02 J	2.1E-03	1.17E-01 J	3.8E-03	5.58E-02 J	1.8E-03	7.99E-02 J	2.6E-03	6.86E-02 J	2.2E-03
Selenium	1.14E+00	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01
Silver	2.57E+00	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02
Thallium	3.68E-01	1.10E-02 U	3.0E-02	1.57E-03 J	4.3E-03	1.10E-02 U	3.0E-02	1.26E-03 J	3.4E-03	8.79E-04 J	2.4E-03

US EPA ARCHIVE DOCUMENT

TABLE J-5
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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND											
	GREYSTONE AVERAGE SEDIMENT[a]	GMP-WS-5001-0000-01-W 6/22/2001 NORMAL	BSAF[b]	GMP-WS-5002-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5003-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5004-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5005-0000-01-W 6/22/2001 NORMAL	BSAF
Vanadium	3.76E+01	8.95E-02 U	2.4E-03	8.90E-02 J	2.4E-03	8.95E-02 U	2.4E-03	8.95E-02 U	2.4E-03	7.03E-02 J	1.9E-03
Zinc	2.21E+02	1.77E+01	8.0E-02	1.52E+01	6.9E-02	1.20E+01	5.4E-02	2.11E+01	9.6E-02	1.44E+01	6.5E-02
Naphthalene	1.83E+01	4.57E-02 U	2.5E-03	1.60E-02 U	8.7E-04	1.75E-02 U	9.5E-04	1.78E-02 U	9.7E-04	2.18E-02 U	1.2E-03
2-Methylnaphthalene	1.83E+01	1.19E-01	6.5E-03	5.03E-02	2.7E-03	4.85E-02	2.6E-03	4.31E-02	2.4E-03	5.54E-02	3.0E-03
Acenaphthylene	1.85E+01	6.00E-02	3.2E-03	4.44E-02	2.4E-03	3.35E-02	1.8E-03	2.82E-02	1.5E-03	3.05E-02	1.6E-03
Acenaphthene	1.51E+01	7.33E-02	4.9E-03	3.66E-02	2.4E-03	4.24E-02	2.8E-03	3.39E-02	2.2E-03	4.05E-02	2.7E-03
Dibenzofuran	1.84E+01	5.47E-02	3.0E-03	3.74E-02	2.0E-03	3.25E-02	1.8E-03	3.40E-02	1.8E-03	3.58E-02	1.9E-03
Fluorene	1.58E+01	9.66E-02	6.1E-03	5.90E-02	3.7E-03	6.16E-02	3.9E-03	4.97E-02	3.1E-03	6.02E-02	3.8E-03
Phenanthrene	2.45E+01	2.46E-01	1.0E-02	1.64E-01	6.7E-03	1.90E-01	7.8E-03	1.33E-01	5.4E-03	1.94E-01	7.9E-03
Anthracene	1.73E+01	6.85E-02	4.0E-03	4.52E-02	2.6E-03	5.15E-02	3.0E-03	2.65E-02	1.5E-03	3.27E-02	1.9E-03
Fluoranthene	4.27E+01	2.50E-01	5.9E-03	1.19E-01	2.8E-03	1.24E-01	2.9E-03	1.13E-01	2.6E-03	1.50E-01	3.5E-03
Pyrene	3.89E+01	7.47E-02 U	1.9E-03	5.93E-02	1.5E-03	6.19E-02	1.6E-03	3.43E-02 U	8.8E-04	1.02E-01	2.6E-03
Benzo(a)anthracene	2.01E+01	4.53E-02	2.3E-03	1.27E-02 J	6.3E-04	1.24E-02 J	6.2E-04	1.88E-02 J	9.4E-04	2.23E-02	1.1E-03
Chrysene	2.58E+01	7.82E-02	3.0E-03	2.62E-02	1.0E-03	3.49E-02	1.4E-03	3.68E-02	1.4E-03	5.27E-02	2.0E-03
Benzo(b)fluoranthene	2.15E+01	4.62E-02	2.1E-03	7.66E-03 U	3.6E-04	7.14E-03 U	3.3E-04	1.95E-02 J	9.0E-04	2.19E-02	1.0E-03
Benzo(k)fluoranthene	2.20E+01	4.51E-02	2.0E-03	7.66E-03 U	3.5E-04	7.14E-03 U	3.2E-04	1.76E-02 J	8.0E-04	2.03E-02 J	9.2E-04
Benzo(a)pyrene	1.99E+01	2.16E-02 U	1.1E-03	7.66E-03 U	3.9E-04	7.14E-03 U	3.6E-04	1.05E-02 U	5.3E-04	1.09E-02 U	5.5E-04
Indeno(1,2,3-cd)pyrene	1.30E+01	2.16E-02 U	1.7E-03	7.66E-03 U	5.9E-04	7.14E-03 U	5.5E-04	1.05E-02 U	8.1E-04	1.09E-02 U	8.4E-04
Dibenzo(a,h)anthracene	1.90E+01	6.44E-03 J	3.4E-04	7.66E-03 U	4.0E-04	7.14E-03 U	3.7E-04	3.14E-03 J	1.6E-04	3.68E-03 J	1.9E-04
Benzo(g,h,i)perylene	1.24E+01	2.16E-02 U	1.7E-03	7.66E-03 U	6.2E-04	7.14E-03 U	5.7E-04	1.05E-02 U	8.5E-04	1.59E-02 J	1.3E-03
Total PAH	2.49E+02	1.22E+00 J	4.9E-03	6.66E-01 J	2.7E-03	7.06E-01 J	2.8E-03	5.69E-01 J	2.3E-03	8.53E-01 J	3.4E-03
1,1'-Biphenyl	2.16E-01	2.53E-02 J	1.2E-01	1.23E-02 J	5.7E-02	1.27E-02 J	5.9E-02	1.25E-02 J	5.8E-02	1.43E-02 J	6.6E-02
2-Monochlorobiphenyl (1)	1.57E-03	1.87E-04 UJ	1.2E-01								
4-Chlorobiphenyl (3)	1.00E-03	1.21E-04 UJ	1.2E-01								
2,2'-Dichlorobiphenyl (4)	7.36E-03	2.37E-03 J	3.2E-01								
2,3-Dichlorobiphenyl (5)	1.78E-04	1.14E-04 UJ	6.4E-01								
2,3'-Dichlorobiphenyl (6)	6.39E-03	1.72E-03 J	2.7E-01								
2,4-Dichlorobiphenyl (7)	1.78E-04	3.54E-04 J	2.0E+00								
2,4'-Dichlorobiphenyl (8)	3.32E-02	4.72E-03 J	1.4E-01								
2,5-Dichlorobiphenyl (9)	1.78E-04	8.00E-04 J	4.5E+00								
2,6-Dichlorobiphenyl (10)	1.78E-04	2.18E-04 J	1.2E+00								
3,4-Dichlorobiphenyl (12)	1.59E-03	2.55E-04 J	1.6E-01								
2,2',3'-Trichlorobiphenyl (16)	2.11E-02	6.02E-03 J	2.9E-01								
2,2',4-Trichlorobiphenyl (17)	2.13E-02	1.03E-02 J	4.9E-01								
2,2',5-Trichlorobiphenyl (18)	2.05E-02	1.35E-02 J	6.6E-01								
2,2',6-Trichlorobiphenyl (19)	5.46E-03	2.10E-03 J	3.8E-01								
2,3,3'-Trichlorobiphenyl (20)	1.07E-01	9.49E-02 J	8.9E-01								
2,3,4'-Trichlorobiphenyl (22)	3.28E-02	2.02E-02 J	6.1E-01								
2,3,6-Trichlorobiphenyl (24)	1.33E-02	2.04E-03 J	1.5E-01								
2,3',4-Trichlorobiphenyl (25)	4.88E-03	2.20E-03 J	4.5E-01								
2,3',5-Trichlorobiphenyl (26)	1.15E-02	7.90E-03 J	6.9E-01								
2,4',5-Trichlorobiphenyl (31)	5.24E-02	5.22E-02 J	1.0E+00								
2,4',6-Trichlorobiphenyl (32)	9.60E-03	5.84E-03 J	6.1E-01								
2,2',3,3'-Tetrachlorobiphenyl (40)	5.13E-02	4.54E-02 J	8.8E-01								
2,2',3,4'-Tetrachlorobiphenyl (42)	2.32E-02	3.20E-02 J	1.4E+00								
2,2',3,5-Tetrachlorobiphenyl (43)	2.54E-01	9.42E-02 J	3.7E-01								
2,2',3,5'-Tetrachlorobiphenyl (44)	1.19E-01	4.63E-02 J	3.9E-01								
2,2',3,6-Tetrachlorobiphenyl (45)	5.67E-03	8.87E-03 J	1.6E+00								

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2,2',3,6'-Tetrachlorobiphenyl (46)	4.46E-03	1.45E-03 UJ	3.2E-01								
2,2',4,5-Tetrachlorobiphenyl (48)	1.03E-02	1.59E-02 J	1.5E+00								
2,2',4,5'-Tetrachlorobiphenyl (49)	6.61E-02	1.03E-01 J	1.6E+00								
2,2',4,6-Tetrachlorobiphenyl (50)	1.27E-02	8.90E-03 J	7.0E-01								
2,3,3',4'-Tetrachlorobiphenyl (56)	3.71E-02	4.89E-02 J	1.3E+00								
2,3,3',6-Tetrachlorobiphenyl (59)	5.39E-03	9.81E-02 J	1.8E+01								
2,3,4,4'-Tetrachlorobiphenyl (60)	5.04E-03	4.71E-02 J	9.3E+00								
2,3,4,5-Tetrachlorobiphenyl (61)	2.28E-01	3.79E-01 J	1.7E+00								
2,3,4',5-Tetrachlorobiphenyl (63)	1.78E-03	1.06E-02 J	5.9E+00								
2,3,4',6-Tetrachlorobiphenyl (64)	3.83E-02	7.24E-02 J	1.9E+00								
2,3',4,4'-Tetrachlorobiphenyl (66)	1.28E-01	2.06E-01 J	1.6E+00								
3,3',4,4'-Tetrachlorobiphenyl (77)	7.62E-03	9.28E-03 J	1.2E+00								
3,4,4',5-Tetrachlorobiphenyl (81)	1.78E-03	6.00E-03 J	3.4E+00								
2,2',3,3',4-Pentachlorobiphenyl (82)	1.25E-01	4.52E-02 J	3.6E-01								
2,2',3,3',5-Pentachlorobiphenyl (83)	2.88E-01	3.16E-01 J	1.1E+00								
2,2',3,3',6-Pentachlorobiphenyl (84)	2.73E-01	5.94E-02 J	2.2E-01								
2,2',3,4,4'-Pentachlorobiphenyl (85)	1.41E-01	4.31E-02 J	3.0E-01								
2,2',3,4,5-Pentachlorobiphenyl (86)	6.18E-01	3.12E-01 J	5.1E-01								
2,2',3,4,6-Pentachlorobiphenyl (88)	1.18E-01	4.79E-02 J	4.0E-01								
2,2',3,4,6'-Pentachlorobiphenyl (89)	1.78E-03	2.38E-03 J	1.3E+00								
2,2',3,4',5-Pentachlorobiphenyl (90)	5.88E-01	4.44E-01 J	7.5E-01								
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.14E-01	6.94E-02 J	6.1E-01								
2,2',3,5,6-Pentachlorobiphenyl (93)	7.13E-01	1.97E-01 J	2.8E-01								
2,3,3',4,4'-Pentachlorobiphenyl (105)	2.07E-01	1.45E-01 J	7.0E-01								
2,3,3',4,5-Pentachlorobiphenyl (106)	4.88E-02	5.77E-02 J	1.2E+00								
2,3,3',4',5'-Pentachlorobiphenyl (108)	2.93E-02	1.95E-02 J	6.6E-01								
2,3,3',4',6-Pentachlorobiphenyl (110)	1.27E+00	2.70E-01 J	2.1E-01								
2,3,4,4',5-Pentachlorobiphenyl (114)	9.56E-03	1.41E-02 J	1.5E+00								
2,3',4,4',5-Pentachlorobiphenyl (118)	6.63E-01	4.97E-01 J	7.5E-01								
2,3',4,4',5'-Pentachlorobiphenyl (123)											
3,3',4,4',5-Pentachlorobiphenyl (126)	1.08E-02	7.79E-04 J	7.2E-02								
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	2.18E-01	9.47E-02 J	4.4E-01								
2,2',3,3',4,5-Hexachlorobiphenyl (129)	9.54E-01	5.98E-01 J	6.3E-01								
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	6.85E-02	3.99E-02 J	5.8E-01								
2,2',3,3',4,6-Hexachlorobiphenyl (131)	1.59E-02	7.10E-03 J	4.5E-01								
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	4.45E-01	1.10E-01 J	2.5E-01								
2,2',3,3',5,6-Hexachlorobiphenyl (134)	6.41E-02	1.58E-02 J	2.5E-01								
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	2.15E-01	7.67E-02 J	3.6E-01								
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	1.44E-01	1.81E-02 J	1.3E-01								
2,2',3,4,4',5-Hexachlorobiphenyl (137)	1.20E-01	5.95E-02 J	4.9E-01								
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	1.12E-01	6.63E-02 J	5.9E-01								
2,2',3,4,5',6-Hexachlorobiphenyl (144)	1.78E-03	1.18E-02 J	6.6E+00								
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	6.59E-02	7.90E-02 J	1.2E+00								
2,2',3,4',5,6-Hexachlorobiphenyl (147)	6.04E-01	2.68E-01 J	4.4E-01								
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2.59E-01	5.18E-01 J	2.0E+00								
2,3,3',4,4',5-Hexachlorobiphenyl (156)	9.64E-02	5.78E-02 J	6.0E-01								
2,3,3',4,4',5'-Hexachlorobiphenyl (157)											
2,3,3',4,4',6-Hexachlorobiphenyl (158)	8.23E-02	5.76E-02 J	7.0E-01								

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2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3.89E-02	2.26E-02 J	5.8E-01								
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	1.78E-03	8.56E-03 J	4.8E+00								
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	1.58E-01	8.50E-02 J	5.4E-01								
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	4.89E-02	2.30E-02 J	4.7E-01								
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	1.26E-02	3.61E-02 J	2.9E+00								
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	1.65E-01	7.31E-02 J	4.4E-01								
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	3.02E-03	6.87E-03 J	2.3E+00								
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.64E-02	5.68E-03 J	3.5E-01								
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	7.21E-02	5.17E-02 J	7.2E-01								
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	1.30E-02	4.43E-02 J	3.4E+00								
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	1.07E-01	2.17E-01 J	2.0E+00								
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	3.56E-03	2.28E-03 UJ	6.4E-01								
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	3.11E-02	6.45E-02 J	2.1E+00								
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	3.56E-03	8.36E-04 J	2.3E-01								
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	5.63E-03	7.86E-03 J	1.4E+00								
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	5.65E-02	2.00E-01 J	3.5E+00								
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	3.62E-03	3.88E-03 J	1.1E+00								
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	1.75E-02	4.59E-02 J	2.6E+00								
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	3.17E-03	4.17E-03 J	1.3E+00								
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	1.84E-02	8.46E-02 J	4.6E+00								
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	1.12E-02	1.42E-02 J	1.3E+00								
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	1.19E-02	7.81E-02 J	6.6E+00								
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	5.79E-04	5.41E-03 J	9.3E+00								
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	5.74E-02	5.28E-01 J	9.2E+00								
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)		7.93E-03 J									
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	5.21E-03	3.64E-02 J	7.0E+00								
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	1.81E-02	2.76E-01 J	1.5E+01								
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.10E-03	6.14E-03 J	5.6E+00								
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	8.61E-02	6.26E-01 J	7.3E+00								
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	5.14E-03	6.79E-02 J	1.3E+01								
Decachlorobiphenyl (209)	8.95E-02	3.93E-01 J	4.4E+00								
PCB Congeners, Total	1.11E+01	9.10E+00 J	8.2E-01								
alpha-BHC	1.68E-03	1.74E-02 UJ	1.0E+01	6.17E-03 UJ	3.7E+00	5.73E-03 U	3.4E+00	8.40E-03 U	5.0E+00	8.75E-03 U	5.2E+00
Toxicity Equivalency (PCB) - Birds	6.07E-05	1.18E-03	1.9E+01								
Toxicity Equivalency (PCB) - Fish	1.24E-03	1.20E-05	9.6E-03								
Toxicity Equivalency (PCB) - Mammals	2.21E-02	2.67E-04	1.2E-02								
Technical Chlordane	7.06E+00	6.10E+00 J	8.6E-01	2.49E+00	3.5E-01	2.63E+00	3.7E-01	2.59E+00	3.7E-01	2.81E+00	4.0E-01
beta-BHC	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	8.40E-03 U	3.8E-01	8.75E-03 U	3.9E-01
delta-BHC	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	8.45E-03 U	3.8E-01	8.75E-03 U	3.9E-01
gamma-BHC	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	1.11E-02 J	5.0E-01	8.75E-03 U	3.9E-01
Heptachlor	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	8.40E-03 U	3.8E-01	8.75E-03 U	3.9E-01
Aldrin	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	8.40E-03 U	3.8E-01	8.75E-03 U	3.9E-01
Heptachlor Epoxide	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 U	2.8E-01	5.73E-03 U	2.6E-01	8.40E-03 U	3.8E-01	8.75E-03 U	3.9E-01
Endosulfan I	2.21E-02	1.74E-02 U	7.8E-01	6.17E-03 UJ	2.8E-01	5.73E-03 U	2.6E-01	8.40E-03 U	3.8E-01	8.75E-03 U	3.9E-01
Dieldrin	6.00E-02	1.74E-02 UJ	2.9E-01	6.17E-03 UJ	1.0E-01	5.55E-02	9.2E-01	8.40E-03 U	1.4E-01	2.70E-01	4.5E+00
4,4'-DDE	1.02E-01	1.23E+00 J	1.2E+01	2.42E-01 J	2.4E+00	1.85E-01	1.8E+00	4.11E-01	4.0E+00	3.83E-01	3.7E+00
Endrin	3.51E-02	1.74E-02 U	4.9E-01	6.17E-03 U	1.8E-01	5.73E-03 U	1.6E-01	8.40E-03 U	2.4E-01	8.75E-03 U	2.5E-01
Endosulfan II	3.33E-02	1.74E-02 U	5.2E-01	6.17E-03 U	1.9E-01	5.73E-03 U	1.7E-01	8.40E-03 U	2.5E-01	8.75E-03 U	2.6E-01
4,4'-DDD	1.11E-01	3.75E-01 J	3.4E+00	1.28E-01 J	1.2E+00	9.60E-02	8.7E-01	1.05E-01	9.5E-01	2.43E-01	2.2E+00
Endosulfan Sulfate	3.33E-02	1.74E-02 U	5.2E-01	6.17E-03 U	1.9E-01	5.73E-03 U	1.7E-01	8.40E-03 U	2.5E-01	8.75E-03 U	2.6E-01

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4,4'-DDT	5.01E-02	3.02E-01 J	6.0E+00	6.17E-03 U	1.2E-01	8.31E-02	1.7E+00	8.88E-02	1.8E+00	8.75E-03 U	1.7E-01
Methoxychlor	1.27E-01	1.74E-02 U	1.4E-01	6.17E-03 U	4.8E-02	5.73E-03 U	4.5E-02	8.40E-03 U	6.6E-02	8.75E-03 U	6.9E-02
Endrin Ketone	3.33E-02	1.74E-02 U	5.2E-01	6.17E-03 U	1.9E-01	5.73E-03 U	1.7E-01	8.40E-03 U	2.5E-01	8.75E-03 U	2.6E-01
Endrin Aldehyde	3.33E-02	1.74E-02 U	5.2E-01	6.17E-03 U	1.9E-01	5.73E-03 U	1.7E-01	8.40E-03 U	2.5E-01	8.75E-03 U	2.6E-01
alpha-Chlordane	1.15E-01	4.20E-01 J	3.7E+00	1.74E-01 J	1.5E+00	1.85E-01	1.6E+00	2.01E-01	1.7E+00	2.26E-01	2.0E+00
gamma-Chlordane	8.38E-02	2.75E-01 J	3.3E+00	1.06E-01	1.3E+00	1.11E-01	1.3E+00	1.09E-01	1.3E+00	9.63E-02	1.1E+00
Toxaphene	1.43E+00	4.33E-01 U	3.0E-01	1.54E-01 U	1.1E-01	1.43E-01 U	1.0E-01	2.10E-01 U	1.5E-01	2.19E-01 U	1.5E-01
Aroclor-1016	3.59E-01	2.16E-01 U	6.0E-01	7.68E-02 U	2.1E-01	7.15E-02 U	2.0E-01	1.05E-01 U	2.9E-01	1.09E-01 U	3.0E-01
Aroclor-1221	5.91E-01	2.16E-01 U	3.7E-01	7.68E-02 U	1.3E-01	7.15E-02 U	1.2E-01	1.05E-01 U	1.8E-01	1.09E-01 U	1.8E-01
Aroclor-1232	3.59E-01	2.16E-01 U	6.0E-01	7.68E-02 U	2.1E-01	7.15E-02 U	2.0E-01	1.05E-01 U	2.9E-01	1.09E-01 U	3.0E-01
Aroclor-1242	3.59E-01	2.16E-01 U	6.0E-01	7.68E-02 U	2.1E-01	7.15E-02 U	2.0E-01	1.05E-01 U	2.9E-01	1.09E-01 U	3.0E-01
Aroclor-1248	3.59E-01	2.16E-01 U	6.0E-01	7.68E-02 U	2.1E-01	7.15E-02 U	2.0E-01	1.05E-01 U	2.9E-01	1.09E-01 U	3.0E-01
Aroclor-1254	3.22E+00	4.52E+00 J	1.4E+00	1.35E+00	4.2E-01	1.43E+00	4.4E-01	1.96E+00	6.1E-01	1.54E+00	4.8E-01
Aroclor-1260	4.57E-01	2.16E-01 U	4.7E-01	7.68E-02 U	1.7E-01	7.15E-02 U	1.6E-01	1.05E-01 U	2.3E-01	1.09E-01 U	2.4E-01
Aroclor-1268	1.69E+00	1.35E+00 J	8.0E-01	2.64E-01	1.6E-01	3.44E-01	2.0E-01	4.30E-01	2.5E-01	4.09E-01	2.4E-01
Aroclor, Total	4.31E+00	5.88E+00 J	1.4E+00	1.62E+00	3.8E-01	1.77E+00	4.1E-01	2.39E+00	5.5E-01	1.95E+00	4.5E-01

Notes:
a. Average carbon-normalized sediment concentration (mg/kg_{oc}) for the exposure area. Average values are summarized in Table J-4.
b. Biota-Sediment Accumulation Factors (BSAFs) were derived as the ratio of the lipid-normalized fish tissue and the Exposure Area average carbon-normalized sediment concentrations (i.e., kg_{oc}/kg_{lp}).
All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND										BSAF Summary Statistics - Greystone Mill Pond			
	GMP-WS-5006-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5007-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5008-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5009-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5010-0000-01-W 6/22/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
HCX	1.15E-04 UJ	1.5E-01	7.24E-05 UJ	9.2E-02	6.69E-05 UJ	8.5E-02	1.54E-04 UJ	1.9E-01	8.13E-05 UJ	1.0E-01	5.8E-01	1.7E-01	2.2E-02	88%
2,3,7,8-TCDD	1.41E-05 J	9.2E-02	6.23E-06 J	4.1E-02	7.79E-06 J	5.1E-02	3.16E-06 UJ	2.1E-02	4.07E-06 J	2.7E-02	9.2E-02	4.6E-02	7.1E-04	57%
1,2,3,7,8-PeCDD	2.19E-06 UJ	5.2E-02	2.14E-06 UJ	5.0E-02	2.45E-06 UJ	5.8E-02	3.39E-06 UJ	8.0E-02	1.89E-05 J	4.5E-01	4.5E-01	1.3E-01	2.3E-02	121%
1,2,3,4,7,8-HxCDD	4.04E-06 UJ	4.6E-02	1.30E-06 J	1.5E-02	1.34E-06 J	1.5E-02	2.47E-06 UJ	2.8E-02	5.98E-06 UJ	6.8E-02	6.8E-02	2.9E-02	4.2E-04	70%
1,2,3,6,7,8-HxCDD	4.33E-06 UJ	1.4E-02	2.32E-06 J	7.4E-03	3.76E-06 J	1.2E-02	3.54E-06 J	1.1E-02	6.18E-06 UJ	2.0E-02	2.3E-02	1.3E-02	2.7E-05	40%
1,2,3,7,8,9-HxCDD	3.93E-06 UJ	1.5E-02	7.97E-07 UJ	3.1E-03	8.72E-07 J	3.4E-03	2.39E-06 UJ	9.4E-03	5.73E-06 UJ	2.2E-02	2.2E-02	8.7E-03	5.6E-05	86%
1,2,3,4,6,7,8-HpCDD	3.06E-06 UJ	5.8E-04	3.19E-06 UJ	6.0E-04	2.21E-06 U	4.2E-04	4.08E-06 UJ	7.7E-04	1.30E-05 UJ	2.5E-03	2.5E-03	9.2E-04	4.2E-07	70%
OCDD	7.74E-06 UJ	2.1E-04	1.11E-05 UJ	3.0E-04	3.52E-06 U	9.4E-05	1.08E-05 UJ	2.9E-04	4.59E-06 UJ	1.2E-04	7.9E-04	2.9E-04	4.4E-08	73%
2,3,7,8-TCDF	3.00E-05 J	1.2E-01	3.46E-05 J#	1.4E-01	6.52E-05 J#	2.6E-01	4.79E-05 J#	1.9E-01	4.64E-05 J#	1.9E-01	6.6E-01	2.2E-01	2.6E-02	73%
1,2,3,7,8-PeCDF	3.58E-06 J	7.3E-02	2.10E-06 J	4.3E-02	2.15E-06 J	4.4E-02	2.47E-06 J	5.0E-02	2.11E-06 UJ	4.3E-02	1.6E-01	5.9E-02	1.4E-03	64%
2,3,4,7,8-PeCDF	4.62E-06 J	3.3E-02	3.41E-06 J	2.4E-02	4.30E-06 J	3.1E-02	6.63E-06 J	4.8E-02	1.87E-06 UJ	1.3E-02	5.3E-02	3.1E-02	1.3E-04	37%
1,2,3,4,7,8-HxCDF	2.89E-06 UJ	9.8E-03	1.59E-06 J	5.4E-03	1.28E-06 J	4.3E-03	1.62E-06 UJ	5.5E-03	3.17E-06 UJ	1.1E-02	1.7E-02	7.4E-03	1.7E-05	56%
1,2,3,6,7,8-HxCDF	2.89E-06 UJ	1.4E-02	1.38E-06 J	6.8E-03	1.34E-06 J	6.6E-03	2.00E-06 J	9.8E-03	3.09E-06 UJ	1.5E-02	2.5E-02	1.0E-02	3.9E-05	60%
2,3,4,6,7,8-HxCDF	3.12E-06 UJ	1.5E-02	6.52E-07 J	3.1E-03	6.04E-07 UJ	2.9E-03	1.69E-06 UJ	8.1E-03	3.33E-06 UJ	1.6E-02	2.6E-02	9.2E-03	5.9E-05	84%
1,2,3,7,8,9-HxCDF	3.70E-06 UJ	9.3E-02	9.78E-07 UJ	2.5E-02	7.05E-07 UJ	1.8E-02	2.00E-06 UJ	5.0E-02	4.07E-06 UJ	1.0E-01	1.6E-01	5.6E-02	2.2E-03	84%
1,2,3,4,6,7,8-HpCDF	5.54E-06 UJ	1.5E-03	1.63E-06 UJ	4.4E-04	7.38E-07 UJ	2.0E-04	1.39E-06 UJ	3.7E-04	5.81E-06 UJ	1.6E-03	1.6E-03	6.1E-04	2.4E-07	80%
1,2,3,4,7,8,9-HpCDF	6.52E-06 UJ	5.7E-02	2.90E-07 UJ	2.6E-03	7.05E-07 UJ	6.2E-03	3.00E-06 UJ	2.6E-02	6.83E-06 UJ	6.0E-02	6.0E-02	2.4E-02	5.7E-04	100%
OCDF	1.39E-06 UJ	4.1E-04	1.78E-06 UJ	5.2E-04	3.69E-07 UJ	1.1E-04	1.54E-06 UJ	4.5E-04	7.32E-07 UJ	2.2E-04	1.2E-03	4.5E-04	1.2E-07	77%
Total TCDD	1.41E-05 J	4.1E-02	3.12E-06 UJ	9.0E-03	7.79E-06 J	2.3E-02	3.70E-06 UJ	1.1E-02	2.03E-06 UJ	5.9E-03	4.1E-02	1.6E-02	1.9E-04	83%
Total PeCDD	2.19E-06 UJ	9.1E-03	2.14E-06 UJ	8.9E-03	3.15E-06 UJ	1.3E-02	3.39E-06 UJ	1.4E-02	1.03E-04 J	4.3E-01	4.3E-01	8.1E-02	2.3E-02	188%
Total HxCDD	4.10E-06 UJ	1.8E-03	5.65E-06 J	2.4E-03	5.97E-06 J	2.6E-03	3.54E-06 J	1.5E-03	5.98E-06 UJ	2.6E-03	3.7E-03	2.2E-03	7.1E-07	38%
Total HpCDD	3.06E-06 UJ	3.1E-04	3.19E-06 UJ	3.2E-04	2.65E-06 UJ	2.7E-04	4.08E-06 UJ	4.1E-04	1.30E-05 UJ	1.3E-03	1.3E-03	5.4E-04	1.2E-07	63%
Total TCDF	3.45E-05 J	1.9E-02	3.41E-05 J	1.9E-02	4.97E-05 J	2.8E-02	3.56E-05 J	2.0E-02	2.68E-05 J	1.5E-02	5.3E-02	2.4E-02	1.3E-04	47%
Total PeCDF	1.78E-05 J	7.3E-03	2.28E-05 J	9.3E-03	2.26E-05 J	9.3E-03	1.85E-05 J	7.6E-03	6.26E-06 J	2.6E-03	3.3E-02	1.1E-02	6.7E-05	76%
Total HxCDF	3.12E-06 UJ	7.4E-04	9.49E-06 J	2.2E-03	7.72E-06 J	1.8E-03	6.63E-06 J	1.6E-03	3.74E-06 J	8.8E-04	4.3E-03	2.0E-03	1.4E-06	59%
Total HpCDF	6.00E-06 UJ	8.2E-04	1.92E-06 UJ	2.6E-04	1.58E-06 UJ	2.2E-04	3.24E-06 UJ	4.4E-04	6.26E-06 UJ	8.6E-04	1.7E-03	6.0E-04	2.3E-07	80%
Toxicity Equivalency - Birds	5.33E-05	7.2E-02	4.73E-05	6.4E-02	8.05E-05	1.1E-01	6.26E-05	8.4E-02	7.40E-05	9.9E-02	2.8E-01	9.9E-02	4.3E-03	66%
Toxicity Equivalency - Fish	2.38E-05	5.2E-02	1.31E-05	2.9E-02	1.69E-05	3.7E-02	1.45E-05	3.2E-02	3.10E-05	6.8E-02	1.1E-01	4.4E-02	6.7E-04	59%
Toxicity Equivalency - Mammals	2.45E-05	4.6E-02	1.46E-05	2.8E-02	2.01E-05	3.8E-02	1.65E-05	3.1E-02	3.21E-05	6.1E-02	1.0E-01	4.2E-02	6.2E-04	59%
Aluminum	2.06E+01	2.5E-03	4.20E+01	5.1E-03	9.34E+00	1.1E-03	3.17E+01	3.9E-03	3.51E+01	4.3E-03	6.4E-03	3.7E-03	3.4E-06	50%
Antimony	1.70E-02 U	2.3E-02	1.70E-02 U	2.3E-02	1.70E-02 U	2.3E-02	7.76E-04 J	1.1E-03	1.70E-02 U	2.3E-02	2.3E-02	1.7E-02	1.1E-04	64%
Arsenic	2.55E-02 U	6.5E-03	2.83E-02 U	7.3E-03	1.70E-02 U	4.4E-03	2.50E-02 U	6.4E-03	2.68E-02 U	6.9E-03	1.2E-02	7.5E-03	7.4E-06	36%
Barium	7.65E-01	5.7E-03	1.07E+00	8.0E-03	5.24E-01	3.9E-03	7.05E-01	5.3E-03	8.45E-01	6.3E-03	9.3E-03	6.8E-03	4.5E-06	31%
Beryllium	3.70E-03 J	2.1E-03	7.36E-03	4.1E-03	3.56E-03 J	2.0E-03	5.24E-03	2.9E-03	5.66E-03	3.2E-03	4.1E-03	2.9E-03	5.7E-07	26%
Cadmium	1.00E-01 U	1.2E-01	2.89E-02 J	3.6E-02	1.92E-02 J	2.4E-02	7.83E-03 J	9.7E-03	1.00E-01 U	1.2E-01	1.2E-01	4.9E-02	2.8E-03	107%
Chromium	1.25E-01 J	1.3E-03	1.39E-01 J	1.4E-03	1.35E-01 U	1.4E-03	1.35E-01 U	1.4E-03	1.09E-01 J	1.1E-03	1.6E-03	1.2E-03	1.6E-07	34%
Cobalt	3.82E-02 J	4.7E-03	4.20E-02 J	5.2E-03	3.16E-02 J	3.9E-03	3.77E-02 J	4.7E-03	4.26E-02 J	5.3E-03	4.8E-02	9.8E-03	1.8E-04	138%
Copper	8.07E-01 J	1.1E-02	1.20E+00 J	1.6E-02	6.69E-01 J	9.2E-03	8.62E-01 J	1.2E-02	9.39E-01 J	1.3E-02	2.1E-02	1.4E-02	1.2E-05	25%
Iron	3.73E+01	2.8E-03	6.63E+01	4.9E-03	2.34E+01	1.7E-03	4.66E+01	3.5E-03	4.68E+01	3.5E-03	4.9E-03	3.6E-03	9.9E-07	28%
Lead	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05	1.10E-02 U	6.1E-05	1.2E-04	6.8E-05	3.8E-10	29%
Manganese	6.20E+00 J	1.0E-02	6.03E+00 J	1.0E-02	3.86E+00 J	6.4E-03	2.58E+00 J	4.3E-03	3.32E+00 J	5.5E-03	2.0E-02	1.0E-02	3.3E-05	55%
Mercury	1.69E-01	8.0E-01	1.31E-01	6.2E-01	2.34E-01	1.1E+00	2.60E-01	1.2E+00	2.78E-01	1.3E+00	1.3E+00	9.0E-01	7.7E-02	31%
Mercury (methyl)	1.47E-01	5.8E+02	1.25E-01	4.9E+02	2.21E-01	8.7E+02	2.88E-01	1.1E+03	2.99E-01	1.2E+03	1.2E+03	7.6E+02	6.4E+04	34%
Molybdenum	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.60E-01 U	1.3E-02	1.3E-02	1.3E-02	7.2E-20	0%
Nickel	6.05E-02 J	1.9E-03	7.46E-02 J	2.4E-03	5.01E-02 J	1.6E-03	7.15E-02 J	2.3E-03	6.18E-02 J	2.0E-03	3.8E-03	2.3E-03	3.5E-07	26%
Selenium	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.24E-01 U	2.0E-01	2.0E-01	2.0E-01	1.2E-17	0%
Silver	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02	3.83E-02 J	1.5E-02	3.00E-02 U	1.2E-02	3.00E-02 U	1.2E-02	1.5E-02	1.2E-02	1.0E-06	9%
Thallium	1.10E-02 U	3.0E-02	1.93E-03 J	5.2E-03	1.10E-02 U	3.0E-02	1.49E-03 J	4.1E-03	1.10E-02 U	3.0E-02	3.0E-02	1.7E-02	1.9E-04	81%

TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

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Vanadium	5.06E-02 J	1.3E-03	7.86E-02 J	2.1E-03	4.74E-02 J	1.3E-03	2.96E-01 J	7.9E-03	1.13E-01 J	3.0E-03	7.9E-03	2.7E-03	3.6E-06	70%
Zinc	1.73E+01	7.8E-02	1.60E+01	7.2E-02	1.72E+01	7.8E-02	1.69E+01	7.6E-02	1.39E+01	6.3E-02	9.6E-02	7.3E-02	1.3E-04	15%
Naphthalene	2.28E-02 U	1.2E-03	1.75E-02 U	9.6E-04	3.52E-02	1.9E-03	2.32E-02 U	1.3E-03	1.85E-02 U	1.0E-03	2.5E-03	1.3E-03	2.7E-07	40%
2-Methylnaphthalene	5.85E-02	3.2E-03	4.97E-02	2.7E-03	4.90E-02	2.7E-03	5.47E-02	3.0E-03	5.04E-02	2.8E-03	6.5E-03	3.2E-03	1.4E-06	38%
Acenaphthylene	2.96E-02	1.6E-03	3.78E-02	2.0E-03	4.74E-02	2.6E-03	3.34E-02	1.8E-03	3.35E-02	1.8E-03	3.2E-03	2.0E-03	2.9E-07	26%
Acenaphthene	2.82E-02	1.9E-03	3.76E-02	2.5E-03	4.07E-02	2.7E-03	3.28E-02	2.2E-03	3.83E-02	2.5E-03	4.9E-03	2.7E-03	6.7E-07	30%
Dibenzofuran	2.98E-02	1.6E-03	2.98E-02	1.6E-03	3.64E-02	2.0E-03	3.27E-02	1.8E-03	3.15E-02	1.7E-03	3.0E-03	1.9E-03	1.6E-07	20%
Fluorene	4.65E-02	2.9E-03	5.83E-02	3.7E-03	6.56E-02	4.2E-03	5.50E-02	3.5E-03	4.98E-02	3.2E-03	6.1E-03	3.8E-03	8.0E-07	23%
Phenanthrene	1.03E-01	4.2E-03	1.75E-01	7.1E-03	1.90E-01	7.8E-03	1.53E-01	6.2E-03	1.28E-01	5.2E-03	1.0E-02	6.8E-03	2.8E-06	24%
Anthracene	2.31E-02	1.3E-03	4.99E-02	2.9E-03	6.23E-02	3.6E-03	3.34E-02	1.9E-03	3.97E-02	2.3E-03	4.0E-03	2.5E-03	7.5E-07	35%
Fluoranthene	8.60E-02	2.0E-03	1.51E-01	3.5E-03	1.30E-01	3.0E-03	1.09E-01	2.6E-03	8.77E-02	2.1E-03	5.9E-03	3.1E-03	1.2E-06	36%
Pyrene	2.57E-02 U	6.6E-04	8.26E-02	2.1E-03	5.58E-02	1.4E-03	3.42E-02 U	8.8E-04	2.23E-02 U	5.7E-04	2.6E-03	1.4E-03	4.6E-07	48%
Benzo(a)anthracene	1.07E-02 U	5.4E-04	2.40E-02	1.2E-03	1.30E-02	6.5E-04	1.46E-02 U	7.3E-04	1.25E-02 J	6.2E-04	2.3E-03	9.3E-04	2.7E-07	56%
Chrysene	1.13E-02 U	4.4E-04	4.08E-02	1.6E-03	1.89E-02	7.3E-04	1.46E-02 U	5.6E-04	1.76E-02	6.8E-04	3.0E-03	1.3E-03	6.3E-07	62%
Benzo(b)fluoranthene	1.07E-02 U	5.0E-04	2.54E-02	1.2E-03	6.31E-03 U	2.9E-04	1.46E-02 U	6.8E-04	7.76E-03 U	3.6E-04	2.1E-03	7.8E-04	3.3E-07	74%
Benzo(k)fluoranthene	1.07E-02 U	4.9E-04	2.27E-02	1.0E-03	6.31E-03 U	2.9E-04	1.46E-02 U	6.6E-04	7.76E-03 U	3.5E-04	2.0E-03	7.3E-04	2.9E-07	74%
Benzo(a)pyrene	1.07E-02 U	5.4E-04	1.98E-02	1.0E-03	6.31E-03 U	3.2E-04	1.46E-02 U	7.3E-04	7.76E-03 U	3.9E-04	1.1E-03	5.9E-04	7.2E-08	46%
Indeno(1,2,3-cd)pyrene	1.07E-02 U	8.2E-04	6.96E-03 U	5.3E-04	6.31E-03 U	4.8E-04	1.46E-02 U	1.1E-03	7.76E-03 U	6.0E-04	1.7E-03	8.0E-04	1.3E-07	45%
Dibenzo(a,h)anthracene	1.07E-02 U	5.6E-04	2.83E-03 J	1.5E-04	6.31E-03 U	3.3E-04	1.46E-02 U	7.6E-04	7.76E-03 U	4.1E-04	7.6E-04	3.7E-04	3.6E-08	51%
Benzo(g,h,i)perylene	1.07E-02 U	8.6E-04	6.96E-03 U	5.6E-04	6.31E-03 U	5.1E-04	1.46E-02 U	1.2E-03	7.76E-03 U	6.2E-04	1.7E-03	8.8E-04	1.6E-07	46%
Total PAH	4.17E-01 J	1.7E-03	8.19E-01 J	3.3E-03	7.56E-01 J	3.0E-03	5.18E-01 J	2.1E-03	5.02E-01 J	2.0E-03	4.9E-03	2.8E-03	8.5E-07	33%
1,1'-Biphenyl	1.21E-02 J	5.6E-02	1.18E-02 J	5.5E-02	1.17E-02 J	5.4E-02	1.39E-02 J	6.4E-02	1.35E-02 J	6.3E-02	1.2E-01	6.5E-02	3.5E-04	29%
2-Monochlorobiphenyl (1)											1.2E-01	1.2E-01		
4-Chlorobiphenyl (3)											1.2E-01	1.2E-01		
2,2'-Dichlorobiphenyl (4)											3.2E-01	3.2E-01		
2,3-Dichlorobiphenyl (5)											6.4E-01	6.4E-01		
2,3'-Dichlorobiphenyl (6)											2.7E-01	2.7E-01		
2,4-Dichlorobiphenyl (7)											2.0E+00	2.0E+00		
2,4'-Dichlorobiphenyl (8)											1.4E-01	1.4E-01		
2,5-Dichlorobiphenyl (9)											4.5E+00	4.5E+00		
2,6-Dichlorobiphenyl (10)											1.2E+00	1.2E+00		
3,4-Dichlorobiphenyl (12)											1.6E-01	1.6E-01		
2,2',3'-Trichlorobiphenyl (16)											2.9E-01	2.9E-01		
2,2',4-Trichlorobiphenyl (17)											4.9E-01	4.9E-01		
2,2',5-Trichlorobiphenyl (18)											6.6E-01	6.6E-01		
2,2',6-Trichlorobiphenyl (19)											3.8E-01	3.8E-01		
2,3,3'-Trichlorobiphenyl (20)											8.9E-01	8.9E-01		
2,3,4'-Trichlorobiphenyl (22)											6.1E-01	6.1E-01		
2,3,6-Trichlorobiphenyl (24)											1.5E-01	1.5E-01		
2,3',4-Trichlorobiphenyl (25)											4.5E-01	4.5E-01		
2,3',5-Trichlorobiphenyl (26)											6.9E-01	6.9E-01		
2,4',5-Trichlorobiphenyl (31)											1.0E+00	1.0E+00		
2,4',6-Trichlorobiphenyl (32)											6.1E-01	6.1E-01		
2,2',3,3'-Tetrachlorobiphenyl (40)											8.8E-01	8.8E-01		
2,2',3,4'-Tetrachlorobiphenyl (42)											1.4E+00	1.4E+00		
2,2',3,5-Tetrachlorobiphenyl (43)											3.7E-01	3.7E-01		
2,2',3,5'-Tetrachlorobiphenyl (44)											3.9E-01	3.9E-01		
2,2',3,6-Tetrachlorobiphenyl (45)											1.6E+00	1.6E+00		

TABLE J-5
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	GREYSTONE MILL POND										BSAF Summary Statistics - Greystone Mill Pond			
	GMP-WS-5006-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5007-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5008-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5009-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5010-0000-01-W 6/22/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,6'-Tetrachlorobiphenyl (46)											3.2E-01	3.2E-01		
2,2',4,5-Tetrachlorobiphenyl (48)											1.5E+00	1.5E+00		
2,2',4,5'-Tetrachlorobiphenyl (49)											1.6E+00	1.6E+00		
2,2',4,6-Tetrachlorobiphenyl (50)											7.0E-01	7.0E-01		
2,3,3',4'-Tetrachlorobiphenyl (56)											1.3E+00	1.3E+00		
2,3,3',6-Tetrachlorobiphenyl (59)											1.8E+01	1.8E+01		
2,3,4,4'-Tetrachlorobiphenyl (60)											9.3E+00	9.3E+00		
2,3,4,5-Tetrachlorobiphenyl (61)											1.7E+00	1.7E+00		
2,3,4',5-Tetrachlorobiphenyl (63)											5.9E+00	5.9E+00		
2,3,4',6-Tetrachlorobiphenyl (64)											1.9E+00	1.9E+00		
2,3',4,4'-Tetrachlorobiphenyl (66)											1.6E+00	1.6E+00		
3,3',4,4'-Tetrachlorobiphenyl (77)											1.2E+00	1.2E+00		
3,4,4',5-Tetrachlorobiphenyl (81)											3.4E+00	3.4E+00		
2,2',3,3',4-Pentachlorobiphenyl (82)											3.6E-01	3.6E-01		
2,2',3,3',5-Pentachlorobiphenyl (83)											1.1E+00	1.1E+00		
2,2',3,3',6-Pentachlorobiphenyl (84)											2.2E-01	2.2E-01		
2,2',3,4,4'-Pentachlorobiphenyl (85)											3.0E-01	3.0E-01		
2,2',3,4,5-Pentachlorobiphenyl (86)											5.1E-01	5.1E-01		
2,2',3,4,6-Pentachlorobiphenyl (88)											4.0E-01	4.0E-01		
2,2',3,4,6'-Pentachlorobiphenyl (89)											1.3E+00	1.3E+00		
2,2',3,4',5-Pentachlorobiphenyl (90)											7.5E-01	7.5E-01		
2,2',3,5,5'-Pentachlorobiphenyl (92)											6.1E-01	6.1E-01		
2,2',3,5,6-Pentachlorobiphenyl (93)											2.8E-01	2.8E-01		
2,3,3',4,4'-Pentachlorobiphenyl (105)											7.0E-01	7.0E-01		
2,3,3',4,5-Pentachlorobiphenyl (106)											1.2E+00	1.2E+00		
2,3,3',4',5'-Pentachlorobiphenyl (108)											6.6E-01	6.6E-01		
2,3,3',4',6-Pentachlorobiphenyl (110)											2.1E-01	2.1E-01		
2,3,4,4',5-Pentachlorobiphenyl (114)											1.5E+00	1.5E+00		
2,3',4,4',5-Pentachlorobiphenyl (118)											7.5E-01	7.5E-01		
2,3',4,4',5'-Pentachlorobiphenyl (123)											0.0E+00			
3,3',4,4',5-Pentachlorobiphenyl (126)											7.2E-02	7.2E-02		
2,2',3,3',4,4'-Hexachlorobiphenyl (128)											4.4E-01	4.4E-01		
2,2',3,3',4,5-Hexachlorobiphenyl (129)											6.3E-01	6.3E-01		
2,2',3,3',4,5'-Hexachlorobiphenyl (130)											5.8E-01	5.8E-01		
2,2',3,3',4,6-Hexachlorobiphenyl (131)											4.5E-01	4.5E-01		
2,2',3,3',4,6'-Hexachlorobiphenyl (132)											2.5E-01	2.5E-01		
2,2',3,3',5,6-Hexachlorobiphenyl (134)											2.5E-01	2.5E-01		
2,2',3,3',5,6'-Hexachlorobiphenyl (135)											3.6E-01	3.6E-01		
2,2',3,3',6,6'-Hexachlorobiphenyl (136)											1.3E-01	1.3E-01		
2,2',3,4,4',5-Hexachlorobiphenyl (137)											4.9E-01	4.9E-01		
2,2',3,4,5,5'-Hexachlorobiphenyl (141)											5.9E-01	5.9E-01		
2,2',3,4,5',6-Hexachlorobiphenyl (144)											6.6E+00	6.6E+00		
2,2',3,4',5,5'-Hexachlorobiphenyl (146)											1.2E+00	1.2E+00		
2,2',3,4',5,6-Hexachlorobiphenyl (147)											4.4E-01	4.4E-01		
2,2',4,4',5,5'-Hexachlorobiphenyl (153)											2.0E+00	2.0E+00		
2,3,3',4,4',5-Hexachlorobiphenyl (156)											6.0E-01	6.0E-01		
2,3,3',4,4',5'-Hexachlorobiphenyl (157)											0.0E+00			
2,3,3',4,4',6-Hexachlorobiphenyl (158)											7.0E-01	7.0E-01		

TABLE J-5

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

	GREYSTONE MILL POND										BSAF Summary Statistics - Greystone Mill Pond			
	GMP-WS-5006-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5007-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5008-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5009-0000-01-W 6/22/2001 NORMAL	BSAF	GMP-WS-5010-0000-01-W 6/22/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',5,5'-Hexachlorobiphenyl (167)											5.8E-01	5.8E-01		
3,3',4,4',5,5'-Hexachlorobiphenyl (169)											4.8E+00	4.8E+00		
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)											5.4E-01	5.4E-01		
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)											4.7E-01	4.7E-01		
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)											2.9E+00	2.9E+00		
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)											4.4E-01	4.4E-01		
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)											2.3E+00	2.3E+00		
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)											3.5E-01	3.5E-01		
2,2',3,3',4,5',6-Heptachlorobiphenyl (177)											7.2E-01	7.2E-01		
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)											3.4E+00	3.4E+00		
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)											2.0E+00	2.0E+00		
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)											6.4E-01	6.4E-01		
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)											2.1E+00	2.1E+00		
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)											2.3E-01	2.3E-01		
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)											1.4E+00	1.4E+00		
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)											3.5E+00	3.5E+00		
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)											1.1E+00	1.1E+00		
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)											2.6E+00	2.6E+00		
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)											1.3E+00	1.3E+00		
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)											4.6E+00	4.6E+00		
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)											1.3E+00	1.3E+00		
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)											6.6E+00	6.6E+00		
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)											9.3E+00	9.3E+00		
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)											9.2E+00	9.2E+00		
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)											0.0E+00			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)											7.0E+00	7.0E+00		
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)											1.5E+01	1.5E+01		
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)											5.6E+00	5.6E+00		
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl											7.3E+00	7.3E+00		
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl											1.3E+01	1.3E+01		
Decachlorobiphenyl (209)											4.4E+00	4.4E+00		
PCB Congeners, Total											8.2E-01	8.2E-01		
alpha-BHC	8.60E-03 U	5.1E+00	5.58E-03 U	3.3E+00	5.07E-03 U	3.0E+00	1.17E-02 U	7.0E+00	6.22E-03 U	3.7E+00	1.0E+01	5.0E+00	5.0E+00	45%
Toxicity Equivalency (PCB) - Birds											1.9E+01	1.9E+01		
Toxicity Equivalency (PCB) - Fish											9.6E-03	9.6E-03		
Toxicity Equivalency (PCB) - Mammals											1.2E-02	1.2E-02		
Technical Chlordane	2.61E+00 J	3.7E-01	2.36E+00	3.3E-01	2.29E+00	3.2E-01	3.01E+00	4.3E-01	2.74E+00	3.9E-01	8.6E-01	4.2E-01	2.5E-02	38%
beta-BHC	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	6.22E-03 U	2.8E-01	7.8E-01	3.8E-01	2.9E-02	45%
delta-BHC	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	6.22E-03 U	2.8E-01	7.8E-01	3.8E-01	2.9E-02	45%
gamma-BHC	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	8.37E-03 J	3.8E-01	7.8E-01	4.0E-01	2.9E-02	43%
Heptachlor	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	6.22E-03 U	2.8E-01	7.8E-01	3.8E-01	2.9E-02	45%
Aldrin	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	6.22E-03 U	2.8E-01	7.8E-01	3.8E-01	2.9E-02	45%
Heptachlor Epoxide	8.60E-03 U	3.9E-01	6.16E-03 J	2.8E-01	8.26E-03 J	3.7E-01	1.16E-02 U	5.3E-01	6.10E-03 J	2.8E-01	7.8E-01	3.9E-01	2.5E-02	41%
Endosulfan I	8.60E-03 U	3.9E-01	5.58E-03 U	2.5E-01	5.07E-03 U	2.3E-01	1.17E-02 U	5.3E-01	6.22E-03 U	2.8E-01	7.8E-01	3.8E-01	2.9E-02	45%
Dieldrin	8.60E-03 U	1.4E-01	4.08E-02	6.8E-01	5.07E-03 U	8.4E-02	1.17E-02 U	2.0E-01	6.22E-03 U	1.0E-01	4.5E+00	7.2E-01	1.8E+00	190%
4,4'-DDE	4.85E-01 J	4.7E+00	2.33E-01	2.3E+00	4.57E-01	4.5E+00	7.81E-01	7.6E+00	4.90E-01	4.8E+00	1.2E+01	4.8E+00	9.2E+00	63%
Endrin	8.60E-03 U	2.5E-01	5.58E-03 U	1.6E-01	5.07E-03 U	1.4E-01	1.17E-02 U	3.3E-01	6.22E-03 U	1.8E-01	4.9E-01	2.4E-01	1.1E-02	45%
Endosulfan II	8.60E-03 U	2.6E-01	5.54E-03 U	1.7E-01	5.07E-03 U	1.5E-01	1.16E-02 U	3.5E-01	6.22E-03 U	1.9E-01	5.2E-01	2.5E-01	1.3E-02	45%
4,4'-DDD	2.55E-01 J	2.3E+00	1.26E-01	1.1E+00	1.67E-01	1.5E+00	1.94E-01	1.8E+00	1.78E-01	1.6E+00	3.4E+00	1.7E+00	6.0E-01	46%
Endosulfan Sulfate	8.60E-03 U	2.6E-01	5.54E-03 U	1.7E-01	5.07E-03 U	1.5E-01	1.17E-02 U	3.5E-01	6.22E-03 U	1.9E-01	5.2E-01	2.5E-01	1.3E-02	45%

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4,4'-DDT	8.60E-03 U	1.7E-01	5.58E-03 U	1.1E-01	6.53E-02	1.3E+00	9.95E-02	2.0E+00	9.29E-02	1.9E+00	6.0E+00	1.5E+00	3.2E+00	117%
Methoxychlor	8.60E-03 U	6.8E-02	5.58E-03 U	4.4E-02	5.07E-03 U	4.0E-02	1.17E-02 U	9.2E-02	6.22E-03 U	4.9E-02	1.4E-01	6.6E-02	8.7E-04	45%
Endrin Ketone	8.60E-03 U	2.6E-01	5.58E-03 U	1.7E-01	5.07E-03 U	1.5E-01	1.17E-02 U	3.5E-01	6.22E-03 U	1.9E-01	5.2E-01	2.5E-01	1.3E-02	45%
Endrin Aldehyde	8.60E-03 U	2.6E-01	5.58E-03 U	1.7E-01	5.07E-03 U	1.5E-01	1.17E-02 U	3.5E-01	6.22E-03 U	1.9E-01	5.2E-01	2.5E-01	1.3E-02	45%
alpha-Chlordane	2.09E-01 J	1.8E+00	1.73E-01	1.5E+00	1.92E-01	1.7E+00	2.01E-01	1.8E+00	1.96E-01	1.7E+00	3.7E+00	1.9E+00	4.0E-01	33%
gamma-Chlordane	1.03E-01 J	1.2E+00	1.01E-01	1.2E+00	7.79E-02	9.3E-01	1.14E-01	1.4E+00	1.00E-01	1.2E+00	3.3E+00	1.4E+00	4.4E-01	47%
Toxaphene	2.15E-01 U	1.5E-01	1.39E-01 U	9.7E-02	1.26E-01 U	8.8E-02	2.91E-01 U	2.0E-01	1.55E-01 U	1.1E-01	3.0E-01	1.5E-01	4.3E-03	45%
Aroclor-1016	1.08E-01 U	3.0E-01	6.94E-02 U	1.9E-01	6.31E-02 U	1.8E-01	1.46E-01 U	4.1E-01	7.76E-02 U	2.2E-01	6.0E-01	2.9E-01	1.7E-02	45%
Aroclor-1221	1.08E-01 U	1.8E-01	6.94E-02 U	1.2E-01	6.31E-02 U	1.1E-01	1.46E-01 U	2.5E-01	7.76E-02 U	1.3E-01	3.7E-01	1.8E-01	6.3E-03	45%
Aroclor-1232	1.08E-01 U	3.0E-01	6.94E-02 U	1.9E-01	6.31E-02 U	1.8E-01	1.46E-01 U	4.1E-01	7.76E-02 U	2.2E-01	6.0E-01	2.9E-01	1.7E-02	45%
Aroclor-1242	1.08E-01 U	3.0E-01	6.94E-02 U	1.9E-01	6.31E-02 U	1.8E-01	1.46E-01 U	4.1E-01	7.76E-02 U	2.2E-01	6.0E-01	2.9E-01	1.7E-02	45%
Aroclor-1248	1.08E-01 U	3.0E-01	6.94E-02 U	1.9E-01	6.31E-02 U	1.8E-01	1.46E-01 U	4.1E-01	7.76E-02 U	2.2E-01	6.0E-01	2.9E-01	1.7E-02	45%
Aroclor-1254	2.80E+00 J	8.7E-01	1.10E+00 J	3.4E-01	2.36E+00	7.3E-01	3.38E+00	1.1E+00	1.61E+00	5.0E-01	1.4E+00	6.9E-01	1.1E-01	49%
Aroclor-1260	1.08E-01 U	2.4E-01	6.94E-02 U	1.5E-01	6.31E-02 U	1.4E-01	1.46E-01 U	3.2E-01	7.76E-02 U	1.7E-01	4.7E-01	2.3E-01	1.0E-02	45%
Aroclor-1268	5.42E-01 J	3.2E-01	2.13E-01	1.3E-01	1.13E+00	6.7E-01	7.98E-01	4.7E-01	3.62E-01	2.1E-01	8.0E-01	3.5E-01	5.2E-02	66%
Aroclor, Total	3.34E+00 J	7.7E-01	1.31E+00 J	3.0E-01	3.48E+00	8.1E-01	4.18E+00	9.7E-01	1.97E+00	4.6E-01	1.4E+00	6.5E-01	1.1E-01	51%

TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND											
	ALLENDALE AVERAGE SEDIMENT[a]	AP-CC-06 4/10/2001 AP-CC-06	BSAF[a]	AP-SC-01, AP-SC-02, AP-SC-03 4/10/2001 NORMAL	BSAF	AP-SC-04, AP-SC-05 4/10/2001 NORMAL	BSAF	APC-WS-4001-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4002-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4003-0000-01-W 6/20/2001 NORMAL	BSAF
HCX	7.62E-01	1.91E-05 U	2.5E-05	2.31E-05 U	3.0E-05	4.42E-05 U	5.8E-05	4.33E-04	5.7E-04	2.18E-04 J	2.9E-04	1.70E-03 J	2.2E-03
2,3,7,8-TCDD	1.40E-01	1.64E-02	1.2E-01	1.80E-02	1.3E-01	2.19E-02	1.6E-01	6.02E-03 J	4.3E-02	1.18E-03 J	8.4E-03	1.53E-02 J	1.1E-01
1,2,3,7,8-PeCDD	2.00E-04	2.05E-05 U	1.0E-01	2.44E-05 U	1.2E-01	2.54E-05 U	1.3E-01	2.68E-06 UJ	1.3E-02	2.37E-06 UJ	1.2E-02	9.92E-06 J	5.0E-02
1,2,3,4,7,8-HxCDD	1.82E-04	1.72E-05 UJ	9.5E-02	2.19E-05 UJ	1.2E-01	4.69E-05 UJ	2.6E-01	1.85E-06 J	1.0E-02	2.67E-06 J	1.5E-02	2.19E-06 UJ	1.2E-02
1,2,3,6,7,8-HxCDD	5.91E-04	1.83E-05 U	3.1E-02	2.16E-05 U	3.7E-02	4.92E-05 U	8.3E-02	4.43E-06 J	7.5E-03	4.44E-06 J	7.5E-03	7.06E-06 J	1.2E-02
1,2,3,7,8,9-HxCDD	5.52E-04	1.28E-05 U	2.3E-02	1.57E-05 U	2.9E-02	4.62E-05 U	8.4E-02	1.94E-06 UJ	3.5E-03	1.41E-06 UJ	2.6E-03	2.10E-06 UJ	3.8E-03
1,2,3,4,6,7,8-HpCDD	9.91E-03	4.86E-05	4.9E-03	2.72E-05 U	2.7E-03	3.75E-04	3.8E-02	4.34E-06 UJ	4.4E-04	3.26E-06 UJ	3.3E-04	5.73E-06 UJ	5.8E-04
OCDD	6.46E-02	6.94E-05 U	1.1E-03	3.18E-05 U	4.9E-04	1.28E-04 U	2.0E-03	1.09E-05 UJ	1.7E-04	8.37E-06 UJ	1.3E-04	1.08E-05 UJ	1.7E-04
2,3,7,8-TCDF	3.56E-04	1.20E-05 UJ	3.4E-02	8.09E-05 J	2.3E-01	1.88E-04 J	5.3E-01	3.21E-05 J#	9.0E-02	2.47E-05 J#	7.0E-02	4.24E-05 J#	1.2E-01
1,2,3,7,8-PeCDF	2.05E-04	1.53E-05 U	7.5E-02	1.85E-05 U	9.0E-02	4.96E-05 U	2.4E-01	2.21E-06 J	1.1E-02	2.67E-06 J	1.3E-02	4.01E-06 J	2.0E-02
2,3,4,7,8-PeCDF	1.71E-04	1.67E-05 U	9.8E-02	2.04E-05 U	1.2E-01	3.22E-04 U	1.9E+00	1.66E-06 UJ	9.7E-03	3.85E-06 J	2.3E-02	8.59E-06 J	5.0E-02
1,2,3,4,7,8-HxCDF	3.48E-04	3.77E-05 U	1.1E-01	4.51E-05 U	1.3E-01	5.69E-05 U	1.6E-01	1.11E-06 UJ	3.2E-03	1.04E-06 UJ	3.0E-03	1.62E-06 UJ	4.7E-03
1,2,3,6,7,8-HxCDF	2.71E-04	3.80E-05 U	1.4E-01	4.54E-05 U	1.7E-01	5.69E-05 U	2.1E-01	5.54E-07 UJ	2.0E-03	6.67E-07 UJ	2.5E-03	1.43E-06 UJ	5.3E-03
2,3,4,6,7,8-HxCDF	2.09E-04	1.01E-05 U	4.8E-02	1.23E-05 U	5.9E-02	4.96E-05 U	2.4E-01	2.58E-06 UJ	1.2E-02	1.19E-06 J	5.7E-03	1.53E-06 UJ	7.3E-03
1,2,3,7,8,9-HxCDF	1.13E-04	1.91E-05 UJ	1.7E-01	2.31E-05 UJ	2.1E-01	4.42E-05 UJ	3.9E-01	2.86E-06 UJ	2.5E-02	7.41E-07 UJ	6.6E-03	1.72E-06 UJ	1.5E-02
1,2,3,4,6,7,8-HpCDF	3.69E-03	2.02E-05 U	5.5E-03	2.50E-05 U	6.8E-03	4.77E-05 U	1.3E-02	1.57E-06 UJ	4.3E-04	1.26E-06 UJ	3.4E-04	2.10E-06 UJ	5.7E-04
1,2,3,4,7,8,9-HpCDF	2.03E-04	2.21E-05 UJ	1.1E-01	2.72E-05 UJ	1.3E-01	5.08E-05 U	2.5E-01	2.12E-06 UJ	1.0E-02	1.48E-06 UJ	7.3E-03	1.81E-06 UJ	8.9E-03
OCDF	5.64E-03	1.83E-05 U	3.2E-03	2.13E-05 U	3.8E-03	2.37E-04	4.2E-02	1.94E-06 UJ	3.4E-04	1.85E-06 UJ	3.3E-04	1.72E-06 UJ	3.0E-04
Total TCDD	1.81E-01	1.64E-02 J	9.0E-02	1.80E-02 J	1.0E-01	2.19E-02 J	1.2E-01	6.02E-03 J	3.3E-02	1.18E-03 J	6.5E-03	1.53E-02 J	8.4E-02
Total PeCDD	8.98E-04	4.13E-05 UJ	4.6E-02	4.94E-05 UJ	5.5E-02	2.54E-05 UJ	2.8E-02	2.68E-06 UJ	3.0E-03	2.37E-06 UJ	2.6E-03	4.96E-06 UJ	5.5E-03
Total HxCDD	3.80E-03	2.40E-05 UJ	6.3E-03	2.93E-05 UJ	7.7E-03	3.64E-04 J	9.6E-02	4.70E-06 UJ	1.2E-03	3.78E-06 UJ	9.9E-04	3.53E-06 UJ	9.3E-04
Total HpCDD	2.00E-02	7.70E-05 J	3.8E-03	2.69E-05 UJ	1.3E-03	6.18E-04 J	3.1E-02	4.34E-06 UJ	2.2E-04	3.26E-06 UJ	1.6E-04	7.35E-06 UJ	3.7E-04
Total TCDF	3.97E-03	2.24E-05 UJ	5.6E-03	8.09E-05 J	2.0E-02	1.88E-04 J	4.7E-02	3.27E-05 J	8.2E-03	2.64E-05 J	6.6E-03	4.39E-05 J	1.1E-02
Total PeCDF	4.60E-03	2.30E-05 J	5.0E-03	3.73E-05 UJ	8.1E-03	2.70E-04 UJ	5.9E-02	2.97E-05 J	6.5E-03	1.63E-05 J	3.5E-03	4.27E-05 J	9.3E-03
Total HxCDF	5.90E-03	1.64E-05 J	2.8E-03	2.50E-05 UJ	4.2E-03	3.29E-04 UJ	5.6E-02	5.54E-06 UJ	9.4E-04	4.22E-06 UJ	7.2E-04	6.68E-06 UJ	1.1E-03
Total HpCDF	7.24E-03	3.99E-05 J	5.5E-03	2.10E-05 J	2.9E-03	1.12E-04 J	1.5E-02	2.77E-06 UJ	3.8E-04	2.37E-06 UJ	3.3E-04	2.48E-06 UJ	3.4E-04
Toxicity Equivalency - Birds	1.37E-01	1.64E-02	1.2E-01	1.81E-02	1.3E-01	2.25E-02	1.6E-01	6.05E-03	4.4E-02	1.21E-03	8.8E-03	1.53E-02	1.1E-01
Toxicity Equivalency - Fish	1.37E-01	1.64E-02	1.2E-01	1.81E-02	1.3E-01	2.22E-02	1.6E-01	6.01E-03	4.4E-02	1.18E-03	8.7E-03	1.53E-02	1.1E-01
Toxicity Equivalency - Mammals	1.37E-01	1.64E-02	1.2E-01	1.81E-02	1.3E-01	2.22E-02	1.6E-01	6.03E-03	4.4E-02	1.19E-03	8.7E-03	1.53E-02	1.1E-01
Aluminum	1.00E+04							4.56E+00 J	4.5E-04	1.06E+00 J	1.1E-04	3.53E+00 J	3.5E-04
Antimony	2.30E+00							1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03
Arsenic	5.83E+00							2.54E-02 U	4.3E-03	2.92E-02 U	5.0E-03	2.54E-02 U	4.3E-03
Barium	1.38E+02							9.45E-01 J	6.9E-03	4.00E-01 J	2.9E-03	4.33E-01 J	3.1E-03
Beryllium	1.46E+00							2.31E-03 U	1.6E-03	2.00E-03 U	1.4E-03	2.00E-03 U	1.4E-03
Cadmium	1.21E+00							2.73E-02 J	2.2E-02	2.85E-02 J	2.3E-02	1.60E-02 J	1.3E-02
Chromium	1.42E+02							1.10E-01 J	7.8E-04	8.12E-02 J	5.7E-04	6.69E-02 J	4.7E-04
Cobalt	7.14E+00							1.15E-01 J	1.6E-02	6.63E-02 J	9.3E-03	8.17E-02 J	1.1E-02
Copper	1.19E+02							7.24E-01 J	6.1E-03	5.81E-01 J	4.9E-03	6.96E-01 J	5.8E-03
Iron	1.80E+04							1.98E+01	1.1E-03	1.41E+01	7.8E-04	2.07E+01	1.2E-03
Lead	3.29E+02							2.15E-01 J	6.5E-04	2.57E-02 U	7.8E-05	5.25E-02 U	1.6E-04
Manganese	4.30E+02							8.86E+00 J	2.1E-02	4.48E+00 J	1.0E-02	4.25E+00 J	9.9E-03
Mercury	4.67E-01							1.13E-01	2.4E-01	1.84E-01	3.9E-01	8.08E-02	1.7E-01
Mercury (methyl)	8.04E-04							1.27E-01	1.6E+02	1.86E-01	2.3E+02	8.47E-02	1.1E+02
Molybdenum	1.32E+01							1.60E-01 U	1.2E-02	1.60E-01 U	1.2E-02	1.60E-01 U	1.2E-02
Nickel	2.67E+01							1.61E-01 J	6.0E-03	1.26E-01 J	4.7E-03	1.26E-01 J	4.7E-03
Selenium	1.06E+00							2.26E-01 J	2.1E-01	2.81E-01 J	2.6E-01	2.88E-01 J	2.7E-01
Silver	2.79E+00							3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02
Thallium	7.28E+00							1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND												
	ALLENDALE AVERAGE SEDIMENT[a]	AP-CC-06 4/10/2001 AP-CC-06	BSAF[a]	AP-SC-01, AP-SC-02, AP-SC-03 4/10/2001 NORMAL	BSAF	AP-SC-04, AP-SC-05 4/10/2001 NORMAL	BSAF	APC-WS-4001-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4002-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4003-0000-01-W 6/20/2001 NORMAL	BSAF
Vanadium	3.62E+01							8.69E-02 J	2.4E-03	8.95E-02 U	2.5E-03	8.95E-02 U	2.5E-03
Zinc	3.54E+02							2.36E+01 J	6.7E-02	1.46E+01 J	4.1E-02	1.63E+01 J	4.6E-02
Naphthalene	3.93E+01							4.54E-02	1.2E-03	3.73E-02	9.5E-04	4.27E-02	1.1E-03
2-Methylnaphthalene	4.07E+01							6.44E-02	1.6E-03	5.39E-02	1.3E-03	5.94E-02	1.5E-03
Acenaphthylene	3.97E+01							2.97E-02	7.5E-04	2.01E-02	5.1E-04	3.76E-02	9.5E-04
Acenaphthene	3.84E+01							5.85E-02	1.5E-03	4.06E-02	1.1E-03	5.42E-02	1.4E-03
Dibenzofuran	3.99E+01							4.50E-02	1.1E-03	2.80E-02	7.0E-04	3.74E-02	9.4E-04
Fluorene	3.57E+01							7.93E-02	2.2E-03	4.74E-02	1.3E-03	5.90E-02	1.6E-03
Phenanthrene	8.13E+01							1.85E-01	2.3E-03	1.08E-01	1.3E-03	1.16E-01	1.4E-03
Anthracene	3.78E+01							4.02E-02	1.1E-03	2.28E-02	6.0E-04	4.60E-02	1.2E-03
Fluoranthene	1.57E+02							1.48E-01	9.4E-04	7.88E-02	5.0E-04	1.11E-01	7.1E-04
Pyrene	1.18E+02							5.63E-02	4.8E-04	2.12E-02	1.8E-04	4.24E-02	3.6E-04
Benzo(a)anthracene	6.02E+01							1.46E-02	2.4E-04	5.48E-03 J	9.1E-05	1.37E-02	2.3E-04
Chrysene	7.94E+01							3.25E-02	4.1E-04	1.07E-02	1.3E-04	2.02E-02	2.5E-04
Benzo(b)fluoranthene	7.16E+01							1.75E-02	2.4E-04	3.70E-03 J	5.2E-05	7.82E-03 J	1.1E-04
Benzo(k)fluoranthene	6.05E+01							1.27E-02	2.1E-04	4.00E-03 J	6.6E-05	8.02E-03 J	1.3E-04
Benzo(a)pyrene	5.44E+01							1.27E-02	2.3E-04	1.93E-03 J	3.5E-05	5.34E-03 J	9.8E-05
Indeno(1,2,3-cd)pyrene	4.36E+01							1.09E-02 J	2.5E-04	3.56E-03 J	8.2E-05	7.06E-03 J	1.6E-04
Dibenzo(a,h)anthracene	3.72E+01							3.69E-03 J	9.9E-05	1.93E-03 J	5.2E-05	2.67E-03 J	7.2E-05
Benzo(g,h,i)perylene	5.47E+01							6.55E-03 U	1.2E-04	4.96E-03 U	9.1E-05	6.39E-03 U	1.2E-04
Total PAH	7.70E+02							8.70E-01	1.1E-03	5.04E-01	6.5E-04	6.85E-01	8.9E-04
1,1'-Biphenyl	1.47E+00							1.48E-02	1.0E-02	1.41E-02	9.6E-03	1.55E-02	1.1E-02
2-Monochlorobiphenyl (1)													
4-Chlorobiphenyl (3)													
2,2'-Dichlorobiphenyl (4)													
2,3-Dichlorobiphenyl (5)													
2,3'-Dichlorobiphenyl (6)													
2,4-Dichlorobiphenyl (7)													
2,4'-Dichlorobiphenyl (8)													
2,5-Dichlorobiphenyl (9)													
2,6-Dichlorobiphenyl (10)													
3,4-Dichlorobiphenyl (12)													
2,2',3'-Trichlorobiphenyl (16)													
2,2',4-Trichlorobiphenyl (17)													
2,2',5-Trichlorobiphenyl (18)													
2,2',6-Trichlorobiphenyl (19)													
2,3,3'-Trichlorobiphenyl (20)													
2,3,4'-Trichlorobiphenyl (22)													
2,3,6-Trichlorobiphenyl (24)													
2,3',4-Trichlorobiphenyl (25)													
2,3',5-Trichlorobiphenyl (26)													
2,4',5-Trichlorobiphenyl (31)													
2,4',6-Trichlorobiphenyl (32)													
2,2',3,3'-Tetrachlorobiphenyl (40)													
2,2',3,4'-Tetrachlorobiphenyl (42)													
2,2',3,5-Tetrachlorobiphenyl (43)													
2,2',3,5'-Tetrachlorobiphenyl (44)													
2,2',3,6-Tetrachlorobiphenyl (45)													

US EPA ARCHIVE DOCUMENT

TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

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North Providence, Rhode Island

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	ALLENDALE AVERAGE SEDIMENT[a]	AP-CC-06 4/10/2001 AP-CC-06	BSAF[a]	AP-SC-01, AP-SC-02, AP-SC-03 4/10/2001 NORMAL	BSAF	AP-SC-04, AP-SC-05 4/10/2001 NORMAL	BSAF	APC-WS-4001-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4002-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4003-0000-01-W 6/20/2001 NORMAL	BSAF
2,2',3,6'-Tetrachlorobiphenyl (46)													
2,2',4,5-Tetrachlorobiphenyl (48)													
2,2',4,5'-Tetrachlorobiphenyl (49)													
2,2',4,6-Tetrachlorobiphenyl (50)													
2,3,3',4'-Tetrachlorobiphenyl (56)													
2,3,3',6-Tetrachlorobiphenyl (59)													
2,3,4,4'-Tetrachlorobiphenyl (60)													
2,3,4,5-Tetrachlorobiphenyl (61)													
2,3,4',5-Tetrachlorobiphenyl (63)													
2,3,4',6-Tetrachlorobiphenyl (64)													
2,3',4,4'-Tetrachlorobiphenyl (66)													
3,3',4,4'-Tetrachlorobiphenyl (77)	1.47E-02	7.46E-03	5.1E-01	3.95E-02	2.7E+00	5.54E-02	3.8E+00						
3,4,4',5-Tetrachlorobiphenyl (81)		6.54E-03 U		7.38E-03 U		9.20E-03 U							
2,2',3,3',4-Pentachlorobiphenyl (82)													
2,2',3,3',5-Pentachlorobiphenyl (83)													
2,2',3,3',6-Pentachlorobiphenyl (84)													
2,2',3,4,4'-Pentachlorobiphenyl (85)													
2,2',3,4,5-Pentachlorobiphenyl (86)													
2,2',3,4,6-Pentachlorobiphenyl (88)													
2,2',3,4,6'-Pentachlorobiphenyl (89)													
2,2',3,4',5-Pentachlorobiphenyl (90)													
2,2',3,5,5'-Pentachlorobiphenyl (92)													
2,2',3,5,6-Pentachlorobiphenyl (93)													
2,3,3',4,4'-Pentachlorobiphenyl (105)		6.12E-01		1.15E+00		1.47E+00							
2,3,3',4,5-Pentachlorobiphenyl (106)													
2,3,3',4',5'-Pentachlorobiphenyl (108)													
2,3,3',4',6-Pentachlorobiphenyl (110)													
2,3,4,4',5-Pentachlorobiphenyl (114)		3.67E-02		6.03E-02		8.69E-02							
2,3',4,4',5-Pentachlorobiphenyl (118)		*2.68E+00* J		*5.17E+00* J		*6.59E+00* J							
2,3',4,4',5'-Pentachlorobiphenyl (123)		4.29E-02		8.72E-02		1.03E-01							
3,3',4,4',5-Pentachlorobiphenyl (126)		1.93E-02		4.73E-02		5.83E-02							
2,2',3,3',4,4'-Hexachlorobiphenyl (128)													
2,2',3,3',4,5-Hexachlorobiphenyl (129)													
2,2',3,3',4,5'-Hexachlorobiphenyl (130)													
2,2',3,3',4,6-Hexachlorobiphenyl (131)													
2,2',3,3',4,6'-Hexachlorobiphenyl (132)													
2,2',3,3',5,6-Hexachlorobiphenyl (134)													
2,2',3,3',5,6'-Hexachlorobiphenyl (135)													
2,2',3,3',6,6'-Hexachlorobiphenyl (136)													
2,2',3,4,4',5-Hexachlorobiphenyl (137)													
2,2',3,4,5,5'-Hexachlorobiphenyl (141)													
2,2',3,4,5',6-Hexachlorobiphenyl (144)													
2,2',3,4',5,5'-Hexachlorobiphenyl (146)													
2,2',3,4',5,6-Hexachlorobiphenyl (147)													
2,2',4,4',5,5'-Hexachlorobiphenyl (153)													
2,3,3',4,4',5-Hexachlorobiphenyl (156)		1.50E-01 J		3.07E-01 J		3.75E-01 J							
2,3,3',4,4',5'-Hexachlorobiphenyl (157)		1.50E-01 J		3.07E-01 J		3.75E-01 J							
2,3,3',4,4',6-Hexachlorobiphenyl (158)													

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND												
	ALLENDALE AVERAGE SEDIMENT[a]	AP-CC-06 4/10/2001 AP-CC-06	BSAF[a]	AP-SC-01, AP-SC-02, AP-SC-03 4/10/2001 NORMAL	BSAF	AP-SC-04, AP-SC-05 4/10/2001 NORMAL	BSAF	APC-WS-4001-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4002-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4003-0000-01-W 6/20/2001 NORMAL	BSAF
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.18E-01		2.45E-01		2.98E-01							
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		6.54E-03 U		7.38E-03 U		9.20E-03 U							
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)													
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)													
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)													
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)													
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)													
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)													
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)													
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)													
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)													
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)													
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)													
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)													
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)													
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)													
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		8.88E-03 J		1.89E-02		2.28E-02							
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)													
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)													
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)													
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)													
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)													
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)													
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)													
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)													
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)													
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)													
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)													
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl													
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl													
Decachlorobiphenyl (209)													
PCB Congeners, Total													
alpha-BHC	7.37E-04							5.72E-03 UJ	7.8E+00	4.52E-03 UJ	6.1E+00	1.17E-02 UJ	1.6E+01
Toxicity Equivalency (PCB) - Birds	1.47E-06	3.09E-03	2.1E+03	7.72E-03	5.2E+03	9.85E-03	6.7E+03						
Toxicity Equivalency (PCB) - Fish	1.47E-06	1.20E-04	8.1E+01	2.81E-04	1.9E+02	3.48E-04	2.4E+02						
Toxicity Equivalency (PCB) - Mammals	8.58E-02	2.50E-03	2.9E-02	5.79E-03	6.8E-02	7.17E-03	8.4E-02						
Technical Chlordane	1.08E+01							2.15E+00 J	2.0E-01	2.31E+00 J	2.1E-01	1.91E+00 J	1.8E-01
beta-BHC	7.21E-02							5.72E-03 UJ	7.9E-02	4.52E-03 UJ	6.3E-02	1.17E-02 UJ	1.6E-01
delta-BHC	8.38E-02							5.72E-03 UJ	6.8E-02	4.52E-03 UJ	5.4E-02	1.17E-02 UJ	1.4E-01
gamma-BHC	8.58E-02							3.69E-03 J	4.3E-02	2.37E-03 J	2.8E-02	1.17E-02 UJ	1.4E-01
Heptachlor	8.75E-02							5.72E-03 UJ	6.5E-02	4.52E-03 UJ	5.2E-02	1.17E-02 UJ	1.3E-01
Aldrin	8.58E-02							5.72E-03 UJ	6.7E-02	4.52E-03 UJ	5.3E-02	1.17E-02 UJ	1.4E-01
Heptachlor Epoxide	8.59E-02							1.05E-02 J	1.2E-01	1.23E-02 J	1.4E-01	6.11E-03 J	7.1E-02
Endosulfan I	8.58E-02							5.72E-03 UJ	6.7E-02	4.52E-03 UJ	5.3E-02	1.17E-02 UJ	1.4E-01
Dieldrin	5.62E-01							9.10E-02 J	1.6E-01	5.73E-02 J	1.0E-01	4.92E-02 J	8.8E-02
4,4'-DDE	2.05E-01							3.13E-01 J	1.5E+00	1.61E-01 J	7.9E-01	2.14E-01 J	1.0E+00
Endrin	1.82E-01							5.72E-03 UJ	3.1E-02	4.52E-03 UJ	2.5E-02	1.17E-02 UJ	6.4E-02
Endosulfan II	3.30E-01							5.72E-03 UJ	1.7E-02	4.52E-03 UJ	1.4E-02	1.17E-02 UJ	3.6E-02
4,4'-DDD	2.55E-01							2.73E-01 J	1.1E+00	1.19E-01 J	4.6E-01	1.18E-01 J	4.6E-01
Endosulfan Sulfate	1.70E-01							5.72E-03 UJ	3.4E-02	4.52E-03 UJ	2.7E-02	1.17E-02 UJ	6.9E-02

US EPA ARCHIVE DOCUMENT

TABLE J-5
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND												
	ALLENDALE AVERAGE SEDIMENT[a]	AP-CC-06 4/10/2001 AP-CC-06	BSAF[a]	AP-SC-01, AP-SC-02, AP-SC-03 4/10/2001 NORMAL	BSAF	AP-SC-04, AP-SC-05 4/10/2001 NORMAL	BSAF	APC-WS-4001-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4002-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4003-0000-01-W 6/20/2001 NORMAL	BSAF
4,4'-DDT	2.03E-01							4.54E-01 J	2.2E+00	4.46E-02 J	2.2E-01	4.41E-02 J	2.2E-01
Methoxychlor	5.47E-01							5.72E-03 UJ	1.0E-02	4.52E-03 UJ	8.3E-03	1.17E-02 UJ	2.1E-02
Endrin Ketone	1.68E-01							5.72E-03 UJ	3.4E-02	4.52E-03 UJ	2.7E-02	1.17E-02 UJ	7.0E-02
Endrin Aldehyde	1.33E-01							5.72E-03 UJ	4.3E-02	4.52E-03 UJ	3.4E-02	1.17E-02 UJ	8.8E-02
alpha-Chlordane	2.59E-01							2.83E-01 J	1.1E+00	3.14E-01 J	1.2E+00	1.75E-01 J	6.7E-01
gamma-Chlordane	1.68E-01							9.94E-02 J	5.9E-01	2.08E-01 J	1.2E+00	9.73E-02 J	5.8E-01
Toxaphene	8.27E+00							1.42E-01 UJ	1.7E-02	1.13E-01 UJ	1.4E-02	2.92E-01 UJ	3.5E-02
Aroclor-1016	1.64E+00							7.08E-02 UJ	4.3E-02	5.64E-02 UJ	3.4E-02	1.46E-01 UJ	8.9E-02
Aroclor-1221	3.28E+00							7.08E-02 UJ	2.2E-02	5.64E-02 UJ	1.7E-02	1.46E-01 UJ	4.5E-02
Aroclor-1232	1.64E+00							7.08E-02 UJ	4.3E-02	5.64E-02 UJ	3.4E-02	1.46E-01 UJ	8.9E-02
Aroclor-1242	1.64E+00							7.08E-02 UJ	4.3E-02	5.64E-02 UJ	3.4E-02	1.46E-01 UJ	8.9E-02
Aroclor-1248	1.82E+00							7.08E-02 UJ	3.9E-02	5.64E-02 UJ	3.1E-02	1.46E-01 UJ	8.0E-02
Aroclor-1254	1.59E+01							2.32E+01 J	1.5E+00	1.11E+01 J	7.0E-01	1.24E+01 J	7.8E-01
Aroclor-1260	1.82E+00							7.08E-02 UJ	3.9E-02	5.64E-02 UJ	3.1E-02	1.46E-01 UJ	8.0E-02
Aroclor-1268	1.37E+00							4.56E-01 J	3.3E-01	2.74E-01 J	2.0E-01	4.25E-01 J	3.1E-01
Aroclor, Total	1.68E+01							2.37E+01 J	1.4E+00	1.14E+01 J	6.8E-01	1.28E+01 J	7.6E-01

US EPA ARCHIVE DOCUMENT

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND											
	APC-WS-4004-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4005-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4006-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4007-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4008-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4009-0000-01-W 6/20/2001 NORMAL	BSAF
HCX	1.23E-03 J	1.6E-03	7.70E-04 J	1.0E-03	6.89E-04 J	9.0E-04	8.61E-04 J	1.1E-03	9.18E-04 J	1.2E-03	9.45E-04 J	1.2E-03
2,3,7,8-TCDD	1.54E-03 J	1.1E-02	8.64E-03 J	6.2E-02	7.80E-03 J	5.6E-02	1.69E-03 J	1.2E-02	7.65E-03 J	5.5E-02	3.23E-03 J	2.3E-02
1,2,3,7,8-PeCDD	2.02E-06 UJ	1.0E-02	6.60E-06 J	3.3E-02	8.03E-06 J	4.0E-02	5.25E-06 UJ	2.6E-02	6.25E-06 UJ	3.1E-02	5.87E-06 UJ	2.9E-02
1,2,3,4,7,8-HxCDD	1.35E-06 J	7.4E-03	1.10E-06 UJ	6.1E-03	3.21E-06 J	1.8E-02	4.58E-06 UJ	2.5E-02	8.58E-06 UJ	4.7E-02	3.89E-06 UJ	2.1E-02
1,2,3,6,7,8-HxCDD	4.81E-06 J	8.1E-03	3.21E-06 J	5.4E-03	5.50E-06 J	9.3E-03	4.92E-06 UJ	8.3E-03	9.24E-06 UJ	1.6E-02	3.96E-06 UJ	6.7E-03
1,2,3,7,8,9-HxCDD	1.63E-06 UJ	3.0E-03	1.10E-06 UJ	2.0E-03	1.49E-06 UJ	2.7E-03	4.50E-06 UJ	8.2E-03	8.40E-06 UJ	1.5E-02	3.67E-06 UJ	6.6E-03
1,2,3,4,6,7,8-HpCDD	4.90E-06 UJ	4.9E-04	3.30E-06 UJ	3.3E-04	1.02E-05 J	1.0E-03	1.06E-05 UJ	1.1E-03	7.74E-06 UJ	7.8E-04	4.18E-06 UJ	4.2E-04
OCDD	1.19E-05 UJ	1.8E-04	8.38E-06 UJ	1.3E-04	1.01E-05 UJ	1.6E-04	1.15E-05 UJ	1.8E-04	3.11E-05 UJ	4.8E-04	1.06E-05 UJ	1.6E-04
2,3,7,8-TCDF	4.81E-05 J#	1.4E-01	2.84E-05 J#	8.0E-02	3.12E-05 J#	8.8E-02	9.00E-06 J	2.5E-02	4.48E-06 UJ	1.3E-02	2.08E-05 J#	5.8E-02
1,2,3,7,8-PeCDF	2.88E-06 UJ	1.4E-02	2.62E-06 UJ	1.3E-02	2.29E-06 J	1.1E-02	5.08E-06 UJ	2.5E-02	4.85E-06 UJ	2.4E-02	5.50E-06 UJ	2.7E-02
2,3,4,7,8-PeCDF	2.98E-06 UJ	1.7E-02	5.08E-06 J	3.0E-02	5.73E-06 J	3.4E-02	4.75E-06 UJ	2.8E-02	4.38E-06 UJ	2.6E-02	5.21E-06 UJ	3.1E-02
1,2,3,4,7,8-HxCDF	1.44E-06 UJ	4.1E-03	9.31E-07 UJ	2.7E-03	9.75E-07 UJ	2.8E-03	5.08E-06 UJ	1.5E-02	5.04E-06 UJ	1.4E-02	3.08E-06 UJ	8.8E-03
1,2,3,6,7,8-HxCDF	1.44E-06 UJ	5.3E-03	5.92E-07 UJ	2.2E-03	9.75E-07 UJ	3.6E-03	5.17E-06 UJ	1.9E-02	5.04E-06 UJ	1.9E-02	3.08E-06 UJ	1.1E-02
2,3,4,6,7,8-HxCDF	1.54E-06 UJ	7.3E-03	1.35E-06 UJ	6.5E-03	9.17E-07 J	4.4E-03	5.33E-06 UJ	2.5E-02	5.41E-06 UJ	2.6E-02	3.23E-06 UJ	1.5E-02
1,2,3,7,8,9-HxCDF	1.54E-06 UJ	1.4E-02	1.44E-06 UJ	1.3E-02	1.15E-06 UJ	1.0E-02	5.83E-06 UJ	5.2E-02	6.06E-06 UJ	5.4E-02	3.67E-06 UJ	3.3E-02
1,2,3,4,6,7,8-HpCDF	1.73E-06 UJ	4.7E-04	1.10E-06 UJ	3.0E-04	1.61E-06 UJ	4.4E-04	7.00E-06 UJ	1.9E-03	1.36E-05 UJ	3.7E-03	1.61E-06 UJ	4.4E-04
1,2,3,4,7,8,9-HpCDF	1.73E-06 UJ	8.5E-03	1.18E-06 UJ	5.8E-03	1.38E-06 UJ	6.8E-03	7.58E-06 UJ	3.7E-02	1.47E-05 UJ	7.3E-02	4.11E-06 UJ	2.0E-02
OCDF	9.62E-07 UJ	1.7E-04	1.02E-06 UJ	1.8E-04	1.09E-06 UJ	1.9E-04	3.00E-06 UJ	5.3E-04	6.44E-06 UJ	1.1E-03	5.87E-06 UJ	1.0E-03
Total TCDD	1.54E-03 J	8.5E-03	8.64E-03 J	4.8E-02	7.80E-03 J	4.3E-02	1.69E-03 J	9.3E-03	7.65E-03 J	4.2E-02	3.23E-03 J	1.8E-02
Total PeCDD	2.02E-06 UJ	2.2E-03	3.30E-06 UJ	3.7E-03	8.03E-06 J	8.9E-03	5.25E-06 UJ	5.8E-03	6.25E-06 UJ	7.0E-03	5.87E-06 UJ	6.5E-03
Total HxCDD	3.08E-06 UJ	8.1E-04	4.31E-06 UJ	1.1E-03	6.71E-06 UJ	1.8E-03	1.67E-06 UJ	4.4E-04	8.68E-06 UJ	2.3E-03	3.81E-06 UJ	1.0E-03
Total HpCDD	7.02E-06 UJ	3.5E-04	4.48E-06 UJ	2.2E-04	5.10E-06 UJ	2.5E-04	1.06E-05 UJ	5.3E-04	7.74E-06 UJ	3.9E-04	4.18E-06 UJ	2.1E-04
Total TCDF	1.52E-05 J	3.8E-03	2.40E-05 J	6.0E-03	2.51E-05 J	6.3E-03	1.07E-05 J	2.7E-03	4.48E-06 UJ	1.1E-03	1.47E-05 J	3.7E-03
Total PeCDF	1.54E-05 J	3.3E-03	1.15E-05 J	2.5E-03	2.12E-05 J	4.6E-03	5.00E-06 J	1.1E-03	4.57E-06 UJ	9.9E-04	6.89E-06 J	1.5E-03
Total HxCDF	4.71E-06 UJ	8.0E-04	4.74E-06 UJ	8.0E-04	4.47E-06 UJ	7.6E-04	5.33E-06 UJ	9.0E-04	5.32E-06 UJ	9.0E-04	2.71E-06 UJ	4.6E-04
Total HpCDF	5.77E-06 UJ	8.0E-04	1.10E-06 UJ	1.5E-04	1.89E-06 UJ	2.6E-04	7.33E-06 UJ	1.0E-03	1.42E-05 UJ	2.0E-03	1.61E-06 UJ	2.2E-04
Toxicity Equivalency - Birds	1.59E-03	1.2E-02	8.68E-03	6.3E-02	7.84E-03	5.7E-02	1.70E-03	1.2E-02	7.67E-03	5.6E-02	3.26E-03	2.4E-02
Toxicity Equivalency - Fish	1.54E-03	1.1E-02	8.66E-03	6.3E-02	7.82E-03	5.7E-02	1.70E-03	1.2E-02	7.67E-03	5.6E-02	3.24E-03	2.4E-02
Toxicity Equivalency - Mammals	1.55E-03	1.1E-02	8.66E-03	6.3E-02	7.82E-03	5.7E-02	1.70E-03	1.2E-02	7.67E-03	5.6E-02	3.24E-03	2.4E-02
Aluminum	7.40E+00 J	7.4E-04	3.22E+00 J	3.2E-04	9.73E+00 J	9.7E-04	8.31E+00 J	8.3E-04	2.58E+01 J	2.6E-03	9.68E+00	9.6E-04
Antimony	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03	1.70E-02 U	7.4E-03
Arsenic	3.25E-02 U	5.6E-03	2.95E-02 U	5.0E-03	3.50E-02 U	6.0E-03	4.00E-02 U	6.9E-03	3.75E-02 U	6.4E-03	1.99E-02 U	3.4E-03
Barium	4.66E-01 J	3.4E-03	1.00E+00 J	7.3E-03	7.13E-01	5.2E-03	5.78E-01 J	4.2E-03	1.45E+00 J	1.1E-02	8.35E-01	6.1E-03
Beryllium	2.00E-03 U	1.4E-03	2.00E-03 U	1.4E-03	2.00E-03 U	1.4E-03	2.47E-03 U	1.7E-03	2.55E-03 U	1.7E-03	2.00E-03 U	1.4E-03
Cadmium	1.56E-02 J	1.3E-02	1.58E-02 J	1.3E-02	1.67E-02 J	1.4E-02	3.37E-02 J	2.8E-02	4.84E-02 J	4.0E-02	1.78E-02 J	1.5E-02
Chromium	1.11E-01 J	7.8E-04	1.10E-01 J	7.8E-04	9.89E-02 J	7.0E-04	1.06E-01 J	7.5E-04	2.29E-01 J	1.6E-03	1.35E-01 U	9.5E-04
Cobalt	8.42E-02 J	1.2E-02	1.27E-01 J	1.8E-02	8.16E-02 J	1.1E-02	7.17E-02 J	1.0E-02	1.07E-01 J	1.5E-02	7.93E-02 J	1.1E-02
Copper	7.85E-01 J	6.6E-03	7.18E-01 J	6.0E-03	6.06E-01 J	5.1E-03	6.89E-01 J	5.8E-03	9.81E-01	8.2E-03	7.10E-01	6.0E-03
Iron	2.10E+01	1.2E-03	2.32E+01	1.3E-03	2.18E+01	1.2E-03	2.11E+01	1.2E-03	4.64E+01	2.6E-03	2.40E+01	1.3E-03
Lead	5.95E-02 U	1.8E-04	2.49E-01 J	7.6E-04	2.60E-01 J	7.9E-04	6.75E-02 U	2.1E-04	3.49E-01	1.1E-03	1.40E-01 J	4.3E-04
Manganese	4.31E+00 J	1.0E-02	7.79E+00 J	1.8E-02	6.44E+00 J	1.5E-02	3.83E+00 J	8.9E-03	1.23E+01 J	2.9E-02	9.09E+00	2.1E-02
Mercury	9.35E-02	2.0E-01	9.23E-02	2.0E-01	1.18E-01	2.5E-01	2.16E-01	4.6E-01	2.05E-01	4.4E-01	1.06E-01	2.3E-01
Mercury (methyl)	1.69E-01	2.1E+02	1.15E-01	1.4E+02	1.25E-01	1.6E+02	2.25E-01	2.8E+02	2.19E-01	2.7E+02	9.38E-02	1.2E+02
Molybdenum	1.60E-01 U	1.2E-02	1.60E-01 U	1.2E-02	1.60E-01 U	1.2E-02	1.60E-01 U	1.2E-02	9.39E-02 J	7.1E-03	5.24E-02 J	4.0E-03
Nickel	1.25E-01 J	4.7E-03	2.05E-01 J	7.7E-03	1.35E-01 J	5.1E-03	1.14E-01 J	4.3E-03	2.21E-01 J	8.3E-03	1.41E-01 J	5.3E-03
Selenium	3.24E-01 J	3.0E-01	2.96E-01 J	2.8E-01	2.97E-01 J	2.8E-01	2.92E-01 J	2.7E-01	3.49E-01 J	3.3E-01	2.15E-01 J	2.0E-01
Silver	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02	3.00E-02 U	1.1E-02
Thallium	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03	1.10E-02 U	1.5E-03

US EPA ARCHIVE DOCUMENT

TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND											
	APC-WS-4004-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4005-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4006-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4007-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4008-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4009-0000-01-W 6/20/2001 NORMAL	BSAF
Vanadium	7.10E-02 J	2.0E-03	8.95E-02 U	2.5E-03	8.95E-02 U	2.5E-03	8.95E-02 U	2.5E-03	1.54E-01 J	4.3E-03	8.95E-02 U	2.5E-03
Zinc	2.02E+01 J	5.7E-02	2.63E+01 J	7.4E-02	1.86E+01 J	5.3E-02	2.19E+01 J	6.2E-02	2.06E+01	5.8E-02	2.21E+01	6.2E-02
Naphthalene	5.08E-02	1.3E-03	4.79E-02	1.2E-03	4.69E-02	1.2E-03	4.77E-02	1.2E-03	5.32E-02	1.4E-03	4.97E-02	1.3E-03
2-Methylnaphthalene	7.42E-02	1.8E-03	6.23E-02	1.5E-03	6.32E-02	1.6E-03	6.30E-02	1.5E-03	7.16E-02	1.8E-03	6.32E-02	1.6E-03
Acenaphthylene	2.79E-02	7.0E-04	4.43E-02	1.1E-03	4.44E-02	1.1E-03	3.77E-02	9.5E-04	4.09E-02	1.0E-03	2.55E-02	6.4E-04
Acenaphthene	6.94E-02	1.8E-03	5.55E-02	1.4E-03	5.62E-02	1.5E-03	7.15E-02	1.9E-03	6.16E-02	1.6E-03	6.03E-02	1.6E-03
Dibenzofuran	5.13E-02	1.3E-03	3.59E-02	9.0E-04	3.86E-02	9.7E-04	5.20E-02	1.3E-03	3.88E-02	9.7E-04	4.59E-02	1.2E-03
Fluorene	8.92E-02	2.5E-03	5.97E-02	1.7E-03	5.89E-02	1.6E-03	9.33E-02	2.6E-03	7.09E-02	2.0E-03	6.74E-02	1.9E-03
Phenanthrene	2.79E-01	3.4E-03	1.08E-01	1.3E-03	1.24E-01	1.5E-03	2.42E-01	3.0E-03	1.99E-01	2.4E-03	1.43E-01	1.8E-03
Anthracene	5.00E-02	1.3E-03	4.94E-02	1.3E-03	4.66E-02	1.2E-03	6.07E-02	1.6E-03	4.79E-02	1.3E-03	3.59E-02	9.5E-04
Fluoranthene	1.47E-01	9.4E-04	1.03E-01	6.6E-04	1.08E-01	6.9E-04	2.31E-01	1.5E-03	2.37E-01	1.5E-03	1.27E-01	8.1E-04
Pyrene	3.60E-02	3.0E-04	2.00E-02	1.7E-04	2.68E-02	2.3E-04	6.48E-02	5.5E-04	6.75E-02 J	5.7E-04	2.58E-02	2.2E-04
Benzo(a)anthracene	1.33E-02	2.2E-04	2.10E-02	3.5E-04	1.75E-02	2.9E-04	3.85E-02	6.4E-04	5.62E-02	9.3E-04	1.63E-02	2.7E-04
Chrysene	2.83E-02	3.6E-04	2.37E-02	3.0E-04	2.00E-02	2.5E-04	5.78E-02	7.3E-04	8.45E-02	1.1E-03	2.98E-02	3.7E-04
Benzo(b)fluoranthene	1.31E-02	1.8E-04	1.20E-02	1.7E-04	1.04E-02	1.5E-04	4.08E-02	5.7E-04	7.48E-02	1.0E-03	1.50E-02	2.1E-04
Benzo(k)fluoranthene	1.02E-02 J	1.7E-04	1.20E-02	2.0E-04	9.75E-03	1.6E-04	3.48E-02	5.8E-04	6.31E-02	1.0E-03	1.47E-02	2.4E-04
Benzo(a)pyrene	1.04E-02 J	1.9E-04	1.07E-02 J	2.0E-04	7.22E-03 J	1.3E-04	3.55E-02	6.5E-04	5.21E-02	9.6E-04	1.30E-02	2.4E-04
Indeno(1,2,3-cd)pyrene	9.04E-03 J	2.1E-04	9.48E-03 J	2.2E-04	7.68E-03	1.8E-04	2.08E-02	4.8E-04	4.98E-02	1.1E-03	9.09E-03 J	2.1E-04
Dibenzo(a,h)anthracene	2.69E-03 J	7.2E-05	5.58E-03 J	1.5E-04	3.67E-03 J	9.9E-05	5.50E-03 J	1.5E-04	1.29E-02	3.5E-04	3.08E-03 J	8.3E-05
Benzo(g,h,i)perylene	6.54E-03 U	1.2E-04	5.58E-03 U	1.0E-04	4.30E-03 U	7.9E-05	1.92E-02	3.5E-04	4.53E-02	8.3E-04	4.91E-03 U	9.0E-05
Total PAH	9.82E-01	1.3E-03	6.98E-01	9.1E-04	7.06E-01	9.2E-04	1.23E+00	1.6E-03	1.34E+00	1.7E-03	7.62E-01	9.9E-04
1,1'-Biphenyl	2.12E-02	1.4E-02	1.76E-02	1.2E-02	1.63E-02	1.1E-02	1.57E-02	1.1E-02	1.62E-02	1.1E-02	1.67E-02	1.1E-02
2-Monochlorobiphenyl (1)							1.59E-03 J		2.98E-04 UJ		7.36E-04 J	
4-Chlorobiphenyl (3)							1.74E-04 UJ		1.41E-04 UJ		1.07E-04 UJ	
2,2'-Dichlorobiphenyl (4)							3.63E-03 J		3.84E-03 J		4.48E-03 J	
2,3-Dichlorobiphenyl (5)							2.25E-04 J		1.99E-04 J		7.28E-05 UJ	
2,3'-Dichlorobiphenyl (6)							3.13E-03 J		3.06E-03 J		4.47E-03 J	
2,4-Dichlorobiphenyl (7)							5.20E-04 J		4.23E-04 J		7.40E-04 J	
2,4'-Dichlorobiphenyl (8)							1.45E-02 J		1.37E-02 J		1.85E-02 J	
2,5-Dichlorobiphenyl (9)							1.13E-03 J		1.01E-03 J		1.70E-03 J	
2,6-Dichlorobiphenyl (10)							2.42E-04 J		2.48E-04 J		4.40E-04 J	
3,4-Dichlorobiphenyl (12)							1.76E-04 J		2.07E-04 J		1.47E-04 J	
2,2',3'-Trichlorobiphenyl (16)							1.20E-02 J		1.70E-02 J		7.61E-03 J	
2,2',4-Trichlorobiphenyl (17)							1.71E-02 J		2.46E-02 J		1.71E-02 J	
2,2',5-Trichlorobiphenyl (18)							2.22E-02 J		3.05E-02 J		2.45E-02 J	
2,2',6-Trichlorobiphenyl (19)							2.76E-03 J		4.04E-03 J		3.91E-03 J	
2,3,3'-Trichlorobiphenyl (20)							1.49E-01 J		2.05E-01 J		1.23E-01 J	
2,3,4'-Trichlorobiphenyl (22)							2.74E-02 J		3.56E-02 J		2.29E-02 J	
2,3,6-Trichlorobiphenyl (24)							3.16E-03 J		4.71E-03 J		2.90E-03 J	
2,3',4-Trichlorobiphenyl (25)							2.83E-03 J		2.54E-03 J		2.04E-03 J	
2,3',5-Trichlorobiphenyl (26)							1.23E-02 J		1.28E-02 J		8.73E-03 J	
2,4',5-Trichlorobiphenyl (31)							5.99E-02 J		6.09E-02 J		5.07E-02 J	
2,4',6-Trichlorobiphenyl (32)							1.29E-02 J		2.01E-02 J		8.80E-03 J	
2,2',3,3'-Tetrachlorobiphenyl (40)							5.01E-02 J		8.57E-02 J		7.01E-02 J	
2,2',3,4'-Tetrachlorobiphenyl (42)							3.32E-02 J		5.93E-02 J		5.71E-02 J	
2,2',3,5-Tetrachlorobiphenyl (43)							7.51E-02 J		1.53E-01 J		1.63E-01 J	
2,2',3,5'-Tetrachlorobiphenyl (44)							1.28E-01 J		2.36E-01 J		8.24E-02 J	
2,2',3,6-Tetrachlorobiphenyl (45)							1.40E-02 J		2.49E-02 J		1.80E-02 J	

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TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND											
	APC-WS-4004-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4005-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4006-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4007-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4008-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4009-0000-01-W 6/20/2001 NORMAL	BSAF
2,2',3,6'-Tetrachlorobiphenyl (46)							4.31E-03 J		7.75E-03 J		5.54E-03 J	
2,2',4,5-Tetrachlorobiphenyl (48)							1.86E-02 J		2.69E-02 J		2.95E-02 J	
2,2',4,5'-Tetrachlorobiphenyl (49)							1.01E-01 J		1.80E-01 J		1.75E-01 J	
2,2',4,6-Tetrachlorobiphenyl (50)							1.26E-02 J		2.51E-02 J		1.28E-02 J	
2,3,3',4'-Tetrachlorobiphenyl (56)							3.25E-02 J		6.25E-02 J		3.94E-02 J	
2,3,3',6-Tetrachlorobiphenyl (59)							1.11E-02 J		1.93E-02 J		1.53E-01 J	
2,3,4,4'-Tetrachlorobiphenyl (60)							1.87E-02 J		3.26E-02 J		3.70E-02 J	
2,3,4,5-Tetrachlorobiphenyl (61)							2.03E-01 J		3.26E-01 J		3.23E-01 J	
2,3,4',5-Tetrachlorobiphenyl (63)							4.98E-03 J		7.78E-03 J		1.03E-02 J	
2,3,4',6-Tetrachlorobiphenyl (64)							5.82E-02 J		1.02E-01 J		1.02E-01 J	
2,3',4,4'-Tetrachlorobiphenyl (66)							1.73E-01 J		2.60E-01 J		2.68E-01 J	
3,3',4,4'-Tetrachlorobiphenyl (77)							1.67E-03 J	1.1E-01	3.39E-03 J	2.3E-01	4.95E-03 J	3.4E-01
3,4,4',5-Tetrachlorobiphenyl (81)							1.07E-02 J		9.25E-04 UJ		7.28E-04 UJ	
2,2',3,3',4-Pentachlorobiphenyl (82)							4.42E-02 J		8.15E-02 J		7.10E-02 J	
2,2',3,3',5-Pentachlorobiphenyl (83)							3.13E-01 J		4.26E-01 J		5.31E-01 J	
2,2',3,3',6-Pentachlorobiphenyl (84)							6.41E-02 J		1.52E-01 J		9.26E-02 J	
2,2',3,4,4'-Pentachlorobiphenyl (85)							1.23E-01 J		1.60E-01 J		7.30E-02 J	
2,2',3,4,5-Pentachlorobiphenyl (86)							3.70E-01 J		5.93E-01 J		5.44E-01 J	
2,2',3,4,6-Pentachlorobiphenyl (88)							6.23E-02 J		1.49E-01 J		9.15E-02 J	
2,2',3,4,6'-Pentachlorobiphenyl (89)							2.50E-03 J		5.07E-03 J		7.28E-04 UJ	
2,2',3,4',5-Pentachlorobiphenyl (90)							4.11E-01 J		7.21E-01 J		6.75E-01 J	
2,2',3,5,5'-Pentachlorobiphenyl (92)							5.78E-02 J		1.36E-01 J		1.21E-01 J	
2,2',3,5,6-Pentachlorobiphenyl (93)							2.55E-01 J		7.58E-01 J		3.72E-01 J	
2,3,3',4,4'-Pentachlorobiphenyl (105)							1.65E-01 J		1.99E-01 J		1.80E-01 J	
2,3,3',4,5-Pentachlorobiphenyl (106)							6.95E-02 J		8.12E-02 J		8.58E-02 J	
2,3,3',4',5'-Pentachlorobiphenyl (108)							1.87E-02 J		2.51E-02 J		2.26E-02 J	
2,3,3',4',6-Pentachlorobiphenyl (110)							7.39E-01 J		1.42E+00 J		5.29E-01 J	
2,3,4,4',5-Pentachlorobiphenyl (114)							9.87E-03 J		1.38E-02 J		1.51E-02 J	
2,3',4,4',5-Pentachlorobiphenyl (118)							7.00E-01 J		8.04E-01 J		7.57E-01 J	
2,3',4,4',5'-Pentachlorobiphenyl (123)												
3,3',4,4',5-Pentachlorobiphenyl (126)							1.51E-03 J		2.33E-03 J		1.22E-03 J	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)							2.08E-01 J		2.37E-01 J		1.48E-01 J	
2,2',3,3',4,5-Hexachlorobiphenyl (129)							1.48E+00 J		2.02E+00 J		9.70E-01 J	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)							5.11E-02 J		9.56E-02 J		5.28E-02 J	
2,2',3,3',4,6-Hexachlorobiphenyl (131)							1.13E-02 J		1.79E-02 J		7.28E-04 UJ	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)							2.27E-01 J		4.38E-01 J		2.01E-01 J	
2,2',3,3',5,6-Hexachlorobiphenyl (134)							1.64E-02 J		6.41E-02 J		1.86E-02 J	
2,2',3,3',5,6'-Hexachlorobiphenyl (135)							1.35E-01 J		3.90E-01 J		1.32E-01 J	
2,2',3,3',6,6'-Hexachlorobiphenyl (136)							3.01E-02 J		7.43E-02 J		2.95E-02 J	
2,2',3,4,4',5-Hexachlorobiphenyl (137)							1.26E-01 J		2.14E-01 J		1.06E-01 J	
2,2',3,4,5,5'-Hexachlorobiphenyl (141)							7.27E-02 J		1.09E-01 J		8.75E-02 J	
2,2',3,4,5',6-Hexachlorobiphenyl (144)							1.71E-02 J		2.28E-02 J		1.65E-02 J	
2,2',3,4',5,5'-Hexachlorobiphenyl (146)							1.14E-01 J		1.42E-01 J		1.07E-01 J	
2,2',3,4',5,6-Hexachlorobiphenyl (147)							7.39E-01 J		2.01E+00 J		4.60E-01 J	
2,2',4,4',5,5'-Hexachlorobiphenyl (153)							6.59E-01 J		6.44E-01 J		6.85E-01 J	
2,3,3',4,4',5-Hexachlorobiphenyl (156)							9.38E-02 J		9.65E-02 J		8.53E-02 J	
2,3,3',4,4',5'-Hexachlorobiphenyl (157)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)							1.08E-01 J		1.18E-01 J		9.14E-02 J	

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	ALLENDALE POND											
	APC-WS-4004-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4005-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4006-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4007-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4008-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4009-0000-01-W 6/20/2001 NORMAL	BSAF
2,3',4,4',5,5'-Hexachlorobiphenyl (167)							4.05E-02 J		3.88E-02 J		3.30E-02 J	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)							1.27E-03 J		1.21E-03 J		7.28E-04 UJ	
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)							1.43E-01 J		1.54E-01 J		9.16E-02 J	
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)							4.32E-02 J		4.95E-02 J		2.60E-02 J	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)							2.22E-02 J		2.21E-02 J		1.77E-02 J	
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)							6.25E-02 J		1.42E-01 J		4.11E-02 J	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)							2.90E-03 J		2.92E-03 J		2.59E-03 J	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)							8.16E-03 J		1.13E-02 J		5.04E-03 J	
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)							5.15E-02 J		9.92E-02 J		3.60E-02 J	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)							2.10E-02 J		3.14E-02 J		1.52E-02 J	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)							1.97E-01 J		1.88E-01 J		1.64E-01 J	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)							1.65E-03 UJ		1.85E-03 UJ		1.46E-03 UJ	
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)							4.26E-02 J		4.10E-02 J		3.92E-02 J	
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)							2.54E-04 J		2.73E-04 J		2.17E-04 J	
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)							6.93E-03 J		9.24E-03 J		5.72E-03 J	
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)							2.67E-01 J		4.32E-01 J		1.32E-01 J	
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)							3.70E-03 J		3.89E-03 J		2.73E-03 J	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)							3.54E-02 J		3.58E-02 J		2.23E-02 J	
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)							3.97E-03 J		3.76E-03 J		3.25E-03 J	
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)							3.48E-02 J		3.24E-02 J		2.16E-02 J	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)							1.26E-02 J		1.36E-02 J		6.25E-03 J	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)							1.78E-02 J		1.74E-02 J		1.37E-02 J	
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)							1.65E-03 UJ		1.11E-03 J		1.08E-03 J	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)							2.27E-01 J		2.69E-01 J		1.12E-01 J	
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)							2.70E-03 J		4.70E-03 J		1.90E-03 J	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)							7.37E-03 J		6.13E-03 J		6.37E-03 J	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)							5.78E-02 J		4.92E-02 J		5.17E-02 J	
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)							2.08E-03 J		2.33E-03 J		1.32E-03 J	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl							1.72E-01 J		1.71E-01 J		1.01E-01 J	
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl							1.13E-02 J		9.17E-03 J		8.92E-03 J	
Decachlorobiphenyl (209)							8.96E-02 J		8.16E-02 J		5.21E-02 J	
PCB Congeners, Total							1.04E+01 J		1.64E+01 J		1.02E+01 J	
alpha-BHC	5.96E-03 UJ	8.1E+00	5.16E-03 UJ	7.0E+00	3.44E-03 UJ	4.7E+00	5.08E-03 UJ	6.9E+00	5.78E-03 UJ	7.8E+00	4.47E-03 UJ	6.1E+00
Toxicity Equivalency (PCB) - Birds							1.34E-03	9.1E+02	5.35E-04	3.6E+02	4.79E-04	3.3E+02
Toxicity Equivalency (PCB) - Fish							1.62E-05	1.2E+01	1.83E-05	1.2E+01	1.24E-05	8.4E+00
Toxicity Equivalency (PCB) - Mammals							3.03E-04	3.5E-03	4.01E-04	4.7E-03	2.74E-04	3.2E-03
Technical Chlordane	2.98E+00 J	2.8E-01	6.00E+00 J	5.6E-01	1.43E+01 J	1.3E+00	5.91E+00 J	5.5E-01	7.94E+00 J	7.4E-01	4.02E+00 J	3.7E-01
beta-BHC	5.96E-03 UJ	8.3E-02	5.16E-03 UJ	7.2E-02	3.44E-03 UJ	4.8E-02	5.08E-03 UJ	7.1E-02	5.78E-03 UJ	8.0E-02	4.47E-03 UJ	6.2E-02
delta-BHC	5.96E-03 UJ	7.1E-02	5.16E-03 UJ	6.2E-02	3.44E-03 UJ	4.1E-02	5.08E-03 UJ	6.1E-02	5.78E-03 UJ	6.9E-02	4.47E-03 UJ	5.3E-02
gamma-BHC	1.92E-03 J	2.2E-02	1.18E-03 J	1.4E-02	1.61E-03 J	1.9E-02	4.17E-03 J	4.9E-02	2.99E-03 J	3.5E-02	1.17E-03 J	1.4E-02
Heptachlor	5.96E-03 UJ	6.8E-02	5.08E-03 UJ	5.8E-02	3.44E-03 UJ	3.9E-02	5.08E-03 UJ	5.8E-02	5.78E-03 UJ	6.6E-02	4.47E-03 UJ	5.1E-02
Aldrin	5.96E-03 UJ	6.9E-02	5.08E-03 UJ	5.9E-02	3.44E-03 UJ	4.0E-02	5.08E-03 UJ	5.9E-02	5.78E-03 UJ	6.7E-02	4.47E-03 UJ	5.2E-02
Heptachlor Epoxide	1.31E-02 J	1.5E-01	8.12E-03 J	9.5E-02	9.17E-03 J	1.1E-01	9.00E-03 J	1.0E-01	1.12E-02 J	1.3E-01	1.10E-02 J	1.3E-01
Endosulfan I	5.96E-03 UJ	6.9E-02	5.16E-03 UJ	6.0E-02	3.44E-03 UJ	4.0E-02	5.08E-03 UJ	5.9E-02	5.78E-03 UJ	6.7E-02	4.47E-03 UJ	5.2E-02
Dieldrin	5.85E-02 J	1.0E-01	1.68E-01 J	3.0E-01	9.86E-02 J	1.8E-01	9.38E-02 J	1.7E-01	1.10E-01 J	2.0E-01	1.11E-01 J	2.0E-01
4,4'-DDE	2.60E-01 J	1.3E+00	4.82E-01 J	2.3E+00	5.35E-01 J	2.6E+00	7.35E-01 J	3.6E+00	7.20E-01 J	3.5E+00	3.30E-01 J	1.6E+00
Endrin	5.96E-03 UJ	3.3E-02	5.16E-03 UJ	2.8E-02	3.44E-03 UJ	1.9E-02	5.08E-03 UJ	2.8E-02	5.78E-03 UJ	3.2E-02	4.47E-03 UJ	2.5E-02
Endosulfan II	5.87E-03 UJ	1.8E-02	5.08E-03 UJ	1.5E-02	3.44E-03 UJ	1.0E-02	5.08E-03 UJ	1.5E-02	5.78E-03 UJ	1.8E-02	4.47E-03 UJ	1.4E-02
4,4'-DDD	1.19E-01 J	4.7E-01	2.52E-01 J	9.9E-01	4.01E-01 J	1.6E+00	1.50E-01 J	5.9E-01	2.27E-01 J	8.9E-01	9.62E-02 J	3.8E-01
Endosulfan Sulfate	5.96E-03 UJ	3.5E-02	5.08E-03 UJ	3.0E-02	3.44E-03 UJ	2.0E-02	5.08E-03 UJ	3.0E-02	5.78E-03 UJ	3.4E-02	4.47E-03 UJ	2.6E-02

US EPA ARCHIVE DOCUMENT

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND											
	APC-WS-4004-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4005-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4006-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4007-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4008-0000-01-W 6/20/2001 NORMAL	BSAF	APC-WS-4009-0000-01-W 6/20/2001 NORMAL	BSAF
4,4'-DDT	9.06E-02 J	4.5E-01	6.84E-02 J	3.4E-01	7.34E-02 J	3.6E-01	1.23E-01 J	6.1E-01	1.45E-01 J	7.1E-01	7.77E-02 J	3.8E-01
Methoxychlor	5.96E-03 UJ	1.1E-02	5.16E-03 UJ	9.4E-03	3.44E-03 UJ	6.3E-03	5.08E-03 UJ	9.3E-03	5.78E-03 UJ	1.1E-02	4.47E-03 UJ	8.2E-03
Endrin Ketone	5.96E-03 UJ	3.6E-02	5.16E-03 UJ	3.1E-02	3.44E-03 UJ	2.1E-02	5.08E-03 UJ	3.0E-02	5.78E-03 UJ	3.4E-02	4.47E-03 UJ	2.7E-02
Endrin Aldehyde	5.96E-03 UJ	4.5E-02	5.16E-03 UJ	3.9E-02	3.44E-03 UJ	2.6E-02	5.08E-03 UJ	3.8E-02	5.78E-03 UJ	4.4E-02	4.47E-03 UJ	3.4E-02
alpha-Chlordane	2.14E-01 J	8.3E-01	3.70E-01 J	1.4E+00	4.03E-01 J	1.6E+00	1.94E-01 J	7.5E-01	2.55E-01 J	9.8E-01	1.23E-01 J	4.7E-01
gamma-Chlordane	1.15E-01 J	6.9E-01	1.21E-01 J	7.2E-01	2.83E-01 J	1.7E+00	8.95E-02 J	5.3E-01	1.31E-01 J	7.8E-01	7.98E-02 J	4.8E-01
Toxaphene	1.48E-01 UJ	1.8E-02	1.28E-01 UJ	1.5E-02	8.63E-02 UJ	1.0E-02	1.27E-01 UJ	1.5E-02	1.44E-01 UJ	1.7E-02	1.12E-01 UJ	1.4E-02
Aroclor-1016	7.38E-02 UJ	4.5E-02	6.39E-02 UJ	3.9E-02	4.31E-02 UJ	2.6E-02	6.34E-02 UJ	3.9E-02	7.19E-02 UJ	4.4E-02	5.60E-02 UJ	3.4E-02
Aroclor-1221	7.38E-02 UJ	2.3E-02	6.39E-02 UJ	2.0E-02	4.31E-02 UJ	1.3E-02	6.34E-02 UJ	1.9E-02	7.19E-02 UJ	2.2E-02	5.60E-02 UJ	1.7E-02
Aroclor-1232	7.38E-02 UJ	4.5E-02	6.39E-02 UJ	3.9E-02	4.31E-02 UJ	2.6E-02	6.34E-02 UJ	3.9E-02	7.19E-02 UJ	4.4E-02	5.60E-02 UJ	3.4E-02
Aroclor-1242	7.38E-02 UJ	4.5E-02	6.39E-02 UJ	3.9E-02	4.31E-02 UJ	2.6E-02	6.34E-02 UJ	3.9E-02	7.19E-02 UJ	4.4E-02	5.60E-02 UJ	3.4E-02
Aroclor-1248	7.38E-02 UJ	4.1E-02	6.39E-02 UJ	3.5E-02	4.31E-02 UJ	2.4E-02	6.34E-02 UJ	3.5E-02	7.19E-02 UJ	3.9E-02	5.60E-02 UJ	3.1E-02
Aroclor-1254	8.20E+00 J	5.2E-01	5.49E+01 J	3.5E+00	3.70E+01 J	2.3E+00	2.67E+01 J	1.7E+00	2.82E+01 J	1.8E+00	1.50E+01 J	9.4E-01
Aroclor-1260	7.38E-02 UJ	4.1E-02	6.39E-02 UJ	3.5E-02	4.31E-02 UJ	2.4E-02	6.34E-02 UJ	3.5E-02	7.19E-02 UJ	4.0E-02	5.60E-02 UJ	3.1E-02
Aroclor-1268	3.51E-01 J	2.6E-01	5.20E-01 J	3.8E-01	5.15E-01 J	3.8E-01	8.79E-01 J	6.4E-01	6.95E-01 J	5.1E-01	2.91E-01 J	2.1E-01
Aroclor, Total	8.55E+00 J	5.1E-01	5.54E+01 J	3.3E+00	3.75E+01 J	2.2E+00	2.76E+01 J	1.6E+00	2.89E+01 J	1.7E+00	1.53E+01 J	9.1E-01

US EPA ARCHIVE DOCUMENT

TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND		BSAF Summary Statistics - Allendale Pond				LYMAN MILL POND						
	APC-WS-4010-0000-01-W 6/20/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation	LYMAN MILL AVERAGE SEDIMENT*	LP-CC-07 4/10/2001 LP-CC-07	BSAF	LP-CC-08 4/10/2001 LP-CC-08	BSAF	LPX-WS-4001-0000-01-W 6/21/2001 NORMAL	BSAF
HCX	1.73E-04 UJ	2.3E-04	2.2E-03	8.1E-04	4.7E-07	85%	2.17E-01	8.42E-06 U	3.9E-05	6.00E-06 U	2.8E-05	4.37E-04 J	2.0E-03
2,3,7,8-TCDD	4.24E-03 J	3.0E-02	1.6E-01	6.2E-02	2.5E-03	80%	2.86E-02	8.89E-03	3.1E-01	1.31E-02	4.6E-01	3.80E-03 J	1.3E-01
1,2,3,7,8-PeCDD	2.00E-06 UJ	1.0E-02	1.3E-01	4.7E-02	1.8E-03	91%	1.37E-04	8.63E-06 U	6.3E-02	1.17E-05 U	8.6E-02	2.89E-05 J	2.1E-01
1,2,3,4,7,8-HxCDD	1.57E-06 UJ	8.6E-03	2.6E-01	5.0E-02	5.2E-03	146%	1.65E-04	7.47E-06 UJ	4.5E-02	5.29E-06 UJ	3.2E-02	2.45E-06 UJ	1.5E-02
1,2,3,6,7,8-HxCDD	2.44E-06 J	4.1E-03	8.3E-02	1.8E-02	4.8E-04	121%	5.46E-04	8.11E-06 U	1.5E-02	5.43E-06 U	9.9E-03	2.54E-06 UJ	4.7E-03
1,2,3,7,8,9-HxCDD	1.57E-06 UJ	2.8E-03	8.4E-02	1.4E-02	5.1E-04	158%	4.75E-04	5.58E-06 U	1.2E-02	5.14E-06 U	1.1E-02	2.36E-06 UJ	5.0E-03
1,2,3,4,6,7,8-HpCDD	1.39E-06 UJ	1.4E-04	3.8E-02	3.9E-03	1.1E-04	261%	1.17E-02	1.94E-05	1.7E-03	1.51E-05	1.3E-03	2.42E-05 J	2.1E-03
OCDD	6.36E-06 UJ	9.8E-05	2.0E-03	4.2E-04	2.9E-07	130%	7.83E-02	1.52E-05 U	1.9E-04	1.24E-05 U	1.6E-04	6.64E-05 UJ	8.5E-04
2,3,7,8-TCDF	1.86E-05 J#	5.2E-02	5.3E-01	1.2E-01	1.8E-02	116%	2.66E-04	5.47E-05 J	2.1E-01	4.80E-05 J	1.8E-01	4.19E-05 J#	1.6E-01
1,2,3,7,8-PeCDF	2.00E-06 UJ	9.8E-03	2.4E-01	4.4E-02	4.2E-03	147%	8.65E-05	6.63E-06 U	7.7E-02	6.14E-06 U	7.1E-02	2.98E-06 UJ	3.4E-02
2,3,4,7,8-PeCDF	3.66E-06 J	2.1E-02	1.9E+00	1.8E-01	2.6E-01	281%	1.10E-04	7.37E-06 U	6.7E-02	9.00E-06 U	8.2E-02	2.71E-06 UJ	2.5E-02
1,2,3,4,7,8-HxCDF	9.58E-07 UJ	2.8E-03	1.6E-01	3.6E-02	3.3E-03	161%	3.40E-04	1.66E-05 U	4.9E-02	7.14E-06 U	2.1E-02	1.31E-06 UJ	3.9E-03
1,2,3,6,7,8-HxCDF	9.58E-07 UJ	3.5E-03	2.1E-01	4.6E-02	5.5E-03	163%	2.40E-04	1.67E-05 U	7.0E-02	7.14E-06 U	3.0E-02	1.31E-06 UJ	5.5E-03
2,3,4,6,7,8-HxCDF	3.48E-07 J	1.7E-03	2.4E-01	3.5E-02	4.0E-03	180%	2.64E-04	4.53E-06 U	1.7E-02	6.29E-06 U	2.4E-02	1.40E-06 UJ	5.3E-03
1,2,3,7,8,9-HxCDF	1.22E-06 UJ	1.1E-02	3.9E-01	7.7E-02	1.3E-02	148%	2.87E-05	8.42E-06 UJ	2.9E-01	6.00E-06 UJ	2.1E-01	1.49E-06 UJ	5.2E-02
1,2,3,4,6,7,8-HpCDF	8.71E-07 UJ	2.4E-04	1.3E-02	2.6E-03	1.4E-05	145%	3.14E-03	8.95E-06 U	2.8E-03	6.43E-06 U	2.0E-03	2.89E-06 UJ	9.2E-04
1,2,3,4,7,8,9-HpCDF	1.31E-06 UJ	6.5E-03	2.5E-01	5.2E-02	5.4E-03	141%	2.25E-04	9.37E-06 UJ	4.2E-02	7.14E-06 U	3.2E-02	2.36E-06 UJ	1.0E-02
OCDF	9.58E-07 UJ	1.7E-04	4.2E-02	4.1E-03	1.3E-04	279%	8.50E-03	7.68E-06 U	9.0E-04	1.39E-05 U	1.6E-03	6.13E-06 UJ	7.2E-04
Total TCDD	4.24E-03 J	2.3E-02	1.2E-01	4.8E-02	1.5E-03	80%	3.58E-02	8.89E-03 J	2.5E-01	1.31E-02 J	3.6E-01	3.80E-03 J	1.1E-01
Total PeCDD	2.44E-06 UJ	2.7E-03	5.5E-02	1.4E-02	3.2E-04	130%	6.64E-04	1.75E-05 UJ	2.6E-02	2.70E-05 UJ	4.1E-02	2.89E-05 J	4.3E-02
Total HxCDD	2.44E-06 J	6.4E-04	9.6E-02	9.3E-03	6.8E-04	280%	4.47E-03	1.05E-05 UJ	2.4E-03	1.26E-05 UJ	2.8E-03	8.76E-07 UJ	2.0E-04
Total HpCDD	1.39E-06 UJ	7.0E-05	3.1E-02	3.0E-03	7.1E-05	283%	3.04E-02	1.94E-05 J	6.4E-04	1.51E-05 J	5.0E-04	4.15E-05 J	1.4E-03
Total TCDF	1.46E-05 J	3.7E-03	4.7E-02	9.7E-03	1.5E-04	126%	4.06E-03	5.47E-05 J	1.3E-02	5.20E-05 J	1.3E-02	1.51E-05 J	3.7E-03
Total PeCDF	6.97E-06 J	1.5E-03	5.9E-02	8.2E-03	2.4E-04	188%	4.23E-03	1.35E-05 UJ	3.2E-03	1.59E-05 UJ	3.7E-03	5.25E-06 J	1.2E-03
Total HxCDF	2.44E-06 J	4.1E-04	5.6E-02	5.4E-03	2.3E-04	279%	5.38E-03	2.34E-05 J	4.3E-03	9.43E-06 J	1.8E-03	2.45E-06 UJ	4.6E-04
Total HpCDF	8.71E-07 UJ	1.2E-04	1.5E-02	2.3E-03	1.8E-05	188%	1.09E-02	2.53E-06 J	2.3E-04	1.00E-04 UJ	9.2E-03	9.11E-06 UJ	8.4E-04
Toxicity Equivalency - Birds	4.27E-03	3.1E-02	1.6E-01	6.4E-02	2.7E-03	80%	2.93E-02	8.97E-03	3.1E-01	1.31E-02	4.5E-01	3.87E-03	1.3E-01
Toxicity Equivalency - Fish	4.25E-03	3.1E-02	1.6E-01	6.4E-02	2.6E-03	80%	2.90E-02	8.93E-03	3.1E-01	1.31E-02	4.5E-01	3.84E-03	1.3E-01
Toxicity Equivalency - Mammals	4.25E-03	3.1E-02	1.6E-01	6.4E-02	2.6E-03	80%	2.92E-02	8.93E-03	3.1E-01	1.31E-02	4.5E-01	3.84E-03	1.3E-01
Aluminum	6.93E+00	6.9E-04	2.6E-03	8.0E-04	4.7E-07	86%	1.02E+04					7.65E+01	7.5E-03
Antimony	1.70E-02 U	7.4E-03	7.4E-03	7.4E-03	0.0E+00	0%	1.32E+00					4.81E-03 J	3.6E-03
Arsenic	2.10E-02 U	3.6E-03	6.9E-03	5.1E-03	1.3E-06	23%	5.23E+00					1.87E-02 U	3.6E-03
Barium	6.19E-01	4.5E-03	1.1E-02	5.4E-03	5.6E-06	44%	1.30E+02					1.38E+00	1.1E-02
Beryllium	2.22E-03 U	1.5E-03	1.7E-03	1.5E-03	2.2E-08	10%	1.64E+00					8.00E-03	4.9E-03
Cadmium	2.09E-02 J	1.7E-02	4.0E-02	2.0E-02	7.7E-05	44%	2.14E+00					1.80E-02 J	8.4E-03
Chromium	6.95E-02 U	4.9E-04	1.6E-03	7.9E-04	1.1E-07	41%	9.89E+01					3.00E-01	3.0E-03
Cobalt	7.53E-02 J	1.1E-02	1.8E-02	1.2E-02	8.0E-06	23%	7.80E+00					8.28E-02 J	1.1E-02
Copper	2.23E+00	1.9E-02	1.9E-02	7.3E-03	1.7E-05	56%	1.12E+02					1.02E+00	9.1E-03
Iron	2.60E+01	1.4E-03	2.6E-03	1.3E-03	2.2E-07	36%	1.65E+04					1.20E+02	7.3E-03
Lead	1.58E-01 J	4.8E-04	1.1E-03	4.8E-04	1.1E-07	69%	2.36E+02					6.10E-01 J	2.6E-03
Manganese	6.48E+00	1.5E-02	2.9E-02	1.6E-02	4.1E-05	40%	5.54E+02					6.55E+00	1.2E-02
Mercury	1.49E-01	3.2E-01	4.6E-01	2.9E-01	1.1E-02	37%	2.88E-01					1.08E-01	3.7E-01
Mercury (methyl)	1.29E-01	1.6E+02	2.8E+02	1.8E+02	3.8E+03	34%	2.07E-03					1.11E-01	5.4E+01
Molybdenum	2.98E-02 J	2.3E-03	1.2E-02	9.8E-03	1.5E-05	40%	6.45E+00					3.58E-02 J	5.6E-03
Nickel	1.14E-01 J	4.3E-03	8.3E-03	5.5E-03	2.0E-06	26%	3.28E+01					1.79E-01 J	5.5E-03
Selenium	2.81E-01 J	2.6E-01	3.3E-01	2.7E-01	1.4E-03	14%	9.57E-01					2.20E-01 J	2.3E-01
Silver	3.00E-02 U	1.1E-02	1.1E-02	1.1E-02	0.0E+00	0%	2.88E+00					9.31E-03 J	3.2E-03
Thallium	1.10E-02 U	1.5E-03	1.5E-03	1.5E-03	0.0E+00	0%	5.78E-01					1.10E-02 U	1.9E-02

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND		BSAF Summary Statistics - Allendale Pond				LYMAN MILL POND						
	APC-WS-4010-0000-01-W 6/20/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation	LYMAN MILL AVERAGE SEDIMENT[a]	LP-CC-07 4/10/2001 LP-CC-07	BSAF	LP-CC-08 4/10/2001 LP-CC-08	BSAF	LPX-WS-4001-0000-01-W 6/21/2001 NORMAL	BSAF
Vanadium	1.17E-01 J	3.2E-03	4.3E-03	2.7E-03	4.0E-07	24%	3.55E+01					1.67E-01 J	4.7E-03
Zinc	2.43E+01	6.9E-02	7.4E-02	5.9E-02	1.0E-04	17%	3.91E+02					2.09E+01	5.3E-02
Naphthalene	4.30E-02	1.1E-03	1.4E-03	1.2E-03	1.4E-08	10%	2.25E+01					4.78E-02	2.1E-03
2-Methylnaphthalene	5.38E-02	1.3E-03	1.8E-03	1.5E-03	2.6E-08	10%	2.36E+01					5.22E-02	2.2E-03
Acenaphthylene	4.25E-02	1.1E-03	1.1E-03	8.8E-04	4.7E-08	25%	2.29E+01					3.75E-02	1.6E-03
Acenaphthene	4.84E-02	1.3E-03	1.9E-03	1.5E-03	5.6E-08	16%	2.01E+01					5.45E-02	2.7E-03
Dibenzofuran	3.43E-02	8.6E-04	1.3E-03	1.0E-03	3.7E-08	19%	1.90E+01					4.20E-02	2.2E-03
Fluorene	4.95E-02	1.4E-03	2.6E-03	1.9E-03	1.9E-07	23%	2.04E+01					7.69E-02	3.8E-03
Phenanthrene	9.91E-02	1.2E-03	3.4E-03	2.0E-03	6.0E-07	39%	6.37E+01					2.58E-01	4.1E-03
Anthracene	4.72E-02	1.2E-03	1.6E-03	1.2E-03	7.0E-08	22%	2.00E+01					3.73E-02	1.9E-03
Fluoranthene	9.01E-02	5.8E-04	1.5E-03	8.8E-04	1.2E-07	40%	9.79E+01					3.89E-01	4.0E-03
Pyrene	2.63E-02	2.2E-04	5.7E-04	3.3E-04	2.4E-08	47%	8.97E+01					2.14E-01	2.4E-03
Benzo(a)anthracene	1.72E-02	2.9E-04	9.3E-04	3.6E-04	6.1E-08	69%	5.10E+01					9.32E-02	1.8E-03
Chrysene	2.14E-02	2.7E-04	1.1E-03	4.1E-04	7.7E-08	67%	5.42E+01					1.75E-01	3.2E-03
Benzo(b)fluoranthene	1.29E-02	1.8E-04	1.0E-03	2.9E-04	8.9E-08	103%	7.41E+01					1.64E-01	2.2E-03
Benzo(k)fluoranthene	1.06E-02 J	1.8E-04	1.0E-03	3.0E-04	8.7E-08	99%	3.23E+01					1.47E-01	4.5E-03
Benzo(a)pyrene	1.43E-02	2.6E-04	9.6E-04	3.0E-04	8.1E-08	95%	4.66E+01					1.16E-01	2.5E-03
Indeno(1,2,3-cd)pyrene	8.54E-03 J	2.0E-04	1.1E-03	3.1E-04	9.6E-08	99%	4.05E+01					1.27E-01	3.1E-03
Dibenzo(a,h)anthracene	2.79E-03 J	7.5E-05	3.5E-04	1.2E-04	7.4E-09	72%	1.77E+01					2.64E-02	1.5E-03
Benzo(g,h,i)perylene	5.84E-03 U	1.1E-04	8.3E-04	2.0E-04	5.5E-08	117%	3.46E+01					1.13E-01	3.3E-03
Total PAH	6.36E-01	8.3E-04	1.7E-03	1.1E-03	1.2E-07	32%	2.54E+02					2.19E+00	8.6E-03
1,1'-Biphenyl	1.36E-02	9.3E-03	1.4E-02	1.1E-02	2.1E-06	13%	2.66E+01					1.61E-02	6.1E-04
2-Monochlorobiphenyl (1)			0.0E+00				1.00E-02						
4-Chlorobiphenyl (3)			0.0E+00				2.10E-02						
2,2'-Dichlorobiphenyl (4)			0.0E+00				1.56E-02						
2,3-Dichlorobiphenyl (5)			0.0E+00				2.51E-03						
2,3'-Dichlorobiphenyl (6)			0.0E+00				7.59E-03						
2,4-Dichlorobiphenyl (7)			0.0E+00				3.91E-03						
2,4'-Dichlorobiphenyl (8)			0.0E+00				8.76E-02						
2,5-Dichlorobiphenyl (9)			0.0E+00				5.27E-03						
2,6-Dichlorobiphenyl (10)			0.0E+00				9.51E-04						
3,4-Dichlorobiphenyl (12)			0.0E+00				1.64E-02						
2,2',3'-Trichlorobiphenyl (16)			0.0E+00				4.24E-02						
2,2',4-Trichlorobiphenyl (17)			0.0E+00				4.34E-02						
2,2',5-Trichlorobiphenyl (18)			0.0E+00				3.42E-02						
2,2',6-Trichlorobiphenyl (19)			0.0E+00				8.83E-03						
2,3,3'-Trichlorobiphenyl (20)			0.0E+00				2.51E-01						
2,3,4'-Trichlorobiphenyl (22)			0.0E+00				6.84E-02						
2,3,6-Trichlorobiphenyl (24)			0.0E+00				2.70E-02						
2,3',4-Trichlorobiphenyl (25)			0.0E+00				1.23E-02						
2,3',5-Trichlorobiphenyl (26)			0.0E+00				2.68E-02						
2,4',5-Trichlorobiphenyl (31)			0.0E+00				1.20E-01						
2,4',6-Trichlorobiphenyl (32)			0.0E+00				2.35E-02						
2,2',3,3'-Tetrachlorobiphenyl (40)			0.0E+00				1.87E-01						
2,2',3,4'-Tetrachlorobiphenyl (42)			0.0E+00				7.10E-02						
2,2',3,5-Tetrachlorobiphenyl (43)			0.0E+00				1.13E-01						
2,2',3,5'-Tetrachlorobiphenyl (44)			0.0E+00				2.49E-01						
2,2',3,6-Tetrachlorobiphenyl (45)			0.0E+00				3.18E-02						

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

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	APC-WS-4010-0000-01-W 6/20/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation	LYMAN MILL AVERAGE SEDIMENT*	LP-CC-07 4/10/2001 LP-CC-07	BSAF	LP-CC-08 4/10/2001 LP-CC-08	BSAF	LPX-WS-4001-0000-01-W 6/21/2001 NORMAL	BSAF
2,2',3,6'-Tetrachlorobiphenyl (46)			0.0E+00				1.34E-02						
2,2',4,5-Tetrachlorobiphenyl (48)			0.0E+00				3.34E-02						
2,2',4,5'-Tetrachlorobiphenyl (49)			0.0E+00				1.42E-01						
2,2',4,6-Tetrachlorobiphenyl (50)			0.0E+00				3.31E-02						
2,3,3',4'-Tetrachlorobiphenyl (56)			0.0E+00				1.07E-01						
2,3,3',6-Tetrachlorobiphenyl (59)			0.0E+00				1.85E-02						
2,3,4,4'-Tetrachlorobiphenyl (60)			0.0E+00				2.03E-02						
2,3,4,5-Tetrachlorobiphenyl (61)			0.0E+00				3.87E-01						
2,3,4',5-Tetrachlorobiphenyl (63)			0.0E+00				4.90E-03						
2,3,4',6-Tetrachlorobiphenyl (64)			0.0E+00				9.30E-02						
2,3',4,4'-Tetrachlorobiphenyl (66)			0.0E+00				2.98E-01						
3,3',4,4'-Tetrachlorobiphenyl (77)			3.8E+00	1.13E+00	2.4E+00	122%	2.32E-02	2.18E-02	9.4E-01	2.38E-01	1.0E+01		
3,4,4',5-Tetrachlorobiphenyl (81)			0.0E+00				8.31E-04	1.68E-03 J	2.0E+00	4.49E-02	5.4E+01		
2,2',3,3',4-Pentachlorobiphenyl (82)			0.0E+00				1.06E-01						
2,2',3,3',5-Pentachlorobiphenyl (83)			0.0E+00				2.70E-01						
2,2',3,3',6-Pentachlorobiphenyl (84)			0.0E+00				2.17E-01						
2,2',3,4,4'-Pentachlorobiphenyl (85)			0.0E+00				9.61E-02						
2,2',3,4,5-Pentachlorobiphenyl (86)			0.0E+00				5.12E-01						
2,2',3,4,6-Pentachlorobiphenyl (88)			0.0E+00				9.01E-02						
2,2',3,4,6'-Pentachlorobiphenyl (89)			0.0E+00				8.31E-04						
2,2',3,4',5-Pentachlorobiphenyl (90)			0.0E+00				5.24E-01						
2,2',3,5,5'-Pentachlorobiphenyl (92)			0.0E+00				1.05E-01						
2,2',3,5,6-Pentachlorobiphenyl (93)			0.0E+00				5.35E-01						
2,3,3',4,4'-Pentachlorobiphenyl (105)			0.0E+00				1.55E-01	6.76E-01	4.4E+00	3.47E+00 J	2.2E+01		
2,3,3',4,5-Pentachlorobiphenyl (106)			0.0E+00				5.17E-02						
2,3,3',4',5'-Pentachlorobiphenyl (108)			0.0E+00				2.02E-02						
2,3,3',4',6-Pentachlorobiphenyl (110)			0.0E+00				8.93E-01						
2,3,4,4',5-Pentachlorobiphenyl (114)			0.0E+00				1.13E-02	4.71E-02	4.2E+00	1.78E-01	1.6E+01		
2,3',4,4',5-Pentachlorobiphenyl (118)			0.0E+00				6.32E-01	3.34E+00 J	5.3E+00	1.47E+01 J	2.3E+01		
2,3',4,4',5'-Pentachlorobiphenyl (123)			0.0E+00					4.37E-02		2.80E-01			
3,3',4,4',5-Pentachlorobiphenyl (126)			0.0E+00				3.35E-03	2.26E-02	6.7E+00	2.47E-01	7.4E+01		
2,2',3,3',4,4'-Hexachlorobiphenyl (128)			0.0E+00				1.62E-01						
2,2',3,3',4,5-Hexachlorobiphenyl (129)			0.0E+00				7.30E-01						
2,2',3,3',4,5'-Hexachlorobiphenyl (130)			0.0E+00				5.77E-02						
2,2',3,3',4,6-Hexachlorobiphenyl (131)			0.0E+00				1.17E-02						
2,2',3,3',4,6'-Hexachlorobiphenyl (132)			0.0E+00				1.04E-01						
2,2',3,3',5,6-Hexachlorobiphenyl (134)			0.0E+00				5.46E-02						
2,2',3,3',5,6'-Hexachlorobiphenyl (135)			0.0E+00				1.90E-01						
2,2',3,3',6,6'-Hexachlorobiphenyl (136)			0.0E+00				1.21E-01						
2,2',3,4,4',5-Hexachlorobiphenyl (137)			0.0E+00				8.99E-02						
2,2',3,4,5,5'-Hexachlorobiphenyl (141)			0.0E+00				8.32E-02						
2,2',3,4,5',6-Hexachlorobiphenyl (144)			0.0E+00				8.31E-04						
2,2',3,4',5,5'-Hexachlorobiphenyl (146)			0.0E+00				3.92E-02						
2,2',3,4',5,6-Hexachlorobiphenyl (147)			0.0E+00				4.72E-01						
2,2',4,4',5,5'-Hexachlorobiphenyl (153)			0.0E+00				2.54E-01						
2,3,3',4,4',5-Hexachlorobiphenyl (156)			0.0E+00				6.65E-02	1.99E-01 J	3.0E+00	1.16E+00 J	1.7E+01		
2,3,3',4,4',5'-Hexachlorobiphenyl (157)			0.0E+00					1.99E-01 J		1.16E+00 J			
2,3,3',4,4',6-Hexachlorobiphenyl (158)			0.0E+00				1.36E-02						

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2,3',4,4',5,5'-Hexachlorobiphenyl (167)			0.0E+00				2.61E-02	1.65E-01	6.3E+00	9.40E-01 J	3.6E+01		
3,3',4,4',5,5'-Hexachlorobiphenyl (169)			0.0E+00				8.31E-04	2.52E-03 U	3.0E+00	4.28E-03 U	5.2E+00		
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)			0.0E+00				1.29E-01						
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)			0.0E+00				4.00E-02						
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)			0.0E+00				9.92E-03						
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)			0.0E+00				1.45E-01						
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)			0.0E+00				4.02E-03						
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)			0.0E+00				1.54E-02						
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)			0.0E+00				6.07E-02						
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)			0.0E+00				1.57E-02						
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)			0.0E+00				9.70E-02						
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)			0.0E+00				1.66E-03						
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)			0.0E+00				3.38E-02						
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)			0.0E+00				1.66E-03						
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)			0.0E+00				5.65E-03						
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)			0.0E+00				6.53E-02						
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)			0.0E+00				2.93E-03	1.29E-02	4.4E+00	1.91E-01	6.5E+01		
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)			0.0E+00				1.68E-02						
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)			0.0E+00				2.58E-03						
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)			0.0E+00				2.75E-02						
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)			0.0E+00				1.35E-02						
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)			0.0E+00				2.18E-02						
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)			0.0E+00				5.89E-04						
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)			0.0E+00				1.08E-01						
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)			0.0E+00										
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)			0.0E+00				6.07E-03						
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)			0.0E+00				3.32E-02						
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)			0.0E+00				1.57E-03						
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl			0.0E+00				1.59E-01						
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl			0.0E+00				1.11E-02						
Decachlorobiphenyl (209)			0.0E+00				1.94E-01						
PCB Congeners, Total			0.0E+00				1.06E+01						
alpha-BHC	5.31E-03 UJ	7.2E+00	1.6E+01	7.8E+00	9.3E+00	39%	1.43E-03					5.34E-03 UJ	3.7E+00
Toxicity Equivalency (PCB) - Birds			6.7E+03	2.6E+03	7.4E+06	104%	1.66E-05	3.66E-03	2.2E+02	4.20E-02	2.5E+03		
Toxicity Equivalency (PCB) - Fish			2.4E+02	9.0E+01	1.0E+04	111%	3.06E-04	1.39E-04	4.6E-01	1.39E-03	4.6E+00		
Toxicity Equivalency (PCB) - Mammals			8.4E-02	3.2E-02	1.3E-03	111%	9.03E-02	2.91E-03	3.2E-02	2.79E-02	3.1E-01		
Technical Chlordane	4.85E+00 J	4.5E-01	1.3E+00	4.8E-01	1.2E-01	72%	1.22E+01					1.52E+01 J	1.2E+00
beta-BHC	5.31E-03 UJ	7.4E-02	1.6E-01	7.9E-02	9.7E-04	39%	9.51E-02					5.34E-03 UJ	5.6E-02
delta-BHC	5.31E-03 UJ	6.3E-02	1.4E-01	6.8E-02	7.2E-04	39%	9.45E-02					5.34E-03 UJ	5.7E-02
gamma-BHC	2.79E-03 J	3.2E-02	1.4E-01	3.9E-02	1.3E-03	92%	8.18E-02					2.45E-03 J	3.0E-02
Heptachlor	5.31E-03 UJ	6.1E-02	1.3E-01	6.5E-02	6.6E-04	39%	8.47E-02					5.34E-03 UJ	6.3E-02
Aldrin	5.31E-03 UJ	6.2E-02	1.4E-01	6.7E-02	6.9E-04	39%	8.45E-02					5.34E-03 UJ	6.3E-02
Heptachlor Epoxide	9.23E-03 J	1.1E-01	1.5E-01	1.2E-01	5.8E-04	21%	1.24E-01					1.52E-02 J	1.2E-01
Endosulfan I	5.31E-03 UJ	6.2E-02	1.4E-01	6.7E-02	6.8E-04	39%	1.29E-01					5.34E-03 UJ	4.1E-02
Dieldrin	2.89E-02 J	5.1E-02	3.0E-01	1.5E-01	5.0E-03	46%	1.67E-01					3.35E-02 J	2.0E-01
4,4'-DDE	9.38E-01 J	4.6E+00	4.6E+00	2.3E+00	1.6E+00	55%	2.03E-01					2.14E+00 J	1.1E+01
Endrin	5.31E-03 UJ	2.9E-02	6.4E-02	3.1E-02	1.5E-04	39%	1.76E-01					5.34E-03 UJ	3.0E-02
Endosulfan II	5.31E-03 UJ	1.6E-02	3.6E-02	1.7E-02	4.6E-05	39%	2.05E-01					5.34E-03 UJ	2.6E-02
4,4'-DDD	2.32E-01 J	9.1E-01	1.6E+00	7.8E-01	1.4E-01	48%	2.74E-01					8.97E-01 J	3.3E+00
Endosulfan Sulfate	5.31E-03 UJ	3.1E-02	6.9E-02	3.4E-02	1.7E-04	39%	2.45E-01					5.34E-03 UJ	2.2E-02

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TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND		BSAF Summary Statistics - Allendale Pond				LYMAN MILL POND						
	APC-WS-4010-0000-01-W 6/20/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation	LYMAN MILL AVERAGE SEDIMENT[a]	LP-CC-07 4/10/2001 LP-CC-07	BSAF	LP-CC-08 4/10/2001 LP-CC-08	BSAF	LPX-WS-4001-0000-01-W 6/21/2001 NORMAL	BSAF
4,4'-DDT	5.40E-02 J	2.7E-01	2.2E+00	5.8E-01	3.6E-01	104%	2.09E-01					4.34E-02 J	2.1E-01
Methoxychlor	5.31E-03 UJ	9.7E-03	2.1E-02	1.0E-02	1.7E-05	39%	8.29E-01					5.34E-03 UJ	6.4E-03
Endrin Ketone	5.31E-03 UJ	3.2E-02	7.0E-02	3.4E-02	1.8E-04	39%	1.76E-01					5.34E-03 UJ	3.0E-02
Endrin Aldehyde	5.31E-03 UJ	4.0E-02	8.8E-02	4.3E-02	2.9E-04	39%	1.80E-01					5.34E-03 UJ	3.0E-02
alpha-Chlordane	3.58E-01 J	1.4E+00	1.6E+00	1.0E+00	1.3E-01	34%	4.20E-01					7.01E-01 J	1.7E+00
gamma-Chlordane	1.60E-01 J	9.5E-01	1.7E+00	8.2E-01	1.4E-01	46%	3.42E-01					5.61E-01 J	1.6E+00
Toxaphene	1.33E-01 UJ	1.6E-02	3.5E-02	1.7E-02	4.5E-05	39%	8.80E+00					1.33E-01 UJ	1.5E-02
Aroclor-1016	6.66E-02 UJ	4.0E-02	8.9E-02	4.3E-02	2.9E-04	39%	1.73E+00					6.65E-02 UJ	3.9E-02
Aroclor-1221	6.66E-02 UJ	2.0E-02	4.5E-02	2.2E-02	7.2E-05	39%	3.44E+00					6.65E-02 UJ	1.9E-02
Aroclor-1232	6.66E-02 UJ	4.0E-02	8.9E-02	4.3E-02	2.9E-04	39%	1.76E+00					6.65E-02 UJ	3.8E-02
Aroclor-1242	6.66E-02 UJ	4.0E-02	8.9E-02	4.3E-02	2.9E-04	39%	1.73E+00					6.65E-02 UJ	3.9E-02
Aroclor-1248	6.66E-02 UJ	3.7E-02	8.0E-02	3.9E-02	2.3E-04	39%	1.76E+00					6.65E-02 UJ	3.8E-02
Aroclor-1254	3.74E+01 J	2.4E+00	3.5E+00	1.6E+00	8.5E-01	58%	5.25E+00					4.85E+01 J	9.2E+00
Aroclor-1260	6.66E-02 UJ	3.7E-02	8.0E-02	3.9E-02	2.4E-04	39%	1.76E+00					6.65E-02 UJ	3.8E-02
Aroclor-1268	4.49E-01 J	3.3E-01	6.4E-01	3.5E-01	1.8E-02	38%	1.25E+00					5.52E-01 J	4.4E-01
Aroclor, Total	3.78E+01 J	2.3E+00	3.3E+00	1.5E+00	7.8E-01	57%	6.39E+00					4.91E+01 J	7.7E+00

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND											
	LPX-WS-4002-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4003-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4004-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4005-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4006-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4007-0000-01-W 6/21/2001 NORMAL	BSAF
HCX	4.72E-04 J	2.2E-03	7.21E-04 J	3.3E-03	1.10E-03 J	5.0E-03	4.49E-04 J	2.1E-03	1.01E-03 J	4.6E-03	7.69E-04 J	3.5E-03
2,3,7,8-TCDD	4.55E-03 J	1.6E-01	7.76E-03 J	2.7E-01	9.41E-03 J	3.3E-01	1.13E-02 J	4.0E-01	9.47E-03 J	3.3E-01	7.31E-03 J	2.6E-01
1,2,3,7,8-PeCDD	2.37E-05 J	1.7E-01	4.66E-06 UJ	3.4E-02	1.09E-05 J	7.9E-02	1.40E-05 J	1.0E-01	1.22E-05 J	8.9E-02	3.30E-06 UJ	2.4E-02
1,2,3,4,7,8-HxCDD	4.13E-06 J	2.5E-02	4.10E-06 UJ	2.5E-02	3.95E-06 J	2.4E-02	3.14E-06 J	1.9E-02	5.77E-06 J	3.5E-02	2.90E-06 J	1.8E-02
1,2,3,6,7,8-HxCDD	3.23E-06 UJ	5.9E-03	6.90E-06 J	1.3E-02	9.73E-06 J	1.8E-02	8.18E-06 J	1.5E-02	9.83E-06 J	1.8E-02	6.80E-06 J	1.2E-02
1,2,3,7,8,9-HxCDD	2.96E-06 UJ	6.2E-03	3.92E-06 UJ	8.3E-03	2.96E-06 J	6.2E-03	2.31E-06 J	4.9E-03	5.37E-06 J	1.1E-02	2.30E-06 J	4.8E-03
1,2,3,4,6,7,8-HpCDD	2.57E-05 J	2.2E-03	1.47E-05 J	1.3E-03	1.75E-05 J	1.5E-03	1.17E-05 J	1.0E-03	3.68E-05 J	3.2E-03	2.05E-05 J	1.8E-03
OCDD	5.91E-05 UJ	7.5E-04	2.22E-05 UJ	2.8E-04	1.76E-05 UJ	2.3E-04	7.48E-06 UJ	9.5E-05	1.55E-04 J	2.0E-03	4.28E-05 UJ	5.5E-04
2,3,7,8-TCDF	4.00E-05 J#	1.5E-01	1.03E-04 J#	3.9E-01	3.27E-05 J#	1.2E-01	6.69E-05 J#	2.5E-01	4.50E-05 J#	1.7E-01	3.66E-05 J#	1.4E-01
1,2,3,7,8-PeCDF	2.87E-06 J	3.3E-02	3.45E-06 UJ	4.0E-02	2.82E-06 J	3.3E-02	3.14E-06 J	3.6E-02	3.41E-06 J	3.9E-02	3.10E-06 UJ	3.6E-02
2,3,4,7,8-PeCDF	5.39E-06 J	4.9E-02	7.65E-06 J	6.9E-02	9.17E-06 J	8.3E-02	1.06E-05 J	9.6E-02	8.91E-06 J	8.1E-02	6.00E-06 J	5.4E-02
1,2,3,4,7,8-HxCDF	8.98E-07 UJ	2.6E-03	1.59E-06 UJ	4.7E-03	1.69E-06 UJ	5.0E-03	7.44E-07 UJ	2.2E-03	2.10E-06 UJ	6.2E-03	1.75E-06 UJ	5.1E-03
1,2,3,6,7,8-HxCDF	2.33E-06 UJ	9.7E-03	3.82E-06 UJ	1.6E-02	1.06E-06 UJ	4.4E-03	7.85E-07 UJ	3.3E-03	1.70E-06 UJ	7.1E-03	1.55E-06 UJ	6.5E-03
2,3,4,6,7,8-HxCDF	2.51E-06 UJ	9.5E-03	2.24E-06 J	8.5E-03	1.27E-06 J	4.8E-03	1.40E-06 J	5.3E-03	2.75E-06 J	1.0E-02	1.60E-06 UJ	6.1E-03
1,2,3,7,8,9-HxCDF	2.69E-06 UJ	9.4E-02	2.24E-06 J	7.8E-02	2.54E-06 UJ	8.8E-02	9.09E-07 UJ	3.2E-02	7.86E-07 UJ	2.7E-02	1.80E-06 UJ	6.3E-02
1,2,3,4,6,7,8-HpCDF	3.23E-06 UJ	1.0E-03	2.61E-06 UJ	8.3E-04	2.05E-06 UJ	6.5E-04	1.32E-06 UJ	4.2E-04	1.30E-05 J	4.1E-03	3.20E-06 UJ	1.0E-03
1,2,3,4,7,8,9-HpCDF	2.24E-06 UJ	1.0E-02	1.87E-06 UJ	8.3E-03	3.10E-06 UJ	1.4E-02	1.24E-06 UJ	5.5E-03	1.51E-06 UJ	6.7E-03	1.55E-06 UJ	6.9E-03
OCDF	5.39E-06 UJ	6.3E-04	4.01E-06 UJ	4.7E-04	1.41E-06 UJ	1.7E-04	1.36E-06 UJ	1.6E-04	1.06E-05 UJ	1.2E-03	4.05E-06 UJ	4.8E-04
Total TCDD	4.55E-03 J	1.3E-01	7.76E-03 J	2.2E-01	9.41E-03 J	2.6E-01	1.13E-02 J	3.2E-01	9.47E-03 J	2.6E-01	7.31E-03 J	2.0E-01
Total PeCDD	2.59E-05 J	3.9E-02	4.66E-06 UJ	7.0E-03	1.09E-05 J	1.6E-02	1.46E-05 J	2.2E-02	1.22E-05 J	1.8E-02	3.30E-06 UJ	5.0E-03
Total HxCDD	4.40E-06 UJ	9.8E-04	6.62E-06 UJ	1.5E-03	8.32E-06 UJ	1.9E-03	1.37E-05 J	3.1E-03	2.10E-05 J	4.7E-03	8.90E-06 UJ	2.0E-03
Total HpCDD	4.00E-05 J	1.3E-03	7.37E-06 UJ	2.4E-04	8.74E-06 UJ	2.9E-04	1.17E-05 J	3.8E-04	5.56E-05 J	1.8E-03	3.26E-05 J	1.1E-03
Total TCDF	3.00E-05 J	7.4E-03	2.22E-05 J	5.5E-03	3.39E-05 J	8.3E-03	7.24E-05 J	1.8E-02	4.47E-05 J	1.1E-02	2.88E-05 J	7.1E-03
Total PeCDF	2.37E-05 J	5.6E-03	7.65E-06 J	1.8E-03	2.68E-05 J	6.3E-03	2.50E-05 J	5.9E-03	2.63E-05 J	6.2E-03	1.63E-05 J	3.9E-03
Total HxCDF	2.87E-06 UJ	5.3E-04	7.65E-06 UJ	1.4E-03	7.19E-06 UJ	1.3E-03	5.29E-06 UJ	9.8E-04	2.40E-05 J	4.5E-03	7.00E-06 UJ	1.3E-03
Total HpCDF	6.91E-06 UJ	6.3E-04	1.29E-05 UJ	1.2E-03	3.10E-06 UJ	2.8E-04	2.07E-06 UJ	1.9E-04	2.61E-05 J	2.4E-03	7.30E-06 UJ	6.7E-04
Toxicity Equivalency - Birds	4.61E-03	1.6E-01	7.87E-03	2.7E-01	9.46E-03	3.2E-01	1.14E-02	3.9E-01	9.54E-03	3.3E-01	7.36E-03	2.5E-01
Toxicity Equivalency - Fish	4.58E-03	1.6E-01	7.78E-03	2.7E-01	9.42E-03	3.2E-01	1.13E-02	3.9E-01	9.50E-03	3.3E-01	7.32E-03	2.5E-01
Toxicity Equivalency - Mammals	4.58E-03	1.6E-01	7.78E-03	2.7E-01	9.44E-03	3.2E-01	1.13E-02	3.9E-01	9.50E-03	3.3E-01	7.32E-03	2.5E-01
Aluminum	3.99E+01	3.9E-03	8.00E+00	7.9E-04	1.57E+01	1.5E-03	1.74E+00	1.7E-04	5.23E+01	5.1E-03	7.18E+01	7.1E-03
Antimony	7.43E-03 J	5.6E-03	1.70E-02 U	1.3E-02	1.70E-02 U	1.3E-02	9.05E-03 J	6.8E-03	1.70E-02 U	1.3E-02	5.62E-03 J	4.2E-03
Arsenic	2.99E-02 U	5.7E-03	1.48E-02 U	2.8E-03	1.70E-02 U	3.3E-03	3.03E-02 U	5.8E-03	2.72E-02 U	5.2E-03	2.58E-02 U	4.9E-03
Barium	1.13E+00	8.7E-03	5.93E-01	4.6E-03	7.83E-01	6.0E-03	4.58E-01	3.5E-03	1.07E+00	8.2E-03	1.47E+00	1.1E-02
Beryllium	6.42E-03	3.9E-03	2.00E-03 U	1.2E-03	2.00E-03 U	1.2E-03	2.00E-03 U	1.2E-03	2.00E-03 U	1.2E-03	1.04E-02	6.4E-03
Cadmium	2.37E-02 J	1.1E-02	1.92E-02 J	9.0E-03	1.50E-02 J	7.0E-03	1.38E-02 J	6.5E-03	1.78E-02 J	8.3E-03	1.94E-02 J	9.1E-03
Chromium	1.89E-01 J	1.9E-03	1.35E-01 U	1.4E-03	1.35E-01 U	1.4E-03	3.44E-01	3.5E-03	1.87E-01 J	1.9E-03	3.00E-01	3.0E-03
Cobalt	8.63E-02 J	1.1E-02	5.10E-02 J	6.5E-03	3.73E-02 U	4.8E-03	8.88E-02 J	1.1E-02	7.42E-02 J	9.5E-03	9.64E-02 J	1.2E-02
Copper	7.86E-01	7.0E-03	7.28E-01	6.5E-03	7.83E-01	7.0E-03	5.51E-01	4.9E-03	8.94E-01	8.0E-03	8.72E-01	7.8E-03
Iron	6.12E+01	3.7E-03	2.90E+01	1.8E-03	4.48E+01	2.7E-03	2.80E+01	1.7E-03	7.20E+01	4.4E-03	1.00E+02	6.1E-03
Lead	4.34E-01 J	1.8E-03	9.76E-02 J	4.1E-04	1.70E-01 J	7.2E-04	1.23E-01 J	5.2E-04	4.07E-01 J	1.7E-03	5.89E-01 J	2.5E-03
Manganese	9.72E+00	1.8E-02	3.96E+00	7.2E-03	5.82E+00	1.1E-02	6.11E+00	1.1E-02	5.68E+00	1.0E-02	1.02E+01	1.8E-02
Mercury	1.57E-01	5.4E-01	9.58E-02	3.3E-01	1.21E-01	4.2E-01	1.09E-01	3.8E-01	8.42E-02	2.9E-01	6.48E-02	2.2E-01
Mercury (methyl)	1.39E-01	6.7E+01	9.56E-02	4.6E+01	1.07E-01	5.2E+01	1.01E-01	4.9E+01	7.90E-02	3.8E+01	6.42E-02	3.1E+01
Molybdenum	4.59E-02 J	7.1E-03	1.97E-02 U	3.1E-03	3.49E-02 J	5.4E-03	3.16E-02 J	4.9E-03	3.65E-02 J	5.7E-03	3.96E-02 J	6.1E-03
Nickel	1.38E-01 J	4.2E-03	9.63E-02 J	2.9E-03	1.15E-01 J	3.5E-03	1.47E-01 J	4.5E-03	1.31E-01 J	4.0E-03	1.87E-01 J	5.7E-03
Selenium	2.25E-01 J	2.4E-01	1.53E-01 U	1.6E-01	2.19E-01 J	2.3E-01	1.99E-01 J	2.1E-01	2.34E-01 J	2.4E-01	2.23E-01 J	2.3E-01
Silver	3.00E-02 U	1.0E-02	3.00E-02 U	1.0E-02	3.00E-02 U	1.0E-02	3.00E-02 U	1.0E-02	3.00E-02 U	1.0E-02	2.83E-03 J	9.8E-04
Thallium	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02

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North Providence, Rhode Island

	LYMAN MILL POND											
	LPX-WS-4002-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4003-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4004-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4005-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4006-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4007-0000-01-W 6/21/2001 NORMAL	BSAF
Vanadium	1.30E-01 J	3.7E-03	7.56E-02 J	2.1E-03	8.95E-02 U	2.5E-03	8.95E-02 U	2.5E-03	1.24E-01 J	3.5E-03	1.25E-01 J	3.5E-03
Zinc	2.49E+01	6.4E-02	1.76E+01	4.5E-02	1.97E+01	5.0E-02	1.94E+01	5.0E-02	1.85E+01	4.7E-02	2.04E+01	5.2E-02
Naphthalene	5.10E-02	2.3E-03	4.01E-02	1.8E-03	4.91E-02	2.2E-03	4.07E-02	1.8E-03	5.78E-02	2.6E-03	4.44E-02	2.0E-03
2-Methylnaphthalene	6.18E-02	2.6E-03	5.37E-02	2.3E-03	5.08E-02	2.2E-03	4.47E-02	1.9E-03	6.74E-02	2.9E-03	5.53E-02	2.3E-03
Acenaphthylene	4.81E-02	2.1E-03	4.33E-02	1.9E-03	3.30E-02	1.4E-03	3.79E-02	1.7E-03	3.96E-02	1.7E-03	4.31E-02	1.9E-03
Acenaphthene	9.59E-02	4.8E-03	4.81E-02	2.4E-03	4.58E-02	2.3E-03	4.64E-02	2.3E-03	5.64E-02	2.8E-03	4.56E-02	2.3E-03
Dibenzofuran	8.28E-02	4.4E-03	3.47E-02	1.8E-03	3.43E-02	1.8E-03	3.78E-02	2.0E-03	4.61E-02	2.4E-03	3.84E-02	2.0E-03
Fluorene	1.46E-01	7.2E-03	5.11E-02	2.5E-03	4.60E-02	2.3E-03	4.68E-02	2.3E-03	6.83E-02	3.4E-03	6.03E-02	3.0E-03
Phenanthrene	3.64E-01	5.7E-03	1.28E-01	2.0E-03	1.50E-01	2.4E-03	9.87E-02	1.5E-03	2.13E-01	3.3E-03	1.56E-01	2.4E-03
Anthracene	5.76E-02	2.9E-03	3.94E-02	2.0E-03	3.43E-02	1.7E-03	4.41E-02	2.2E-03	4.84E-02	2.4E-03	5.41E-02	2.7E-03
Fluoranthene	4.32E-01	4.4E-03	1.34E-01	1.4E-03	1.84E-01	1.9E-03	8.44E-02	8.6E-04	3.04E-01	3.1E-03	2.52E-01	2.6E-03
Pyrene	2.21E-01	2.5E-03	3.02E-02	3.4E-04	8.55E-02	9.5E-04	2.95E-02	3.3E-04	1.32E-01	1.5E-03	1.15E-01	1.3E-03
Benzo(a)anthracene	8.22E-02	1.6E-03	2.07E-02	4.1E-04	2.78E-02	5.5E-04	9.17E-03	1.8E-04	5.98E-02	1.2E-03	4.62E-02	9.1E-04
Chrysene	1.52E-01	2.8E-03	2.63E-02	4.9E-04	4.32E-02	8.0E-04	9.67E-03	1.8E-04	1.02E-01	1.9E-03	8.40E-02	1.6E-03
Benzo(b)fluoranthene	1.22E-01	1.6E-03	1.57E-02	2.1E-04	3.06E-02	4.1E-04	2.23E-03 J	3.0E-05	7.82E-02	1.1E-03	6.15E-02	8.3E-04
Benzo(k)fluoranthene	1.09E-01	3.4E-03	1.51E-02	4.7E-04	2.71E-02	8.4E-04	2.31E-03 J	7.2E-05	7.13E-02	2.2E-03	5.59E-02	1.7E-03
Benzo(a)pyrene	9.07E-02	1.9E-03	1.46E-02	3.1E-04	2.50E-02	5.4E-04	2.81E-03 U	6.0E-05	5.67E-02	1.2E-03	4.57E-02	9.8E-04
Indeno(1,2,3-cd)pyrene	8.64E-02	2.1E-03	1.27E-02	3.1E-04	2.14E-02	5.3E-04	1.49E-03 J	3.7E-05	4.68E-02	1.2E-03	3.27E-02	8.1E-04
Dibenzo(a,h)anthracene	1.94E-02	1.1E-03	5.60E-03 J	3.2E-04	6.49E-03 J	3.7E-04	9.92E-04 J	5.6E-05	1.09E-02	6.2E-04	7.30E-03	4.1E-04
Benzo(g,h,i)perylene	7.81E-02	2.3E-03	6.72E-03 U	1.9E-04	2.19E-02	6.3E-04	2.81E-03 U	8.1E-05	4.00E-02	1.2E-03	2.79E-02	8.1E-04
Total PAH	2.32E+00	9.1E-03	7.27E-01	2.9E-03	9.31E-01	3.7E-03	5.50E-01	2.2E-03	1.52E+00	6.0E-03	1.24E+00	4.9E-03
1,1'-Biphenyl	2.01E-02	7.6E-04	1.40E-02	5.3E-04	1.48E-02	5.6E-04	1.34E-02	5.0E-04	1.70E-02	6.4E-04	1.49E-02	5.6E-04
2-Monochlorobiphenyl (1)											1.01E-03 J	1.0E-01
4-Chlorobiphenyl (3)											7.59E-05 UJ	3.6E-03
2,2'-Dichlorobiphenyl (4)											6.58E-03 J	4.2E-01
2,3-Dichlorobiphenyl (5)											2.13E-04 J	8.5E-02
2,3'-Dichlorobiphenyl (6)											3.17E-03 J	4.2E-01
2,4-Dichlorobiphenyl (7)											4.44E-04 J	1.1E-01
2,4'-Dichlorobiphenyl (8)											1.07E-02 J	1.2E-01
2,5-Dichlorobiphenyl (9)											1.01E-03 J	1.9E-01
2,6-Dichlorobiphenyl (10)											4.81E-04 J	5.1E-01
3,4-Dichlorobiphenyl (12)											1.36E-04 J	8.3E-03
2,2',3'-Trichlorobiphenyl (16)											1.77E-02 J	4.2E-01
2,2',4-Trichlorobiphenyl (17)											2.36E-02 J	5.4E-01
2,2',5-Trichlorobiphenyl (18)											3.32E-02 J	9.7E-01
2,2',6-Trichlorobiphenyl (19)											5.00E-03 J	5.7E-01
2,3,3'-Trichlorobiphenyl (20)											2.09E-01 J	8.4E-01
2,3,4'-Trichlorobiphenyl (22)											2.65E-02 J	3.9E-01
2,3,6-Trichlorobiphenyl (24)											5.37E-03 J	2.0E-01
2,3',4-Trichlorobiphenyl (25)											2.17E-03 J	1.8E-01
2,3',5-Trichlorobiphenyl (26)											1.08E-02 J	4.1E-01
2,4',5-Trichlorobiphenyl (31)											4.49E-02 J	3.7E-01
2,4',6-Trichlorobiphenyl (32)											1.94E-02 J	8.3E-01
2,2',3,3'-Tetrachlorobiphenyl (40)											1.24E-01 J	6.6E-01
2,2',3,4'-Tetrachlorobiphenyl (42)											8.18E-02 J	1.2E+00
2,2',3,5-Tetrachlorobiphenyl (43)											1.84E-01 J	1.6E+00
2,2',3,5'-Tetrachlorobiphenyl (44)											3.11E-01 J	1.2E+00
2,2',3,6-Tetrachlorobiphenyl (45)											2.70E-02 J	8.5E-01

US EPA ARCHIVE DOCUMENT

TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND											
	LPX-WS-4002-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4003-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4004-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4005-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4006-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4007-0000-01-W 6/21/2001 NORMAL	BSAF
2,2',3,6'-Tetrachlorobiphenyl (46)											8.65E-03 J	6.5E-01
2,2',4,5-Tetrachlorobiphenyl (48)											3.04E-02 J	9.1E-01
2,2',4,5'-Tetrachlorobiphenyl (49)											2.38E-01 J	1.7E+00
2,2',4,6-Tetrachlorobiphenyl (50)											2.86E-02 J	8.6E-01
2,3,3',4'-Tetrachlorobiphenyl (56)											6.98E-02 J	6.5E-01
2,3,3',6-Tetrachlorobiphenyl (59)											2.39E-02 J	1.3E+00
2,3,4,4'-Tetrachlorobiphenyl (60)											4.23E-02 J	2.1E+00
2,3,4,5-Tetrachlorobiphenyl (61)											4.41E-01 J	1.1E+00
2,3,4',5-Tetrachlorobiphenyl (63)											1.22E-02 J	2.5E+00
2,3,4',6-Tetrachlorobiphenyl (64)											1.31E-01 J	1.4E+00
2,3',4,4'-Tetrachlorobiphenyl (66)											5.29E-01 J	1.8E+00
3,3',4,4'-Tetrachlorobiphenyl (77)											8.20E-03 J	3.5E-01
3,4,4',5-Tetrachlorobiphenyl (81)											1.81E-02 J	2.2E+01
2,2',3,3',4-Pentachlorobiphenyl (82)											1.20E-01 J	1.1E+00
2,2',3,3',5-Pentachlorobiphenyl (83)											6.23E-01 J	2.3E+00
2,2',3,3',6-Pentachlorobiphenyl (84)											1.81E-01 J	8.4E-01
2,2',3,4,4'-Pentachlorobiphenyl (85)											2.59E-01 J	2.7E+00
2,2',3,4,5-Pentachlorobiphenyl (86)											8.63E-01 J	1.7E+00
2,2',3,4,6-Pentachlorobiphenyl (88)											1.50E-01 J	1.7E+00
2,2',3,4,6'-Pentachlorobiphenyl (89)											7.13E-03 J	8.6E+00
2,2',3,4',5-Pentachlorobiphenyl (90)											1.00E+00 J	1.9E+00
2,2',3,5,5'-Pentachlorobiphenyl (92)											1.31E-01 J	1.2E+00
2,2',3,5,6-Pentachlorobiphenyl (93)											5.85E-01 J	1.1E+00
2,3,3',4,4'-Pentachlorobiphenyl (105)											2.71E-01 J	1.7E+00
2,3,3',4,5-Pentachlorobiphenyl (106)											1.27E-01	2.5E+00
2,3,3',4',5'-Pentachlorobiphenyl (108)											3.53E-02 J	1.7E+00
2,3,3',4',6-Pentachlorobiphenyl (110)											1.45E+00 J	1.6E+00
2,3,4,4',5-Pentachlorobiphenyl (114)											2.27E-02 J	2.0E+00
2,3',4,4',5-Pentachlorobiphenyl (118)											1.27E+00 J	2.0E+00
2,3',4,4',5'-Pentachlorobiphenyl (123)												
3,3',4,4',5-Pentachlorobiphenyl (126)											2.52E-03 J	7.5E-01
2,2',3,3',4,4'-Hexachlorobiphenyl (128)											3.82E-01	2.4E+00
2,2',3,3',4,5-Hexachlorobiphenyl (129)											2.12E+00	2.9E+00
2,2',3,3',4,5'-Hexachlorobiphenyl (130)											1.30E-01 J	2.3E+00
2,2',3,3',4,6-Hexachlorobiphenyl (131)											2.01E-02 J	1.7E+00
2,2',3,3',4,6'-Hexachlorobiphenyl (132)											5.44E-01 J	5.2E+00
2,2',3,3',5,6-Hexachlorobiphenyl (134)											7.11E-02	1.3E+00
2,2',3,3',5,6'-Hexachlorobiphenyl (135)											1.31E-01	6.9E-01
2,2',3,3',6,6'-Hexachlorobiphenyl (136)											8.70E-02 J	7.2E-01
2,2',3,4,4',5-Hexachlorobiphenyl (137)											2.04E-01	2.3E+00
2,2',3,4,5,5'-Hexachlorobiphenyl (141)											1.65E-01 J	2.0E+00
2,2',3,4,5',6-Hexachlorobiphenyl (144)											3.10E-02 J	3.7E+01
2,2',3,4',5,5'-Hexachlorobiphenyl (146)											1.32E-01	3.4E+00
2,2',3,4',5,6-Hexachlorobiphenyl (147)											1.01E+00	2.2E+00
2,2',4,4',5,5'-Hexachlorobiphenyl (153)											8.44E-01	3.3E+00
2,3,3',4,4',5-Hexachlorobiphenyl (156)											1.35E-01	2.0E+00
2,3,3',4,4',5'-Hexachlorobiphenyl (157)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)											1.64E-01 J	1.2E+01

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND											
	LPX-WS-4002-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4003-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4004-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4005-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4006-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4007-0000-01-W 6/21/2001 NORMAL	BSAF
2,3',4,4',5,5'-Hexachlorobiphenyl (167)											6.10E-02 J	2.3E+00
3,3',4,4',5,5'-Hexachlorobiphenyl (169)											1.38E-03 J	1.7E+00
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)											2.74E-01 J	2.1E+00
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)											7.76E-02	1.9E+00
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)											3.00E-02 J	3.0E+00
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)											1.26E-01 J	8.7E-01
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)											4.93E-03 J	1.2E+00
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)											1.79E-02 J	1.2E+00
2,2',3,3',4,5',6-Heptachlorobiphenyl (177)											1.18E-01 J	1.9E+00
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)											2.89E-02 J	1.8E+00
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)											2.77E-01	2.9E+00
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)											9.88E-04 J	5.9E-01
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)											6.42E-02 J	1.9E+00
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)											3.07E-04 J	1.8E-01
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)											1.11E-02 J	2.0E+00
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)											1.65E-01 J	2.5E+00
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)											4.84E-03 J	1.7E+00
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)											3.91E-02 J	2.3E+00
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)											6.17E-03 J	2.4E+00
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)											4.49E-02 J	1.6E+00
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)											1.94E-02 J	1.4E+00
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)											2.72E-02 J	1.2E+00
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)											1.41E-03 J	2.4E+00
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)											1.66E-01	1.5E+00
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)											6.71E-03 J	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)											9.81E-03 J	1.6E+00
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)											5.90E-02 J	1.8E+00
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)											2.26E-03 J	1.4E+00
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl											1.58E-01 J	1.0E+00
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl											1.28E-02 J	1.1E+00
Decachlorobiphenyl (209)											9.68E-02 J	5.0E-01
PCB Congeners, Total											1.79E+01	1.7E+00
alpha-BHC	5.48E-03 UJ	3.8E+00	5.78E-03 UJ	4.1E+00	4.30E-03 UJ	3.0E+00	2.56E-03 UJ	1.8E+00	4.00E-03 UJ	2.8E+00	3.10E-03 UJ	2.2E+00
Toxicity Equivalency (PCB) - Birds											2.53E-03	1.5E+02
Toxicity Equivalency (PCB) - Fish											3.14E-05	1.0E-01
Toxicity Equivalency (PCB) - Mammals											5.03E-04	5.6E-03
Technical Chlordane	1.87E+01 J	1.5E+00	2.08E+01 J	1.7E+00	1.90E+01 J	1.6E+00	2.16E+01 J	1.8E+00	2.49E+01 J	2.0E+00	2.41E+01 J	2.0E+00
beta-BHC	5.48E-03 UJ	5.8E-02	5.78E-03 UJ	6.1E-02	4.30E-03 UJ	4.5E-02	2.56E-03 UJ	2.7E-02	4.00E-03 UJ	4.2E-02	3.10E-03 UJ	3.3E-02
delta-BHC	5.48E-03 UJ	5.8E-02	5.78E-03 UJ	6.1E-02	4.30E-03 UJ	4.6E-02	2.56E-03 UJ	2.7E-02	4.00E-03 UJ	4.2E-02	3.10E-03 UJ	3.3E-02
gamma-BHC	2.69E-03 J	3.3E-02	2.61E-03 J	3.2E-02	2.68E-03 J	3.3E-02	3.88E-03 J	4.8E-02	3.01E-03 J	3.7E-02	2.70E-03 J	3.3E-02
Heptachlor	5.48E-03 UJ	6.5E-02	5.78E-03 UJ	6.8E-02	4.30E-03 UJ	5.1E-02	2.56E-03 UJ	3.0E-02	4.00E-03 UJ	4.7E-02	3.05E-03 UJ	3.6E-02
Aldrin	5.48E-03 UJ	6.5E-02	5.78E-03 UJ	6.8E-02	4.30E-03 UJ	5.1E-02	2.56E-03 UJ	3.0E-02	4.00E-03 UJ	4.7E-02	3.05E-03 UJ	3.6E-02
Heptachlor Epoxide	3.59E-02 J	2.9E-01	2.16E-02 J	1.7E-01	2.58E-02 J	2.1E-01	1.20E-02 J	9.7E-02	1.82E-02 J	1.5E-01	1.16E-02 J	9.4E-02
Endosulfan I	5.48E-03 UJ	4.2E-02	5.78E-03 UJ	4.5E-02	4.30E-03 UJ	3.3E-02	2.56E-03 UJ	2.0E-02	4.00E-03 UJ	3.1E-02	3.10E-03 UJ	2.4E-02
Dieldrin	6.59E-02 J	3.9E-01	5.52E-02 J	3.3E-01	5.50E-02 J	3.3E-01	6.79E-02 J	4.1E-01	1.27E-01 J	7.6E-01	7.06E-02 J	4.2E-01
4,4'-DDE	2.50E+00 J	1.2E+01	1.88E+00 J	9.3E+00	2.46E+00 J	1.2E+01	2.37E+00 J	1.2E+01	1.27E+00 J	6.2E+00	1.58E+00 J	7.8E+00
Endrin	5.48E-03 UJ	3.1E-02	5.78E-03 UJ	3.3E-02	4.30E-03 UJ	2.4E-02	2.56E-03 UJ	1.5E-02	4.00E-03 UJ	2.3E-02	3.05E-03 UJ	1.7E-02
Endosulfan II	5.48E-03 UJ	2.7E-02	5.78E-03 UJ	2.8E-02	4.30E-03 UJ	2.1E-02	2.56E-03 UJ	1.3E-02	4.00E-03 UJ	2.0E-02	3.05E-03 UJ	1.5E-02
4,4'-DDD	7.90E-01 J	2.9E+00	6.86E-01 J	2.5E+00	6.87E-01 J	2.5E+00	5.52E-01 J	2.0E+00	2.60E-01 J	9.5E-01	5.43E-01 J	2.0E+00
Endosulfan Sulfate	5.48E-03 UJ	2.2E-02	5.78E-03 UJ	2.4E-02	4.30E-03 UJ	1.8E-02	2.56E-03 UJ	1.0E-02	4.00E-03 UJ	1.6E-02	3.05E-03 UJ	1.2E-02

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TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND											
	LPX-WS-4002-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4003-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4004-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4005-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4006-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4007-0000-01-W 6/21/2001 NORMAL	BSAF
4,4'-DDT	1.03E-01 J	4.9E-01	1.25E-01 J	6.0E-01	6.88E-02 J	3.3E-01	7.00E-02 J	3.3E-01	3.15E-02 J	1.5E-01	3.57E-02 J	1.7E-01
Methoxychlor	5.48E-03 UJ	6.6E-03	5.78E-03 UJ	7.0E-03	4.30E-03 UJ	5.2E-03	2.56E-03 UJ	3.1E-03	4.00E-03 UJ	4.8E-03	3.10E-03 UJ	3.7E-03
Endrin Ketone	5.48E-03 UJ	3.1E-02	5.78E-03 UJ	3.3E-02	4.30E-03 UJ	2.4E-02	2.56E-03 UJ	1.5E-02	4.00E-03 UJ	2.3E-02	3.05E-03 UJ	1.7E-02
Endrin Aldehyde	5.48E-03 UJ	3.0E-02	5.78E-03 UJ	3.2E-02	4.30E-03 UJ	2.4E-02	2.56E-03 UJ	1.4E-02	4.00E-03 UJ	2.2E-02	3.10E-03 UJ	1.7E-02
alpha-Chlordane	8.78E-01 J	2.1E+00	9.62E-01 J	2.3E+00	5.68E-01 J	1.4E+00	4.92E-01 J	1.2E+00	4.96E-01 J	1.2E+00	4.27E-01 J	1.0E+00
gamma-Chlordane	5.92E-01 J	1.7E+00	4.51E-01 J	1.3E+00	5.01E-01 J	1.5E+00	3.37E-01 J	9.9E-01	3.01E-01 J	8.8E-01	3.40E-01 J	9.9E-01
Toxaphene	1.36E-01 UJ	1.5E-02	1.43E-01 UJ	1.6E-02	1.07E-01 UJ	1.2E-02	6.36E-02 UJ	7.2E-03	9.97E-02 UJ	1.1E-02	7.67E-02 UJ	8.7E-03
Aroclor-1016	6.80E-02 UJ	3.9E-02	7.16E-02 UJ	4.2E-02	5.37E-02 UJ	3.1E-02	3.18E-02 UJ	1.8E-02	4.99E-02 UJ	2.9E-02	3.84E-02 UJ	2.2E-02
Aroclor-1221	6.80E-02 UJ	2.0E-02	7.16E-02 UJ	2.1E-02	5.37E-02 UJ	1.6E-02	3.18E-02 UJ	9.2E-03	4.99E-02 UJ	1.4E-02	3.84E-02 UJ	1.1E-02
Aroclor-1232	6.80E-02 UJ	3.9E-02	7.16E-02 UJ	4.1E-02	5.37E-02 UJ	3.1E-02	3.18E-02 UJ	1.8E-02	4.99E-02 UJ	2.8E-02	3.84E-02 UJ	2.2E-02
Aroclor-1242	6.80E-02 UJ	3.9E-02	7.16E-02 UJ	4.2E-02	5.37E-02 UJ	3.1E-02	3.18E-02 UJ	1.8E-02	4.99E-02 UJ	2.9E-02	3.84E-02 UJ	2.2E-02
Aroclor-1248	6.80E-02 UJ	3.9E-02	7.16E-02 UJ	4.1E-02	5.37E-02 UJ	3.1E-02	3.18E-02 UJ	1.8E-02	4.99E-02 UJ	2.8E-02	3.84E-02 UJ	2.2E-02
Aroclor-1254	6.47E+01 J	1.2E+01	6.83E+01 J	1.3E+01	6.61E+01 J	1.3E+01	5.87E+01 J	1.1E+01	4.80E+01 J	9.1E+00	6.02E+01 J	1.1E+01
Aroclor-1260	6.80E-02 UJ	3.9E-02	7.16E-02 UJ	4.1E-02	5.37E-02 UJ	3.1E-02	3.18E-02 UJ	1.8E-02	4.99E-02 UJ	2.8E-02	3.84E-02 UJ	2.2E-02
Aroclor-1268	8.20E-01 J	6.5E-01	7.75E-01 J	6.2E-01	5.99E-01 J	4.8E-01	3.69E-01 J	2.9E-01	3.83E-01 J	3.1E-01	4.54E-01 J	3.6E-01
Aroclor, Total	6.55E+01 J	1.0E+01	6.91E+01 J	1.1E+01	6.67E+01 J	1.0E+01	5.90E+01 J	9.2E+00	4.84E+01 J	7.6E+00	6.07E+01 J	9.5E+00

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TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND						BSAF Summary Statistics - Lyman Mill Pond			
	LPX-WS-4008-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4009-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4010-0000-01-W 6/21/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
HCX	1.03E-03 J	4.8E-03	1.20E-03 J	5.5E-03	1.71E-04 UJ	7.9E-04	5.5E-03	2.8E-03	3.8E-06	69%
2,3,7,8-TCDD	6.51E-03 J	2.3E-01	5.86E-03 J	2.1E-01	8.62E-03 J	3.0E-01	4.6E-01	2.8E-01	8.8E-03	33%
1,2,3,7,8-PeCDD	4.11E-06 UJ	3.0E-02	4.58E-06 UJ	3.3E-02	5.39E-06 UJ	3.9E-02	2.1E-01	8.0E-02	3.5E-03	73%
1,2,3,4,7,8-HxCDD	3.21E-06 J	1.9E-02	4.73E-06 UJ	2.9E-02	2.31E-06 UJ	1.4E-02	4.5E-02	2.5E-02	8.4E-05	37%
1,2,3,6,7,8-HxCDD	3.08E-06 UJ	5.6E-03	6.65E-06 J	1.2E-02	8.22E-06 J	1.5E-02	1.8E-02	1.2E-02	2.1E-05	38%
1,2,3,7,8,9-HxCDD	2.76E-06 UJ	5.8E-03	4.43E-06 UJ	9.3E-03	2.31E-06 UJ	4.9E-03	1.2E-02	7.4E-03	7.4E-06	36%
1,2,3,4,6,7,8-HpCDD	4.13E-05 J	3.5E-03	5.13E-05 J	4.4E-03	1.16E-05 UJ	1.0E-03	4.4E-03	2.1E-03	1.2E-06	52%
OCDD	2.62E-04 J	3.3E-03	3.59E-04 J	4.6E-03	3.15E-05 UJ	4.0E-04	4.6E-03	1.1E-03	2.1E-06	130%
2,3,7,8-TCDF	4.74E-05 J#	1.8E-01	5.33E-05 J#	2.0E-01	3.61E-05 J#	1.4E-01	3.9E-01	1.9E-01	5.1E-03	38%
1,2,3,7,8-PeCDF	2.95E-06 J	3.4E-02	2.81E-06 J	3.2E-02	3.34E-06 UJ	3.9E-02	7.7E-02	4.2E-02	2.3E-04	36%
2,3,4,7,8-PeCDF	2.70E-06 UJ	2.4E-02	4.95E-06 UJ	4.5E-02	7.71E-06 J	7.0E-02	9.6E-02	6.2E-02	5.3E-04	37%
1,2,3,4,7,8-HxCDF	1.35E-06 UJ	4.0E-03	4.28E-06 UJ	1.3E-02	2.91E-06 J	8.6E-03	4.9E-02	1.0E-02	1.7E-04	127%
1,2,3,6,7,8-HxCDF	1.22E-06 UJ	5.1E-03	4.43E-06 UJ	1.8E-02	1.71E-06 J	7.1E-03	7.0E-02	1.5E-02	3.5E-04	124%
2,3,4,6,7,8-HxCDF	1.80E-06 J	6.8E-03	4.80E-06 UJ	1.8E-02	1.20E-06 UJ	4.5E-03	2.4E-02	1.0E-02	4.0E-05	63%
1,2,3,7,8,9-HxCDF	2.70E-06 UJ	9.4E-02	5.24E-06 UJ	1.8E-01	1.37E-06 UJ	4.8E-02	2.9E-01	1.1E-01	6.6E-03	77%
1,2,3,4,6,7,8-HpCDF	1.39E-05 J	4.4E-03	1.68E-05 J	5.4E-03	3.08E-06 UJ	9.8E-04	5.4E-03	2.1E-03	2.9E-06	83%
1,2,3,4,7,8,9-HpCDF	3.15E-06 UJ	1.4E-02	6.65E-06 UJ	2.9E-02	1.46E-06 UJ	6.5E-03	4.2E-02	1.5E-02	1.4E-04	78%
OCDF	1.38E-05 UJ	1.6E-03	1.62E-05 UJ	1.9E-03	3.34E-06 UJ	3.9E-04	1.9E-03	8.6E-04	3.6E-07	70%
Total TCDD	6.51E-03 J	1.8E-01	5.86E-03 J	1.6E-01	8.62E-03 J	2.4E-01	3.6E-01	2.2E-01	5.6E-03	33%
Total PeCDD	4.11E-06 UJ	6.2E-03	6.32E-05 J	9.5E-02	5.99E-06 UJ	9.0E-03	9.5E-02	2.7E-02	6.5E-04	93%
Total HxCDD	1.60E-06 UJ	3.6E-04	3.32E-06 UJ	7.4E-04	8.22E-06 J	1.8E-03	4.7E-03	1.9E-03	1.6E-06	68%
Total HpCDD	7.47E-05 J	2.5E-03	9.39E-05 J	3.1E-03	1.63E-05 UJ	5.4E-04	3.1E-03	1.1E-03	8.4E-07	80%
Total TCDF	2.66E-05 J	6.6E-03	2.27E-05 J	5.6E-03	2.60E-05 J	6.4E-03	1.8E-02	8.8E-03	1.7E-05	47%
Total PeCDF	1.91E-05 J	4.5E-03	1.79E-05 J	4.2E-03	7.71E-06 J	1.8E-03	6.3E-03	4.0E-03	3.2E-06	44%
Total HxCDF	9.31E-06 UJ	1.7E-03	1.33E-05 UJ	2.5E-03	1.11E-05 J	2.1E-03	4.5E-03	1.9E-03	1.7E-06	68%
Total HpCDF	1.71E-05 UJ	1.6E-03	1.82E-05 UJ	1.7E-03	5.74E-06 UJ	5.3E-04	9.2E-03	1.6E-03	6.2E-06	154%
Toxicity Equivalency - Birds	6.57E-03	2.2E-01	5.92E-03	2.0E-01	8.66E-03	3.0E-01	4.5E-01	2.8E-01	8.3E-03	33%
Toxicity Equivalency - Fish	6.52E-03	2.2E-01	5.88E-03	2.0E-01	8.63E-03	3.0E-01	4.5E-01	2.8E-01	8.5E-03	33%
Toxicity Equivalency - Mammals	6.52E-03	2.2E-01	5.88E-03	2.0E-01	8.63E-03	3.0E-01	4.5E-01	2.8E-01	8.4E-03	33%
Aluminum	7.76E+01	7.6E-03	1.17E+02	1.1E-02	2.54E+01	2.5E-03	1.1E-02	4.8E-03	1.3E-05	76%
Antimony	5.82E-03 J	4.4E-03	1.00E-02 J	7.6E-03	1.70E-02 U	1.3E-02	1.3E-02	8.4E-03	1.6E-05	48%
Arsenic	2.44E-02 U	4.7E-03	7.15E-02	1.4E-02	1.63E-02 U	3.1E-03	1.4E-02	5.3E-03	9.9E-06	60%
Barium	1.38E+00	1.1E-02	2.06E+00	1.6E-02	7.04E-01	5.4E-03	1.6E-02	8.5E-03	1.4E-05	44%
Beryllium	8.73E-03	5.3E-03	1.37E-02	8.4E-03	2.66E-03 U	1.6E-03	8.4E-03	3.5E-03	6.9E-06	74%
Cadmium	1.31E-02 J	6.1E-03	3.22E-02 J	1.5E-02	1.13E-02 J	5.3E-03	1.5E-02	8.6E-03	8.1E-06	33%
Chromium	3.53E-01	3.6E-03	5.13E-01	5.2E-03	2.49E-01 J	2.5E-03	5.2E-03	2.7E-03	1.4E-06	43%
Cobalt	8.06E-02 J	1.0E-02	1.15E-01 J	1.5E-02	6.25E-02 J	8.0E-03	1.5E-02	9.9E-03	8.3E-06	29%
Copper	9.61E-01	8.6E-03	1.17E+00	1.0E-02	6.30E-01	5.6E-03	1.0E-02	7.5E-03	2.7E-06	22%
Iron	8.09E+01	4.9E-03	1.74E+02	1.1E-02	4.38E+01	2.7E-03	1.1E-02	4.6E-03	7.7E-06	61%
Lead	6.32E-01 J	2.7E-03	1.01E+00 J	4.3E-03	2.10E-01 J	8.9E-04	4.3E-03	1.8E-03	1.5E-06	68%
Manganese	1.06E+01	1.9E-02	1.07E+01	1.9E-02	5.51E+00	1.0E-02	1.9E-02	1.4E-02	2.1E-05	34%
Mercury	7.70E-02	2.7E-01	9.58E-02	3.3E-01	7.10E-02	2.5E-01	5.4E-01	3.4E-01	9.0E-03	28%
Mercury (methyl)	6.91E-02	3.3E+01	8.26E-02	4.0E+01	7.86E-02	3.8E+01	6.7E+01	4.5E+01	1.2E+02	24%
Molybdenum	2.92E-02 J	4.5E-03	6.42E-02 J	1.0E-02	2.52E-02 J	3.9E-03	1.0E-02	5.6E-03	3.6E-06	34%
Nickel	1.77E-01 J	5.4E-03	2.52E-01 J	7.7E-03	1.18E-01 J	3.6E-03	7.7E-03	4.7E-03	1.9E-06	30%
Selenium	2.16E-01 J	2.3E-01	2.45E-01 J	2.6E-01	2.06E-01 J	2.2E-01	2.6E-01	2.2E-01	6.8E-04	12%
Silver	1.67E-02 J	5.8E-03	1.31E-02 J	4.5E-03	3.00E-02 U	1.0E-02	1.0E-02	7.7E-03	1.4E-05	48%
Thallium	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.10E-02 U	1.9E-02	1.9E-02	1.9E-02	1.4E-19	0%

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Vanadium	1.38E-01 J	3.9E-03	2.54E-01	7.2E-03	7.26E-02 J	2.0E-03	7.2E-03	3.6E-03	2.3E-06	43%
Zinc	2.27E+01	5.8E-02	2.38E+01	6.1E-02	1.82E+01	4.7E-02	6.4E-02	5.3E-02	4.0E-05	12%
Naphthalene	4.94E-02	2.2E-03	5.70E-02	2.5E-03	4.08E-02	1.8E-03	2.6E-03	2.1E-03	8.1E-08	13%
2-Methylnaphthalene	7.05E-02	3.0E-03	6.91E-02	2.9E-03	5.14E-02	2.2E-03	3.0E-03	2.4E-03	1.4E-07	15%
Acenaphthylene	3.47E-02	1.5E-03	4.98E-02	2.2E-03	3.78E-02	1.7E-03	2.2E-03	1.8E-03	5.8E-08	14%
Acenaphthene	5.15E-02	2.6E-03	7.73E-02	3.8E-03	4.49E-02	2.2E-03	4.8E-03	2.8E-03	7.0E-07	30%
Dibenzofuran	4.27E-02	2.3E-03	6.47E-02	3.4E-03	3.39E-02	1.8E-03	4.4E-03	2.4E-03	7.0E-07	35%
Fluorene	7.06E-02	3.5E-03	1.07E-01	5.3E-03	5.67E-02	2.8E-03	7.2E-03	3.8E-03	2.4E-06	43%
Phenanthrene	2.41E-01	3.8E-03	4.36E-01	6.8E-03	1.55E-01	2.4E-03	6.8E-03	3.5E-03	2.9E-06	49%
Anthracene	4.69E-02	2.3E-03	6.93E-02	3.5E-03	4.54E-02	2.3E-03	3.5E-03	2.4E-03	2.7E-07	22%
Fluoranthene	4.07E-01	4.2E-03	7.25E-01	7.4E-03	2.45E-01	2.5E-03	7.4E-03	3.2E-03	3.6E-06	59%
Pyrene	2.37E-01	2.6E-03	3.30E-01	3.7E-03	1.29E-01	1.4E-03	3.7E-03	1.7E-03	1.2E-06	63%
Benzo(a)anthracene	8.84E-02	1.7E-03	1.73E-01	3.4E-03	4.88E-02	9.6E-04	3.4E-03	1.3E-03	8.8E-07	73%
Chrysene	1.72E-01	3.2E-03	3.40E-01	6.3E-03	8.27E-02	1.5E-03	6.3E-03	2.2E-03	3.2E-06	82%
Benzo(b)fluoranthene	1.44E-01	1.9E-03	3.07E-01	4.1E-03	5.34E-02	7.2E-04	4.1E-03	1.3E-03	1.5E-06	93%
Benzo(k)fluoranthene	1.31E-01	4.1E-03	2.57E-01	8.0E-03	4.81E-02	1.5E-03	8.0E-03	2.7E-03	5.7E-06	89%
Benzo(a)pyrene	1.03E-01	2.2E-03	2.17E-01	4.7E-03	4.37E-02	9.4E-04	4.7E-03	1.5E-03	1.9E-06	89%
Indeno(1,2,3-cd)pyrene	8.65E-02	2.1E-03	1.99E-01	4.9E-03	3.22E-02	7.9E-04	4.9E-03	1.6E-03	2.3E-06	95%
Dibenzo(a,h)anthracene	1.81E-02	1.0E-03	4.03E-02	2.3E-03	7.88E-03 J	4.5E-04	2.3E-03	8.1E-04	4.6E-07	83%
Benzo(g,h,i)perylene	7.27E-02	2.1E-03	1.69E-01	4.9E-03	2.86E-02	8.3E-04	4.9E-03	1.6E-03	2.3E-06	94%
Total PAH	2.08E+00	8.2E-03	3.71E+00	1.5E-02	1.20E+00	4.7E-03	1.5E-02	6.5E-03	1.4E-05	58%
1,1'-Biphenyl	1.63E-02	6.1E-04	1.94E-02	7.3E-04	1.39E-02	5.2E-04	7.6E-04	6.0E-04	7.4E-09	14%
2-Monochlorobiphenyl (1)	9.39E-04 J	9.4E-02	1.40E-03 J	1.4E-01			1.4E-01	1.1E-01	6.3E-04	22%
4-Chlorobiphenyl (3)	1.02E-04 UJ	4.8E-03	9.04E-04 J	4.3E-02			4.3E-02	1.7E-02	5.0E-04	131%
2,2'-Dichlorobiphenyl (4)	7.23E-03 J	4.6E-01	7.82E-03 J	5.0E-01			5.0E-01	4.6E-01	1.6E-03	9%
2,3-Dichlorobiphenyl (5)	3.15E-04 J	1.3E-01	3.26E-04 J	1.3E-01			1.3E-01	1.1E-01	6.2E-04	22%
2,3'-Dichlorobiphenyl (6)	3.65E-03 J	4.8E-01	4.75E-03 J	6.3E-01			6.3E-01	5.1E-01	1.2E-02	21%
2,4-Dichlorobiphenyl (7)	5.93E-04 J	1.5E-01	6.56E-04 J	1.7E-01			1.7E-01	1.4E-01	7.8E-04	19%
2,4'-Dichlorobiphenyl (8)	1.23E-02 J	1.4E-01	1.72E-02 J	2.0E-01			2.0E-01	1.5E-01	1.5E-03	25%
2,5-Dichlorobiphenyl (9)	1.48E-03 J	2.8E-01	1.53E-03 J	2.9E-01			2.9E-01	2.5E-01	3.0E-03	22%
2,6-Dichlorobiphenyl (10)	6.39E-05 UJ	6.7E-02	8.19E-04 J	8.6E-01			8.6E-01	4.8E-01	1.6E-01	83%
3,4-Dichlorobiphenyl (12)	1.28E-04 UJ	7.8E-03	1.47E-04 UJ	9.0E-03			9.0E-03	8.4E-03	3.6E-07	7%
2,2',3'-Trichlorobiphenyl (16)	2.13E-02 J	5.0E-01	1.75E-02 J	4.1E-01			5.0E-01	4.4E-01	2.5E-03	11%
2,2',4-Trichlorobiphenyl (17)	2.79E-02 J	6.4E-01	2.60E-02 J	6.0E-01			6.4E-01	6.0E-01	2.5E-03	8%
2,2',5-Trichlorobiphenyl (18)	4.14E-02 J	1.2E+00	3.50E-02 J	1.0E+00			1.2E+00	1.1E+00	1.6E-02	12%
2,2',6-Trichlorobiphenyl (19)	5.95E-03 J	6.7E-01	6.42E-03 J	7.3E-01			7.3E-01	6.6E-01	6.7E-03	12%
2,3,3'-Trichlorobiphenyl (20)	2.13E-01 J	8.5E-01	1.79E-01 J	7.2E-01			8.5E-01	8.0E-01	5.5E-03	9%
2,3,4'-Trichlorobiphenyl (22)	2.57E-02 J	3.8E-01	3.44E-02 J	5.0E-01			5.0E-01	4.2E-01	5.0E-03	17%
2,3,6-Trichlorobiphenyl (24)	6.16E-03 J	2.3E-01	5.42E-03 J	2.0E-01			2.3E-01	2.1E-01	2.7E-04	8%
2,3',4-Trichlorobiphenyl (25)	2.26E-03 J	1.8E-01	2.02E-03 J	1.6E-01			1.8E-01	1.7E-01	9.9E-05	6%
2,3',5-Trichlorobiphenyl (26)	1.32E-02 J	5.0E-01	1.03E-02 J	3.8E-01			5.0E-01	4.3E-01	3.5E-03	14%
2,4',5-Trichlorobiphenyl (31)	5.79E-02 J	4.8E-01	5.91E-02 J	4.9E-01			4.9E-01	4.5E-01	4.3E-03	15%
2,4',6-Trichlorobiphenyl (32)	2.15E-02 J	9.2E-01	1.60E-02 J	6.8E-01			9.2E-01	8.1E-01	1.4E-02	15%
2,2',3,3'-Tetrachlorobiphenyl (40)	1.20E-01 J	6.4E-01	9.36E-02 J	5.0E-01			6.6E-01	6.0E-01	7.7E-03	15%
2,2',3,4'-Tetrachlorobiphenyl (42)	7.77E-02 J	1.1E+00	8.43E-02 J	1.2E+00			1.2E+00	1.1E+00	2.2E-03	4%
2,2',3,5-Tetrachlorobiphenyl (43)	2.40E-01 J	2.1E+00	1.91E-01 J	1.7E+00			2.1E+00	1.8E+00	7.3E-02	15%
2,2',3,5'-Tetrachlorobiphenyl (44)	3.37E-01 J	1.4E+00	1.04E-01 J	4.2E-01			1.4E+00	1.0E+00	2.6E-01	51%
2,2',3,6-Tetrachlorobiphenyl (45)	2.95E-02 J	9.3E-01	2.88E-02 J	9.0E-01			9.3E-01	8.9E-01	1.6E-03	4%

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TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND						BSAF Summary Statistics - Lyman Mill Pond			
	LPX-WS-4008-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4009-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4010-0000-01-W 6/21/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,6'-Tetrachlorobiphenyl (46)	9.14E-03 J	6.8E-01	9.69E-03 J	7.2E-01			7.2E-01	6.8E-01	1.5E-03	6%
2,2',4,5-Tetrachlorobiphenyl (48)	3.28E-02 J	9.8E-01	3.12E-02 J	9.3E-01			9.8E-01	9.4E-01	1.3E-03	4%
2,2',4,5'-Tetrachlorobiphenyl (49)	2.79E-01 J	2.0E+00	2.19E-01 J	1.5E+00			2.0E+00	1.7E+00	4.6E-02	12%
2,2',4,6-Tetrachlorobiphenyl (50)	*2.99E-02 J*	*9.0E-01*	*2.35E-02 J*	*7.1E-01*			*9.0E-01*	*8.2E-01*	*1.0E-02*	*12%*
2,3,3',4'-Tetrachlorobiphenyl (56)	6.42E-02 J	6.0E-01	7.97E-02 J	7.4E-01			7.4E-01	6.6E-01	5.4E-03	11%
2,3,3',6-Tetrachlorobiphenyl (59)	2.75E-02 J	1.5E+00	2.22E-01 J	1.2E+01			1.2E+01	4.9E+00	3.8E+01	124%
2,3,4,4'-Tetrachlorobiphenyl (60)	4.09E-02 J	2.0E+00	4.71E-02 J	2.3E+00			2.3E+00	2.1E+00	2.6E-02	7%
2,3,4,5-Tetrachlorobiphenyl (61)	4.86E-01 J	1.3E+00	4.75E-01 J	1.2E+00			1.3E+00	1.2E+00	3.6E-03	5%
2,3,4',5-Tetrachlorobiphenyl (63)	1.49E-02 J	3.0E+00	1.32E-02 J	2.7E+00			3.0E+00	2.7E+00	7.7E-02	10%
2,3,4',6-Tetrachlorobiphenyl (64)	1.35E-01 J	1.4E+00	1.48E-01 J	1.6E+00			1.6E+00	1.5E+00	9.3E-03	6%
2,3',4,4'-Tetrachlorobiphenyl (66)	5.50E-01 J	1.8E+00	4.07E-01 J	1.4E+00			1.8E+00	1.7E+00	6.7E-02	16%
3,3',4,4'-Tetrachlorobiphenyl (77)	7.66E-03 J	3.3E-01	9.57E-03 J	4.1E-01			1.0E+01	2.5E+00	1.9E+01	178%
3,4,4',5-Tetrachlorobiphenyl (81)	6.39E-04 UJ	7.7E-01	7.37E-04 UJ	8.9E-01			5.4E+01	1.6E+01	5.3E+02	145%
2,2',3,3',4-Pentachlorobiphenyl (82)	8.70E-02 J	8.2E-01	1.24E-01 J	1.2E+00			1.2E+00	1.0E+00	3.8E-02	19%
2,2',3,3',5-Pentachlorobiphenyl (83)	7.93E-01 J	2.9E+00	7.55E-01 J	2.8E+00			2.9E+00	2.7E+00	1.1E-01	12%
2,2',3,3',6-Pentachlorobiphenyl (84)	1.55E-01 J	7.1E-01	1.81E-01 J	8.3E-01			8.4E-01	7.9E-01	4.7E-03	9%
2,2',3,4,4'-Pentachlorobiphenyl (85)	2.55E-01 J	2.7E+00	1.02E-01 J	1.1E+00			2.7E+00	2.1E+00	8.8E-01	44%
2,2',3,4,5-Pentachlorobiphenyl (86)	8.26E-01 J	1.6E+00	8.27E-01 J	1.6E+00			1.7E+00	1.6E+00	1.7E-03	3%
2,2',3,4,6-Pentachlorobiphenyl (88)	1.41E-01 J	1.6E+00	1.36E-01 J	1.5E+00			1.7E+00	1.6E+00	5.8E-03	5%
2,2',3,4,6'-Pentachlorobiphenyl (89)	6.15E-03 J	7.4E+00	6.75E-03 J	8.1E+00			8.6E+00	8.0E+00	3.5E-01	7%
2,2',3,4',5-Pentachlorobiphenyl (90)	1.12E+00 J	2.1E+00	1.04E+00 J	2.0E+00			2.1E+00	2.0E+00	1.3E-02	6%
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.53E-01 J	1.5E+00	1.48E-01 J	1.4E+00			1.5E+00	1.4E+00	1.2E-02	8%
2,2',3,5,6-Pentachlorobiphenyl (93)	5.51E-01 J	1.0E+00	5.37E-01 J	1.0E+00			1.1E+00	1.0E+00	2.1E-03	4%
2,3,3',4,4'-Pentachlorobiphenyl (105)	3.02E-01 J	1.9E+00	2.33E-01 J	1.5E+00			2.2E+01	6.4E+00	8.1E+01	141%
2,3,3',4,5-Pentachlorobiphenyl (106)	1.41E-01 J	2.7E+00	5.48E-01 J	1.1E+01			1.1E+01	5.3E+00	2.1E+01	88%
2,3,3',4',5-Pentachlorobiphenyl (108)	2.85E-02 J	1.4E+00	3.54E-02 J	1.7E+00			1.7E+00	1.6E+00	3.8E-02	12%
2,3,3',4',6-Pentachlorobiphenyl (110)	1.26E+00 J	1.4E+00	8.04E-01 J	9.0E-01			1.6E+00	1.3E+00	1.4E-01	28%
2,3,4,4',5-Pentachlorobiphenyl (114)	1.71E-02 J	1.5E+00	2.21E-02 J	2.0E+00			1.6E+01	5.1E+00	3.6E+01	119%
2,3',4,4',5-Pentachlorobiphenyl (118)	1.55E+00 J	2.4E+00	1.09E+00 J	1.7E+00			2.3E+01	6.9E+00	8.5E+01	133%
2,3',4,4',5'-Pentachlorobiphenyl (123)							0.0E+00			
3,3',4,4',5-Pentachlorobiphenyl (126)	3.05E-03 J	9.1E-01	1.47E-03 J	4.4E-01			7.4E+01	1.7E+01	1.0E+03	194%
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	3.54E-01 J	2.2E+00	2.38E-01 J	1.5E+00			2.4E+00	2.0E+00	2.2E-01	23%
2,2',3,3',4,5-Hexachlorobiphenyl (129)	2.36E+00 J	3.2E+00	1.43E+00 J	2.0E+00			3.2E+00	2.7E+00	4.4E-01	25%
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	1.24E-01 J	2.1E+00	8.23E-02 J	1.4E+00			2.3E+00	1.9E+00	2.0E-01	23%
2,2',3,3',4,6-Hexachlorobiphenyl (131)	2.69E-02 J	2.3E+00	1.56E-02 J	1.3E+00			2.3E+00	1.8E+00	2.4E-01	27%
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	4.59E-01 J	4.4E+00	3.41E-01 J	3.3E+00			5.2E+00	4.3E+00	9.6E-01	23%
2,2',3,3',5,6-Hexachlorobiphenyl (134)	4.97E-02 J	9.1E-01	3.51E-02 J	6.4E-01			1.3E+00	9.5E-01	1.1E-01	35%
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	2.45E-01 J	1.3E+00	1.49E-01 J	7.8E-01			1.3E+00	9.2E-01	1.1E-01	35%
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	7.91E-02 J	6.6E-01	5.11E-02 J	4.2E-01			7.2E-01	6.0E-01	2.5E-02	26%
2,2',3,4,4',5-Hexachlorobiphenyl (137)	2.28E-01 J	2.5E+00	1.44E-01 J	1.6E+00			2.5E+00	2.1E+00	2.3E-01	22%
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	1.78E-01 J	2.1E+00	1.17E-01 J	1.4E+00			2.1E+00	1.8E+00	1.5E-01	21%
2,2',3,4,5',6-Hexachlorobiphenyl (144)	4.25E-02 J	5.1E+01	2.26E-02 J	2.7E+01			5.1E+01	3.9E+01	1.5E+02	31%
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	2.05E-01 J	5.2E+00	1.41E-01 J	3.6E+00			5.2E+00	4.1E+00	1.0E+00	25%
2,2',3,4',5,6-Hexachlorobiphenyl (147)	1.05E+00 J	2.2E+00	6.56E-01 J	1.4E+00			2.2E+00	1.9E+00	2.1E-01	24%
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	1.29E+00 J	5.1E+00	9.25E-01 J	3.6E+00			5.1E+00	4.0E+00	8.8E-01	23%
2,3,3',4,4',5-Hexachlorobiphenyl (156)	1.64E-01 J	2.5E+00	1.15E-01 J	1.7E+00			1.7E+01	5.3E+00	4.6E+01	127%
2,3,3',4,4',5'-Hexachlorobiphenyl (157)							0.0E+00			
2,3,3',4,4',6-Hexachlorobiphenyl (158)	2.04E-01 J	1.5E+01	1.29E-01 J	9.5E+00			1.5E+01	1.2E+01	7.6E+00	23%

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TABLE J-5
CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND						BSAF Summary Statistics - Lyman Mill Pond			
	LPX-WS-4008-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4009-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4010-0000-01-W 6/21/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	6.96E-02 J	2.7E+00	4.81E-02 J	1.8E+00			3.6E+01	9.8E+00	2.2E+02	150%
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	6.39E-04 UJ	7.7E-01	7.37E-04 UJ	8.9E-01			5.2E+00	2.3E+00	3.4E+00	80%
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	2.45E-01 J	1.9E+00	1.41E-01 J	1.1E+00			2.1E+00	1.7E+00	3.0E-01	32%
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	7.62E-02 J	1.9E+00	4.06E-02 J	1.0E+00			1.9E+00	1.6E+00	2.7E-01	32%
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	3.48E-02 J	3.5E+00	2.21E-02 J	2.2E+00			3.5E+00	2.9E+00	4.2E-01	22%
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	9.67E-02 J	6.7E-01	5.70E-02 J	3.9E-01			8.7E-01	6.4E-01	5.7E-02	37%
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	5.95E-03 J	1.5E+00	3.24E-03 J	8.1E-01			1.5E+00	1.2E+00	1.2E-01	29%
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.82E-02 J	1.2E+00	7.16E-03 J	4.7E-01			1.2E+00	9.4E-01	1.7E-01	44%
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	9.61E-02 J	1.6E+00	5.59E-02 J	9.2E-01			1.9E+00	1.5E+00	2.7E-01	35%
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	3.45E-02 J	2.2E+00	1.69E-02 J	1.1E+00			2.2E+00	1.7E+00	3.3E-01	34%
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	3.28E-01 J	3.4E+00	2.20E-01 J	2.3E+00			3.4E+00	2.8E+00	3.1E-01	20%
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	1.28E-03 UJ	7.7E-01	1.47E-03 UJ	8.9E-01			8.9E-01	7.5E-01	2.2E-02	20%
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	8.42E-02 J	2.5E+00	5.14E-02 J	1.5E+00			2.5E+00	2.0E+00	2.4E-01	25%
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	4.49E-04 J	2.7E-01	1.93E-04 J	1.2E-01			2.7E-01	1.9E-01	5.9E-03	40%
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	1.29E-02 J	2.3E+00	6.92E-03 J	1.2E+00			2.3E+00	1.8E+00	2.9E-01	30%
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	2.29E-01 J	3.5E+00	1.41E-01 J	2.2E+00			3.5E+00	2.7E+00	4.9E-01	26%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	6.11E-03 J	2.1E+00	3.75E-03 J	1.3E+00			6.5E+01	1.5E+01	7.9E+02	189%
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	4.28E-02 J	2.6E+00	2.84E-02 J	1.7E+00			2.6E+00	2.2E+00	2.0E-01	20%
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	7.53E-03 J	2.9E+00	4.58E-03 J	1.8E+00			2.9E+00	2.4E+00	3.3E-01	24%
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	4.76E-02 J	1.7E+00	3.29E-02 J	1.2E+00			1.7E+00	1.5E+00	8.0E-02	19%
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	1.88E-02 J	1.4E+00	9.81E-03 J	7.3E-01			1.4E+00	1.2E+00	1.6E-01	34%
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	2.78E-02 J	1.3E+00	2.05E-02 J	9.4E-01			1.3E+00	1.2E+00	3.4E-02	16%
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	1.89E-03 J	3.2E+00	1.35E-03 J	2.3E+00			3.2E+00	2.6E+00	2.5E-01	19%
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	1.88E-01 J	1.7E+00	1.23E-01 J	1.1E+00			1.7E+00	1.5E+00	9.6E-02	21%
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	5.45E-03 J		2.76E-03 J				0.0E+00			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	1.31E-02 J	2.1E+00	7.23E-03 J	1.2E+00			2.1E+00	1.7E+00	2.3E-01	29%
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	7.19E-02 J	2.2E+00	6.16E-02 J	1.9E+00			2.2E+00	1.9E+00	4.2E-02	11%
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	2.49E-03 J	1.6E+00	1.61E-03 J	1.0E+00			1.6E+00	1.4E+00	8.4E-02	21%
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	2.01E-01 J	1.3E+00	1.34E-01 J	8.4E-01			1.3E+00	1.0E+00	4.6E-02	21%
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	1.70E-02 J	1.5E+00	1.22E-02 J	1.1E+00			1.5E+00	1.3E+00	5.5E-02	19%
Decachlorobiphenyl (209)	1.19E-01 J	6.1E-01	7.06E-02 J	3.6E-01			6.1E-01	4.9E-01	1.6E-02	25%
PCB Congeners, Total	1.95E+01 J	1.8E+00	1.51E+01 J	1.4E+00			1.8E+00	1.6E+00	4.3E-02	13%
alpha-BHC	3.98E-03 UJ	2.8E+00	4.58E-03 UJ	3.2E+00	5.14E-03 UJ	3.6E+00	4.1E+00	3.1E+00	5.4E-01	24%
Toxicity Equivalency (PCB) - Birds	8.16E-04	4.9E+01	7.49E-04	4.5E+01			2.5E+03	6.0E+02	1.2E+06	180%
Toxicity Equivalency (PCB) - Fish	2.68E-05	8.8E-02	1.62E-05	5.3E-02			4.6E+00	1.1E+00	3.9E+00	187%
Toxicity Equivalency (PCB) - Mammals	5.89E-04	6.5E-03	3.57E-04	4.0E-03			3.1E-01	7.1E-02	1.8E-02	187%
Technical Chlordane	2.07E+01 J	1.7E+00	6.14E+00 J	5.0E-01	5.74E+00 J	4.7E-01	2.0E+00	1.4E+00	3.1E-01	38%
beta-BHC	3.98E-03 UJ	4.2E-02	4.58E-03 UJ	4.8E-02	5.14E-03 UJ	5.4E-02	6.1E-02	4.7E-02	1.2E-04	24%
delta-BHC	3.98E-03 UJ	4.2E-02	4.58E-03 UJ	4.8E-02	5.22E-03 UJ	5.5E-02	6.1E-02	4.7E-02	1.3E-04	24%
gamma-BHC	2.70E-03 J	3.3E-02	1.77E-03 J	2.2E-02	2.40E-03 J	2.9E-02	4.8E-02	3.3E-02	4.2E-05	20%
Heptachlor	3.98E-03 UJ	4.7E-02	4.58E-03 UJ	5.4E-02	5.14E-03 UJ	6.1E-02	6.8E-02	5.2E-02	1.6E-04	24%
Aldrin	3.98E-03 UJ	4.7E-02	4.58E-03 UJ	5.4E-02	5.14E-03 UJ	6.1E-02	6.8E-02	5.2E-02	1.6E-04	24%
Heptachlor Epoxide	1.55E-02 J	1.3E-01	2.53E-02 J	2.0E-01	1.39E-02 J	1.1E-01	2.9E-01	1.6E-01	3.8E-03	39%
Endosulfan I	3.98E-03 UJ	3.1E-02	4.58E-03 UJ	3.5E-02	5.14E-03 UJ	4.0E-02	4.5E-02	3.4E-02	6.6E-05	24%
Dieldrin	5.02E-02 J	3.0E-01	1.18E-01 J	7.1E-01	1.07E-01 J	6.4E-01	7.6E-01	4.5E-01	3.6E-02	42%
4,4'-DDE	1.77E+00 J	8.7E+00	5.48E-01 J	2.7E+00	9.58E-01 J	4.7E+00	1.2E+01	8.6E+00	1.1E+01	38%
Endrin	3.98E-03 UJ	2.3E-02	4.58E-03 UJ	2.6E-02	5.14E-03 UJ	2.9E-02	3.3E-02	2.5E-02	3.6E-05	24%
Endosulfan II	3.98E-03 UJ	1.9E-02	4.58E-03 UJ	2.2E-02	5.14E-03 UJ	2.5E-02	2.8E-02	2.2E-02	2.7E-05	24%
4,4'-DDD	4.86E-01 J	1.8E+00	2.01E-01 J	7.3E-01	2.32E-01 J	8.4E-01	3.3E+00	1.9E+00	7.7E-01	45%
Endosulfan Sulfate	3.98E-03 UJ	1.6E-02	4.58E-03 UJ	1.9E-02	5.14E-03 UJ	2.1E-02	2.4E-02	1.8E-02	1.9E-05	24%

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TABLE J-5

CALCULATION OF SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR WHITE SUCKER TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND						BSAF Summary Statistics - Lyman Mill Pond			
	LPX-WS-4008-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4009-0000-01-W 6/21/2001 NORMAL	BSAF	LPX-WS-4010-0000-01-W 6/21/2001 NORMAL	BSAF	Maximum	Mean	Variance	Coefficient of Variation
4,4'-DDT	1.78E-02 J	8.5E-02	4.58E-03 J	2.2E-02	2.59E-02 J	1.2E-01	6.0E-01	2.5E-01	3.4E-02	73%
Methoxychlor	3.98E-03 UJ	4.8E-03	4.58E-03 UJ	5.5E-03	5.14E-03 UJ	6.2E-03	7.0E-03	5.3E-03	1.6E-06	24%
Endrin Ketone	3.98E-03 UJ	2.3E-02	4.58E-03 UJ	2.6E-02	5.14E-03 UJ	2.9E-02	3.3E-02	2.5E-02	3.6E-05	24%
Endrin Aldehyde	3.98E-03 UJ	2.2E-02	4.58E-03 UJ	2.5E-02	5.14E-03 UJ	2.9E-02	3.2E-02	2.5E-02	3.4E-05	24%
alpha-Chlordane	3.92E-01 J	9.3E-01	4.54E-01 J	1.1E+00	2.42E-01 J	5.8E-01	2.3E+00	1.3E+00	2.8E-01	40%
gamma-Chlordane	3.00E-01 J	8.8E-01	3.44E-01 J	1.0E+00	3.94E-01 J	1.2E+00	1.7E+00	1.2E+00	1.0E-01	26%
Toxaphene	9.86E-02 UJ	1.1E-02	1.14E-01 UJ	1.3E-02	1.29E-01 UJ	1.5E-02	1.6E-02	1.3E-02	8.9E-06	24%
Aroclor-1016	4.93E-02 UJ	2.9E-02	5.69E-02 UJ	3.3E-02	6.46E-02 UJ	3.7E-02	4.2E-02	3.2E-02	5.8E-05	24%
Aroclor-1221	4.93E-02 UJ	1.4E-02	5.69E-02 UJ	1.7E-02	6.46E-02 UJ	1.9E-02	2.1E-02	1.6E-02	1.5E-05	24%
Aroclor-1232	4.93E-02 UJ	2.8E-02	5.69E-02 UJ	3.2E-02	6.46E-02 UJ	3.7E-02	4.1E-02	3.1E-02	5.6E-05	24%
Aroclor-1242	4.93E-02 UJ	2.9E-02	5.69E-02 UJ	3.3E-02	6.46E-02 UJ	3.7E-02	4.2E-02	3.2E-02	5.8E-05	24%
Aroclor-1248	4.93E-02 UJ	2.8E-02	5.69E-02 UJ	3.2E-02	6.46E-02 UJ	3.7E-02	4.1E-02	3.1E-02	5.6E-05	24%
Aroclor-1254	5.68E+01 J	1.1E+01	4.48E+01 J	8.5E+00	5.07E+01 J	9.6E+00	1.3E+01	1.1E+01	2.5E+00	15%
Aroclor-1260	4.93E-02 UJ	2.8E-02	5.69E-02 UJ	3.2E-02	6.46E-02 UJ	3.7E-02	4.1E-02	3.1E-02	5.6E-05	24%
Aroclor-1268	4.47E-01 J	3.6E-01	3.25E-01 J	2.6E-01	3.72E-01 J	3.0E-01	6.5E-01	4.1E-01	1.9E-02	34%
Aroclor, Total	5.73E+01 J	9.0E+00	4.51E+01 J	7.1E+00	5.11E+01 J	8.0E+00	1.1E+01	9.0E+00	1.8E+00	15%

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TABLE J-6

SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR EMERGING INSECT/SWALLOW STOMACH CONTENTS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	INSECT[a]				GREYSTONE SEDIMENT[b]				ALLENDALE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
HCX	3	7	8.1E-03	3.2E-03	7	7	1.3E-03	5.9E-04	42	45	9.8E+00	7.6E-01	27	34	1.8E+00	2.3E-01
2,3,7,8-TCDD	7	8	9.9E-03	3.6E-03	8	11	7.9E-04	1.5E-04	144	147	3.1E+00	1.4E-01	45	46	9.9E-02	2.9E-02
1,2,3,4,7,8-HxCDD	4	8	9.5E-04	1.4E-04	8	11	2.3E-04	8.8E-05	55	62	4.5E-04	1.8E-04	37	46	1.5E-03	1.6E-04
1,2,3,6,7,8-HxCDD	7	8	2.8E-04	8.4E-05	9	11	7.8E-04	3.1E-04	58	61	2.4E-03	5.9E-04	40	44	5.3E-03	5.5E-04
1,2,3,7,8,9-HxCDD	4	8	9.5E-04	1.4E-04	7	11	6.3E-04	2.6E-04	59	62	1.5E-03	5.5E-04	42	45	4.1E-03	4.7E-04
1,2,3,4,6,7,8-HpCDD	5	8	2.1E-03	7.0E-04	11	11	1.3E-02	5.3E-03	57	62	2.3E-02	9.9E-03	35	46	1.5E-01	1.2E-02
OCDD	5	8	6.9E-03	1.8E-03	11	11	1.0E-01	3.7E-02	58	62	1.7E-01	6.5E-02	36	46	1.1E+00	7.8E-02
2,3,7,8-TCDF	6	8	7.0E-05	3.3E-05	9	11	6.4E-04	2.5E-04	59	62	1.4E-03	3.6E-04	39	45	8.4E-04	2.7E-04
1,2,3,7,8-PeCDF	2	8	9.5E-04	1.4E-04	5	11	1.4E-04	4.9E-05	50	58	1.4E-03	2.0E-04	36	42	3.1E-04	8.6E-05
2,3,4,7,8-PeCDF	2	8	9.5E-04	1.6E-04	8	8	2.5E-04	1.4E-04	56	62	7.3E-04	1.7E-04	37	45	2.8E-04	1.1E-04
1,2,3,4,7,8-HxCDF	2	8	9.5E-04	1.4E-04	9	11	6.8E-04	2.9E-04	55	59	1.2E-03	3.5E-04	38	41	1.5E-03	3.4E-04
1,2,3,6,7,8-HxCDF	4	8	9.5E-04	1.4E-04	9	11	4.6E-04	2.0E-04	58	61	8.3E-04	2.7E-04	39	41	1.1E-03	2.4E-04
2,3,4,6,7,8-HxCDF	2	8	9.5E-04	1.6E-04	9	11	5.7E-04	2.1E-04	55	61	1.2E-03	2.1E-04	39	41	1.6E-03	2.6E-04
1,2,3,7,8,9-HxCDF	1	8	9.5E-04	1.6E-04	1	11	1.6E-04	4.0E-05	27	53	5.7E-04	1.1E-04	16	36	1.1E-04	2.9E-05
1,2,3,4,6,7,8-HpCDF	5	8	4.8E-04	1.3E-04	11	11	1.1E-02	3.7E-03	57	59	1.5E-02	3.7E-03	41	46	2.3E-02	3.1E-03
OCDF	2	8	5.7E-05	3.3E-05	11	11	5.6E-03	3.4E-03	53	59	1.3E-02	5.6E-03	33	45	1.4E-01	8.5E-03
Total TCDD	6	6	9.9E-03	4.3E-03	9	11	1.3E-03	3.5E-04	50	52	3.1E+00	1.8E-01	35	35	1.0E-01	3.6E-02
Total HxCDD	5	6	7.1E-04	2.4E-04	9	11	6.0E-03	2.3E-03	48	52	8.3E-03	3.8E-03	32	35	2.6E-02	4.5E-03
Total HpCDD	5	6	2.8E-03	1.1E-03	10	11	2.7E-02	1.0E-02	51	52	4.3E-02	2.0E-02	33	35	2.3E-01	3.0E-02
Total TCDF	6	6	2.2E-04	9.2E-05	10	11	5.8E-03	1.8E-03	51	52	1.9E-02	4.0E-03	35	35	1.1E-02	4.1E-03
Total PeCDF	5	6	3.6E-04	1.4E-04	9	10	5.1E-03	2.4E-03	50	52	2.2E-02	4.6E-03	35	35	1.3E-02	4.2E-03
Total HxCDF	4	6	1.0E-03	2.3E-04	11	11	9.4E-03	4.2E-03	52	52	2.9E-02	5.9E-03	34	35	1.8E-02	5.4E-03
Total HpCDF	2	6	2.6E-04	1.2E-04	11	11	1.9E-02	7.3E-03	52	52	1.9E-02	7.2E-03	34	35	8.8E-02	1.1E-02
Toxicity Equivalency - Birds	8	8	1.2E-02	4.0E-03	11	11	2.1E-03	7.4E-04	148	148	3.1E+00	1.4E-01	46	46	1.0E-01	2.9E-02
Toxicity Equivalency - Fish	8	8	1.2E-02	3.9E-03	11	11	1.5E-03	4.5E-04	148	148	3.1E+00	1.4E-01	46	46	1.0E-01	2.9E-02
Toxicity Equivalency - Mammals	8	8	1.2E-02	3.9E-03	11	11	1.6E-03	5.3E-04	148	148	3.1E+00	1.4E-01	46	46	1.0E-01	2.9E-02
2-Monochlorobiphenyl (1)	2	2	2.5E-03	1.6E-03	1	1	1.6E-03	1.6E-03					2	2	1.1E-02	1.0E-02
4-Chlorobiphenyl (3)	2	2	2.3E-03	1.4E-03	0	1	1.0E-03	1.0E-03					2	2	2.4E-02	2.1E-02
2,2'-Dichlorobiphenyl (4)	1	2	4.8E-03	2.8E-03	1	1	7.4E-03	7.4E-03					2	2	2.1E-02	1.6E-02
2,2',3'-Trichlorobiphenyl (16)	2	2	3.2E-03	2.0E-03	1	1	2.1E-02	2.1E-02					2	2	6.1E-02	4.2E-02
2,2',4-Trichlorobiphenyl (17)	2	2	3.1E-03	2.1E-03	1	1	2.1E-02	2.1E-02					2	2	6.3E-02	4.3E-02
2,2',5-Trichlorobiphenyl (18)	2	2	6.6E-03	4.3E-03	1	1	2.0E-02	2.0E-02					2	2	4.6E-02	3.4E-02
2,2',6-Trichlorobiphenyl (19)	2	2	8.5E-04	5.3E-04	1	1	5.5E-03	5.5E-03					2	2	1.3E-02	8.8E-03

US EPA ARCHIVE DOCUMENT

TABLE J-6
SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR EMERGING INSECT/SWALLOW STOMACH CONTENTS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	INSECT[a]				GREYSTONE SEDIMENT[b]				ALLENDALE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,3,3'-Trichlorobiphenyl (20)	2	2	3.2E-02	1.8E-02	1	1	1.1E-01	1.1E-01					2	2	3.8E-01	2.5E-01
2,3,4'-Trichlorobiphenyl (22)	1	2	5.0E-03	3.2E-03	1	1	3.3E-02	3.3E-02					2	2	9.8E-02	6.8E-02
2,3',4-Trichlorobiphenyl (25)	2	2	1.5E-03	7.9E-04	1	1	4.9E-03	4.9E-03					2	2	1.9E-02	1.2E-02
2,3',5-Trichlorobiphenyl (26)	2	2	2.7E-03	1.4E-03	1	1	1.2E-02	1.2E-02					2	2	4.2E-02	2.7E-02
2,4',5-Trichlorobiphenyl (31)	2	2	1.8E-02	9.8E-03	1	1	5.2E-02	5.2E-02					2	2	1.8E-01	1.2E-01
2,4',6-Trichlorobiphenyl (32)	2	2	3.1E-03	1.8E-03	1	1	9.6E-03	9.6E-03					2	2	3.1E-02	2.3E-02
2,2',3,3'-Tetrachlorobiphenyl (40)	2	2	9.5E-03	5.6E-03	1	1	5.1E-02	5.1E-02					2	2	2.0E-01	1.9E-01
2,2',3,4'-Tetrachlorobiphenyl (42)	2	2	7.6E-03	4.3E-03	1	1	2.3E-02	2.3E-02					2	2	9.6E-02	7.1E-02
2,2',3,5-Tetrachlorobiphenyl (43)	2	2	6.4E-02	3.7E-02	1	1	2.5E-01	2.5E-01					2	2	2.2E-01	1.1E-01
2,2',3,5'-Tetrachlorobiphenyl (44)	2	2	3.2E-02	1.8E-02	1	1	1.2E-01	1.2E-01					2	2	3.4E-01	2.5E-01
2,2',3,6-Tetrachlorobiphenyl (45)	2	2	1.8E-03	1.1E-03	1	1	5.7E-03	5.7E-03					2	2	4.4E-02	3.2E-02
2,2',3,6'-Tetrachlorobiphenyl (46)	2	2	6.8E-04	3.8E-04	1	1	4.5E-03	4.5E-03					2	2	1.7E-02	1.3E-02
2,2',4,5-Tetrachlorobiphenyl (48)	2	2	2.9E-03	1.6E-03	1	1	1.0E-02	1.0E-02					2	2	4.9E-02	3.3E-02
2,2',4,5'-Tetrachlorobiphenyl (49)	2	2	3.1E-02	1.8E-02	1	1	6.6E-02	6.6E-02					2	2	2.0E-01	1.4E-01
2,2',4,6-Tetrachlorobiphenyl (50)	2	2	1.8E-03	9.5E-04	1	1	1.3E-02	1.3E-02					2	2	4.1E-02	3.3E-02
2,3,3',4'-Tetrachlorobiphenyl (56)	2	2	1.0E-02	5.8E-03	1	1	3.7E-02	3.7E-02					2	2	1.3E-01	1.1E-01
2,3,3',6-Tetrachlorobiphenyl (59)	2	2	3.3E-03	1.9E-03	1	1	5.4E-03	5.4E-03					2	2	2.6E-02	1.9E-02
2,3,4,4'-Tetrachlorobiphenyl (60)	2	2	1.2E-02	6.8E-03	1	1	5.0E-03	5.0E-03					2	2	3.7E-02	2.0E-02
2,3,4,5-Tetrachlorobiphenyl (61)	2	2	1.2E-01	6.8E-02	1	1	2.3E-01	2.3E-01					2	2	5.4E-01	3.9E-01
2,3,4',5-Tetrachlorobiphenyl (63)	2	2	6.0E-03	3.4E-03	0	1	1.8E-03	1.8E-03					2	2	7.3E-03	4.9E-03
2,3,4',6-Tetrachlorobiphenyl (64)	2	2	1.8E-02	1.0E-02	1	1	3.8E-02	3.8E-02					2	2	1.3E-01	9.3E-02
2,3',4,4'-Tetrachlorobiphenyl (66)	2	2	5.7E-02	3.1E-02	1	1	1.3E-01	1.3E-01					2	2	3.8E-01	3.0E-01
3,3',4,4'-Tetrachlorobiphenyl (77)	2	2	1.2E-02	7.0E-03	1	1	7.6E-03	7.6E-03	2	2	1.5E-02	1.5E-02	3	3	3.6E-02	2.3E-02
3,4,4',5-Tetrachlorobiphenyl (81)	1	2	3.5E-03	2.9E-03	0	1	1.8E-03	1.8E-03					0	1	8.3E-04	8.3E-04
2,2',3,3',4-Pentachlorobiphenyl (82)	2	2	1.6E-02	9.0E-03	1	1	1.2E-01	1.2E-01					2	2	1.4E-01	1.1E-01
2,2',3,3',5-Pentachlorobiphenyl (83)	2	2	1.8E-01	1.0E-01	1	1	2.9E-01	2.9E-01					2	2	3.8E-01	2.7E-01
2,2',3,3',6-Pentachlorobiphenyl (84)	2	2	1.3E-02	7.4E-03	1	1	2.7E-01	2.7E-01					2	2	2.5E-01	2.2E-01
2,2',3,4,4'-Pentachlorobiphenyl (85)	2	2	6.8E-02	3.8E-02	1	1	1.4E-01	1.4E-01					2	2	1.3E-01	9.6E-02
2,2',3,4,5-Pentachlorobiphenyl (86)	2	2	1.1E-01	6.0E-02	1	1	6.2E-01	6.2E-01					2	2	6.7E-01	5.1E-01
2,2',3,4,6-Pentachlorobiphenyl (88)	2	2	1.2E-02	6.6E-03	1	1	1.2E-01	1.2E-01					2	2	1.1E-01	9.0E-02
2,2',3,4,6'-Pentachlorobiphenyl (89)	2	2	2.9E-04	1.7E-04	0	1	1.8E-03	1.8E-03					0	1	8.3E-04	8.3E-04
2,2',3,4',5-Pentachlorobiphenyl (90)	2	2	2.0E-01	1.2E-01	1	1	5.9E-01	5.9E-01					2	2	7.0E-01	5.2E-01
2,2',3,5,5'-Pentachlorobiphenyl (92)	2	2	3.4E-02	1.9E-02	1	1	1.1E-01	1.1E-01					2	2	1.4E-01	1.1E-01
2,2',3,5,6-Pentachlorobiphenyl (93)	2	2	2.7E-03	1.5E-03	1	1	7.1E-01	7.1E-01					2	2	6.5E-01	5.4E-01
2,2',3,5',6-Pentachlorobiphenyl (95)	1	2	9.2E-02	4.9E-02			0.0E+00	0.0E+00							0.0E+00	0.0E+00

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TABLE J-6

SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR EMERGING INSECT/SWALLOW STOMACH CONTENTS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	INSECT[a]				GREYSTONE SEDIMENT[b]				ALLENDALE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,3,3',4,4'-Pentachlorobiphenyl (105)	2	2	8.6E-02	5.0E-02	1	1	2.1E-01	2.1E-01					2	2	2.2E-01	1.6E-01
2,3,3',4,5-Pentachlorobiphenyl (106)	2	2	2.2E-02	1.3E-02	1	1	4.9E-02	4.9E-02					2	2	7.4E-02	5.2E-02
2,3,3',4',5'-Pentachlorobiphenyl (108)	2	2	6.3E-03	3.5E-03	1	1	2.9E-02	2.9E-02					2	2	2.9E-02	2.0E-02
2,3,3',4',6-Pentachlorobiphenyl (110)	2	2	1.7E-01	9.3E-02	1	1	1.3E+00	1.3E+00					2	2	1.1E+00	8.9E-01
2,3,4,4',5-Pentachlorobiphenyl (114)	2	2	7.8E-03	4.5E-03	1	1	9.6E-03	9.6E-03					1	1	1.1E-02	1.1E-02
2,3',4,4',5-Pentachlorobiphenyl (118)	2	2	2.8E-01	1.6E-01	1	1	6.6E-01	6.6E-01					2	2	8.9E-01	6.3E-01
3,3',4,4',5-Pentachlorobiphenyl (126)	2	2	1.9E-03	1.1E-03	1	1	1.1E-02	1.1E-02					1	2	5.0E-03	3.4E-03
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	2	2	9.5E-02	5.4E-02	1	1	2.2E-01	2.2E-01					2	2	2.3E-01	1.6E-01
2,2',3,3',4,5-Hexachlorobiphenyl (129)	2	2	5.2E-01	3.0E-01	1	1	9.5E-01	9.5E-01					2	2	1.1E+00	7.3E-01
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	2	2	5.3E-02	2.9E-02	1	1	6.9E-02	6.9E-02					2	2	8.7E-02	5.8E-02
2,2',3,3',4,6-Hexachlorobiphenyl (131)	2	2	3.4E-03	1.9E-03	1	1	1.6E-02	1.6E-02					2	2	1.7E-02	1.2E-02
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	2	2	3.6E-02	2.0E-02	1	1	4.5E-01	4.5E-01					1	2	2.1E-01	1.0E-01
2,2',3,3',5,6-Hexachlorobiphenyl (134)	1	2	1.9E-02	1.0E-02	1	1	6.4E-02	6.4E-02					2	2	7.7E-02	5.5E-02
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	2	2	4.6E-02	2.7E-02	1	1	2.2E-01	2.2E-01					2	2	2.8E-01	1.9E-01
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	1	2	6.6E-03	4.0E-03	1	1	1.4E-01	1.4E-01					2	2	1.6E-01	1.2E-01
2,2',3,4,4',5-Hexachlorobiphenyl (137)	2	2	2.6E-02	1.4E-02	1	1	1.2E-01	1.2E-01					2	2	1.4E-01	9.0E-02
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	2	2	2.7E-02	1.5E-02	1	1	1.1E-01	1.1E-01					2	2	1.3E-01	8.3E-02
2,2',3,4,5',6-Hexachlorobiphenyl (144)	2	2	9.1E-03	5.2E-03	0	1	1.8E-03	1.8E-03					0	1	8.3E-04	8.3E-04
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	2	2	1.1E-01	6.4E-02	1	1	6.6E-02	6.6E-02					2	2	6.3E-02	3.9E-02
2,2',3,4',5,6-Hexachlorobiphenyl (147)	2	2	1.3E-01	7.4E-02	1	1	6.0E-01	6.0E-01					2	2	6.9E-01	4.7E-01
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2	2	5.3E-01	3.1E-01	1	1	2.6E-01	2.6E-01					2	2	4.1E-01	2.5E-01
2,3,3',4,4',5-Hexachlorobiphenyl (156)	2	2	1.0E-01	5.7E-02	1	1	9.6E-02	9.6E-02					2	2	9.7E-02	6.7E-02
2,3,3',4,4',6-Hexachlorobiphenyl (158)	2	2	2.7E-02	1.6E-02	1	1	8.2E-02	8.2E-02					1	2	2.7E-02	1.4E-02
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	2	2	1.3E-02	7.5E-03	1	1	3.9E-02	3.9E-02					2	2	3.7E-02	2.6E-02
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	2	2	6.5E-03	6.0E-03	0	1	1.8E-03	1.8E-03					0	1	8.3E-04	8.3E-04
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	2	2	8.7E-02	5.1E-02	1	1	1.6E-01	1.6E-01					2	2	1.6E-01	1.3E-01
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	2	2	7.1E-03	4.4E-03	1	1	4.9E-02	4.9E-02					2	2	5.1E-02	4.0E-02
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	2	2	1.6E-02	1.1E-02	1	1	1.3E-02	1.3E-02					2	2	1.3E-02	9.9E-03
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	2	2	3.6E-02	2.5E-02	1	1	1.7E-01	1.7E-01					2	2	1.6E-01	1.4E-01
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	1	2	7.0E-03	4.7E-03	1	1	3.0E-03	3.0E-03					1	1	4.0E-03	4.0E-03
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	2	2	1.3E-03	8.6E-04	1	1	1.6E-02	1.6E-02					2	2	1.9E-02	1.5E-02

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TABLE J-6
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS															
	INSECT[a]				GREYSTONE SEDIMENT[b]				ALLENDALE SEDIMENT[b]				LYMAN MILL SEDIMENT[b]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	2	2	2.3E-02	1.5E-02	1	1	7.2E-02	7.2E-02					2	2	7.4E-02	6.1E-02
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	2	2	1.1E-02	8.8E-03	1	1	1.3E-02	1.3E-02					2	2	2.2E-02	1.6E-02
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	2	2	1.1E-01	6.9E-02	1	1	1.1E-01	1.1E-01					2	2	1.3E-01	9.7E-02
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	2	2	1.4E-04	1.3E-04	0	1	3.6E-03	3.6E-03					0	1	1.7E-03	1.7E-03
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	2	2	7.9E-05	5.8E-05	0	1	3.6E-03	3.6E-03					0	1	1.7E-03	1.7E-03
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	2	2	9.0E-02	6.5E-02	1	1	5.7E-02	5.7E-02					2	2	8.8E-02	6.5E-02
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	2	2	5.2E-03	3.1E-03	1	1	3.6E-03	3.6E-03					2	2	4.1E-03	2.9E-03
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	2	2	2.0E-02	1.1E-02	1	1	1.7E-02	1.7E-02					2	2	2.3E-02	1.7E-02
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2	2	1.1E-03	6.5E-04	1	1	3.2E-03	3.2E-03					2	2	3.7E-03	2.6E-03
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	2	2	3.2E-02	2.1E-02	1	1	1.8E-02	1.8E-02					2	2	3.8E-02	2.7E-02
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	2	2	6.1E-03	4.2E-03	1	1	1.1E-02	1.1E-02					2	2	1.6E-02	1.4E-02
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	2	2	1.1E-02	9.2E-03	1	1	1.2E-02	1.2E-02					2	2	2.9E-02	2.2E-02
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	2	2	1.4E-03	1.4E-03	1	1	5.8E-04	5.8E-04					2	2	6.4E-04	5.9E-04
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	2	2	9.5E-02	8.5E-02	1	1	5.7E-02	5.7E-02					2	2	1.5E-01	1.1E-01
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	2	2	9.5E-02	8.5E-02	1	1	3.6E-03	3.6E-03					2	2	1.1E-02	7.3E-03
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	2	2	4.9E-03	4.6E-03	1	1	5.2E-03	5.2E-03					2	2	6.4E-03	6.1E-03
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	2	2	5.7E-02	5.1E-02	1	1	1.8E-02	1.8E-02					2	2	4.9E-02	3.3E-02
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	2	2	2.2E-03	1.6E-03	1	1	1.1E-03	1.1E-03					2	2	2.2E-03	1.6E-03
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	2	2	1.3E-01	1.0E-01	1	1	8.6E-02	8.6E-02					2	2	2.3E-01	1.6E-01
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	2	2	6.0E-03	4.0E-03	1	1	5.1E-03	5.1E-03					2	2	1.7E-02	1.1E-02
Decachlorobiphenyl (209)	1	2	6.9E-02	3.6E-02	1	1	8.9E-02	8.9E-02					2	2	2.8E-01	1.9E-01
PCB Congeners, Total	2	2	4.2E+00	2.5E+00	1	1	1.1E+01	1.1E+01					2	2	1.4E+01	1.1E+01
Toxicity Equivalency (PCB)	2	2	3.4E-04	2.2E-04	1	1	1.2E-03	1.2E-03					2	2	1.7E-04	8.5E-05
Toxicity Equivalency (PCB) - Birds	2	2	1.1E-03	7.6E-04	1	1	1.7E-03	1.7E-03	2	2	7.4E-04	7.4E-04	3	3	2.1E-03	1.4E-03
Toxicity Equivalency (PCB) - Fish	2	2	1.5E-05	9.1E-06	1	1	6.1E-05	6.1E-05	2	2	1.5E-06	1.5E-06	3	3	3.0E-05	1.7E-05
Toxicity Equivalency (PCB) - Mammals	2	2	3.4E-04	2.2E-04	1	1	1.2E-03	1.2E-03	2	2	1.5E-06	1.5E-06	3	3	5.7E-04	3.1E-04

Notes:

a. Invertebrate tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. Sediment concentrations are expressed on a carbon normalized basis (i.e., mg/kg_{oc}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

c. BSAFs are expressed on a lipid- and carbon-normalized basis (i.e., kg_{oc}/kg_{lip}). BSAF statistics based on paired invertebrate and Exposure Area average sediment concentration sample sets (see Table J-7).

All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

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TABLE J-6

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Baseline Ecological Risk Assessment - Interim Final
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PARAMETER	NORMALIZED MEDIA CONCENTRATIONS							
	MANTON POND SEDIMENT[b]				STUDY AREA BSAFs[c]			
	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
HCX	3	3	6.3E-03	5.7E-03	2.4E+00	6.5E-01	1.2E+00	166%
2,3,7,8-TCDD	3	3	2.7E-02	2.2E-02	1.3E+00	3.0E-01	1.8E-01	142%
1,2,3,4,7,8-HxCDD	2	3	2.4E-05	1.4E-05	5.8E+00	1.1E+00	4.1E+00	180%
1,2,3,6,7,8-HxCDD	3	3	2.9E-04	1.3E-04	4.7E-01	1.9E-01	1.6E-02	67%
1,2,3,7,8,9-HxCDD	3	3	1.5E-04	8.3E-05	2.0E+00	3.4E-01	4.6E-01	199%
1,2,3,4,6,7,8-HpCDD	3	3	1.5E-02	7.2E-03	2.1E-01	8.5E-02	5.9E-03	91%
OCDD	3	3	2.9E-01	1.2E-01	1.1E-01	3.1E-02	1.3E-03	116%
2,3,7,8-TCDF	3	3	2.7E-04	2.0E-04	2.6E-01	1.2E-01	4.1E-03	52%
1,2,3,7,8-PeCDF	1	3	2.9E-05	1.2E-05	1.1E+01	1.9E+00	1.5E+01	197%
2,3,4,7,8-PeCDF	3	3	6.5E-05	4.3E-05	8.6E+00	1.4E+00	8.6E+00	207%
1,2,3,4,7,8-HxCDF	2	3	2.3E-04	1.0E-04	2.8E+00	4.4E-01	9.1E-01	218%
1,2,3,6,7,8-HxCDF	1	3	1.1E-04	4.6E-05	4.0E+00	6.4E-01	1.8E+00	213%
2,3,4,6,7,8-HxCDF	3	3	1.7E-04	8.3E-05	3.6E+00	6.7E-01	1.5E+00	183%
1,2,3,7,8,9-HxCDF	2	3	1.3E-05	7.3E-06	3.3E+01	5.4E+00	1.3E+02	208%
1,2,3,4,6,7,8-HpCDF	3	3	5.6E-03	2.4E-03	1.3E-01	3.7E-02	1.6E-03	106%
OCDF	3	3	3.2E-02	1.1E-02	9.6E-03	5.8E-03	8.1E-06	49%
Total TCDD	3	3	2.7E-02	2.2E-02	7.8E-01	2.6E-01	7.1E-02	103%
Total HxCDD	3	3	2.3E-03	9.8E-04	1.9E-01	7.0E-02	3.8E-03	88%
Total HpCDD	3	3	3.0E-02	1.5E-02	1.4E-01	6.2E-02	2.7E-03	83%
Total TCDF	3	3	2.5E-03	1.9E-03	1.1E-01	3.6E-02	1.5E-03	107%
Total PeCDF	3	3	1.8E-03	1.2E-03	8.4E-02	4.7E-02	7.2E-04	57%
Total HxCDF	2	3	6.3E-03	2.7E-03	1.8E-01	4.4E-02	4.4E-03	150%
Total HpCDF	3	3	2.5E-02	9.0E-03	3.6E-02	1.4E-02	1.2E-04	79%
Toxicity Equivalency - Birds	3	3	2.7E-02	2.3E-02	6.3E-01	2.3E-01	4.6E-02	94%
Toxicity Equivalency - Fish	3	3	2.7E-02	2.2E-02	7.9E-01	2.7E-01	7.7E-02	103%
Toxicity Equivalency - Mammals	3	3	2.7E-02	2.3E-02	6.8E-01	2.5E-01	5.9E-02	98%
2-Monochlorobiphenyl (1)					4.8E-01	3.7E-01	2.8E-02	45%
4-Chlorobiphenyl (3)					4.5E-01	2.8E-01	5.8E-02	87%
2,2'-Dichlorobiphenyl (4)					3.1E-01	2.1E-01	1.8E-02	64%
2,2',3'-Trichlorobiphenyl (16)					7.6E-02	5.8E-02	6.8E-04	45%
2,2',4-Trichlorobiphenyl (17)					7.2E-02	6.0E-02	3.1E-04	29%
2,2',5-Trichlorobiphenyl (18)					1.9E-01	1.5E-01	4.4E-03	46%
2,2',6-Trichlorobiphenyl (19)					9.6E-02	6.7E-02	1.7E-03	62%

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PARAMETER	NORMALIZED MEDIA CONCENTRATIONS						
	MANTON POND SEDIMENT[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection	Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,3,3'-Trichlorobiphenyl (20)				1.3E-01	8.3E-02	4.1E-03	78%
2,3,4'-Trichlorobiphenyl (22)				7.4E-02	5.8E-02	4.8E-04	38%
2,3',4-Trichlorobiphenyl (25)				1.2E-01	7.1E-02	5.0E-03	99%
2,3',5-Trichlorobiphenyl (26)				1.0E-01	5.9E-02	3.3E-03	97%
2,4',5-Trichlorobiphenyl (31)				1.5E-01	9.0E-02	6.9E-03	92%
2,4',6-Trichlorobiphenyl (32)				1.3E-01	9.3E-02	3.0E-03	58%
2,2',3,3'-Tetrachlorobiphenyl (40)				5.1E-02	4.3E-02	1.3E-04	27%
2,2',3,4'-Tetrachlorobiphenyl (42)				1.1E-01	7.7E-02	1.8E-03	54%
2,2',3,5-Tetrachlorobiphenyl (43)				5.6E-01	3.0E-01	1.4E-01	123%
2,2',3,5'-Tetrachlorobiphenyl (44)				1.3E-01	8.4E-02	4.4E-03	79%
2,2',3,6-Tetrachlorobiphenyl (45)				5.8E-02	5.2E-02	8.0E-05	17%
2,2',3,6'-Tetrachlorobiphenyl (46)				5.1E-02	3.5E-02	5.2E-04	65%
2,2',4,5-Tetrachlorobiphenyl (48)				8.7E-02	6.1E-02	1.4E-03	62%
2,2',4,5'-Tetrachlorobiphenyl (49)				2.2E-01	1.4E-01	1.1E-02	71%
2,2',4,6-Tetrachlorobiphenyl (50)				5.3E-02	3.1E-02	9.7E-04	99%
2,3,3',4'-Tetrachlorobiphenyl (56)				9.7E-02	6.4E-02	2.2E-03	73%
2,3,3',6-Tetrachlorobiphenyl (59)				1.8E-01	1.3E-01	5.3E-03	57%
2,3,4,4'-Tetrachlorobiphenyl (60)				5.7E-01	4.9E-01	1.5E-02	25%
2,3,4,5-Tetrachlorobiphenyl (61)				3.1E-01	1.9E-01	3.2E-02	95%
2,3,4',5-Tetrachlorobiphenyl (63)				1.2E+00	8.5E-01	2.9E-01	63%
2,3,4',6-Tetrachlorobiphenyl (64)				1.9E-01	1.3E-01	7.3E-03	65%
2,3',4,4'-Tetrachlorobiphenyl (66)				1.9E-01	1.2E-01	1.0E-02	84%
3,3',4,4'-Tetrachlorobiphenyl (77)				5.2E-01	3.8E-01	4.1E-02	53%
3,4,4',5-Tetrachlorobiphenyl (81)				2.7E+00	2.3E+00	2.7E-01	22%
2,2',3,3',4-Pentachlorobiphenyl (82)				1.5E-01	8.4E-02	8.8E-03	112%
2,2',3,3',5-Pentachlorobiphenyl (83)				6.8E-01	3.8E-01	1.8E-01	111%
2,2',3,3',6-Pentachlorobiphenyl (84)				6.0E-02	3.3E-02	1.4E-03	113%
2,2',3,4,4'-Pentachlorobiphenyl (85)				7.0E-01	3.8E-01	2.1E-01	120%
2,2',3,4,5-Pentachlorobiphenyl (86)				2.1E-01	1.1E-01	1.7E-02	114%
2,2',3,4,6-Pentachlorobiphenyl (88)				1.3E-01	7.1E-02	6.8E-03	116%
2,2',3,4,6'-Pentachlorobiphenyl (89)				3.5E-01	1.9E-01	5.0E-02	118%
2,2',3,4',5-Pentachlorobiphenyl (90)				3.9E-01	2.2E-01	6.0E-02	113%
2,2',3,5,5'-Pentachlorobiphenyl (92)				3.2E-01	1.8E-01	4.2E-02	114%
2,2',3,5,6-Pentachlorobiphenyl (93)				5.0E-03	2.7E-03	1.0E-05	117%
2,2',3,5',6-Pentachlorobiphenyl (95)							

US EPA ARCHIVE DOCUMENT

SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR EMERGING INSECT/SWALLOW STOMACH CONTENTS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	NORMALIZED MEDIA CONCENTRATIONS						
	MANTON POND SEDIMENT[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection	Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,3,3',4,4'-Pentachlorobiphenyl (105)				5.6E-01	3.1E-01	1.2E-01	113%
2,3,3',4,5-Pentachlorobiphenyl (106)				4.2E-01	2.5E-01	6.1E-02	101%
2,3,3',4',5'-Pentachlorobiphenyl (108)				3.1E-01	1.7E-01	4.1E-02	121%
2,3,3',4',6-Pentachlorobiphenyl (110)				1.9E-01	1.0E-01	1.5E-02	121%
2,3,4,4',5-Pentachlorobiphenyl (114)				6.9E-01	4.1E-01	1.6E-01	98%
2,3',4,4',5-Pentachlorobiphenyl (118)				4.4E-01	2.5E-01	7.5E-02	110%
3,3',4,4',5-Pentachlorobiphenyl (126)				5.6E-01	2.9E-01	1.5E-01	131%
2,2',3,3',4,4'-Hexachlorobiphenyl (128)				5.9E-01	3.2E-01	1.4E-01	115%
2,2',3,3',4,5-Hexachlorobiphenyl (129)				7.1E-01	3.9E-01	2.0E-01	114%
2,2',3,3',4,5'-Hexachlorobiphenyl (130)				9.1E-01	5.0E-01	3.4E-01	115%
2,2',3,3',4,6-Hexachlorobiphenyl (131)				2.9E-01	1.6E-01	3.3E-02	115%
2,2',3,3',4,6'-Hexachlorobiphenyl (132)				3.4E-01	1.8E-01	5.4E-02	132%
2,2',3,3',5,6-Hexachlorobiphenyl (134)				3.5E-01	1.8E-01	5.6E-02	130%
2,2',3,3',5,6'-Hexachlorobiphenyl (135)				2.4E-01	1.4E-01	2.1E-02	103%
2,2',3,3',6,6'-Hexachlorobiphenyl (136)				5.5E-02	3.2E-02	1.0E-03	99%
2,2',3,4,4',5-Hexachlorobiphenyl (137)				2.9E-01	1.5E-01	3.7E-02	129%
2,2',3,4,5,5'-Hexachlorobiphenyl (141)				3.2E-01	1.8E-01	3.9E-02	110%
2,2',3,4,5',6-Hexachlorobiphenyl (144)				1.1E+01	5.9E+00	5.2E+01	123%
2,2',3,4',5,5'-Hexachlorobiphenyl (146)				2.8E+00	1.5E+00	3.3E+00	119%
2,2',3,4',5,6-Hexachlorobiphenyl (147)				2.7E-01	1.5E-01	2.9E-02	112%
2,2',4,4',5,5'-Hexachlorobiphenyl (153)				2.1E+00	1.2E+00	1.6E+00	103%
2,3,3',4,4',5-Hexachlorobiphenyl (156)				1.5E+00	8.3E-01	1.0E+00	121%
2,3,3',4,4',6-Hexachlorobiphenyl (158)				2.0E+00	1.0E+00	1.9E+00	135%
2,3',4,4',5,5'-Hexachlorobiphenyl (167)				5.1E-01	2.8E-01	1.1E-01	118%
3,3',4,4',5,5'-Hexachlorobiphenyl (169)				6.7E+00	5.2E+00	4.5E+00	41%
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)				6.8E-01	3.8E-01	1.7E-01	107%
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)				1.8E-01	1.1E-01	9.8E-03	93%
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)				1.7E+00	1.1E+00	7.0E-01	79%
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)				2.5E-01	1.7E-01	1.3E-02	68%
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)				2.3E+00	1.5E+00	1.5E+00	82%
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)				8.5E-02	5.5E-02	1.8E-03	78%

US EPA ARCHIVE DOCUMENT

TABLE J-6
SITE-SPECIFIC BIOTA-SEDIMENT ACCUMULATION FACTORS FOR EMERGING INSECT/SWALLOW STOMACH CONTENTS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	NORMALIZED MEDIA CONCENTRATIONS						
	MANTON POND SEDIMENT[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection	Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)				3.7E-01	2.3E-01	3.9E-02	84%
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)				6.9E-01	6.1E-01	1.5E-02	20%
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)				1.1E+00	7.0E-01	3.7E-01	87%
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)				8.2E-02	5.7E-02	1.3E-03	62%
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)				2.2E-02	2.2E-02	3.2E-07	3%
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)				1.4E+00	1.0E+00	2.2E-01	45%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)				1.8E+00	1.0E+00	1.1E+00	102%
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)				1.2E+00	6.7E-01	5.2E-01	108%
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)				4.1E-01	2.5E-01	5.7E-02	97%
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)				1.2E+00	8.8E-01	1.8E-01	48%
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)				4.5E-01	3.3E-01	3.0E-02	52%
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)				5.9E-01	5.6E-01	2.4E-03	9%
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)				2.4E+00	2.3E+00	7.2E-03	4%
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)				1.3E+00	1.1E+00	9.2E-02	28%
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)				2.1E+01	1.7E+01	3.0E+01	33%
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)				9.5E-01	8.3E-01	3.0E-02	21%
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)				2.5E+00	2.1E+00	3.1E-01	26%
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)				1.4E+00	1.2E+00	1.0E-01	28%
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl				9.2E-01	8.6E-01	7.4E-03	10%
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl				5.4E-01	4.5E-01	1.5E-02	27%
Decachlorobiphenyl (209)				3.6E-01	2.0E-01	5.0E-02	113%
PCB Congeners, Total				3.9E-01	2.3E-01	5.4E-02	100%
Toxicity Equivalency (PCB)				4.0E+00	2.0E+00	7.7E+00	136%
Toxicity Equivalency (PCB) - Birds				7.4E-01	5.1E-01	1.0E-01	63%
Toxicity Equivalency (PCB) - Fish				8.8E-01	4.7E-01	3.3E-01	123%
Toxicity Equivalency (PCB) - Mammals				1.1E+00	5.9E-01	5.3E-01	122%

Notes:
a. Invertebrate tissue concentrations are expre
b. Sediment concentrations are expressed on
c. BSAFs are expressed on a lipid- and carbor
(see Table J-7).
All data (including organic carbon fraction and l

Prepared by: SGD
Checked by: NAR

TABLE J-7

CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND							ALLENDALE POND				
PARAMETER	GREYSTONE AVERAGE SEDIMENT[a]	Greystone Pond Diet 6/19/2000	BSAF[b]	DIET-GP 6/9/2001	BSAF	GMP-EI-5001-5005-0000-01 7/20/2001	BSAF	ALLENDALE AVERAGE SEDIMENT[a]	Allendale Pond Diet 6/19/2000	BSAF	DIET-AP 6/12/2001	BSAF
HCX	5.93E-04	1.28E-05 UJ	2.2E-02	1.23E-03 UJ	2.1E+00	1.40E-03 U	2.4E+00	7.58E-01	2.20E-05 UJ	2.9E-05	4.76E-03 J	6.3E-03
2,3,7,8-TCDD	1.53E-04	8.33E-06 U	5.4E-02	2.01E-04 J	1.3E+00	5.00E-05 J	3.3E-01	1.40E-01	2.69E-03	1.9E-02	8.23E-03 J	5.9E-02
1,2,3,4,7,8-HxCDD	8.80E-05	6.74E-06 U	7.7E-02	1.84E-05 J	2.1E-01	6.74E-06 J	7.7E-02	1.82E-04	1.07E-05 U	5.9E-02	5.31E-05 J	2.9E-01
1,2,3,6,7,8-HxCDD	3.13E-04	2.84E-05	9.1E-02	6.56E-05 J	2.1E-01	2.13E-05 J	6.8E-02	5.91E-04	5.57E-05	9.4E-02	2.76E-04 J	4.7E-01
1,2,3,7,8,9-HxCDD	2.55E-04	1.40E-05 UJ	5.5E-02	1.28E-05 J	5.0E-02	8.51E-06 J	3.3E-02	5.52E-04	2.37E-05 U	4.3E-02	6.89E-05 J	1.2E-01
1,2,3,4,6,7,8-HpCDD	5.29E-03	1.81E-04 U	3.4E-02	1.07E-03 J	2.0E-01	1.09E-04 J	2.1E-02	9.91E-03	3.07E-04 U	3.1E-02	2.07E-03 J	2.1E-01
OCDD	3.74E-02	4.30E-04 U	1.2E-02	2.20E-03 J	5.9E-02	2.84E-04 J	7.6E-03	6.46E-02	7.34E-04 U	1.1E-02	6.93E-03 J	1.1E-01
2,3,7,8-TCDF	2.49E-04	2.48E-05 J	1.0E-01	1.74E-05 J	7.0E-02	2.73E-05 EJ	1.1E-01	3.56E-04	3.24E-05 J	9.1E-02	4.22E-05 UJ$	1.2E-01
1,2,3,7,8-PeCDF	4.88E-05	6.21E-06 U	1.3E-01	1.33E-05 UJ	2.7E-01	1.03E-05 J	2.1E-01	2.05E-04	1.15E-05 U	5.6E-02	6.85E-05 J	3.3E-01
2,3,4,7,8-PeCDF	1.39E-04	4.61E-06 U	3.3E-02	4.61E-06 J	3.3E-02	1.75E-04 U	1.3E+00	1.71E-04	8.10E-06 U	4.7E-02	7.16E-05 J	4.2E-01
1,2,3,4,7,8-HxCDF	2.95E-04	6.74E-06 U	2.3E-02	1.13E-05 UJ	3.9E-02	1.45E-05 J	4.9E-02	3.48E-04	1.51E-05 U	4.3E-02	1.06E-04 J	3.0E-01
1,2,3,6,7,8-HxCDF	2.04E-04	4.79E-06 U	2.3E-02	1.45E-05 J	7.1E-02	7.09E-06 J	3.5E-02	2.71E-04	7.91E-06 U	2.9E-02	9.57E-05 J	3.5E-01
2,3,4,6,7,8-HxCDF	2.09E-04	9.22E-06 U	4.4E-02	9.22E-06 UJ	4.4E-02	1.75E-04 U	8.4E-01	2.09E-04	1.43E-05 U	6.8E-02	8.51E-05 J	4.1E-01
1,2,3,7,8,9-HxCDF	3.99E-05	1.52E-05 UJ	3.8E-01	1.45E-05 UJ	3.6E-01	1.75E-04 U	4.4E+00	1.13E-04	2.64E-05 UJ	2.3E-01	5.46E-05 J	4.8E-01
1,2,3,4,6,7,8-HpCDF	3.74E-03	4.41E-05 U	1.2E-02	1.49E-04 J	4.0E-02	2.87E-05 J	7.7E-03	3.69E-03	8.12E-05 U	2.2E-02	4.85E-04 J	1.3E-01
OCDF	3.39E-03	2.16E-05 U	6.4E-03	3.24E-05 UJ	9.6E-03	1.49E-05 J	4.4E-03	5.64E-03	5.44E-05 U	9.6E-03	2.02E-05 UJ	3.6E-03
Total TCDD	3.46E-04			2.69E-04 J	7.8E-01	6.70E-05 J	1.9E-01	1.81E-01			8.23E-03 J	4.5E-02
Total HxCDD	2.31E-03			1.51E-04 J	6.5E-02	7.77E-05 J	3.4E-02	3.80E-03			7.11E-04 J	1.9E-01
Total HpCDD	9.97E-03			1.18E-03 J	1.2E-01	1.82E-04 J	1.8E-02	2.00E-02			2.77E-03 J	1.4E-01
Total TCDF	1.79E-03			3.33E-05 J	1.9E-02	2.73E-05 J	1.5E-02	3.97E-03			1.15E-04 J	2.9E-02
Total PeCDF	2.44E-03			8.12E-05 J	3.3E-02	5.57E-05 J	2.3E-02	4.60E-03			3.59E-04 J	7.8E-02
Total HxCDF	4.23E-03			3.19E-05 UJ	7.5E-03	6.24E-05 J	1.5E-02	5.90E-03			1.05E-03 J	1.8E-01
Total HpCDF	7.28E-03			9.20E-05 UJ	1.3E-02	3.79E-05 J	5.2E-03	7.24E-03			2.60E-04 UJ	3.6E-02
Toxicity Equivalency - Birds	7.45E-04	5.21E-05	7.0E-02	2.47E-04	3.3E-01	4.68E-04	6.3E-01	1.37E-01	2.75E-03	2.0E-02	8.44E-03	6.2E-02
Toxicity Equivalency - Fish	4.53E-04	2.78E-05	6.1E-02	2.34E-04	5.2E-01	3.58E-04	7.9E-01	1.37E-01	2.72E-03	2.0E-02	8.40E-03	6.2E-02
Toxicity Equivalency - Mammals	5.29E-04	3.18E-05	6.0E-02	2.45E-04	4.6E-01	3.62E-04	6.8E-01	1.41E-01	2.73E-03	1.9E-02	8.40E-03	6.0E-02
2-Monochlorobiphenyl (1)	1.57E-03					7.59E-04 J	4.8E-01					
4-Chlorobiphenyl (3)	1.00E-03					4.48E-04 J	4.5E-01					
2,2'-Dichlorobiphenyl (4)	7.36E-03					8.55E-04 U	1.2E-01					
2,2',3'-Trichlorobiphenyl (16)	2.11E-02					8.34E-04 JC	3.9E-02					
2,2',4-Trichlorobiphenyl (17)	2.13E-02					1.01E-03 J	4.8E-02					
2,2',5-Trichlorobiphenyl (18)	2.05E-02					2.02E-03 JC	9.9E-02					
2,2',6-Trichlorobiphenyl (19)	5.46E-03					2.05E-04 J	3.8E-02					
2,3,3'-Trichlorobiphenyl (20)	1.07E-01					3.96E-03 JC	3.7E-02					
2,3,4'-Trichlorobiphenyl (22)	3.28E-02					1.40E-03 U	4.3E-02					
2,3',4-Trichlorobiphenyl (25)	4.88E-03					1.04E-04 J	2.1E-02					
2,3',5-Trichlorobiphenyl (26)	1.15E-02					2.14E-04 JC	1.9E-02					
2,4',5-Trichlorobiphenyl (31)	5.24E-02					1.64E-03 J	3.1E-02					
2,4',6-Trichlorobiphenyl (32)	9.60E-03					5.26E-04 J	5.5E-02					
2,2',3,3'-Tetrachlorobiphenyl (40)	5.13E-02					1.76E-03 JC	3.4E-02					
2,2',3,4'-Tetrachlorobiphenyl (42)	2.32E-02					1.10E-03 J	4.7E-02					
2,2',3,5-Tetrachlorobiphenyl (43)	2.54E-01					1.02E-02 C	4.0E-02					
2,2',3,5'-Tetrachlorobiphenyl (44)	1.19E-01					4.41E-03 JC	3.7E-02					
2,2',3,6-Tetrachlorobiphenyl (45)	5.67E-03					2.57E-04 JC	4.5E-02					
2,2',3,6'-Tetrachlorobiphenyl (46)	4.46E-03					8.37E-05 J	1.9E-02					

TABLE J-7
CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND							ALLENDALE POND				
PARAMETER	GREYSTONE AVERAGE SEDIMENT[a]	Greystone Pond Diet 6/19/2000	BSAF[b]	DIET-GP 6/9/2001	BSAF	GMP-EI-5001-5005-0000-01 7/20/2001	BSAF	ALLENDALE AVERAGE SEDIMENT[a]	Allendale Pond Diet 6/19/2000	BSAF	DIET-AP 6/12/2001	BSAF
2,2',4,5-Tetrachlorobiphenyl (48)	1.03E-02					3.52E-04 J	3.4E-02					
2,2',4,5'-Tetrachlorobiphenyl (49)	6.61E-02					4.75E-03 JC	7.2E-02					
2,2',4,6-Tetrachlorobiphenyl (50)	1.27E-02					1.20E-04 JC	9.4E-03					
2,3,3',4'-Tetrachlorobiphenyl (56)	3.71E-02					1.14E-03 J	3.1E-02					
2,3,3',6-Tetrachlorobiphenyl (59)	5.39E-03					4.11E-04 JC	7.6E-02					
2,3,4,4'-Tetrachlorobiphenyl (60)	5.04E-03					2.02E-03 J	4.0E-01					
2,3,4,5-Tetrachlorobiphenyl (61)	2.28E-01					1.41E-02 C	6.2E-02					
2,3,4',5-Tetrachlorobiphenyl (63)	1.78E-03					8.37E-04 J	4.7E-01					
2,3,4',6-Tetrachlorobiphenyl (64)	3.83E-02					2.69E-03 J	7.0E-02					
2,3',4,4'-Tetrachlorobiphenyl (66)	1.28E-01					6.25E-03 J	4.9E-02					
3,3',4,4'-Tetrachlorobiphenyl (77)	7.62E-03					1.81E-03 J	2.4E-01	1.47E-02				
3,4,4',5-Tetrachlorobiphenyl (81)	1.78E-03					3.50E-03 U	2.0E+00					
2,2',3,3',4-Pentachlorobiphenyl (82)	1.25E-01					2.22E-03 J	1.8E-02					
2,2',3,3',5-Pentachlorobiphenyl (83)	2.88E-01					2.34E-02 C	8.1E-02					
2,2',3,3',6-Pentachlorobiphenyl (84)	2.73E-01					1.84E-03 J	6.7E-03					
2,2',3,4,4'-Pentachlorobiphenyl (85)	1.41E-01					8.14E-03 C	5.8E-02					
2,2',3,4,5-Pentachlorobiphenyl (86)	6.18E-01					1.36E-02 C	2.2E-02					
2,2',3,4,6-Pentachlorobiphenyl (88)	1.18E-01					1.49E-03 JC	1.3E-02					
2,2',3,4,6'-Pentachlorobiphenyl (89)	1.78E-03					5.50E-05 J	3.1E-02					
2,2',3,4',5-Pentachlorobiphenyl (90)	5.88E-01					2.54E-02 C	4.3E-02					
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.14E-01					3.94E-03 J	3.4E-02					
2,2',3,5,6-Pentachlorobiphenyl (93)	7.13E-01					3.30E-04 JC	4.6E-04					
2,2',3,5',6-Pentachlorobiphenyl (95)	0.00E+00					4.88E-03 U						
2,3,3',4,4'-Pentachlorobiphenyl (105)	2.07E-01					1.29E-02	6.2E-02					
2,3,3',4,5-Pentachlorobiphenyl (106)	4.88E-02					3.47E-03 JC	7.1E-02					
2,3,3',4',5'-Pentachlorobiphenyl (108)	2.93E-02					7.26E-04 JC	2.5E-02					
2,3,3',4',6-Pentachlorobiphenyl (110)	1.27E+00					1.89E-02 C	1.5E-02					
2,3,4,4',5-Pentachlorobiphenyl (114)	9.56E-03					1.19E-03 J	1.2E-01					
2,3',4,4',5-Pentachlorobiphenyl (118)	6.63E-01					3.67E-02	5.5E-02					
3,3',4,4',5-Pentachlorobiphenyl (126)	1.08E-02					2.28E-04 J	2.1E-02					
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	2.18E-01					1.30E-02 C	6.0E-02					
2,2',3,3',4,5-Hexachlorobiphenyl (129)	9.54E-01					7.26E-02 C	7.6E-02					
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	6.85E-02					6.30E-03 J	9.2E-02					
2,2',3,3',4,6-Hexachlorobiphenyl (131)	1.59E-02					4.82E-04 J	3.0E-02					
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	4.45E-01					5.26E-03 J	1.2E-02					
2,2',3,3',5,6-Hexachlorobiphenyl (134)	6.41E-02					9.29E-04 JC	1.4E-02					
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	2.15E-01					8.28E-03 C	3.8E-02					
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	1.44E-01					1.40E-03 U	9.7E-03					
2,2',3,4,4',5-Hexachlorobiphenyl (137)	1.20E-01					1.58E-03 JC	1.3E-02					
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	1.12E-01					4.43E-03	4.0E-02					
2,2',3,4,5',6-Hexachlorobiphenyl (144)	1.78E-03					1.36E-03 J	7.6E-01					
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	6.59E-02					1.61E-02 C	2.4E-01					
2,2',3,4',5,6-Hexachlorobiphenyl (147)	6.04E-01					1.89E-02 C	3.1E-02					
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2.59E-01					8.41E-02 C	3.3E-01					
2,3,3',4,4',5-Hexachlorobiphenyl (156)	9.64E-02					1.18E-02 C	1.2E-01					

TABLE J-7

CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND							ALLENDALE POND				
PARAMETER	GREYSTONE AVERAGE SEDIMENT[a]	Greystone Pond Diet 6/19/2000	BSAF[b]	DIET-GP 6/9/2001	BSAF	GMP-EI-5001-5005-0000-01 7/20/2001	BSAF	ALLENDALE AVERAGE SEDIMENT[a]	Allendale Pond Diet 6/19/2000	BSAF	DIET-AP 6/12/2001	BSAF
2,3,3',4,4',6-Hexachlorobiphenyl (158)	8.23E-02					4.00E-03	4.9E-02					
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3.89E-02					1.78E-03 J	4.6E-02					
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	1.78E-03					6.55E-03 J	3.7E+00					
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	1.58E-01					1.49E-02 J	9.4E-02					
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	4.89E-02					1.80E-03 JC	3.7E-02					
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	1.26E-02					5.89E-03 J	4.7E-01					
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	1.65E-01					1.45E-02 C	8.8E-02					
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	3.02E-03					7.01E-03 U	2.3E+00					
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.64E-02					4.04E-04 J	2.5E-02					
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	7.21E-02					6.87E-03 J	9.5E-02					
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	1.30E-02					6.77E-03 J	5.2E-01					
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	1.07E-01					2.84E-02 C	2.7E-01					
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	3.56E-03					1.15E-04 J	3.2E-02					
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	3.56E-03					7.94E-05 J	2.2E-02					
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	5.65E-02					4.00E-02 J	7.1E-01					
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	3.62E-03					1.05E-03 J	2.9E-01					
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	1.75E-02					2.72E-03 J	1.6E-01					
2,3,3',4,4',5,6-Heptachlorobiphenyl (191)	3.17E-03					2.42E-04 J	7.6E-02					
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	1.84E-02					1.06E-02 J	5.8E-01					
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	1.12E-02					2.32E-03 J	2.1E-01					
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	1.19E-02					7.03E-03 J	5.9E-01					
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	5.79E-04					1.38E-03 JC	2.4E+00					
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	5.74E-02					7.51E-02 C	1.3E+00					
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	3.63E-03					7.51E-02 J	2.1E+01					
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	5.21E-03					4.94E-03 J	9.5E-01					
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	1.81E-02					4.54E-02 J	2.5E+00					
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.10E-03					1.02E-03 J	9.3E-01					
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	8.61E-02					7.96E-02	9.2E-01					
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	5.14E-03					1.89E-03 J	3.7E-01					
Decachlorobiphenyl (209)	8.95E-02					3.50E-03 U	3.9E-02					
PCB Congeners, Total	1.11E+01					7.45E-01	6.7E-02					
Toxicity Equivalency (PCB)	1.22E-03					1.00E-04	8.2E-02					
Toxicity Equivalency (PCB) - Birds	1.68E-03					4.72E-04	2.8E-01	7.37E-04				
Toxicity Equivalency (PCB) - Fish	6.07E-05					3.72E-06	6.1E-02	1.47E-06				
Toxicity Equivalency (PCB) - Mammals	1.24E-03					1.00E-04	8.1E-02	1.47E-06				

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TABLE J-7
CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND							ALLENDALE POND				
PARAMETER	GREYSTONE AVERAGE SEDIMENT[a]	Greystone Pond Diet 6/19/2000	BSAF[b]	DIET-GP 6/9/2001	BSAF	GMP-EI-5001-5005-0000-01 7/20/2001	BSAF	ALLENDALE AVERAGE SEDIMENT[a]	Allendale Pond Diet 6/19/2000	BSAF	DIET-AP 6/12/2001	BSAF

a. Average carbon-normalized sediment concentration (mg/kg_{oc}) for the exposure area. Average values are summarized in Table J-6.
b. Biota-Sediment Accumulation Factors (BSAFs) were derived as the ratio of the lipid-normalized invertebrate tissue and the Exposure Area average carbon-normalized sediment concentrations (i.e., kgoc/kglip).
All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

GMP-EI-5001-5005-0000-01 lipid content used as surrogate for DIET-GP.
LPX-EI-4006-4010-0000-01 lipid content used as surrogate for DIET-LP.
Average of GMP-EI-5001-5005-0000-01 and LPX-EI-4006-4010-0000-01 lipid content (2.66) used as surrogate for Allendale Pond Diet, DIET-AP, and MANTON FOOD.

Prepared by: SGD
Checked by: NAR

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TABLE J-7

CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND					MANTON POND		
PARAMETER	LYMAN MILL AVERAGE SEDIMENT[a]	DIET-LP 6/12/2001	BSAF	LPX-EI-4006-4010-0000-01 7/20/2001	BSAF	MANTON AVERAGE SEDIMENT[a]	MANTON FOOD 6/14/2003	BSAF
HCX	2.30E-01	8.12E-03 J	3.5E-02	6.57E-03 JK	2.9E-02	5.70E-03		
2,3,7,8-TCDD	2.86E-02	4.80E-03 J	1.7E-01	9.86E-03	3.5E-01	2.24E-02	2.62E-03	1.2E-01
1,2,3,4,7,8-HxCDD	1.65E-04	3.29E-05 J	2.0E-01	9.50E-04 U	5.8E+00	1.40E-05	3.23E-05 U	2.3E+00
1,2,3,6,7,8-HxCDD	5.46E-04	8.92E-05 J	1.6E-01	1.01E-04 J	1.9E-01	1.34E-04	3.20E-05 U	2.4E-01
1,2,3,7,8,9-HxCDD	4.75E-04	2.33E-05 J	4.9E-02	9.50E-04 U	2.0E+00	8.34E-05	3.12E-05 U	3.7E-01
1,2,3,4,6,7,8-HpCDD	1.17E-02	9.66E-04 J	8.3E-02	5.00E-04 J	4.3E-02	7.22E-03	4.13E-04 U	5.7E-02
OCDD	7.83E-02	2.05E-03 J	2.6E-02	1.26E-03 J	1.6E-02	1.17E-01	6.68E-04 U	5.7E-03
2,3,7,8-TCDF	2.66E-04	1.85E-05 UJ$	6.9E-02	7.03E-05 J	2.6E-01	2.04E-04	3.20E-05 J#	1.6E-01
1,2,3,7,8-PeCDF	8.65E-05	1.65E-05 UJ	1.9E-01	9.50E-04 U	1.1E+01	1.18E-05	3.97E-05 U	3.4E+00
2,3,4,7,8-PeCDF	1.10E-04	1.73E-05 UJ	1.6E-01	9.50E-04 U	8.6E+00	4.28E-05	3.50E-05 U	8.2E-01
1,2,3,4,7,8-HxCDF	3.40E-04	1.22E-05 UJ	3.6E-02	9.50E-04 U	2.8E+00	1.01E-04	2.29E-05 UJ	2.3E-01
1,2,3,6,7,8-HxCDF	2.40E-04	1.65E-05 J	6.9E-02	9.50E-04 U	4.0E+00	4.62E-05	2.52E-05 U	5.5E-01
2,3,4,6,7,8-HxCDF	2.64E-04	6.83E-06 J	2.6E-02	9.50E-04 U	3.6E+00	8.27E-05	2.50E-05 U	3.0E-01
1,2,3,7,8,9-HxCDF	2.87E-05	1.85E-05 UJ	6.4E-01	9.50E-04 U	3.3E+01	7.33E-06	2.88E-05 U	3.9E+00
1,2,3,4,6,7,8-HpCDF	3.14E-03	1.29E-04 J	4.1E-02	5.58E-05 J	1.8E-02	2.42E-03	6.84E-05 UJ	2.8E-02
OCDF	8.50E-03	1.43E-05 UJ	1.7E-03	5.74E-05 J	6.8E-03	1.13E-02	4.81E-05 UJ	4.3E-03
Total TCDD	3.58E-02	4.88E-03 J	1.4E-01	9.86E-03 J	2.8E-01	2.24E-02	2.62E-03 J	1.2E-01
Total HxCDD	4.47E-03	3.52E-04 J	7.9E-02	1.01E-04 J	2.3E-02	9.81E-04	3.18E-05 UJ	3.2E-02
Total HpCDD	3.04E-02	1.17E-03 J	3.8E-02	7.86E-04 J	2.6E-02	1.45E-02	5.12E-04 UJ	3.5E-02
Total TCDF	4.06E-03	8.88E-05 J	2.2E-02	7.03E-05 J	1.7E-02	1.91E-03	2.18E-04 J	1.1E-01
Total PeCDF	4.23E-03	1.13E-04 J	2.7E-02	1.55E-04 J	3.7E-02	1.17E-03	9.83E-05 UJ	8.4E-02
Total HxCDF	5.38E-03	1.44E-04 J	2.7E-02	3.65E-05 J	6.8E-03	2.68E-03	8.20E-05 UJ	3.1E-02
Total HpCDF	1.09E-02	8.84E-05 UJ	8.1E-03	1.11E-04 J	1.0E-02	9.03E-03	1.08E-04 UJ	1.2E-02
Toxicity Equivalency - Birds	2.93E-02	4.86E-03	1.7E-01	1.24E-02	4.3E-01	2.26E-02	2.65E-03	1.2E-01
Toxicity Equivalency - Fish	2.90E-02	4.86E-03	1.7E-01	1.22E-02	4.2E-01	2.25E-02	2.62E-03	1.2E-01
Toxicity Equivalency - Mammals	2.91E-02	4.86E-03	1.7E-01	1.19E-02	4.1E-01	2.26E-02	2.62E-03	1.2E-01
2-Monochlorobiphenyl (1)	1.00E-02			2.50E-03 J	2.5E-01			
4-Chlorobiphenyl (3)	2.10E-02			2.25E-03 J	1.1E-01			
2,2'-Dichlorobiphenyl (4)	1.56E-02			4.79E-03 J	3.1E-01			
2,2',3'-Trichlorobiphenyl (16)	4.24E-02			3.23E-03 JC	7.6E-02			
2,2',4-Trichlorobiphenyl (17)	4.34E-02			3.15E-03 J	7.2E-02			
2,2',5-Trichlorobiphenyl (18)	3.42E-02			6.60E-03 JC	1.9E-01			
2,2',6-Trichlorobiphenyl (19)	8.83E-03			8.48E-04 J	9.6E-02			
2,3,3'-Trichlorobiphenyl (20)	2.51E-01			3.21E-02 JC	1.3E-01			
2,3,4'-Trichlorobiphenyl (22)	6.84E-02			5.04E-03 J	7.4E-02			
2,3',4-Trichlorobiphenyl (25)	1.23E-02			1.48E-03 J	1.2E-01			
2,3',5-Trichlorobiphenyl (26)	2.68E-02			2.67E-03 JC	1.0E-01			
2,4',5-Trichlorobiphenyl (31)	1.20E-01			1.79E-02 J	1.5E-01			
2,4',6-Trichlorobiphenyl (32)	2.35E-02			3.09E-03 J	1.3E-01			
2,2',3,3'-Tetrachlorobiphenyl (40)	1.87E-01			9.47E-03 JC	5.1E-02			
2,2',3,4'-Tetrachlorobiphenyl (42)	7.10E-02			7.58E-03 J	1.1E-01			
2,2',3,5-Tetrachlorobiphenyl (43)	1.13E-01			6.35E-02 C	5.6E-01			
2,2',3,5'-Tetrachlorobiphenyl (44)	2.49E-01			3.25E-02 JC	1.3E-01			
2,2',3,6-Tetrachlorobiphenyl (45)	3.18E-02			1.84E-03 JC	5.8E-02			
2,2',3,6'-Tetrachlorobiphenyl (46)	1.34E-02			6.82E-04 J	5.1E-02			

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North Providence, Rhode Island

	LYMAN MILL POND						MANTON POND		
PARAMETER	LYMAN MILL AVERAGE SEDIMENT[a]	DIET-LP 6/12/2001	BSAF	LPX-EI-4006-4010-0000-01 7/20/2001		BSAF	MANTON AVERAGE SEDIMENT[a]	MANTON FOOD 6/14/2003	BSAF
2,2',4,5-Tetrachlorobiphenyl (48)	3.34E-02			2.92E-03	J	8.7E-02			
2,2',4,5'-Tetrachlorobiphenyl (49)	1.42E-01			3.09E-02	JC	2.2E-01			
2,2',4,6-Tetrachlorobiphenyl (50)	3.31E-02			1.77E-03	JC	5.3E-02			
2,3,3',4'-Tetrachlorobiphenyl (56)	1.07E-01			1.04E-02	J	9.7E-02			
2,3,3',6-Tetrachlorobiphenyl (59)	1.85E-02			3.32E-03	JC	1.8E-01			
2,3,4,4'-Tetrachlorobiphenyl (60)	2.03E-02			1.16E-02	J	5.7E-01			
2,3,4,5-Tetrachlorobiphenyl (61)	3.87E-01			1.21E-01	C	3.1E-01			
2,3,4',5-Tetrachlorobiphenyl (63)	4.90E-03			6.00E-03	J	1.2E+00			
2,3,4',6-Tetrachlorobiphenyl (64)	9.30E-02			1.78E-02		1.9E-01			
2,3',4,4'-Tetrachlorobiphenyl (66)	2.98E-01			5.67E-02		1.9E-01			
3,3',4,4'-Tetrachlorobiphenyl (77)	2.32E-02			1.22E-02	J	5.2E-01			
3,4,4',5-Tetrachlorobiphenyl (81)	8.31E-04			2.25E-03	J	2.7E+00			
2,2',3,3',4-Pentachlorobiphenyl (82)	1.06E-01			1.58E-02	J	1.5E-01			
2,2',3,3',5-Pentachlorobiphenyl (83)	2.70E-01			1.83E-01	C	6.8E-01			
2,2',3,3',6-Pentachlorobiphenyl (84)	2.17E-01			1.30E-02	J	6.0E-02			
2,2',3,4,4'-Pentachlorobiphenyl (85)	9.61E-02			6.75E-02	C	7.0E-01			
2,2',3,4,5-Pentachlorobiphenyl (86)	5.12E-01			1.06E-01	C	2.1E-01			
2,2',3,4,6-Pentachlorobiphenyl (88)	9.01E-02			1.17E-02	JC	1.3E-01			
2,2',3,4,6'-Pentachlorobiphenyl (89)	8.31E-04			2.88E-04	J	3.5E-01			
2,2',3,4',5-Pentachlorobiphenyl (90)	5.24E-01			2.05E-01	C	3.9E-01			
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.05E-01			3.40E-02	J	3.2E-01			
2,2',3,5,6-Pentachlorobiphenyl (93)	5.35E-01			2.66E-03	JC	5.0E-03			
2,2',3,5',6-Pentachlorobiphenyl (95)	0.00E+00			9.21E-02					
2,3,3',4,4'-Pentachlorobiphenyl (105)	1.55E-01			8.64E-02		5.6E-01			
2,3,3',4,5-Pentachlorobiphenyl (106)	5.17E-02			2.17E-02	JC	4.2E-01			
2,3,3',4',5'-Pentachlorobiphenyl (108)	2.02E-02			6.30E-03	JC	3.1E-01			
2,3,3',4',6-Pentachlorobiphenyl (110)	8.93E-01			1.67E-01	C	1.9E-01			
2,3,4,4',5-Pentachlorobiphenyl (114)	1.13E-02			7.85E-03	J	6.9E-01			
2,3',4,4',5-Pentachlorobiphenyl (118)	6.32E-01			2.80E-01		4.4E-01			
3,3',4,4',5-Pentachlorobiphenyl (126)	3.35E-03			1.89E-03	J	5.6E-01			
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	1.62E-01			9.50E-02	C	5.9E-01			
2,2',3,3',4,5-Hexachlorobiphenyl (129)	7.30E-01			5.20E-01	C	7.1E-01			
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	5.77E-02			5.25E-02		9.1E-01			
2,2',3,3',4,6-Hexachlorobiphenyl (131)	1.17E-02			3.36E-03	J	2.9E-01			
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	1.04E-01			3.56E-02	J	3.4E-01			
2,2',3,3',5,6-Hexachlorobiphenyl (134)	5.46E-02			1.90E-02	UC	3.5E-01			
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	1.90E-01			4.62E-02	C	2.4E-01			
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	1.21E-01			6.65E-03	J	5.5E-02			
2,2',3,4,4',5-Hexachlorobiphenyl (137)	8.99E-02			2.58E-02	JC	2.9E-01			
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	8.32E-02			2.65E-02		3.2E-01			
2,2',3,4,5',6-Hexachlorobiphenyl (144)	8.31E-04			9.12E-03	J	1.1E+01			
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	3.92E-02			1.11E-01	C	2.8E+00			
2,2',3,4',5,6-Hexachlorobiphenyl (147)	4.72E-01			1.28E-01	C	2.7E-01			
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2.54E-01			5.32E-01	C	2.1E+00			
2,3,3',4,4',5-Hexachlorobiphenyl (156)	6.65E-02			1.02E-01	C	1.5E+00			

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TABLE [illegible]-7
CALCULATION OF SITE-SPECIFIC BSAFs FOR EMERGING INSECT/SWALLOW STOMACH CONTENT TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND						MANTON POND		
PARAMETER	LYMAN MILL AVERAGE SEDIMENT[a]	DIET-LP 6/12/2001	BSAF	LPX-EI-4006-4010-0000-01 7/20/2001		BSAF	MANTON AVERAGE SEDIMENT[a]	MANTON FOOD 6/14/2003	BSAF
2,3,3',4,4',6-Hexachlorobiphenyl (158)	1.36E-02			2.72E-02		2.0E+00			
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	2.61E-02			1.32E-02	J	5.1E-01			
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	8.31E-04			5.55E-03	J	6.7E+00			
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	1.29E-01			8.69E-02		6.8E-01			
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	4.00E-02			7.09E-03	JC	1.8E-01			
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	9.92E-03			1.64E-02	J	1.7E+00			
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	1.45E-01			3.60E-02	JC	2.5E-01			
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	4.02E-03			2.47E-03	J	6.1E-01			
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.54E-02			1.31E-03	J	8.5E-02			
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	6.07E-02			2.27E-02	J	3.7E-01			
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	1.57E-02			1.09E-02	J	6.9E-01			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	9.70E-02			1.09E-01	C	1.1E+00			
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	1.66E-03			1.37E-04	J	8.2E-02			
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	1.66E-03			3.57E-05	J	2.1E-02			
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	6.53E-02			8.97E-02		1.4E+00			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	2.93E-03			5.19E-03	J	1.8E+00			
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	1.68E-02			1.98E-02	J	1.2E+00			
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2.58E-03			1.07E-03	J	4.1E-01			
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	2.75E-02			3.24E-02	J	1.2E+00			
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	1.35E-02			6.12E-03	J	4.5E-01			
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	2.18E-02			1.14E-02	J	5.2E-01			
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	5.89E-04			1.33E-03	JC	2.3E+00			
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	1.08E-01			9.47E-02	C	8.8E-01			
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	7.32E-03			9.47E-02		1.3E+01			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	6.07E-03			4.28E-03	J	7.0E-01			
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	3.32E-02			5.70E-02	J	1.7E+00			
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.57E-03			2.17E-03	J	1.4E+00			
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	1.59E-01			1.28E-01		8.0E-01			
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	1.11E-02			6.02E-03	J	5.4E-01			
Decachlorobiphenyl (209)	1.94E-01			6.92E-02	J	3.6E-01			
PCB Congeners, Total	1.06E+01			4.20E+00		3.9E-01			
Toxicity Equivalency (PCB)	8.48E-05			3.39E-04		4.0E+00			
Toxicity Equivalency (PCB) - Birds	1.43E-03			1.05E-03		7.4E-01			
Toxicity Equivalency (PCB) - Fish	1.66E-05			1.45E-05		8.8E-01			
Toxicity Equivalency (PCB) - Mammals	3.06E-04			3.39E-04		1.1E+00			

US EPA ARCHIVE DOCUMENT

TABLE J-8

SUMMARY OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS										
	EARTHWORM[a]			SURFACE SOIL[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
HCX	5	11	4.0E-01	9.2E-02	11	11	1.1E+00	1.9E-01	3.1E+00	5.9E-01	7.3E-01	145%
2,3,7,8-TCDD	10	11	8.3E-03	2.5E-03	7	11	7.2E-02	1.6E-02	7.1E-01	2.5E-01	4.7E-02	86%
1,2,3,7,8-PeCDD	9	11	1.1E-04	3.4E-05	11	11	1.8E-04	8.6E-05	8.1E+00	1.0E+00	5.6E+00	231%
1,2,3,4,7,8-HxCDD	10	11	1.2E-04	4.4E-05	11	11	3.8E-04	1.4E-04	5.5E+00	7.0E-01	2.5E+00	228%
1,2,3,6,7,8-HxCDD	11	11	2.9E-04	9.9E-05	11	11	1.0E-03	5.0E-04	4.1E-01	2.0E-01	1.1E-02	52%
1,2,3,7,8,9-HxCDD	11	11	3.1E-04	9.1E-05	11	11	1.0E-03	4.3E-04	3.4E-01	2.0E-01	9.5E-03	49%
1,2,3,4,6,7,8-HpCDD	11	11	7.8E-03	2.3E-03	11	11	2.4E-02	1.1E-02	4.5E-01	2.2E-01	1.6E-02	58%
OCDD	11	11	5.4E-02	1.6E-02	11	11	1.6E-01	7.3E-02	4.3E-01	2.2E-01	1.5E-02	56%
2,3,7,8-TCDF	4	11	5.6E-05	2.0E-05	11	11	1.0E-03	3.0E-04	4.2E-01	1.2E-01	1.8E-02	108%
1,2,3,7,8-PeCDF	3	11	1.1E-04	4.2E-05	10	11	1.3E-04	5.7E-05	5.6E+00	1.1E+00	2.5E+00	145%
2,3,4,7,8-PeCDF	4	11	8.2E-05	3.2E-05	10	11	1.8E-04	1.1E-04	6.6E-01	3.0E-01	2.7E-02	55%
1,2,3,4,7,8-HxCDF	10	11	1.2E-04	5.4E-05	11	11	5.1E-04	3.3E-04	3.3E-01	1.7E-01	7.0E-03	49%
1,2,3,6,7,8-HxCDF	10	11	1.2E-04	5.0E-05	11	11	4.1E-04	2.3E-04	3.0E+00	4.1E-01	7.2E-01	205%
2,3,4,6,7,8-HxCDF	9	11	1.1E-04	4.2E-05	11	11	3.5E-04	1.8E-04	3.8E+00	5.0E-01	1.2E+00	217%
1,2,3,4,6,7,8-HpCDF	11	11	3.7E-03	7.8E-04	11	11	1.2E-02	3.5E-03	4.9E-01	2.1E-01	1.6E-02	59%
1,2,3,4,7,8,9-HpCDF	10	11	1.7E-04	4.5E-05	11	11	5.5E-04	1.8E-04	6.3E-01	2.5E-01	2.9E-02	68%
OCDF	11	11	8.6E-03	1.7E-03	11	11	2.8E-02	7.7E-03	5.0E-01	2.3E-01	1.7E-02	55%
Total TCDD	10	11	8.3E-03	2.5E-03	6	11	7.2E-02	1.6E-02	7.1E-01	2.4E-01	4.5E-02	89%
Total PeCDD	9	11	1.2E-04	8.3E-05	11	11	1.3E-03	4.0E-04	2.4E+00	4.3E-01	4.4E-01	153%
Total HxCDD	11	11	1.9E-03	7.4E-04	11	11	5.6E-03	3.1E-03	4.0E-01	2.4E-01	1.2E-02	45%
Total HpCDD	11	11	1.5E-02	5.0E-03	11	11	4.7E-02	1.9E-02	5.0E-01	2.6E-01	2.2E-02	57%
Total TCDF	5	11	7.3E-05	4.7E-05	11	11	2.3E-03	7.6E-04	5.1E-01	1.2E-01	2.0E-02	117%
Total PeCDF	11	11	1.8E-03	6.8E-04	11	11	6.3E-03	3.2E-03	2.4E+00	3.7E-01	4.6E-01	182%
Total HxCDF	11	11	3.1E-03	9.7E-04	11	11	8.5E-03	3.9E-03	5.0E-01	2.6E-01	1.8E-02	52%
Total HpCDF	11	11	8.1E-03	1.7E-03	11	11	2.8E-02	8.0E-03	5.0E-01	2.1E-01	1.7E-02	60%
Toxicity Equivalency - Birds	11	11	8.6E-03	2.7E-03	11	11	7.3E-02	1.7E-02	1.9E+00	3.4E-01	2.9E-01	158%
Toxicity Equivalency - Fish	11	11	8.6E-03	2.7E-03	11	11	7.3E-02	1.6E-02	1.9E+00	3.6E-01	2.8E-01	148%
Toxicity Equivalency - Mammals	11	11	8.6E-03	2.7E-03	11	11	7.3E-02	1.6E-02	1.9E+00	3.5E-01	2.9E-01	152%
Aluminum	11	11	5.6E+03	3.2E+03	11	11	2.2E+04	1.4E+04	4.5E-01	2.5E-01	1.7E-02	53%
Antimony	11	11	3.6E-01	1.9E-01	10	11	9.8E-01	4.1E-01	1.8E+00	7.0E-01	2.4E-01	70%
Arsenic	11	11	1.2E+00	6.3E-01	11	11	1.2E+01	5.9E+00	1.6E-01	1.1E-01	9.7E-04	28%
Barium	11	11	5.2E+01	3.7E+01	11	11	8.4E+02	2.3E+02	3.7E-01	2.4E-01	1.4E-02	49%
Beryllium	11	11	3.4E-01	2.2E-01	11	11	4.5E+00	1.9E+00	2.6E-01	1.4E-01	5.0E-03	49%

US EPA ARCHIVE DOCUMENT

TABLE J-8
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North Providence, Rhode Island

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	EARTHWORM[a]				SURFACE SOIL[b]				STUDY AREA BSAFs[c]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
Cadmium	11	11	7.8E+00	3.4E+00	11	11	3.5E+00	1.5E+00	1.7E+01	4.0E+00	2.3E+01	119%
Chromium	11	11	1.7E+01	7.3E+00	10	11	2.9E+02	1.3E+02	2.4E-01	8.3E-02	3.6E-03	72%
Cobalt	11	11	1.7E+00	9.4E-01	11	11	2.0E+01	9.1E+00	2.2E-01	1.2E-01	2.8E-03	44%
Copper	11	11	1.9E+01	1.1E+01	11	11	4.0E+02	1.5E+02	1.5E-01	9.8E-02	1.9E-03	44%
Iron	11	11	2.6E+03	1.8E+03	11	11	3.7E+04	2.3E+04	1.1E-01	8.0E-02	6.0E-04	31%
Lead	11	11	1.0E+02	3.8E+01	11	11	9.0E+02	3.9E+02	6.3E-01	1.4E-01	3.0E-02	120%
Manganese	11	11	3.2E+02	1.5E+02	11	11	4.1E+03	1.2E+03	4.8E-01	2.0E-01	2.4E-02	77%
Mercury	11	11	1.5E-01	5.3E-02	11	11	8.1E-01	3.8E-01	7.2E-01	1.9E-01	3.4E-02	99%
Mercury (methyl)	11	11	4.7E-03	2.9E-03	11	11	7.7E-04	4.1E-04	1.4E+01	8.0E+00	1.7E+01	52%
Molybdenum	11	11	5.4E+00	1.4E+00	11	11	8.8E+01	2.5E+01	1.5E-01	8.2E-02	2.1E-03	56%
Nickel	11	11	1.1E+01	3.2E+00	11	11	3.9E+02	5.7E+01	1.9E-01	9.9E-02	2.1E-03	47%
Selenium	11	11	5.2E+00	8.7E-01	4	11	9.6E-01	4.7E-01	6.7E+00	1.7E+00	3.0E+00	100%
Silver	11	11	3.2E-01	1.2E-01	11	11	3.9E+00	1.6E+00	2.3E-01	1.1E-01	4.9E-03	65%
Thallium	11	11	8.4E-02	6.0E-02	11	11	5.9E-01	3.9E-01	2.4E-01	1.8E-01	5.7E-03	43%
Vanadium	11	11	6.4E+00	3.9E+00	11	11	1.0E+02	5.5E+01	1.4E-01	8.0E-02	1.4E-03	46%
Zinc	11	11	2.1E+02	1.2E+02	11	11	1.2E+03	3.2E+02	2.2E+00	6.2E-01	3.5E-01	96%
2-Monochlorobiphenyl (1)	2	2	4.7E-04	3.8E-04	3	3	2.5E-03	1.5E-03	2.5E-01	2.2E-01	2.2E-03	21%
4-Chlorobiphenyl (3)	2	2	5.9E-04	4.2E-04	2	3	7.1E-03	3.1E-03	1.3E-01	1.1E-01	1.3E-03	33%
2,2'-Dichlorobiphenyl (4)	1	2	1.6E-03	1.3E-03	3	3	1.5E-02	6.6E-03	2.4E-01	1.7E-01	8.4E-03	53%
2,3-Dichlorobiphenyl (5)	0	2	2.2E-04	1.9E-04	2	3	1.8E-03	8.0E-04	4.4E-01	2.6E-01	6.2E-02	94%
2,3'-Dichlorobiphenyl (6)	0	2	2.2E-04	1.9E-04	2	3	1.4E-02	6.0E-03	5.4E-02	3.3E-02	8.7E-04	90%
2,4-Dichlorobiphenyl (7)	0	2	2.2E-04	1.9E-04	2	3	2.2E-03	1.1E-03	2.5E-01	1.6E-01	1.6E-02	78%
2,4'-Dichlorobiphenyl (8)	2	2	3.2E-03	2.1E-03	3	3	6.7E-02	2.9E-02	1.7E-01	9.0E-02	1.2E-02	119%
2,5-Dichlorobiphenyl (9)	0	2	2.2E-04	1.9E-04	2	3	4.5E-03	1.9E-03	1.8E-01	1.1E-01	1.1E-02	94%
2,6-Dichlorobiphenyl (10)	0	2	2.2E-04	1.9E-04	2	3	7.4E-04	3.5E-04	8.7E-01	5.4E-01	2.1E-01	84%
3,4-Dichlorobiphenyl (12)	0	2	4.3E-04	3.8E-04	2	3	4.5E-03	2.9E-03	1.1E-01	9.1E-02	7.8E-04	30%
2,2',3'-Trichlorobiphenyl (16)	2	2	1.6E-03	1.2E-03	2	3	4.3E-02	1.7E-02	2.1E-01	1.2E-01	1.8E-02	116%
2,2',4-Trichlorobiphenyl (17)	2	2	1.9E-03	1.5E-03	2	3	4.5E-02	1.7E-02	2.9E-01	1.6E-01	3.6E-02	120%
2,2',5-Trichlorobiphenyl (18)	2	2	4.3E-03	3.2E-03	2	3	4.1E-02	1.9E-02	2.8E-01	1.7E-01	2.7E-02	98%
2,2',6-Trichlorobiphenyl (19)	2	2	2.9E-04	2.4E-04	2	3	1.1E-02	4.2E-03	1.8E-01	9.9E-02	1.3E-02	116%
2,3,3'-Trichlorobiphenyl (20)	2	2	1.9E-02	1.6E-02	2	3	1.7E-01	7.5E-02	3.5E-01	2.2E-01	3.9E-02	91%

US EPA ARCHIVE DOCUMENT

TABLE J-8
SUMMARY OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS										
	EARTHWORM[a]			SURFACE SOIL[b]			STUDY AREA BSAFs[c]				
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,3,4'-Trichlorobiphenyl (22)	2	2	4.1E-03	3.7E-03	2	3	6.1E-02	2.5E-02	3.2E-01	1.9E-01	3.4E-02	100%
2,3',4-Trichlorobiphenyl (25)	2	2	9.0E-04	7.6E-04	2	3	8.1E-03	3.4E-03	4.2E-01	2.5E-01	5.8E-02	97%
2,3',5-Trichlorobiphenyl (26)	2	2	2.1E-03	1.7E-03	2	3	2.0E-02	8.6E-03	4.1E-01	2.4E-01	6.0E-02	103%
2,4',5-Trichlorobiphenyl (31)	2	2	1.3E-02	1.0E-02	2	3	7.5E-02	3.6E-02	4.2E-01	2.6E-01	5.5E-02	91%
2,4',6-Trichlorobiphenyl (32)	2	2	1.8E-03	1.5E-03	2	3	1.5E-02	6.6E-03	3.9E-01	2.3E-01	4.6E-02	92%
2,2',3,3'-Tetrachlorobiphenyl (40)	2	2	1.3E-02	1.2E-02	3	3	6.2E-02	2.6E-02	9.7E-01	5.8E-01	3.1E-01	96%
2,2',3,4'-Tetrachlorobiphenyl (42)	2	2	8.9E-03	7.9E-03	3	3	2.9E-02	1.3E-02	1.1E+00	6.5E-01	3.5E-01	90%
2,2',3,5-Tetrachlorobiphenyl (43)	2	2	9.2E-02	7.3E-02	3	3	1.0E-01	6.0E-02	1.3E+00	9.2E-01	2.8E-01	58%
2,2',3,5'-Tetrachlorobiphenyl (44)	2	2	3.9E-02	3.2E-02	3	3	7.9E-02	4.0E-02	1.1E+00	6.9E-01	2.8E-01	77%
2,2',3,6-Tetrachlorobiphenyl (45)	2	2	2.3E-03	2.1E-03	2	3	2.2E-02	8.6E-03	6.3E-01	3.6E-01	1.5E-01	107%
2,2',3,6'-Tetrachlorobiphenyl (46)	2	2	6.1E-04	5.9E-04	3	3	8.4E-03	3.2E-03	5.4E-01	3.0E-01	1.1E-01	108%
2,2',4,5-Tetrachlorobiphenyl (48)	2	2	4.1E-03	3.5E-03	3	3	1.7E-02	7.5E-03	8.6E-01	5.1E-01	2.4E-01	95%
2,2',4,5'-Tetrachlorobiphenyl (49)	2	2	3.5E-02	2.6E-02	3	3	3.9E-02	2.3E-02	1.3E+00	8.4E-01	3.5E-01	70%
2,2',4,6-Tetrachlorobiphenyl (50)	2	2	2.4E-03	2.3E-03	3	3	1.7E-02	6.9E-03	9.3E-01	5.3E-01	3.2E-01	108%
2,3,3',4'-Tetrachlorobiphenyl (56)	2	2	1.3E-02	9.3E-03	3	3	2.2E-02	1.4E-02	6.0E-01	4.7E-01	3.2E-02	38%
2,3,3',6-Tetrachlorobiphenyl (59)	2	2	2.7E-03	2.1E-03	3	3	7.6E-03	3.6E-03	1.0E+00	6.2E-01	3.3E-01	93%
2,3,4,4'-Tetrachlorobiphenyl (60)	2	2	4.3E-03	3.1E-03	3	3	1.1E-02	5.6E-03	4.2E-01	4.1E-01	1.9E-05	1%
2,3,4,5-Tetrachlorobiphenyl (61)	2	2	8.4E-02	6.1E-02	3	3	1.1E-01	6.1E-02	7.6E-01	7.0E-01	6.7E-03	12%
2,3,4',5-Tetrachlorobiphenyl (63)	2	2	1.6E-03	1.1E-03	3	3	1.3E-03	6.9E-04	1.2E+00	1.1E+00	2.5E-02	14%
2,3,4',6-Tetrachlorobiphenyl (64)	2	2	1.8E-02	1.3E-02	3	3	2.9E-02	1.6E-02	1.0E+00	6.7E-01	2.7E-01	76%
2,3',4,4'-Tetrachlorobiphenyl (66)	2	2	4.6E-02	3.3E-02	3	3	5.4E-02	3.6E-02	8.4E-01	6.4E-01	8.1E-02	44%
3,3',4,4'-Tetrachlorobiphenyl (77)	2	2	3.4E-03	2.4E-03	3	3	9.1E-03	6.1E-03	3.8E-01	2.8E-01	2.0E-02	51%
3,4,4',5-Tetrachlorobiphenyl (81)	0	2	2.2E-03	1.9E-03	0	3	9.0E-04	8.0E-04	2.5E+00	2.2E+00	2.6E-01	23%
2,2',3,3',4-Pentachlorobiphenyl (82)	2	2	1.7E-02	1.4E-02	3	3	6.9E-02	3.1E-02	9.5E-01	5.5E-01	3.3E-01	104%
2,2',3,3',5-Pentachlorobiphenyl (83)	2	2	1.2E-01	8.5E-02	3	3	1.2E-01	7.2E-02	1.5E+00	9.5E-01	5.9E-01	81%
2,2',3,3',6-Pentachlorobiphenyl (84)	2	2	3.9E-02	3.4E-02	3	3	1.5E-01	6.3E-02	1.3E+00	7.6E-01	6.4E-01	106%
2,2',3,4,4'-Pentachlorobiphenyl (85)	2	2	3.2E-02	2.3E-02	3	3	6.0E-02	3.4E-02	8.8E-01	5.5E-01	2.2E-01	84%
2,2',3,4,5-Pentachlorobiphenyl (86)	2	2	1.4E-01	1.0E-01	3	3	2.5E-01	1.3E-01	1.1E+00	7.0E-01	3.5E-01	85%
2,2',3,4,6-Pentachlorobiphenyl (88)	2	2	2.5E-02	2.0E-02	3	3	6.3E-02	3.0E-02	1.3E+00	7.5E-01	5.3E-01	97%

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North Providence, Rhode Island

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	Frequency of Detection	Maximum Detect	Average	Frequency of Detection	Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,4,6'-Pentachlorobiphenyl (89)	2	2	6.5E-04	6.1E-04	3	3	2.1E-03	9.9E-04	9.2E-01	6.0E-01	2.1E-01	77%
2,2',3,4',5-Pentachlorobiphenyl (90)	2	2	2.7E-01	2.0E-01	3	3	2.1E-01	1.3E-01	1.7E+00	1.1E+00	5.6E-01	66%
2,2',3,5,5'-Pentachlorobiphenyl (92)	2	2	5.6E-02	4.2E-02	3	3	5.2E-02	2.9E-02	1.9E+00	1.2E+00	9.3E-01	78%
2,2',3,5,6-Pentachlorobiphenyl (93)	2	2	4.6E-03	4.4E-03	3	3	3.3E-01	1.5E-01	4.1E-02	2.7E-02	4.1E-04	75%
2,3,3',4,4'-Pentachlorobiphenyl (105)	2	2	4.9E-02	3.7E-02	3	3	8.3E-02	5.3E-02	7.6E-01	5.3E-01	1.0E-01	61%
2,3,3',4,5-Pentachlorobiphenyl (106)	2	2	1.7E-02	1.3E-02	3	3	1.8E-02	1.2E-02	1.2E+00	8.5E-01	1.9E-01	51%
2,3,3',4',5'-Pentachlorobiphenyl (108)	2	2	9.4E-03	7.4E-03	3	3	1.4E-02	7.5E-03	1.2E+00	8.0E-01	3.4E-01	73%
2,3,3',4',6-Pentachlorobiphenyl (110)	2	2	2.9E-01	2.2E-01	3	3	6.4E-01	3.0E-01	1.4E+00	8.2E-01	6.9E-01	102%
2,3,4,4',5-Pentachlorobiphenyl (114)	2	2	2.2E-03	1.4E-03	3	3	3.7E-03	2.6E-03	6.0E-01	3.8E-01	9.6E-02	81%
2,3',4,4',5-Pentachlorobiphenyl (118)	2	2	1.6E-01	1.2E-01	3	3	2.8E-01	1.7E-01	8.3E-01	5.5E-01	1.5E-01	72%
3,3',4,4',5-Pentachlorobiphenyl (126)	1	2	3.3E-03	1.9E-03	3	3	6.4E-03	2.7E-03	5.6E-01	5.4E-01	1.2E-03	6%
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	2	2	4.8E-02	3.6E-02	3	3	1.6E-01	7.6E-02	9.2E-01	5.4E-01	2.9E-01	101%
2,2',3,3',4,5-Hexachlorobiphenyl (129)	2	2	3.2E-01	2.4E-01	3	3	5.6E-01	2.9E-01	1.3E+00	8.0E-01	5.4E-01	91%
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	2	2	1.9E-02	1.4E-02	3	3	4.4E-02	2.2E-02	1.1E+00	6.5E-01	3.7E-01	93%
2,2',3,3',4,6-Hexachlorobiphenyl (131)	2	2	3.1E-03	2.4E-03	3	3	9.0E-03	4.1E-03	1.2E+00	7.0E-01	5.2E-01	103%
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	2	2	7.8E-02	6.0E-02	3	3	3.4E-01	1.5E-01	9.6E-01	5.4E-01	3.5E-01	109%
2,2',3,3',5,6-Hexachlorobiphenyl (134)	2	2	1.0E-02	7.4E-03	3	3	4.7E-02	2.1E-02	9.0E-01	5.0E-01	3.2E-01	114%
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	2	2	8.9E-02	6.5E-02	3	3	1.4E-01	6.8E-02	2.2E+00	1.2E+00	1.8E+00	109%
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	2	2	2.9E-02	2.2E-02	3	3	9.8E-02	4.2E-02	1.6E+00	8.8E-01	1.1E+00	117%
2,2',3,4,4',5-Hexachlorobiphenyl (137)	2	2	4.3E-02	3.3E-02	3	3	8.2E-02	3.9E-02	1.6E+00	9.2E-01	8.3E-01	99%
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	2	2	3.7E-02	2.7E-02	3	3	6.1E-02	3.3E-02	1.3E+00	7.8E-01	4.9E-01	90%
2,2',3,4,5',6-Hexachlorobiphenyl (144)	2	2	7.4E-03	5.1E-03	1	3	5.2E-03	2.2E-03	3.0E+00	2.2E+00	1.1E+00	49%
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	2	2	6.7E-02	5.1E-02	3	3	2.2E-02	1.4E-02	4.3E+00	2.9E+00	3.8E+00	67%
2,2',3,4',5,6-Hexachlorobiphenyl (147)	2	2	4.1E-01	3.0E-01	3	3	4.0E-01	1.9E-01	3.3E+00	1.9E+00	4.1E+00	107%
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2	2	2.0E-01	1.4E-01	3	3	1.4E-01	8.8E-02	2.1E+00	1.3E+00	1.1E+00	79%
2,3,3',4,4',5-Hexachlorobiphenyl (156)	2	2	2.6E-02	1.9E-02	3	3	4.7E-02	2.5E-02	1.1E+00	6.7E-01	3.3E-01	87%
2,3,3',4,4',6-Hexachlorobiphenyl (158)	2	2	2.1E-02	1.5E-02	3	3	4.5E-02	2.3E-02	1.0E+00	6.0E-01	3.2E-01	95%
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	2	2	1.0E-02	8.0E-03	3	3	2.0E-02	1.0E-02	1.3E+00	7.8E-01	5.2E-01	93%
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	2	2	1.9E-03	1.8E-03	1	3	9.0E-04	5.8E-04	1.0E+01	6.0E+00	3.3E+01	96%

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TABLE J-8

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

PARAMETER	STATISTICAL SUMMARY OF NORMALIZED MEDIA CONCENTRATIONS										
	EARTHWORM[a]			SURFACE SOIL[b]			STUDY AREA BSAFs[c]			
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	2	2	2.6E-02	2.0E-02	3	3	1.5E-01	7.2E-02	6.5E-01	3.7E-01	1.5E-01	107%
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	2	2	8.6E-03	6.3E-03	3	3	3.6E-02	1.8E-02	7.9E-01	4.5E-01	2.3E-01	107%
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	2	2	7.1E-03	5.7E-03	3	3	1.2E-02	6.2E-03	1.6E+00	1.0E+00	7.8E-01	88%
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	2	2	5.0E-02	3.7E-02	3	3	1.6E-01	7.3E-02	1.6E+00	8.8E-01	1.0E+00	116%
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	2	2	1.2E-03	8.9E-04	3	3	2.0E-03	1.1E-03	1.6E+00	9.4E-01	8.5E-01	97%
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	2	2	2.9E-03	2.2E-03	2	3	1.3E-02	5.7E-03	1.0E+00	5.6E-01	4.0E-01	113%
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	2	2	1.9E-02	1.4E-02	3	3	6.0E-02	3.1E-02	1.1E+00	6.1E-01	4.1E-01	105%
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	2	2	9.4E-03	8.5E-03	3	3	1.4E-02	7.6E-03	2.0E+00	1.3E+00	1.1E+00	84%
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	2	2	5.7E-02	4.4E-02	3	3	9.3E-02	5.2E-02	1.5E+00	9.0E-01	6.4E-01	90%
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	1	2	3.3E-03	1.8E-03	1	3	1.8E-03	1.1E-03	1.9E+00	1.9E+00	8.6E-03	5%
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	2	2	9.4E-05	9.3E-05	0	3	1.7E-03	1.1E-03	5.1E-01	2.8E-01	1.0E-01	114%
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	2	2	2.1E-01	1.6E-01	3	3	5.3E-02	3.0E-02	9.7E+00	5.9E+00	2.9E+01	91%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	2	2	1.2E-03	1.0E-03	3	3	2.7E-03	1.4E-03	1.2E+00	7.5E-01	4.2E-01	87%
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	2	2	3.1E-03	2.2E-03	3	3	1.8E-02	9.3E-03	4.9E-01	2.8E-01	8.8E-02	104%
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2	2	9.6E-04	6.9E-04	3	3	2.4E-03	1.2E-03	1.2E+00	6.7E-01	5.0E-01	105%
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	2	2	7.9E-03	7.3E-03	3	3	3.5E-02	1.8E-02	9.4E-01	5.6E-01	2.8E-01	94%
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	2	2	2.6E-03	2.2E-03	3	3	1.7E-02	9.2E-03	6.8E-01	3.9E-01	1.7E-01	106%
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	2	2	5.6E-03	5.4E-03	3	3	2.3E-02	1.1E-02	1.2E+00	6.9E-01	4.5E-01	97%
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	2	2	2.3E-03	2.2E-03	2	3	1.3E-03	7.9E-04	9.2E+00	5.8E+00	2.3E+01	82%
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	2	2	7.5E-02	7.0E-02	3	3	1.4E-01	6.3E-02	2.3E+00	1.4E+00	1.6E+00	89%
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	2	2	3.8E-03	3.7E-03	3	3	7.8E-03	3.5E-03	2.2E+00	1.3E+00	1.5E+00	92%
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	2	2	1.9E-02	1.8E-02	3	3	4.2E-02	1.9E-02	1.8E+00	1.1E+00	9.4E-01	87%
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1	2	4.4E-03	2.5E-03	3	3	1.9E-03	9.6E-04	8.2E+00	4.3E+00	3.1E+01	130%
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	2	2	7.7E-02	7.6E-02	3	3	2.1E-01	9.1E-02	1.7E+00	1.0E+00	8.9E-01	92%
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	2	2	6.0E-03	5.6E-03	3	3	1.5E-02	6.3E-03	1.6E+00	1.0E+00	7.6E-01	85%
Decachlorobiphenyl (209)	2	2	8.4E-02	8.0E-02	3	3	3.1E-01	1.2E-01	1.7E+00	1.0E+00	1.1E+00	103%
PCB Congeners, Total	2	2	3.9E+00	3.0E+00	3	3	7.2E+00	3.6E+00	1.4E+00	8.4E-01	5.9E-01	92%
Toxicity Equivalency (PCB) - Birds	2	2	5.6E-04	5.1E-04	3	3	1.1E-03	6.6E-04	7.0E-01	6.0E-01	2.0E-02	23%
Toxicity Equivalency (PCB) - Fish	2	2	1.8E-05	1.2E-05	3	3	3.5E-05	1.6E-05	7.2E-01	6.2E-01	2.2E-02	24%
Toxicity Equivalency (PCB) - Mammals	2	2	3.6E-04	2.3E-04	3	3	7.1E-04	3.1E-04	7.8E-01	6.5E-01	3.8E-02	30%

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	EARTHWORM[a]				SURFACE SOIL[b]				STUDY AREA BSAFs[c]		
	Frequency of Detection		Maximum Detect	Average	Frequency of Detection		Maximum Detect	Average	Maximum	Mean	Variance	Coefficient of Variation
Technical Chlordane	11	11	3.9E+00	2.0E+00	11	11	1.3E+01	6.5E+00	8.5E-01	3.9E-01	4.9E-02	57%
delta-BHC	1	11	2.2E-02	1.5E-02	0	11	1.3E-02	1.1E-02	2.3E+00	1.4E+00	1.7E-01	29%
Heptachlor Epoxide	7	11	4.8E-02	1.8E-02	3	11	2.9E-02	1.2E-02	4.2E+00	1.5E+00	1.2E+00	72%
Dieldrin	9	11	1.3E-01	5.4E-02	10	11	3.0E-01	1.2E-01	1.8E+00	5.8E-01	2.2E-01	80%
4,4'-DDE	11	11	1.7E-01	8.1E-02	11	11	4.4E-01	1.7E-01	1.0E+00	5.5E-01	7.4E-02	50%
4,4'-DDD	10	11	9.5E-02	5.2E-02	11	11	2.7E-01	1.4E-01	1.4E+00	4.7E-01	1.2E-01	76%
Endosulfan Sulfate	11	11	1.6E-01	6.4E-02	8	11	1.5E-01	7.2E-02	1.4E+01	2.5E+00	1.6E+01	161%
4,4'-DDT	4	11	2.3E-01	4.1E-02	11	11	6.1E-01	1.9E-01	4.3E-01	2.1E-01	2.0E-02	68%
Methoxychlor	4	11	1.9E-01	4.3E-02	0	11	1.3E-02	1.1E-02	1.7E+01	4.0E+00	2.7E+01	129%
alpha-Chlordane	11	11	1.4E-01	7.3E-02	11	11	8.4E-01	3.2E-01	8.3E+00	1.0E+00	5.9E+00	244%
gamma-Chlordane	11	11	1.7E-01	7.1E-02	0	11	1.3E-02	1.1E-02	1.8E+01	6.9E+00	2.9E+01	77%
Aroclor-1254	11	11	3.0E+00	1.8E+00	11	11	2.0E+01	7.1E+00	8.8E-01	3.5E-01	6.1E-02	70%
Aroclor-1268	11	11	4.7E-01	2.6E-01	11	11	1.4E+00	7.1E-01	1.3E+00	4.3E-01	8.9E-02	70%
Aroclor, Total	11	11	3.2E+00	2.1E+00	11	11	2.1E+01	7.8E+00	8.3E-01	3.7E-01	6.4E-02	69%

Notes:

a. Earthworm tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. Surface soil concentrations are expressed on a carbon normalized basis (i.e., mg/kg_{oc}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

c. BSAFs are expressed on a lipid- and carbon-normalized basis (i.e., kg_{oc}/kg_{lip}). BSAF statistics based on paired earthworm and surface soil concentration sample sets (see Table J-9).

All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

US EPA ARCHIVE DOCUMENT

TABLE J-9

CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND								
PARAMETER	*CMS-EW-4001-0000-01* 7/18/2001 NORMAL	*CMS-FP-4001-0000-01* 7/18/2001 NORMAL	BSAF	*CMS-EW-4002-0000-01* 7/18/2001 NORMAL	*CMS-FP-4002-0000-01* 7/18/2001 NORMAL	BSAF	*CMS-EW-4003-0000-01* 7/19/2001 NORMAL	*CMS-FP-4003-0000-01* 7/19/2001 NORMAL	BSAF
HCX	1.31E-01 J	2.11E-01 J	6.2E-01	3.25E-01 J	1.14E+00 J	2.8E-01	4.01E-01 J	4.78E-01 J	8.4E-01
2,3,7,8-TCDD	3.58E-03 J	2.58E-02 J	1.4E-01	8.07E-03 J	7.21E-02 J	1.1E-01	8.34E-03 J	4.07E-02	2.0E-01
1,2,3,7,8-PeCDD	8.16E-06 J	1.04E-04 J	7.9E-02	2.51E-05 J	7.52E-05 J	3.3E-01	3.47E-05 J	1.24E-04 J	2.8E-01
1,2,3,4,7,8-HxCDD	1.86E-05 J	1.70E-04 J	1.1E-01	3.93E-05 J	1.14E-04 J	3.4E-01	6.44E-05 J	1.77E-04 J	3.6E-01
1,2,3,6,7,8-HxCDD	5.41E-05 J	5.86E-04 J	9.2E-02	1.04E-04 J	4.84E-04	2.2E-01	2.06E-04 J	6.70E-04	3.1E-01
1,2,3,7,8,9-HxCDD	4.77E-05 J	5.63E-04 J	8.5E-02	9.44E-05 J	3.74E-04	2.5E-01	1.69E-04 J	5.70E-04	3.0E-01
1,2,3,4,6,7,8-HpCDD	1.27E-03 J	1.33E-02 J	9.6E-02	2.60E-03 J	1.03E-02	2.5E-01	4.96E-03 J	1.48E-02	3.4E-01
OCDD	9.88E-03 J	9.23E-02 J	1.1E-01	1.77E-02 J	7.05E-02	2.5E-01	3.49E-02 J	1.09E-01	3.2E-01
2,3,7,8-TCDF	6.38E-06 U	1.35E-04 J	4.7E-02	2.51E-05 #	2.38E-04 J	1.1E-01	1.16E-05 U	2.13E-04 J	5.4E-02
1,2,3,7,8-PeCDF	5.87E-06 J	4.10E-05 J	1.4E-01	4.64E-05 U	4.42E-05 J	1.1E+00	5.74E-05 U	3.91E-05 U	1.5E+00
2,3,4,7,8-PeCDF	3.16E-05 U	7.49E-05 J	4.2E-01	4.64E-05 U	1.28E-04 J	3.6E-01	1.57E-05 J	1.05E-04 J	1.5E-01
1,2,3,4,7,8-HxCDF	2.32E-05 J	2.31E-04 J	1.0E-01	4.83E-05 J	3.56E-04	1.4E-01	9.49E-05 J	3.55E-04	2.7E-01
1,2,3,6,7,8-HxCDF	2.22E-05 J	2.04E-04 J	1.1E-01	3.63E-05 J	2.08E-04 J	1.7E-01	8.29E-05 J	2.91E-04	2.9E-01
2,3,4,6,7,8-HxCDF	1.25E-05 J	1.36E-04 J	9.2E-02	2.58E-05 J	1.34E-04 J	1.9E-01	4.26E-05 J	1.89E-04 J	2.3E-01
1,2,3,4,6,7,8-HpCDF	3.17E-04 J	3.11E-03 J	1.0E-01	6.04E-04 J	2.28E-03	2.6E-01	1.25E-03 J	4.06E-03	3.1E-01
1,2,3,4,7,8,9-HpCDF	2.02E-05 J	1.67E-04 J	1.2E-01	3.00E-05 J	1.41E-04 J	2.1E-01	6.11E-05 J	2.28E-04 J	2.7E-01
OCDF	8.36E-04 J	8.01E-03 J	1.0E-01	1.40E-03 J	5.21E-03	2.7E-01	2.97E-03 J	8.94E-03	3.3E-01
Total TCDD	3.58E-03 J	2.58E-02 J	1.4E-01	8.07E-03 J	7.21E-02 J	1.1E-01	8.34E-03 J	4.07E-02 J	2.0E-01
Total PeCDD	4.11E-05 J	2.87E-04 J	1.4E-01	1.13E-04 J	3.48E-04 J	3.2E-01	1.00E-04 J	2.89E-04 J	3.5E-01
Total HxCDD	4.10E-04 J	3.44E-03 J	1.2E-01	8.61E-04 J	3.01E-03 J	2.9E-01	1.36E-03 J	4.07E-03 J	3.3E-01
Total HpCDD	2.53E-03 J	2.28E-02 J	1.1E-01	5.36E-03 J	1.90E-02 J	2.8E-01	9.87E-03 J	2.56E-02 J	3.9E-01
Total TCDF	2.24E-05 UJ	2.30E-04 J	9.7E-02	4.34E-05 J	7.56E-04 J	5.8E-02	7.04E-05 UJ	5.76E-04 J	1.2E-01
Total PeCDF	4.75E-04 J	2.47E-03 J	1.9E-01	1.41E-03 J	4.13E-03 J	3.4E-01	9.20E-04 J	3.82E-03 J	2.4E-01
Total HxCDF	5.91E-04 J	3.81E-03 J	1.6E-01	1.16E-03 J	3.11E-03 J	3.7E-01	1.58E-03 J	4.19E-03 J	3.8E-01
Total HpCDF	7.53E-04 J	6.47E-03 J	1.2E-01	1.38E-03 J	4.92E-03 J	2.8E-01	2.79E-03 J	8.50E-03 J	3.3E-01
Toxicity Equivalency - Birds	3.67E-03	2.64E-02	1.4E-01	8.28E-03	7.29E-02	1.1E-01	8.56E-03	4.15E-02	2.1E-01
Toxicity Equivalency - Fish	3.65E-03	2.62E-02	1.4E-01	8.24E-03	7.26E-02	1.1E-01	8.56E-03	4.14E-02	2.1E-01
Toxicity Equivalency - Mammals	3.67E-03	2.64E-02	1.4E-01	8.28E-03	7.28E-02	1.1E-01	8.61E-03	4.15E-02	2.1E-01
Aluminum	4.86E+03 J	1.08E+04 J	4.5E-01	2.49E+03 J	8.64E+03 J	2.9E-01	4.33E+03 J	1.26E+04 J	3.4E-01
Antimony	1.80E-01	2.43E-01 J	7.4E-01	1.89E-01	2.75E-01 J	6.9E-01	2.41E-01	3.28E-01 J	7.3E-01
Arsenic	4.65E-01	3.94E+00	1.2E-01	6.10E-01	4.27E+00	1.4E-01	6.00E-01	5.01E+00	1.2E-01
Barium	4.77E+01	1.28E+02	3.7E-01	2.94E+01	8.75E+01	3.4E-01	5.15E+01	1.72E+02	3.0E-01
Beryllium	2.63E-01 J	1.59E+00	1.7E-01	1.79E-01 J	6.76E-01	2.6E-01	2.97E-01 J	2.08E+00	1.4E-01
Cadmium	2.40E+00	1.13E+00	2.1E+00	2.85E+00	3.68E-01 J	7.7E+00	1.72E+00	1.20E+00	1.4E+00
Chromium	8.02E+00	8.32E+01	9.6E-02	7.07E+00	8.12E+01	8.7E-02	9.63E+00	1.07E+02	9.0E-02
Cobalt	9.60E-01	7.03E+00 J	1.4E-01	7.04E-01	3.14E+00	2.2E-01	1.12E+00	9.74E+00	1.1E-01
Copper	*8.79E+00*	*8.15E+01*	1.1E-01	*9.33E+00*	*6.21E+01*	1.5E-01	1.17E+01	9.33E+01	1.3E-01
Iron	2.10E+03	1.95E+04	1.1E-01	1.54E+03	1.74E+04	8.8E-02	2.58E+03	2.39E+04	1.1E-01
Lead	1.70E+01 J	2.11E+02	8.1E-02	5.46E+01 J	4.77E+02	1.1E-01	2.01E+01 J	2.21E+02	9.1E-02
Manganese	1.24E+02	1.07E+03	1.2E-01	8.56E+01	1.80E+02	4.8E-01	2.56E+02	8.23E+02	3.1E-01
Mercury	4.14E-02	2.52E-01	1.6E-01	3.71E-02	2.22E-01	1.7E-01	5.35E-02	3.89E-01	1.4E-01
Mercury (methyl)	4.36E-03	4.99E-04 J	8.7E+00	2.30E-03	2.63E-04 J	8.7E+00	3.05E-03	2.23E-04 J	1.4E+01
Molybdenum	1.34E+00	1.17E+01 J	1.1E-01	1.18E+00	1.60E+01 J	7.4E-02	1.37E+00	1.58E+01 J	8.7E-02
Nickel	2.69E+00	2.38E+01	1.1E-01	2.59E+00	1.36E+01	1.9E-01	3.01E+00	2.49E+01	1.2E-01
Selenium	3.05E-01 J	2.43E-01 U	1.3E+00	3.54E-01 J	2.29E-01 U	1.5E+00	2.51E-01 J	2.90E-01 U	8.7E-01
Silver	4.77E-02	5.99E-01	8.0E-02	8.91E-02	4.68E-01	1.9E-01	1.05E-01	1.01E+00	1.0E-01
Thallium	6.81E-02	2.86E-01	2.4E-01	6.30E-02	3.38E-01	1.9E-01	6.45E-02	2.95E-01	2.2E-01
Vanadium	*4.67E+00*	*3.91E+01*	1.2E-01	*3.64E+00*	*4.03E+01*	9.0E-02	*5.21E+00*	*4.61E+01*	1.1E-01

US EPA ARCHIVE DOCUMENT

TABLE J-9
CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND								
PARAMETER	CMS-EW-4001-0000-01 7/18/2001 NORMAL	CMS-FP-4001-0000-01 7/18/2001 NORMAL	BSAF	CMS-EW-4002-0000-01 7/18/2001 NORMAL	CMS-FP-4002-0000-01 7/18/2001 NORMAL	BSAF	CMS-EW-4003-0000-01 7/19/2001 NORMAL	CMS-FP-4003-0000-01 7/19/2001 NORMAL	BSAF
Zinc	1.12E+02	2.17E+02 J	5.2E-01	9.32E+01	9.11E+01	1.0E+00	8.38E+01	2.72E+02	3.1E-01
2-Monochlorobiphenyl (1)									
4-Chlorobiphenyl (3)									
2,2'-Dichlorobiphenyl (4)									
2,4'-Dichlorobiphenyl (8)									
2,2',3'-Trichlorobiphenyl (16)									
2,2',4-Trichlorobiphenyl (17)									
2,2',5-Trichlorobiphenyl (18)									
2,2',6-Trichlorobiphenyl (19)									
2,3,3'-Trichlorobiphenyl (20)									
2,3,4'-Trichlorobiphenyl (22)									
2,3',4-Trichlorobiphenyl (25)									
2,3',5-Trichlorobiphenyl (26)									
2,4',5-Trichlorobiphenyl (31)									
2,4',6-Trichlorobiphenyl (32)									
2,2',3,3'-Tetrachlorobiphenyl (40)									
2,2',3,4'-Tetrachlorobiphenyl (42)									
2,2',3,5-Tetrachlorobiphenyl (43)									
2,2',3,5'-Tetrachlorobiphenyl (44)									
2,2',3,6-Tetrachlorobiphenyl (45)									
2,2',3,6'-Tetrachlorobiphenyl (46)									
2,2',4,5-Tetrachlorobiphenyl (48)									
2,2',4,5'-Tetrachlorobiphenyl (49)									
2,2',4,6-Tetrachlorobiphenyl (50)									
2,3,3',4'-Tetrachlorobiphenyl (56)									
2,3,3',6-Tetrachlorobiphenyl (59)									
2,3,4,4'-Tetrachlorobiphenyl (60)									
2,3,4,5-Tetrachlorobiphenyl (61)									
2,3,4',5-Tetrachlorobiphenyl (63)									
2,3,4',6-Tetrachlorobiphenyl (64)									
2,3',4,4'-Tetrachlorobiphenyl (66)									
3,3',4,4'-Tetrachlorobiphenyl (77)									
2,2',3,3',4-Pentachlorobiphenyl (82)									
2,2',3,3',5-Pentachlorobiphenyl (83)									
2,2',3,3',6-Pentachlorobiphenyl (84)									
2,2',3,4,4'-Pentachlorobiphenyl (85)									
2,2',3,4,5-Pentachlorobiphenyl (86)									
2,2',3,4,6-Pentachlorobiphenyl (88)									
2,2',3,4,6'-Pentachlorobiphenyl (89)									
2,2',3,4',5-Pentachlorobiphenyl (90)									
2,2',3,5,5'-Pentachlorobiphenyl (92)									
2,2',3,5,6-Pentachlorobiphenyl (93)									
2,3,3',4,4'-Pentachlorobiphenyl (105)									
2,3,3',4,5-Pentachlorobiphenyl (106)									
2,3,3',4',5'-Pentachlorobiphenyl (108)									
2,3,3',4',6-Pentachlorobiphenyl (110)									
2,3,4,4',5-Pentachlorobiphenyl (114)									

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2,3',4,4',5-Pentachlorobiphenyl (118)									
3,3',4,4',5-Pentachlorobiphenyl (126)									
2,2',3,3',4,4'-Hexachlorobiphenyl (128)									
2,2',3,3',4,5-Hexachlorobiphenyl (129)									
2,2',3,3',4,5'-Hexachlorobiphenyl (130)									
2,2',3,3',4,6-Hexachlorobiphenyl (131)									
2,2',3,3',4,6'-Hexachlorobiphenyl (132)									
2,2',3,3',5,6-Hexachlorobiphenyl (134)									
2,2',3,3',5,6'-Hexachlorobiphenyl (135)									
2,2',3,3',6,6'-Hexachlorobiphenyl (136)									
2,2',3,4,4',5-Hexachlorobiphenyl (137)									
2,2',3,4,5,5'-Hexachlorobiphenyl (141)									
2,2',3,4,5',6-Hexachlorobiphenyl (144)									
2,2',3,4',5,5'-Hexachlorobiphenyl (146)									
2,2',3,4',5,6-Hexachlorobiphenyl (147)									
2,2',4,4',5,5'-Hexachlorobiphenyl (153)									
2,3,3',4,4',5-Hexachlorobiphenyl (156)									
2,3,3',4,4',6-Hexachlorobiphenyl (158)									
2,3',4,4',5,5'-Hexachlorobiphenyl (167)									
3,3',4,4',5,5'-Hexachlorobiphenyl (169)									
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)									
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)									
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)									
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)									
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)									
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)									
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)									
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)									
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)									
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)									
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)									
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)									
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)									
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)									
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)									
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)									
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)									
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)									
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)									
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)									
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)									
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)									
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)									
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl									
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl									
Decachlorobiphenyl (209)									
PCB Congeners, Total									

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Toxicity Equivalency (PCB) - Birds									
Toxicity Equivalency (PCB) - Fish									
Toxicity Equivalency (PCB) - Mammals									
Technical Chlordane	2.99E+00	9.14E+00 J	3.3E-01	2.23E+00 J	1.30E+01	1.7E-01	3.70E+00 J	8.99E+00	4.1E-01
delta-BHC	1.02E-02 U	1.05E-02 U	9.7E-01	1.44E-02 U	1.13E-02 U	1.3E+00	1.76E-02 U	1.10E-02 U	1.6E+00
Heptachlor Epoxide	3.32E-03 J	1.05E-02 U	3.2E-01	4.76E-02	1.13E-02 U	4.2E+00	3.06E-02 J	1.10E-02 U	2.8E+00
Dieldrin	7.32E-02	1.72E-01 J	4.3E-01	1.11E-01	2.98E-01	3.7E-01	1.28E-01	2.11E-01	6.1E-01
4,4'-DDE	7.65E-02	9.14E-02 J	8.4E-01	8.61E-02 J	2.42E-01	3.6E-01	9.35E-02 J	1.09E-01	8.6E-01
4,4'-DDD	9.46E-02	1.64E-01 J	5.8E-01	5.43E-02 J	2.67E-01	2.0E-01	6.06E-02	1.97E-01	3.1E-01
Endosulfan Sulfate	6.12E-02	1.10E-01	5.6E-01	1.60E-01	1.13E-02 U	1.4E+01	1.03E-01	1.54E-01	6.7E-01
4,4'-DDT	1.02E-02 U	4.88E-01 J	2.1E-02	1.44E-02 UJ	5.60E-02	2.6E-01	2.08E-02 U	1.61E-01	1.3E-01
Methoxychlor	1.02E-02 U	1.05E-02 U	9.7E-01	1.13E-01	1.13E-02 U	1.0E+01	1.85E-01	1.10E-02 U	1.7E+01
alpha-Chlordane	8.11E-02	4.65E-01	1.7E-01	7.72E-02	8.43E-01	9.2E-02	9.07E-02	4.29E-01	2.1E-01
gamma-Chlordane	1.11E-01	1.05E-02 U	1.1E+01	7.38E-02	1.13E-02 U	6.5E+00	1.32E-01	1.10E-02 U	1.2E+01
Aroclor-1254	2.96E+00	7.85E+00	3.8E-01	2.86E+00	1.98E+01	1.4E-01	2.25E+00	1.08E+01	2.1E-01
Aroclor-1268	1.50E-01 J	6.75E-01	2.2E-01	1.80E-01 J	7.11E-01	2.5E-01	2.60E-01 J	6.29E-01	4.1E-01
Aroclor, Total	3.11E+00	8.52E+00	3.6E-01	3.04E+00	2.06E+01	1.5E-01	2.51E+00 J	1.14E+01	2.2E-01

Notes:
a. Biota-Sediment Accumulation Factors (BSAFs) were derived as the ratio of the lipid-normalized earthworm tissue and carbon-normalized surface soil concentrations (i.e., kgoc/kglip). All data (including organic carbon fraction and lipid) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

TABLE J-9

CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND				LYMAN MILL POND					
PARAMETER	CMS-EW-4005-0000-01 7/20/2001 NORMAL	LPX-EW-4005-0000-01 7/20/2001 NORMAL	CMS-FP-4005-0000-01 7/20/2001 NORMAL	BSAF	LPX-EW-4004-0000-01 7/19/2001 NORMAL	LPX-FP-4004-0000-01 7/19/2001 NORMAL	BSAF	LPX-EW-4006-0000-01 7/19/2001 NORMAL	LPX-FP-4006-0000-01 7/19/2001 NORMAL	BSAF
HCX		1.34E-01 J	2.60E-01 J	5.1E-01	1.77E-02 J	5.78E-03 J	3.1E+00	4.52E-04 U	1.65E-03 J	2.7E-01
2,3,7,8-TCDD		4.04E-03 J	7.49E-03 J	5.4E-01	3.47E-03 J	2.49E-02	1.4E-01	2.21E-04 J	1.73E-03	1.3E-01
1,2,3,7,8-PeCDD		2.76E-05 J	1.16E-04 J	2.4E-01	1.09E-04 U	1.35E-05 J	8.1E+00	8.14E-06 J	9.03E-05 J	9.0E-02
1,2,3,4,7,8-HxCDD		5.30E-05 J	1.89E-04 J	2.8E-01	1.09E-04 U	1.99E-05 J	5.5E+00	7.24E-06 J	9.27E-05 J	7.8E-02
1,2,3,6,7,8-HxCDD		1.51E-04	8.31E-04 J	1.8E-01	2.27E-05 J	5.58E-05 J	4.1E-01	2.40E-05 J	2.57E-04	9.3E-02
1,2,3,7,8,9-HxCDD		1.67E-04	6.83E-04 J	2.4E-01	1.75E-05 J	5.14E-05 J	3.4E-01	2.26E-05 J	3.14E-04	7.2E-02
1,2,3,4,6,7,8-HpCDD		3.84E-03 J	1.67E-02 J	2.3E-01	5.71E-04 J	1.26E-03	4.5E-01	4.00E-04 J	4.88E-03	8.2E-02
OCDD		2.55E-02 J	1.18E-01 J	2.2E-01	4.14E-03 J	9.55E-03	4.3E-01	2.32E-03 J	2.55E-02	9.1E-02
2,3,7,8-TCDF		5.56E-05 UJ	1.62E-04 J	3.4E-01	2.10E-05 J	4.99E-05 J	4.2E-01	7.24E-06 J#	4.98E-04	1.5E-02
1,2,3,7,8-PeCDF		7.73E-06 UJ	3.20E-05 J	2.4E-01	1.09E-04 U	1.94E-05 J	5.6E+00	5.66E-05 U	1.25E-04 J	4.5E-01
2,3,4,7,8-PeCDF		9.05E-06 UJ	7.87E-05 J	1.1E-01	1.22E-05 J	2.96E-05 J	4.1E-01	5.66E-05 U	1.81E-04 J	3.1E-01
1,2,3,4,7,8-HxCDF		4.18E-05 J	2.39E-04 J	1.7E-01	1.92E-05 J	5.89E-05 J	3.3E-01	3.39E-05 J	3.40E-04	1.0E-01
1,2,3,6,7,8-HxCDF		3.55E-05 J	2.17E-04 J	1.6E-01	1.09E-04 U	3.66E-05 J	3.0E+00	1.31E-05 J	1.56E-04 J	8.4E-02
2,3,4,6,7,8-HxCDF		2.43E-05 J	1.60E-04 J	1.5E-01	1.09E-04 U	2.89E-05 J	3.8E+00	1.58E-05 J	1.77E-04 J	8.9E-02
1,2,3,4,6,7,8-HpCDF		6.04E-04 J	3.61E-03 J	1.7E-01	1.98E-04	4.02E-04	4.9E-01	1.20E-04 J	8.49E-04	1.4E-01
1,2,3,4,7,8,9-HpCDF		3.65E-05 J	2.16E-04 J	1.7E-01	1.27E-05 J	2.60E-05 J	4.9E-01	6.79E-06 J	5.88E-05 J	1.2E-01
OCDF		1.47E-03 J	9.60E-03 J	1.5E-01	4.11E-04	8.21E-04	5.0E-01	1.98E-04 J	1.03E-03	1.9E-01
Total TCDD		4.04E-03 J	7.49E-03 J	5.4E-01	3.47E-03 J	2.49E-02 J	1.4E-01	2.21E-04 J	1.92E-03 J	1.1E-01
Total PeCDD		1.18E-04 J	1.99E-04 J	5.9E-01	1.09E-04 U	4.59E-05 J	2.4E+00	6.83E-05 J	1.25E-03 J	5.5E-02
Total HxCDD		1.36E-03 J	4.16E-03 J	3.3E-01	1.96E-04 J	4.94E-04 J	4.0E-01	2.48E-04 J	2.58E-03 J	9.6E-02
Total HpCDD		1.04E-02 J	2.86E-02 J	3.6E-01	1.25E-03 J	2.49E-03 J	5.0E-01	8.18E-04 J	9.29E-03 J	8.8E-02
Total TCDF		5.56E-05 UJ	5.11E-04 J	1.1E-01	3.58E-05 J	1.64E-04 J	2.2E-01	5.16E-05 J	2.26E-03 J	2.3E-02
Total PeCDF		3.93E-04 J	2.02E-03 J	1.9E-01	1.77E-03 J	7.34E-04 J	2.4E+00	1.91E-04 J	3.17E-03 J	6.0E-02
Total HxCDF		8.40E-04 J	3.05E-03 J	2.8E-01	3.34E-04 J	6.66E-04 J	5.0E-01	2.57E-04 J	2.06E-03 J	1.2E-01
Total HpCDF		1.36E-03 J	8.32E-03 J	1.6E-01	4.13E-04 J	8.23E-04 J	5.0E-01	2.40E-04 J	1.67E-03 J	1.4E-01
Toxicity Equivalency - Birds		8.12E-03	4.21E-03	1.9E+00	3.68E-03	2.52E-02	1.5E-01	3.15E-04	2.64E-03	1.2E-01
Toxicity Equivalency - Fish		7.95E-03	4.14E-03	1.9E+00	3.69E-03	2.49E-02	1.5E-01	2.78E-04	2.08E-03	1.3E-01
Toxicity Equivalency - Mammals		8.17E-03	4.21E-03	1.9E+00	3.66E-03	2.49E-02	1.5E-01	2.84E-04	2.16E-03	1.3E-01
Aluminum		5.58E+03 J	1.31E+04 J	4.2E-01	2.23E+03 J	1.48E+04 J	1.5E-01	1.31E+03 J	2.03E+04 J	6.4E-02
Antimony		2.20E-01	1.99E-01 J	1.1E+00	1.03E-01	5.60E-02 U	1.8E+00	1.11E-01	7.04E-01 J	1.6E-01
Arsenic		5.92E-01	4.64E+00	1.3E-01	5.20E-01	4.25E+00	1.2E-01	1.17E+00	7.42E+00	1.6E-01
Barium		4.77E+01	1.61E+02	3.0E-01	2.21E+01	7.23E+01	3.1E-01	3.17E+01	8.42E+02	3.8E-02
Beryllium		2.87E-01 J	1.57E+00	1.8E-01	1.35E-01 J	1.06E+00	1.3E-01	4.81E-02 J	6.49E-01	7.4E-02
Cadmium		2.51E+00	2.01E+00	1.2E+00	7.78E+00	4.63E-01 J	1.7E+01	3.01E+00	3.18E+00	9.5E-01
Chromium		7.93E+00	7.45E+01	1.1E-01	3.20E+00	3.39E+01	9.4E-02	3.03E+00	1.07E+02	2.8E-02
Cobalt		1.07E+00	1.06E+01	1.0E-01	7.39E-01	5.03E+00	1.5E-01	3.86E-01	7.47E+00	5.2E-02
Copper		1.14E+01	8.54E+01	1.3E-01	4.30E+00	3.34E+01	1.3E-01	1.07E+01	4.00E+02	2.7E-02
Iron		2.53E+03	2.53E+04	1.0E-01	1.14E+03	1.83E+04	6.2E-02	1.07E+03	2.55E+04	4.2E-02
Lead		2.13E+01 J	2.36E+02	9.0E-02	9.95E+01 J	1.58E+02	6.3E-01	3.47E+01 J	9.01E+02	3.9E-02
Manganese		1.69E+02	1.97E+03	8.6E-02	7.50E+01	7.40E+02	1.0E-01	2.35E+01	4.70E+02	5.0E-02
Mercury		4.72E-02	3.36E-01	1.4E-01	1.51E-01	2.09E-01	7.2E-01	3.49E-02	2.45E-01	1.4E-01
Mercury (methyl)		3.46E-03	3.87E-04 J	8.9E+00	1.57E-03 J	7.67E-04 J	2.0E+00	8.40E-04 J	1.59E-04 J	5.3E+00
Molybdenum		1.14E+00	8.81E+00 J	1.3E-01	4.62E-01	3.48E+00 J	1.3E-01	1.58E-01	2.67E+00 J	5.9E-02
Nickel		2.89E+00	2.73E+01	1.1E-01	1.19E+00	1.23E+01	9.7E-02	9.46E-01	2.58E+01	3.7E-02
Selenium		3.82E-01 J	2.69E-01 U	1.4E+00	5.22E+00 J	7.79E-01 J	6.7E+00	3.28E-01 J	2.93E-01 U	1.1E+00
Silver		6.55E-02	8.75E-01	7.5E-02	7.59E-02	4.07E-01	1.9E-01	5.33E-02	1.43E+00	3.7E-02
Thallium		7.57E-02	3.36E-01	2.3E-01	6.81E-02	2.79E-01	2.4E-01	3.38E-02	5.75E-01	5.9E-02
Vanadium		5.76E+00	4.15E+01	1.4E-01	2.53E+00	3.86E+01	6.6E-02	1.91E+00	4.26E+01	4.5E-02

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND				LYMAN MILL POND					
PARAMETER	CMS-EW-4005-0000-01 7/20/2001 NORMAL	LPX-EW-4005-0000-01 7/20/2001 NORMAL	CMS-FP-4005-0000-01 7/20/2001 NORMAL	BSAF	LPX-EW-4004-0000-01 7/19/2001 NORMAL	LPX-FP-4004-0000-01 7/19/2001 NORMAL	BSAF	LPX-EW-4006-0000-01 7/19/2001 NORMAL	LPX-FP-4006-0000-01 7/19/2001 NORMAL	BSAF
Zinc		1.16E+02	3.71E+02	3.1E-01	2.14E+02	9.75E+01	2.2E+00	1.41E+02	1.15E+03	1.2E-01
2-Monochlorobiphenyl (1)					4.69E-04 J	2.52E-03	1.9E-01			
4-Chlorobiphenyl (3)					5.94E-04 J	7.13E-03	8.3E-02			
2,2'-Dichlorobiphenyl (4)					1.02E-03 J	4.30E-03 J	2.4E-01			
2,4'-Dichlorobiphenyl (8)					3.20E-03 J	1.93E-02 J	1.7E-01			
2,2',3'-Trichlorobiphenyl (16)					1.56E-03 C	7.42E-03	2.1E-01			
2,2',4-Trichlorobiphenyl (17)					1.93E-03 J	6.63E-03	2.9E-01			
2,2',5-Trichlorobiphenyl (18)					4.29E-03 JC	1.51E-02 J	2.8E-01			
2,2',6-Trichlorobiphenyl (19)					2.94E-04 J	1.64E-03	1.8E-01			
2,3,3'-Trichlorobiphenyl (20)					1.92E-02 C	5.41E-02 J	3.5E-01			
2,3,4'-Trichlorobiphenyl (22)					4.06E-03 J	1.28E-02	3.2E-01			
2,3',4-Trichlorobiphenyl (25)					9.04E-04 J	2.17E-03	4.2E-01			
2,3',5-Trichlorobiphenyl (26)					2.14E-03 C	5.22E-03 J	4.1E-01			
2,4',5-Trichlorobiphenyl (31)					1.32E-02 J	3.12E-02	4.2E-01			
2,4',6-Trichlorobiphenyl (32)					1.80E-03	4.66E-03	3.9E-01			
2,2',3,3'-Tetrachlorobiphenyl (40)					1.25E-02 C	1.29E-02 J	9.7E-01			
2,2',3,4'-Tetrachlorobiphenyl (42)					8.95E-03 J	8.38E-03	1.1E+00			
2,2',3,5-Tetrachlorobiphenyl (43)					9.16E-02 C	7.10E-02 J	1.3E+00			
2,2',3,5'-Tetrachlorobiphenyl (44)					3.90E-02 C	3.66E-02 J	1.1E+00			
2,2',3,6-Tetrachlorobiphenyl (45)					2.32E-03 C	3.69E-03 J	6.3E-01			
2,2',3,6'-Tetrachlorobiphenyl (46)					5.67E-04 J	1.06E-03 J	5.4E-01			
2,2',4,5-Tetrachlorobiphenyl (48)					4.06E-03 J	4.72E-03	8.6E-01			
2,2',4,5'-Tetrachlorobiphenyl (49)					3.54E-02 C	2.81E-02 J	1.3E+00			
2,2',4,6-Tetrachlorobiphenyl (50)					2.42E-03 C	2.61E-03 J	9.3E-01			
2,3,3',4'-Tetrachlorobiphenyl (56)					1.31E-02 J	2.19E-02	6.0E-01			
2,3,3',6-Tetrachlorobiphenyl (59)					2.66E-03 C	2.61E-03 J	1.0E+00			
2,3,4,4'-Tetrachlorobiphenyl (60)					4.32E-03 J	1.06E-02	4.1E-01			
2,3,4,5-Tetrachlorobiphenyl (61)					8.41E-02 C	1.11E-01 J	7.6E-01			
2,3,4',5-Tetrachlorobiphenyl (63)					1.58E-03 J	1.30E-03 J	1.2E+00			
2,3,4',6-Tetrachlorobiphenyl (64)					1.78E-02 J	1.71E-02	1.0E+00			
2,3',4,4'-Tetrachlorobiphenyl (66)					4.57E-02 J	5.41E-02 J	8.4E-01			
3,3',4,4'-Tetrachlorobiphenyl (77)					3.42E-03 J	9.11E-03 J	3.8E-01			
2,2',3,3',4-Pentachlorobiphenyl (82)					1.73E-02 J	1.83E-02 J	9.5E-01			
2,2',3,3',5-Pentachlorobiphenyl (83)					1.19E-01 C	7.97E-02 J	1.5E+00			
2,2',3,3',6-Pentachlorobiphenyl (84)					3.95E-02 J	2.98E-02 J	1.3E+00			
2,2',3,4,4'-Pentachlorobiphenyl (85)					3.21E-02 C	3.63E-02 J	8.8E-01			
2,2',3,4,5-Pentachlorobiphenyl (86)					1.38E-01 C	1.24E-01 J	1.1E+00			
2,2',3,4,6-Pentachlorobiphenyl (88)					2.55E-02 C	2.01E-02 J	1.3E+00			
2,2',3,4,6'-Pentachlorobiphenyl (89)					6.53E-04 J	7.08E-04 J	9.2E-01			
2,2',3,4',5-Pentachlorobiphenyl (90)					2.74E-01 C	1.64E-01 J	1.7E+00			
2,2',3,5,5'-Pentachlorobiphenyl (92)					5.56E-02 J	2.90E-02	1.9E+00			
2,2',3,5,6-Pentachlorobiphenyl (93)					4.56E-03 C	1.10E-01 J	4.1E-02			
2,3,3',4,4'-Pentachlorobiphenyl (105)					4.94E-02 J	6.51E-02 J	7.6E-01			
2,3,3',4,5-Pentachlorobiphenyl (106)					1.74E-02 C	1.51E-02 J	1.2E+00			
2,3,3',4',5'-Pentachlorobiphenyl (108)					9.37E-03 C	7.74E-03 J	1.2E+00			
2,3,3',4',6-Pentachlorobiphenyl (110)					2.86E-01 C	2.04E-01 J	1.4E+00			
2,3,4,4',5-Pentachlorobiphenyl (114)					2.22E-03 J	3.68E-03 J	6.0E-01			

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2,3',4,4',5-Pentachlorobiphenyl (118)					1.61E-01 J	1.95E-01 J	8.3E-01			
3,3',4,4',5-Pentachlorobiphenyl (126)					5.29E-04 J	9.41E-04 J	5.6E-01			
2,2',3,3',4,4'-Hexachlorobiphenyl (128)					4.77E-02 C	5.19E-02 J	9.2E-01			
2,2',3,3',4,5-Hexachlorobiphenyl (129)					3.21E-01 C	2.43E-01 J	1.3E+00			
2,2',3,3',4,5'-Hexachlorobiphenyl (130)					1.91E-02 J	1.77E-02 J	1.1E+00			
2,2',3,3',4,6-Hexachlorobiphenyl (131)					3.15E-03 J	2.61E-03 J	1.2E+00			
2,2',3,3',4,6'-Hexachlorobiphenyl (132)					7.83E-02 J	8.17E-02 J	9.6E-01			
2,2',3,3',5,6-Hexachlorobiphenyl (134)					1.01E-02 C	1.13E-02 J	9.0E-01			
2,2',3,3',5,6'-Hexachlorobiphenyl (135)					8.94E-02 C	4.09E-02 J	2.2E+00			
2,2',3,3',6,6'-Hexachlorobiphenyl (136)					2.91E-02 J	1.81E-02 J	1.6E+00			
2,2',3,4,4',5-Hexachlorobiphenyl (137)					4.29E-02 C	2.75E-02 J	1.6E+00			
2,2',3,4,5,5'-Hexachlorobiphenyl (141)					3.69E-02 J	2.90E-02 J	1.3E+00			
2,2',3,4,5',6-Hexachlorobiphenyl (144)					7.45E-03 J	5.18E-03	1.4E+00			
2,2',3,4',5,5'-Hexachlorobiphenyl (146)					6.74E-02 C	1.57E-02 J	4.3E+00			
2,2',3,4',5,6-Hexachlorobiphenyl (147)					4.15E-01 C	1.24E-01 J	3.3E+00			
2,2',4,4',5,5'-Hexachlorobiphenyl (153)					2.05E-01 C	9.99E-02 J	2.1E+00			
2,3,3',4,4',5-Hexachlorobiphenyl (156)					2.56E-02 C	2.38E-02 J	1.1E+00			
2,3,3',4,4',6-Hexachlorobiphenyl (158)					2.08E-02 J	2.09E-02 J	1.0E+00			
2,3',4,4',5,5'-Hexachlorobiphenyl (167)					1.05E-02 J	8.14E-03 J	1.3E+00			
3,3',4,4',5,5'-Hexachlorobiphenyl (169)					1.87E-03 J	1.87E-04 J	1.0E+01			
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)					2.60E-02 J	4.01E-02 J	6.5E-01			
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)					8.64E-03 JC	1.09E-02 J	7.9E-01			
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)					7.13E-03 J	4.39E-03 J	1.6E+00			
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)					4.97E-02 C	3.11E-02 J	1.6E+00			
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)					1.21E-03 J	7.56E-04 J	1.6E+00			
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)					2.90E-03 J	2.90E-03 J	1.0E+00			
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)					1.91E-02 J	1.79E-02 J	1.1E+00			
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)					9.37E-03 J	4.62E-03	2.0E+00			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)					5.74E-02 C	3.92E-02 J	1.5E+00			
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)					2.80E-04 J	1.44E-04 J	1.9E+00			
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)					9.26E-05 J	1.71E-03 U	5.4E-02			
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)					2.10E-01 J	2.17E-02 J	9.7E+00			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)					1.22E-03 J	1.01E-03 J	1.2E+00			
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)					3.13E-03 J	6.33E-03 J	4.9E-01			
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)					9.61E-04 J	8.19E-04 J	1.2E+00			
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)					7.94E-03 J	8.45E-03 J	9.4E-01			
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)					2.65E-03 J	3.88E-03 J	6.8E-01			
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)					5.64E-03 J	4.83E-03 J	1.2E+00			
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)					2.29E-03 JC	2.49E-04 J	9.2E+00			
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)					6.48E-02 C	2.78E-02 J	2.3E+00			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)					3.81E-03 J	1.71E-03 J	2.2E+00			
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)					1.87E-02 J	1.04E-02 J	1.8E+00			
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)					4.35E-03 U	5.30E-04 J	8.2E+00			
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl					7.59E-02 J	4.47E-02	1.7E+00			
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl					5.19E-03 J	3.16E-03 J	1.6E+00			
Decachlorobiphenyl (209)					7.70E-02 J	4.47E-02 J	1.7E+00			
PCB Congeners, Total					3.95E+00 J	2.85E+00 J	1.4E+00			

TABLE J-9
CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	ALLENDALE POND				LYMAN MILL POND					
PARAMETER	CMS-EW-4005-0000-01 7/20/2001 NORMAL	LPX-EW-4005-0000-01 7/20/2001 NORMAL	CMS-FP-4005-0000-01 7/20/2001 NORMAL	BSAF	LPX-EW-4004-0000-01 7/19/2001 NORMAL	LPX-FP-4004-0000-01 7/19/2001 NORMAL	BSAF	LPX-EW-4006-0000-01 7/19/2001 NORMAL	LPX-FP-4006-0000-01 7/19/2001 NORMAL	BSAF
Toxicity Equivalency (PCB) - Birds					4.54E-04	6.47E-04	7.0E-01			
Toxicity Equivalency (PCB) - Fish					5.41E-06	7.53E-06	7.2E-01			
Toxicity Equivalency (PCB) - Mammals					1.07E-04	1.37E-04	7.8E-01			
Technical Chlordane	3.92E+00		9.44E+00	4.2E-01	1.18E+00 J	1.76E+00 J	6.7E-01	1.03E+00 J	1.21E+00 J	8.5E-01
delta-BHC	2.17E-02 J		9.27E-03 U	2.3E+00	1.66E-02 U	1.26E-02 U	1.3E+00	2.04E-02 U	1.04E-02 U	1.9E+00
Heptachlor Epoxide	4.28E-03 J		9.27E-03 U	4.6E-01	1.31E-02 J	8.61E-03 J	1.5E+00	2.04E-02 U	1.04E-02 U	1.9E+00
Dieldrin	9.28E-02		1.76E-01	5.3E-01	5.20E-02	4.86E-02	1.1E+00	1.86E-02 J	1.04E-02 U	1.8E+00
4,4'-DDE	6.02E-02		9.59E-02	6.3E-01	1.14E-01 J	1.11E-01	1.0E+00	8.19E-02	1.93E-01 J	4.2E-01
4,4'-DDD	6.22E-02		1.70E-01	3.7E-01	4.54E-02 J	3.18E-02	1.4E+00	2.04E-02 U	8.51E-02 J	2.4E-01
Endosulfan Sulfate	8.29E-02		9.14E-02	9.1E-01	6.07E-02	3.02E-02	2.0E+00	4.62E-02	1.04E-02 U	4.4E+00
4,4'-DDT	1.00E-02 U		1.96E-01	5.1E-02	4.80E-03 J	6.71E-02	7.2E-02	5.02E-02	1.17E-01 J	4.3E-01
Methoxychlor	1.23E-02 U		9.27E-03 U	1.3E+00	1.66E-02 U	1.26E-02 U	1.3E+00	1.67E-02 J	1.04E-02 U	1.6E+00
alpha-Chlordane	1.00E-01		4.68E-01	2.1E-01	4.63E-02	6.27E-02	7.4E-01	1.43E-01	1.73E-02 J	8.3E+00
gamma-Chlordane	1.70E-01		9.27E-03 U	1.8E+01	3.71E-02	1.26E-02 U	2.9E+00	2.71E-03 J	1.04E-02 U	2.6E-01
Aroclor-1254	3.04E+00		6.95E+00	4.4E-01	2.33E+00	2.65E+00	8.8E-01	1.11E+00	3.55E+00 J	3.1E-01
Aroclor-1268	1.45E-01 J		4.01E-01	3.6E-01	2.98E-01 J	4.96E-01	6.0E-01	9.64E-02 J	3.52E-01 J	2.7E-01
Aroclor, Total	3.19E+00		7.35E+00	4.3E-01	2.62E+00 J	3.15E+00	8.3E-01	1.20E+00 J	3.90E+00 J	3.1E-01

US EPA ARCHIVE DOCUMENT

TABLE J-9
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND			GREYSTONE MILL POND					
PARAMETER	LPX-EW-4007-0000-01 7/19/2001 NORMAL	LPX-FP-4007-0000-01 7/19/2001 NORMAL	BSAF	RWR-EW-5001-0000-01 7/17/2001 NORMAL	RWR-FP-5001-0000-01 7/17/2001 NORMAL	BSAF	RWR-EW-5002-0000-01 7/16/2001 NORMAL	RWR-FP-5002-0000-01 7/16/2001 NORMAL	BSAF
HCX	3.24E-04 U	2.66E-03 J	1.2E-01	1.92E-04 U	7.86E-04 J	2.4E-01	6.53E-04 U	2.19E-03 J	3.0E-01
2,3,7,8-TCDD	9.87E-05 J	1.39E-04 UJ	7.1E-01	9.11E-06 J	5.20E-04	1.8E-02	9.87E-06 J	3.29E-05 U	3.0E-01
1,2,3,7,8-PeCDD	4.22E-05 J	1.78E-04 J	2.4E-01	7.56E-06 J	6.16E-05 J	1.2E-01	8.16E-05 U	5.78E-05 J	1.4E+00
1,2,3,4,7,8-HxCDD	1.20E-04 J	3.82E-04 J	3.1E-01	8.72E-06 J	1.04E-04 J	8.4E-02	1.58E-05 J	1.03E-04 J	1.5E-01
1,2,3,6,7,8-HxCDD	2.94E-04 J	1.05E-03 J	2.8E-01	3.04E-05 J	4.26E-04	7.1E-02	5.49E-05 J	4.11E-04	1.3E-01
1,2,3,7,8,9-HxCDD	3.10E-04 J	1.02E-03 J	3.1E-01	2.50E-05 J	2.84E-04	8.8E-02	3.36E-05 J	2.86E-04	1.2E-01
1,2,3,4,6,7,8-HpCDD	7.80E-03 J	2.45E-02 J	3.2E-01	4.95E-04 J	8.05E-03	6.1E-02	8.77E-04 J	7.16E-03	1.2E-01
OCDD	5.35E-02 J	1.57E-01 J	3.4E-01	3.58E-03 J	5.44E-02	6.6E-02	6.66E-03 J	4.50E-02	1.5E-01
2,3,7,8-TCDF	8.12E-06 U	1.43E-04 J	5.7E-02	4.84E-06 U	1.01E-03 J	4.8E-03	1.63E-05 U	1.92E-04 J	8.5E-02
1,2,3,7,8-PeCDF	4.04E-05 U	6.92E-05 J	5.8E-01	2.40E-05 U	4.78E-05 J	5.0E-01	8.16E-05 U	5.50E-05 J	1.5E+00
2,3,4,7,8-PeCDF	4.04E-05 U	1.19E-04 J	3.4E-01	2.40E-05 U	1.07E-04 J	2.2E-01	8.16E-05 U	1.24E-04 J	6.6E-01
1,2,3,4,7,8-HxCDF	1.17E-04 J	5.10E-04 J	2.3E-01	1.47E-05 J	2.85E-04	5.2E-02	8.16E-05 U	3.59E-04	2.3E-01
1,2,3,6,7,8-HxCDF	1.23E-04 J	4.09E-04 J	3.0E-01	1.18E-05 J	2.16E-04	5.5E-02	2.27E-05 J	2.42E-04 J	9.4E-02
2,3,4,6,7,8-HxCDF	8.28E-05 J	3.54E-04 J	2.3E-01	8.14E-06 J	1.42E-04 J	5.7E-02	8.16E-05 U	1.92E-04 J	4.2E-01
1,2,3,4,6,7,8-HpCDF	3.74E-03 J	1.19E-02 J	3.1E-01	1.71E-04 J	2.77E-03	6.2E-02	3.40E-04 J	2.65E-03	1.3E-01
1,2,3,4,7,8,9-HpCDF	1.74E-04 J	5.48E-04 J	3.2E-01	1.03E-05 J	1.38E-04 J	7.5E-02	8.16E-05 U	1.30E-04 J	6.3E-01
OCDF	8.62E-03 J	2.81E-02 J	3.1E-01	3.29E-04 J	4.38E-03	7.5E-02	7.49E-04 J	2.50E-03 J	3.0E-01
Total TCDD	9.87E-05 J	1.39E-04 UJ	7.1E-01	1.55E-05 J	2.88E-04 UJ	5.4E-02	9.87E-06 J	5.55E-05 UJ	1.8E-01
Total PeCDD	1.18E-04 J	4.35E-04 J	2.7E-01	5.35E-05 J	3.19E-04 J	1.7E-01	8.16E-05 U	3.17E-04 J	2.6E-01
Total HxCDD	1.94E-03 J	5.59E-03 J	3.5E-01	4.57E-04 J	2.44E-03 J	1.9E-01	3.27E-04 J	2.70E-03 J	1.2E-01
Total HpCDD	1.45E-02 J	4.66E-02 J	3.1E-01	1.74E-03 J	1.55E-02 J	1.1E-01	1.70E-03 J	1.37E-02 J	1.2E-01
Total TCDF	7.32E-05 UJ	1.43E-04 J	5.1E-01	1.76E-05 UJ	1.01E-03 J	1.7E-02	4.24E-05 J	5.29E-04 J	8.0E-02
Total PeCDF	4.58E-04 J	2.47E-03 J	1.9E-01	5.21E-04 J	3.55E-03 J	1.5E-01	3.12E-04 J	3.03E-03 J	1.0E-01
Total HxCDF	3.13E-03 J	8.52E-03 J	3.7E-01	7.93E-04 J	3.81E-03 J	2.1E-01	4.40E-04 J	4.04E-03 J	1.1E-01
Total HpCDF	8.10E-03 J	2.78E-02 J	2.9E-01	4.20E-04 J	6.22E-03 J	6.7E-02	6.96E-04 J	5.38E-03 J	1.3E-01
Toxicity Equivalency - Birds	3.23E-04	1.01E-03	3.2E-01	5.99E-05	1.85E-03	3.2E-02	2.35E-04	5.70E-04	4.1E-01
Toxicity Equivalency - Fish	3.19E-04	8.94E-04	3.6E-01	4.36E-05	8.55E-04	5.1E-02	1.79E-04	3.44E-04	5.2E-01
Toxicity Equivalency - Mammals	3.96E-04	1.15E-03	3.4E-01	4.98E-05	9.99E-04	5.0E-02	1.89E-04	4.39E-04	4.3E-01
Aluminum	3.46E+03 J	1.31E+04 J	2.6E-01	1.06E+03 J	2.18E+04 J	4.9E-02	2.47E+03 J	1.22E+04 J	2.0E-01
Antimony	1.98E-01	2.13E-01 J	9.3E-01	9.62E-02	5.21E-01 J	1.8E-01	1.69E-01	4.62E-01 J	3.7E-01
Arsenic	5.26E-01	4.93E+00	1.1E-01	3.93E-01	5.58E+00	7.0E-02	5.57E-01	6.34E+00	8.8E-02
Barium	2.95E+01	1.05E+02	2.8E-01	1.24E+01	2.39E+02	5.2E-02	2.99E+01	2.82E+02	1.1E-01
Beryllium	1.73E-01 J	6.98E-01	2.5E-01	1.23E-01 J	4.46E+00	2.8E-02	2.53E-01 J	2.48E+00	1.0E-01
Cadmium	5.09E+00	1.76E+00	2.9E+00	2.78E+00	3.46E+00	8.0E-01	2.96E+00	1.06E+00	2.8E+00
Chromium	3.21E+00	1.36E+01 U	2.4E-01	3.18E+00	2.91E+02	1.1E-02	7.56E+00	1.71E+02	4.4E-02
Cobalt	7.56E-01	4.94E+00	1.5E-01	7.49E-01	9.57E+00	7.8E-02	9.86E-01	1.25E+01	7.9E-02
Copper	7.13E+00	8.60E+01	8.3E-02	1.08E+01	3.24E+02	3.3E-02	8.60E+00	1.09E+02	7.9E-02
Iron	1.58E+03	1.85E+04	8.5E-02	1.09E+03	2.45E+04	4.4E-02	1.77E+03	2.60E+04	6.8E-02
Lead	5.78E+01 J	2.48E+02	2.3E-01	8.82E+00 J	5.91E+02	1.5E-02	2.02E+01 J	3.19E+02	6.3E-02
Manganese	4.29E+01	3.07E+02	1.4E-01	1.57E+02	5.11E+02	3.1E-01	2.38E+02	2.29E+03	1.0E-01
Mercury	3.02E-02	1.59E-01	1.9E-01	2.49E-02	8.11E-01	3.1E-02	4.15E-02	3.81E-01	1.1E-01
Mercury (methyl)	9.27E-04 J	2.94E-04 J	3.2E+00	4.16E-03	3.26E-04 J	1.3E+01	2.61E-03	7.62E-04 J	3.4E+00
Molybdenum	2.19E-01	1.42E+00 J	1.5E-01	7.33E-01	3.48E+01 J	2.1E-02	1.34E+00	3.70E+01 J	3.6E-02
Nickel	1.63E+00	2.04E+01	8.0E-02	1.05E+01	3.87E+02	2.7E-02	2.32E+00	2.74E+01	8.5E-02
Selenium	4.52E-01 J	2.19E-01 U	2.1E+00	4.47E-01 J	8.62E-01 J	5.2E-01	5.59E-01 J	3.06E-01 U	1.8E+00
Silver	1.82E-01	3.88E+00	4.7E-02	1.05E-01	3.80E+00	2.8E-02	3.24E-01	1.38E+00	2.3E-01
Thallium	6.67E-02	2.89E-01	2.3E-01	2.59E-02	5.66E-01	4.6E-02	4.86E-02	3.45E-01	1.4E-01
Vanadium	3.44E+00	3.16E+01	1.1E-01	1.77E+00	9.07E+01	2.0E-02	3.18E+00	5.36E+01	5.9E-02

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Zinc	1.65E+02	2.18E+02	7.6E-01	4.01E+01	4.97E+02	8.1E-02	1.17E+02	2.48E+02	4.7E-01
2-Monochlorobiphenyl (1)		7.89E-04 J					2.90E-04 J	1.15E-03 J	2.5E-01
4-Chlorobiphenyl (3)		2.25E-04 UJ					2.50E-04 J	1.85E-03 J	1.3E-01
2,2'-Dichlorobiphenyl (4)		4.69E-04 J					1.63E-03 U	1.50E-02 J	1.1E-01
2,4'-Dichlorobiphenyl (8)		1.49E-03 J					9.66E-04 J	6.70E-02 J	1.4E-02
2,2',3'-Trichlorobiphenyl (16)		4.12E-04 UJ					8.87E-04 C	4.33E-02 J	2.0E-02
2,2',4-Trichlorobiphenyl (17)		3.73E-04 UJ					1.06E-03 J	4.52E-02 J	2.3E-02
2,2',5-Trichlorobiphenyl (18)		1.48E-04 UJ					2.12E-03 JC	4.08E-02 J	5.2E-02
2,2',6-Trichlorobiphenyl (19)		1.13E-04 UJ					1.94E-04 J	1.09E-02 J	1.8E-02
2,3,3'-Trichlorobiphenyl (20)		2.26E-03 UJ					1.28E-02 C	1.68E-01 J	7.6E-02
2,3,4'-Trichlorobiphenyl (22)		7.09E-04 UJ					3.29E-03 J	6.08E-02 J	5.4E-02
2,3',4-Trichlorobiphenyl (25)		8.75E-05 UJ					6.19E-04 J	8.08E-03 J	7.7E-02
2,3',5-Trichlorobiphenyl (26)		2.02E-04 UJ					1.31E-03 C	2.05E-02 J	6.4E-02
2,4',5-Trichlorobiphenyl (31)		8.84E-04 UJ					6.93E-03 J	7.54E-02 J	9.2E-02
2,4',6-Trichlorobiphenyl (32)		1.87E-04 UJ					1.23E-03 J	1.49E-02 J	8.2E-02
2,2',3,3'-Tetrachlorobiphenyl (40)		2.44E-03 J					1.15E-02 C	6.16E-02 J	1.9E-01
2,2',3,4'-Tetrachlorobiphenyl (42)		1.25E-03 J					6.81E-03 J	2.89E-02 J	2.4E-01
2,2',3,5-Tetrachlorobiphenyl (43)		8.45E-03 J					5.42E-02 C	1.01E-01 J	5.4E-01
2,2',3,5'-Tetrachlorobiphenyl (44)		5.05E-03 J					2.45E-02 C	7.87E-02 J	3.1E-01
2,2',3,6-Tetrachlorobiphenyl (45)		3.60E-04 UJ					1.90E-03 C	2.19E-02 J	8.7E-02
2,2',3,6'-Tetrachlorobiphenyl (46)		2.46E-04 J					6.06E-04 J	8.41E-03 J	7.2E-02
2,2',4,5-Tetrachlorobiphenyl (48)		5.76E-04 J					2.93E-03 J	1.73E-02 J	1.7E-01
2,2',4,5'-Tetrachlorobiphenyl (49)		2.87E-03 J					1.69E-02 C	3.94E-02 J	4.3E-01
2,2',4,6-Tetrachlorobiphenyl (50)		5.88E-04 J					2.19E-03 C	1.74E-02 J	1.3E-01
2,3,3',4'-Tetrachlorobiphenyl (56)		3.62E-03 J					5.52E-03 J	1.61E-02 J	3.4E-01
2,3,3',6-Tetrachlorobiphenyl (59)		4.44E-04 J					1.61E-03 C	7.61E-03 J	2.1E-01
2,3,4,4'-Tetrachlorobiphenyl (60)		1.74E-03 J					1.87E-03 J	4.51E-03 J	4.2E-01
2,3,4,5-Tetrachlorobiphenyl (61)		1.42E-02 J					3.73E-02 C	5.80E-02 J	6.4E-01
2,3,4',5-Tetrachlorobiphenyl (63)		1.56E-04 J					6.09E-04 J	6.12E-04 J	1.0E+00
2,3,4',6-Tetrachlorobiphenyl (64)		2.62E-03 J					9.14E-03 J	2.95E-02 J	3.1E-01
2,3',4,4'-Tetrachlorobiphenyl (66)		7.14E-03 J					2.12E-02 J	4.78E-02 J	4.4E-01
3,3',4,4'-Tetrachlorobiphenyl (77)		1.83E-03 J					1.29E-03 J	7.36E-03 J	1.8E-01
2,2',3,3',4-Pentachlorobiphenyl (82)		4.93E-03 J					9.84E-03 J	6.89E-02 J	1.4E-01
2,2',3,3',5-Pentachlorobiphenyl (83)		1.40E-02 J					5.03E-02 C	1.23E-01 J	4.1E-01
2,2',3,3',6-Pentachlorobiphenyl (84)		8.95E-03 J					2.90E-02 J	1.51E-01 J	1.9E-01
2,2',3,4,4'-Pentachlorobiphenyl (85)		6.14E-03 J					1.33E-02 C	5.98E-02 J	2.2E-01
2,2',3,4,5-Pentachlorobiphenyl (86)		1.22E-02 J					6.87E-02 C	2.47E-01 J	2.8E-01
2,2',3,4,6-Pentachlorobiphenyl (88)		5.28E-03 J					1.51E-02 C	6.31E-02 J	2.4E-01
2,2',3,4,6'-Pentachlorobiphenyl (89)		1.57E-04 J					5.67E-04 J	2.10E-03 J	2.7E-01
2,2',3,4',5-Pentachlorobiphenyl (90)		2.68E-02 J					1.26E-01 C	2.07E-01 J	6.1E-01
2,2',3,5,5'-Pentachlorobiphenyl (92)		5.43E-03 J					2.89E-02 J	5.23E-02 J	5.5E-01
2,2',3,5,6-Pentachlorobiphenyl (93)		1.78E-02 J					4.22E-03 C	3.33E-01 J	1.3E-02
2,3,3',4,4'-Pentachlorobiphenyl (105)		1.21E-02 J					2.49E-02 J	8.25E-02 J	3.0E-01
2,3,3',4,5-Pentachlorobiphenyl (106)		2.59E-03 J					9.48E-03 C	1.75E-02 J	5.4E-01
2,3,3',4',5'-Pentachlorobiphenyl (108)		1.14E-03 J					5.33E-03 C	1.38E-02 J	3.9E-01
2,3,3',4',6-Pentachlorobiphenyl (110)		5.55E-02 J					1.48E-01 C	6.42E-01 J	2.3E-01
2,3,4,4',5-Pentachlorobiphenyl (114)		5.93E-04 J					5.79E-04 J	3.51E-03 J	1.7E-01

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TABLE J-9

CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND			GREYSTONE MILL POND					
	LPX-EW-4007-0000-01 7/19/2001 NORMAL	LPX-FP-4007-0000-01 7/19/2001 NORMAL	BSAF	RWR-EW-5001-0000-01 7/17/2001 NORMAL	RWR-FP-5001-0000-01 7/17/2001 NORMAL	BSAF	RWR-EW-5002-0000-01 7/16/2001 NORMAL	RWR-FP-5002-0000-01 7/16/2001 NORMAL	BSAF
2,3',4,4',5-Pentachlorobiphenyl (118)		3.49E-02 J					7.49E-02 J	2.76E-01 J	2.7E-01
3,3',4,4',5-Pentachlorobiphenyl (126)		6.99E-04 J					3.27E-03 U	6.37E-03 J	5.1E-01
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		1.39E-02 J					2.50E-02 C	1.63E-01 J	1.5E-01
2,2',3,3',4,5-Hexachlorobiphenyl (129)		6.50E-02 J					1.59E-01 C	5.58E-01 J	2.8E-01
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		4.48E-03 J					9.81E-03 J	4.37E-02 J	2.2E-01
2,2',3,3',4,6-Hexachlorobiphenyl (131)		7.49E-04 J					1.71E-03 J	9.02E-03 J	1.9E-01
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		2.91E-02 J					4.22E-02 J	3.36E-01 J	1.3E-01
2,2',3,3',5,6-Hexachlorobiphenyl (134)		3.99E-03 J					4.58E-03 C	4.72E-02 J	9.7E-02
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		2.20E-02 J					4.01E-02 C	1.40E-01 J	2.9E-01
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		1.16E-02 J					1.48E-02 J	9.76E-02 J	1.5E-01
2,2',3,4,4',5-Hexachlorobiphenyl (137)		8.12E-03 J					2.25E-02 C	8.21E-02 J	2.7E-01
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		8.73E-03 J					1.73E-02 J	6.09E-02 J	2.8E-01
2,2',3,4,5',6-Hexachlorobiphenyl (144)		6.40E-04 UJ					2.66E-03 J	9.00E-04 UJ	3.0E+00
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		3.24E-03 J					3.41E-02 C	2.21E-02 J	1.5E+00
2,2',3,4',5,6-Hexachlorobiphenyl (147)		5.44E-02 J					1.86E-01 C	3.99E-01 J	4.7E-01
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		2.10E-02 J					8.34E-02 C	1.43E-01 J	5.8E-01
2,3,3',4,4',5-Hexachlorobiphenyl (156)		5.20E-03 J					1.21E-02 C	4.72E-02 J	2.6E-01
2,3,3',4,4',6-Hexachlorobiphenyl (158)		4.77E-03 J					8.69E-03 J	4.46E-02 J	1.9E-01
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		2.15E-03 J					5.45E-03 J	2.04E-02 J	2.7E-01
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		6.40E-04 UJ					1.75E-03 J	9.00E-04 UJ	1.9E+00
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		2.88E-02 J					1.33E-02 J	1.46E-01 J	9.1E-02
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		7.33E-03 J					4.01E-03 JC	3.63E-02 J	1.1E-01
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		2.46E-03 J					4.34E-03 J	1.16E-02 J	3.7E-01
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		3.21E-02 J					2.50E-02 C	1.55E-01 J	1.6E-01
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)		4.61E-04 J					5.80E-04 J	1.98E-03 J	2.9E-01
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		1.28E-03 UJ					1.44E-03 J	1.28E-02 J	1.1E-01
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		1.60E-02 J					9.57E-03 J	6.03E-02 J	1.6E-01
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		3.60E-03 J					7.55E-03 J	1.45E-02 J	5.2E-01
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		2.56E-02 J					3.05E-02 C	9.26E-02 J	3.3E-01
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)		1.28E-03 UJ					3.27E-03 U	1.80E-03 UJ	1.8E+00
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)		1.28E-03 UJ					9.38E-05 J	1.83E-04 UJ	5.1E-01
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		1.62E-02 J					1.10E-01 J	5.26E-02 J	2.1E+00
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		4.62E-04 J					7.79E-04 J	2.70E-03 J	2.9E-01
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		3.44E-03 J					1.35E-03 J	1.82E-02 J	7.4E-02
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		4.60E-04 J					4.21E-04 J	2.39E-03 J	1.8E-01
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		8.73E-03 J					6.70E-03 J	3.54E-02 J	1.9E-01
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		6.51E-03 J					1.66E-03 J	1.72E-02 J	9.7E-02
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		4.53E-03 J					5.14E-03 J	2.33E-02 J	2.2E-01
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		1.28E-03 UJ					2.04E-03 JC	8.43E-04 J	2.4E+00
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		1.83E-02 J					7.52E-02 C	1.42E-01 J	5.3E-01
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		9.85E-04 J					3.67E-03 J	7.82E-03 J	4.7E-01
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		4.91E-03 J					1.80E-02 J	4.24E-02 J	4.2E-01
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		4.30E-04 J					6.55E-04 J	1.92E-03 J	3.4E-01
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		1.56E-02 J					7.67E-02 J	2.11E-01 J	3.6E-01
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		9.95E-04 J					5.95E-03 J	1.46E-02 J	4.1E-01
Decachlorobiphenyl (209)		1.76E-02 J					8.39E-02 J	3.07E-01 J	2.7E-01
PCB Congeners, Total		7.48E-01 J					2.11E+00 J	7.17E+00 J	2.9E-01

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North Providence, Rhode Island

	LYMAN MILL POND			GREYSTONE MILL POND					
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Toxicity Equivalency (PCB) - Birds		2.28E-04					5.59E-04	1.11E-03	5.0E-01
Toxicity Equivalency (PCB) - Fish		4.31E-06					1.80E-05	3.51E-05	5.1E-01
Toxicity Equivalency (PCB) - Mammals		8.42E-05					3.62E-04	7.08E-04	5.1E-01
Technical Chlordane	2.49E+00 J	6.42E+00	3.9E-01	5.65E-01 J	6.74E+00	8.4E-02	1.05E+00 J	6.49E+00	1.6E-01
delta-BHC	1.19E-02 U	9.58E-03 U	1.2E+00	1.29E-02 U	9.85E-03 U	1.3E+00	1.23E-02 U	1.30E-02 U	9.5E-01
Heptachlor Epoxide	2.79E-02	2.92E-02	9.6E-01	1.29E-02 U	9.85E-03 U	1.3E+00	1.23E-02 U	1.30E-02 U	9.5E-01
Dieldrin	2.79E-02	7.61E-02	3.7E-01	1.29E-02 U	8.63E-02	1.5E-01	1.23E-02 U	8.04E-02 J	1.5E-01
4,4'-DDE	1.70E-01	4.45E-01	3.8E-01	3.66E-02	1.89E-01	1.9E-01	5.46E-02 J	9.70E-02 J	5.6E-01
4,4'-DDD	7.05E-02	1.85E-01	3.8E-01	2.89E-02	1.39E-01	2.1E-01	3.29E-02 J	8.67E-02 J	3.8E-01
Endosulfan Sulfate	2.82E-02	2.41E-02	1.2E+00	2.58E-02	9.85E-03 U	2.6E+00	2.20E-02 J	7.64E-02 J	2.9E-01
4,4'-DDT	2.33E-01	6.07E-01	3.8E-01	1.29E-02 U	6.04E-02	2.1E-01	1.23E-02 UJ	5.03E-02 J	2.5E-01
Methoxychlor	6.92E-02	9.58E-03 U	7.2E+00	1.29E-02 U	9.85E-03 U	1.3E+00	1.23E-02 U	1.30E-02 U	9.5E-01
alpha-Chlordane	9.45E-02	3.13E-01	3.0E-01	3.72E-02	3.29E-01	1.1E-01	4.51E-02	3.12E-01 J	1.4E-01
gamma-Chlordane	9.77E-02	9.58E-03 U	1.0E+01	2.03E-02 J	9.85E-03 U	2.1E+00	4.05E-02	1.30E-02 UJ	3.1E+00
Aroclor-1254	8.56E-01	1.20E+00	7.1E-01	7.02E-01	7.69E+00	9.1E-02	1.14E+00	3.88E+00	3.0E-01
Aroclor-1268	4.19E-01	3.30E-01	1.3E+00	2.49E-01 J	7.66E-01	3.3E-01	3.21E-01	8.14E-01	3.9E-01
Aroclor, Total	1.27E+00 J	1.53E+00 J	8.3E-01	9.51E-01 J	8.45E+00	1.1E-01	1.46E+00 J	4.69E+00	3.1E-01

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Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND					
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HCX	3.85E-04 U	2.77E-03 J	1.4E-01	2.75E-04 U	4.05E-03 J	6.8E-02
2,3,7,8-TCDD	1.66E-05 J	4.12E-05 U	4.0E-01	6.91E-06 U	8.94E-05 U	7.7E-02
1,2,3,7,8-PeCDD	1.27E-05 J	4.80E-05 J	2.7E-01	1.24E-05 J	7.82E-05 J	1.6E-01
1,2,3,4,7,8-HxCDD	1.97E-05 J	7.65E-05 J	2.6E-01	2.40E-05 J	1.19E-04 J	2.0E-01
1,2,3,6,7,8-HxCDD	7.53E-05 J	3.27E-04	2.3E-01	7.54E-05 J	4.45E-04 J	1.7E-01
1,2,3,7,8,9-HxCDD	5.71E-05 J	2.52E-04	2.3E-01	5.69E-05 J	3.40E-04 J	1.7E-01
1,2,3,4,6,7,8-HpCDD	1.53E-03 J	5.04E-03	3.0E-01	1.43E-03 J	9.98E-03	1.4E-01
OCDD	1.25E-02 J	3.96E-02	3.2E-01	9.93E-03 J	8.10E-02	1.2E-01
2,3,7,8-TCDF	3.32E-05 #	2.21E-04 J	1.5E-01	3.44E-05 U	3.94E-04 J	8.7E-02
1,2,3,7,8-PeCDF	1.81E-05 J	7.55E-05 J	2.4E-01	1.16E-05 J	7.71E-05 J	1.5E-01
2,3,4,7,8-PeCDF	2.16E-05 J	1.37E-04 J	1.6E-01	1.63E-05 J	1.19E-04 U	1.4E-01
1,2,3,4,7,8-HxCDF	6.37E-05 J	3.69E-04	1.7E-01	5.11E-05 J	4.91E-04 J	1.0E-01
1,2,3,6,7,8-HxCDF	4.86E-05 J	2.45E-04	2.0E-01	4.23E-05 J	3.20E-04 J	1.3E-01
2,3,4,6,7,8-HxCDF	2.97E-05 J	1.75E-04 J	1.7E-01	2.60E-05 J	2.41E-04 J	1.1E-01
1,2,3,4,6,7,8-HpCDF	6.53E-04 J	2.68E-03	2.4E-01	5.60E-04 J	4.68E-03	1.2E-01
1,2,3,4,7,8,9-HpCDF	2.74E-05 J	1.32E-04 J	2.1E-01	3.23E-05 J	2.09E-04 J	1.5E-01
OCDF	1.00E-03 J	3.91E-03	2.6E-01	9.71E-04 J	1.22E-02	8.0E-02
Total TCDD	1.66E-05 J	4.64E-05 UJ	3.6E-01	6.91E-06 U	1.05E-04 UJ	6.6E-02
Total PeCDD	8.19E-05 J	5.71E-04 J	1.4E-01	2.68E-05 J	3.17E-04 J	8.4E-02
Total HxCDD	5.54E-04 J	2.30E-03 J	2.4E-01	4.52E-04 J	3.10E-03 J	1.5E-01
Total HpCDD	4.26E-03 J	1.02E-02 J	4.2E-01	2.86E-03 J	1.97E-02 J	1.5E-01
Total TCDF	7.18E-05 J	9.40E-04 J	7.6E-02	2.72E-05 UJ	1.25E-03 J	2.2E-02
Total PeCDF	6.75E-04 J	3.75E-03 J	1.8E-01	4.02E-04 J	6.32E-03 J	6.4E-02
Total HxCDF	8.60E-04 J	3.98E-03 J	2.2E-01	6.70E-04 J	5.99E-03 J	1.1E-01
Total HpCDF	1.29E-03 J	5.54E-03 J	2.3E-01	1.15E-03 J	1.21E-02 J	9.5E-02
Toxicity Equivalency - Birds	1.22E-04	6.05E-04	2.0E-01	1.03E-04	9.08E-04	1.1E-01
Toxicity Equivalency - Fish	8.26E-05	3.34E-04	2.5E-01	6.71E-05	4.94E-04	1.4E-01
Toxicity Equivalency - Mammals	1.02E-04	4.12E-04	2.5E-01	8.40E-05	6.26E-04	1.3E-01
Aluminum	3.44E+03 J	1.10E+04 J	3.1E-01	3.76E+03 J	1.86E+04 J	2.0E-01
Antimony	3.57E-01	5.32E-01 J	6.7E-01	2.73E-01	9.82E-01 J	2.8E-01
Arsenic	8.33E-01	6.74E+00	1.2E-01	6.21E-01	1.22E+01	5.1E-02
Barium	5.01E+01	1.81E+02	2.8E-01	5.19E+01	2.22E+02	2.3E-01
Beryllium	3.00E-01 J	1.90E+00	1.6E-01	3.35E-01 J	3.47E+00	9.7E-02
Cadmium	4.13E+00	7.11E-01	5.8E+00	2.02E+00	1.28E+00	1.6E+00
Chromium	1.72E+01	2.14E+02	8.0E-02	9.94E+00	2.46E+02	4.0E-02
Cobalt	1.74E+00	1.01E+01	1.7E-01	1.16E+00	2.03E+01	5.7E-02
Copper	1.94E+01	1.32E+02	1.5E-01	1.73E+01	2.55E+02	6.8E-02
Iron	2.22E+03	2.14E+04	1.0E-01	2.49E+03	3.72E+04	6.7E-02
Lead	6.32E+01 J	3.16E+02	2.0E-01	2.17E+01 J	5.74E+02	3.8E-02
Manganese	1.92E+02	4.39E+02	4.4E-01	3.19E+02	4.13E+03	7.7E-02
Mercury	7.62E-02	4.23E-01	1.8E-01	4.77E-02	7.12E-01	6.7E-02
Mercury (methyl)	4.36E-03	5.35E-04 J	8.1E+00	4.68E-03	3.48E-04 J	1.3E+01
Molybdenum	5.36E+00	8.77E+01 J	6.1E-02	1.71E+00	5.66E+01 J	3.0E-02
Nickel	3.80E+00	2.55E+01	1.5E-01	3.35E+00	3.90E+01	8.6E-02
Selenium	9.96E-01 J	6.87E-01 J	1.4E+00	2.48E-01 J	9.63E-01 J	2.6E-01
Silver	1.74E-01	1.23E+00	1.4E-01	1.40E-01	2.31E+00	6.1E-02
Thallium	8.39E-02	3.46E-01	2.4E-01	6.19E-02	5.85E-01	1.1E-01
Vanadium	6.37E+00	8.17E+01	7.8E-02	4.75E+00	1.03E+02	4.6E-02

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TABLE J-9
CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND					
PARAMETER	RWR-EW-5003-0000-01 7/17/2001 NORMAL	RWR-FP-5003-0000-01 7/17/2001 NORMAL	BSAF	RWR-EW-5004-0000-01 7/18/2001 NORMAL	RWR-FP-5004-0000-01 7/19/2001 NORMAL	BSAF
Zinc	1.14E+02	1.58E+02	7.2E-01	7.08E+01	2.49E+02	2.8E-01
2-Monochlorobiphenyl (1)						
4-Chlorobiphenyl (3)						
2,2'-Dichlorobiphenyl (4)						
2,4'-Dichlorobiphenyl (8)						
2,2',3'-Trichlorobiphenyl (16)						
2,2',4-Trichlorobiphenyl (17)						
2,2',5-Trichlorobiphenyl (18)						
2,2',6-Trichlorobiphenyl (19)						
2,3,3'-Trichlorobiphenyl (20)						
2,3,4'-Trichlorobiphenyl (22)						
2,3',4-Trichlorobiphenyl (25)						
2,3',5-Trichlorobiphenyl (26)						
2,4',5-Trichlorobiphenyl (31)						
2,4',6-Trichlorobiphenyl (32)						
2,2',3,3'-Tetrachlorobiphenyl (40)						
2,2',3,4'-Tetrachlorobiphenyl (42)						
2,2',3,5-Tetrachlorobiphenyl (43)						
2,2',3,5'-Tetrachlorobiphenyl (44)						
2,2',3,6-Tetrachlorobiphenyl (45)						
2,2',3,6'-Tetrachlorobiphenyl (46)						
2,2',4,5-Tetrachlorobiphenyl (48)						
2,2',4,5'-Tetrachlorobiphenyl (49)						
2,2',4,6-Tetrachlorobiphenyl (50)						
2,3,3',4'-Tetrachlorobiphenyl (56)						
2,3,3',6-Tetrachlorobiphenyl (59)						
2,3,4,4'-Tetrachlorobiphenyl (60)						
2,3,4,5-Tetrachlorobiphenyl (61)						
2,3,4',5-Tetrachlorobiphenyl (63)						
2,3,4',6-Tetrachlorobiphenyl (64)						
2,3',4,4'-Tetrachlorobiphenyl (66)						
3,3',4,4'-Tetrachlorobiphenyl (77)						
2,2',3,3',4-Pentachlorobiphenyl (82)						
2,2',3,3',5-Pentachlorobiphenyl (83)						
2,2',3,3',6-Pentachlorobiphenyl (84)						
2,2',3,4,4'-Pentachlorobiphenyl (85)						
2,2',3,4,5-Pentachlorobiphenyl (86)						
2,2',3,4,6-Pentachlorobiphenyl (88)						
2,2',3,4,6'-Pentachlorobiphenyl (89)						
2,2',3,4',5-Pentachlorobiphenyl (90)						
2,2',3,5,5'-Pentachlorobiphenyl (92)						
2,2',3,5,6-Pentachlorobiphenyl (93)						
2,3,3',4,4'-Pentachlorobiphenyl (105)						
2,3,3',4,5-Pentachlorobiphenyl (106)						
2,3,3',4',5'-Pentachlorobiphenyl (108)						
2,3,3',4',6-Pentachlorobiphenyl (110)						
2,3,4,4',5-Pentachlorobiphenyl (114)						

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TABLE J-9
CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND					
	RWR-EW-5003-0000-01 7/17/2001 NORMAL	RWR-FP-5003-0000-01 7/17/2001 NORMAL	BSAF	RWR-EW-5004-0000-01 7/18/2001 NORMAL	RWR-FP-5004-0000-01 7/19/2001 NORMAL	BSAF
2,3',4,4',5-Pentachlorobiphenyl (118)						
3,3',4,4',5-Pentachlorobiphenyl (126)						
2,2',3,3',4,4'-Hexachlorobiphenyl (128)						
2,2',3,3',4,5-Hexachlorobiphenyl (129)						
2,2',3,3',4,5'-Hexachlorobiphenyl (130)						
2,2',3,3',4,6-Hexachlorobiphenyl (131)						
2,2',3,3',4,6'-Hexachlorobiphenyl (132)						
2,2',3,3',5,6-Hexachlorobiphenyl (134)						
2,2',3,3',5,6'-Hexachlorobiphenyl (135)						
2,2',3,3',6,6'-Hexachlorobiphenyl (136)						
2,2',3,4,4',5-Hexachlorobiphenyl (137)						
2,2',3,4,5,5'-Hexachlorobiphenyl (141)						
2,2',3,4,5',6-Hexachlorobiphenyl (144)						
2,2',3,4',5,5'-Hexachlorobiphenyl (146)						
2,2',3,4',5,6-Hexachlorobiphenyl (147)						
2,2',4,4',5,5'-Hexachlorobiphenyl (153)						
2,3,3',4,4',5-Hexachlorobiphenyl (156)						
2,3,3',4,4',6-Hexachlorobiphenyl (158)						
2,3',4,4',5,5'-Hexachlorobiphenyl (167)						
3,3',4,4',5,5'-Hexachlorobiphenyl (169)						
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)						
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)						
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)						
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)						
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)						
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)						
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)						
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)						
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)						
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)						
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)						
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)						
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)						
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)						
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)						
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)						
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)						
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)						
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)						
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)						
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)						
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)						
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)						
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl						
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl						
Decachlorobiphenyl (209)						
PCB Congeners, Total						

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TABLE J-9
CALCULATION OF SITE-SPECIFIC BIOTA-SOIL ACCUMULATION FACTORS FOR EARTHWORM TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND					
PARAMETER	RWR-EW-5003-0000-01 7/17/2001 NORMAL	RWR-FP-5003-0000-01 7/17/2001 NORMAL	BSAF	RWR-EW-5004-0000-01 7/18/2001 NORMAL	RWR-FP-5004-0000-01 7/19/2001 NORMAL	BSAF
Toxicity Equivalency (PCB) - Birds						
Toxicity Equivalency (PCB) - Fish						
Toxicity Equivalency (PCB) - Mammals						
Technical Chlordane	2.03E+00 J	5.02E+00	4.0E-01	1.34E+00 J	3.51E+00 J	3.8E-01
delta-BHC	1.49E-02 U	1.12E-02 U	1.3E+00	1.04E-02 U	7.52E-03 U	1.4E+00
Heptachlor Epoxide	1.49E-02 U	1.12E-02 U	1.3E+00	8.56E-03 J	7.18E-03 J	1.2E+00
Dieldrin	3.24E-02	7.65E-02	4.2E-01	3.73E-02	6.98E-02 J	5.3E-01
4,4'-DDE	7.34E-02	1.38E-01	5.3E-01	3.87E-02	1.94E-01 J	2.0E-01
4,4'-DDD	7.92E-02	1.14E-01	6.9E-01	2.24E-02	6.58E-02 J	3.4E-01
Endosulfan Sulfate	5.56E-02	1.47E-01	3.8E-01	5.61E-02	1.23E-01 J	4.6E-01
4,4'-DDT	1.49E-02 U	1.19E-01	1.2E-01	6.69E-02	1.77E-01 J	3.8E-01
Methoxychlor	1.49E-02 U	1.12E-02 U	1.3E+00	1.04E-02 U	7.52E-03 U	1.4E+00
alpha-Chlordane	5.60E-02	1.41E-01	4.0E-01	2.79E-02	1.04E-01 J	2.7E-01
gamma-Chlordane	5.10E-02	1.12E-02 U	4.6E+00	4.20E-02	7.52E-03 U	5.6E+00
Aroclor-1254	2.27E+00	7.12E+00	3.2E-01	7.15E-01	6.21E+00 J	1.2E-01
Aroclor-1268	4.66E-01	1.24E+00	3.8E-01	2.99E-01	1.35E+00 J	2.2E-01
Aroclor, Total	2.73E+00 J	8.37E+00	3.3E-01	1.01E+00 J	7.56E+00 J	1.3E-01

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND 2000												
	Statistical Summary for Normalized Swallow Egg												
PARAMETER	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-06-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-17-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-18-P 5/26/2000	BMF GREYSTONE 2000
HCX	10	48	1.84E-03	4.79E-04	1.28E-05 UJ	0.0000025 UJ	2.0E-01	1.71E-06 UJ	1.3E-01	1.29E-06 UJ	1.0E-01	3.00E-06 UJ	2.4E-01
TCX	1	18	1.91E-02	1.13E-02									
2,3,7,8-TCDD	55	55	6.39E-02	1.19E-02	8.33E-06 U	4.36E-04	5.2E+01	0.000255	3.1E+01	9.23E-05	1.1E+01	3.19E-05	3.8E+00
1,2,3,7,8-PeCDD	47	55	6.91E-04	1.85E-04	7.45E-06 U	1.20E-04	1.6E+01	4.61E-05	6.2E+00	5.92E-05	7.9E+00	2.73E-05	3.7E+00
1,2,3,4,7,8-HxCDD	51	55	6.60E-04	1.91E-04	6.74E-06 U	1.12E-04 J	1.7E+01	4.60E-05 J	6.8E+00	6.96E-05 J	1.0E+01	2.51E-05 J	3.7E+00
1,2,3,6,7,8-HxCDD	52	55	3.99E-03	1.07E-03	2.84E-05	7.66E-04	2.7E+01	2.02E-04	7.1E+00	5.28E-04	1.9E+01	9.82E-05	3.5E+00
1,2,3,7,8,9-HxCDD	51	55	6.13E-04	1.40E-04	1.40E-05 UJ	4.86E-05	3.5E+00	2.65E-05	1.9E+00	3.59E-05	2.6E+00	2.01E-05	1.4E+00
1,2,3,4,6,7,8-HpCDD	51	55	2.26E-02	3.96E-03	1.81E-04 U	1.23E-03	6.8E+00	4.61E-04	2.5E+00	9.28E-04	5.1E+00	3.70E-04	2.0E+00
OCDD	31	55	7.42E-02	6.25E-03	4.30E-04 U	4.10E-04 U	9.5E-01	1.85E-04 U	4.3E-01	3.68E-04 U	8.6E-01	1.57E-04 U	3.6E-01
2,3,7,8-TCDF	43	55	5.67E-04	2.11E-04	2.48E-05 J	1.57E-04 J	6.3E+00	6.84E-05 J	2.8E+00	7.93E-05 J	3.2E+00	4.62E-05 J	1.9E+00
1,2,3,7,8-PeCDF	44	55	1.95E-04	6.96E-05	6.21E-06 U	4.44E-05	7.2E+00	1.84E-05	3.0E+00	2.98E-05	4.8E+00	1.16E-05	1.9E+00
2,3,4,7,8-PeCDF	46	55	3.25E-04	1.11E-04	4.61E-06 U	7.34E-05	1.6E+01	3.18E-05	6.9E+00	4.15E-05	9.0E+00	1.85E-05 *	4.0E+00
1,2,3,4,7,8-HxCDF	46	55	4.36E-04	1.14E-04	6.74E-06 U	5.55E-05	8.2E+00	2.62E-05	3.9E+00	4.53E-05	6.7E+00	7.54E-06 U	1.1E+00
1,2,3,6,7,8-HxCDF	47	55	3.18E-04	9.94E-05	4.79E-06 U	4.32E-05	9.0E+00	2.28E-05	4.8E+00	3.11E-05	6.5E+00	7.29E-06 U	1.5E+00
2,3,4,6,7,8-HxCDF	47	55	1.92E-04	5.64E-05	9.22E-06 U	2.38E-05	2.6E+00	1.39E-05	1.5E+00	2.00E-05	2.2E+00	8.42E-06	9.1E-01
1,2,3,7,8,9-HxCDF	9	55	1.23E-04	1.13E-05	1.52E-05 UJ	2.50E-06 U	1.6E-01	4.75E-06	3.1E-01	1.29E-06 U	8.5E-02	3.00E-06 U	2.0E-01
1,2,3,4,6,7,8-HpCDF	44	55	4.78E-03	6.22E-04	4.41E-05 U	1.23E-04	2.8E+00	2.86E-05 U	6.5E-01	2.12E-04	4.8E+00	2.78E-05 U	6.3E-01
1,2,3,4,7,8,9-HpCDF	14	55	3.41E-04	3.33E-05	9.93E-06 U	4.92E-06 U	5.0E-01	4.88E-06 U	4.9E-01	4.92E-06 U	5.0E-01	1.75E-06 U	1.8E-01
OCDF	14	55	2.41E-03	1.95E-04	2.16E-05 U	1.70E-05 U	7.9E-01	1.64E-05 U	7.6E-01	1.29E-05 U	6.0E-01	6.04E-06 U	2.8E-01
Total TCDD	35	35	6.39E-02	1.14E-02									
Total PeCDD	7	35	1.08E-03	1.60E-04									
Total HxCDD	31	35	5.11E-03	1.38E-03									
Total HpCDD	31	35	2.31E-02	4.75E-03									
Total TCDF	35	35	8.19E-04	2.84E-04									
Total PeCDF	19	35	5.54E-04	2.14E-04									
Total HxCDF	28	35	1.29E-03	3.84E-04									
Total HpCDF	26	35	6.11E-03	9.65E-04									
Toxicity Equivalency - Birds	55	55	6.49E-02	1.24E-02	5.21E-05	8.24E-04	1.6E+01	4.18E-04	8.0E+00	3.01E-04	5.8E+00	1.33E-04	2.5E+00
Toxicity Equivalency - Fish	55	55	6.45E-02	1.23E-02	2.78E-05	6.82E-04	2.5E+01	3.54E-04	1.3E+01	2.31E-04	8.3E+00	8.83E-05	3.2E+00
Toxicity Equivalency - Mammals	55	55	6.47E-02	1.23E-02	3.18E-05	7.29E-04	2.3E+01	3.64E-04	1.1E+01	2.66E-04	8.4E+00	9.50E-05	3.0E+00
2-Monochlorobiphenyl (1)	1	6	7.04E-03	1.45E-03									
4-Chlorobiphenyl (3)	1	6	7.56E-03	1.59E-03									
2,3-Dichlorobiphenyl (5)	3	6	4.00E-04	2.52E-04									
2,4-Dichlorobiphenyl (7)	5	6	4.67E-04	3.41E-04									
2,5-Dichlorobiphenyl (9)	5	6	4.93E-04	3.72E-04									
2,6-Dichlorobiphenyl (10)	1	6	1.40E-03	4.97E-04									
2,2',3'-Trichlorobiphenyl (16)	1	6	6.70E-03	2.04E-03									
2,2',4-Trichlorobiphenyl (17)	4	6	1.53E-02	5.76E-03									
2,2',5-Trichlorobiphenyl (18)	4	6	2.78E-02	1.01E-02									
2,2',6-Trichlorobiphenyl (19)	2	6	1.60E-03	6.34E-04									
2,3,3'-Trichlorobiphenyl (20)	6	6	6.40E-01	3.60E-01									
2,3,4'-Trichlorobiphenyl (22)	1	6	1.24E-02	4.39E-03									
2,3,6-Trichlorobiphenyl (24)	6	6	3.75E-03	1.64E-03									
2,3',4-Trichlorobiphenyl (25)	6	6	5.12E-03	3.23E-03									
2,3',5-Trichlorobiphenyl (26)	6	6	7.60E-03	4.95E-03									
2,4',5-Trichlorobiphenyl (31)	6	6	8.95E-02	6.09E-02									
2,4',6-Trichlorobiphenyl (32)	5	6	6.79E-03	3.19E-03									
2,2',3,3'-Tetrachlorobiphenyl (40)	6	6	5.06E-02	2.82E-02									
2,2',3,4'-Tetrachlorobiphenyl (42)	6	6	7.62E-02	3.61E-02									
2,2',3,5-Tetrachlorobiphenyl (43)	6	6	1.84E+00	8.53E-01									

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2000												
	Statistical Summary for Normalized Swallow Egg												
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-06-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-17-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-18-P 5/26/2000	BMF GREYSTONE 2000
2,2',3,5'-Tetrachlorobiphenyl (44)	6	6	6.03E-01	2.64E-01									
2,2',3,6-Tetrachlorobiphenyl (45)	6	6	1.03E-02	4.54E-03									
2,2',3,6'-Tetrachlorobiphenyl (46)	4	6	2.15E-03	1.07E-03									
2,2',4,5-Tetrachlorobiphenyl (48)	6	6	3.63E-02	1.29E-02									
2,2',4,5'-Tetrachlorobiphenyl (49)	6	6	6.38E-01	2.92E-01									
2,2',4,6-Tetrachlorobiphenyl (50)	6	6	2.39E-02	1.21E-02									
2,3,3',4'-Tetrachlorobiphenyl (56)	5	6	3.55E-02	2.19E-02									
2,3,3',6-Tetrachlorobiphenyl (59)	6	6	5.75E-02	2.50E-02									
2,3,4,4'-Tetrachlorobiphenyl (60)	6	6	1.18E-01	6.69E-02									
2,3,4,5-Tetrachlorobiphenyl (61)	6	6	6.25E-01	4.18E-01									
2,3,4',5-Tetrachlorobiphenyl (63)	6	6	4.06E-02	2.26E-02									
2,3,4',6-Tetrachlorobiphenyl (64)	6	6	1.69E-01	9.25E-02									
2,3',4,4'-Tetrachlorobiphenyl (66)	6	6	1.30E+00	6.77E-01									
3,3',4,4'-Tetrachlorobiphenyl (77)	6	6	7.49E-02	5.60E-02									
3,4,4',5-Tetrachlorobiphenyl (81)	4	6	1.85E-02	5.47E-03									
2,2',3,3',4-Pentachlorobiphenyl (82)	6	6	8.71E-02	4.56E-02									
2,2',3,3',5-Pentachlorobiphenyl (83)	6	6	2.03E+00	1.07E+00									
2,2',3,3',6-Pentachlorobiphenyl (84)	6	6	8.11E-02	4.79E-02									
2,2',3,4,4'-Pentachlorobiphenyl (85)	6	6	6.26E-01	3.35E-01									
2,2',3,4,5-Pentachlorobiphenyl (86)	6	6	1.59E+00	7.83E-01									
2,2',3,4,6-Pentachlorobiphenyl (88)	6	6	2.38E-01	1.21E-01									
2,2',3,4,6'-Pentachlorobiphenyl (89)	6	6	3.42E-03	1.56E-03									
2,2',3,4',5-Pentachlorobiphenyl (90)	6	6	3.95E+00	2.20E+00									
2,2',3,5,5'-Pentachlorobiphenyl (92)	6	6	6.26E-01	3.45E-01									
2,2',3,5,6-Pentachlorobiphenyl (93)	6	6	1.56E+00	7.71E-01									
2,3,3',4,4'-Pentachlorobiphenyl (105)	6	6	8.52E-01	4.77E-01									
2,3,3',4,5-Pentachlorobiphenyl (106)	6	6	3.85E-01	2.05E-01									
2,3,3',4',5'-Pentachlorobiphenyl (108)	6	6	6.04E-02	4.23E-02									
2,3,3',4',6-Pentachlorobiphenyl (110)	6	6	2.13E+00	1.12E+00									
2,3,4,4',5-Pentachlorobiphenyl (114)	6	6	5.36E-02	3.11E-02									
2,3',4,4',5-Pentachlorobiphenyl (118)	6	6	3.98E+00	2.16E+00									
3,3',4,4',5-Pentachlorobiphenyl (126)	6	6	1.39E-02	9.38E-03									
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	6	6	7.56E-01	3.90E-01									
2,2',3,3',4,5-Hexachlorobiphenyl (129)	6	6	5.09E+00	2.77E+00									
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	6	6	3.23E-01	1.65E-01									
2,2',3,3',4,6-Hexachlorobiphenyl (131)	5	6	1.69E-02	9.27E-03									
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	6	6	5.04E-01	2.64E-01									
2,2',3,3',5,6-Hexachlorobiphenyl (134)	6	6	2.80E-02	1.61E-02									
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	6	6	4.03E-01	2.37E-01									
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	6	6	7.10E-02	3.49E-02									
2,2',3,4,4',5-Hexachlorobiphenyl (137)	6	6	4.48E-01	2.51E-01									
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	6	6	5.28E-01	2.88E-01									
2,2',3,4,5',6-Hexachlorobiphenyl (144)	6	6	8.51E-02	4.61E-02									
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	6	6	5.75E-01	3.50E-01									
2,2',3,4',5,6-Hexachlorobiphenyl (147)	6	6	1.71E+00	9.19E-01									
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	6	6	3.89E+00	2.40E+00									
2,3,3',4,4',5-Hexachlorobiphenyl (156)	6	6	5.47E-01	3.01E-01									
2,3,3',4,4',6-Hexachlorobiphenyl (158)	6	6	4.94E-01	2.48E-01									
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	6	6	2.33E-01	1.30E-01									

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Egg				GREYSTONE MILL POND 2000								
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-06-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-17-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-18-P 5/26/2000	BMF GREYSTONE 2000
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	6	6	4.65E-03	2.94E-03									
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	6	6	6.52E-01	4.04E-01									
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	6	6	1.45E-01	8.24E-02									
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	6	6	1.30E-01	8.85E-02									
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	6	6	2.09E-01	1.38E-01									
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	6	6	1.80E-02	1.22E-02									
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	6	6	1.15E-02	7.55E-03									
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	6	6	2.39E-01	1.47E-01									
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	6	6	8.24E-02	6.95E-02									
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	6	6	1.34E+00	9.85E-01									
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	3	6	7.99E-03	4.57E-03									
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	6	6	2.54E-01	1.75E-01									
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	4	6	7.74E-03	2.97E-03									
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	6	6	3.14E-02	1.95E-02									
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	6	6	5.70E-01	4.54E-01									
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	6	6	2.52E-02	1.74E-02									
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	6	6	1.54E-01	1.01E-01									
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	6	6	2.28E-02	1.58E-02									
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	6	6	3.30E-01	2.28E-01									
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	6	6	5.68E-02	4.78E-02									
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	6	6	1.23E-01	9.63E-02									
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	6	6	6.19E-03	4.70E-03									
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	6	6	6.35E-01	4.44E-01									
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	6	6	8.66E-03	6.38E-03									
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	6	6	3.74E-02	2.69E-02									
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	6	6	4.23E-01	2.64E-01									
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	6	6	1.12E-02	8.87E-03									
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	6	6	7.14E-01	4.27E-01									
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	6	6	6.90E-02	4.18E-02									
Decachlorobiphenyl (209)	6	6	7.02E-01	2.77E-01									
PCB Congeners, Total	6	6	4.65E+01	2.65E+01									
Toxicity Equivalency (PCB) - Birds	6	6	7.00E-03	4.40E-03									
Toxicity Equivalency (PCB) - Fish	6	6	1.03E-04	7.10E-05									
Toxicity Equivalency (PCB) - Mammals	6	6	2.05E-03	1.41E-03									
Technical Chlordane	8	8	1.90E+01	9.16E+00									
Heptachlor Epoxide	8	8	8.27E-01	4.53E-01									
Dieldrin	8	8	4.77E-01	2.89E-01									
4,4'-DDE	8	8	8.46E+00	5.31E+00									
4,4'-DDD	8	8	1.96E-01	1.13E-01									
4,4'-DDT	7	8	1.35E-01	7.17E-02									
alpha-Chlordane	8	8	4.44E-01	2.22E-01									
Aroclor-1254	8	8	4.22E+01	1.99E+01									
Aroclor-1268	8	8	1.20E+01	3.90E+00									
Aroclor, Total	8	8	5.42E+01	2.38E+01									
Lipid_percent	9	9											

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Egg			GREYSTONE MILL POND 2000								
	Frequency of Detection	Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-06-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-17-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-18-P 5/26/2000	BMF GREYSTONE 2000

Notes:
a. Swallow stomach contents, emerging insect, and swallow egg tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}).
Half the detection level used to calculate normalized concentrations for values reported as non-detects.
b. BMFs are expressed on a lipid-normalized basis (i.e., kg_{lip}/kg_{lip}). BMF statistics calculated for each exposure area based on paired tree swallow egg/swallow stomach contents/emerging insect sample sets.
All data (including lipid content) extracted from site database (MACTEC, 2003).
Average lipid content for Greystone Reach tree swallow samples collected in 2001 used as a surrogate for samples collected in 2000 not evaluated for lipid content.
Average lipid content for Allendale Reach tree swallow samples collected in 2001 used as a surrogate for samples collected in 2000 not evaluated for lipid content.

Prepared by: SGD
Checked by: NAR

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TABLE J-10
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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2000						BMF Summary Statistics - Greystone 2000			
	GP-TS-19-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-23-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-29-P 5/26/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation
HCX	2.00E-06 UJ	1.6E-01	0.000004875 UJ	3.8E-01	2.71E-06 UJ	2.1E-01	3.82E-01	2.02E-01	8.41E-03	45%
TCX										
2,3,7,8-TCDD	4.21E-04	5.1E+01	5.36E-05	6.4E+00	1.69E-04	2.0E+01	5.23E+01	2.50E+01	4.06E+02	81%
1,2,3,7,8-PeCDD	5.93E-05	8.0E+00	2.94E-05	4.0E+00	5.54E-05	7.4E+00	1.61E+01	7.61E+00	1.72E+01	55%
1,2,3,4,7,8-HxCDD	5.22E-05 J	7.7E+00	2.80E-05 J	4.2E+00	5.18E-05 J	7.7E+00	1.66E+01	8.15E+00	1.90E+01	53%
1,2,3,6,7,8-HxCDD	2.36E-04	8.3E+00	1.34E-04	4.7E+00	3.75E-04	1.3E+01	2.70E+01	1.18E+01	7.20E+01	72%
1,2,3,7,8,9-HxCDD	2.57E-05	1.8E+00	2.27E-05	1.6E+00	5.07E-05	3.6E+00	3.62E+00	2.35E+00	7.93E-01	38%
1,2,3,4,6,7,8-HpCDD	7.07E-04	3.9E+00	3.31E-04	1.8E+00	1.07E-03	5.9E+00	6.77E+00	4.02E+00	3.87E+00	49%
OCDD	8.86E-04	2.1E+00	1.28E-04 U	3.0E-01	3.80E-04 U	8.8E-01	2.06E+00	8.35E-01	3.65E-01	72%
2,3,7,8-TCDF	1.40E-04 J	5.7E+00	7.10E-05 J	2.9E+00	7.28E-05 J	2.9E+00	6.34E+00	3.66E+00	2.77E+00	45%
1,2,3,7,8-PeCDF	2.52E-05	4.1E+00	1.21E-05 *	1.9E+00	2.51E-05	4.0E+00	7.16E+00	3.83E+00	3.38E+00	48%
2,3,4,7,8-PeCDF	3.99E-05	8.7E+00	3.99E-05	8.7E+00	5.64E-05	1.2E+01	1.59E+01	9.34E+00	1.45E+01	41%
1,2,3,4,7,8-HxCDF	2.94E-05	4.4E+00	2.43E-05	3.6E+00	4.01E-05	5.9E+00	8.24E+00	4.84E+00	5.47E+00	48%
1,2,3,6,7,8-HxCDF	2.83E-05	5.9E+00	8.29E-06 U	1.7E+00	4.04E-05	8.4E+00	9.02E+00	5.41E+00	8.78E+00	55%
2,3,4,6,7,8-HxCDF	1.31E-05	1.4E+00	9.75E-06	1.1E+00	2.58E-05	2.8E+00	2.79E+00	1.78E+00	5.50E-01	42%
1,2,3,7,8,9-HxCDF	2.00E-06 U	1.3E-01	5.38E-06 UJ	3.5E-01	2.71E-06 U	1.8E-01	3.53E-01	2.03E-01	9.25E-03	47%
1,2,3,4,6,7,8-HpCDF	1.16E-04	2.6E+00	2.08E-05 U	4.7E-01	6.43E-05 U	1.5E+00	4.79E+00	1.91E+00	2.51E+00	83%
1,2,3,4,7,8,9-HpCDF	2.83E-06 U	2.9E-01	4.42E-06 U	4.4E-01	3.96E-06 U	4.0E-01	4.95E-01	3.98E-01	1.53E-02	31%
OCDF	1.14E-05 U	5.3E-01	5.25E-06 U	2.4E-01	9.13E-06 U	4.2E-01	7.88E-01	5.16E-01	4.65E-02	42%
Total TCDD										
Total PeCDD										
Total HxCDD										
Total HpCDD										
Total TCDF										
Total PeCDF										
Total HxCDF										
Total HpCDF										
Toxicity Equivalency - Birds	6.80E-04	1.3E+01	2.06E-04	3.9E+00	3.80E-04	7.3E+00	1.58E+01	8.06E+00	2.30E+01	60%
Toxicity Equivalency - Fish	5.47E-04	2.0E+01	1.28E-04	4.6E+00	3.01E-04	1.1E+01	2.45E+01	1.20E+01	6.06E+01	65%
Toxicity Equivalency - Mammals	5.63E-04	1.8E+01	1.38E-04	4.3E+00	3.32E-04	1.0E+01	2.29E+01	1.12E+01	5.06E+01	64%
2-Monochlorobiphenyl (1)										
4-Chlorobiphenyl (3)										
2,3-Dichlorobiphenyl (5)										
2,4-Dichlorobiphenyl (7)										
2,5-Dichlorobiphenyl (9)										
2,6-Dichlorobiphenyl (10)										
2,2',3'-Trichlorobiphenyl (16)										
2,2',4-Trichlorobiphenyl (17)										
2,2',5-Trichlorobiphenyl (18)										
2,2',6-Trichlorobiphenyl (19)										
2,3,3'-Trichlorobiphenyl (20)										
2,3,4'-Trichlorobiphenyl (22)										
2,3,6-Trichlorobiphenyl (24)										
2,3',4-Trichlorobiphenyl (25)										
2,3',5-Trichlorobiphenyl (26)										
2,4',5-Trichlorobiphenyl (31)										
2,4',6-Trichlorobiphenyl (32)										
2,2',3,3'-Tetrachlorobiphenyl (40)										
2,2',3,4'-Tetrachlorobiphenyl (42)										
2,2',3,5-Tetrachlorobiphenyl (43)										

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2000						BMF Summary Statistics - Greystone 2000			
	GP-TS-19-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-23-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-29-P 5/26/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5'-Tetrachlorobiphenyl (44)										
2,2',3,6-Tetrachlorobiphenyl (45)										
2,2',3,6'-Tetrachlorobiphenyl (46)										
2,2',4,5-Tetrachlorobiphenyl (48)										
2,2',4,5'-Tetrachlorobiphenyl (49)										
2,2',4,6-Tetrachlorobiphenyl (50)										
2,3,3',4'-Tetrachlorobiphenyl (56)										
2,3,3',6-Tetrachlorobiphenyl (59)										
2,3,4,4'-Tetrachlorobiphenyl (60)										
2,3,4,5-Tetrachlorobiphenyl (61)										
2,3,4',5-Tetrachlorobiphenyl (63)										
2,3,4',6-Tetrachlorobiphenyl (64)										
2,3',4,4'-Tetrachlorobiphenyl (66)										
3,3',4,4'-Tetrachlorobiphenyl (77)										
3,4,4',5-Tetrachlorobiphenyl (81)										
2,2',3,3',4-Pentachlorobiphenyl (82)										
2,2',3,3',5-Pentachlorobiphenyl (83)										
2,2',3,3',6-Pentachlorobiphenyl (84)										
2,2',3,4,4'-Pentachlorobiphenyl (85)										
2,2',3,4,5-Pentachlorobiphenyl (86)										
2,2',3,4,6-Pentachlorobiphenyl (88)										
2,2',3,4,6'-Pentachlorobiphenyl (89)										
2,2',3,4',5-Pentachlorobiphenyl (90)										
2,2',3,5,5'-Pentachlorobiphenyl (92)										
2,2',3,5,6-Pentachlorobiphenyl (93)										
2,3,3',4,4'-Pentachlorobiphenyl (105)										
2,3,3',4,5-Pentachlorobiphenyl (106)										
2,3,3',4',5'-Pentachlorobiphenyl (108)										
2,3,3',4',6-Pentachlorobiphenyl (110)										
2,3,4,4',5-Pentachlorobiphenyl (114)										
2,3',4,4',5-Pentachlorobiphenyl (118)										
3,3',4,4',5-Pentachlorobiphenyl (126)										
2,2',3,3',4,4'-Hexachlorobiphenyl (128)										
2,2',3,3',4,5-Hexachlorobiphenyl (129)										
2,2',3,3',4,5'-Hexachlorobiphenyl (130)										
2,2',3,3',4,6-Hexachlorobiphenyl (131)										
2,2',3,3',4,6'-Hexachlorobiphenyl (132)										
2,2',3,3',5,6-Hexachlorobiphenyl (134)										
2,2',3,3',5,6'-Hexachlorobiphenyl (135)										
2,2',3,3',6,6'-Hexachlorobiphenyl (136)										
2,2',3,4,4',5-Hexachlorobiphenyl (137)										
2,2',3,4,5,5'-Hexachlorobiphenyl (141)										
2,2',3,4,5',6-Hexachlorobiphenyl (144)										
2,2',3,4',5,5'-Hexachlorobiphenyl (146)										
2,2',3,4',5,6-Hexachlorobiphenyl (147)										
2,2',4,4',5,5'-Hexachlorobiphenyl (153)										
2,3,3',4,4',5-Hexachlorobiphenyl (156)										
2,3,3',4,4',6-Hexachlorobiphenyl (158)										
2,3',4,4',5,5'-Hexachlorobiphenyl (167)										

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North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2000						BMF Summary Statistics - Greystone 2000			
	GP-TS-19-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-23-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-29-P 5/26/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation
3,3',4,4',5,5'-Hexachlorobiphenyl (169)										
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)										
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)										
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)										
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)										
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)										
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)										
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)										
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)										
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)										
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)										
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)										
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)										
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)										
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)										
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)										
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)										
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)										
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)										
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)										
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)										
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)										
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)										
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)										
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)										
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)										
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)										
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl										
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl										
Decachlorobiphenyl (209)										
PCB Congeners, Total										
Toxicity Equivalency (PCB) - Birds										
Toxicity Equivalency (PCB) - Fish										
Toxicity Equivalency (PCB) - Mammals										
Technical Chlordane										
Heptachlor Epoxide										
Dieldrin										
4,4'-DDE										
4,4'-DDD										
4,4'-DDT										
alpha-Chlordane										
Aroclor-1254										
Aroclor-1268										
Aroclor, Total										
Lipid_percent										

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2000						BMF Summary Statistics - Greystone 2000			
	GP-TS-19-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-23-P 5/26/2000	BMF GREYSTONE 2000	GP-TS-29-P 5/26/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation
[illegible]										

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001																							
	DIET-GP 6/9/2001		GMP-EI-5001-5005 0000-01 7/20/2001		G-TS-01-P 5/21/2001		BMF-DIET GREYSTONE 2001		BMF-EI GREYSTONE 2001	G-TS-02-P 5/21/2001		BMF-DIET GREYSTONE 2001		BMF-EI GREYSTONE 2001	G-TS-04-P 5/28/2001		BMF-DIET GREYSTONE 2001		BMF-EI GREYSTONE 2001	G-TS-06-P 5/31/2001			
HCX	1.23E-03	UJ	1.40E-03	U						0.00028225	UJ	2.3E-01		2.0E-01	8.31E-05	UJ	6.7E-02		5.9E-02				
TCX		R	1.75E-04	U						5.83E-03	UJ			3.3E+01	5.42E-03	UJ			3.1E+01				
2,3,7,8-TCDD	2.01E-04	J	0.00005	J						6.78E-05	J	3.4E-01		1.4E+00	1.11E-04	J	5.5E-01		2.2E+00				
1,2,3,7,8-PeCDD	1.17E-05	UJ	1.75E-04	U						1.74E-05	J	1.5E+00		9.9E-02	3.88E-05	J	3.3E+00		2.2E-01				
1,2,3,4,7,8-HxCDD	1.84E-05	J	6.74E-06	J						3.39E-05	J	1.8E+00		5.0E+00	4.18E-05	J	2.3E+00		6.2E+00				
1,2,3,6,7,8-HxCDD	6.56E-05	J	2.13E-05	J						2.66E-04	J	4.1E+00		1.3E+01	1.96E-04	J	3.0E+00		9.2E+00				
1,2,3,7,8,9-HxCDD	1.28E-05	J	8.51E-06	J						4.30E-05	J	3.4E+00		5.1E+00	2.90E-05	J	2.3E+00		3.4E+00				
1,2,3,4,6,7,8-HpCDD	1.07E-03	J	1.09E-04	J						3.57E-03	J	3.3E+00		3.3E+01	9.96E-04	J	9.3E-01		9.1E+00				
OCDD	2.20E-03	J	2.84E-04	J						4.90E-03	J	2.2E+00		1.7E+01	1.66E-03	J	7.5E-01		5.8E+00				
2,3,7,8-TCDF	1.74E-05	J	2.73E-05	EJ						1.52E-05	UJ$	8.7E-01		5.6E-01	5.18E-05	J$	3.0E+00		1.9E+00				
1,2,3,7,8-PeCDF	1.33E-05	UJ	1.03E-05	J						4.88E-06	UJ	3.7E-01		4.7E-01	9.67E-06	UJ	7.3E-01		9.4E-01				
2,3,4,7,8-PeCDF	4.61E-06	J	1.75E-04	U						6.92E-06	UJ	1.5E+00		3.9E-02	3.04E-05	J	6.6E+00		1.7E-01				
1,2,3,4,7,8-HxCDF	1.13E-05	UJ	1.45E-05	J						1.81E-05	UJ	1.6E+00		1.2E+00	3.19E-05	J	2.8E+00		2.2E+00				
1,2,3,6,7,8-HxCDF	1.45E-05	J	7.09E-06	J						2.78E-05	J	1.9E+00		3.9E+00	2.12E-05	J	1.5E+00		3.0E+00				
2,3,4,6,7,8-HxCDF	9.22E-06	UJ	1.75E-04	U						1.83E-05	J	2.0E+00		1.0E-01	1.23E-05	J	1.3E+00		7.0E-02				
1,2,3,7,8,9-HxCDF	1.45E-05	UJ	1.75E-04	U						3.17E-06	UJ	2.2E-01		1.8E-02	3.96E-06	UJ	2.7E-01		2.3E-02				
1,2,3,4,6,7,8-HpCDF	1.49E-04	J	2.87E-05	J						3.81E-04	J	2.6E+00		1.3E+01	1.71E-04	J	1.1E+00		6.0E+00				
1,2,3,4,7,8,9-HpCDF	5.32E-06	UJ	1.75E-04	U						2.52E-05	J	4.7E+00		1.4E-01	2.50E-06	UJ	4.7E-01		1.4E-02				
OCDF	3.24E-05	UJ	1.49E-05	J						1.24E-04	J	3.8E+00		8.3E+00	8.77E-05	J	2.7E+00		5.9E+00				
Total TCDD	2.69E-04	J	6.70E-05	J						6.78E-05	J	2.5E-01		1.0E+00	1.11E-04	J	4.1E-01		1.7E+00				
Total PeCDD	1.17E-05	UJ	1.75E-04	U						2.52E-05	UJ	2.2E+00		1.4E-01	4.10E-05	UJ	3.5E+00		2.3E-01				
Total HxCDD	1.51E-04	J	7.77E-05	J						3.69E-04	J	2.4E+00		4.7E+00	2.67E-04	J	1.8E+00		3.4E+00				
Total HpCDD	1.18E-03	J	1.82E-04	J						3.64E-03	J	3.1E+00		2.0E+01	9.96E-04	J	8.4E-01		5.5E+00				
Total TCDF	3.33E-05	J	2.73E-05	J						3.49E-05	J	1.0E+00		1.3E+00	6.38E-05	J	1.9E+00		2.3E+00				
Total PeCDF	8.12E-05	J	5.57E-05	J						1.91E-05	UJ	2.4E-01		3.4E-01	3.08E-05	UJ	3.8E-01		5.5E-01				
Total HxCDF	3.19E-05	UJ	6.24E-05	J						1.23E-04	J	3.9E+00		2.0E+00	9.81E-05	J	3.1E+00		1.6E+00				
Total HpCDF	9.20E-05	UJ	3.79E-05	J						5.12E-04	J	5.6E+00		1.3E+01	2.19E-04	J	2.4E+00		5.8E+00				
Toxicity Equivalency - Birds	2.47E-04		4.68E-04							1.32E-04		5.3E-01		2.8E-01	2.50E-04		1.0E+00		5.3E-01				
Toxicity Equivalency - Fish	2.34E-04		3.58E-04							1.25E-04		5.3E-01		3.5E-01	2.01E-04		8.6E-01		5.6E-01				
Toxicity Equivalency - Mammals	2.45E-04		3.62E-04							1.72E-04		7.0E-01		4.7E-01	2.16E-04		8.8E-01		6.0E-01				
2-Monochlorobiphenyl (1)			7.59E-04	J																			
4-Chlorobiphenyl (3)			4.48E-04	J																			
2,3-Dichlorobiphenyl (5)			3.51E-04	U																			
2,4-Dichlorobiphenyl (7)			3.51E-04	U																			
2,5-Dichlorobiphenyl (9)			3.51E-04	U																			
2,6-Dichlorobiphenyl (10)			3.51E-04	U																			
2,2',3'-Trichlorobiphenyl (16)			8.34E-04	JC																			
2,2',4-Trichlorobiphenyl (17)			1.01E-03	J																			
2,2',5-Trichlorobiphenyl (18)			2.02E-03	JC																			
2,2',6-Trichlorobiphenyl (19)			2.05E-04	J																			
2,3,3'-Trichlorobiphenyl (20)			3.96E-03	JC																			
2,3,4'-Trichlorobiphenyl (22)			1.40E-03	U																			
2,3,6-Trichlorobiphenyl (24)																							
2,3',4-Trichlorobiphenyl (25)			1.04E-04	J																			
2,3',5-Trichlorobiphenyl (26)			2.14E-04	JC																			
2,4',5-Trichlorobiphenyl (31)			1.64E-03	J																			
2,4',6-Trichlorobiphenyl (32)			5.26E-04	J																			
2,2',3,3'-Tetrachlorobiphenyl (40)			1.76E-03	JC																			
2,2',3,4'-Tetrachlorobiphenyl (42)			1.10E-03	J																			
2,2',3,5-Tetrachlorobiphenyl (43)			1.02E-02	C																			

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND 2001											
PARAMETER	DIET-GP 6/9/2001	GMP-EI-5001-5005 0000-01 7/20/2001	G-TS-01-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-02-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-P 5/28/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-06-P 5/31/2001
2,2',3,5'-Tetrachlorobiphenyl (44)		4.41E-03 JC										
2,2',3,6-Tetrachlorobiphenyl (45)		2.57E-04 JC										
2,2',3,6'-Tetrachlorobiphenyl (46)		8.37E-05 J										
2,2',4,5-Tetrachlorobiphenyl (48)		3.52E-04 J										
2,2',4,5'-Tetrachlorobiphenyl (49)		4.75E-03 JC										
2,2',4,6-Tetrachlorobiphenyl (50)		1.20E-04 JC										
2,3,3',4'-Tetrachlorobiphenyl (56)		1.14E-03 J										
2,3,3',6-Tetrachlorobiphenyl (59)		4.11E-04 JC										
2,3,4,4'-Tetrachlorobiphenyl (60)		2.02E-03 J										
2,3,4,5-Tetrachlorobiphenyl (61)		1.41E-02 C										
2,3,4',5-Tetrachlorobiphenyl (63)		8.37E-04 J										
2,3,4',6-Tetrachlorobiphenyl (64)		2.69E-03 J										
2,3',4,4'-Tetrachlorobiphenyl (66)		6.25E-03 J										
3,3',4,4'-Tetrachlorobiphenyl (77)		1.81E-03 J										
3,4,4',5-Tetrachlorobiphenyl (81)		3.50E-03 U										
2,2',3,3',4-Pentachlorobiphenyl (82)		2.22E-03 J										
2,2',3,3',5-Pentachlorobiphenyl (83)		2.34E-02 C										
2,2',3,3',6-Pentachlorobiphenyl (84)		1.84E-03 J										
2,2',3,4,4'-Pentachlorobiphenyl (85)		8.14E-03 C										
2,2',3,4,5-Pentachlorobiphenyl (86)		1.36E-02 C										
2,2',3,4,6-Pentachlorobiphenyl (88)		1.49E-03 JC										
2,2',3,4,6'-Pentachlorobiphenyl (89)		5.50E-05 J										
2,2',3,4',5-Pentachlorobiphenyl (90)		2.54E-02 C										
2,2',3,5,5'-Pentachlorobiphenyl (92)		3.94E-03 J										
2,2',3,5,6-Pentachlorobiphenyl (93)		3.30E-04 JC										
2,3,3',4,4'-Pentachlorobiphenyl (105)		1.29E-02										
2,3,3',4,5-Pentachlorobiphenyl (106)		3.47E-03 JC										
2,3,3',4',5'-Pentachlorobiphenyl (108)		7.26E-04 JC										
2,3,3',4',6-Pentachlorobiphenyl (110)		1.89E-02 C										
2,3,4,4',5-Pentachlorobiphenyl (114)		1.19E-03 J										
2,3',4,4',5-Pentachlorobiphenyl (118)		3.67E-02										
3,3',4,4',5-Pentachlorobiphenyl (126)		2.28E-04 J										
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		1.30E-02 C										
2,2',3,3',4,5-Hexachlorobiphenyl (129)		7.26E-02 C										
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		6.30E-03 J										
2,2',3,3',4,6-Hexachlorobiphenyl (131)		4.82E-04 J										
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		5.26E-03 J										
2,2',3,3',5,6-Hexachlorobiphenyl (134)		9.29E-04 JC										
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		8.28E-03 C										
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		1.40E-03 U										
2,2',3,4,4',5-Hexachlorobiphenyl (137)		1.58E-03 JC										
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		4.43E-03										
2,2',3,4,5',6-Hexachlorobiphenyl (144)		1.36E-03 J										
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		1.61E-02 C										
2,2',3,4',5,6-Hexachlorobiphenyl (147)		1.89E-02 C										
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		8.41E-02 C										
2,3,3',4,4',5-Hexachlorobiphenyl (156)		1.18E-02 C										
2,3,3',4,4',6-Hexachlorobiphenyl (158)		4.00E-03										
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.78E-03 J										

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001																			
	DIET-GP 6/9/2001		GMP-EI-5001-5005-0000-01 7/20/2001		G-TS-01-P 5/21/2001		BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-02-P 5/21/2001		BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-P 5/28/2001		BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-06-P 5/31/2001	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)			6.55E-03	J														
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)			1.49E-02	J														
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)			1.80E-03	JC														
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)			5.89E-03	J														
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)			1.45E-02	C														
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)			7.01E-03	U														
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)			4.04E-04	J														
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)			6.87E-03	J														
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)			6.77E-03	J														
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)			2.84E-02	C														
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)			1.15E-04	J														
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)																		
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)			7.94E-05	J														
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)																		
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)			4.00E-02	J														
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)			1.05E-03	J														
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)			2.72E-03	J														
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)			2.42E-04	J														
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)			1.06E-02	J														
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)			2.32E-03	J														
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)			7.03E-03	J														
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)			1.38E-03	JC														
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)			7.51E-02	C														
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)																		
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)			4.94E-03	J														
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)			4.54E-02	J														
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)			1.02E-03	J														
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl			7.96E-02															
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl			1.89E-03	J														
Decachlorobiphenyl (209)			3.50E-03	U														
PCB Congeners, Total			7.45E-01															
Toxicity Equivalency (PCB) - Birds			4.72E-04															
Toxicity Equivalency (PCB) - Fish			3.72E-06															
Toxicity Equivalency (PCB) - Mammals			1.00E-04															
Technical Chlordane					1.658495575	J											11.86602067	J
Heptachlor Epoxide					0.065663717	J											0.526614987	J
Dieldrin					0.172300885												0.272222222	
4,4'-DDE					2.097256637												8.438630491	
4,4'-DDD					0.031858407	J											0.123514212	
4,4'-DDT					0.052566372	J											0.052713178	U
alpha-Chlordane					0.010442478	J											0.288113695	
Aroclor-1254					3.488672566												19.53824289	
Aroclor-1268					0.956814159	J											4.650258398	
Aroclor, Total					4.445486726	J											24.1883709	
Lipid_percent																		

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TABLE J-10
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001											
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TABLE J-10

CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

	GREYSTONE MILL POND 2001												
PARAMETER	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-19-P 6/11/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-21-P 5/25/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-P 5/26/2001	BMF-DIET GREYSTONE 2001
HCX			0.00054325 UJ	4.4E-01	3.9E-01				4.91E-04 UJ	4.0E-01	3.5E-01	6.76E-04 UJ	5.5E-01
TCX			1.08E-02 UJ	6.2E+01					1.00E-02 UJ		5.7E+01	1.33E-02 UJ	
2,3,7,8-TCDD			0.000089 J	4.4E-01	1.8E+00				2.37E-03 J	1.2E+01	4.7E+01	1.75E-03 J	8.7E+00
1,2,3,7,8-PeCDD			3.83E-06 UJ	3.3E-01	2.2E-02				5.94E-05 J	5.1E+00	3.4E-01	6.07E-05 J	5.2E+00
1,2,3,4,7,8-HxCDD			2.26E-05 J	1.2E+00	3.4E+00				5.10E-05 J	2.8E+00	7.6E+00	7.13E-05 J	3.9E+00
1,2,3,6,7,8-HxCDD			1.54E-04 J	2.3E+00	7.2E+00				2.30E-04 J	3.5E+00	1.1E+01	4.34E-04 J	6.6E+00
1,2,3,7,8,9-HxCDD			2.81E-05 J	2.2E+00	3.3E+00				4.18E-05 J	3.3E+00	4.9E+00	6.01E-05 J	4.7E+00
1,2,3,4,6,7,8-HpCDD			2.44E-03 J	2.3E+00	2.2E+01				2.28E-03 J	2.1E+00	2.1E+01	6.82E-03 J	6.4E+00
OCDD			5.32E-03 J	2.4E+00	1.9E+01				5.40E-03 J	2.5E+00	1.9E+01	1.73E-02 J	7.8E+00
2,3,7,8-TCDF			8.08E-06 UJ$	4.7E-01	3.0E-01				8.85E-05 J$	5.1E+00	3.2E+00	1.40E-04 J$	8.1E+00
1,2,3,7,8-PeCDF			6.50E-06 UJ	4.9E-01	6.3E-01				3.68E-05 J	2.8E+00	3.6E+00	1.51E-05 UJ	1.1E+00
2,3,4,7,8-PeCDF			3.54E-06 UJ	7.7E-01	2.0E-02				4.20E-05 J	9.1E+00	2.4E-01	4.12E-05 J	8.9E+00
1,2,3,4,7,8-HxCDF			1.08E-05 UJ	9.5E-01	7.4E-01				1.66E-05 UJ	1.5E+00	1.1E+00	5.44E-05 J	4.8E+00
1,2,3,6,7,8-HxCDF			8.54E-06 UJ	5.9E-01	1.2E+00				3.02E-05 J	2.1E+00	4.3E+00	4.23E-05 J	2.9E+00
2,3,4,6,7,8-HxCDF			5.38E-06 UJ	5.8E-01	3.1E-02				1.73E-05 J	1.9E+00	9.9E-02	2.44E-05 J	2.6E+00
1,2,3,7,8,9-HxCDF			4.54E-06 UJ	3.1E-01	2.6E-02				4.58E-06 UJ	3.2E-01	2.6E-02	1.15E-05 UJ	7.9E-01
1,2,3,4,6,7,8-HpCDF			2.75E-04 J	1.8E+00	9.6E+00				3.32E-04 J	2.2E+00	1.2E+01	6.99E-04 J	4.7E+00
1,2,3,4,7,8,9-HpCDF			2.07E-05 J	3.9E+00	1.2E-01				7.25E-06 UJ	1.4E+00	4.1E-02	3.60E-05 J	6.8E+00
OCDF			3.13E-05 UJ	9.6E-01	2.1E+00				1.64E-04 J	5.0E+00	1.1E+01	4.88E-04 J	1.5E+01
Total TCDD			8.90E-05 J	3.3E-01	1.3E+00				2.37E-03 J	8.8E+00	3.5E+01	1.75E-03 J	6.5E+00
Total PeCDD			3.83E-06 UJ	3.3E-01	2.2E-02				2.97E-05 UJ	2.5E+00	1.7E-01	3.84E-04 J	3.3E+01
Total HxCDD			2.18E-04 J	1.4E+00	2.8E+00				3.36E-04 J	2.2E+00	4.3E+00	6.03E-04 J	4.0E+00
Total HpCDD			2.44E-03 J	2.1E+00	1.3E+01				2.34E-03 J	2.0E+00	1.3E+01	6.95E-03 J	5.9E+00
Total TCDF			1.78E-05 J	5.3E-01	6.5E-01				1.05E-04 J	3.2E+00	3.8E+00	1.29E-04 J	3.9E+00
Total PeCDF			3.54E-06 UJ	4.4E-02	6.4E-02				4.58E-05 UJ	5.6E-01	8.2E-01	4.87E-05 UJ	6.0E-01
Total HxCDF			2.47E-05 UJ	7.7E-01	4.0E-01				6.07E-05 UJ	1.9E+00	9.7E-01	2.19E-04 J	6.9E+00
Total HpCDF			3.30E-04 J	3.6E+00	8.7E+00				4.24E-04 J	4.6E+00	1.1E+01	8.98E-04 J	9.8E+00
Toxicity Equivalency - Birds			1.19E-04	4.8E-01	2.5E-01				2.59E-03	1.1E+01	5.5E+00	2.03E-03	8.2E+00
Toxicity Equivalency - Fish			1.18E-04	5.0E-01	3.3E-01				2.50E-03	1.1E+01	7.0E+00	1.91E-03	8.1E+00
Toxicity Equivalency - Mammals			1.48E-04	6.0E-01	4.1E-01				2.53E-03	1.0E+01	7.0E+00	1.99E-03	8.1E+00
2-Monochlorobiphenyl (1)													
4-Chlorobiphenyl (3)													
2,3-Dichlorobiphenyl (5)													
2,4-Dichlorobiphenyl (7)													
2,5-Dichlorobiphenyl (9)													
2,6-Dichlorobiphenyl (10)													
2,2',3'-Trichlorobiphenyl (16)													
2,2',4-Trichlorobiphenyl (17)													
2,2',5-Trichlorobiphenyl (18)													
2,2',6-Trichlorobiphenyl (19)													
2,3,3'-Trichlorobiphenyl (20)													
2,3,4'-Trichlorobiphenyl (22)													
2,3,6-Trichlorobiphenyl (24)													
2,3',4-Trichlorobiphenyl (25)													
2,3',5-Trichlorobiphenyl (26)													
2,4',5-Trichlorobiphenyl (31)													
2,4',6-Trichlorobiphenyl (32)													
2,2',3,3'-Tetrachlorobiphenyl (40)													
2,2',3,4'-Tetrachlorobiphenyl (42)													
2,2',3,5-Tetrachlorobiphenyl (43)													

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001												
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-19-P 6/11/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-21-P 5/25/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-P 5/26/2001	BMF-DIET GREYSTONE 2001
2,2',3,5'-Tetrachlorobiphenyl (44)													
2,2',3,6-Tetrachlorobiphenyl (45)													
2,2',3,6'-Tetrachlorobiphenyl (46)													
2,2',4,5-Tetrachlorobiphenyl (48)													
2,2',4,5'-Tetrachlorobiphenyl (49)													
2,2',4,6-Tetrachlorobiphenyl (50)													
2,3,3',4'-Tetrachlorobiphenyl (56)													
2,3,3',6-Tetrachlorobiphenyl (59)													
2,3,4,4'-Tetrachlorobiphenyl (60)													
2,3,4,5-Tetrachlorobiphenyl (61)													
2,3,4',5-Tetrachlorobiphenyl (63)													
2,3,4',6-Tetrachlorobiphenyl (64)													
2,3',4,4'-Tetrachlorobiphenyl (66)													
3,3',4,4'-Tetrachlorobiphenyl (77)													
3,4,4',5-Tetrachlorobiphenyl (81)													
2,2',3,3',4-Pentachlorobiphenyl (82)													
2,2',3,3',5-Pentachlorobiphenyl (83)													
2,2',3,3',6-Pentachlorobiphenyl (84)													
2,2',3,4,4'-Pentachlorobiphenyl (85)													
2,2',3,4,5-Pentachlorobiphenyl (86)													
2,2',3,4,6-Pentachlorobiphenyl (88)													
2,2',3,4,6'-Pentachlorobiphenyl (89)													
2,2',3,4',5-Pentachlorobiphenyl (90)													
2,2',3,5,5'-Pentachlorobiphenyl (92)													
2,2',3,5,6-Pentachlorobiphenyl (93)													
2,3,3',4,4'-Pentachlorobiphenyl (105)													
2,3,3',4,5-Pentachlorobiphenyl (106)													
2,3,3',4',5'-Pentachlorobiphenyl (108)													
2,3,3',4',6-Pentachlorobiphenyl (110)													
2,3,4,4',5-Pentachlorobiphenyl (114)													
2,3',4,4',5-Pentachlorobiphenyl (118)													
3,3',4,4',5-Pentachlorobiphenyl (126)													
2,2',3,3',4,4'-Hexachlorobiphenyl (128)													
2,2',3,3',4,5-Hexachlorobiphenyl (129)													
2,2',3,3',4,5'-Hexachlorobiphenyl (130)													
2,2',3,3',4,6-Hexachlorobiphenyl (131)													
2,2',3,3',4,6'-Hexachlorobiphenyl (132)													
2,2',3,3',5,6-Hexachlorobiphenyl (134)													
2,2',3,3',5,6'-Hexachlorobiphenyl (135)													
2,2',3,3',6,6'-Hexachlorobiphenyl (136)													
2,2',3,4,4',5-Hexachlorobiphenyl (137)													
2,2',3,4,5,5'-Hexachlorobiphenyl (141)													
2,2',3,4,5',6-Hexachlorobiphenyl (144)													
2,2',3,4',5,5'-Hexachlorobiphenyl (146)													
2,2',3,4',5,6-Hexachlorobiphenyl (147)													
2,2',4,4',5,5'-Hexachlorobiphenyl (153)													
2,3,3',4,4',5-Hexachlorobiphenyl (156)													
2,3,3',4,4',6-Hexachlorobiphenyl (158)													
2,3',4,4',5,5'-Hexachlorobiphenyl (167)													

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001												
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-19-P 6/11/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-21-P 5/25/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-P 5/26/2001	BMF-DIET GREYSTONE 2001
3,3',4,4',5,5'-Hexachlorobiphenyl (169)													
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)													
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)													
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)													
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)													
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)													
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)													
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)													
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)													
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)													
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)													
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)													
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)													
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)													
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)													
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)													
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)													
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)													
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)													
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)													
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)													
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)													
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)													
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)													
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)													
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)													
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)													
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl													
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl													
Decachlorobiphenyl (209)													
PCB Congeners, Total													
Toxicity Equivalency (PCB) - Birds													
Toxicity Equivalency (PCB) - Fish													
Toxicity Equivalency (PCB) - Mammals													
Technical Chlordane						4.395588235 J							
Heptachlor Epoxide						0.222588235 J							
Dieldrin						0.168176471							
4,4'-DDE						3.667764706							
4,4'-DDD						0.042058824 J							
4,4'-DDT						0.036941176 J							
alpha-Chlordane						0.125764706							
Aroclor-1254						7.833176471							
Aroclor-1268						2.037882353							
Aroclor, Total						9.871117647							
Lipid_percent													

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001												
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-P 5/21/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-19-P 6/11/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-21-P 5/25/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-P 5/26/2001	BMF-DIET GREYSTONE 2001
(TAV)													

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001											
					BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001			
	BMF-EI GREYSTONE 2001	G-TS-29-P 5/26/2001		BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
HCX	4.8E-01	2.12E-04	UJ	1.7E-01	1.5E-01	5.49E-01	3.09E-01	3.33E-02	59%	4.82E-01	2.72E-01	2.57E-02	59%
TCX	7.6E+01	4.17E-03	UJ		2.4E+01					7.61E+01	4.72E+01	4.31E+02	44%
2,3,7,8-TCDD	3.5E+01	1.26E-04	J	6.3E-01	2.5E+00	1.18E+01	3.75E+00	2.65E+01	137%	4.75E+01	1.51E+01	4.27E+02	137%
1,2,3,7,8-PeCDD	3.5E-01	4.00E-05	J	3.4E+00	2.3E-01	5.18E+00	3.14E+00	3.74E+00	62%	3.46E-01	2.09E-01	1.67E-02	62%
1,2,3,4,7,8-HxCDD	1.1E+01	4.92E-05	J	2.7E+00	7.3E+00	3.87E+00	2.44E+00	8.13E-01	37%	1.06E+01	6.67E+00	6.09E+00	37%
1,2,3,6,7,8-HxCDD	2.0E+01	1.85E-04	J	2.8E+00	8.7E+00	6.62E+00	3.72E+00	2.36E+00	41%	2.04E+01	1.15E+01	2.24E+01	41%
1,2,3,7,8,9-HxCDD	7.1E+00	3.75E-05	J	2.9E+00	4.4E+00	4.71E+00	3.13E+00	8.40E-01	29%	7.06E+00	4.69E+00	1.89E+00	29%
1,2,3,4,6,7,8-HpCDD	6.2E+01	8.31E-04	J	7.7E-01	7.6E+00	6.35E+00	2.63E+00	4.21E+00	78%	6.25E+01	2.58E+01	4.08E+02	78%
OCDD	6.1E+01	8.44E-04	J	3.8E-01	3.0E+00	7.85E+00	2.68E+00	7.20E+00	100%	6.07E+01	2.08E+01	4.31E+02	100%
2,3,7,8-TCDF	5.1E+00	1.25E-04	J$	7.2E+00	4.6E+00	8.08E+00	4.11E+00	1.03E+01	78%	5.14E+00	2.62E+00	4.15E+00	78%
1,2,3,7,8-PeCDF	1.5E+00	1.77E-05	J	1.3E+00	1.7E+00	2.76E+00	1.14E+00	7.73E-01	77%	3.57E+00	1.47E+00	1.29E+00	77%
2,3,4,7,8-PeCDF	2.4E-01	2.27E-05	J	4.9E+00	1.3E-01	9.11E+00	5.30E+00	1.29E+01	68%	2.40E-01	1.40E-01	8.93E-03	68%
1,2,3,4,7,8-HxCDF	3.7E+00	3.10E-05	J	2.7E+00	2.1E+00	4.80E+00	2.39E+00	1.93E+00	58%	3.74E+00	1.87E+00	1.18E+00	58%
1,2,3,6,7,8-HxCDF	6.0E+00	3.01E-05	J	2.1E+00	4.2E+00	2.91E+00	1.83E+00	5.95E-01	42%	5.97E+00	3.76E+00	2.50E+00	42%
2,3,4,6,7,8-HxCDF	1.4E-01	1.65E-05	J	1.8E+00	9.4E-02	2.65E+00	1.70E+00	4.79E-01	41%	1.39E-01	8.96E-02	1.33E-03	41%
1,2,3,7,8,9-HxCDF	6.6E-02	3.88E-06	UJ	2.7E-01	2.2E-02	7.91E-01	3.63E-01	4.53E-02	59%	6.56E-02	3.01E-02	3.12E-04	59%
1,2,3,4,6,7,8-HpCDF	2.4E+01	1.47E-04	J	9.8E-01	5.1E+00	4.68E+00	2.24E+00	1.80E+00	60%	2.43E+01	1.16E+01	4.86E+01	60%
1,2,3,4,7,8,9-HpCDF	2.1E-01	8.33E-06	J	1.6E+00	4.8E-02	6.77E+00	3.13E+00	5.80E+00	77%	2.06E-01	9.51E-02	5.35E-03	77%
OCDF	3.3E+01	1.25E-05	UJ	3.9E-01	8.4E-01	1.51E+01	4.66E+00	2.89E+01	115%	3.28E+01	1.02E+01	1.37E+02	115%
Total TCDD	2.6E+01	1.26E-04	J	4.7E-01	1.9E+00	8.82E+00	2.80E+00	1.47E+01	137%	3.54E+01	1.12E+01	2.38E+02	137%
Total PeCDD	2.2E+00	2.10E-05	UJ	1.8E+00	1.2E-01	3.28E+01	7.19E+00	1.59E+02	175%	2.19E+00	4.80E-01	7.09E-01	175%
Total HxCDD	7.8E+00	2.72E-04	J	1.8E+00	3.5E+00	3.99E+00	2.28E+00	8.30E-01	40%	7.76E+00	4.43E+00	3.14E+00	40%
Total HpCDD	3.8E+01	8.31E-04	J	7.0E-01	4.6E+00	5.88E+00	2.43E+00	3.63E+00	79%	3.83E+01	1.58E+01	1.54E+02	79%
Total TCDF	4.7E+00	1.16E-04	J	3.5E+00	4.2E+00	3.87E+00	2.33E+00	1.88E+00	59%	4.73E+00	2.85E+00	2.80E+00	59%
Total PeCDF	8.7E-01	7.68E-05	J	9.5E-01	1.4E+00	9.46E-01	4.62E-01	9.94E-02	68%	1.38E+00	6.73E-01	2.11E-01	68%
Total HxCDF	3.5E+00	1.25E-04	J	3.9E+00	2.0E+00	6.85E+00	3.40E+00	4.33E+00	61%	3.50E+00	1.74E+00	1.13E+00	61%
Total HpCDF	2.4E+01	1.85E-04	J	2.0E+00	4.9E+00	9.76E+00	4.65E+00	8.05E+00	61%	2.37E+01	1.13E+01	4.73E+01	61%
Toxicity Equivalency - Birds	4.3E+00	3.34E-04		1.4E+00	7.1E-01	1.05E+01	3.69E+00	2.00E+01	121%	5.54E+00	1.94E+00	5.56E+00	121%
Toxicity Equivalency - Fish	5.3E+00	2.23E-04		9.5E-01	6.2E-01	1.07E+01	3.61E+00	2.08E+01	126%	6.98E+00	2.36E+00	8.92E+00	126%
Toxicity Equivalency - Mammals	5.5E+00	2.37E-04		9.7E-01	6.5E-01	1.04E+01	3.61E+00	1.96E+01	123%	7.00E+00	2.44E+00	8.96E+00	123%
2-Monochlorobiphenyl (1)													
4-Chlorobiphenyl (3)													
2,3-Dichlorobiphenyl (5)													
2,4-Dichlorobiphenyl (7)													
2,5-Dichlorobiphenyl (9)													
2,6-Dichlorobiphenyl (10)													
2,2',3'-Trichlorobiphenyl (16)													
2,2',4-Trichlorobiphenyl (17)													
2,2',5-Trichlorobiphenyl (18)													
2,2',6-Trichlorobiphenyl (19)													
2,3,3'-Trichlorobiphenyl (20)													
2,3,4'-Trichlorobiphenyl (22)													
2,3,6-Trichlorobiphenyl (24)													
2,3',4-Trichlorobiphenyl (25)													
2,3',5-Trichlorobiphenyl (26)													
2,4',5-Trichlorobiphenyl (31)													
2,4',6-Trichlorobiphenyl (32)													
2,2',3,3'-Tetrachlorobiphenyl (40)													
2,2',3,4'-Tetrachlorobiphenyl (42)													
2,2',3,5-Tetrachlorobiphenyl (43)													

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001											
					BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001			
	BMF-EI GREYSTONE 2001	G-TS-29-P 5/26/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5'-Tetrachlorobiphenyl (44)												
2,2',3,6-Tetrachlorobiphenyl (45)												
2,2',3,6'-Tetrachlorobiphenyl (46)												
2,2',4,5-Tetrachlorobiphenyl (48)												
2,2',4,5'-Tetrachlorobiphenyl (49)												
2,2',4,6-Tetrachlorobiphenyl (50)												
2,3,3',4'-Tetrachlorobiphenyl (56)												
2,3,3',6-Tetrachlorobiphenyl (59)												
2,3,4,4'-Tetrachlorobiphenyl (60)												
2,3,4,5-Tetrachlorobiphenyl (61)												
2,3,4',5-Tetrachlorobiphenyl (63)												
2,3,4',6-Tetrachlorobiphenyl (64)												
2,3',4,4'-Tetrachlorobiphenyl (66)												
3,3',4,4'-Tetrachlorobiphenyl (77)												
3,4,4',5-Tetrachlorobiphenyl (81)												
2,2',3,3',4-Pentachlorobiphenyl (82)												
2,2',3,3',5-Pentachlorobiphenyl (83)												
2,2',3,3',6-Pentachlorobiphenyl (84)												
2,2',3,4,4'-Pentachlorobiphenyl (85)												
2,2',3,4,5-Pentachlorobiphenyl (86)												
2,2',3,4,6-Pentachlorobiphenyl (88)												
2,2',3,4,6'-Pentachlorobiphenyl (89)												
2,2',3,4',5-Pentachlorobiphenyl (90)												
2,2',3,5,5'-Pentachlorobiphenyl (92)												
2,2',3,5,6-Pentachlorobiphenyl (93)												
2,3,3',4,4'-Pentachlorobiphenyl (105)												
2,3,3',4,5-Pentachlorobiphenyl (106)												
2,3,3',4',5'-Pentachlorobiphenyl (108)												
2,3,3',4',6-Pentachlorobiphenyl (110)												
2,3,4,4',5-Pentachlorobiphenyl (114)												
2,3',4,4',5-Pentachlorobiphenyl (118)												
3,3',4,4',5-Pentachlorobiphenyl (126)												
2,2',3,3',4,4'-Hexachlorobiphenyl (128)												
2,2',3,3',4,5-Hexachlorobiphenyl (129)												
2,2',3,3',4,5'-Hexachlorobiphenyl (130)												
2,2',3,3',4,6-Hexachlorobiphenyl (131)												
2,2',3,3',4,6'-Hexachlorobiphenyl (132)												
2,2',3,3',5,6-Hexachlorobiphenyl (134)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												
2,2',3,3',6,6'-Hexachlorobiphenyl (136)												
2,2',3,4,4',5-Hexachlorobiphenyl (137)												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)												
2,2',3,4,5',6-Hexachlorobiphenyl (144)												
2,2',3,4',5,5'-Hexachlorobiphenyl (146)												
2,2',3,4',5,6-Hexachlorobiphenyl (147)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)												
2,3,3',4,4',5-Hexachlorobiphenyl (156)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)												
2,3',4,4',5,5'-Hexachlorobiphenyl (167)												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001											
					BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001			
	BMF-EI GREYSTONE 2001	G-TS-29-P 5/26/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
3,3',4,4',5,5'-Hexachlorobiphenyl (169)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)												
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)												
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)												
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)												
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)												
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)												
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)												
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)												
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)												
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)												
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)												
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)												
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)												
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)												
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)												
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)												
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl												
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl												
Decachlorobiphenyl (209)												
PCB Congeners, Total												
Toxicity Equivalency (PCB) - Birds												
Toxicity Equivalency (PCB) - Fish												
Toxicity Equivalency (PCB) - Mammals												
Technical Chlordane												
Heptachlor Epoxide												
Dieldrin												
4,4'-DDE												
4,4'-DDD												
4,4'-DDT												
alpha-Chlordane												
Aroclor-1254												
Aroclor-1268												
Aroclor, Total												
Lipid_percent												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001											
					BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001			
	BMF-EI GREYSTONE 2001	G-TS-29-P 5/26/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
[illegible]												

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	ALLENDALE POND 2000											
PARAMETER	Allendale Pond Diet 6/19/2000	AP-TS-08-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-09-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-10-E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-11-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-16-E 6/12/2000
HCX	2.20E-05 UJ	4.04E-06 UJ	1.8E-01	1.81E-06 UJ	8.2E-02	5.32E-06 UJ	2.4E-01	1.49E-06 UJ	6.8E-02	2.55E-06 UJ	1.2E-01	2.13E-06 UJ
TCX												
2,3,7,8-TCDD	2.69E-03	9.70E-03	3.6E+00	1.57E-02	5.9E+00	0.01852617	6.9E+00	9.21E-03	3.4E+00	2.29E-02	8.5E+00	2.36E-02
1,2,3,7,8-PeCDD	1.34E-05 U	4.30E-04	3.2E+01	1.02E-04	7.6E+00	5.19E-04	3.9E+01	2.18E-04	1.6E+01	2.76E-04	2.1E+01	6.91E-04
1,2,3,4,7,8-HxCDD (COE)	1.07E-05 U	3.31E-04 J	3.1E+01	1.15E-04 J	1.1E+01	4.78E-04 J	4.4E+01	2.21E-04 J	2.1E+01	2.44E-04 J	2.3E+01	6.60E-04 J
1,2,3,6,7,8-HxCDD	5.57E-05	1.94E-03	3.5E+01	3.90E-04	7.0E+00	1.68E-03	3.0E+01	8.01E-04	1.4E+01	1.06E-03	1.9E+01	3.71E-03
1,2,3,7,8,9-HxCDD	2.37E-05 U	1.72E-04	7.3E+00	8.72E-05	3.7E+00	2.99E-04	1.3E+01	1.85E-04	7.8E+00	2.04E-04	8.6E+00	5.44E-04
1,2,3,4,6,7,8-HpCDD	3.07E-04 U	2.34E-03	7.6E+00	2.32E-03	7.6E+00	3.94E-03	1.3E+01	1.59E-03	5.2E+00	3.93E-03	1.3E+01	1.05E-02
OCDD	7.34E-04 U	8.94E-04 U	1.2E+00	3.19E-03	4.4E+00	1.56E-03 U	2.1E+00	4.10E-04 U	5.6E-01	1.48E-03 U	2.0E+00	8.34E-03
2,3,7,8-TCDF	3.24E-05 J	4.28E-04 J	1.3E+01	1.28E-04 J	4.0E+00	5.67E-04 J	1.7E+01	1.73E-04 J	5.4E+00	3.19E-04 J	9.9E+00	4.32E-04 J
1,2,3,7,8-PeCDF	1.15E-05 U	1.20E-04	1.0E+01	3.51E-05	3.1E+00	1.05E-04	9.2E+00	5.23E-05	4.6E+00	7.85E-05	6.8E+00	1.85E-04
2,3,4,7,8-PeCDF	8.10E-06 U	2.63E-04	3.2E+01	5.49E-05	6.8E+00	1.76E-04	2.2E+01	7.47E-05	9.2E+00	1.21E-04	1.5E+01	3.25E-04
1,2,3,4,7,8-HxCDF	1.51E-05 U	1.22E-04	8.1E+00	5.70E-05	3.8E+00	1.30E-04	8.6E+00	8.60E-05	5.7E+00	1.11E-04	7.3E+00	2.81E-04
1,2,3,6,7,8-HxCDF	7.91E-06 U	1.30E-04	1.6E+01	6.51E-05	8.2E+00	1.50E-04	1.9E+01	9.32E-05	1.2E+01	1.25E-04	1.6E+01	3.18E-04
2,3,4,6,7,8-HxCDF	1.43E-05 U	7.64E-05	5.3E+00	3.74E-05	2.6E+00	8.04E-05	5.6E+00	4.04E-05	2.8E+00	7.11E-05	5.0E+00	1.70E-04
1,2,3,7,8,9-HxCDF	2.64E-05 UJ	4.04E-06 U	1.5E-01	2.02E-06 UJ	7.7E-02	6.28E-06 UJ	2.4E-01	1.70E-06 UJ	6.5E-02	2.98E-06 UJ	1.1E-01	7.23E-06 J
1,2,3,4,6,7,8-HpCDF	8.12E-05 U	3.27E-04	4.0E+00	3.15E-04	3.9E+00	5.20E-04	6.4E+00	2.01E-04	2.5E+00	4.15E-04	5.1E+00	1.37E-03
1,2,3,4,7,8,9-HpCDF	1.94E-05 U	7.66E-06 U	3.9E-01	1.09E-05 U	5.6E-01	1.83E-05 U	9.4E-01	5.74E-06 U	3.0E-01	1.17E-05 U	6.0E-01	5.32E-05
OCDF	5.44E-05 U	2.28E-05 U	4.2E-01	5.98E-05 U	1.1E+00	8.11E-05 U	1.5E+00	2.09E-05 U	3.8E-01	4.03E-05 U	7.4E-01	1.05E-04 U
Total TCDD												
Total PeCDD												
Total HxCDD												
Total HpCDD (COE)												
Total TCDF												
Total PeCDF												
Total HxCDF												
Total HpCDF												
Toxicity Equivalency - Birds	2.75E-03	1.09E-02	4.0E+00	1.61E-02	5.8E+00	1.99E-02	7.2E+00	9.74E-03	3.5E+00	2.36E-02	8.6E+00	2.53E-02
Toxicity Equivalency - Fish	2.72E-03	1.05E-02	3.9E+00	1.60E-02	5.9E+00	1.95E-02	7.1E+00	9.62E-03	3.5E+00	2.34E-02	8.6E+00	2.49E-02
Toxicity Equivalency - Mammals	2.73E-03	1.06E-02	3.9E+00	1.60E-02	5.9E+00	1.95E-02	7.2E+00	9.64E-03	3.5E+00	2.34E-02	8.6E+00	2.51E-02
2-Monochlorobiphenyl (1)												
4-Chlorobiphenyl (3)												
2,3-Dichlorobiphenyl (5)												
2,4-Dichlorobiphenyl (7)												
2,5-Dichlorobiphenyl (9)												
2,6-Dichlorobiphenyl (10)												
2,2',3'-Trichlorobiphenyl (16)												
2,2',4-Trichlorobiphenyl (17)												
2,2',5-Trichlorobiphenyl (18)												
2,2',6-Trichlorobiphenyl (19)												
2,3,3'-Trichlorobiphenyl (20)												
2,3,4'-Trichlorobiphenyl (22)												
2,3,6-Trichlorobiphenyl (24)												
2,3',4-Trichlorobiphenyl (25)												
2,3',5-Trichlorobiphenyl (26)												
2,4',5-Trichlorobiphenyl (31)												
2,4',6-Trichlorobiphenyl (32)												
2,2',3,3'-Tetrachlorobiphenyl (40)												
2,2',3,4'-Tetrachlorobiphenyl (42)												
2,2',3,5-Tetrachlorobiphenyl (43)												

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	Allendale Pond Diet 6/19/2000	AP-TS-08-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-09-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-10-E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-11-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-16-E 6/12/2000
2,2',3,5'-Tetrachlorobiphenyl (44)												
2,2',3,6-Tetrachlorobiphenyl (45)												
2,2',3,6'-Tetrachlorobiphenyl (46)												
2,2',4,5-Tetrachlorobiphenyl (48)												
2,2',4,5'-Tetrachlorobiphenyl (49)												
2,2',4,6-Tetrachlorobiphenyl (50)												
2,3,3',4'-Tetrachlorobiphenyl (56)												
2,3,3',6-Tetrachlorobiphenyl (59)												
2,3,4,4'-Tetrachlorobiphenyl (60)												
2,3,4,5-Tetrachlorobiphenyl (61)												
2,3,4',5-Tetrachlorobiphenyl (63)												
2,3,4',6-Tetrachlorobiphenyl (64)												
2,3',4,4'-Tetrachlorobiphenyl (66)												
3,3',4,4'-Tetrachlorobiphenyl (77)												
3,4,4',5-Tetrachlorobiphenyl (81)												
2,2',3,3',4-Pentachlorobiphenyl (82)												
2,2',3,3',5-Pentachlorobiphenyl (83)												
2,2',3,3',6-Pentachlorobiphenyl (84)												
2,2',3,4,4'-Pentachlorobiphenyl (85)												
2,2',3,4,5-Pentachlorobiphenyl (86)												
2,2',3,4,6-Pentachlorobiphenyl (88)												
2,2',3,4,6'-Pentachlorobiphenyl (89)												
2,2',3,4',5-Pentachlorobiphenyl (90)												
2,2',3,5,5'-Pentachlorobiphenyl (92)												
2,2',3,5,6-Pentachlorobiphenyl (93)												
2,3,3',4,4'-Pentachlorobiphenyl (105)												
2,3,3',4,5-Pentachlorobiphenyl (106)												
2,3,3',4',5'-Pentachlorobiphenyl (108)												
2,3,3',4',6-Pentachlorobiphenyl (110)												
2,3,4,4',5-Pentachlorobiphenyl (114)												
2,3',4,4',5-Pentachlorobiphenyl (118)												
3,3',4,4',5-Pentachlorobiphenyl (126)												
2,2',3,3',4,4'-Hexachlorobiphenyl (128)												
2,2',3,3',4,5-Hexachlorobiphenyl (129)												
2,2',3,3',4,5'-Hexachlorobiphenyl (130)												
2,2',3,3',4,6-Hexachlorobiphenyl (131)												
2,2',3,3',4,6'-Hexachlorobiphenyl (132)												
2,2',3,3',5,6-Hexachlorobiphenyl (134)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												
2,2',3,3',6,6'-Hexachlorobiphenyl (136)												
2,2',3,4,4',5-Hexachlorobiphenyl (137)												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)												
2,2',3,4,5',6-Hexachlorobiphenyl (144)												
2,2',3,4',5,5'-Hexachlorobiphenyl (146)												
2,2',3,4',5,6-Hexachlorobiphenyl (147)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)												
2,3,3',4,4',5-Hexachlorobiphenyl (156)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)												
2,3',4,4',5,5'-Hexachlorobiphenyl (167)												

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	Allendale Pond Diet 6/19/2000	AP-TS-08-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-09-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-10-E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-11-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-16-E 6/12/2000
3,3',4,4',5,5'-Hexachlorobiphenyl (169)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)												
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)												
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)												
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)												
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)												
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)												
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)												
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)												
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)												
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)												
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)												
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)												
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)												
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)												
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)												
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)												
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl												
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl												
Decachlorobiphenyl (209)												
PCB Congeners, Total												
Toxicity Equivalency (PCB) - Birds												
Toxicity Equivalency (PCB) - Fish												
Toxicity Equivalency (PCB) - Mammals												
Technical Chlordane												
Heptachlor Epoxide												
Dieldrin												
4,4'-DDE												
4,4'-DDD												
4,4'-DDT												
alpha-Chlordane												
Aroclor-1254												
Aroclor-1268												
Aroclor, Total												
Lipid_percent												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	Allendale Pond Diet 6/19/2000	AP-TS-08-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-09-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-10-E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-11-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-16-E 6/12/2000

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	BMF ALLENDALE 2000	AP-TS-17-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-18-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-19 E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-22-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-23-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-24-P 5/26/2000
HCX	9.7E-02	6.91E-06 UJ	3.1E-01	1.06E-06 UJ	4.8E-02	4.15E-06 UJ	1.9E-01	3.19E-06 UJ	1.4E-01	1.17E-06 UJ	5.3E-02	1.09E-05 UJ
TCX												
2,3,7,8-TCDD	8.8E+00	1.68E-02	6.2E+00	1.39E-02	5.2E+00	3.26E-02	1.2E+01	7.02E-03	2.6E+00	2.16E-02	8.0E+00	3.24E-02
1,2,3,7,8-PeCDD	5.2E+01	1.60E-04	1.2E+01	1.75E-04	1.3E+01	3.86E-04	2.9E+01	3.46E-04	2.6E+01	2.98E-04	2.2E+01	2.56E-04
1,2,3,4,7,8-HxCDD	6.1E+01	1.71E-04 J	1.6E+01	2.43E-04 J	2.3E+01	4.42E-04 J	4.1E+01	2.67E-04 J	2.5E+01	2.96E-04 J	2.8E+01	2.75E-04 J
1,2,3,6,7,8-HxCDD	6.7E+01	5.97E-04	1.1E+01	1.12E-03	2.0E+01	2.10E-03	3.8E+01	1.51E-03	2.7E+01	1.22E-03	2.2E+01	8.47E-04
1,2,3,7,8,9-HxCDD	2.3E+01	1.14E-04	4.8E+00	1.14E-04	4.8E+00	3.40E-04	1.4E+01	1.68E-04	7.1E+00	1.57E-04	6.6E+00	1.57E-04
1,2,3,4,6,7,8-HpCDD	3.4E+01	1.56E-03	5.1E+00	2.73E-03	8.9E+00	9.23E-03	3.0E+01	2.78E-03	9.1E+00	1.90E-03	6.2E+00	2.51E-03
OCDD	1.1E+01	5.85E-04 U	8.0E-01	1.79E-03	2.4E+00	1.16E-02	1.6E+01	7.91E-04 U	1.1E+00	4.16E-04 U	5.7E-01	1.19E-03 U
2,3,7,8-TCDF	1.3E+01	2.25E-04 J	6.9E+00	2.53E-04 J	7.8E+00	1.91E-04 J	5.9E+00	2.23E-04 J	6.9E+00	4.76E-04 J	1.5E+01	3.32E-04 J
1,2,3,7,8-PeCDF	1.6E+01	5.96E-05	5.2E+00	6.34E-05	5.5E+00	1.00E-04	8.7E+00	8.94E-05	7.8E+00	9.47E-05	8.2E+00	8.74E-05
2,3,4,7,8-PeCDF	4.0E+01	9.26E-05	1.1E+01	1.03E-04	1.3E+01	2.06E-04	2.5E+01	2.39E-04	2.9E+01	1.56E-04	1.9E+01	2.07E-04
1,2,3,4,7,8-HxCDF	1.9E+01	7.72E-05	5.1E+00	8.68E-05	5.8E+00	1.64E-04	1.1E+01	1.07E-04	7.1E+00	1.11E-04	7.4E+00	1.09E-04
1,2,3,6,7,8-HxCDF	4.0E+01	8.26E-05	1.0E+01	9.06E-05	1.1E+01	2.03E-04	2.6E+01	7.87E-05	1.0E+01	1.25E-04	1.6E+01	1.15E-04
2,3,4,6,7,8-HxCDF	1.2E+01	4.34E-05	3.0E+00	5.64E-05	3.9E+00	1.09E-04	7.6E+00	5.62E-05	3.9E+00	5.81E-05	4.1E+00	5.06E-05
1,2,3,7,8,9-HxCDF	2.7E-01	7.66E-06 UJ	2.9E-01	3.19E-06 J	1.2E-01	4.89E-06 UJ	1.9E-01	3.72E-06 UJ	1.4E-01	1.38E-06 UJ	5.2E-02	1.19E-05 UJ
1,2,3,4,6,7,8-HpCDF	1.7E+01	1.01E-04 U	1.2E+00	3.59E-04	4.4E+00	1.11E-03	1.4E+01	1.29E-04 U	1.6E+00	2.25E-04	2.8E+00	3.41E-04
1,2,3,4,7,8,9-HpCDF	2.7E+00	6.91E-06 U	3.6E-01	8.19E-06 U	4.2E-01	2.65E-05 U	1.4E+00	6.81E-06 U	3.5E-01	7.87E-06 U	4.1E-01	1.24E-05 U
OCDF	1.9E+00	1.90E-05 U	3.5E-01	3.50E-05 U	6.4E-01	1.33E-04 U	2.4E+00	1.57E-05 U	2.9E-01	2.32E-05 U	4.3E-01	6.38E-05 U
Total TCDD												
Total PeCDD												
Total HxCDD												
Total HpCDD												
Total TCDF												
Total PeCDF												
Total HxCDF												
Total HpCDF												
Toxicity Equivalency - Birds	9.2E+00	1.73E-02	6.3E+00	1.45E-02	5.3E+00	3.36E-02	1.2E+01	7.91E-03	2.9E+00	2.26E-02	8.2E+00	3.34E-02
Toxicity Equivalency - Fish	9.1E+00	1.71E-02	6.3E+00	1.43E-02	5.3E+00	3.34E-02	1.2E+01	7.68E-03	2.8E+00	2.21E-02	8.1E+00	3.30E-02
Toxicity Equivalency - Mammals	9.2E+00	1.71E-02	6.3E+00	1.44E-02	5.3E+00	3.36E-02	1.2E+01	7.77E-03	2.8E+00	2.21E-02	8.1E+00	3.30E-02
2-Monochlorobiphenyl (1)												
4-Chlorobiphenyl (3)												
2,3-Dichlorobiphenyl (5)												
2,4-Dichlorobiphenyl (7)												
2,5-Dichlorobiphenyl (9)												
2,6-Dichlorobiphenyl (10)												
2,2',3'-Trichlorobiphenyl (16)												
2,2',4-Trichlorobiphenyl (17)												
2,2',5-Trichlorobiphenyl (18)												
2,2',6-Trichlorobiphenyl (19)												
2,3,3'-Trichlorobiphenyl (20)												
2,3,4'-Trichlorobiphenyl (22)												
2,3,6-Trichlorobiphenyl (24)												
2,3',4-Trichlorobiphenyl (25)												
2,3',5-Trichlorobiphenyl (26)												
2,4',5-Trichlorobiphenyl (31)												
2,4',6-Trichlorobiphenyl (32)												
2,2',3,3'-Tetrachlorobiphenyl (40)												
2,2',3,4'-Tetrachlorobiphenyl (42)												
2,2',3,5-Tetrachlorobiphenyl (43)												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	BMF ALLENDALE 2000	AP-TS-17-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-18-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-19 E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-22-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-23-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-24-P 5/26/2000
2,2',3,5'-Tetrachlorobiphenyl (44)												
2,2',3,6-Tetrachlorobiphenyl (45)												
2,2',3,6'-Tetrachlorobiphenyl (46)												
2,2',4,5-Tetrachlorobiphenyl (48)												
2,2',4,5'-Tetrachlorobiphenyl (49)												
2,2',4,6-Tetrachlorobiphenyl (50)												
2,3,3',4'-Tetrachlorobiphenyl (56)												
2,3,3',6-Tetrachlorobiphenyl (59)												
2,3,4,4'-Tetrachlorobiphenyl (60)												
2,3,4,5-Tetrachlorobiphenyl (61)												
2,3,4',5-Tetrachlorobiphenyl (63)												
2,3,4',6-Tetrachlorobiphenyl (64)												
2,3',4,4'-Tetrachlorobiphenyl (66)												
3,3',4,4'-Tetrachlorobiphenyl (77)												
3,4,4',5-Tetrachlorobiphenyl (81)												
2,2',3,3',4-Pentachlorobiphenyl (82)												
2,2',3,3',5-Pentachlorobiphenyl (83)												
2,2',3,3',6-Pentachlorobiphenyl (84)												
2,2',3,4,4'-Pentachlorobiphenyl (85)												
2,2',3,4,5-Pentachlorobiphenyl (86)												
2,2',3,4,6-Pentachlorobiphenyl (88)												
2,2',3,4,6'-Pentachlorobiphenyl (89)												
2,2',3,4',5-Pentachlorobiphenyl (90)												
2,2',3,5,5'-Pentachlorobiphenyl (92)												
2,2',3,5,6-Pentachlorobiphenyl (93)												
2,3,3',4,4'-Pentachlorobiphenyl (105)												
2,3,3',4,5-Pentachlorobiphenyl (106)												
2,3,3',4',5-Pentachlorobiphenyl (108)												
2,3,3',4',6-Pentachlorobiphenyl (110)												
2,3,4,4',5-Pentachlorobiphenyl (114)												
2,3',4,4',5-Pentachlorobiphenyl (118)												
3,3',4,4',5-Pentachlorobiphenyl (126)												
2,2',3,3',4,4'-Hexachlorobiphenyl (128)												
2,2',3,3',4,5-Hexachlorobiphenyl (129)												
2,2',3,3',4,5'-Hexachlorobiphenyl (130)												
2,2',3,3',4,6-Hexachlorobiphenyl (131)												
2,2',3,3',4,6'-Hexachlorobiphenyl (132)												
2,2',3,3',5,6-Hexachlorobiphenyl (134)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												
2,2',3,3',6,6'-Hexachlorobiphenyl (136)												
2,2',3,4,4',5-Hexachlorobiphenyl (137)												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)												
2,2',3,4,5',6-Hexachlorobiphenyl (144)												
2,2',3,4',5,5'-Hexachlorobiphenyl (146)												
2,2',3,4',5,6-Hexachlorobiphenyl (147)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)												
2,3,3',4,4',5-Hexachlorobiphenyl (156)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)												
2,3',4,4',5,5'-Hexachlorobiphenyl (167)												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	BMF ALLENDALE 2000	AP-TS-17-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-18-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-19 E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-22-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-23-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-24-P 5/26/2000
3,3',4,4',5,5'-Hexachlorobiphenyl (169)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)												
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)												
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)												
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)												
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)												
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)												
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)												
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)												
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)												
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)												
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)												
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)												
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)												
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)												
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)												
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)												
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl												
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl												
Decachlorobiphenyl (209)												
PCB Congeners, Total												
Toxicity Equivalency (PCB) - Birds												
Toxicity Equivalency (PCB) - Fish												
Toxicity Equivalency (PCB) - Mammals												
Technical Chlordane												
Heptachlor Epoxide												
Dieldrin												
4,4'-DDE												
4,4'-DDD												
4,4'-DDT												
alpha-Chlordane												
Aroclor-1254												
Aroclor-1268												
Aroclor, Total												
Lipid_percent												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000											
	BMF ALLENDALE 2000	AP-TS-17-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-18-E 6/12/2000	BMF ALLENDALE 2000	AP-TS-19 E&P 5/26/2000	BMF ALLENDALE 2000	AP-TS-22-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-23-P 5/26/2000	BMF ALLENDALE 2000	AP-TS-24-P 5/26/2000
[illegible]												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	ALLENDALE POND 2000							ALLENDALE POND 2001				
				BMF Summary Statistics - Allendale 2000								
PARAMETER	BMF ALLENDALE 2000	AP-TS-29-P 5/26/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-33-P 6/9/2001	BMF ALLENDALE 2001	A-TS-35-P 5/31/2001	BMF ALLENDALE 2001
HCX	4.9E-01	1.49E-06 UJ	6.8E-02	4.92E-01	1.61E-01	1.63E-02	79%	4.76E-03 J			8.41E-04 UJ	1.8E-01
TCX								R			1.70E-02 UJ	
2,3,7,8-TCDD	1.2E+01	2.87E-02	1.1E+01	1.21E+01	7.23E+00	1.00E+01	44%	8.23E-03 J			8.90E-04 J	1.1E-01
1,2,3,7,8-PeCDD	1.9E+01	4.24E-04	3.2E+01	5.17E+01	2.46E+01	1.47E+02	49%	3.71E-05 UJ			1.16E-04 J	3.1E+00
1,2,3,4,7,8-HxCDD	2.6E+01	4.04E-04 J	3.8E+01	6.14E+01	2.97E+01	1.83E+02	46%	5.31E-05 J			1.37E-04 J	2.6E+00
1,2,3,6,7,8-HxCDD	1.5E+01	2.19E-03	3.9E+01	6.66E+01	2.65E+01	2.50E+02	60%	2.76E-04 J			1.05E-03 J	3.8E+00
1,2,3,7,8,9-HxCDD	6.6E+00	3.42E-04	1.4E+01	2.29E+01	9.35E+00	2.88E+01	57%	6.89E-05 J			1.76E-04 J	2.6E+00
1,2,3,4,6,7,8-HpCDD	8.2E+00	4.55E-03	1.5E+01	3.43E+01	1.25E+01	8.60E+01	74%	2.07E-03 J			7.33E-03 J	3.5E+00
OCDD	1.6E+00	9.03E-04 U	1.2E+00	1.58E+01	3.48E+00	2.20E+01	135%	6.93E-03 J			1.10E-02 J	1.6E+00
2,3,7,8-TCDF	1.0E+01	3.94E-04 J	1.2E+01	1.75E+01	9.84E+00	1.69E+01	42%	4.22E-05 UJ$			2.05E-04 J$	4.9E+00
1,2,3,7,8-PeCDF	7.6E+00	1.18E-04	1.0E+01	1.61E+01	7.96E+00	1.09E+01	42%	6.85E-05 J			8.04E-05 J	1.2E+00
2,3,4,7,8-PeCDF	2.6E+01	2.97E-04	3.7E+01	4.01E+01	2.20E+01	1.16E+02	49%	7.16E-05 J			9.26E-05 J	1.3E+00
1,2,3,4,7,8-HxCDF	7.3E+00	2.08E-04	1.4E+01	1.87E+01	8.42E+00	1.60E+01	48%	1.06E-04 J			1.49E-04 J	1.4E+00
1,2,3,6,7,8-HxCDF	1.4E+01	2.00E-04	2.5E+01	4.02E+01	1.73E+01	7.69E+01	51%	9.57E-05 J			1.26E-04 J	1.3E+00
2,3,4,6,7,8-HxCDF	3.5E+00	1.01E-04	7.1E+00	1.19E+01	5.11E+00	6.53E+00	50%	8.51E-05 J			8.77E-05 J	1.0E+00
1,2,3,7,8,9-HxCDF	4.5E-01	1.81E-06 UJ	6.9E-02	4.52E-01	1.72E-01	1.34E-02	67%	5.46E-05 J			8.51E-06 J	1.6E-01
1,2,3,4,6,7,8-HpCDF	4.2E+00	5.74E-04	7.1E+00	1.69E+01	5.67E+00	2.14E+01	82%	4.85E-04 J			1.80E-03 J	3.7E+00
1,2,3,4,7,8,9-HpCDF	6.4E-01	1.40E-05 U	7.2E-01	2.74E+00	7.54E-01	4.44E-01	88%	1.77E-05 UJ			5.98E-05 J	3.4E+00
OCDF	1.2E+00	3.47E-05 U	6.4E-01	2.45E+00	9.25E-01	4.56E-01	73%	2.02E-05 UJ			8.00E-04 J	4.0E+01
Total TCDD								8.23E-03 J			8.90E-04 J	1.1E-01
Total PeCDD								9.55E-05 UJ			5.81E-05 UJ	6.1E-01
Total HxCDD								7.11E-04 J			1.42E-03 J	2.0E+00
Total HpCDD								2.77E-03 J			7.42E-03 J	2.7E+00
Total TCDF								1.15E-04 J			2.67E-04 J	2.3E+00
Total PeCDF								3.59E-04 J			2.75E-04 J	7.7E-01
Total HxCDF								1.05E-03 J			7.19E-04 J	6.9E-01
Total HpCDF								2.60E-04 UJ			2.25E-03 J	8.6E+00
Toxicity Equivalency - Birds	1.2E+01	3.00E-02	1.1E+01	1.22E+01	7.40E+00	9.87E+00	42%	8.44E-03			1.41E-03	1.7E-01
Toxicity Equivalency - Fish	1.2E+01	2.96E-02	1.1E+01	1.23E+01	7.37E+00	9.96E+00	43%	8.40E-03			1.21E-03	1.4E-01
Toxicity Equivalency - Mammals	1.2E+01	2.98E-02	1.1E+01	1.23E+01	7.38E+00	9.98E+00	43%	8.40E-03			1.34E-03	1.6E-01
2-Monochlorobiphenyl (1)												
4-Chlorobiphenyl (3)												
2,3-Dichlorobiphenyl (5)												
2,4-Dichlorobiphenyl (7)												
2,5-Dichlorobiphenyl (9)												
2,6-Dichlorobiphenyl (10)												
2,2',3'-Trichlorobiphenyl (16)												
2,2',4-Trichlorobiphenyl (17)												
2,2',5-Trichlorobiphenyl (18)												
2,2',6-Trichlorobiphenyl (19)												
2,3,3'-Trichlorobiphenyl (20)												
2,3,4'-Trichlorobiphenyl (22)												
2,3,6-Trichlorobiphenyl (24)												
2,3',4-Trichlorobiphenyl (25)												
2,3',5-Trichlorobiphenyl (26)												
2,4',5-Trichlorobiphenyl (31)												
2,4',6-Trichlorobiphenyl (32)												
2,2',3,3'-Tetrachlorobiphenyl (40)												
2,2',3,4'-Tetrachlorobiphenyl (42)												
2,2',3,5-Tetrachlorobiphenyl (43)												

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000			BMF Summary Statistics - Allendale 2000				ALLENDALE POND 2001				
	BMF ALLENDALE 2000	AP-TS-29-P 5/26/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-33-P 6/9/2001	BMF ALLENDALE 2001	A-TS-35-P 5/31/2001	BMF ALLENDALE 2001
2,2',3,5'-Tetrachlorobiphenyl (44)												
2,2',3,6-Tetrachlorobiphenyl (45)												
2,2',3,6'-Tetrachlorobiphenyl (46)												
2,2',4,5-Tetrachlorobiphenyl (48)												
2,2',4,5'-Tetrachlorobiphenyl (49)												
2,2',4,6-Tetrachlorobiphenyl (50)												
2,3,3',4-Tetrachlorobiphenyl (56)												
2,3,3',6-Tetrachlorobiphenyl (59)												
2,3,4,4'-Tetrachlorobiphenyl (60)												
2,3,4,5-Tetrachlorobiphenyl (61)												
2,3,4',5-Tetrachlorobiphenyl (63)												
2,3,4',6-Tetrachlorobiphenyl (64)												
2,3',4,4'-Tetrachlorobiphenyl (66)												
3,3',4,4'-Tetrachlorobiphenyl (77)												
3,4,4',5-Tetrachlorobiphenyl (81)												
2,2',3,3',4-Pentachlorobiphenyl (82)												
2,2',3,3',5-Pentachlorobiphenyl (83)												
2,2',3,3',6-Pentachlorobiphenyl (84)												
2,2',3,4,4'-Pentachlorobiphenyl (85)												
2,2',3,4,5-Pentachlorobiphenyl (86)												
2,2',3,4,6-Pentachlorobiphenyl (88)												
2,2',3,4,6'-Pentachlorobiphenyl (89)												
2,2',3,4',5-Pentachlorobiphenyl (90)												
2,2',3,5,5'-Pentachlorobiphenyl (92)												
2,2',3,5,6-Pentachlorobiphenyl (93)												
2,3,3',4,4'-Pentachlorobiphenyl (105)												
2,3,3',4,5-Pentachlorobiphenyl (106)												
2,3,3',4',5'-Pentachlorobiphenyl (108)												
2,3,3',4',6-Pentachlorobiphenyl (110)												
2,3,4,4',5-Pentachlorobiphenyl (114)												
2,3',4,4',5-Pentachlorobiphenyl (118)												
3,3',4,4',5-Pentachlorobiphenyl (126)												
2,2',3,3',4,4'-Hexachlorobiphenyl (128)												
2,2',3,3',4,5-Hexachlorobiphenyl (129)												
2,2',3,3',4,5'-Hexachlorobiphenyl (130)												
2,2',3,3',4,6-Hexachlorobiphenyl (131)												
2,2',3,3',4,6'-Hexachlorobiphenyl (132)												
2,2',3,3',5,6-Hexachlorobiphenyl (134)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												
2,2',3,3',6,6'-Hexachlorobiphenyl (136)												
2,2',3,4,4',5-Hexachlorobiphenyl (137)												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)												
2,2',3,4,5',6-Hexachlorobiphenyl (144)												
2,2',3,4',5,5'-Hexachlorobiphenyl (146)												
2,2',3,4',5,6-Hexachlorobiphenyl (147)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)												
2,3,3',4,4',5-Hexachlorobiphenyl (156)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)												
2,3',4,4',5,5'-Hexachlorobiphenyl (167)												

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TABLE J-10
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000			BMF Summary Statistics - Allendale 2000				ALLENDALE POND 2001				
	BMF ALLENDALE 2000	AP-TS-29-P 5/26/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-33-P 6/9/2001	BMF ALLENDALE 2001	A-TS-35-P 5/31/2001	BMF ALLENDALE 2001
3,3',4,4',5,5'-Hexachlorobiphenyl (169)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)												
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)												
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)												
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)												
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)												
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)												
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)												
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)												
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)												
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)												
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)												
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)												
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)												
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)												
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)												
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)												
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl												
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl												
Decachlorobiphenyl (209)												
PCB Congeners, Total												
Toxicity Equivalency (PCB) - Birds												
Toxicity Equivalency (PCB) - Fish												
Toxicity Equivalency (PCB) - Mammals												
Technical Chlordane									12.68419355 J			
Heptachlor Epoxide									0.647419355 J			
Dieldrin									0.477419355			
4,4'-DDE									8.456129032 J			
4,4'-DDD									0.196129032 J			
4,4'-DDT									0.084516129 J			
alpha-Chlordane									0.142903226 J			
Aroclor-1254									42.19774194			
Aroclor-1268									12.03225806			
Aroclor, Total									54.23			
Lipid_percent												

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Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2000			BMF Summary Statistics - Allendale 2000				ALLENDALE POND 2001				
	BMF ALLENDALE 2000	AP-TS-29-P 5/26/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-33-P 6/9/2001	BMF ALLENDALE 2001	A-TS-35-P 5/31/2001	BMF ALLENDALE 2001

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TABLE J-10

CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001													
	A-TS-38-P 5/25/2001	BMF ALLENDALE 2001	A-TS-39-P 6/12/2001	BMF ALLENDALE 2001	A-TS-42A-P 6/9/2001	BMF ALLENDALE 2001	A-TS-42B-P 6/7/2001	BMF ALLENDALE 2001	A-TS-45-P 6/8/2001	BMF ALLENDALE 2001	A-TS-46-P 5/28/2001	BMF ALLENDALE 2001
HCX	6.01E-04 UJ	1.3E-01			8.00E-04 UJ	1.7E-01			6.27E-04	1.3E-01	7.40E-04 UJ	1.6E-01
TCX	1.17E-02 UJ				1.60E-02 UJ						1.49E-02 UJ	
2,3,7,8-TCDD	3.84E-03 J	4.7E-01			8.73E-03 J	1.1E+00			7.19E-03 J	8.7E-01	3.74E-03 J	4.5E-01
1,2,3,7,8-PeCDD	6.19E-04 J	1.7E+01			1.20E-04 J	3.2E+00			2.62E-04 J	7.1E+00	8.68E-05 J	2.3E+00
1,2,3,4,7,8-HxCDD COE	5.72E-04 J	1.1E+01			1.21E-04 J	2.3E+00			3.05E-04 J	5.7E+00	8.06E-05 J	1.5E+00
1,2,3,6,7,8-HxCDD	3.99E-03 J	1.4E+01			7.99E-04 J	2.9E+00			1.50E-03 J	5.4E+00	7.02E-04 J	2.5E+00
1,2,3,7,8,9-HxCDD	2.47E-04 J	3.6E+00			1.10E-04 J	1.6E+00			1.62E-04 J	2.4E+00	1.20E-04 J	1.7E+00
1,2,3,4,6,7,8-HpCDD	7.03E-03 J	3.4E+00			4.00E-03 J	1.9E+00			2.33E-03 J	1.1E+00	4.13E-03 J	2.0E+00
OCDD	7.53E-03 J	1.1E+00			4.23E-03 J	6.1E-01			8.36E-04 UJ	1.2E-01	6.78E-03 J	9.8E-01
2,3,7,8-TCDF	1.87E-04 J$	4.4E+00			4.24E-04 J$	1.0E+01			1.80E-04 UJ$	4.3E+00	1.25E-04 J$	3.0E+00
1,2,3,7,8-PeCDF	1.28E-04 J	1.9E+00			2.90E-05 UJ	4.2E-01			1.49E-04 J	2.2E+00	2.38E-05 UJ	3.5E-01
2,3,4,7,8-PeCDF	2.57E-04 J	3.6E+00			9.21E-05 J	1.3E+00			1.74E-04 J	2.4E+00	6.04E-05 J	8.4E-01
1,2,3,4,7,8-HxCDF	1.70E-04 J	1.6E+00			9.64E-05 J	9.1E-01			2.22E-04 J	2.1E+00	7.91E-05 J	7.5E-01
1,2,3,6,7,8-HxCDF	1.67E-04 J	1.7E+00			7.81E-05 J	8.2E-01			1.31E-04 J	1.4E+00	7.49E-05 J	7.8E-01
2,3,4,6,7,8-HxCDF	1.04E-04 J	1.2E+00			4.94E-05 J	5.8E-01			6.26E-05 J	7.3E-01	5.32E-05 J	6.2E-01
1,2,3,7,8,9-HxCDF	9.15E-06 UJ	1.7E-01			4.47E-06 UJ	8.2E-02			6.70E-06 UJ	1.2E-01	9.15E-06 UJ	1.7E-01
1,2,3,4,6,7,8-HpCDF	4.58E-04 J	9.4E-01			5.49E-04 J	1.1E+00			1.86E-04 J	3.8E-01	1.11E-03 J	2.3E+00
1,2,3,4,7,8,9-HpCDF	6.81E-06 UJ	3.8E-01			1.09E-05 UJ	6.1E-01			6.49E-06 UJ	3.7E-01	3.74E-05 J	2.1E+00
OCDF	1.80E-05 UJ	8.9E-01			5.45E-05 UJ	2.7E+00			6.28E-06 UJ	3.1E-01	2.45E-04 J	1.2E+01
Total TCDD	3.84E-03 J	4.7E-01			8.73E-03 J	1.1E+00			7.19E-03 J	8.7E-01	3.74E-03 J	4.5E-01
Total PeCDD	7.00E-04 J	7.3E+00			6.01E-05 UJ	6.3E-01			1.31E-04 UJ	1.4E+00	4.34E-05 UJ	4.5E-01
Total HxCDD	5.11E-03 J	7.2E+00			1.07E-03 J	1.5E+00			2.01E-03 J	2.8E+00	9.54E-04 J	1.3E+00
Total HpCDD	7.69E-03 J	2.8E+00			4.05E-03 J	1.5E+00			2.37E-03 J	8.5E-01	4.13E-03 J	1.5E+00
Total TCDF	2.29E-04 J	2.0E+00			2.33E-04 J	2.0E+00			4.45E-04 J	3.9E+00	1.40E-04 J	1.2E+00
Total PeCDF	3.85E-04 J	1.1E+00			5.54E-04 J	1.5E+00			4.82E-04 J	1.3E+00	6.77E-05 UJ	1.9E-01
Total HxCDF	5.23E-04 J	5.0E-01			2.97E-04 J	2.8E-01			4.70E-04 J	4.5E-01	3.60E-04 J	3.4E-01
Total HpCDF	4.99E-04 J	1.9E+00			6.86E-04 J	2.6E+00			1.06E-04 UJ	4.1E-01	1.34E-03 J	5.1E+00
Toxicity Equivalency - Birds	5.06E-03	6.0E-01			9.43E-03	1.1E+00			7.91E-03	9.4E-01	4.09E-03	4.8E-01
Toxicity Equivalency - Fish	5.00E-03	6.0E-01			9.02E-03	1.1E+00			7.77E-03	9.2E-01	3.96E-03	4.7E-01
Toxicity Equivalency - Mammals	5.21E-03	6.2E-01			9.11E-03	1.1E+00			7.83E-03	9.3E-01	4.04E-03	4.8E-01
2-Monochlorobiphenyl (1)									3.10E-04 UJ			
4-Chlorobiphenyl (3)									4.13E-04 UJ			
2,3-Dichlorobiphenyl (5)									2.27E-04 UJ			
2,4-Dichlorobiphenyl (7)									2.55E-04 J			
2,5-Dichlorobiphenyl (9)									2.80E-04			
2,6-Dichlorobiphenyl (10)									2.27E-04 UJ			
2,2',3'-Trichlorobiphenyl (16)									6.51E-04 UJ			
2,2',4-Trichlorobiphenyl (17)									8.58E-04 UJ			
2,2',5-Trichlorobiphenyl (18)									1.54E-03 UJ			
2,2',6-Trichlorobiphenyl (19)									1.73E-04 UJ			
2,3,3'-Trichlorobiphenyl (20)									1.83E-01 J			
2,3,4'-Trichlorobiphenyl (22)									2.28E-03 UJ			
2,3,6-Trichlorobiphenyl (24)									4.74E-04 J			
2,3',4-Trichlorobiphenyl (25)									1.37E-03 J			
2,3',5-Trichlorobiphenyl (26)									2.48E-03 J			
2,4',5-Trichlorobiphenyl (31)									5.70E-02 J			
2,4',6-Trichlorobiphenyl (32)									1.75E-03 J			
2,2',3,3'-Tetrachlorobiphenyl (40)									1.45E-02 J			
2,2',3,4'-Tetrachlorobiphenyl (42)									1.72E-02 J			
2,2',3,5-Tetrachlorobiphenyl (43)									4.32E-01 J			

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Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001											
	A-TS-38-P 5/25/2001	BMF ALLENDALE 2001	A-TS-39-P 6/12/2001	BMF ALLENDALE 2001	A-TS-42A-P 6/9/2001	BMF ALLENDALE 2001	A-TS-42B-P 6/7/2001	BMF ALLENDALE 2001	A-TS-45-P 6/8/2001	BMF ALLENDALE 2001	A-TS-46-P 5/28/2001	BMF ALLENDALE 2001
2,2',3,5'-Tetrachlorobiphenyl (44)									1.43E-01 J			
2,2',3,6-Tetrachlorobiphenyl (45)									2.08E-03 J			
2,2',3,6'-Tetrachlorobiphenyl (46)									6.81E-04 J			
2,2',4,5-Tetrachlorobiphenyl (48)									3.64E-03 J			
2,2',4,5'-Tetrachlorobiphenyl (49)									1.29E-01 J			
2,2',4,6-Tetrachlorobiphenyl (50)									6.17E-03 J			
2,3,3',4'-Tetrachlorobiphenyl (56)									1.59E-02 J			
2,3,3',6-Tetrachlorobiphenyl (59)									9.91E-03 J			
2,3,4,4'-Tetrachlorobiphenyl (60)									4.05E-02 J			
2,3,4,5-Tetrachlorobiphenyl (61)									2.77E-01 J			
2,3,4',5-Tetrachlorobiphenyl (63)									1.40E-02 J			
2,3,4',6-Tetrachlorobiphenyl (64)									4.18E-02 J			
2,3',4,4'-Tetrachlorobiphenyl (66)									3.59E-01 J			
3,3',4,4'-Tetrachlorobiphenyl (77)									4.91E-02 J			
3,4,4',5-Tetrachlorobiphenyl (81)									1.35E-03 J			
2,2',3,3',4-Pentachlorobiphenyl (82)									2.73E-02 J			
2,2',3,3',5-Pentachlorobiphenyl (83)									6.28E-01 J			
2,2',3,3',6-Pentachlorobiphenyl (84)									4.38E-02 J			
2,2',3,4,4'-Pentachlorobiphenyl (85)									1.87E-01 J			
2,2',3,4,5-Pentachlorobiphenyl (86)									4.21E-01 J			
2,2',3,4,6-Pentachlorobiphenyl (88)									6.04E-02 J			
2,2',3,4,6'-Pentachlorobiphenyl (89)									5.52E-04 J			
2,2',3,4',5-Pentachlorobiphenyl (90)									1.41E+00 J			
2,2',3,5,5'-Pentachlorobiphenyl (92)									2.17E-01 J			
2,2',3,5,6-Pentachlorobiphenyl (93)									4.61E-01 J			
2,3,3',4,4'-Pentachlorobiphenyl (105)									3.07E-01 J			
2,3,3',4,5-Pentachlorobiphenyl (106)									1.62E-01 J			
2,3,3',4',5'-Pentachlorobiphenyl (108)									5.10E-02 J			
2,3,3',4',6-Pentachlorobiphenyl (110)									5.42E-01 J			
2,3,4,4',5-Pentachlorobiphenyl (114)									2.02E-02 J			
2,3',4,4',5-Pentachlorobiphenyl (118)									1.38E+00 J			
3,3',4,4',5-Pentachlorobiphenyl (126)									9.46E-03 J			
2,2',3,3',4,4'-Hexachlorobiphenyl (128)									2.65E-01 J			
2,2',3,3',4,5-Hexachlorobiphenyl (129)									1.99E+00 J			
2,2',3,3',4,5'-Hexachlorobiphenyl (130)									1.04E-01 J			
2,2',3,3',4,6-Hexachlorobiphenyl (131)									7.95E-03 J			
2,2',3,3',4,6'-Hexachlorobiphenyl (132)									1.65E-01 J			
2,2',3,3',5,6-Hexachlorobiphenyl (134)									1.89E-02 J			
2,2',3,3',5,6'-Hexachlorobiphenyl (135)									1.68E-01 J			
2,2',3,3',6,6'-Hexachlorobiphenyl (136)									4.31E-02 J			
2,2',3,4,4',5-Hexachlorobiphenyl (137)									1.69E-01 J			
2,2',3,4,5,5'-Hexachlorobiphenyl (141)									1.86E-01 J			
2,2',3,4,5',6-Hexachlorobiphenyl (144)									2.64E-02 J			
2,2',3,4',5,5'-Hexachlorobiphenyl (146)									2.79E-01 J			
2,2',3,4',5,6-Hexachlorobiphenyl (147)									6.69E-01 J			
2,2',4,4',5,5'-Hexachlorobiphenyl (153)									1.98E+00 J			
2,3,3',4,4',5-Hexachlorobiphenyl (156)									2.21E-01 J			
2,3,3',4,4',6-Hexachlorobiphenyl (158)									1.46E-01 J			
2,3',4,4',5,5'-Hexachlorobiphenyl (167)									1.10E-01 J			

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3,3',4,4',5,5'-Hexachlorobiphenyl (169)									2.90E-03 J			
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)									3.70E-01 J			
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)									6.48E-02 J			
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)									9.07E-02 J			
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)									1.27E-01 J			
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)									1.15E-02 J			
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)									9.18E-03 J			
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)									1.43E-01 J			
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)									8.24E-02 J			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)									9.60E-01 J			
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)									2.36E-03 J			
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)									1.41E-01 J			
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)									6.61E-04 J			
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)									1.34E-02 J			
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)									4.54E-01 J			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)									1.65E-02 J			
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)									1.08E-01 J			
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)									1.55E-02 J			
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)									3.30E-01 J			
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)									5.46E-02 J			
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)									1.23E-01 J			
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)									5.02E-03 J			
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)									6.35E-01 J			
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)									6.99E-03 J			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)									3.58E-02 J			
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)									2.85E-01 J			
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)									1.12E-02 J			
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl									7.14E-01 J			
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl									6.90E-02 J			
Decachlorobiphenyl (209)									7.02E-01 J			
PCB Congeners, Total									1.99E+01 J			
Toxicity Equivalency (PCB) - Birds									3.62E-03			
Toxicity Equivalency (PCB) - Fish									6.34E-05			
Toxicity Equivalency (PCB) - Mammals									1.27E-03			
Technical Chlordane			4.49083558 J				19.03379888 J					
Heptachlor Epoxide			0.547304582 J				0.827374302 J					
Dieldrin			0.328975741				0.417318436					
4,4'-DDE			6.480458221				4.272067039					
4,4'-DDD			0.170889488				0.131284916 J					
4,4'-DDT			0.060512129 J				0.093575419 J					
alpha-Chlordane			0.443665768				0.340782123					
Aroclor-1254			16.29299191				22.34301676					
Aroclor-1268			2.389622642				2.578212291 J					
Aroclor, Total			18.68261456				24.92122905 J					
Lipid_percent												

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Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

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	A-TS-47-P 6/22/2001	BMF ALLENDALE 2001	A-TS-48-P 5/26/2001	BMF ALLENDALE 2001	A-TS-49-P 5/30/2001	BMF ALLENDALE 2001	A-TS-51-P 6/22/2001	BMF ALLENDALE 2001	A-TS-52-P 6/9/2001	BMF ALLENDALE 2001	A-TS-53-P 5/30/2001	BMF ALLENDALE 2001
HCX	1.47E-03 UJ	3.1E-01	7.69E-04 UJ	1.6E-01	9.46E-04 UJ	2.0E-01	4.56E-04 UJ	9.6E-02	4.21E-04	8.9E-02	2.52E-04 J	5.3E-02
TCX			6.51E-05 J		1.91E-02 UJ		9.15E-03 UJ					
2,3,7,8-TCDD	1.33E-02 J	1.6E+00	4.95E-03 J	6.0E-01	3.88E-03 J	4.7E-01	9.06E-03 J	1.1E+00	8.46E-03 J	1.0E+00	5.67E-03 J	6.9E-01
1,2,3,7,8-PeCDD	5.74E-05 UJ	1.5E+00	9.87E-05 J	2.7E+00	9.79E-05 J	2.6E+00	1.66E-04 J	4.5E+00	1.27E-04 J	3.4E+00	1.87E-04 J	5.1E+00
1,2,3,4,7,8-HxCDD (OE)	1.18E-04 J	2.2E+00	9.68E-05 J	1.8E+00	9.26E-05 J	1.7E+00	1.74E-04 J	3.3E+00	1.35E-04 J	2.5E+00	2.48E-04 J	4.7E+00
1,2,3,6,7,8-HxCDD	3.90E-04 J	1.4E+00	5.63E-04 J	2.0E+00	1.08E-03 J	3.9E+00	4.22E-04 J	1.5E+00	8.75E-04 J	3.2E+00	1.41E-03 J	5.1E+00
1,2,3,7,8,9-HxCDD	1.28E-04 J	1.9E+00	8.83E-05 J	1.3E+00	1.26E-04 J	1.8E+00	7.00E-05 J	1.0E+00	1.03E-04 J	1.5E+00	2.44E-04 J	3.5E+00
1,2,3,4,6,7,8-HpCDD	1.06E-03 J	5.1E-01	2.82E-03 J	1.4E+00	6.86E-03 J	3.3E+00	6.07E-04 J	2.9E-01	1.27E-03 J	6.1E-01	7.14E-03 J	3.4E+00
OCDD	6.50E-04 UJ	9.4E-02	4.82E-03 J	7.0E-01	6.39E-03 J	9.2E-01	2.19E-04 UJ	3.2E-02	3.57E-04 UJ	5.1E-02	8.58E-03 J	1.2E+00
2,3,7,8-TCDF	1.96E-04 UJ$	4.6E+00	1.57E-04 J$	3.7E+00	1.46E-04 J$	3.5E+00	3.46E-04 J$	8.2E+00	1.63E-04 UJ$	3.9E+00	1.33E-04 UJ$	3.1E+00
1,2,3,7,8-PeCDF	5.45E-05 J	7.9E-01	2.35E-05 UJ	3.4E-01	2.36E-05 UJ	3.4E-01	6.30E-05 J	9.2E-01	8.51E-05 J	1.2E+00	9.47E-05 J	1.4E+00
2,3,4,7,8-PeCDF	1.02E-04 UJ	1.4E+00	6.66E-05 J	9.3E-01	6.81E-05 J	9.5E-01	1.15E-04 J	1.6E+00	1.29E-04 J	1.8E+00	1.29E-04 J	1.8E+00
1,2,3,4,7,8-HxCDF	1.04E-04 UJ	9.8E-01	6.96E-05 J	6.6E-01	1.19E-04 J	1.1E+00	4.68E-05 J	4.4E-01	9.70E-05 J	9.2E-01	1.58E-04 J	1.5E+00
1,2,3,6,7,8-HxCDF	1.02E-04 UJ	1.1E+00	6.49E-05 J	6.8E-01	8.04E-05 J	8.4E-01	5.02E-05 J	5.2E-01	6.81E-05 J	7.1E-01	1.46E-04 J	1.5E+00
2,3,4,6,7,8-HxCDF	1.10E-04 UJ	1.3E+00	4.64E-05 J	5.4E-01	6.02E-05 J	7.1E-01	2.87E-05 J	3.4E-01	3.72E-05 J	4.4E-01	1.19E-04 J	1.4E+00
1,2,3,7,8,9-HxCDF	1.23E-04 UJ	2.3E+00	4.36E-06 UJ	8.0E-02	5.96E-06 UJ	1.1E-01	5.96E-06 UJ	1.1E-01	1.00E-05 UJ	1.8E-01	1.09E-05 UJ	2.0E-01
1,2,3,4,6,7,8-HpCDF	1.87E-04 J	3.9E-01	6.46E-04 J	1.3E+00	1.03E-03 J	2.1E+00	5.77E-05 J	1.2E-01	1.43E-04 J	2.9E-01	1.50E-03 J	3.1E+00
1,2,3,4,7,8,9-HpCDF	2.23E-04 UJ	1.3E+01	9.68E-06 UJ	5.5E-01	4.49E-05 J	2.5E+00	4.89E-06 UJ	2.8E-01	1.30E-05 UJ	7.3E-01	2.24E-05 UJ	1.3E+00
OCDF	3.31E-04 UJ	1.6E+01	1.98E-04 J	9.8E+00	2.00E-04 J	9.9E+00	7.13E-06 UJ	3.5E-01	6.28E-06 UJ	3.1E-01	1.54E-04 UJ	7.6E+00
Total TCDD	1.33E-02 J	1.6E+00	4.95E-03 J	6.0E-01	3.88E-03 J	4.7E-01	9.06E-03 J	1.1E+00	8.46E-03 J	1.0E+00	5.67E-03 J	6.9E-01
Total PeCDD	3.09E-04 UJ	3.2E+00	4.94E-05 UJ	5.2E-01	4.89E-05 UJ	5.1E-01	8.29E-05 UJ	8.7E-01	6.34E-05 UJ	6.6E-01	9.37E-05 UJ	9.8E-01
Total HxCDD	6.35E-04 J	8.9E-01	7.84E-04 J	1.1E+00	1.33E-03 J	1.9E+00	7.09E-04 J	1.0E+00	1.14E-03 J	1.6E+00	2.04E-03 J	2.9E+00
Total HpCDD (OE)	1.06E-03 J	3.8E-01	2.88E-03 J	1.0E+00	6.86E-03 J	2.5E+00	6.07E-04 J	2.2E-01	1.30E-03 J	4.7E-01	7.24E-03 J	2.6E+00
Total TCDF	2.97E-04 J	2.6E+00	1.63E-04 J	1.4E+00	1.49E-04 J	1.3E+00	4.74E-04 J	4.1E+00	2.89E-04 J	2.5E+00	3.86E-04 J	3.4E+00
Total PeCDF	5.45E-05 J	1.5E-01	8.26E-05 UJ	2.3E-01	6.34E-05 UJ	1.8E-01	2.64E-04 J	7.4E-01	2.18E-04 J	6.1E-01	3.69E-04 J	1.0E+00
Total HxCDF	1.09E-04 UJ	1.0E-01	2.41E-04 J	2.3E-01	3.46E-04 J	3.3E-01	1.78E-04 J	1.7E-01	2.02E-04 J	1.9E-01	6.91E-04 J	6.6E-01
Total HpCDF	9.37E-05 UJ	3.6E-01	7.93E-04 J	3.0E+00	1.17E-03 J	4.5E+00	2.88E-05 UJ	1.1E-01	7.49E-05 UJ	2.9E-01	1.69E-03 J	6.5E+00
Toxicity Equivalency - Birds	1.37E-02	1.6E+00	5.32E-03	6.3E-01	4.28E-03	5.1E-01	9.72E-03	1.2E+00	8.94E-03	1.1E+00	6.23E-03	7.4E-01
Toxicity Equivalency - Fish	1.35E-02	1.6E+00	5.17E-03	6.2E-01	4.13E-03	4.9E-01	9.40E-03	1.1E+00	8.77E-03	1.0E+00	6.15E-03	7.3E-01
Toxicity Equivalency - Mammals	1.36E-02	1.6E+00	5.23E-03	6.2E-01	4.28E-03	5.1E-01	9.40E-03	1.1E+00	8.83E-03	1.1E+00	6.26E-03	7.4E-01
2-Monochlorobiphenyl (1)	7.04E-03 J								2.23E-04 UJ			
4-Chlorobiphenyl (3)	7.56E-03								2.67E-04 UJ			
2,3-Dichlorobiphenyl (5)	3.76E-04 UJ								8.28E-05 J			
2,4-Dichlorobiphenyl (7)	3.60E-04 J								2.24E-04 J			
2,5-Dichlorobiphenyl (9)	4.73E-04 J								1.47E-04 J			
2,6-Dichlorobiphenyl (10)	3.76E-04 UJ								2.70E-04 UJ			
2,2',3'-Trichlorobiphenyl (16)	1.50E-03 UJ								4.81E-04 UJ			
2,2',4-Trichlorobiphenyl (17)	6.18E-03 J								7.91E-04 UJ			
2,2',5-Trichlorobiphenyl (18)	9.87E-03 J								1.39E-03 UJ			
2,2',6-Trichlorobiphenyl (19)	1.23E-03 J								1.61E-04 UJ			
2,3,3'-Trichlorobiphenyl (20)	2.91E-01 J								3.39E-01 J			
2,3,4'-Trichlorobiphenyl (22)	1.24E-02 J								1.76E-03 UJ			
2,3,6-Trichlorobiphenyl (24)	2.45E-03 J								5.47E-04 J			
2,3',4-Trichlorobiphenyl (25)	4.28E-03 J								1.78E-03 J			
2,3',5-Trichlorobiphenyl (26)	6.55E-03 J								2.79E-03 J			
2,4',5-Trichlorobiphenyl (31)	8.95E-02 J								7.19E-02 J			
2,4',6-Trichlorobiphenyl (32)	6.79E-03 J								1.95E-03 J			
2,2',3,3'-Tetrachlorobiphenyl (40)	4.01E-02 J								8.46E-03 J			
2,2',3,4'-Tetrachlorobiphenyl (42)	4.81E-02 J								8.52E-03 J			
2,2',3,5-Tetrachlorobiphenyl (43)	7.97E-01 J								5.05E-01 J			

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2,2',3,5'-Tetrachlorobiphenyl (44)	2.55E-01 J								8.97E-02 J			
2,2',3,6-Tetrachlorobiphenyl (45)	5.89E-03 J								1.56E-03 J			
2,2',3,6'-Tetrachlorobiphenyl (46)	1.73E-03 J								2.66E-04 UJ			
2,2',4,5-Tetrachlorobiphenyl (48)	1.00E-02 J								2.35E-03 J			
2,2',4,5'-Tetrachlorobiphenyl (49)	2.83E-01 J								1.38E-01 J			
2,2',4,6-Tetrachlorobiphenyl (50)	1.68E-02 J								5.44E-03 J			
2,3,3',4'-Tetrachlorobiphenyl (56)	3.55E-02 J								3.03E-03 UJ			
2,3,3',6-Tetrachlorobiphenyl (59)	2.31E-02 J								9.08E-03 J			
2,3,4,4'-Tetrachlorobiphenyl (60)	6.25E-02 J								5.77E-02 J			
2,3,4,5-Tetrachlorobiphenyl (61)	4.80E-01 J								2.53E-01 J			
2,3,4',5-Tetrachlorobiphenyl (63)	2.25E-02 J								1.78E-02 J			
2,3,4',6-Tetrachlorobiphenyl (64)	1.22E-01 J								5.45E-02 J			
2,3',4,4'-Tetrachlorobiphenyl (66)	6.41E-01 J								4.12E-01 J			
3,3',4,4'-Tetrachlorobiphenyl (77)	7.28E-02 J								5.14E-02 J			
3,4,4',5-Tetrachlorobiphenyl (81)	1.85E-02 J								1.61E-03 J			
2,2',3,3',4-Pentachlorobiphenyl (82)	5.11E-02 J								1.47E-02 J			
2,2',3,3',5-Pentachlorobiphenyl (83)	1.17E+00 J								6.34E-01 J			
2,2',3,3',6-Pentachlorobiphenyl (84)	6.73E-02 J								2.21E-02 J			
2,2',3,4,4'-Pentachlorobiphenyl (85)	3.73E-01 J								2.07E-01 J			
2,2',3,4,5-Pentachlorobiphenyl (86)	8.12E-01 J								3.63E-01 J			
2,2',3,4,6-Pentachlorobiphenyl (88)	1.58E-01 J								5.93E-02 J			
2,2',3,4,6'-Pentachlorobiphenyl (89)	2.35E-03 J								4.27E-04 J			
2,2',3,4',5-Pentachlorobiphenyl (90)	2.50E+00 J								1.51E+00 J			
2,2',3,5,5'-Pentachlorobiphenyl (92)	4.13E-01 J								2.37E-01 J			
2,2',3,5,6-Pentachlorobiphenyl (93)	9.14E-01 J								4.36E-01 J			
2,3,3',4,4'-Pentachlorobiphenyl (105)	5.09E-01 J								3.45E-01 J			
2,3,3',4,5-Pentachlorobiphenyl (106)	2.49E-01 J								1.74E-01 J			
2,3,3',4',5'-Pentachlorobiphenyl (108)	6.04E-02 J								3.63E-02 J			
2,3,3',4',6-Pentachlorobiphenyl (110)	1.36E+00 J								5.87E-01 J			
2,3,4,4',5-Pentachlorobiphenyl (114)	3.67E-02 J								2.37E-02 J			
2,3',4,4',5-Pentachlorobiphenyl (118)	2.40E+00 J								1.43E+00 J			
3,3',4,4',5-Pentachlorobiphenyl (126)	1.39E-02 J								6.91E-03 J			
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	3.83E-01 J								2.47E-01 J			
2,2',3,3',4,5-Hexachlorobiphenyl (129)	2.71E+00 J								1.86E+00 J			
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	1.51E-01 J								1.09E-01 J			
2,2',3,3',4,6-Hexachlorobiphenyl (131)	1.35E-02 J								4.81E-03 J			
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	2.78E-01 J								1.69E-01 J			
2,2',3,3',5,6-Hexachlorobiphenyl (134)	1.41E-02 J								7.55E-03 J			
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	3.09E-01 J								1.50E-01 J			
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	7.10E-02 J								2.73E-02 J			
2,2',3,4,4',5-Hexachlorobiphenyl (137)	2.83E-01 J								1.64E-01 J			
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	3.21E-01 J								1.85E-01 J			
2,2',3,4,5',6-Hexachlorobiphenyl (144)	5.52E-02 J								2.53E-02 J			
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	4.04E-01 J								2.49E-01 J			
2,2',3,4',5,6-Hexachlorobiphenyl (147)	1.05E+00 J								6.13E-01 J			
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	2.60E+00 J								1.80E+00 J			
2,3,3',4,4',5-Hexachlorobiphenyl (156)	3.18E-01 J								1.96E-01 J			
2,3,3',4,4',6-Hexachlorobiphenyl (158)	2.33E-01 J								1.41E-01 J			
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	1.53E-01 J								9.22E-02 J			

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001											
	A-TS-47-P 6/22/2001	BMF ALLENDALE 2001	A-TS-48-P 5/26/2001	BMF ALLENDALE 2001	A-TS-49-P 5/30/2001	BMF ALLENDALE 2001	A-TS-51-P 6/22/2001	BMF ALLENDALE 2001	A-TS-52-P 6/9/2001	BMF ALLENDALE 2001	A-TS-53-P 5/30/2001	BMF ALLENDALE 2001
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	3.81E-03 J								1.43E-03 J			
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	3.48E-01 J								2.85E-01 J			
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	6.69E-02 J								5.35E-02 J			
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	8.82E-02 J								6.34E-02 J			
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	1.47E-01 J								8.74E-02 J			
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	1.23E-02 J								7.98E-03 J			
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	1.15E-02 J								6.01E-03 J			
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	1.19E-01 J								1.08E-01 J			
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	7.82E-02 J								5.35E-02 J			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	9.44E-01 J								7.85E-01 J			
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	7.53E-03 UJ								1.58E-03 J			
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	1.78E-01 J								1.24E-01 J			
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	7.35E-04 J								7.48E-04 J			
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	1.77E-02 J								1.22E-02 J			
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	5.02E-01 J								3.61E-01 J			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	1.83E-02 J								1.20E-02 J			
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	8.29E-02 J								7.39E-02 J			
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	1.48E-02 J								1.21E-02 J			
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	2.02E-01 J								1.82E-01 J			
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	4.30E-02 J								3.98E-02 J			
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	8.61E-02 J								6.46E-02 J			
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	4.73E-03 J								3.27E-03 J			
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	3.57E-01 J								2.69E-01 J			
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	6.38E-03 J								3.90E-03 J			
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	2.29E-02 J								1.55E-02 J			
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	2.03E-01 J								1.56E-01 J			
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	8.46E-03 J								6.06E-03 J			
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	2.79E-01 J								2.05E-01 J			
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	2.59E-02 J								2.04E-02 J			
Decachlorobiphenyl (209)	1.50E-01 J								1.15E-01 J			
PCB Congeners, Total	2.78E+01 J								1.73E+01 J			
Toxicity Equivalency (PCB) - Birds	7.00E-03								3.49E-03			
Toxicity Equivalency (PCB) - Fish	1.03E-04								5.11E-05			
Toxicity Equivalency (PCB) - Mammals	1.90E-03								1.00E-03			
Technical Chlordane												
Heptachlor Epoxide												
Dieldrin												
4,4'-DDE												
4,4'-DDD												
4,4'-DDT												
alpha-Chlordane												
Aroclor-1254												
Aroclor-1268												
Aroclor, Total												
Lipid_percent												

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001											
	A-TS-47-P 6/22/2001	BMF ALLENDALE 2001	A-TS-48-P 5/26/2001	BMF ALLENDALE 2001	A-TS-49-P 5/30/2001	BMF ALLENDALE 2001	A-TS-51-P 6/22/2001	BMF ALLENDALE 2001	A-TS-52-P 6/9/2001	BMF ALLENDALE 2001	A-TS-53-P 5/30/2001	BMF ALLENDALE 2001
(1,4-D)												

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TABLE J-10
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001				BMF Summary Statistics - Allendale 2001			
	A-TS-54-P 6/11/2001	BMF ALLENDALE 2001	A-TS-57-P 5/26/2001	BMF ALLENDALE 2001	Maximum	Mean	Variance	Coefficient of Variation
HCX	1.75E-03 J	3.7E-01	7.20E-04 UJ	1.5E-01	3.68E-01	1.68E-01	7.43E-03	51%
TCX			1.49E-02 UJ					
2,3,7,8-TCDD	6.39E-02 J	7.8E+00	1.19E-02 J	1.4E+00	7.76E+00	1.36E+00	3.88E+00	145%
1,2,3,7,8-PeCDD	3.33E-04 J	9.0E+00	2.01E-04 J	5.4E+00	1.67E+01	5.12E+00	1.63E+01	79%
1,2,3,4,7,8-HxCDD	2.40E-04 J	4.5E+00	2.19E-04 J	4.1E+00	1.08E+01	3.68E+00	6.26E+00	68%
1,2,3,6,7,8-HxCDD	1.68E-03 J	6.1E+00	1.74E-03 J	6.3E+00	1.44E+01	4.51E+00	1.16E+01	75%
1,2,3,7,8,9-HxCDD	1.57E-04 J	2.3E+00	2.40E-04 J	3.5E+00	3.58E+00	2.20E+00	7.57E-01	40%
1,2,3,4,6,7,8-HpCDD	1.59E-03 J	7.7E-01	8.71E-03 J	4.2E+00	4.20E+00	2.04E+00	1.89E+00	68%
OCDD	1.04E-03 UJ	1.5E-01	2.22E-02 J	3.2E+00	3.20E+00	8.29E-01	7.75E-01	106%
2,3,7,8-TCDF	3.17E-04 UJ$	7.5E+00	2.35E-04 J$	5.6E+00	1.00E+01	5.13E+00	4.67E+00	42%
1,2,3,7,8-PeCDF	1.46E-04 J	2.1E+00	1.07E-04 J	1.6E+00	2.18E+00	1.13E+00	4.50E-01	59%
2,3,4,7,8-PeCDF	2.76E-04 J	3.9E+00	2.83E-05 UJ	4.0E-01	3.85E+00	1.71E+00	1.07E+00	60%
1,2,3,4,7,8-HxCDF	1.18E-04 J	1.1E+00	1.87E-04 J	1.8E+00	2.10E+00	1.17E+00	2.27E-01	41%
1,2,3,6,7,8-HxCDF	1.10E-04 J	1.1E+00	1.55E-04 J	1.6E+00	1.74E+00	1.09E+00	1.58E-01	36%
2,3,4,6,7,8-HxCDF	7.02E-05 J	8.2E-01	9.87E-05 J	1.2E+00	1.40E+00	8.38E-01	1.20E-01	41%
1,2,3,7,8,9-HxCDF	5.74E-06 J	1.1E-01	4.87E-05 UJ	8.9E-01	2.25E+00	3.56E-01	3.70E-01	171%
1,2,3,4,6,7,8-HpCDF	3.43E-04 J	7.1E-01	1.51E-03 J	3.1E+00	3.71E+00	1.51E+00	1.50E+00	81%
1,2,3,4,7,8,9-HpCDF	4.36E-06 UJ	2.5E-01	9.51E-05 J	5.4E+00	1.26E+01	2.34E+00	1.18E+01	147%
OCDF	7.51E-05 UJ	3.7E+00	1.37E-03 J	6.8E+01	6.79E+01	1.32E+01	3.84E+02	148%
Total TCDD	6.39E-02 J	7.8E+00	1.19E-02 J	1.4E+00	7.76E+00	1.36E+00	3.88E+00	145%
Total PeCDD	1.66E-04 UJ	1.7E+00	1.37E-04 UJ	1.4E+00	7.33E+00	1.57E+00	3.58E+00	121%
Total HxCDD	2.11E-03 J	3.0E+00	2.25E-03 J	3.2E+00	7.18E+00	2.33E+00	2.75E+00	71%
Total HpCDD	1.67E-03 J	6.0E-01	8.96E-03 J	3.2E+00	3.23E+00	1.56E+00	1.13E+00	68%
Total TCDF	8.19E-04 J	7.2E+00	2.26E-04 J	2.0E+00	7.15E+00	2.76E+00	2.59E+00	58%
Total PeCDF	4.97E-04 J	1.4E+00	5.35E-05 UJ	1.5E-01	1.54E+00	7.21E-01	2.68E-01	72%
Total HxCDF	3.75E-04 J	3.6E-01	7.22E-04 J	6.9E-01	6.89E-01	3.84E-01	3.98E-02	52%
Total HpCDF	4.05E-04 J	1.6E+00	2.39E-03 J	9.2E+00	9.21E+00	3.41E+00	1.00E+01	93%
Toxicity Equivalency - Birds	6.49E-02	7.7E+00	1.25E-02	1.5E+00	7.69E+00	1.40E+00	3.74E+00	138%
Toxicity Equivalency - Fish	6.45E-02	7.7E+00	1.24E-02	1.5E+00	7.68E+00	1.38E+00	3.74E+00	140%
Toxicity Equivalency - Mammals	6.47E-02	7.7E+00	1.26E-02	1.5E+00	7.70E+00	1.40E+00	3.76E+00	139%
2-Monochlorobiphenyl (1)								
4-Chlorobiphenyl (3)								
2,3-Dichlorobiphenyl (5)								
2,4-Dichlorobiphenyl (7)								
2,5-Dichlorobiphenyl (9)								
2,6-Dichlorobiphenyl (10)								
2,2',3'-Trichlorobiphenyl (16)								
2,2',4-Trichlorobiphenyl (17)								
2,2',5-Trichlorobiphenyl (18)								
2,2',6-Trichlorobiphenyl (19)								
2,3,3'-Trichlorobiphenyl (20)								
2,3,4'-Trichlorobiphenyl (22)								
2,3,6-Trichlorobiphenyl (24)								
2,3',4-Trichlorobiphenyl (25)								
2,3',5-Trichlorobiphenyl (26)								
2,4',5-Trichlorobiphenyl (31)								
2,4',6-Trichlorobiphenyl (32)								
2,2',3,3'-Tetrachlorobiphenyl (40)								
2,2',3,4'-Tetrachlorobiphenyl (42)								
2,2',3,5-Tetrachlorobiphenyl (43)								

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001				BMF Summary Statistics - Allendale 2001			
	A-TS-54-P 6/11/2001	BMF ALLENDALE 2001	A-TS-57-P 5/26/2001	BMF ALLENDALE 2001	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5'-Tetrachlorobiphenyl (44)								
2,2',3,6-Tetrachlorobiphenyl (45)								
2,2',3,6'-Tetrachlorobiphenyl (46)								
2,2',4,5-Tetrachlorobiphenyl (48)								
2,2',4,5'-Tetrachlorobiphenyl (49)								
2,2',4,6-Tetrachlorobiphenyl (50)								
2,3,3',4'-Tetrachlorobiphenyl (56)								
2,3,3',6-Tetrachlorobiphenyl (59)								
2,3,4,4'-Tetrachlorobiphenyl (60)								
2,3,4,5-Tetrachlorobiphenyl (61)								
2,3,4',5-Tetrachlorobiphenyl (63)								
2,3,4',6-Tetrachlorobiphenyl (64)								
2,3',4,4'-Tetrachlorobiphenyl (66)								
3,3',4,4'-Tetrachlorobiphenyl (77)								
3,4,4',5-Tetrachlorobiphenyl (81)								
2,2',3,3',4-Pentachlorobiphenyl (82)								
2,2',3,3',5-Pentachlorobiphenyl (83)								
2,2',3,3',6-Pentachlorobiphenyl (84)								
2,2',3,4,4'-Pentachlorobiphenyl (85)								
2,2',3,4,5-Pentachlorobiphenyl (86)								
2,2',3,4,6-Pentachlorobiphenyl (88)								
2,2',3,4,6'-Pentachlorobiphenyl (89)								
2,2',3,4',5-Pentachlorobiphenyl (90)								
2,2',3,5,5'-Pentachlorobiphenyl (92)								
2,2',3,5,6-Pentachlorobiphenyl (93)								
2,3,3',4,4'-Pentachlorobiphenyl (105)								
2,3,3',4,5-Pentachlorobiphenyl (106)								
2,3,3',4',5'-Pentachlorobiphenyl (108)								
2,3,3',4',6-Pentachlorobiphenyl (110)								
2,3,4,4',5-Pentachlorobiphenyl (114)								
2,3',4,4',5-Pentachlorobiphenyl (118)								
3,3',4,4',5-Pentachlorobiphenyl (126)								
2,2',3,3',4,4'-Hexachlorobiphenyl (128)								
2,2',3,3',4,5-Hexachlorobiphenyl (129)								
2,2',3,3',4,5'-Hexachlorobiphenyl (130)								
2,2',3,3',4,6-Hexachlorobiphenyl (131)								
2,2',3,3',4,6'-Hexachlorobiphenyl (132)								
2,2',3,3',5,6-Hexachlorobiphenyl (134)								
2,2',3,3',5,6'-Hexachlorobiphenyl (135)								
2,2',3,3',6,6'-Hexachlorobiphenyl (136)								
2,2',3,4,4',5-Hexachlorobiphenyl (137)								
2,2',3,4,5,5'-Hexachlorobiphenyl (141)								
2,2',3,4,5',6-Hexachlorobiphenyl (144)								
2,2',3,4',5,5'-Hexachlorobiphenyl (146)								
2,2',3,4',5,6-Hexachlorobiphenyl (147)								
2,2',4,4',5,5'-Hexachlorobiphenyl (153)								
2,3,3',4,4',5-Hexachlorobiphenyl (156)								
2,3,3',4,4',6-Hexachlorobiphenyl (158)								
2,3',4,4',5,5'-Hexachlorobiphenyl (167)								

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001				BMF Summary Statistics - Allendale 2001			
	A-TS-54-P 6/11/2001	BMF ALLENDALE 2001	A-TS-57-P 5/26/2001	BMF ALLENDALE 2001	Maximum	Mean	Variance	Coefficient of Variation
3,3',4,4',5,5'-Hexachlorobiphenyl (169)								
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)								
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)								
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)								
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)								
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)								
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)								
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)								
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)								
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)								
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)								
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)								
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)								
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)								
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)								
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)								
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)								
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)								
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)								
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)								
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)								
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)								
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)								
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)								
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)								
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)								
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)								
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl								
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl								
Decachlorobiphenyl (209)								
PCB Congeners, Total								
Toxicity Equivalency (PCB) - Birds								
Toxicity Equivalency (PCB) - Fish								
Toxicity Equivalency (PCB) - Mammals								
Technical Chlordane								
Heptachlor Epoxide								
Dieldrin								
4;4'-DDE								
4,4'-DDD								
4,4'-DDT								
alpha-Chlordane								
Aroclor-1254								
Aroclor-1268								
Aroclor, Total								
Lipid_percent								

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TABLE J-10
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	*ALLENDALE POND 2001*							
					BMF Summary Statistics - Allendale 2001			
	A-TS-54-P 6/11/2001	BMF ALLENDALE 2001	A-TS-57-P 5/26/2001	BMF ALLENDALE 2001	Maximum	Mean	Variance	Coefficient of Variation
TRW								

US EPA ARCHIVE DOCUMENT

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND 2001										
PARAMETER	DIET-LP 6/12/2001	LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-65-P 6/14/2001	BMF-DIET LYMAN MILL 2001
HCX	8.12E-03 J	6.57E-03 JK	1.43E-03 J	1.8E-01	2.2E-01	9.22E-04	1.1E-01	1.4E-01		
TCX	R	0.000950402 U								
2,3,7,8-TCDD	4.80E-03 J	9.86E-03	3.16E-02 J	6.6E+00	3.2E+00	1.16E-02 J	2.4E+00	1.2E+00		
1,2,3,7,8-PeCDD	1.41E-05 UJ	9.50E-04 U	4.86E-05 UJ	3.5E+00	5.1E-02	4.69E-05 UJ	3.3E+00	4.9E-02		
1,2,3,4,7,8-HxCDD	3.29E-05 J	9.50E-04 U	9.95E-05 J	3.0E+00	1.0E-01	8.79E-05 J	2.7E+00	9.2E-02		
1,2,3,6,7,8-HxCDD	8.92E-05 J	1.01E-04 J	5.85E-04 J	6.6E+00	5.8E+00	6.66E-04 J	7.5E+00	6.6E+00		
1,2,3,7,8,9-HxCDD	2.33E-05 J	9.50E-04 U	1.13E-04 J	4.8E+00	1.2E-01	7.68E-05 J	3.3E+00	8.1E-02		
1,2,3,4,6,7,8-HpCDD	9.66E-04 J	5.00E-04 J	6.50E-03 J	6.7E+00	1.3E+01	3.45E-03 J	3.6E+00	6.9E+00		
OCDD	2.05E-03 J	1.26E-03 J	1.37E-02 J	6.7E+00	1.1E+01	4.86E-03 J	2.4E+00	3.9E+00		
2,3,7,8-TCDF	1.85E-05 UJ$	7.03E-05 J	1.13E-04 UJ$	6.1E+00	1.6E+00	1.30E-04 UJ$	7.0E+00	1.8E+00		
1,2,3,7,8-PeCDF	1.65E-05 UJ	9.50E-04 U	4.69E-05 J	2.9E+00	4.9E-02	1.26E-05 UJ	7.6E-01	1.3E-02		
2,3,4,7,8-PeCDF	1.73E-05 UJ	9.50E-04 U	6.21E-05 J	3.6E+00	6.5E-02	5.67E-05 J	3.3E+00	6.0E-02		
1,2,3,4,7,8-HxCDF	1.22E-05 UJ	9.50E-04 U	1.05E-04 J	8.6E+00	1.1E-01	8.02E-05 J	6.5E+00	8.4E-02		
1,2,3,6,7,8-HxCDF	1.65E-05 J	9.50E-04 U	8.89E-05 J	5.4E+00	9.4E-02	8.56E-05 J	5.2E+00	9.0E-02		
2,3,4,6,7,8-HxCDF	6.83E-06 J	9.50E-04 U	1.59E-05 UJ	2.3E+00	1.7E-02	5.19E-05 J	7.6E+00	5.5E-02		
1,2,3,7,8,9-HxCDF	1.85E-05 UJ	9.50E-04 U	2.79E-05 UJ	1.5E+00	2.9E-02	1.06E-05 UJ	5.7E-01	1.1E-02		
1,2,3,4,6,7,8-HpCDF	1.29E-04 J	5.58E-05 J	1.07E-03 J	8.3E+00	1.9E+01	7.55E-04 J	5.9E+00	1.4E+01		
1,2,3,4,7,8,9-HpCDF	3.01E-06 UJ	9.50E-04 U	2.31E-05 UJ	7.7E+00	2.4E-02	1.40E-05 UJ	4.7E+00	1.5E-02		
OCDF	1.43E-05 UJ	5.74E-05 J	2.79E-04 UJ	2.0E+01	4.9E+00	1.16E-04 UJ	8.2E+00	2.0E+00		
Total TCDD	4.88E-03 J	9.86E-03 J	3.16E-02 J	6.5E+00	3.2E+00	1.16E-02 J	2.4E+00	1.2E+00		
Total PeCDD	1.51E-05 UJ	9.50E-04 U	4.86E-05 UJ	3.2E+00	5.1E-02	4.69E-05 UJ	3.1E+00	4.9E-02		
Total HxCDD	3.52E-04 J	1.01E-04 J	8.44E-04 J	2.4E+00	8.3E+00	8.31E-04 J	2.4E+00	8.2E+00		
Total HpCDD	1.17E-03 J	7.86E-04 J	6.65E-03 J	5.7E+00	8.5E+00	3.52E-03 J	3.0E+00	4.5E+00		
Total TCDF	8.88E-05 J	7.03E-05 J	2.47E-04 J	2.8E+00	3.5E+00	1.59E-04 J	1.8E+00	2.3E+00		
Total PeCDF	1.13E-04 J	1.55E-04 J	1.09E-04 J	9.6E-01	7.0E-01	5.67E-05 J	5.0E-01	3.7E-01		
Total HxCDF	1.44E-04 J	3.65E-05 J	2.63E-04 J	1.8E+00	7.2E+00	3.73E-04 J	2.6E+00	1.0E+01		
Total HpCDF	8.84E-05 UJ	1.11E-04 J	1.32E-03 J	1.5E+01	1.2E+01	9.46E-04 J	1.1E+01	8.5E+00		
Toxicity Equivalency - Birds	4.86E-03	1.24E-02	3.18E-02	6.5E+00	2.6E+00	1.19E-02	2.4E+00	9.5E-01		
Toxicity Equivalency - Fish	4.86E-03	1.22E-02	3.18E-02	6.5E+00	2.6E+00	1.18E-02	2.4E+00	9.6E-01		
Toxicity Equivalency - Mammals	4.86E-03	1.19E-02	3.18E-02	6.5E+00	2.7E+00	1.18E-02	2.4E+00	9.9E-01		
2-Monochlorobiphenyl (1)		2.50E-03 J	4.26E-04 UJ		1.7E-01	3.36E-04 UJ		1.3E-01		
4-Chlorobiphenyl (3)		2.25E-03 J	4.13E-04 UJ		1.8E-01	4.47E-04 UJ		2.0E-01		
2,3-Dichlorobiphenyl (5)		1.90E-03 U	4.00E-04 UJ		2.1E-01	2.83E-04 J		1.5E-01		
2,4-Dichlorobiphenyl (7)		1.90E-03 U	4.00E-04 UJ		2.1E-01	4.67E-04 J		2.5E-01		
2,5-Dichlorobiphenyl (9)		1.90E-03 U	4.00E-04 UJ		2.1E-01	4.93E-04 J		2.6E-01		
2,6-Dichlorobiphenyl (10)		1.90E-03 U	1.40E-03 J		7.4E-01	3.87E-04 UJ		2.0E-01		
2,2',3'-Trichlorobiphenyl (16)		3.23E-03 JC	6.70E-03 J		2.1E+00	1.41E-03 UJ		4.4E-01		
2,2',4-Trichlorobiphenyl (17)		3.15E-03 J	1.53E-02 J		4.9E+00	5.63E-03 J		1.8E+00		
2,2',5-Trichlorobiphenyl (18)		6.60E-03 JC	2.78E-02 J		4.2E+00	1.02E-02 J		1.6E+00		
2,2',6-Trichlorobiphenyl (19)		8.48E-04 J	1.60E-03 J		1.9E+00	3.42E-04 UJ		4.0E-01		
2,3,3'-Trichlorobiphenyl (20)		3.21E-02 JC	6.40E-01 J		2.0E+01	3.92E-01 J		1.2E+01		
2,3,4'-Trichlorobiphenyl (22)		5.04E-03 J	4.00E-03 UJ		7.9E-01	2.93E-03 UJ		5.8E-01		
2,3,6-Trichlorobiphenyl (24)			3.75E-03 J			1.41E-03 J				
2,3',4-Trichlorobiphenyl (25)		1.48E-03 J	5.12E-03 J		3.5E+00	3.09E-03 J		2.1E+00		
2,3',5-Trichlorobiphenyl (26)		2.67E-03 JC	7.60E-03 J		2.9E+00	4.87E-03 J		1.8E+00		
2,4',5-Trichlorobiphenyl (31)		1.79E-02 J	4.45E-02 J		2.5E+00	4.48E-02 J		2.5E+00		
2,4',6-Trichlorobiphenyl (32)		3.09E-03 J	4.98E-03 J		1.6E+00	1.16E-03 UJ		3.7E-01		
2,2',3,3'-Tetrachlorobiphenyl (40)		9.47E-03 JC	5.06E-02 J		5.3E+00	2.56E-02 J		2.7E+00		
2,2',3,4'-Tetrachlorobiphenyl (42)		7.58E-03 J	7.62E-02 J		1.0E+01	3.43E-02 J		4.5E+00		

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001										
	DIET-LP 6/12/2001		LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-65-P 6/14/2001	BMF-DIET LYMAN MILL 2001
2,2',3,5-Tetrachlorobiphenyl (43)			6.35E-02 C	1.84E+00 J		2.9E+01	8.04E-01 J		1.3E+01		
2,2',3,5'-Tetrachlorobiphenyl (44)			3.25E-02 JC	6.03E-01 J		1.9E+01	2.43E-01 J		7.5E+00		
2,2',3,6-Tetrachlorobiphenyl (45)			1.84E-03 JC	1.03E-02 J		5.6E+00	4.16E-03 J		2.3E+00		
2,2',3,6'-Tetrachlorobiphenyl (46)			6.82E-04 J	2.15E-03 J		3.2E+00	1.22E-03 J		1.8E+00		
2,2',4,5-Tetrachlorobiphenyl (48)			2.92E-03 J	3.63E-02 J		1.2E+01	1.47E-02 J		5.0E+00		
2,2',4,5'-Tetrachlorobiphenyl (49)			3.09E-02 JC	6.38E-01 J		2.1E+01	2.52E-01 J		8.1E+00		
2,2',4,6-Tetrachlorobiphenyl (50)			1.77E-03 JC	2.39E-02 J		1.4E+01	1.32E-02 J		7.5E+00		
2,3,3',4'-Tetrachlorobiphenyl (56)			1.04E-02 J	3.32E-02 J		3.2E+00	1.96E-02 J		1.9E+00		
2,3,3',6-Tetrachlorobiphenyl (59)			3.32E-03 JC	5.75E-02 J		1.7E+01	2.32E-02 J		7.0E+00		
2,3,4,4'-Tetrachlorobiphenyl (60)			1.16E-02 J	1.18E-01 J		1.0E+01	6.69E-02 J		5.8E+00		
2,3,4,5-Tetrachlorobiphenyl (61)			1.21E-01 C	6.25E-01 J		5.2E+00	4.01E-01 J		3.3E+00		
2,3,4',5-Tetrachlorobiphenyl (63)			6.00E-03 J	4.06E-02 J		6.8E+00	1.89E-02 J		3.1E+00		
2,3,4',6-Tetrachlorobiphenyl (64)			1.78E-02	1.69E-01 J		9.5E+00	7.50E-02 J		4.2E+00		
2,3',4,4'-Tetrachlorobiphenyl (66)			5.67E-02	1.30E+00 J		2.3E+01	6.58E-01 J		1.2E+01		
3,3',4,4'-Tetrachlorobiphenyl (77)			1.22E-02 J	7.49E-02 J		6.2E+00	3.87E-02 J		3.2E+00		
3,4,4',5-Tetrachlorobiphenyl (81)			2.25E-03 J	4.26E-03 J		1.9E+00	3.87E-03 UJ		1.7E+00		
2,2',3,3',4-Pentachlorobiphenyl (82)			1.58E-02 J	8.71E-02 J		5.5E+00	4.25E-02 J		2.7E+00		
2,2',3,3',5-Pentachlorobiphenyl (83)			1.83E-01 C	2.03E+00 J		1.1E+01	8.04E-01 J		4.4E+00		
2,2',3,3',6-Pentachlorobiphenyl (84)			1.30E-02 J	8.11E-02 J		6.2E+00	3.59E-02 J		2.8E+00		
2,2',3,4,4'-Pentachlorobiphenyl (85)			6.75E-02 C	6.26E-01 J		9.3E+00	2.54E-01 J		3.8E+00		
2,2',3,4,5-Pentachlorobiphenyl (86)			1.06E-01 C	1.59E+00 J		1.5E+01	6.81E-01 J		6.4E+00		
2,2',3,4,6-Pentachlorobiphenyl (88)			1.17E-02 JC	2.38E-01 J		2.0E+01	8.89E-02 J		7.6E+00		
2,2',3,4,6'-Pentachlorobiphenyl (89)			2.88E-04 J	3.42E-03 J		1.2E+01	1.31E-03 J		4.5E+00		
2,2',3,4',5-Pentachlorobiphenyl (90)			2.05E-01 C	3.95E+00 J		1.9E+01	1.72E+00 J		8.4E+00		
2,2',3,5,5'-Pentachlorobiphenyl (92)			3.40E-02 J	6.26E-01 J		1.8E+01	2.55E-01 J		7.5E+00		
2,2',3,5,6-Pentachlorobiphenyl (93)			2.66E-03 JC	1.56E+00 J		5.9E+02	6.00E-01 J		2.3E+02		
2,3,3',4,4'-Pentachlorobiphenyl (105)			8.64E-02	8.52E-01 J		9.9E+00	3.68E-01 J		4.3E+00		
2,3,3',4,5-Pentachlorobiphenyl (106)			2.17E-02 JC	3.85E-01 J		1.8E+01	2.46E-02 J		1.1E+00		
2,3,3',4',5'-Pentachlorobiphenyl (108)			6.30E-03 JC	3.82E-02 J		6.1E+00	2.77E-02 J		4.4E+00		
2,3,3',4',6-Pentachlorobiphenyl (110)			1.67E-01 C	2.13E+00 J		1.3E+01	9.11E-01 J		5.4E+00		
2,3,4,4',5-Pentachlorobiphenyl (114)			7.85E-03 J	5.36E-02 J		6.8E+00	2.18E-02 J		2.8E+00		
2,3',4,4',5-Pentachlorobiphenyl (118)			2.80E-01	3.98E+00 J		1.4E+01	1.53E+00 J		5.5E+00		
3,3',4,4',5-Pentachlorobiphenyl (126)			1.89E-03 J	1.22E-02 J		6.4E+00	4.69E-03 J		2.5E+00		
2,2',3,3',4,4'-Hexachlorobiphenyl (128)			9.50E-02 C	7.56E-01 J		8.0E+00	2.53E-01 J		2.7E+00		
2,2',3,3',4,5-Hexachlorobiphenyl (129)			5.20E-01 C	5.09E+00 J		9.8E+00	1.94E+00 J		3.7E+00		
2,2',3,3',4,5'-Hexachlorobiphenyl (130)			5.25E-02	3.23E-01 J		6.1E+00	1.03E-01 J		2.0E+00		
2,2',3,3',4,6-Hexachlorobiphenyl (131)			3.36E-03 J	1.69E-02 J		5.0E+00	3.87E-03 UJ		1.2E+00		
2,2',3,3',4,6'-Hexachlorobiphenyl (132)			3.56E-02 J	5.04E-01 J		1.4E+01	1.64E-01 J		4.6E+00		
2,2',3,3',5,6-Hexachlorobiphenyl (134)			1.90E-02 UC	2.80E-02 J		1.5E+00	1.27E-02 J		6.7E-01		
2,2',3,3',5,6'-Hexachlorobiphenyl (135)			4.62E-02 C	4.03E-01 J		8.7E+00	1.34E-01 J		2.9E+00		
2,2',3,3',6,6'-Hexachlorobiphenyl (136)			6.65E-03 J	3.51E-02 J		5.3E+00	1.21E-02 J		1.8E+00		
2,2',3,4,4',5-Hexachlorobiphenyl (137)			2.58E-02 JC	4.48E-01 J		1.7E+01	1.55E-01 J		6.0E+00		
2,2',3,4,5,5'-Hexachlorobiphenyl (141)			2.65E-02	5.28E-01 J		2.0E+01	1.90E-01 J		7.2E+00		
2,2',3,4,5',6-Hexachlorobiphenyl (144)			9.12E-03 J	8.51E-02 J		9.3E+00	2.79E-02 J		3.1E+00		
2,2',3,4',5,5'-Hexachlorobiphenyl (146)			1.11E-01 C	5.75E-01 J		5.2E+00	2.03E-01 J		1.8E+00		
2,2',3,4',5,6-Hexachlorobiphenyl (147)			1.28E-01 C	1.71E+00 J		1.3E+01	5.82E-01 J		4.5E+00		
2,2',4,4',5,5'-Hexachlorobiphenyl (153)			5.32E-01 C	3.89E+00 J		7.3E+00	1.53E+00 J		2.9E+00		
2,3,3',4,4',5-Hexachlorobiphenyl (156)			1.02E-01 C	5.47E-01 J		5.3E+00	2.20E-01 J		2.2E+00		
2,3,3',4,4',6-Hexachlorobiphenyl (158)			2.72E-02	4.94E-01 J		1.8E+01	1.71E-01 J		6.3E+00		

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND 2001									
PARAMETER	DIET-LP 6/12/2001	LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-P 5/27/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-65-P 6/14/2001	BMF-DIET LYMAN MILL 2001
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.32E-02 J	2.33E-01 J		1.8E+01	5.00E-02 J		3.8E+00		
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		5.55E-03 J	3.60E-03 J		6.5E-01	1.23E-03 J		2.2E-01		
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		8.69E-02	6.52E-01 J		7.5E+00	3.43E-01 J		4.0E+00		
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		7.09E-03 JC	1.45E-01 J		2.0E+01	6.73E-02 J		9.5E+00		
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		1.64E-02 J	1.30E-01 J		7.9E+00	6.92E-02 J		4.2E+00		
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		3.60E-02 JC	2.09E-01 J		5.8E+00	1.04E-01 J		2.9E+00		
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)		2.47E-03 J	1.80E-02 J		7.3E+00	8.16E-03 J		3.3E+00		
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		1.31E-03 J	7.46E-03 J		5.7E+00	4.25E-03 J		3.2E+00		
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		2.27E-02 J	2.39E-01 J		1.1E+01	1.09E-01 J		4.8E+00		
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		1.09E-02 J	7.96E-02 J		7.3E+00	4.38E-02 J		4.0E+00		
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		1.09E-01 C	1.34E+00 J		1.2E+01	8.37E-01 J		7.7E+00		
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)		1.37E-04 J	7.99E-03 UJ		5.8E+01	1.49E-03 J		1.1E+01		
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)			2.54E-01 J			1.28E-01 J				
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)		3.57E-05 J	1.46E-03 J		4.1E+01	7.74E-03 UJ		2.2E+02		
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)			3.14E-02 J			1.92E-02 J				
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		8.97E-02	5.70E-01 J		6.4E+00	3.10E-01 J		3.5E+00		
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		5.19E-03 J	2.52E-02 J		4.9E+00	1.31E-02 J		2.5E+00		
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		1.98E-02 J	1.54E-01 J		7.8E+00	8.95E-02 J		4.5E+00		
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		1.07E-03 J	2.28E-02 J		2.1E+01	1.28E-02 J		1.2E+01		
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		3.24E-02 J	2.42E-01 J		7.5E+00	1.93E-01 J		6.0E+00		
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		6.12E-03 J	5.68E-02 J		9.3E+00	4.08E-02 J		6.7E+00		
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		1.14E-02 J	1.23E-01 J		1.1E+01	6.83E-02 J		6.0E+00		
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		1.33E-03 JC	6.19E-03 J		4.7E+00	2.85E-03 J		2.1E+00		
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		9.47E-02 C	6.06E-01 J		6.4E+00	3.18E-01 J		3.4E+00		
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)			8.66E-03 J			5.71E-03 J				
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		4.28E-03 J	3.74E-02 J		8.7E+00	1.72E-02 J		4.0E+00		
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		5.70E-02 J	4.23E-01 J		7.4E+00	2.15E-01 J		3.8E+00		
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		2.17E-03 J	1.10E-02 J		5.1E+00	6.30E-03 J		2.9E+00		
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		1.28E-01	4.77E-01 J		3.7E+00	2.93E-01 J		2.3E+00		
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		6.02E-03 J	5.13E-02 J		8.5E+00	2.69E-02 J		4.5E+00		
Decachlorobiphenyl (209)		6.92E-02 J	1.68E-01 J		2.4E+00	1.23E-01 J		1.8E+00		
PCB Congeners, Total		4.20E+00	4.65E+01 J		1.1E+01	1.97E+01 J		4.7E+00		
Toxicity Equivalency (PCB) - Birds		1.05E-03	5.59E-03		5.3E+00	2.87E-03		2.7E+00		
Toxicity Equivalency (PCB) - Fish		1.45E-05	9.91E-05		6.8E+00	4.03E-05		2.8E+00		
Toxicity Equivalency (PCB) - Mammals		3.39E-04	2.05E-03		6.0E+00	8.00E-04		2.4E+00		
Technical Chlordane									13.99009709 J	
Heptachlor Epoxide									0.58407767 J	
Dieldrin									0.261165049	
4,4'-DDE									5.711262136	
4,4'-DDD									0.128932039 J	
4,4'-DDT									0.134563107 J	
alpha-Chlordane									0.359223301	
Aroclor-1254									26.46407767	
Aroclor-1268									3.80407767	
Aroclor, Total									30.26815534	
Lipid_percent										

Notes:
a. Swallow stomach contents, emerging insect, and swallow egg tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}).

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001									
	DIET-LP 6/12/2001	LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-P 5/27/2001	*BMF-DIET* LYMAN MILL 2001	*BMF-EI* LYMAN MILL 2001	L-TS-63-P 5/27/2001	*BMF-DIET* LYMAN MILL 2001	*BMF-EI* LYMAN MILL 2001	L-TS-65-P 6/14/2001	*BMF-DIET* LYMAN MILL 2001

Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. BMFs are expressed on a lipid-normalized basis (i.e., kg_{lip}/kg_{lip}). BMF statistics calculated for each exposure area based on paired tree swallow egg/swallow stomach contents/emerging insect sample sets.

All data (including lipid content) extracted from site database (MACTEC, 2003).

Prepared by: SGD
Checked by: NAR

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND 2001									
PARAMETER	BMF-EI LYMAN MILL 2001	L-TS-67-P 6/18/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-69-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001
HCX		1.29E-03 J	1.6E-01	2.0E-01	1.03E-03 J	1.3E-01	1.6E-01	6.86E-04 UJ	8.5E-02	1.0E-01
TCX								1.35E-02 UJ		1.4E+01
2,3,7,8-TCDD		4.05E-02 J	8.4E+00	4.1E+00	1.88E-02 J	3.9E+00	1.9E+00	1.43E-02 J	3.0E+00	1.4E+00
1,2,3,7,8-PeCDD		2.75E-04 J	2.0E+01	2.9E-01	2.81E-04 J	2.0E+01	3.0E-01	1.45E-04 J	1.0E+01	1.5E-01
1,2,3,4,7,8-HxCDD		2.39E-04 J	7.3E+00	2.5E-01	2.94E-04 J	8.9E+00	3.1E-01	1.76E-04 J	5.3E+00	1.9E-01
1,2,3,6,7,8-HxCDD		1.21E-03 J	1.4E+01	1.2E+01	1.89E-03 J	2.1E+01	1.9E+01	1.67E-03 J	1.9E+01	1.7E+01
1,2,3,7,8,9-HxCDD		9.87E-05 J	4.2E+00	1.0E-01	2.24E-04 J	9.6E+00	2.4E-01	1.23E-04 J	5.3E+00	1.3E-01
1,2,3,4,6,7,8-HpCDD		1.95E-03 J	2.0E+00	3.9E+00	8.04E-03 J	8.3E+00	1.6E+01	4.98E-03 J	5.2E+00	1.0E+01
OCDD		1.67E-03 J	8.1E-01	1.3E+00	1.09E-02 J	5.3E+00	8.6E+00	8.54E-03 J	4.2E+00	6.8E+00
2,3,7,8-TCDF		2.07E-04 UJ$	1.1E+01	2.9E+00	2.12E-04 UJ$	1.1E+01	3.0E+00	2.11E-04 J$	1.1E+01	3.0E+00
1,2,3,7,8-PeCDF		9.51E-05 J	5.8E+00	1.0E-01	1.16E-04 J	7.1E+00	1.2E-01	1.95E-04 J	1.2E+01	2.0E-01
2,3,4,7,8-PeCDF		1.52E-04 J	8.8E+00	1.6E-01	1.83E-04 J	1.1E+01	1.9E-01	2.90E-04 J	1.7E+01	3.0E-01
1,2,3,4,7,8-HxCDF		1.23E-04 J	1.0E+01	1.3E-01	1.95E-04 J	1.6E+01	2.0E-01	2.21E-04 J	1.8E+01	2.3E-01
1,2,3,6,7,8-HxCDF		1.25E-04 J	7.6E+00	1.3E-01	1.87E-04 J	1.1E+01	2.0E-01	1.48E-04 J	9.0E+00	1.6E-01
2,3,4,6,7,8-HxCDF		6.98E-05 J	1.0E+01	7.3E-02	1.17E-04 J	1.7E+01	1.2E-01	7.77E-05 J	1.1E+01	8.2E-02
1,2,3,7,8,9-HxCDF		8.93E-06 UJ	4.8E-01	9.4E-03	7.06E-06 UJ	3.8E-01	7.4E-03	1.38E-05 UJ	7.5E-01	1.5E-02
1,2,3,4,6,7,8-HpCDF		3.36E-04 J	2.6E+00	6.0E+00	1.64E-03 J	1.3E+01	2.9E+01	1.03E-03 J	8.1E+00	1.9E+01
1,2,3,4,7,8,9-HpCDF		7.17E-06 UJ	2.4E+00	7.5E-03	2.68E-05 UJ	8.9E+00	2.8E-02	3.03E-05 J	1.0E+01	3.2E-02
OCDF		3.82E-05 UJ	2.7E+00	6.7E-01	2.07E-04 UJ	1.4E+01	3.6E+00	4.34E-04 J	3.0E+01	7.6E+00
Total TCDD		4.05E-02 J	8.3E+00	4.1E+00	1.88E-02 J	3.9E+00	1.9E+00	1.43E-02 J	2.9E+00	1.4E+00
Total PeCDD		1.37E-04 UJ	9.1E+00	1.4E-01	1.41E-04 UJ	9.4E+00	1.5E-01	7.23E-05 UJ	4.8E+00	7.6E-02
Total HxCDD		1.54E-03 J	4.4E+00	1.5E+01	2.45E-03 J	7.0E+00	2.4E+01	2.00E-03 J	5.7E+00	2.0E+01
Total HpCDD		1.98E-03 J	1.7E+00	2.5E+00	8.15E-03 J	7.0E+00	1.0E+01	5.06E-03 J	4.3E+00	6.4E+00
Total TCDF		4.31E-04 J	4.9E+00	6.1E+00	5.32E-04 J	6.0E+00	7.6E+00	2.23E-04 J	2.5E+00	3.2E+00
Total PeCDF		3.02E-04 J	2.7E+00	1.9E+00	4.17E-04 J	3.7E+00	2.7E+00	5.13E-04 J	4.5E+00	3.3E+00
Total HxCDF		3.38E-04 J	2.3E+00	9.3E+00	6.29E-04 J	4.4E+00	1.7E+01	5.37E-04 J	3.7E+00	1.5E+01
Total HpCDF		1.87E-04 UJ	2.1E+00	1.7E+00	1.84E-03 J	2.1E+01	1.7E+01	1.18E-03 J	1.3E+01	1.1E+01
Toxicity Equivalency - Birds		4.11E-02	8.5E+00	3.3E+00	1.96E-02	4.0E+00	1.6E+00	1.51E-02	3.1E+00	1.2E+00
Toxicity Equivalency - Fish		4.11E-02	8.5E+00	3.4E+00	1.95E-02	4.0E+00	1.6E+00	1.48E-02	3.0E+00	1.2E+00
Toxicity Equivalency - Mammals		4.11E-02	8.5E+00	3.4E+00	1.96E-02	4.0E+00	1.6E+00	1.49E-02	3.1E+00	1.3E+00
2-Monochlorobiphenyl (1)										
4-Chlorobiphenyl (3)										
2,3-Dichlorobiphenyl (5)										
2,4-Dichlorobiphenyl (7)										
2,5-Dichlorobiphenyl (9)										
2,6-Dichlorobiphenyl (10)										
2,2',3'-Trichlorobiphenyl (16)										
2,2',4-Trichlorobiphenyl (17)										
2,2',5-Trichlorobiphenyl (18)										
2,2',6-Trichlorobiphenyl (19)										
2,3,3'-Trichlorobiphenyl (20)										
2,3,4'-Trichlorobiphenyl (22)										
2,3,6-Trichlorobiphenyl (24)										
2,3',4-Trichlorobiphenyl (25)										
2,3',5-Trichlorobiphenyl (26)										
2,4',5-Trichlorobiphenyl (31)										
2,4',6-Trichlorobiphenyl (32)										
2,2',3,3'-Tetrachlorobiphenyl (40)										
2,2',3,4'-Tetrachlorobiphenyl (42)										

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001									
	BMF-EI LYMAN MILL 2001	L-TS-67-P 6/18/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-69-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001
2,2',3,5-Tetrachlorobiphenyl (43)										
2,2',3,5'-Tetrachlorobiphenyl (44)										
2,2',3,6-Tetrachlorobiphenyl (45)										
2,2',3,6'-Tetrachlorobiphenyl (46)										
2,2',4,5-Tetrachlorobiphenyl (48)										
2,2',4,5'-Tetrachlorobiphenyl (49)										
2,2',4,6-Tetrachlorobiphenyl (50)										
2,3,3',4'-Tetrachlorobiphenyl (56)										
2,3,3',6-Tetrachlorobiphenyl (59)										
2,3,4,4'-Tetrachlorobiphenyl (60)										
2,3,4,5-Tetrachlorobiphenyl (61)										
2,3,4',5-Tetrachlorobiphenyl (63)										
2,3,4',6-Tetrachlorobiphenyl (64)										
2,3',4,4'-Tetrachlorobiphenyl (66)										
3,3',4,4'-Tetrachlorobiphenyl (77)										
3,4,4',5-Tetrachlorobiphenyl (81)										
2,2',3,3',4-Pentachlorobiphenyl (82)										
2,2',3,3',5-Pentachlorobiphenyl (83)										
2,2',3,3',6-Pentachlorobiphenyl (84)										
2,2',3,4,4'-Pentachlorobiphenyl (85)										
2,2',3,4,5-Pentachlorobiphenyl (86)										
2,2',3,4,6-Pentachlorobiphenyl (88)										
2,2',3,4,6'-Pentachlorobiphenyl (89)										
2,2',3,4',5-Pentachlorobiphenyl (90)										
2,2',3,5,5'-Pentachlorobiphenyl (92)										
2,2',3,5,6-Pentachlorobiphenyl (93)										
2,3,3',4,4'-Pentachlorobiphenyl (105)										
2,3,3',4,5-Pentachlorobiphenyl (106)										
2,3,3',4',5'-Pentachlorobiphenyl (108)										
2,3,3',4',6-Pentachlorobiphenyl (110)										
2,3,4,4',5-Pentachlorobiphenyl (114)										
2,3',4,4',5-Pentachlorobiphenyl (118)										
3,3',4,4',5-Pentachlorobiphenyl (126)										
2,2',3,3',4,4'-Hexachlorobiphenyl (128)										
2,2',3,3',4,5-Hexachlorobiphenyl (129)										
2,2',3,3',4,5'-Hexachlorobiphenyl (130)										
2,2',3,3',4,6-Hexachlorobiphenyl (131)										
2,2',3,3',4,6'-Hexachlorobiphenyl (132)										
2,2',3,3',5,6-Hexachlorobiphenyl (134)										
2,2',3,3',5,6'-Hexachlorobiphenyl (135)										
2,2',3,3',6,6'-Hexachlorobiphenyl (136)										
2,2',3,4,4',5-Hexachlorobiphenyl (137)										
2,2',3,4,5,5'-Hexachlorobiphenyl (141)										
2,2',3,4,5',6-Hexachlorobiphenyl (144)										
2,2',3,4',5,5'-Hexachlorobiphenyl (146)										
2,2',3,4',5,6-Hexachlorobiphenyl (147)										
2,2',4,4',5,5'-Hexachlorobiphenyl (153)										
2,3,3',4,4',5-Hexachlorobiphenyl (156)										
2,3,3',4,4',6-Hexachlorobiphenyl (158)										

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001									
	BMF-EI LYMAN MILL 2001	L-TS-67-P 6/18/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-69-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001
2,3',4,4',5,5'-Hexachlorobiphenyl (167)										
3,3',4,4',5,5'-Hexachlorobiphenyl (169)										
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)										
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)										
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)										
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)										
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)										
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)										
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)										
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)										
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)										
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)										
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)										
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)										
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)										
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)										
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)										
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)										
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)										
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)										
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)										
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)										
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)										
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)										
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)										
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)										
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)										
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)										
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl										
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl										
Decachlorobiphenyl (209)										
PCB Congeners, Total										
Toxicity Equivalency (PCB) - Birds										
Toxicity Equivalency (PCB) - Fish										
Toxicity Equivalency (PCB) - Mammals										
Technical Chlordane										
Heptachlor Epoxide										
Dieldrin										
4,4'-DDE										
4,4'-DDD										
4,4'-DDT										
alpha-Chlordane										
Aroclor-1254										
Aroclor-1268										
Aroclor, Total										
Lipid_percent										

US EPA ARCHIVE DOCUMENT

TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001									
	BMF-EI LYMAN MILL 2001	L-TS-67-P 6/18/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-69-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001

US EPA ARCHIVE DOCUMENT

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001											
	L-TS-73-P 5/30/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-83-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-P 5/28/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-P 5/31/2001	BMF-DIET LYMAN MILL 2001
HCX				1.84E-03 J	2.3E-01	2.8E-01	8.46E-04 UJ	1.0E-01	1.3E-01	7.57E-04 UJ	9.3E-02
TCX				5.82E-03 UJ		6.1E+00	1.66E-02 UJ		1.7E+01	1.45E-02 UJ	
2,3,7,8-TCDD				3.08E-02 J	6.4E+00	3.1E+00	2.04E-02 J	4.3E+00	2.1E+00	1.93E-02 J	4.0E+00
1,2,3,7,8-PeCDD				3.10E-04 J	2.2E+01	3.3E-01	2.11E-04 J	1.5E+01	2.2E-01	1.56E-04 J	1.1E+01
1,2,3,4,7,8-HxCDD				3.23E-04 J	9.8E+00	3.4E-01	1.91E-04 J	5.8E+00	2.0E-01	1.87E-04 J	5.7E+00
1,2,3,6,7,8-HxCDD				2.96E-03 J	3.3E+01	2.9E+01	1.76E-03 J	2.0E+01	1.7E+01	8.77E-04 J	9.8E+00
1,2,3,7,8,9-HxCDD				1.83E-04 J	7.8E+00	1.9E-01	2.42E-04 J	1.0E+01	2.5E-01	1.82E-04 J	7.8E+00
1,2,3,4,6,7,8-HpCDD				7.49E-03 J	7.7E+00	1.5E+01	2.26E-02 J	2.3E+01	4.5E+01	6.18E-03 J	6.4E+00
OCDD				1.23E-02 J	6.0E+00	9.8E+00	7.42E-02 J	3.6E+01	5.9E+01	2.13E-02 J	1.0E+01
2,3,7,8-TCDF				3.72E-04 J$	2.0E+01	5.3E+00	2.37E-04 J$	1.3E+01	3.4E+00	2.06E-04 J$	1.1E+01
1,2,3,7,8-PeCDF				1.72E-04 J	1.0E+01	1.8E-01	6.58E-05 J	4.0E+00	6.9E-02	2.71E-05 UJ	1.6E+00
2,3,4,7,8-PeCDF				2.07E-04 J	1.2E+01	2.2E-01	8.74E-05 J	5.1E+00	9.2E-02	7.10E-05 J	4.1E+00
1,2,3,4,7,8-HxCDF				2.28E-04 J	1.9E+01	2.4E-01	4.36E-04 J	3.6E+01	4.6E-01	1.95E-04 J	1.6E+01
1,2,3,6,7,8-HxCDF				1.94E-04 J	1.2E+01	2.0E-01	2.05E-04 J	1.2E+01	2.2E-01	1.33E-04 J	8.1E+00
2,3,4,6,7,8-HxCDF				1.11E-04 J	1.6E+01	1.2E-01	1.17E-04 J	1.7E+01	1.2E-01	6.11E-05 J	8.9E+00
1,2,3,7,8,9-HxCDF				7.27E-06 J	3.9E-01	7.6E-03	1.31E-05 UJ	7.1E-01	1.4E-02	6.65E-06 J	3.6E-01
1,2,3,4,6,7,8-HpCDF				1.63E-03 J	1.3E+01	2.9E+01	4.78E-03 J	3.7E+01	8.6E+01	1.20E-03 J	9.3E+00
1,2,3,4,7,8,9-HpCDF				8.45E-05 J	2.8E+01	8.9E-02	3.41E-04 J	1.1E+02	3.6E-01	1.05E-04 J	3.5E+01
OCDF				8.08E-04 J	5.7E+01	1.4E+01	2.41E-03 J	1.7E+02	4.2E+01	2.28E-04 J	1.6E+01
Total TCDD				3.08E-02 J	6.3E+00	3.1E+00	2.04E-02 J	4.2E+00	2.1E+00	1.93E-02 J	4.0E+00
Total PeCDD				3.10E-04 J	2.1E+01	3.3E-01	1.06E-04 UJ	7.0E+00	1.1E-01	7.82E-05 UJ	5.2E+00
Total HxCDD				3.53E-03 J	1.0E+01	3.5E+01	2.30E-03 J	6.5E+00	2.3E+01	1.28E-03 J	3.6E+00
Total HpCDD				7.65E-03 J	6.6E+00	9.7E+00	2.31E-02 J	2.0E+01	2.9E+01	6.26E-03 J	5.4E+00
Total TCDF				5.05E-04 J	5.7E+00	7.2E+00	2.62E-04 J	2.9E+00	3.7E+00	2.65E-04 J	3.0E+00
Total PeCDF				5.21E-04 J	4.6E+00	3.4E+00	9.78E-05 UJ	8.6E-01	6.3E-01	7.67E-05 UJ	6.8E-01
Total HxCDF				7.40E-04 J	5.1E+00	2.0E+01	1.04E-03 J	7.2E+00	2.8E+01	4.61E-04 J	3.2E+00
Total HpCDF				2.01E-03 J	2.3E+01	1.8E+01	6.11E-03 J	6.9E+01	5.5E+01	1.46E-03 J	1.7E+01
Toxicity Equivalency - Birds				3.18E-02	6.5E+00	2.6E+00	2.12E-02	4.4E+00	1.7E+00	1.99E-02	4.1E+00
Toxicity Equivalency - Fish				3.16E-02	6.5E+00	2.6E+00	2.10E-02	4.3E+00	1.7E+00	1.97E-02	4.1E+00
Toxicity Equivalency - Mammals				3.18E-02	6.5E+00	2.7E+00	2.12E-02	4.4E+00	1.8E+00	1.98E-02	4.1E+00
2-Monochlorobiphenyl (1)											
4-Chlorobiphenyl (3)											
2,3-Dichlorobiphenyl (5)											
2,4-Dichlorobiphenyl (7)											
2,5-Dichlorobiphenyl (9)											
2,6-Dichlorobiphenyl (10)											
2,2',3'-Trichlorobiphenyl (16)											
2,2',4-Trichlorobiphenyl (17)											
2,2',5-Trichlorobiphenyl (18)											
2,2',6-Trichlorobiphenyl (19)											
2,3,3'-Trichlorobiphenyl (20)											
2,3,4'-Trichlorobiphenyl (22)											
2,3,6-Trichlorobiphenyl (24)											
2,3',4-Trichlorobiphenyl (25)											
2,3',5-Trichlorobiphenyl (26)											
2,4',5-Trichlorobiphenyl (31)											
2,4',6-Trichlorobiphenyl (32)											
2,2',3,3'-Tetrachlorobiphenyl (40)											
2,2',3,4'-Tetrachlorobiphenyl (42)											

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001										
	L-TS-73-P 5/30/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-83-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-P 5/28/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-P 5/31/2001	BMF-DIET LYMAN MILL 2001
2,2',3,5-Tetrachlorobiphenyl (43)											
2,2',3,5'-Tetrachlorobiphenyl (44)											
2,2',3,6-Tetrachlorobiphenyl (45)											
2,2',3,6'-Tetrachlorobiphenyl (46)											
2,2',4,5-Tetrachlorobiphenyl (48)											
2,2',4,5'-Tetrachlorobiphenyl (49)											
2,2',4,6-Tetrachlorobiphenyl (50)											
2,3,3',4'-Tetrachlorobiphenyl (56)											
2,3,3',6-Tetrachlorobiphenyl (59)											
2,3,4,4'-Tetrachlorobiphenyl (60)											
2,3,4,5-Tetrachlorobiphenyl (61)											
2,3,4',5-Tetrachlorobiphenyl (63)											
2,3,4',6-Tetrachlorobiphenyl (64)											
2,3',4,4'-Tetrachlorobiphenyl (66)											
3,3',4,4'-Tetrachlorobiphenyl (77)											
3,4,4',5-Tetrachlorobiphenyl (81)											
2,2',3,3',4-Pentachlorobiphenyl (82)											
2,2',3,3',5-Pentachlorobiphenyl (83)											
2,2',3,3',6-Pentachlorobiphenyl (84)											
2,2',3,4,4'-Pentachlorobiphenyl (85)											
2,2',3,4,5-Pentachlorobiphenyl (86)											
2,2',3,4,6-Pentachlorobiphenyl (88)											
2,2',3,4,6'-Pentachlorobiphenyl (89)											
2,2',3,4',5-Pentachlorobiphenyl (90)											
2,2',3,5,5'-Pentachlorobiphenyl (92)											
2,2',3,5,6-Pentachlorobiphenyl (93)											
2,3,3',4,4'-Pentachlorobiphenyl (105)											
2,3,3',4,5-Pentachlorobiphenyl (106)											
2,3,3',4',5'-Pentachlorobiphenyl (108)											
2,3,3',4',6-Pentachlorobiphenyl (110)											
2,3,4,4',5-Pentachlorobiphenyl (114)											
2,3',4,4',5-Pentachlorobiphenyl (118)											
3,3',4,4',5-Pentachlorobiphenyl (126)											
2,2',3,3',4,4'-Hexachlorobiphenyl (128)											
2,2',3,3',4,5-Hexachlorobiphenyl (129)											
2,2',3,3',4,5'-Hexachlorobiphenyl (130)											
2,2',3,3',4,6-Hexachlorobiphenyl (131)											
2,2',3,3',4,6'-Hexachlorobiphenyl (132)											
2,2',3,3',5,6-Hexachlorobiphenyl (134)											
2,2',3,3',5,6'-Hexachlorobiphenyl (135)											
2,2',3,3',6,6'-Hexachlorobiphenyl (136)											
2,2',3,4,4',5-Hexachlorobiphenyl (137)											
2,2',3,4,5,5'-Hexachlorobiphenyl (141)											
2,2',3,4,5',6-Hexachlorobiphenyl (144)											
2,2',3,4',5,5'-Hexachlorobiphenyl (146)											
2,2',3,4',5,6-Hexachlorobiphenyl (147)											
2,2',4,4',5,5'-Hexachlorobiphenyl (153)											
2,3,3',4,4',5-Hexachlorobiphenyl (156)											
2,3,3',4,4',6-Hexachlorobiphenyl (158)											

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TABLE J-10

CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001															
	L-TS-73-P 5/30/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-83-P 5/25/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-P 5/28/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-P 5/31/2001		BMF-DIET LYMAN MILL 2001
2,3',4,4',5,5'-Hexachlorobiphenyl (167)															
3,3',4,4',5,5'-Hexachlorobiphenyl (169)															
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)															
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)															
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)															
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)															
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)															
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)															
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)															
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)															
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)															
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)															
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)															
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)															
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)															
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)															
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)															
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)															
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)															
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)															
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)															
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)															
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)															
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)															
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)															
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)															
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)															
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)															
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl															
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl															
Decachlorobiphenyl (209)															
PCB Congeners, Total															
Toxicity Equivalency (PCB) - Birds															
Toxicity Equivalency (PCB) - Fish															
Toxicity Equivalency (PCB) - Mammals															
Technical Chlordane	5.181919643	J													
Heptachlor Epoxide	0.2	J													
Dieldrin	0.213169643	J													
4,4'-DDE	3.3875														
4,4'-DDD	0.081696429	J													
4,4'-DDT	0.058258929	J													
alpha-Chlordane	0.0640625	J													
Aroclor-1254	20.909375	J													
Aroclor-1268	2.7640625														
Aroclor, Total	23.6734375	J													
Lipid_percent															

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001										
	L-TS-73-P 5/30/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-83-P 5/25/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-P 5/28/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-P 5/31/2001	BMF-DIET LYMAN MILL 2001

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001											
					BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001			
	BMF-EI LYMAN MILL 2001	L-TS-90-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
HCX	1.2E-01	1.45E-03 J	1.8E-01	2.2E-01	2.27E-01	1.40E-01	2.26E-03	34%	2.80E-01	1.73E-01	3.45E-03	34%
TCX	1.5E+01								1.75E+01	1.33E+01	2.46E+01	37%
2,3,7,8-TCDD	2.0E+00	0.016737487 J	3.5E+00	1.7E+00	8.44E+00	4.73E+00	3.92E+00	42%	4.11E+00	2.30E+00	9.29E-01	42%
1,2,3,7,8-PeCDD	1.6E-01	2.97E-04 J	2.1E+01	3.1E-01	2.21E+01	1.40E+01	5.39E+01	52%	3.27E-01	2.07E-01	1.18E-02	52%
1,2,3,4,7,8-HxCDD	2.0E-01	1.54E-04 J	4.7E+00	1.6E-01	9.80E+00	5.90E+00	5.85E+00	41%	3.40E-01	2.05E-01	7.02E-03	41%
1,2,3,6,7,8-HxCDD	8.7E+00	9.28E-04 J	1.0E+01	9.2E+00	3.32E+01	1.56E+01	7.24E+01	54%	2.92E+01	1.38E+01	5.62E+01	54%
1,2,3,7,8,9-HxCDD	1.9E-01	1.23E-04 J	5.3E+00	1.3E-01	1.04E+01	6.51E+00	6.20E+00	38%	2.55E-01	1.60E-01	3.73E-03	38%
1,2,3,4,6,7,8-HpCDD	1.2E+01	6.20E-03 J	6.4E+00	1.2E+01	2.34E+01	7.75E+00	3.84E+01	80%	4.52E+01	1.50E+01	1.43E+02	80%
OCDD	1.7E+01	2.19E-02 J	1.1E+01	1.7E+01	3.62E+01	9.17E+00	1.13E+02	116%	5.89E+01	1.50E+01	3.00E+02	116%
2,3,7,8-TCDF	2.9E+00	1.04E-04 UJ$	5.6E+00	1.5E+00	2.01E+01	1.08E+01	1.93E+01	41%	5.29E+00	2.83E+00	1.33E+00	41%
1,2,3,7,8-PeCDF	2.9E-02	9.03E-06 UJ	5.5E-01	9.5E-03	1.18E+01	4.99E+00	1.70E+01	83%	2.05E-01	8.65E-02	5.10E-03	83%
2,3,4,7,8-PeCDF	7.5E-02	8.41E-06 UJ	4.9E-01	8.9E-03	1.68E+01	7.19E+00	2.71E+01	72%	3.05E-01	1.31E-01	8.94E-03	72%
1,2,3,4,7,8-HxCDF	2.1E-01	1.36E-04 J	1.1E+01	1.4E-01	3.56E+01	1.56E+01	7.46E+01	55%	4.58E-01	2.01E-01	1.24E-02	55%
1,2,3,6,7,8-HxCDF	1.4E-01	9.93E-05 J	6.0E+00	1.0E-01	1.24E+01	8.54E+00	7.80E+00	33%	2.16E-01	1.48E-01	2.34E-03	33%
2,3,4,6,7,8-HxCDF	6.4E-02	1.88E-05 UJ	2.8E+00	2.0E-02	1.72E+01	1.04E+01	3.24E+01	55%	1.23E-01	7.48E-02	1.67E-03	55%
1,2,3,7,8,9-HxCDF	7.0E-03	2.20E-05 UJ	1.2E+00	2.3E-02	1.51E+00	7.06E-01	1.60E-01	57%	2.94E-02	1.37E-02	6.03E-05	57%
1,2,3,4,6,7,8-HpCDF	2.1E+01	1.06E-03 J	8.3E+00	1.9E+01	3.72E+01	1.17E+01	1.01E+02	86%	8.56E+01	2.69E+01	5.36E+02	86%
1,2,3,4,7,8,9-HpCDF	1.1E-01	4.01E-05 UJ	1.3E+01	4.2E-02	1.13E+02	2.48E+01	1.22E+03	141%	3.59E-01	7.86E-02	1.22E-02	141%
OCDF	4.0E+00	1.95E-04 UJ	1.4E+01	3.4E+00	1.69E+02	3.68E+01	2.72E+03	142%	4.20E+01	9.13E+00	1.67E+02	142%
Total TCDD	2.0E+00	1.67E-02 J	3.4E+00	1.7E+00	8.29E+00	4.64E+00	3.79E+00	42%	4.11E+00	2.30E+00	9.29E-01	42%
Total PeCDD	8.2E-02	1.08E-03 J	7.2E+01	1.1E+00	7.16E+01	1.49E+01	4.81E+02	147%	1.14E+00	2.36E-01	1.21E-01	147%
Total HxCDD	1.3E+01	1.27E-03 J	3.6E+00	1.3E+01	1.00E+01	5.07E+00	6.25E+00	49%	3.49E+01	1.76E+01	7.55E+01	49%
Total HpCDD	8.0E+00	6.38E-03 J	5.5E+00	8.1E+00	1.98E+01	6.56E+00	2.76E+01	80%	2.95E+01	9.73E+00	6.09E+01	80%
Total TCDF	3.8E+00	2.60E-04 J	2.9E+00	3.7E+00	5.99E+00	3.61E+00	2.25E+00	42%	7.56E+00	4.56E+00	3.60E+00	42%
Total PeCDF	5.0E-01	8.72E-06 UJ	7.7E-02	5.6E-02	4.60E+00	2.06E+00	3.31E+00	88%	3.36E+00	1.51E+00	1.77E+00	88%
Total HxCDF	1.3E+01	3.25E-04 J	2.3E+00	8.9E+00	7.22E+00	3.63E+00	2.97E+00	47%	2.85E+01	1.43E+01	4.62E+01	47%
Total HpCDF	1.3E+01	1.29E-03 J	1.5E+01	1.2E+01	6.92E+01	2.06E+01	3.68E+02	93%	5.50E+01	1.63E+01	2.32E+02	93%
Toxicity Equivalency - Birds	1.6E+00	1.72E-02	3.5E+00	1.4E+00	8.46E+00	4.79E+00	3.84E+00	41%	3.30E+00	1.87E+00	5.86E-01	41%
Toxicity Equivalency - Fish	1.6E+00	1.72E-02	3.5E+00	1.4E+00	8.46E+00	4.76E+00	3.89E+00	41%	3.37E+00	1.90E+00	6.16E-01	41%
Toxicity Equivalency - Mammals	1.7E+00	1.73E-02	3.6E+00	1.4E+00	8.46E+00	4.78E+00	3.87E+00	41%	3.45E+00	1.95E+00	6.42E-01	41%
2-Monochlorobiphenyl (1)		3.74E-04 UJ		1.5E-01					1.70E-01	1.51E-01	3.27E-04	12%
4-Chlorobiphenyl (3)		4.54E-04 UJ		2.0E-01					2.01E-01	1.94E-01	9.23E-05	5%
2,3-Dichlorobiphenyl (5)		1.45E-04 J		7.6E-02					2.10E-01	1.45E-01	4.49E-03	46%
2,4-Dichlorobiphenyl (7)		3.39E-04 J		1.8E-01					2.46E-01	2.11E-01	1.14E-03	16%
2,5-Dichlorobiphenyl (9)		4.37E-04 J		2.3E-01					2.59E-01	2.33E-01	6.08E-04	11%
2,6-Dichlorobiphenyl (10)		3.22E-04 UJ		1.7E-01					7.36E-01	3.70E-01	1.01E-01	86%
2,2',3'-Trichlorobiphenyl (16)		1.48E-03 UJ		4.6E-01					2.07E+00	9.89E-01	8.81E-01	95%
2,2',4-Trichlorobiphenyl (17)		5.77E-03 J		1.8E+00					4.87E+00	2.83E+00	3.11E+00	62%
2,2',5-Trichlorobiphenyl (18)		9.66E-03 J		1.5E+00					4.22E+00	2.41E+00	2.45E+00	65%
2,2',6-Trichlorobiphenyl (19)		2.92E-04 UJ		3.4E-01					1.89E+00	8.79E-01	7.67E-01	100%
2,3,3'-Trichlorobiphenyl (20)		3.17E-01 J		9.9E+00					2.00E+01	1.40E+01	2.78E+01	38%
2,3,4'-Trichlorobiphenyl (22)		2.94E-03 UJ		5.8E-01					7.93E-01	6.52E-01	1.48E-02	19%
2,3,6-Trichlorobiphenyl (24)		1.19E-03 J										
2,3',4-Trichlorobiphenyl (25)		3.76E-03 J		2.5E+00					3.45E+00	2.69E+00	4.90E-01	26%
2,3',5-Trichlorobiphenyl (26)		5.39E-03 J		2.0E+00					2.85E+00	2.23E+00	2.96E-01	24%
2,4',5-Trichlorobiphenyl (31)		5.78E-02 J		3.2E+00					3.23E+00	2.74E+00	1.80E-01	15%
2,4',6-Trichlorobiphenyl (32)		2.52E-03 J		8.1E-01					1.61E+00	9.33E-01	3.93E-01	67%
2,2',3,3'-Tetrachlorobiphenyl (40)		3.00E-02 J		3.2E+00					5.34E+00	3.74E+00	1.98E+00	38%
2,2',3,4'-Tetrachlorobiphenyl (42)		3.23E-02 J		4.3E+00					1.01E+01	6.28E+00	1.07E+01	52%

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001											
					BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001			
	BMF-EI LYMAN MILL 2001	L-TS-90-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5-Tetrachlorobiphenyl (43)		7.34E-01 J		1.2E+01					2.90E+01	1.77E+01	9.57E+01	55%
2,2',3,5'-Tetrachlorobiphenyl (44)		2.49E-01 J		7.7E+00					1.86E+01	1.12E+01	4.04E+01	57%
2,2',3,6-Tetrachlorobiphenyl (45)		3.23E-03 J		1.8E+00					5.60E+00	3.20E+00	4.38E+00	65%
2,2',3,6'-Tetrachlorobiphenyl (46)		3.97E-04 UJ		5.8E-01					3.16E+00	1.84E+00	1.66E+00	70%
2,2',4,5-Tetrachlorobiphenyl (48)		1.07E-02 J		3.6E+00					1.24E+01	7.03E+00	2.22E+01	67%
2,2',4,5'-Tetrachlorobiphenyl (49)		3.10E-01 J		1.0E+01					2.06E+01	1.29E+01	4.54E+01	52%
2,2',4,6-Tetrachlorobiphenyl (50)		7.26E-03 J		4.1E+00					1.35E+01	8.36E+00	2.27E+01	57%
2,3,3',4'-Tetrachlorobiphenyl (56)		2.40E-02 J		2.3E+00					3.20E+00	2.47E+00	4.47E-01	27%
2,3,3',6-Tetrachlorobiphenyl (59)		2.71E-02 J		8.1E+00					1.73E+01	1.08E+01	3.19E+01	52%
2,3,4,4'-Tetrachlorobiphenyl (60)		5.55E-02 J		4.8E+00					1.02E+01	6.92E+00	8.32E+00	42%
2,3,4,5-Tetrachlorobiphenyl (61)		4.71E-01 J		3.9E+00					5.15E+00	4.11E+00	8.95E-01	23%
2,3,4',5-Tetrachlorobiphenyl (63)		2.17E-02 J		3.6E+00					6.76E+00	4.51E+00	3.87E+00	44%
2,3,4',6-Tetrachlorobiphenyl (64)		9.22E-02 J		5.2E+00					9.52E+00	6.30E+00	7.98E+00	45%
2,3',4,4'-Tetrachlorobiphenyl (66)		6.90E-01 J		1.2E+01					2.29E+01	1.56E+01	4.05E+01	41%
3,3',4,4'-Tetrachlorobiphenyl (77)		4.92E-02 J		4.0E+00					6.17E+00	4.47E+00	2.35E+00	34%
3,4,4',5-Tetrachlorobiphenyl (81)		3.22E-03 UJ		1.4E+00					1.90E+00	1.68E+00	5.46E-02	14%
2,2',3,3',4-Pentachlorobiphenyl (82)		5.10E-02 J		3.2E+00					5.50E+00	3.80E+00	2.23E+00	39%
2,2',3,3',5-Pentachlorobiphenyl (83)		1.17E+00 J		6.4E+00					1.11E+01	7.31E+00	1.18E+01	47%
2,2',3,3',6-Pentachlorobiphenyl (84)		3.71E-02 J		2.9E+00					6.23E+00	3.95E+00	3.91E+00	50%
2,2',3,4,4'-Pentachlorobiphenyl (85)		3.63E-01 J		5.4E+00					9.28E+00	6.14E+00	8.03E+00	46%
2,2',3,4,5-Pentachlorobiphenyl (86)		8.26E-01 J		7.8E+00					1.50E+01	9.74E+00	2.13E+01	47%
2,2',3,4,6-Pentachlorobiphenyl (88)		1.23E-01 J		1.1E+01					2.04E+01	1.29E+01	4.47E+01	52%
2,2',3,4,6'-Pentachlorobiphenyl (89)		1.29E-03 J		4.5E+00					1.19E+01	6.95E+00	1.80E+01	61%
2,2',3,4',5-Pentachlorobiphenyl (90)		2.11E+00 J		1.0E+01					1.93E+01	1.27E+01	3.39E+01	46%
2,2',3,5,5'-Pentachlorobiphenyl (92)		3.22E-01 J		9.5E+00					1.84E+01	1.18E+01	3.40E+01	49%
2,2',3,5,6-Pentachlorobiphenyl (93)		6.59E-01 J		2.5E+02					5.86E+02	3.53E+02	4.07E+04	57%
2,3,3',4,4'-Pentachlorobiphenyl (105)		4.79E-01 J		5.5E+00					9.86E+00	6.55E+00	8.61E+00	45%
2,3,3',4,5-Pentachlorobiphenyl (106)		2.38E-01 J		1.1E+01					1.77E+01	9.94E+00	6.96E+01	84%
2,3,3',4',5'-Pentachlorobiphenyl (108)		4.02E-02 J		6.4E+00					6.38E+00	5.61E+00	1.14E+00	19%
2,3,3',4',6-Pentachlorobiphenyl (110)		1.19E+00 J		7.1E+00					1.27E+01	8.42E+00	1.47E+01	45%
2,3,4,4',5-Pentachlorobiphenyl (114)		3.08E-02 J		3.9E+00					6.83E+00	4.51E+00	4.37E+00	46%
2,3',4,4',5-Pentachlorobiphenyl (118)		2.21E+00 J		7.9E+00					1.42E+01	9.21E+00	2.03E+01	49%
3,3',4,4',5-Pentachlorobiphenyl (126)		9.21E-03 J		4.9E+00					6.42E+00	4.59E+00	3.94E+00	43%
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		4.39E-01 J		4.6E+00					7.96E+00	5.08E+00	7.17E+00	53%
2,2',3,3',4,5-Hexachlorobiphenyl (129)		3.03E+00 J		5.8E+00					9.78E+00	6.45E+00	9.45E+00	48%
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		1.97E-01 J		3.8E+00					6.14E+00	3.95E+00	4.38E+00	53%
2,2',3,3',4,6-Hexachlorobiphenyl (131)		8.56E-03 J		2.5E+00					5.05E+00	2.92E+00	3.89E+00	68%
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		3.04E-01 J		8.6E+00					1.42E+01	9.11E+00	2.31E+01	53%
2,2',3,3',5,6-Hexachlorobiphenyl (134)		1.55E-02 J		8.1E-01					1.47E+00	9.86E-01	1.85E-01	44%
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		2.58E-01 J		5.6E+00					8.73E+00	5.74E+00	8.50E+00	51%
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		2.05E-02 J		3.1E+00					5.29E+00	3.40E+00	3.08E+00	52%
2,2',3,4,4',5-Hexachlorobiphenyl (137)		2.86E-01 J		1.1E+01					1.74E+01	1.15E+01	3.24E+01	50%
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		3.17E-01 J		1.2E+01					1.99E+01	1.30E+01	4.15E+01	50%
2,2',3,4,5',6-Hexachlorobiphenyl (144)		5.67E-02 J		6.2E+00					9.33E+00	6.21E+00	9.83E+00	51%
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		3.89E-01 J		3.5E+00					5.18E+00	3.50E+00	2.80E+00	48%
2,2',3,4',5,6-Hexachlorobiphenyl (147)		8.89E-01 J		6.9E+00					1.33E+01	8.25E+00	2.05E+01	55%
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		2.60E+00 J		4.9E+00					7.31E+00	5.02E+00	4.93E+00	44%
2,3,3',4,4',5-Hexachlorobiphenyl (156)		3.02E-01 J		3.0E+00					5.35E+00	3.49E+00	2.77E+00	48%
2,3,3',4,4',6-Hexachlorobiphenyl (158)		3.00E-01 J		1.1E+01					1.62E+01	1.18E+01	3.57E+01	51%

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND 2001											
					BMF-Diet Summary Statistics - Lyman Mill 2001				*BMF-EI Summary Statistics - Lyman Mill 2001*			
PARAMETER	BMF-EI LYMAN MILL 2001	L-TS-90-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.42E-01 J		1.1E+01					1.76E+01	1.07E+01	4.78E+01	65%
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		4.65E-03 J		8.4E-01					8.38E-01	5.69E-01	9.95E-02	55%
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		4.29E-01 J		4.9E+00					7.50E+00	5.46E+00	3.35E+00	34%
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		9.73E-02 J		1.4E+01					2.04E+01	1.46E+01	3.04E+01	38%
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		8.96E-02 J		5.5E+00					7.92E+00	5.86E+00	3.56E+00	32%
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		1.53E-01 J		4.2E+00					5.80E+00	4.31E+00	2.12E+00	34%
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)		1.55E-02 J		6.3E+00					7.31E+00	5.63E+00	4.32E+00	37%
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		6.88E-03 J		5.3E+00					5.70E+00	4.73E+00	1.71E+00	28%
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		1.62E-01 J		7.2E+00					1.05E+01	7.50E+00	8.27E+00	38%
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		7.93E-02 J		7.3E+00					7.32E+00	6.22E+00	3.57E+00	30%
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		1.05E+00 J		9.6E+00					1.22E+01	9.82E+00	5.27E+00	23%
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)		6.45E-03 UJ		4.7E+01					5.84E+01	3.88E+01	6.16E+02	64%
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)		2.25E-01 J										
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)		6.45E-03 UJ		1.8E+02					2.17E+02	1.46E+02	8.61E+03	64%
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)		2.31E-02 J										
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		5.27E-01 J		5.9E+00					6.35E+00	5.23E+00	2.41E+00	30%
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		1.95E-02 J		3.8E+00					4.86E+00	3.71E+00	1.37E+00	31%
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		1.01E-01 J		5.1E+00					7.78E+00	5.80E+00	3.02E+00	30%
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		1.69E-02 J		1.6E+01					2.14E+01	1.64E+01	2.19E+01	29%
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		2.20E-01 J		6.8E+00					7.48E+00	6.75E+00	5.77E-01	11%
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		5.18E-02 J		8.5E+00					9.28E+00	8.13E+00	1.80E+00	16%
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		1.13E-01 J		9.9E+00					1.08E+01	8.89E+00	6.49E+00	29%
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		6.13E-03 J		4.6E+00					4.65E+00	3.80E+00	2.06E+00	38%
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		4.77E-01 J		5.0E+00					6.40E+00	4.93E+00	2.33E+00	31%
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)		6.63E-03 J										
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		3.27E-02 J		7.6E+00					8.74E+00	6.80E+00	6.13E+00	36%
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		3.01E-01 J		5.3E+00					7.42E+00	5.49E+00	3.34E+00	33%
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		1.01E-02 J		4.7E+00					5.09E+00	4.23E+00	1.35E+00	27%
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		5.94E-01 J		4.6E+00					4.65E+00	3.56E+00	1.40E+00	33%
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		5.74E-02 J		9.5E+00					9.54E+00	7.51E+00	7.18E+00	36%
Decachlorobiphenyl (209)		4.07E-01 J		5.9E+00					5.89E+00	3.36E+00	4.89E+00	66%
PCB Congeners, Total		2.79E+01 J		6.7E+00					1.11E+01	7.48E+00	1.06E+01	44%
Toxicity Equivalency (PCB) - Birds		3.82E-03		3.6E+00					5.31E+00	3.89E+00	1.72E+00	34%
Toxicity Equivalency (PCB) - Fish		6.87E-05		4.7E+00					6.81E+00	4.77E+00	4.09E+00	42%
Toxicity Equivalency (PCB) - Mammals		1.41E-03		4.2E+00					6.05E+00	4.19E+00	3.40E+00	44%
Technical Chlordane												
Heptachlor Epoxide												
Dieldrin												
4,4'-DDE												
4,4'-DDD												
4,4'-DDT												
alpha-Chlordane												
Aroclor-1254												
Aroclor-1268												
Aroclor, Total												
Lipid_percent												

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TABLE J-10
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001											
					BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001			
	BMF-EI LYMAN MILL 2001	L-TS-90-P 5/26/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003								
	MANTON FOOD 6/14/2003	RMP 120-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 123-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 124-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 129-E 5/27/2003	BMF-DIET MANTON POND 2003
HCX									
TCX									
2,3,7,8-TCDD	2.62E-03	1.19E-02	4.5E+00	9.86E-03	3.8E+00	1.48E-02	5.7E+00	7.98E-03	3.0E+00
1,2,3,7,8-PeCDD	4.32E-05 U	1.46E-04 U	3.4E+00	7.71E-05 U	1.8E+00	7.04E-05 U	1.6E+00	6.00E-05 U	1.4E+00
1,2,3,4,7,8-HxCDD	3.23E-05 U	1.28E-04 U	4.0E+00	1.20E-04 U	3.7E+00	6.99E-05 U	2.2E+00	5.62E-05 U	1.7E+00
1,2,3,6,7,8-HxCDD	3.20E-05 U	2.13E-03	6.7E+01	4.97E-04 U	1.6E+01	2.05E-04 U	6.4E+00	2.64E-04 U	8.3E+00
1,2,3,7,8,9-HxCDD	3.12E-05 U	5.51E-05 U	1.8E+00	6.44E-05 U	2.1E+00	2.68E-05 U	8.6E-01	3.77E-05 U	1.2E+00
1,2,3,4,6,7,8-HpCDD	4.13E-04 U	1.01E-03 U	2.5E+00	1.00E-03 U	2.4E+00	3.56E-04 U	8.6E-01	1.59E-03 U	3.9E+00
OCDD	6.68E-04 U	1.06E-03 U	1.6E+00	1.84E-03 U	2.8E+00	3.63E-04 U	5.4E-01	2.26E-03 U	3.4E+00
2,3,7,8-TCDF	3.20E-05 J#	3.28E-04 #	1.0E+01	1.61E-04 #	5.0E+00	3.48E-04 #	1.1E+01	2.82E-04	8.8E+00
1,2,3,7,8-PeCDF	3.97E-05 U	1.19E-04 J	3.0E+00	7.75E-05 J	2.0E+00	6.30E-05 J	1.6E+00	7.00E-05 J	1.8E+00
2,3,4,7,8-PeCDF	3.50E-05 U	1.07E-04 U	3.1E+00	7.20E-05 U	2.1E+00	4.44E-05 U	1.3E+00	4.39E-05 U	1.3E+00
1,2,3,4,7,8-HxCDF	2.29E-05 UJ	9.02E-05 UJ	3.9E+00	4.20E-05 UJ	1.8E+00	2.99E-05 UJ	1.3E+00	4.01E-05 UJ	1.7E+00
1,2,3,6,7,8-HxCDF	2.52E-05 U	6.68E-05 U	2.7E+00	3.71E-05 U	1.5E+00	2.99E-05 U	1.2E+00	3.74E-05 U	1.5E+00
2,3,4,6,7,8-HxCDF	2.50E-05 U	4.30E-05 U	1.7E+00	3.87E-05 U	1.5E+00	1.63E-05 U	6.5E-01	1.60E-05 U	6.4E-01
1,2,3,7,8,9-HxCDF	2.88E-05 U	3.75E-05 U	1.3E+00	3.74E-05 U	1.3E+00	3.41E-05 U	1.2E+00	1.97E-05 U	6.9E-01
1,2,3,4,6,7,8-HpCDF	6.84E-05 UJ	1.06E-04 UJ	1.5E+00	1.35E-04 UJ	2.0E+00	5.01E-05 UJ	7.3E-01	2.54E-04 UJ	3.7E+00
1,2,3,4,7,8,9-HpCDF	2.65E-05 U	1.21E-05 U	4.6E-01	5.97E-05 U	2.3E+00	5.43E-05 U	2.0E+00	1.57E-05 U	5.9E-01
OCDF	4.81E-05 UJ	6.78E-05 UJ	1.4E+00	7.08E-05 UJ	1.5E+00	3.52E-05 UJ	7.3E-01	1.60E-04 UJ	3.3E+00
Total TCDD	2.62E-03 J	1.19E-02 J	4.5E+00	9.86E-03 J	3.8E+00	1.48E-02 J	5.7E+00	7.98E-03 J	3.0E+00
Total PeCDD	4.32E-05 UJ	1.46E-04 UJ	3.4E+00	7.71E-05 UJ	1.8E+00	7.04E-05 UJ	1.6E+00	6.00E-05 UJ	1.4E+00
Total HxCDD	3.18E-05 UJ	1.25E-03 UJ	3.9E+01	6.82E-04 UJ	2.1E+01	3.01E-04 UJ	9.5E+00	3.66E-04 UJ	1.2E+01
Total HpCDD	5.12E-04 UJ	1.04E-03 UJ	2.0E+00	1.05E-03 UJ	2.0E+00	3.77E-04 UJ	7.4E-01	1.63E-03 UJ	3.2E+00
Total TCDF	2.18E-04 J	4.14E-04 J	1.9E+00	2.69E-04 J	1.2E+00	5.69E-04 J	2.6E+00	3.82E-04 J	1.7E+00
Total PeCDF	9.83E-05 UJ	1.67E-04 UJ	1.7E+00	1.11E-04 UJ	1.1E+00	7.59E-05 UJ	7.7E-01	7.89E-05 UJ	8.0E-01
Total HxCDF	8.20E-05 UJ	2.11E-04 UJ	2.6E+00	1.38E-04 UJ	1.7E+00	7.98E-05 UJ	9.7E-01	1.39E-04 UJ	1.7E+00
Total HpCDF	1.08E-04 UJ	1.31E-04 UJ	1.2E+00	1.75E-04 UJ	1.6E+00	5.62E-05 UJ	5.2E-01	3.82E-04 UJ	3.5E+00
Toxicity Equivalency - Birds	2.65E-03	1.22E-02	4.6E+00	1.00E-02	3.8E+00	1.52E-02	5.7E+00	8.27E-03	3.1E+00
Toxicity Equivalency - Fish	2.62E-03	1.19E-02	4.5E+00	9.87E-03	3.8E+00	1.49E-02	5.7E+00	8.00E-03	3.1E+00
Toxicity Equivalency - Mammals	2.62E-03	1.21E-02	4.6E+00	9.88E-03	3.8E+00	1.49E-02	5.7E+00	8.01E-03	3.1E+00
2-Monochlorobiphenyl (1)									
4-Chlorobiphenyl (3)									
2,3-Dichlorobiphenyl (5)									
2,4-Dichlorobiphenyl (7)									
2,5-Dichlorobiphenyl (9)									
2,6-Dichlorobiphenyl (10)									
2,2',3'-Trichlorobiphenyl (16)									
2,2',4-Trichlorobiphenyl (17)									
2,2',5-Trichlorobiphenyl (18)									
2,2',6-Trichlorobiphenyl (19)									
2,3,3'-Trichlorobiphenyl (20)									
2,3,4'-Trichlorobiphenyl (22)									
2,3,6-Trichlorobiphenyl (24)									
2,3',4-Trichlorobiphenyl (25)									
2,3',5-Trichlorobiphenyl (26)									
2,4',5-Trichlorobiphenyl (31)									
2,4',6-Trichlorobiphenyl (32)									
2,2',3,3'-Tetrachlorobiphenyl (40)									
2,2',3,4'-Tetrachlorobiphenyl (42)									

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003								
	MANTON FOOD 6/14/2003	RMP 120-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 123-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 124-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 129-E 5/27/2003	BMF-DIET MANTON POND 2003
2,2',3,5-Tetrachlorobiphenyl (43)									
2,2',3,5'-Tetrachlorobiphenyl (44)									
2,2',3,6-Tetrachlorobiphenyl (45)									
2,2',3,6'-Tetrachlorobiphenyl (46)									
2,2',4,5-Tetrachlorobiphenyl (48)									
2,2',4,5'-Tetrachlorobiphenyl (49)									
2,2',4,6-Tetrachlorobiphenyl (50)									
2,3,3',4'-Tetrachlorobiphenyl (56)									
2,3,3',6-Tetrachlorobiphenyl (59)									
2,3,4,4'-Tetrachlorobiphenyl (60)									
2,3,4,5-Tetrachlorobiphenyl (61)									
2,3,4',5-Tetrachlorobiphenyl (63)									
2,3,4',6-Tetrachlorobiphenyl (64)									
2,3',4,4'-Tetrachlorobiphenyl (66)									
3,3',4,4'-Tetrachlorobiphenyl (77)									
3,4,4',5-Tetrachlorobiphenyl (81)									
2,2',3,3',4-Pentachlorobiphenyl (82)									
2,2',3,3',5-Pentachlorobiphenyl (83)									
2,2',3,3',6-Pentachlorobiphenyl (84)									
2,2',3,4,4'-Pentachlorobiphenyl (85)									
2,2',3,4,5-Pentachlorobiphenyl (86)									
2,2',3,4,6-Pentachlorobiphenyl (88)									
2,2',3,4,6'-Pentachlorobiphenyl (89)									
2,2',3,4',5-Pentachlorobiphenyl (90)									
2,2',3,5,5'-Pentachlorobiphenyl (92)									
2,2',3,5,6-Pentachlorobiphenyl (93)									
2,3,3',4,4'-Pentachlorobiphenyl (105)									
2,3,3',4,5-Pentachlorobiphenyl (106)									
2,3,3',4',5'-Pentachlorobiphenyl (108)									
2,3,3',4',6-Pentachlorobiphenyl (110)									
2,3,4,4',5-Pentachlorobiphenyl (114)									
2,3',4,4',5-Pentachlorobiphenyl (118)									
3,3',4,4',5-Pentachlorobiphenyl (126)									
2,2',3,3',4,4'-Hexachlorobiphenyl (128)									
2,2',3,3',4,5-Hexachlorobiphenyl (129)									
2,2',3,3',4,5'-Hexachlorobiphenyl (130)									
2,2',3,3',4,6-Hexachlorobiphenyl (131)									
2,2',3,3',4,6'-Hexachlorobiphenyl (132)									
2,2',3,3',5,6-Hexachlorobiphenyl (134)									
2,2',3,3',5,6'-Hexachlorobiphenyl (135)									
2,2',3,3',6,6'-Hexachlorobiphenyl (136)									
2,2',3,4,4',5-Hexachlorobiphenyl (137)									
2,2',3,4,5,5'-Hexachlorobiphenyl (141)									
2,2',3,4,5',6-Hexachlorobiphenyl (144)									
2,2',3,4',5,5'-Hexachlorobiphenyl (146)									
2,2',3,4',5,6-Hexachlorobiphenyl (147)									
2,2',4,4',5,5'-Hexachlorobiphenyl (153)									
2,3,3',4,4',5-Hexachlorobiphenyl (156)									
2,3,3',4,4',6-Hexachlorobiphenyl (158)									

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003								
	MANTON FOOD 6/14/2003	RMP 120-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 123-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 124-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 129-E 5/27/2003	BMF-DIET MANTON POND 2003
2,3',4,4',5,5'-Hexachlorobiphenyl (167)									
3,3',4,4',5,5'-Hexachlorobiphenyl (169)									
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)									
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)									
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)									
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)									
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)									
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)									
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)									
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)									
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)									
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)									
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)									
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)									
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)									
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)									
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)									
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)									
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)									
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)									
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)									
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)									
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)									
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)									
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)									
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)									
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)									
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)									
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl									
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl									
Decachlorobiphenyl (209)									
PCB Congeners, Total									
Toxicity Equivalency (PCB) - Birds									
Toxicity Equivalency (PCB) - Fish									
Toxicity Equivalency (PCB) - Mammals									
Technical Chlordane									
Heptachlor Epoxide									
Dieldrin									
4,4'-DDE									
4,4'-DDD									
4,4'-DDT									
alpha-Chlordane									
Aroclor-1254									
Aroclor-1268									
Aroclor, Total									
Lipid_percent									

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003								
	MANTON FOOD 6/14/2003	RMP 120-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 123-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 124-E 5/27/2003	BMF-DIET MANTON POND 2003	RMP 129-E 5/27/2003	BMF-DIET MANTON POND 2003

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003			
	BMF-Diet Summary Statistics - Manton Pond 2003			
	Maximum	Mean	Variance	Coefficient of Variation
HCX				
TCX				
2,3,7,8-TCDD	5.67E+00	4.26E+00	1.26E+00	26%
1,2,3,7,8-PeCDD	3.38E+00	2.05E+00	8.23E-01	44%
1,2,3,4,7,8-HxCDD	3.96E+00	2.90E+00	1.23E+00	38%
1,2,3,6,7,8-HxCDD	6.67E+01	2.42E+01	8.18E+02	118%
1,2,3,7,8,9-HxCDD	2.06E+00	1.47E+00	2.94E-01	37%
1,2,3,4,6,7,8-HpCDD	3.85E+00	2.40E+00	1.49E+00	51%
OCDD	3.39E+00	2.07E+00	1.59E+00	61%
2,3,7,8-TCDF	1.09E+01	8.76E+00	6.86E+00	30%
1,2,3,7,8-PeCDF	3.01E+00	2.08E+00	4.06E-01	31%
2,3,4,7,8-PeCDF	3.06E+00	1.91E+00	7.30E-01	45%
1,2,3,4,7,8-HxCDF	3.93E+00	2.21E+00	1.38E+00	53%
1,2,3,6,7,8-HxCDF	2.65E+00	1.70E+00	4.22E-01	38%
2,3,4,6,7,8-HxCDF	1.72E+00	1.14E+00	3.30E-01	50%
1,2,3,7,8,9-HxCDF	1.30E+00	1.12E+00	8.62E-02	26%
1,2,3,4,6,7,8-HpCDF	3.71E+00	1.99E+00	1.58E+00	63%
1,2,3,4,7,8,9-HpCDF	2.25E+00	1.34E+00	8.92E-01	71%
OCDF	3.32E+00	1.73E+00	1.23E+00	64%
Total TCDD	5.67E+00	4.26E+00	1.26E+00	26%
Total PeCDD	3.38E+00	2.05E+00	8.23E-01	44%
Total HxCDD	3.93E+01	2.05E+01	1.86E+02	67%
Total HpCDD	3.18E+00	2.00E+00	9.94E-01	50%
Total TCDF	2.60E+00	1.87E+00	3.21E-01	30%
Total PeCDF	1.70E+00	1.10E+00	1.84E-01	39%
Total HxCDF	2.57E+00	1.73E+00	4.29E-01	38%
Total HpCDF	3.53E+00	1.72E+00	1.67E+00	75%
Toxicity Equivalency - Birds	5.74E+00	4.32E+00	1.27E+00	26%
Toxicity Equivalency - Fish	5.68E+00	4.26E+00	1.26E+00	26%
Toxicity Equivalency - Mammals	5.68E+00	4.28E+00	1.28E+00	26%
2-Monochlorobiphenyl (1)				
4-Chlorobiphenyl (3)				
2,3-Dichlorobiphenyl (5)				
2,4-Dichlorobiphenyl (7)				
2,5-Dichlorobiphenyl (9)				
2,6-Dichlorobiphenyl (10)				
2,2',3'-Trichlorobiphenyl (16)				
2,2',4-Trichlorobiphenyl (17)				
2,2',5-Trichlorobiphenyl (18)				
2,2',6-Trichlorobiphenyl (19)				
2,3,3'-Trichlorobiphenyl (20)				
2,3,4'-Trichlorobiphenyl (22)				
2,3,6-Trichlorobiphenyl (24)				
2,3',4-Trichlorobiphenyl (25)				
2,3',5-Trichlorobiphenyl (26)				
2,4',5-Trichlorobiphenyl (31)				
2,4',6-Trichlorobiphenyl (32)				
2,2',3,3'-Tetrachlorobiphenyl (40)				
2,2',3,4'-Tetrachlorobiphenyl (42)				

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003			
	BMF-Diet Summary Statistics - Manton Pond 2003			
	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,5-Tetrachlorobiphenyl (43)				
2,2',3,5'-Tetrachlorobiphenyl (44)				
2,2',3,6-Tetrachlorobiphenyl (45)				
2,2',3,6'-Tetrachlorobiphenyl (46)				
2,2',4,5-Tetrachlorobiphenyl (48)				
2,2',4,5'-Tetrachlorobiphenyl (49)				
2,2',4,6-Tetrachlorobiphenyl (50)				
2,3,3',4'-Tetrachlorobiphenyl (56)				
2,3,3',6-Tetrachlorobiphenyl (59)				
2,3,4,4'-Tetrachlorobiphenyl (60)				
2,3,4,5-Tetrachlorobiphenyl (61)				
2,3,4',5-Tetrachlorobiphenyl (63)				
2,3,4',6-Tetrachlorobiphenyl (64)				
2,3',4,4'-Tetrachlorobiphenyl (66)				
3,3',4,4'-Tetrachlorobiphenyl (77)				
3,4,4',5-Tetrachlorobiphenyl (81)				
2,2',3,3',4-Pentachlorobiphenyl (82)				
2,2',3,3',5-Pentachlorobiphenyl (83)				
2,2',3,3',6-Pentachlorobiphenyl (84)				
2,2',3,4,4'-Pentachlorobiphenyl (85)				
2,2',3,4,5-Pentachlorobiphenyl (86)				
2,2',3,4,6-Pentachlorobiphenyl (88)				
2,2',3,4,6'-Pentachlorobiphenyl (89)				
2,2',3,4',5-Pentachlorobiphenyl (90)				
2,2',3,5,5'-Pentachlorobiphenyl (92)				
2,2',3,5,6-Pentachlorobiphenyl (93)				
2,3,3',4,4'-Pentachlorobiphenyl (105)				
2,3,3',4,5-Pentachlorobiphenyl (106)				
2,3,3',4',5'-Pentachlorobiphenyl (108)				
2,3,3',4',6-Pentachlorobiphenyl (110)				
2,3,4,4',5-Pentachlorobiphenyl (114)				
2,3',4,4',5-Pentachlorobiphenyl (118)				
3,3',4,4',5-Pentachlorobiphenyl (126)				
2,2',3,3',4,4'-Hexachlorobiphenyl (128)				
2,2',3,3',4,5-Hexachlorobiphenyl (129)				
2,2',3,3',4,5'-Hexachlorobiphenyl (130)				
2,2',3,3',4,6-Hexachlorobiphenyl (131)				
2,2',3,3',4,6'-Hexachlorobiphenyl (132)				
2,2',3,3',5,6-Hexachlorobiphenyl (134)				
2,2',3,3',5,6'-Hexachlorobiphenyl (135)				
2,2',3,3',6,6'-Hexachlorobiphenyl (136)				
2,2',3,4,4',5-Hexachlorobiphenyl (137)				
2,2',3,4,5,5'-Hexachlorobiphenyl (141)				
2,2',3,4,5',6-Hexachlorobiphenyl (144)				
2,2',3,4',5,5'-Hexachlorobiphenyl (146)				
2,2',3,4',5,6-Hexachlorobiphenyl (147)				
2,2',4,4',5,5'-Hexachlorobiphenyl (153)				
2,3,3',4,4',5-Hexachlorobiphenyl (156)				
2,3,3',4,4',6-Hexachlorobiphenyl (158)				

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CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003			
	BMF-Diet Summary Statistics - Manton Pond 2003			
	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',5,5'-Hexachlorobiphenyl (167)				
3,3',4,4',5,5'-Hexachlorobiphenyl (169)				
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)				
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)				
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)				
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)				
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)				
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)				
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)				
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)				
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)				
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)				
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)				
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)				
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)				
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)				
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)				
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)				
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)				
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)				
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)				
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)				
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)				
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)				
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)				
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)				
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)				
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)				
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl				
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl				
Decachlorobiphenyl (209)				
PCB Congeners, Total				
Toxicity Equivalency (PCB) - Birds				
Toxicity Equivalency (PCB) - Fish				
Toxicity Equivalency (PCB) - Mammals				
Technical Chlordane				
Heptachlor Epoxide				
Dieldrin				
4,4'-DDE				
4,4'-DDD				
4,4'-DDT				
alpha-Chlordane				
Aroclor-1254				
Aroclor-1268				
Aroclor, Total				
Lipid_percent				

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TABLE J-10
CALCULATON OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR TREE SWALLOW EGG TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003			
	BMF-Diet Summary Statistics - Manton Pond 2003			
	Maximum	Mean	Variance	Coefficient of Variation

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TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Nestling				GREYSTONE MILL POND 2000									
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-06-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-17-N 6/12/2000	BMF GREYSTONE 2000	GP-TS-18-N 6/12/2000	BMF GREYSTONE 2000
HCX	10	25	1.84E-03	2.69E-04	**1.28E-05** UJ	5.34E-07 UJ	4.2E-02	2.33E-06 UJ	1.8E-01	1.45E-06 UJ	1.1E-01	2.59E-06 UJ	2.0E-01
2,3,7,8-TCDD	30	30	5.26E-02	1.01E-02	**8.33E-06** U	7.08E-05	8.5E+00	1.05E-04 *	1.3E+01	9.66E-05	1.2E+01	8.30E-05	1.0E+01
1,2,3,7,8-PeCDD	24	30	1.27E-04	4.72E-05	**7.45E-06** U	2.35E-05	3.2E+00	3.00E-05	4.0E+00	2.81E-05	3.8E+00	1.75E-05	2.4E+00
1,2,3,4,7,8-HxCDD	26	30	1.20E-04	4.84E-05	**6.74E-06** U	1.90E-05	2.8E+00	2.59E-05	3.8E+00	2.56E-05	3.8E+00	1.70E-05	2.5E+00
1,2,3,6,7,8-HxCDD	26	30	4.28E-04	1.57E-04	**2.84E-05**	8.13E-05	2.9E+00	6.62E-05	2.3E+00	1.05E-04	3.7E+00	6.24E-05	2.2E+00
1,2,3,7,8,9-HxCDD	24	30	1.17E-04	3.48E-05	**1.40E-05** UJ	1.17E-05 J	8.4E-01	1.51E-05 J	1.1E+00	1.66E-05 J	1.2E+00	1.25E-05 J	8.9E-01
1,2,3,4,6,7,8-HpCDD	25	30	3.42E-03	6.64E-04	**1.81E-04** U	1.28E-04	7.1E-01	5.89E-05 U	3.3E-01	2.87E-04	1.6E+00	3.40E-04	1.9E+00
OCDD	9	30	3.19E-03	5.59E-04	**4.30E-04** U	5.73E-05 U	1.3E-01	4.15E-05 U	9.7E-02	9.46E-05 U	2.2E-01	1.86E-04 U	4.3E-01
2,3,7,8-TCDF	30	30	2.86E-04	1.04E-04	**2.48E-05** J	6.03E-05 J	2.4E+00	8.77E-05 J	3.5E+00	7.68E-05 J	3.1E+00	5.46E-05 J	2.2E+00
1,2,3,7,8-PeCDF	28	30	6.08E-05	2.27E-05	**6.21E-06** U	1.23E-05	2.0E+00	1.55E-05 *	2.5E+00	1.55E-05	2.5E+00	9.12E-06 *	1.5E+00
2,3,4,7,8-PeCDF	22	30	1.76E-04	3.47E-05	**4.61E-06** U	1.38E-05	3.0E+00	9.42E-06 U	2.0E+00	1.68E-05	3.6E+00	5.72E-06 U	1.2E+00
1,2,3,4,7,8-HxCDF	17	30	8.62E-05	2.68E-05	**6.74E-06** U	1.23E-05	1.8E+00	9.14E-06 U	1.4E+00	1.71E-05	2.5E+00	6.44E-06 U	9.6E-01
1,2,3,6,7,8-HxCDF	22	30	8.83E-05	2.81E-05	**4.79E-06** U	1.19E-05	2.5E+00	8.49E-06 U	1.8E+00	1.68E-05	3.5E+00	5.81E-06 U	1.2E+00
2,3,4,6,7,8-HxCDF	22	30	3.58E-05	1.39E-05	**9.22E-06** U	4.94E-06	5.4E-01	6.34E-06 *	6.9E-01	9.68E-07 U	1.0E-01	4.29E-06 *	4.7E-01
1,2,3,4,6,7,8-HpCDF	0	30	4.64E-05	9.47E-06	**4.41E-05** U	7.94E-06 U	1.8E-01	9.51E-06 U	2.2E-01	1.44E-05 U	3.3E-01	1.56E-05 U	3.5E-01
1,2,3,4,7,8,9-HpCDF	15	30	2.33E-04	7.13E-05	**9.93E-06** U	8.66E-07 U	8.7E-02	3.64E-06 U	3.7E-01	1.45E-06 U	1.5E-01	1.88E-06 U	1.9E-01
OCDF	8	30	2.00E-05	8.15E-06	**2.16E-05** U	1.40E-06 U	6.5E-02	4.29E-06 U	2.0E-01	2.74E-06 U	1.3E-01	2.68E-06 U	1.2E-01
Total TCDD	1	30	3.10E-04	2.92E-05									
Total HxCDD	19	19	5.26E-02	1.27E-02									
Total HpCDD	1	19	9.07E-05	4.41E-05									
Total TCDF	15	19	1.02E-03	3.22E-04									
Total PeCDF	13	19	2.26E-03	7.36E-04									
Total HxCDF	17	19	4.57E-04	1.71E-04									
Total HpCDF	15	19	3.82E-04	1.08E-04									
Toxicity Equivalency - Birds	13	19	3.40E-04	1.25E-04	**5.21E-05**	1.76E-04	3.4E+00	2.39E-04	4.6E+00	2.27E-04	4.4E+00	1.67E-04	3.2E+00
Toxicity Equivalency - Fish	10	19	2.89E-04	1.21E-04	**2.78E-05**	1.18E-04	4.3E+00	1.61E-04	5.8E+00	1.56E-04	5.6E+00	1.18E-04	4.3E+00
Toxicity Equivalency - Mammals	30	30	5.31E-02	1.03E-02	**3.18E-05**	1.23E-04	3.9E+00	1.63E-04	5.1E+00	1.63E-04	5.1E+00	1.24E-04	3.9E+00
2-Monochlorobiphenyl (1)	30	30	5.28E-02	1.02E-02		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
4-Chlorobiphenyl (3)	30	30	5.28E-02	1.02E-02		1.67E-03 U		1.40E-03 U		3.23E-04 J		1.79E-03 U	
2,2'-Dichlorobiphenyl (4)	1	3	5.21E-02	1.81E-02									
2,6-Dichlorobiphenyl (10)	1	3	9.90E-04	5.05E-04									
3,4-Dichlorobiphenyl (12)	1	3	7.43E-04	5.71E-04									
16/32 (2,2',3'/2,4',6)	2	11	4.48E-03	1.82E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
2,2',3'-Trichlorobiphenyl (16)	3	3	9.22E-03	4.57E-03									
2,2',4-Trichlorobiphenyl (17)	13	13	4.70E-03	2.12E-03		1.34E-03 J		1.12E-03 J		1.29E-03 J		2.68E-03 J	
2,2',5-Trichlorobiphenyl (18)	13	13	6.02E-03	2.52E-03		4.01E-04 J		7.46E-04 J		6.45E-04 J		4.47E-03	
2,2',6-Trichlorobiphenyl (19)	3	13	1.66E-02	2.66E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
2,3,3'-Trichlorobiphenyl (20)	3	3	3.54E-01	1.97E-01									
2,3,4'-Trichlorobiphenyl (22)	13	13	1.04E-02	3.64E-03		1.60E-03 J		1.12E-03 J		6.45E-04 J		3.04E-03 J	
24/27 (2,3,6/2,3',6)	8	11	1.74E-03	8.11E-04		1.34E-04 J		1.40E-03 U		1.29E-03 U		5.37E-04 J	
2,3',4-Trichlorobiphenyl (25)	13	13	4.93E-03	1.77E-03		1.74E-03 J		7.46E-04 J		4.84E-04 J		1.07E-03 J	
2,3',5-Trichlorobiphenyl (26)	13	13	4.52E-03	2.38E-03		3.20E-03 J		5.60E-04 J		6.45E-04 J		3.04E-03 J	
2,4,4'-Trichlorobiphenyl (28)	11	11	1.06E-01	4.83E-02		3.03E-02		1.90E-02		1.82E-02		3.01E-02	
2,4',5-Trichlorobiphenyl (31)	13	13	7.57E-02	2.61E-02		2.08E-02		7.28E-03		8.23E-03		2.08E-02	
2,4',6-Trichlorobiphenyl (32)	3	3	1.74E-02	8.66E-03									

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TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Nestling				GREYSTONE MILL POND 2000									
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-06-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-17-N 6/12/2000	BMF GREYSTONE 2000	GP-TS-18-N 6/12/2000	BMF GREYSTONE 2000
2,2',3,3'-Tetrachlorobiphenyl (40)	13	13	3.45E-02	7.49E-03		4.01E-04 J		5.60E-04 J		3.23E-04 J		8.94E-04 J	
2,2',3,4'-Tetrachlorobiphenyl (42)	13	13	6.02E-02	1.55E-02		4.54E-03		2.24E-03 J		2.26E-03 J		5.90E-03	
2,2',3,5-Tetrachlorobiphenyl (43)	3	13	7.80E-01	8.76E-02		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
2,2',3,5'-Tetrachlorobiphenyl (44)	13	13	3.14E-01	5.86E-02		1.28E-02		4.85E-03		6.77E-03		1.63E-02	
2,2',3,6-Tetrachlorobiphenyl (45)	7	13	8.75E-03	2.25E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		7.16E-04 J	
2,2',3,6'-Tetrachlorobiphenyl (46)	7	13	4.48E-03	1.39E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		7.16E-04 J	
47/75 (2,2',4,4'/2,4,4',6)	11	11	5.77E-02	2.81E-02		1.16E-02		6.90E-03		8.23E-03		1.23E-02	
2,2',4,5-Tetrachlorobiphenyl (48)	13	13	8.10E-03	3.09E-03		1.74E-03 J		3.73E-04 J		1.13E-03 J		4.11E-03	
2,2',4,5'-Tetrachlorobiphenyl (49)	13	13	3.75E-01	8.40E-02		2.54E-02		1.14E-02		1.53E-02		2.29E-02	
2,2',4,6-Tetrachlorobiphenyl (50)	3	3	1.32E-02	1.17E-02									
2,2',4,6'-Tetrachlorobiphenyl (51)	10	11	1.49E-03	8.15E-04		6.68E-04 J		1.40E-03 U		3.23E-04 J		8.94E-04 J	
2,2',5,5'-Tetrachlorobiphenyl (52)	11	11	3.30E-01	1.18E-01		4.11E-02		2.09E-02		3.56E-02		4.22E-02	
2,2',5,6'-Tetrachlorobiphenyl (53)	11	11	3.32E-03	1.99E-03		1.20E-03 J		5.60E-04 J		4.84E-04 J		2.15E-03 J	
2,3,3',4'-Tetrachlorobiphenyl (56)	3	3	3.02E-02	1.92E-02									
2,3,3',6-Tetrachlorobiphenyl (59)	13	13	3.05E-02	4.50E-03		9.35E-04 J		3.73E-04 J		6.45E-04 J		1.25E-03 J	
2,3,4,4'-Tetrachlorobiphenyl (60)	3	3	7.84E-02	4.20E-02									
PCB60/56	1	11	1.00E-01	1.08E-02		2.00E-03 U		1.68E-03 U		1.53E-03 U		2.15E-03 U	
2,3,4,5-Tetrachlorobiphenyl (61)	3	3	6.08E-01	3.37E-01									
2,3,4',5-Tetrachlorobiphenyl (63)	13	13	3.79E-02	7.70E-03		1.87E-03 J		1.49E-03 J		1.94E-03 J		1.61E-03 J	
2,3,4',6-Tetrachlorobiphenyl (64)	3	3	2.07E-01	1.07E-01									
2,3',4,4'-Tetrachlorobiphenyl (66)	13	13	8.55E-01	1.81E-01		0.034045394		0.030410448		3.39E-02		3.11E-02	
70/76 (2,3',4',5/2,3',4',5)	11	11	1.33E-01	5.43E-02		1.95E-02		2.16E-02		2.74E-02		2.38E-02	
2,3',4',5-Tetrachlorobiphenyl (74)	11	11	9.45E-02	4.43E-02		2.15E-02		2.07E-02		2.10E-02		2.06E-02	
3,3',4,4'-Tetrachlorobiphenyl (77)	13	13	4.47E-02	1.37E-02		3.16E-03 J		4.01E-03 J		3.52E-03		4.04E-03 J	
3,4,4',5-Tetrachlorobiphenyl (81)	5	13	1.09E-02	1.81E-03		7.94E-05 J		1.04E-04 J		1.25E-03 U		1.78E-03 U	
2,2',3,3',4-Pentachlorobiphenyl (82)	13	13	7.51E-02	2.39E-02		4.01E-03		2.99E-03		3.87E-03		5.72E-03	
2,2',3,3',5-Pentachlorobiphenyl (83)	12	13	1.50E+00	1.65E-01		1.67E-03 U		2.43E-03 J		3.06E-03		2.15E-03 J	
2,2',3,3',6-Pentachlorobiphenyl (84)	13	13	9.46E-02	2.26E-02		2.40E-03 J		2.61E-03 J		3.39E-03		4.29E-03	
2,2',3,4,4'-Pentachlorobiphenyl (85)	13	13	4.21E-01	1.11E-01		2.04E-02		1.81E-02		2.18E-02		1.97E-02	
2,2',3,4,5-Pentachlorobiphenyl (86)	3	3	1.05E+00	5.28E-01									
2,2',3,4,6-Pentachlorobiphenyl (88)	3	3	1.55E-01	7.84E-02									
2,2',3,4,6'-Pentachlorobiphenyl (89)	3	13	4.48E-03	1.66E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
2,2',3,4',5-Pentachlorobiphenyl (90)	3	3	2.52E+00	1.25E+00									
2,2',3,4',6-Pentachlorobiphenyl (91)	11	11	7.76E-02	2.64E-02		7.08E-03		5.41E-03		7.42E-03		7.33E-03	
2,2',3,5,5'-Pentachlorobiphenyl (92)	13	13	4.39E-01	9.74E-02		1.46E-02		1.23E-02		1.65E-02		1.47E-02	
2,2',3,5,6-Pentachlorobiphenyl (93)	3	3	2.87E-02	1.52E-02									
2,2',3,5',6-Pentachlorobiphenyl (95)	13	13	7.70E-01	1.69E-01		2.51E-02		2.07E-02		2.85E-02		2.70E-02	
2,2',3,4',5'-Pentachlorobiphenyl (97)	11	11	3.13E-01	9.03E-02		1.63E-02		1.55E-02		1.98E-02		1.99E-02	
2,2',4,4',5-Pentachlorobiphenyl (99)	11	11	4.69E-01	1.94E-01		5.33E-02		4.59E-02		5.61E-02		5.38E-02	
2,2',4,4',6-Pentachlorobiphenyl (100)	11	11	3.48E-03	1.36E-03		8.01E-04 J		5.60E-04 J		6.45E-04 J		8.94E-04 J	
101/90 (2,2',4,5,5'/2,2',3,4',5)	11	11	1.40E+00	4.13E-01		9.63E-02		8.08E-02		0.109354839		9.62E-02	
2,3,3',4,4'-Pentachlorobiphenyl (105)	13	13	5.62E-01	1.71E-01		4.13E-02		4.12E-02		4.48E-02		3.61E-02	
2,3,3',4,5-Pentachlorobiphenyl (106)	3	3	2.22E-01	1.17E-01									
2,3,3',4',5-Pentachlorobiphenyl (107)	11	11	1.40E-01	4.06E-02		9.48E-03		1.01E-02		1.02E-02		8.41E-03	
2,3,3',4',5'-Pentachlorobiphenyl (108)	3	3	2.26E-02	1.58E-02									
2,3,3',4',6-Pentachlorobiphenyl (110)	13	13	1.84E+00	4.47E-01		7.80E-02 E		6.81E-02 E		8.69E-02 E		7.96E-02 E	
2,3,4,4',5-Pentachlorobiphenyl (114)	13	13	3.94E-02	1.16E-02		2.80E-03 J		3.36E-03		3.23E-03		2.68E-03 J	
2,3',4,4',5-Pentachlorobiphenyl (118)	13	13	2.25E+00	6.54E-01		0.139519359		0.128171642		0.151612903		0.124329159	

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TABLE J-11

CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Nestling				GREYSTONE MILL POND 2000									
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-06-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-17-N 6/12/2000	BMF GREYSTONE 2000	GP-TS-18-N 6/12/2000	BMF GREYSTONE 2000
2,3',4,4',6-Pentachlorobiphenyl (119)	11	11	2.94E-02	9.90E-03		2.94E-03 J		1.87E-03 J		2.58E-03		2.50E-03 J	
2,3',4,4',5'-Pentachlorobiphenyl (123)	11	11	1.72E-02	5.79E-03		1.63E-03 J		1.51E-03 J		1.58E-03 J		1.82E-03 J	
2,3',4',5,5'-Pentachlorobiphenyl (124)	11	11	1.94E-02	8.10E-03		2.00E-03 J		2.43E-03 J		3.55E-03		2.50E-03 J	
3,3',4,4',5-Pentachlorobiphenyl (126)	12	13	1.31E-02	4.63E-03		1.77E-03 J		2.04E-03 J		1.25E-03 U		1.78E-03 U	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	13	13	4.43E-01	1.32E-01		0.025634179		0.023320896		0.029354839		0.025223614	
2,2',3,3',4,5-Hexachlorobiphenyl (129)	13	13	2.73E+00	3.25E-01		0.003471295		0.003544776		0.004516129		0.003935599	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	13	13	1.90E-01	5.00E-02		0.007743658		0.006902985		0.008870968		0.007334526	
2,2',3,3',4,6-Hexachlorobiphenyl (131)	12	13	9.95E-03	3.16E-03		0.001668892 U		0.000559701 J		0.000967742 J		0.000715564 J	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	13	13	2.92E-01	7.77E-02		0.016154873		0.010447761		0.015645161		0.015205725	
2,2',3,3',5,6-Hexachlorobiphenyl (134)	13	13	4.58E-02	7.59E-03		0.000801068 J		0.00130597 J		0.001290323 J		0.001252236 J	
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)	11	11	1.13E-01	3.23E-02		8.54E-03		7.84E-03		1.05E-02		9.66E-03	
2,2',3,3',5,6'-Hexachlorobiphenyl (135)	3	3	3.46E-01	1.73E-01									
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	13	13	5.43E-02	1.24E-02		2.40E-03 J		2.24E-03 J		3.06E-03		2.50E-03 J	
2,2',3,4,4',5-Hexachlorobiphenyl (137)	13	13	2.88E-01	6.01E-02		8.28E-03		7.28E-03		8.55E-03		7.51E-03	
PCB 138/160/163	11	11	2.41E+00	6.23E-01		1.73E-01		1.45E-01		1.80E-01		1.57E-01	
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	13	13	3.54E-01	9.46E-02		1.83E-02		1.55E-02		1.90E-02		1.57E-02	
2,2',3,4,5',6-Hexachlorobiphenyl (144)	3	3	5.99E-02	3.10E-02									
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	13	13	3.58E-01	1.14E-01		2.51E-02		2.05E-02		2.44E-02		2.06E-02	
2,2',3,4',5,6-Hexachlorobiphenyl (147)	3	3	1.16E+00	5.75E-01									
2,2',3,4',5',6-Hexachlorobiphenyl (149)	11	11	5.70E-01	1.67E-01		4.86E-02		4.01E-02		5.23E-02		4.69E-02	
2,2',3,5,5',6-Hexachlorobiphenyl (151)	11	11	1.22E-01	3.43E-02		1.05E-02		9.14E-03		1.03E-02		8.94E-03	
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	13	13	2.20E+00	6.82E-01		1.68E-01		1.32E-01		1.61E-01		1.40E-01	
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')	11	11	1.56E-01	5.23E-02		1.58E-02 J		1.61E-02 J		7.69E-03 J		8.82E-03 J	
2,3,3',4,4',5-Hexachlorobiphenyl (156)	13	13	3.21E-01	8.47E-02		1.51E-02		1.44E-02		1.68E-02		1.36E-02	
2,3,3',4,4',6-Hexachlorobiphenyl (158)	13	13	2.91E-01	7.96E-02		1.42E-02		1.23E-02		1.55E-02		1.41E-02	
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	13	13	1.26E-01	4.16E-02		8.01E-03		7.46E-03		7.90E-03		6.98E-03	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7	25	6.90E-03	2.06E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)	11	11	2.57E-01	6.62E-02		2.35E-02		1.85E-02		2.03E-02		1.77E-02	
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	3	3	2.90E-01	1.66E-01									
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	13	13	7.73E-02	2.05E-02		5.87E-03		4.48E-03		5.48E-03		5.55E-03	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	13	13	6.30E-02	1.35E-02		2.80E-03 J		2.80E-03 J		2.74E-03		2.50E-03 J	
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)	6	11	2.49E-03	1.35E-03		1.67E-03 U		1.40E-03 U		1.29E-03 U		1.79E-03 U	
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	13	13	2.47E-01	5.73E-02		1.46E-02		1.19E-02		1.60E-02		1.45E-02	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	13	13	9.95E-03	3.41E-03		1.60E-03 J		1.49E-03 J		1.61E-03 J		1.61E-03 J	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	13	13	8.96E-03	2.77E-03		1.07E-03 J		7.46E-04 J		1.29E-03 J		1.07E-03 J	
2,2',3,3',4,5',6-Heptachlorobiphenyl (177)	13	13	1.29E-01	3.48E-02		9.61E-03		7.28E-03		9.03E-03		8.59E-03	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	13	13	5.22E-02	1.90E-02		7.74E-03		7.46E-03		8.71E-03		7.51E-03	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	13	13	5.46E-01	1.99E-01		6.68E-02		5.02E-02		5.58E-02		5.24E-02	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	3	3	2.75E-03	1.54E-03									
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	11	11	1.19E-01	3.48E-02		1.64E-02		1.27E-02		1.58E-02		1.54E-02	
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	13	13	1.49E-03	5.49E-04		5.34E-04 J		3.73E-04 J		4.84E-04 J		5.37E-04 J	
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	11	11	1.09E-02	3.60E-03		1.87E-03 J		1.31E-03 J		1.61E-03 J		1.79E-03 J	
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')	11	11	2.83E-01	8.05E-02		4.06E-02		3.54E-02		3.81E-02		3.65E-02	
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	3	3	2.45E-01	1.78E-01									
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	13	13	1.19E-02	4.29E-03		1.34E-03 J		1.68E-03 J		1.45E-03 J		1.07E-03 J	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	3	3	4.80E-02	3.04E-02									
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	13	13	1.01E-02	3.31E-03		1.07E-03 J		7.46E-04 J		9.68E-04 J		7.16E-04 J	
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)	11	11	2.59E-02	7.10E-03		3.20E-03 J		2.99E-03		3.06E-03		3.04E-03 J	

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TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	Statistical Summary for Normalized Swallow Nestling				GREYSTONE MILL POND 2000									
	Frequency of Detection		Maximum Detect	Average	Greystone Pond Diet 6/19/2000	GP-TS-02-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-06-N 6/19/2000	BMF GREYSTONE 2000	GP-TS-17-N 6/12/2000	BMF GREYSTONE 2000	GP-TS-18-N 6/12/2000	BMF GREYSTONE 2000
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	13	13	8.06E-02	3.38E-02		1.70E-02		1.55E-02		1.76E-02		1.61E-02	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	13	13	2.24E-02	8.36E-03		4.01E-03		3.17E-03		4.19E-03		4.11E-03	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	3	3	4.79E-02	3.98E-02									
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	12	13	6.06E-03	1.89E-03		1.20E-03 J		9.33E-04 J		1.13E-03 J		1.43E-03 J	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	13	13	2.74E-01	5.39E-02		4.14E-03		4.48E-03		5.32E-03		5.37E-03	
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	11	11	2.02E-01	6.99E-02		5.01E-02		5.50E-02		6.24E-02		6.03E-02	
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	11	11	4.48E-03	1.67E-03		1.20E-03 J		1.31E-03 J		1.29E-03 J		1.43E-03 J	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	13	13	1.74E-02	8.17E-03		4.67E-03		4.66E-03		5.65E-03		5.90E-03	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	3	3	1.28E-01	1.08E-01									
PCB 203/196	11	11	1.58E-01	5.93E-02		4.45E-02		4.35E-02		5.18E-02		5.35E-02	
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	13	13	4.98E-03	2.17E-03		1.34E-03 J		1.68E-03 J		1.29E-03 J		1.43E-03 J	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	13	13	2.51E-01	1.08E-01		6.86E-02		7.20E-02		8.11E-02		8.52E-02	
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	13	13	1.85E-02	9.33E-03		6.14E-03		6.34E-03		7.90E-03		8.59E-03	
Decachlorobiphenyl (209)	13	13	1.31E-01	5.02E-02		2.96E-02		3.17E-02		3.53E-02		3.90E-02	
PCB Congeners, Total	13	13	2.78E+01	7.61E+00		1.81E+00		1.54E+00		1.85E+00		1.78E+00	
Toxicity Equivalency (PCB) - Birds	13	13	3.51E-03	1.47E-03		3.54E-04		4.25E-04		4.37E-04		5.67E-04	
Toxicity Equivalency (PCB) - Fish	13	13	8.81E-05	3.28E-05		1.04E-05		1.18E-05		8.50E-06		1.13E-05	
Toxicity Equivalency (PCB) - Mammals	13	13	1.80E-03	6.82E-04		2.38E-04		2.59E-04		1.77E-04		2.31E-04	
Technical Chlordane	18	18	2.58E+01	8.35E+00									
Heptachlor Epoxide	16	18	1.30E+00	2.51E-01									
Dieldrin	18	18	5.07E-01	1.65E-01									
4,4'-DDE	16	18	1.59E+00	5.29E-01									
4,4'-DDD	18	18	1.59E+00	2.87E-01									
Endosulfan Sulfate	2	18	4.05E-01	5.93E-02									
4,4'-DDT	16	18	1.87E-01	5.56E-02									
alpha-Chlordane	18	18	2.18E+00	3.23E-01									
gamma-Chlordane	6	18	5.74E-01	7.25E-02									
Aroclor-1254	18	18	3.04E+01	9.37E+00									
Aroclor-1268	18	18	1.63E+00	7.55E-01									
Aroclor, Total	18	18	3.15E+01	1.01E+01									

Notes:

a. Swallow stomach contents, emerging insect, and swallow egg tissue concentrations are expressed on a lipid-normalized basis (i.e. mg/kg_{lip}). Half the detection level used to calculate normalized concentrations for values reported as non-detects.

b. BMFs are expressed on a lipid-normalized basis (i.e., kg_{lip}/kg_{lip}). BMF statistics calculated for each exposure area based on paired tree swallow egg/swallow stomach contents/emerging insect sample sets.

All data (including lipid content) extracted from site database (MACTEC, 2003).

Average lipid content for Greystone Reach tree swallow samples collected in 2001 used as a surrogate for samples collected in 2000 not evaluated for lipid content.

Average lipid content for Allendale Reach tree swallow samples collected in 2001 used as a surrogate for samples collected in 2000 not evaluated for lipid content.

Prepared by: KJA
Checked by: SGH

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TABLE J-11
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND 2000						GREYSTONE MILL POND 2001					
			BMF GREYSTONE 2000									
PARAMETER	GP-TS-19-N 6/12/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-GP 6/9/2001	GMP-EI-5001-5005 0000-01 7/20/2001	G-TS-02-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-N 6/9/2001
HCX	3.47E-06 UJ	2.7E-01	2.72E-01	1.6E-01	7.76E-03	54%	1.23E-03 UJ	1.40E-03 U	5.07E-04 UJ	4.1E-01	3.6E-01	1.78E-04 J
2,3,7,8-TCDD	1.44E-04	1.7E+01	1.73E+01	1.2E+01	1.13E+01	28%	2.01E-04 J	5.00E-05 J	3.83E-04 J	1.9E+00	7.7E+00	4.94E-04 J
1,2,3,7,8-PeCDD	2.95E-05	4.0E+00	4.03E+00	3.5E+00	4.99E-01	20%	1.17E-05 UJ	1.75E-04 U	4.31E-05 J	3.7E+00	2.5E-01	2.39E-05 UJ
1,2,3,4,7,8-HxCDD	3.17E-05	4.7E+00	4.70E+00	3.5E+00	7.68E-01	25%	1.84E-05 J	6.74E-06 J	4.92E-05 J	2.7E+00	7.3E+00	3.93E-05 J
1,2,3,6,7,8-HxCDD	9.31E-05	3.3E+00	3.71E+00	2.9E+00	4.01E-01	22%	6.56E-05 J	2.13E-05 J	1.08E-04 J	1.7E+00	5.1E+00	1.26E-04 J
1,2,3,7,8,9-HxCDD	1.41E-05 J	1.0E+00	1.19E+00	1.0E+00	1.95E-02	14%	1.28E-05 J	8.51E-06 J	1.81E-05 J	1.4E+00	2.1E+00	2.78E-05 J
1,2,3,4,6,7,8-HpCDD	2.62E-04	1.4E+00	1.88E+00	1.2E+00	4.18E-01	54%	1.07E-03 J	1.09E-04 J	2.37E-04 J	2.2E-01	2.2E+00	4.22E-04 J
OCDD	7.05E-05 U	1.6E-01	4.32E-01	2.1E-01	1.76E-02	63%	2.20E-03 J	2.84E-04 J	2.09E-04 UJ	9.5E-02	7.4E-01	7.12E-04 UJ
2,3,7,8-TCDF	8.17E-05 J	3.3E+00	3.53E+00	2.9E+00	3.25E-01	20%	1.74E-05 J	2.73E-05 EJ	1.20E-04 J	6.9E+00	4.4E+00	9.06E-05 J#
1,2,3,7,8-PeCDF	1.41E-05	2.3E+00	2.50E+00	2.1E+00	1.86E-01	20%	1.33E-05 UJ	1.03E-05 J	2.69E-05 J	2.0E+00	2.6E+00	2.76E-05 J
2,3,4,7,8-PeCDF	1.78E-05	3.9E+00	3.85E+00	2.8E+00	1.21E+00	40%	4.61E-06 J	1.75E-04 U	0.00003 J	6.5E+00	1.7E-01	3.74E-05 J
1,2,3,4,7,8-HxCDF	8.01E-06 U	1.2E+00	2.54E+00	1.6E+00	3.92E-01	40%	1.13E-05 UJ	1.45E-05 J	2.81E-05 J	2.5E+00	1.9E+00	2.14E-05 UJ
1,2,3,6,7,8-HxCDF	1.56E-05	3.3E+00	3.50E+00	2.4E+00	9.41E-01	40%	1.45E-05 J	7.09E-06 J	0.00002 J	1.4E+00	2.8E+00	2.31E-05 J
2,3,4,6,7,8-HxCDF	6.56E-06	7.1E-01	7.12E-01	5.0E-01	5.97E-02	49%	9.22E-06 UJ	1.75E-04 U	1.15E-05 J	1.3E+00	6.6E-02	1.39E-05 J
1,2,3,4,6,7,8-HpCDF	1.45E-05 U	3.3E-01	3.53E-01	2.6E-01	5.98E-03	28%	1.49E-04 J	2.87E-05 J	3.46E-05 J	2.3E-01	1.2E+00	1.35E-04 J
1,2,3,4,7,8,9-HpCDF	2.70E-06 U	2.7E-01	3.66E-01	2.1E-01	1.20E-02	52%	5.32E-06 UJ	1.75E-04 U	0.00002 UJ	3.8E+00	1.1E-01	1.79E-05 UJ
OCDF	2.90E-06 U	1.3E-01	1.98E-01	1.3E-01	2.25E-03	37%	3.24E-05 UJ	1.49E-05 J	2.35E-05 UJ	7.2E-01	1.6E+00	1.05E-04 UJ
Total TCDD							2.69E-04 J	6.70E-05 J	3.83E-04 J	1.4E+00	5.7E+00	4.97E-04 J
Total HxCDD							1.51E-04 J	7.77E-05 J	1.96E-04 J	1.3E+00	2.5E+00	2.53E-04 J
Total HpCDD							1.18E-03 J	1.82E-04 J	2.58E-04 J	2.2E-01	1.4E+00	2.76E-04 UJ
Total TCDF							3.33E-05 J	2.73E-05 J	1.68E-04 J	5.0E+00	6.2E+00	7.20E-05 UJ
Total PeCDF							8.12E-05 J	5.57E-05 J	1.03E-04 J	1.3E+00	1.9E+00	1.25E-04 J
Total HxCDF							3.19E-05 UJ	6.24E-05 J	8.81E-05 J	2.8E+00	1.4E+00	8.74E-05 UJ
Total HpCDF							9.20E-05 UJ	3.79E-05 J	2.21E-05 UJ	2.4E-01	5.8E-01	1.16E-04 UJ
Toxicity Equivalency - Birds	2.82E-04	5.4E+00	5.41E+00	4.2E+00	8.24E-01	22%	2.47E-04	4.68E-04	5.92E-04	2.4E+00	1.3E+00	6.65E-04
Toxicity Equivalency - Fish	2.08E-04	7.5E+00	7.50E+00	5.5E+00	1.80E+00	24%	2.34E-04	3.58E-04	4.81E-04	2.1E+00	1.3E+00	5.73E-04
Toxicity Equivalency - Mammals	2.12E-04	6.7E+00	6.68E+00	4.9E+00	1.33E+00	23%	2.45E-04	3.62E-04	4.81E-04	2.0E+00	1.3E+00	5.79E-04
2-Monochlorobiphenyl (1)	1.74E-03 U							7.59E-04 J				1.01E-02 J
4-Chlorobiphenyl (3)	1.74E-03 U							4.48E-04 J				3.23E-03 J
2,2'-Dichlorobiphenyl (4)								8.55E-04 U				5.21E-02 J
2,6-Dichlorobiphenyl (10)								3.51E-04 U				9.90E-04 J
3,4-Dichlorobiphenyl (12)								7.01E-04 UC				6.65E-04 J
16/32 (2,2',3'/2,4',6)	1.74E-03 U											
2,2',3'-Trichlorobiphenyl (16)								8.34E-04 JC				9.22E-03 J
2,2',4-Trichlorobiphenyl (17)	1.35E-03 J							1.01E-03 J				4.70E-03 J
2,2',5-Trichlorobiphenyl (18)	9.65E-04 J							2.02E-03 JC				4.90E-03 J
2,2',6-Trichlorobiphenyl (19)	1.74E-03 U							2.05E-04 J				1.66E-02 J
2,3,3'-Trichlorobiphenyl (20)								3.96E-03 JC				6.93E-02 J
2,3,4'-Trichlorobiphenyl (22)	1.54E-03 J							1.40E-03 U				4.78E-03 J
24/27 (2,3,6/2,3',6)	1.74E-03 U											
2,3',4-Trichlorobiphenyl (25)	5.79E-04 J							1.04E-04 J				1.99E-03 J
2,3',5-Trichlorobiphenyl (26)	7.72E-04 J							2.14E-04 JC				3.51E-03 J
2,4,4'-Trichlorobiphenyl (28)	1.91E-02											
2,4',5-Trichlorobiphenyl (31)	7.34E-03							1.64E-03 J				2.54E-02 J
2,4',6-Trichlorobiphenyl (32)								5.26E-04 J				0.017440812 J

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

	GREYSTONE MILL POND 2000						GREYSTONE MILL POND 2001				
			BMF GREYSTONE 2000								
PARAMETER	GP-TS-19-N 6/12/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-GP 6/9/2001	GMP-EI-5001-5005 0000-01 7/20/2001	G-TS-02-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-N 6/9/2001
2,2',3,3'-Tetrachlorobiphenyl (40)	3.86E-04 J							1.76E-03 JC				1.47E-02 J
2,2',3,4'-Tetrachlorobiphenyl (42)	3.09E-03 J							1.10E-03 J				7.65E-03 J
2,2',3,5-Tetrachlorobiphenyl (43)	1.74E-03 U							1.02E-02 C				7.92E-02 J
2,2',3,5'-Tetrachlorobiphenyl (44)	7.14E-03							4.41E-03 JC				3.51E-02 J
2,2',3,6-Tetrachlorobiphenyl (45)	1.74E-03 U							2.57E-04 JC				8.75E-03 J
2,2',3,6'-Tetrachlorobiphenyl (46)	1.74E-03 U							8.37E-05 J				6.84E-04 J
47/75 (2,2',4,4'/2,4,4',6)	8.88E-03											
2,2',4,5-Tetrachlorobiphenyl (48)	1.35E-03 J							3.52E-04 J				2.26E-03 J
2,2',4,5'-Tetrachlorobiphenyl (49)	1.56E-02							4.75E-03 JC				3.69E-02 J
2,2',4,6-Tetrachlorobiphenyl (50)								1.20E-04 JC				1.13E-02 J
2,2',4,6'-Tetrachlorobiphenyl (51)	3.86E-04 J											
2,2',5,5'-Tetrachlorobiphenyl (52)	3.55E-02											
2,2',5,6'-Tetrachlorobiphenyl (53)	5.79E-04 J											
2,3,3',4'-Tetrachlorobiphenyl (56)								1.14E-03 J				8.37E-03 J
2,3,3',6-Tetrachlorobiphenyl (59)	5.79E-04 J							4.11E-04 JC				2.94E-03 J
2,3,4,4'-Tetrachlorobiphenyl (60)								2.02E-03 J				1.46E-02 J
PCB60/56	2.12E-03 U											
2,3,4,5-Tetrachlorobiphenyl (61)								1.41E-02 C				9.36E-02 J
2,3,4',5-Tetrachlorobiphenyl (63)	2.32E-03 J							8.37E-04 J				4.46E-03 J
2,3,4',6-Tetrachlorobiphenyl (64)								2.69E-03 J				0.023049359 J
2,3',4,4'-Tetrachlorobiphenyl (66)	0.038030888							6.25E-03 J				7.84E-02 J
70/76 (2,3',4',5/2,3',4',5)	2.45E-02											
2,3',4',5-Tetrachlorobiphenyl (74)	2.41E-02											
3,3',4,4'-Tetrachlorobiphenyl (77)	4.50E-03							1.81E-03 J				8.06E-03 J
3,4,4',5-Tetrachlorobiphenyl (81)	1.73E-03 U							3.50E-03 U				3.49E-04 J
2,2',3,3',4-Pentachlorobiphenyl (82)	5.79E-03							2.22E-03 J				7.19E-03 J
2,2',3,3',5-Pentachlorobiphenyl (83)	2.51E-03 J							2.34E-02 C				0.118682692 J
2,2',3,3',6-Pentachlorobiphenyl (84)	3.47E-03 J							1.84E-03 J				1.05E-02 J
2,2',3,4,4'-Pentachlorobiphenyl (85)	2.59E-02							8.14E-03 C				4.14E-02 J
2,2',3,4,5-Pentachlorobiphenyl (86)								1.36E-02 C				8.59E-02 J
2,2',3,4,6-Pentachlorobiphenyl (88)								1.49E-03 JC				1.57E-02 J
2,2',3,4,6'-Pentachlorobiphenyl (89)	1.74E-03 U							5.50E-05 J				3.83E-04 J
2,2',3,4',5-Pentachlorobiphenyl (90)								2.54E-02 C				0.212584615 J
2,2',3,4',6-Pentachlorobiphenyl (91)	8.11E-03											
2,2',3,5,5'-Pentachlorobiphenyl (92)	1.83E-02							3.94E-03 J				3.55E-02 J
2,2',3,5,6-Pentachlorobiphenyl (93)								3.30E-04 JC				4.77E-03 J
2,2',3,5',6-Pentachlorobiphenyl (95)	2.86E-02							4.88E-03 U				6.53E-02 J
2,2',3,4',5'-Pentachlorobiphenyl (97)	2.14E-02											
2,2',4,4',5-Pentachlorobiphenyl (99)	6.64E-02											
2,2',4,4',6-Pentachlorobiphenyl (100)	7.72E-04 J											
101/90 (2,2',4,5,5'/2,2',3,4',5)	0.125096525											
2,3,3',4,4'-Pentachlorobiphenyl (105)	5.48E-02							1.29E-02				7.86E-02 J
2,3,3',4,5-Pentachlorobiphenyl (106)								3.47E-03 JC				2.33E-02 J
2,3,3',4',5-Pentachlorobiphenyl (107)	0.011969112											
2,3,3',4',5'-Pentachlorobiphenyl (108)								7.26E-04 JC				6.19E-03 J
2,3,3',4',6-Pentachlorobiphenyl (110)	0.094980695 E							1.89E-02 C				0.177438034 J
2,3,4,4',5-Pentachlorobiphenyl (114)	4.05E-03							1.19E-03 J				5.43E-03 J
2,3',4,4',5-Pentachlorobiphenyl (118)	0.183011583							3.67E-02				0.261262607 J

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North Providence, Rhode Island

	GREYSTONE MILL POND 2000						GREYSTONE MILL POND 2001				
			BMF GREYSTONE 2000								
PARAMETER	GP-TS-19-N 6/12/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-GP 6/9/2001	GMP-EI-5001-5005-0000-01 7/20/2001	G-TS-02-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-N 6/9/2001
2,3',4,4',6-Pentachlorobiphenyl (119)	3.09E-03 J											
2,3',4,4',5'-Pentachlorobiphenyl (123)	2.03E-03 J											
2,3',4',5,5'-Pentachlorobiphenyl (124)	2.90E-03 J											
3,3',4,4',5-Pentachlorobiphenyl (126)	1.92E-03 J							2.28E-04 J				1.20E-03 J
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	0.039189189							1.30E-02 C				5.75E-02 J
2,2',3,3',4,5-Hexachlorobiphenyl (129)	0.004633205							7.26E-02 C				3.54E-01 J
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	0.011776062							6.30E-03 J				2.22E-02 J
2,2',3,3',4,6-Hexachlorobiphenyl (131)	0.000965251 J							4.82E-04 J				1.92E-03 J
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	0.016023166							5.26E-03 J				4.05E-02 J
2,2',3,3',5,6-Hexachlorobiphenyl (134)	0.001544402 J							9.29E-04 JC				5.85E-03 J
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)	1.22E-02											
2,2',3,3',5,6'-Hexachlorobiphenyl (135)								8.28E-03 C				4.49E-02 J
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	2.90E-03 J							1.40E-03 U				6.17E-03 J
2,2',3,4,4',5-Hexachlorobiphenyl (137)	0.011969112							1.58E-03 JC				3.77E-02 J
PCB 138/160/163	0.256756757											
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	0.024324324							4.43E-03				4.35E-02 J
2,2',3,4,5',6-Hexachlorobiphenyl (144)								1.36E-03 J				7.43E-03 J
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	0.038416988							1.61E-02 C				5.87E-02 J
2,2',3,4',5,6-Hexachlorobiphenyl (147)								1.89E-02 C				1.31E-01 J
2,2',3,4',5',6-Hexachlorobiphenyl (149)	0.064864865											
2,2',3,5,5',6-Hexachlorobiphenyl (151)	0.011389961											
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	0.24015444							8.41E-02 C				3.87E-01 J
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')	0.009848263 J											
2,3,3',4,4',5-Hexachlorobiphenyl (156)	0.023359073							1.18E-02 C				4.65E-02 J
2,3,3',4,4',6-Hexachlorobiphenyl (158)	0.021814672							4.00E-03				3.49E-02 J
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	0.012162162							1.78E-03 J				2.06E-02 J
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	0.001737452 U							6.55E-03 J				4.79E-03 J
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)	0.042277992											
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)								1.49E-02 J				6.35E-02 J
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	0.01042471							1.80E-03 JC				1.64E-02 J
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	0.005212355							5.89E-03 J				2.32E-02 J
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)	0.001737452 U											
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	0.022972973							1.45E-02 C				8.49E-02 J
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	0.002509653 J							7.01E-03 U				3.25E-03 J
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	0.001737452 J							4.04E-04 J				2.10E-03 J
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	0.017953668							6.87E-03 J				3.48E-02 J
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	0.013320463							6.77E-03 J				2.71E-02 J
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	0.138610039							2.84E-02 C				1.84E-01 J
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)								1.15E-04 J				9.01E-04 J
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	0.030888031											
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	0.0003861 J							7.94E-05 J				4.19E-04 J
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	0.002316602 J											
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')	0.077992278											
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)								4.00E-02 J				1.25E-01 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	0.002316602 J							1.05E-03 J				3.36E-03 J
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)								2.72E-03 J				1.24E-02 J
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	0.001737452 J							2.42E-04 J				2.78E-03 J
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)	0.005791506											

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			BMF GREYSTONE 2000									
PARAMETER	GP-TS-19-N 6/12/2000	BMF GREYSTONE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-GP 6/9/2001	GMP-EI-5001-5005-0000-01 7/20/2001	G-TS-02-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-04-N 6/9/2001
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	0.030694981							1.06E-02 J				3.89E-02 J
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	0.007915058							2.32E-03 J				8.41E-03 J
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)								7.03E-03 J				3.42E-02 J
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	0.001544402 J							1.38E-03 JC				2.93E-03 UJ
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	0.006949807							7.51E-02 C				2.25E-01 J
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	0.081660232							7.51E-02 J				
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	0.001544402 J											
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	0.008301158							4.94E-03 J				1.49E-02 J
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)								4.54E-02 J				8.99E-02 J
PCB 203/196	0.076061776											
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	0.002123552 J							1.02E-03 J				2.81E-03 J
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	0.093243243							7.96E-02				2.51E-01 J
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	0.00965251							1.89E-03 J				1.85E-02 J
Decachlorobiphenyl (209)	0.037065637							3.50E-03 U				1.31E-01 J
PCB Congeners, Total	2.451351351							7.45E-01				4.51E+00 J
Toxicity Equivalency (PCB) - Birds	0.000604247							4.72E-04				5.79E-04
Toxicity Equivalency (PCB) - Fish	1.24517E-05							3.72E-06				9.29E-06
Toxicity Equivalency (PCB) - Mammals	0.000258687							1.00E-04				2.29E-04
Technical Chlordane									7.845 J			4.20E+00 J
Heptachlor Epoxide									0.211153846 J			1.60E-01
Dieldrin									0.108461538 J			1.47E-01
4,4'-DDE									0.758846154			3.81E-01
4,4'-DDD									0.086153846			4.38E-02 J
Endosulfan Sulfate									0.046730769 UJ			3.95E-02 U
4,4'-DDT									0.038653846 U			4.49E-02 J
alpha-Chlordane									0.335 J			1.29E-01
gamma-Chlordane									0.026153846 J			3.95E-02 U
Aroclor-1254									4.207307692 J			2.87E+00
Aroclor-1268									0.923461538 J			6.02E-01 J
Aroclor, Total									5.130769231 J			3.47E+00 J

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HCX	1.4E-01	1.3E-01	2.22E-04 UJ	1.8E-01	1.6E-01	2.96E-04 UJ	2.4E-01	2.1E-01			
2,3,7,8-TCDD	2.5E+00	9.9E+00	9.51E-05 J	4.7E-01	1.9E+00	1.53E-04 J	7.6E-01	3.1E+00	4.81E-05	2.4E-01	9.6E-01
1,2,3,7,8-PeCDD	2.0E+00	1.4E-01	1.95E-05 J	1.7E+00	1.1E-01	2.73E-05 J	2.3E+00	1.6E-01	1.86E-05 J	1.6E+00	1.1E-01
1,2,3,4,7,8-HxCDD	2.1E+00	5.8E+00	2.17E-05 J	1.2E+00	3.2E+00	3.75E-05 J	2.0E+00	5.6E+00	1.91E-05 J	1.0E+00	2.8E+00
1,2,3,6,7,8-HxCDD	1.9E+00	5.9E+00	8.18E-05 J	1.2E+00	3.8E+00	1.02E-04 J	1.6E+00	4.8E+00	5.56E-05 J	8.5E-01	2.6E+00
1,2,3,7,8,9-HxCDD	2.2E+00	3.3E+00	1.25E-05 J	9.8E-01	1.5E+00	1.47E-05 J	1.2E+00	1.7E+00	1.35E-05 J	1.1E+00	1.6E+00
1,2,3,4,6,7,8-HpCDD	3.9E-01	3.9E+00	4.81E-04 J	4.5E-01	4.4E+00	2.52E-04 J	2.3E-01	2.3E+00	1.39E-04	1.3E-01	1.3E+00
OCDD	3.2E-01	2.5E+00	9.56E-04 J	4.3E-01	3.4E+00	9.68E-05 UJ	4.4E-02	3.4E-01	5.60714E-05 U	2.6E-02	2.0E-01
2,3,7,8-TCDF	5.2E+00	3.3E+00	5.31E-05 J	3.1E+00	1.9E+00	7.70E-05 J	4.4E+00	2.8E+00	7.53E-05 #	4.3E+00	2.8E+00
1,2,3,7,8-PeCDF	2.1E+00	2.7E+00	1.06E-05 J	8.0E-01	1.0E+00	1.50E-05 J	1.1E+00	1.5E+00	1.04E-05 J	7.9E-01	1.0E+00
2,3,4,7,8-PeCDF	8.1E+00	2.1E-01	1.66E-05 J	3.6E+00	9.5E-02	1.59E-05 J	3.4E+00	9.1E-02	1.16E-05 J	2.5E+00	6.6E-02
1,2,3,4,7,8-HxCDF	1.9E+00	1.5E+00	1.54E-05 J	1.4E+00	1.1E+00	1.41E-05 J	1.2E+00	9.7E-01	5.49E-06 U	4.8E-01	3.8E-01
1,2,3,6,7,8-HxCDF	1.6E+00	3.3E+00	1.20E-05 J	8.3E-01	1.7E+00	1.28E-05 J	8.8E-01	1.8E+00	1.26E-05 J	8.7E-01	1.8E+00
2,3,4,6,7,8-HxCDF	1.5E+00	7.9E-02	6.02E-06 J	6.5E-01	3.4E-02	6.15E-06 J	6.7E-01	3.5E-02	3.08E-06 U	3.3E-01	1.8E-02
1,2,3,4,6,7,8-HpCDF	9.0E-01	4.7E+00	4.28E-05 J	2.9E-01	1.5E+00	2.22E-05 J	1.5E-01	7.7E-01	1.04E-05 U	7.0E-02	3.6E-01
1,2,3,4,7,8,9-HpCDF	3.4E+00	1.0E-01	2.69E-06 J	5.1E-01	1.5E-02	5.18E-06 UJ	9.7E-01	3.0E-02	1.28E-05 U	2.4E+00	7.3E-02
OCDF	3.2E+00	7.1E+00	7.69E-06 UJ	2.4E-01	5.2E-01	3.24E-06 UJ	1.0E-01	2.2E-01	3.88E-06 U	1.2E-01	2.6E-01
Total TCDD	1.8E+00	7.4E+00	9.51E-05 J	3.5E-01	1.4E+00	1.53E-04 J	5.7E-01	2.3E+00	4.81E-05 J	1.8E-01	7.2E-01
Total HxCDD	1.7E+00	3.3E+00	1.29E-04 J	8.6E-01	1.7E+00	1.70E-04 J	1.1E+00	2.2E+00	0.000102768 J	6.8E-01	1.3E+00
Total HpCDD	2.3E-01	1.5E+00	4.98E-04 J	4.2E-01	2.7E+00	2.61E-04 J	2.2E-01	1.4E+00	1.52E-04 J	1.3E-01	8.4E-01
Total TCDF	2.2E+00	2.6E+00	7.70E-05 J	2.3E+00	2.8E+00	1.10E-04 J	3.3E+00	4.0E+00	6.78E-05 J	2.0E+00	2.5E+00
Total PeCDF	1.5E+00	2.3E+00	7.73E-05 J	9.5E-01	1.4E+00	6.28E-05 J	7.7E-01	1.1E+00	4.52E-05 J	5.6E-01	8.1E-01
Total HxCDF	2.7E+00	1.4E+00	6.07E-05 J	1.9E+00	9.7E-01	7.12E-05 J	2.2E+00	1.1E+00	4.72E-05 J	1.5E+00	7.6E-01
Total HpCDF	1.3E+00	3.1E+00	6.15E-05 J	6.7E-01	1.6E+00	1.36E-05 UJ	1.5E-01	3.6E-01	1.15E-05 UJ	1.3E-01	3.0E-01
Toxicity Equivalency - Birds	2.7E+00	1.4E+00	1.93E-04	7.8E-01	4.1E-01	2.83E-04	1.1E+00	6.0E-01	1.59E-04	6.4E-01	3.4E-01
Toxicity Equivalency - Fish	2.4E+00	1.6E+00	1.43E-04	6.1E-01	4.0E-01	2.17E-04	9.3E-01	6.1E-01	8.84E-05	3.8E-01	2.5E-01
Toxicity Equivalency - Mammals	2.4E+00	1.6E+00	1.49E-04	6.1E-01	4.1E-01	2.18E-04	8.9E-01	6.0E-01	9.20E-05	3.8E-01	2.5E-01
2-Monochlorobiphenyl (1)		1.3E+01									
4-Chlorobiphenyl (3)		7.2E+00									
2,2'-Dichlorobiphenyl (4)		6.1E+01									
2,6-Dichlorobiphenyl (10)		2.8E+00									
3,4-Dichlorobiphenyl (12)		9.5E-01									
16/32 (2,2',3'/2,4',6)											
2,2',3'-Trichlorobiphenyl (16)		1.1E+01									
2,2',4-Trichlorobiphenyl (17)		4.6E+00									
2,2',5-Trichlorobiphenyl (18)		2.4E+00									
2,2',6-Trichlorobiphenyl (19)		8.1E+01									
2,3,3'-Trichlorobiphenyl (20)		1.7E+01									
2,3,4'-Trichlorobiphenyl (22)		3.4E+00									
24/27 (2,3,6/2,3',6)											
2,3',4-Trichlorobiphenyl (25)		1.9E+01									
2,3',5-Trichlorobiphenyl (26)		1.6E+01									
2,4,4'-Trichlorobiphenyl (28)											
2,4',5-Trichlorobiphenyl (31)		1.5E+01									
2,4',6-Trichlorobiphenyl (32)		3.3E+01									

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TABLE J-11
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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001										
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-N 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	GTS29-Nb 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001
2,2',3,3'-Tetrachlorobiphenyl (40)		8.3E+00									
2,2',3,4'-Tetrachlorobiphenyl (42)		7.0E+00									
2,2',3,5-Tetrachlorobiphenyl (43)		7.8E+00									
2,2',3,5'-Tetrachlorobiphenyl (44)		8.0E+00									
2,2',3,6-Tetrachlorobiphenyl (45)		3.4E+01									
2,2',3,6'-Tetrachlorobiphenyl (46)		8.2E+00									
47/75 (2,2',4,4'/2,4,4',6)											
2,2',4,5-Tetrachlorobiphenyl (48)		6.4E+00									
2,2',4,5'-Tetrachlorobiphenyl (49)		7.8E+00									
2,2',4,6-Tetrachlorobiphenyl (50)		9.4E+01									
2,2',4,6'-Tetrachlorobiphenyl (51)											
2,2',5,5'-Tetrachlorobiphenyl (52)											
2,2',5,6'-Tetrachlorobiphenyl (53)											
2,3,3',4'-Tetrachlorobiphenyl (56)		7.4E+00									
2,3,3',6-Tetrachlorobiphenyl (59)		7.2E+00									
2,3,4,4'-Tetrachlorobiphenyl (60)		7.2E+00									
PCB60/56											
2,3,4,5-Tetrachlorobiphenyl (61)		6.7E+00									
2,3,4',5-Tetrachlorobiphenyl (63)		5.3E+00									
2,3,4',6-Tetrachlorobiphenyl (64)		8.6E+00									
2,3',4,4'-Tetrachlorobiphenyl (66)		1.3E+01									
70/76 (2,3',4',5/2,3',4',5)											
2,3',4',5-Tetrachlorobiphenyl (74)											
3,3',4,4'-Tetrachlorobiphenyl (77)		4.5E+00									
3,4,4',5-Tetrachlorobiphenyl (81)		1.0E-01									
2,2',3,3',4-Pentachlorobiphenyl (82)		3.2E+00									
2,2',3,3',5-Pentachlorobiphenyl (83)		5.1E+00									
2,2',3,3',6-Pentachlorobiphenyl (84)		5.7E+00									
2,2',3,4,4'-Pentachlorobiphenyl (85)		5.1E+00									
2,2',3,4,5-Pentachlorobiphenyl (86)		6.3E+00									
2,2',3,4,6-Pentachlorobiphenyl (88)		1.1E+01									
2,2',3,4,6'-Pentachlorobiphenyl (89)		7.0E+00									
2,2',3,4',5-Pentachlorobiphenyl (90)		8.4E+00									
2,2',3,4',6-Pentachlorobiphenyl (91)											
2,2',3,5,5'-Pentachlorobiphenyl (92)		9.0E+00									
2,2',3,5,6-Pentachlorobiphenyl (93)		1.4E+01									
2,2',3,5',6-Pentachlorobiphenyl (95)		1.3E+01									
2,2',3,4',5'-Pentachlorobiphenyl (97)											
2,2',4,4',5-Pentachlorobiphenyl (99)											
2,2',4,4',6-Pentachlorobiphenyl (100)											
101/90 (2,2',4,5,5'/2,2',3,4',5)											
2,3,3',4,4'-Pentachlorobiphenyl (105)		6.1E+00									
2,3,3',4,5-Pentachlorobiphenyl (106)		6.7E+00									
2,3,3',4',5-Pentachlorobiphenyl (107)											
2,3,3',4',5'-Pentachlorobiphenyl (108)		8.5E+00									
2,3,3',4',6-Pentachlorobiphenyl (110)		9.4E+00									
2,3,4,4',5-Pentachlorobiphenyl (114)		4.6E+00									
2,3',4,4',5-Pentachlorobiphenyl (118)		7.1E+00									

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001										
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-N 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	GTS29-Nb 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001
2,3',4,4',6-Pentachlorobiphenyl (119)											
2,3',4,4',5'-Pentachlorobiphenyl (123)											
2,3',4',5,5'-Pentachlorobiphenyl (124)											
3,3',4,4',5-Pentachlorobiphenyl (126)		5.2E+00									
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		4.4E+00									
2,2',3,3',4,5-Hexachlorobiphenyl (129)		4.9E+00									
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		3.5E+00									
2,2',3,3',4,6-Hexachlorobiphenyl (131)		4.0E+00									
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		7.7E+00									
2,2',3,3',5,6-Hexachlorobiphenyl (134)		6.3E+00									
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)											
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		5.4E+00									
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		4.4E+00									
2,2',3,4,4',5-Hexachlorobiphenyl (137)		2.4E+01									
PCB 138/160/163											
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		9.8E+00									
2,2',3,4,5',6-Hexachlorobiphenyl (144)		5.5E+00									
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		3.6E+00									
2,2',3,4',5,6-Hexachlorobiphenyl (147)		6.9E+00									
2,2',3,4',5',6-Hexachlorobiphenyl (149)											
2,2',3,5,5',6-Hexachlorobiphenyl (151)											
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		4.6E+00									
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')											
2,3,3',4,4',5-Hexachlorobiphenyl (156)		3.9E+00									
2,3,3',4,4',6-Hexachlorobiphenyl (158)		8.7E+00									
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.2E+01									
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		7.3E-01									
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)											
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		4.3E+00									
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		9.1E+00									
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		3.9E+00									
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)											
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		5.8E+00									
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)		4.6E-01									
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		5.2E+00									
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		5.1E+00									
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		4.0E+00									
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		6.5E+00									
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)		7.8E+00									
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)											
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)		5.3E+00									
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)											
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')											
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		3.1E+00									
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		3.2E+00									
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		4.6E+00									
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		1.1E+01									
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)											

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North Providence, Rhode Island

PARAMETER	GREYSTONE MILL POND 2001										
	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-07-N 5/30/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	G-TS-22-N 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001	GTS29-Nb 6/7/2001	BMF-DIET GREYSTONE 2001	BMF-EI GREYSTONE 2001
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		3.7E+00									
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		3.6E+00									
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		4.9E+00									
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		2.1E+00									
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		3.0E+00									
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)											
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)											
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		3.0E+00									
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		2.0E+00									
PCB 203/196											
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		2.7E+00									
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		3.2E+00									
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		9.8E+00									
Decachlorobiphenyl (209)		3.7E+01									
PCB Congeners, Total		6.1E+00									
Toxicity Equivalency (PCB) - Birds		1.2E+00									
Toxicity Equivalency (PCB) - Fish		2.5E+00									
Toxicity Equivalency (PCB) - Mammals		2.3E+00									
Technical Chlordane			11.97305864			5.859546926 J					
Heptachlor Epoxide			0.251505547			0.144174757 J					
Dieldrin			0.06133122			0.119902913 J					
4,4'-DDE			0.256101426			0.397734628 J					
4,4'-DDD			0.049128368			0.05210356 J					
Endosulfan Sulfate			0.017908082 U			0.023867314 UJ					
4,4'-DDT			0.022028526 J			0.064724919 J					
alpha-Chlordane			0.365134707			0.057443366 J					
gamma-Chlordane			0.016006339 J			0.023867314 UJ					
Aroclor-1254			2.542947702			3.816504854 J					
Aroclor-1268			0.655309033			0.778478964 J					
Aroclor, Total			3.198098257 J			4.594983819 J					

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	GREYSTONE MILL POND 2001								ALLENDALE POND 2000				
	BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001								
PARAMETER	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation	Allendale Pond Diet 6/19/2000	AP-TS-08-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-N 6/12/2000	BMF ALLENDALE 2000
HCX	4.11E-01	2.4E-01	1.40E-02	48%	3.61E-01	2.1E-01	1.08E-02	48%	2.20E-05 UJ	1.45E-06 UJ	6.6E-02	4.06E-06 UJ	1.8E-01
2,3,7,8-TCDD	2.46E+00	1.2E+00	9.32E-01	83%	9.88E+00	4.7E+00	1.50E+01	83%	2.69E-03	4.30E-03	1.6E+00	1.02E-02	3.8E+00
1,2,3,7,8-PeCDD	3.68E+00	2.3E+00	7.19E-01	37%	2.46E-01	1.5E-01	3.21E-03	37%	1.34E-05 U	3.48E-05	2.6E+00	4.60E-05	3.4E+00
1,2,3,4,7,8-HxCDD	2.67E+00	1.8E+00	4.73E-01	38%	7.31E+00	5.0E+00	3.54E+00	38%	1.07E-05 U	2.79E-05	2.6E+00	4.50E-05	4.2E+00
1,2,3,6,7,8-HxCDD	1.92E+00	1.4E+00	1.68E-01	28%	5.91E+00	4.4E+00	1.60E+00	28%	5.57E-05	1.28E-04	2.3E+00	1.40E-04	2.5E+00
1,2,3,7,8,9-HxCDD	2.18E+00	1.4E+00	2.37E-01	36%	3.26E+00	2.0E+00	5.33E-01	36%	2.37E-05 U	2.11E-05 J	8.9E-01	2.10E-05 J	8.8E-01
1,2,3,4,6,7,8-HpCDD	4.47E-01	2.8E-01	1.73E-02	46%	4.40E+00	2.8E+00	1.67E+00	46%	3.07E-04 U	3.16E-04	1.0E+00	3.33E-04	1.1E+00
OCDD	4.35E-01	1.8E-01	3.38E-02	99%	3.36E+00	1.4E+00	2.02E+00	99%	7.34E-04 U	1.12E-04 U	1.5E-01	9.41E-05 U	1.3E-01
2,3,7,8-TCDF	6.93E+00	4.8E+00	2.02E+00	30%	4.41E+00	3.0E+00	8.20E-01	30%	3.24E-05 J	4.58E-05 J	1.4E+00	8.26E-05 J	2.5E+00
1,2,3,7,8-PeCDF	2.07E+00	1.4E+00	4.12E-01	47%	2.68E+00	1.8E+00	6.89E-01	47%	1.15E-05 U	1.11E-05	9.7E-01	1.60E-05	1.4E+00
2,3,4,7,8-PeCDF	8.11E+00	4.8E+00	5.59E+00	49%	2.13E-01	1.3E-01	3.87E-03	49%	8.10E-06 U	1.84E-05	2.3E+00	2.33E-05	2.9E+00
1,2,3,4,7,8-HxCDF	2.47E+00	1.5E+00	5.54E-01	50%	1.93E+00	1.2E+00	3.37E-01	50%	1.51E-05 U	1.24E-05	8.3E-01	1.64E-05	1.1E+00
1,2,3,6,7,8-HxCDF	1.59E+00	1.1E+00	1.23E-01	32%	3.25E+00	2.3E+00	5.15E-01	32%	7.91E-06 U	1.43E-05	1.8E+00	2.01E-05	2.5E+00
2,3,4,6,7,8-HxCDF	1.51E+00	8.8E-01	2.31E-01	55%	7.93E-02	4.6E-02	6.41E-04	55%	1.43E-05 U	9.78E-06	6.8E-01	1.13E-05	7.9E-01
1,2,3,4,6,7,8-HpCDF	9.02E-01	3.3E-01	1.10E-01	101%	4.69E+00	1.7E+00	2.97E+00	101%	8.12E-05 U	1.89E-05 U	2.3E-01	1.66E-05 U	2.0E-01
1,2,3,4,7,8,9-HpCDF	3.76E+00	2.2E+00	2.06E+00	65%	1.14E-01	6.7E-02	1.90E-03	65%	1.94E-05 U	1.15E-06 U	5.9E-02	2.56E-06 U	1.3E-01
OCDF	3.24E+00	8.8E-01	1.79E+00	152%	7.05E+00	1.9E+00	8.52E+00	152%	5.44E-05 U	3.74E-06 U	6.9E-02	3.47E-06 U	6.4E-02
Total TCDD	1.85E+00	8.7E-01	5.24E-01	83%	7.42E+00	3.5E+00	8.46E+00	83%					
Total HxCDD	1.68E+00	1.1E+00	1.51E-01	35%	3.26E+00	2.2E+00	5.72E-01	35%					
Total HpCDD	4.22E-01	2.4E-01	1.15E-02	44%	2.75E+00	1.6E+00	4.89E-01	44%					
Total TCDF	5.04E+00	3.0E+00	1.59E+00	43%	6.16E+00	3.6E+00	2.37E+00	43%					
Total PeCDF	1.54E+00	1.0E+00	1.54E-01	39%	2.25E+00	1.5E+00	3.29E-01	39%					
Total HxCDF	2.76E+00	2.2E+00	3.02E-01	25%	1.41E+00	1.1E+00	7.90E-02	25%					
Total HpCDF	1.26E+00	4.9E-01	2.34E-01	99%	3.05E+00	1.2E+00	1.37E+00	99%					
Toxicity Equivalency - Birds	2.69E+00	1.5E+00	8.99E-01	62%	1.42E+00	8.1E-01	2.50E-01	62%	2.75E-03	4.41E-03	1.6E+00	1.03E-02	3.7E+00
Toxicity Equivalency - Fish	2.44E+00	1.3E+00	8.35E-01	71%	1.60E+00	8.4E-01	3.58E-01	71%	2.72E-03	4.36E-03	1.6E+00	1.02E-02	3.8E+00
Toxicity Equivalency - Mammals	2.37E+00	1.2E+00	7.64E-01	70%	1.60E+00	8.4E-01	3.50E-01	70%	2.73E-03	4.37E-03	1.6E+00	1.02E-02	3.8E+00
2-Monochlorobiphenyl (1)					1.33E+01	1.3E+01				1.15E-03 U		1.77E-03 U	
4-Chlorobiphenyl (3)					7.20E+00	7.2E+00				1.15E-03 U		1.77E-03 U	
2,2'-Dichlorobiphenyl (4)					6.09E+01	6.1E+01							
2,6-Dichlorobiphenyl (10)					2.82E+00	2.8E+00							
3,4-Dichlorobiphenyl (12)					9.49E-01	9.5E-01							
16/32 (2,2',3'/2,4',6)										1.15E-03 U		2.10E-03 J	
2,2',3'-Trichlorobiphenyl (16)					1.11E+01	1.1E+01							
2,2',4-Trichlorobiphenyl (17)					4.63E+00	4.6E+00				1.69E-03 J		1.57E-03 J	
2,2',5-Trichlorobiphenyl (18)					2.42E+00	2.4E+00				1.81E-03 J		2.62E-03 J	
2,2',6-Trichlorobiphenyl (19)					8.08E+01	8.1E+01				1.15E-03 U		1.77E-03 U	
2,3,3'-Trichlorobiphenyl (20)					1.75E+01	1.7E+01							
2,3,4'-Trichlorobiphenyl (22)					3.41E+00	3.4E+00				1.81E-03 J		3.80E-03	
24/27 (2,3,6/2,3',6)										4.83E-04 J		5.24E-04 J	
2,3',4-Trichlorobiphenyl (25)					1.92E+01	1.9E+01				1.09E-03 J		1.31E-03 J	
2,3',5-Trichlorobiphenyl (26)					1.64E+01	1.6E+01				1.45E-03 J		1.97E-03 J	
2,4,4'-Trichlorobiphenyl (28)										3.53E-02		5.95E-02	
2,4',5-Trichlorobiphenyl (31)					1.54E+01	1.5E+01				1.57E-02		0.017300131	
2,4',6-Trichlorobiphenyl (32)					3.31E+01	3.3E+01							

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North Providence, Rhode Island

	GREYSTONE MILL POND 2001								ALLENDALE POND 2000				
	BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001								
PARAMETER	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation	Allendale Pond Diet 6/19/2000	AP-TS-08-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-N 6/12/2000	BMF ALLENDALE 2000
2,2',3,3'-Tetrachlorobiphenyl (40)					8.35E+00	8.3E+00				7.25E-04 J		2.75E-03 J	
2,2',3,4'-Tetrachlorobiphenyl (42)					6.96E+00	7.0E+00				5.80E-03		1.49E-02	
2,2',3,5-Tetrachlorobiphenyl (43)					7.78E+00	7.8E+00				1.15E-03 U		1.77E-03 U	
2,2',3,5'-Tetrachlorobiphenyl (44)					7.96E+00	8.0E+00				1.68E-02		4.02E-02	
2,2',3,6-Tetrachlorobiphenyl (45)					3.41E+01	3.4E+01				1.15E-03 U		6.55E-04 J	
2,2',3,6'-Tetrachlorobiphenyl (46)					8.18E+00	8.2E+00				3.62E-04 J		1.77E-03 U	
47/75 (2,2',4,4'/2,4,4',6)										1.78E-02		4.44E-02	
2,2',4,5-Tetrachlorobiphenyl (48)					6.43E+00	6.4E+00				2.29E-03 J		2.62E-03 J	
2,2',4,5'-Tetrachlorobiphenyl (49)					7.78E+00	7.8E+00				3.44E-02		8.01E-02	
2,2',4,6-Tetrachlorobiphenyl (50)					9.39E+01	9.4E+01							
2,2',4,6'-Tetrachlorobiphenyl (51)										4.83E-04 J		9.17E-04 J	
2,2',5,5'-Tetrachlorobiphenyl (52)										6.86E-02		0.169069463	
2,2',5,6'-Tetrachlorobiphenyl (53)										1.69E-03 J		3.01E-03 J	
2,3,3',4'-Tetrachlorobiphenyl (56)					7.36E+00	7.4E+00							
2,3,3',6-Tetrachlorobiphenyl (59)					7.15E+00	7.2E+00				8.45E-04 J		2.23E-03 J	
2,3,4,4'-Tetrachlorobiphenyl (60)					7.24E+00	7.2E+00							
PCB60/56										1.39E-03 U		2.10E-03 U	
2,3,4,5-Tetrachlorobiphenyl (61)					6.66E+00	6.7E+00							
2,3,4',5-Tetrachlorobiphenyl (63)					5.32E+00	5.3E+00				2.54E-03		5.90E-03	
2,3,4',6-Tetrachlorobiphenyl (64)					8.57E+00	8.6E+00							
2,3',4,4'-Tetrachlorobiphenyl (66)					1.25E+01	1.3E+01				6.20E-02		0.182044561	
70/76 (2,3',4',5/2,3',4',5)										2.95E-02		7.84E-02	
2,3',4',5-Tetrachlorobiphenyl (74)										2.63E-02		5.61E-02	
3,3',4,4'-Tetrachlorobiphenyl (77)					4.46E+00	4.5E+00				8.73E-03 J		1.77E-02	
3,4,4',5-Tetrachlorobiphenyl (81)					9.97E-02	1.0E-01				1.16E-03 UJ		1.76E-03 U	
2,2',3,3',4-Pentachlorobiphenyl (82)					3.24E+00	3.2E+00				8.21E-03		2.78E-02	
2,2',3,3',5-Pentachlorobiphenyl (83)					5.08E+00	5.1E+00				6.04E-03		1.48E-02	
2,2',3,3',6-Pentachlorobiphenyl (84)					5.73E+00	5.7E+00				9.18E-03		2.48E-02	
2,2',3,4,4'-Pentachlorobiphenyl (85)					5.09E+00	5.1E+00				4.24E-02		0.122542595	
2,2',3,4,5-Pentachlorobiphenyl (86)					6.32E+00	6.3E+00							
2,2',3,4,6-Pentachlorobiphenyl (88)					1.06E+01	1.1E+01							
2,2',3,4,6'-Pentachlorobiphenyl (89)					6.97E+00	7.0E+00				1.15E-03 U		1.77E-03 U	
2,2',3,4',5-Pentachlorobiphenyl (90)					8.38E+00	8.4E+00							
2,2',3,4',6-Pentachlorobiphenyl (91)										1.46E-02		3.94E-02	
2,2',3,5,5'-Pentachlorobiphenyl (92)					9.02E+00	9.0E+00				3.51E-02		8.61E-02	
2,2',3,5,6-Pentachlorobiphenyl (93)					1.44E+01	1.4E+01							
2,2',3,5',6-Pentachlorobiphenyl (95)					1.34E+01	1.3E+01				6.64E-02		0.171690695	
2,2',3,4',5'-Pentachlorobiphenyl (97)										4.31E-02		0.129882045	
2,2',4,4',5-Pentachlorobiphenyl (99)										0.108333333		0.305504587	
2,2',4,4',6-Pentachlorobiphenyl (100)										8.45E-04 J		1.97E-03 J	
101/90 (2,2',4,5,5'/2,2',3,4',5)										0.235144928		0.675884666	
2,3,3',4,4'-Pentachlorobiphenyl (105)					6.11E+00	6.1E+00				7.39E-02		0.168938401	
2,3,3',4,5-Pentachlorobiphenyl (106)					6.72E+00	6.7E+00							
2,3,3',4',5-Pentachlorobiphenyl (107)										2.31E-02		5.83E-02	
2,3,3',4',5'-Pentachlorobiphenyl (108)					8.53E+00	8.5E+00							
2,3,3',4',6-Pentachlorobiphenyl (110)					9.41E+00	9.4E+00				0.178985507 E		0.452293578 E	
2,3,4,4',5-Pentachlorobiphenyl (114)					4.56E+00	4.6E+00				4.95E-03		1.10E-02	
2,3',4,4',5-Pentachlorobiphenyl (118)					7.13E+00	7.1E+00				0.292753623		0.778768021	

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	GREYSTONE MILL POND 2001								ALLENDALE POND 2000				
	BMF-Diet Summary Statistics - Greystone 2001				BMF-EI Summary Statistics - Greystone 2001								
PARAMETER	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation	Allendale Pond Diet 6/19/2000	AP-TS-08-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-15-N 6/12/2000	BMF ALLENDALE 2000
2,3',4,4',6-Pentachlorobiphenyl (119)										4.95E-03		1.52E-02	
2,3',4,4',5'-Pentachlorobiphenyl (123)										4.34E-03 J		9.41E-03	
2,3',4',5,5'-Pentachlorobiphenyl (124)										5.19E-03		1.32E-02	
3,3',4,4',5-Pentachlorobiphenyl (126)					5.25E+00	5.2E+00				3.59E-03 J		7.69E-03	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)					4.41E+00	4.4E+00				0.055434783		0.149541284	
2,2',3,3',4,5-Hexachlorobiphenyl (129)					4.87E+00	4.9E+00				0.009541063		0.025688073	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)					3.52E+00	3.5E+00				0.018961353		0.049017038	
2,2',3,3',4,6-Hexachlorobiphenyl (131)					3.98E+00	4.0E+00				0.001570048 J		0.003538663	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)					7.71E+00	7.7E+00				0.028743961		0.072477064	
2,2',3,3',5,6-Hexachlorobiphenyl (134)					6.30E+00	6.3E+00				0.002536232		0.00576671	
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)										1.85E-02		4.23E-02	
2,2',3,3',5,6'-Hexachlorobiphenyl (135)					5.42E+00	5.4E+00							
2,2',3,3',6,6'-Hexachlorobiphenyl (136)					4.40E+00	4.4E+00				5.07E-03		1.42E-02	
2,2',3,4,4',5-Hexachlorobiphenyl (137)					2.38E+01	2.4E+01				1.90E-02		4.68E-02	
PCB 138/160/163										3.54E-01		9.29E-01	
2,2',3,4,5,5'-Hexachlorobiphenyl (141)					9.81E+00	9.8E+00				4.11E-02		9.65E-02	
2,2',3,4,5',6-Hexachlorobiphenyl (144)					5.48E+00	5.5E+00							
2,2',3,4',5,5'-Hexachlorobiphenyl (146)					3.65E+00	3.6E+00				5.29E-02		1.28E-01	
2,2',3,4',5,6-Hexachlorobiphenyl (147)					6.92E+00	6.9E+00							
2,2',3,4',5',6-Hexachlorobiphenyl (149)										9.30E-02		2.26E-01	
2,2',3,5,5',6-Hexachlorobiphenyl (151)										2.08E-02		4.67E-02	
2,2',4,4',5,5'-Hexachlorobiphenyl (153)					4.60E+00	4.6E+00				3.26E-01		7.63E-01	
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')										3.70E-02 J		8.53E-02 J	
2,3,3',4,4',5-Hexachlorobiphenyl (156)					3.94E+00	3.9E+00				3.33E-02		7.82E-02	
2,3,3',4,4',6-Hexachlorobiphenyl (158)					8.73E+00	8.7E+00				3.02E-02		8.01E-02	
2,3',4,4',5,5'-Hexachlorobiphenyl (167)					1.16E+01	1.2E+01				2.09E-02		4.53E-02	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)					7.31E-01	7.3E-01				1.15E-03 U		1.77E-03 U	
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)										3.62E-02		8.51E-02	
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)					4.27E+00	4.3E+00							
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)					9.09E+00	9.1E+00				8.21E-03		1.85E-02	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)					3.94E+00	3.9E+00				3.74E-03		7.34E-03	
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)										4.83E-04 J		7.86E-04 J	
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)					5.83E+00	5.8E+00				1.85E-02		3.26E-02	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)					4.63E-01	4.6E-01				1.57E-03 J		3.15E-03 J	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)					5.20E+00	5.2E+00				1.45E-03 J		2.49E-03 J	
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)					5.06E+00	5.1E+00				1.41E-02		2.94E-02	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)					4.00E+00	4.0E+00				8.09E-03		1.42E-02	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)					6.49E+00	6.5E+00				9.24E-02		1.88E-01	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)					7.81E+00	7.8E+00							
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)										1.98E-02		3.96E-02	
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)					5.27E+00	5.3E+00				4.83E-04 J		6.55E-04 J	
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)										2.42E-03		4.33E-03	
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')										4.65E-02		8.55E-02	
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)					3.13E+00	3.1E+00							
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)					3.20E+00	3.2E+00				2.66E-03		3.93E-03	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)					4.56E+00	4.6E+00							
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)					1.15E+01	1.1E+01				1.45E-03 J		3.15E-03 J	
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)										4.11E-03		8.13E-03	

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2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)					3.67E+00	3.7E+00				1.59E-02		2.78E-02	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)					3.63E+00	3.6E+00				3.99E-03		7.21E-03	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)					4.87E+00	4.9E+00							
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)					2.12E+00	2.1E+00				6.04E-04 J		1.05E-03 J	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)					3.00E+00	3.0E+00				2.29E-03 J		4.59E-03	
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)										3.06E-02		5.87E-02	
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)										8.45E-04 J		1.57E-03 J	
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)					3.02E+00	3.0E+00				2.66E-03		5.24E-03	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)					1.98E+00	2.0E+00							
PCB 203/196										2.78E-02		4.85E-02	
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)					2.75E+00	2.7E+00				1.09E-03 J		1.44E-03 J	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl					3.15E+00	3.2E+00				2.92E-02		6.61E-02	
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl					9.77E+00	9.8E+00				2.90E-03		6.16E-03	
Decachlorobiphenyl (209)					3.73E+01	3.7E+01				1.20E-02		3.32E-02	
PCB Congeners, Total					6.05E+00	6.1E+00				3.16E+00		7.81E+00	
Toxicity Equivalency (PCB) - Birds					1.23E+00	1.2E+00				9.28E-04		3.51E-03	
Toxicity Equivalency (PCB) - Fish					2.50E+00	2.5E+00				2.16E-05		8.81E-05	
Toxicity Equivalency (PCB) - Mammals					2.28E+00	2.3E+00				4.36E-04		1.80E-03	
Technical Chlordane													
Heptachlor Epoxide													
Dieldrin													
4,4'-DDE													
4,4'-DDD													
Endosulfan Sulfate													
4,4'-DDT													
alpha-Chlordane													
gamma-Chlordane													
Aroclor-1254													
Aroclor-1268													
Aroclor, Total													

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	ALLENDALE POND 2000										ALLENDALE POND 2001		
							BMF Summary Statistics - Allendale 2000						
PARAMETER	AP-TS-23-N 6/19/2000	BMF ALLENDALE 2000	AP-TS-24-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-29-N 6/19/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-35-N 6/12/2001	BMF ALLENDALE 2001
HCX	1.27E-06 UJ	5.8E-02	1.32E-05 UJ	6.0E-01	8.74E-07 UJ	4.0E-02	5.98E-01	1.9E-01	5.56E-02	125%	4.76E-03 J	2.20E-04 J	4.6E-02
2,3,7,8-TCDD	9.90E-03	3.7E+00	2.10E-02	7.8E+00	1.39E-02	5.2E+00	7.80E+00	4.4E+00	5.22E+00	52%	8.23E-03 J	1.10E-02 J	1.3E+00
1,2,3,7,8-PeCDD	4.39E-05	3.3E+00	8.21E-05	6.1E+00	5.84E-05	4.4E+00	6.14E+00	4.0E+00	1.87E+00	35%	3.71E-05 UJ	4.94E-05 J	1.3E+00
1,2,3,4,7,8-HxCDD	3.76E-05	3.5E+00	7.41E-05	6.9E+00	5.96E-05	5.6E+00	6.91E+00	4.6E+00	2.90E+00	37%	5.31E-05 J	6.01E-05 J	1.1E+00
1,2,3,6,7,8-HxCDD	1.05E-04	1.9E+00	1.94E-04	3.5E+00	1.73E-04	3.1E+00	3.48E+00	2.7E+00	4.08E-01	24%	2.76E-04 J	2.04E-04 J	7.4E-01
1,2,3,7,8,9-HxCDD	1.99E-05 J	8.4E-01	1.42E-05 U	6.0E-01	3.67E-05 J	1.5E+00	1.55E+00	9.5E-01	1.25E-01	37%	6.89E-05 J	4.33E-05 J	6.3E-01
1,2,3,4,6,7,8-HpCDD	2.31E-04	7.5E-01	1.52E-04 U	5.0E-01	4.58E-04	1.5E+00	1.49E+00	9.7E-01	1.40E-01	39%	2.07E-03 J	5.98E-04 J	2.9E-01
OCDD	8.55E-05 U	1.2E-01	1.18E-04 U	1.6E-01	1.31E-04 U	1.8E-01	1.79E-01	1.5E-01	6.31E-04	17%	6.93E-03 J	3.07E-04 UJ	4.4E-02
2,3,7,8-TCDF	8.42E-05 J	2.6E+00	1.34E-04 J	4.1E+00	1.05E-04 J	3.3E+00	4.15E+00	2.8E+00	1.01E+00	36%	4.22E-05 UJ$	1.13E-04 J	2.7E+00
1,2,3,7,8-PeCDF	1.84E-05	1.6E+00	2.44E-05	2.1E+00	2.40E-05	2.1E+00	2.12E+00	1.6E+00	2.37E-01	30%	6.85E-05 J	3.12E-05 J	4.5E-01
2,3,4,7,8-PeCDF	2.51E-05	3.1E+00	4.28E-05	5.3E+00	3.57E-05	4.4E+00	5.28E+00	3.6E+00	1.51E+00	34%	7.16E-05 J	4.63E-05 J	6.5E-01
1,2,3,4,7,8-HxCDF	1.01E-05 U	6.7E-01	1.42E-05 U	9.4E-01	3.23E-05	2.1E+00	2.15E+00	1.1E+00	3.44E-01	52%	1.06E-04 J	2.61E-05 UJ	2.5E-01
1,2,3,6,7,8-HxCDF	2.27E-05	2.9E+00	1.49E-05 U	1.9E+00	3.48E-05	4.4E+00	4.40E+00	2.7E+00	1.10E+00	39%	9.57E-05 J	3.73E-05 J	3.9E-01
2,3,4,6,7,8-HxCDF	8.96E-06	6.3E-01	8.46E-06 U	5.9E-01	1.94E-05	1.4E+00	1.36E+00	8.1E-01	9.91E-02	39%	8.51E-05 J	2.44E-05 J	2.9E-01
1,2,3,4,6,7,8-HpCDF	1.99E-05 U	2.5E-01	1.82E-05 U	2.2E-01	8.60E-05	1.1E+00	1.06E+00	3.9E-01	1.39E-01	95%	4.85E-04 J	1.08E-04 J	2.2E-01
1,2,3,4,7,8,9-HpCDF	2.01E-06 U	1.0E-01	1.07E-05 U	5.5E-01	1.66E-06 U	8.6E-02	5.51E-01	1.9E-01	4.24E-02	110%	1.77E-05 UJ	1.99E-05 UJ	1.1E+00
OCDF	3.81E-06 U	7.0E-02	1.47E-05 U	2.7E-01	4.90E-06 U	9.0E-02	2.70E-01	1.1E-01	7.83E-03	79%	2.02E-05 UJ	1.18E-05 UJ	5.8E-01
Total TCDD											8.23E-03 J	1.10E-02 J	1.3E+00
Total HxCDD											7.11E-04 J	3.39E-04 J	4.8E-01
Total HpCDD											2.77E-03 J	3.17E-04 UJ	1.1E-01
Total TCDF											1.15E-04 J	7.51E-05 UJ	6.6E-01
Total PeCDF											3.59E-04 J	1.04E-04 J	2.9E-01
Total HxCDF											1.05E-03 J	9.49E-05 UJ	9.1E-02
Total HpCDF											2.60E-04 UJ	5.40E-05 UJ	2.1E-01
Toxicity Equivalency - Birds	1.01E-02	3.7E+00	2.12E-02	7.7E+00	1.41E-02	5.1E+00	7.72E+00	4.4E+00	5.09E+00	52%	8.44E-03	1.13E-02	1.3E+00
Toxicity Equivalency - Fish	9.99E-03	3.7E+00	2.11E-02	7.7E+00	0.014020979	5.1E+00	7.75E+00	4.4E+00	5.13E+00	52%	8.40E-03	1.12E-02	1.3E+00
Toxicity Equivalency - Mammals	9.99E-03	3.7E+00	2.11E-02	7.7E+00	0.014020979	5.1E+00	7.72E+00	4.4E+00	5.10E+00	52%	8.40E-03	1.12E-02	1.3E+00
2-Monochlorobiphenyl (1)	1.27E-03 U		4.48E-03 U		1.31E-03 U							1.75E-04 UJ	
4-Chlorobiphenyl (3)	1.27E-03 U		4.48E-03 U		1.31E-03 U							0.0002375 UJ	
2,2'-Dichlorobiphenyl (4)												5.60E-04 UJ	
2,6-Dichlorobiphenyl (10)												3.71E-04 UJ	
3,4-Dichlorobiphenyl (12)												7.43E-04 UJ	
16/32 (2,2',3'/2,4',6)	1.27E-03 U		4.48E-03 U		1.31E-03 U								
2,2',3'-Trichlorobiphenyl (16)												2.62E-03 J	
2,2',4-Trichlorobiphenyl (17)	2.54E-03 J		3.48E-03 J		1.57E-03 J							3.62E-03 J	
2,2',5-Trichlorobiphenyl (18)	1.64E-03 J		3.48E-03 J		2.10E-03 J							6.02E-03 J	
2,2',6-Trichlorobiphenyl (19)	1.27E-03 U		4.48E-03 U		1.31E-03 U							6.37E-04 J	
2,3,3'-Trichlorobiphenyl (20)												0.167697761 J	
2,3,4'-Trichlorobiphenyl (22)	1.79E-03 J		1.04E-02		2.62E-03 J							1.00E-02 J	
24/27 (2,3,6/2,3',6)	5.97E-04 J		9.95E-04 J		6.99E-04 J								
2,3',4-Trichlorobiphenyl (25)	1.49E-03 J		2.49E-03 J		1.75E-03 J							4.02E-03 J	
2,3',5-Trichlorobiphenyl (26)	2.09E-03 J		3.98E-03 J		2.62E-03							4.52E-03 J	
2,4,4'-Trichlorobiphenyl (28)	7.22E-02		0.106467662		0.084965035								
2,4',5-Trichlorobiphenyl (31)	2.43E-02		3.38E-02		2.52E-02							6.73E-02 J	
2,4',6-Trichlorobiphenyl (32)												5.51E-03 J	

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

	ALLENDALE POND 2000										ALLENDALE POND 2001		
							BMF Summary Statistics - Allendale 2000						
PARAMETER	AP-TS-23-N 6/19/2000	BMF ALLENDALE 2000	AP-TS-24-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-29-N 6/19/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-35-N 6/12/2001	BMF ALLENDALE 2001
2,2',3,3'-Tetrachlorobiphenyl (40)	1.19E-03 J		9.45E-03		1.92E-03 J							3.45E-02 J	
2,2',3,4'-Tetrachlorobiphenyl (42)	1.42E-02		2.44E-02		1.78E-02							4.00E-02 J	
2,2',3,5-Tetrachlorobiphenyl (43)	1.27E-03 U		4.48E-03 U		1.31E-03 U							0.34681903 J	
2,2',3,5'-Tetrachlorobiphenyl (44)	4.09E-02		8.31E-02		5.24E-02							1.52E-01 J	
2,2',3,6-Tetrachlorobiphenyl (45)	1.27E-03 U		4.48E-03 U		5.24E-04 J							4.06E-03 J	
2,2',3,6'-Tetrachlorobiphenyl (46)	5.97E-04 J		4.48E-03 U		5.24E-04 J							1.17E-03 J	
47/75 (2,2',4,4'/2,4,4',6)	5.04E-02		5.77E-02		5.05E-02								
2,2',4,5-Tetrachlorobiphenyl (48)	2.24E-03 J		7.46E-03 J		1.92E-03 J							8.10E-03 J	
2,2',4,5'-Tetrachlorobiphenyl (49)	9.49E-02		0.129850746		9.81E-02							0.158736567 J	
2,2',4,6-Tetrachlorobiphenyl (50)												1.06E-02 J	
2,2',4,6'-Tetrachlorobiphenyl (51)	7.46E-04 J		1.49E-03 J		8.74E-04 J								
2,2',5,5'-Tetrachlorobiphenyl (52)	0.176865672		0.329850746		0.219230769								
2,2',5,6'-Tetrachlorobiphenyl (53)	2.99E-03		2.99E-03 J		3.32E-03								
2,3,3',4'-Tetrachlorobiphenyl (56)												3.02E-02 J	
2,3,3',6-Tetrachlorobiphenyl (59)	1.64E-03 J		4.48E-03 J		2.27E-03 J							1.23E-02 J	
2,3,4,4'-Tetrachlorobiphenyl (60)												3.29E-02 J	
PCB60/56	1.49E-03 U		0.100497512		1.57E-03 U								
2,3,4,5-Tetrachlorobiphenyl (61)												0.310065672 J	
2,3,4',5-Tetrachlorobiphenyl (63)	6.57E-03		1.39E-02		7.69E-03							1.39E-02 J	
2,3,4',6-Tetrachlorobiphenyl (64)												9.21E-02 J	
2,3',4,4'-Tetrachlorobiphenyl (66)	0.178208955		0.335323383		0.191958042							0.311704478 J	
70/76 (2,3',4',5/2,3',4',5)	0.078955224		0.133333333		0.086013986								
2,3',4',5-Tetrachlorobiphenyl (74)	6.84E-02		9.45E-02		8.08E-02								
3,3',4,4'-Tetrachlorobiphenyl (77)	1.15E-02 J		0.021889552 J		1.82E-02							2.61E-02 J	
3,4,4',5-Tetrachlorobiphenyl (81)	1.25E-03 UJ		3.17E-04 J		1.32E-03 U							1.09E-02 J	
2,2',3,3',4-Pentachlorobiphenyl (82)	0.018955224		7.51E-02		2.97E-02							4.90E-02 J	
2,2',3,3',5-Pentachlorobiphenyl (83)	1.66E-02		3.48E-02		2.24E-02							0.574076306 J	
2,2',3,3',6-Pentachlorobiphenyl (84)	2.12E-02		4.43E-02		2.99E-02							4.19E-02 J	
2,2',3,4,4'-Pentachlorobiphenyl (85)	0.112985075		0.287562189		0.139160839							0.167978731 J	
2,2',3,4,5-Pentachlorobiphenyl (86)												0.448572761 J	
2,2',3,4,6-Pentachlorobiphenyl (88)												6.47E-02 J	
2,2',3,4,6'-Pentachlorobiphenyl (89)	1.27E-03 U		4.48E-03 U		1.31E-03 U							1.41E-03 J	
2,2',3,4',5-Pentachlorobiphenyl (90)												1.010264552 J	
2,2',3,4',6-Pentachlorobiphenyl (91)	0.038955224		7.76E-02		4.65E-02								
2,2',3,5,5'-Pentachlorobiphenyl (92)	8.70E-02		0.222885572		0.116783217							0.18195709 J	
2,2',3,5,6-Pentachlorobiphenyl (93)												1.20E-02 J	
2,2',3,5',6-Pentachlorobiphenyl (95)	0.155970149		0.329353234		0.211538462							0.302607276 J	
2,2',3,4',5'-Pentachlorobiphenyl (97)	0.121343284		0.313432836		0.169055944								
2,2',4,4',5-Pentachlorobiphenyl (99)	0.30880597		0.469154229		0.377272727								
2,2',4,4',6-Pentachlorobiphenyl (100)	1.64E-03 J		3.48E-03 J		1.75E-03 J								
101/90 (2,2',4,5,5'/2,2',3,4',5)	0.417313433		1.397512438		0.662762238								
2,3,3',4,4'-Pentachlorobiphenyl (105)	0.160597015		0.491542289		0.208391608							0.261521828 J	
2,3,3',4,5-Pentachlorobiphenyl (106)												0.105323321 J	
2,3,3',4',5-Pentachlorobiphenyl (107)	5.51E-02		0.139800995		6.54E-02								
2,3,3',4',5'-Pentachlorobiphenyl (108)												1.85E-02 J	
2,3,3',4',6-Pentachlorobiphenyl (110)	0.316268657 E		1.14278607 E		0.530594406 E							0.789224627 J	
2,3,4,4',5-Pentachlorobiphenyl (114)	1.09E-02		3.33E-02		1.38E-02							1.72E-02 J	
2,3',4,4',5-Pentachlorobiphenyl (118)	0.447910448		1.76119403		0.765559441							1.11575597 J	

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North Providence, Rhode Island

	ALLENDALE POND 2000										ALLENDALE POND 2001		
							BMF Summary Statistics - Allendale 2000						
PARAMETER	AP-TS-23-N 6/19/2000	BMF ALLENDALE 2000	AP-TS-24-N 6/12/2000	BMF ALLENDALE 2000	AP-TS-29-N 6/19/2000	BMF ALLENDALE 2000	Maximum	Mean	Variance	Coefficient of Variation	DIET-AP 6/12/2001	A-TS-35-N 6/12/2001	BMF ALLENDALE 2001
2,3',4,4',6-Pentachlorobiphenyl (119)	1.48E-02		2.94E-02		1.73E-02								
2,3',4,4',5'-Pentachlorobiphenyl (123)	5.13E-03 J		1.72E-02 J		1.02E-02								
2,3',4',5,5'-Pentachlorobiphenyl (124)	1.15E-02		1.94E-02		1.33E-02								
3,3',4,4',5-Pentachlorobiphenyl (126)	5.01E-03 J		1.31E-02 J		9.58E-03							3.78E-03 J	
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	0.128208955		0.44278607		0.157517483							1.84E-01 J	
2,2',3,3',4,5-Hexachlorobiphenyl (129)	0.023731343		0.068159204		0.030594406							1.26E+00 J	
2,2',3,3',4,5'-Hexachlorobiphenyl (130)	0.044776119		0.149751244		0.052622378							8.23E-02 J	
2,2',3,3',4,6-Hexachlorobiphenyl (131)	0.004179104		0.009950249		0.004895105							8.48E-03 J	
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	0.06761194		0.190547264		0.081118881							1.68E-01 J	
2,2',3,3',5,6-Hexachlorobiphenyl (134)	0.006268657		0.006965174 J		0.008391608							1.30E-02 J	
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)	0.04		0.113432836		0.052972028								
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												0.128675373 J	
2,2',3,3',6,6'-Hexachlorobiphenyl (136)	1.01E-02		2.24E-02		1.66E-02							1.82E-02 J	
2,2',3,4,4',5-Hexachlorobiphenyl (137)	4.33E-02		0.135323383		5.38E-02							0.129094403 J	
PCB 138/160/163	5.13E-01		2.407960199		8.59E-01								
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	9.10E-02		0.260696517		1.08E-01							0.143391418 J	
2,2',3,4,5',6-Hexachlorobiphenyl (144)												0.025822761 J	
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	1.04E-01		0.358208955		1.29E-01							0.182066791 J	
2,2',3,4',5,6-Hexachlorobiphenyl (147)												0.43383209 J	
2,2',3,4',5',6-Hexachlorobiphenyl (149)	2.08E-01		0.569651741		2.69E-01								
2,2',3,5,5',6-Hexachlorobiphenyl (151)	4.24E-02		0.12238806		5.10E-02								
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	4.24E-01		1.750746269		7.19E-01							1.41201306 J	
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')	5.99E-02 J		0.155722886 J		1.07E-01 J								
2,3,3',4,4',5-Hexachlorobiphenyl (156)	7.01E-02		0.225373134		8.76E-02							0.163782836 J	
2,3,3',4,4',6-Hexachlorobiphenyl (158)	6.96E-02		0.245771144		8.85E-02							0.123139179 J	
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	3.91E-02		0.123383085		4.79E-02							0.074627985 J	
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	1.27E-03 U		0.004477612 U		1.31E-03 U							0.002718843 J	
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)	6.63E-02		0.25721393		7.90E-02								
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												0.144591604 J	
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	1.51E-02		0.055223881		1.80E-02							0.029251866 J	
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	6.27E-03		0.021393035		7.69E-03							0.033821082 J	
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)	8.96E-04 J		0.002487562 J		1.22E-03 J								
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	3.07E-02		0.1		3.90E-02							0.139213433 J	
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)	2.54E-03		0.009950249		3.15E-03							0.004913246 J	
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)	2.24E-03 J		0.005970149 J		3.15E-03							0.003975746 J	
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	2.37E-02		0.097014925		2.92E-02							0.050546269 J	
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	1.19E-02		0.052238806		1.50E-02							0.031496642 J	
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	1.49E-01		0.535820896		1.85E-01							0.361269776 J	
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												0.000953731 J	
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	3.43E-02		0.118905473		4.18E-02								
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)	4.48E-04 J		0.001492537 J		3.50E-04 J							0.000357836 J	
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)	3.88E-03		0.010945274		5.07E-03								
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')	7.30E-02		0.282587065		8.95E-02								
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												0.164626306 J	
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	3.73E-03		0.011442786		4.20E-03							0.007139925 J	
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												0.030766418 J	
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)	2.39E-03 J		0.009950249		2.97E-03							0.00543097 J	
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)	6.57E-03		0.025870647		8.04E-03								

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2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	2.33E-02		0.080597015		3.02E-02							0.057808582 J	
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)	5.22E-03		0.02238806		6.47E-03							0.012699813 J	
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												0.037092724 J	
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	8.96E-04 J		0.003482587 J		1.22E-03 J							0.002765858 UJ	
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)	4.18E-03		0.015920398		5.24E-03							0.193264552 J	
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)	4.91E-02		0.20199005		6.57E-02								
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	1.34E-03 J		0.004477612 J		1.75E-03 J								
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	3.88E-03		0.017412935		5.59E-03							0.013580224 J	
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												0.106364925 J	
PCB 203/196	4.42E-02		0.157711443		5.87E-02								
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)	1.49E-03 J		0.004975124 J		1.57E-03 J							0.003245522 J	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	4.96E-02		0.191044776		7.12E-02							0.155239179 J	
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	4.18E-03		0.017910448		5.94E-03							0.012368843 J	
Decachlorobiphenyl (209)	2.07E-02		0.090547264		2.73E-02							0.069223881 J	
PCB Congeners, Total	6.05E+00		18.7641791		8.43E+00							13.25704869 J	
Toxicity Equivalency (PCB) - Birds	1.23E-03		0.002542289		2.05E-03							0.002835821	
Toxicity Equivalency (PCB) - Fish	3.06E-05		8.1592E-05		5.63E-05							3.52612E-05	
Toxicity Equivalency (PCB) - Mammals	6.30E-04		0.001761194		1.14E-03							0.00063806	
Technical Chlordane												6.297574627 J	
Heptachlor Epoxide												0.145149254 J	
Dieldrin												0.117164179 J	
4,4'-DDE												1.193097015	
4,4'-DDD												0.058395522	
Endosulfan Sulfate												0.025746269 UJ	
4,4'-DDT												0.062313433	
alpha-Chlordane												0.081716418 J	
gamma-Chlordane												0.025746269 UJ	
Aroclor-1254												4.823320896 J	
Aroclor-1268												0.395335821 J	
Aroclor, Total												5.218656716 J	

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CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	ALLENDALE POND 2001								BMF Summary Statistics - Allendale 2001			
	A-TS-46-N 6/9/2001	BMF ALLENDALE 2001	A-TS-48-N 6/7/2001	BMF ALLENDALE 2001	A-TS-49-N 6/12/2001	BMF ALLENDALE 2001	A-TS-57-N 6/8/2001	BMF ALLENDALE 2001	Maximum	Mean	Variance	Coefficient of Variation
HCX	4.39E-04 J	9.2E-02	4.30E-04 J	9.0E-02	6.87E-04 J	1.4E-01	1.84E-03 J	3.9E-01	3.87E-01	1.5E-01	1.48E-02	81%
2,3,7,8-TCDD	1.17E-02 J	1.4E+00	2.90E-02 J	3.5E+00	2.19E-02 J	2.7E+00	5.26E-02 J	6.4E+00	6.39E+00	3.0E+00	3.44E+00	62%
1,2,3,7,8-PeCDD	3.43E-05 J	9.2E-01	1.12E-04 J	3.0E+00	8.32E-05 J	2.2E+00	1.27E-04 J	3.4E+00	3.42E+00	2.2E+00	9.09E-01	43%
1,2,3,4,7,8-HxCDD	3.17E-05 J	6.0E-01	1.03E-04 J	1.9E+00	9.45E-05 J	1.8E+00	1.20E-04 J	2.3E+00	2.26E+00	1.6E+00	3.69E-01	38%
1,2,3,6,7,8-HxCDD	9.75E-05 J	3.5E-01	4.28E-04 J	1.5E+00	3.51E-04 J	1.3E+00	3.94E-04 J	1.4E+00	1.55E+00	1.1E+00	2.11E-01	42%
1,2,3,7,8,9-HxCDD	2.62E-05 J	3.8E-01	1.17E-04 J	1.7E+00	7.49E-05 J	1.1E+00	9.32E-05 J	1.4E+00	1.70E+00	1.0E+00	2.27E-01	46%
1,2,3,4,6,7,8-HpCDD	2.86E-04 J	1.4E-01	9.26E-04 J	4.5E-01	2.21E-03 J	1.1E+00	1.02E-03 J	4.9E-01	1.07E+00	5.8E-01	1.56E-01	68%
OCDD	2.88E-04 J	4.2E-02	6.62E-04 J	9.6E-02	3.19E-03 J	4.6E-01	5.98E-04 J	8.6E-02	4.60E-01	2.0E-01	4.16E-02	103%
2,3,7,8-TCDF	7.81E-05 J	1.9E+00	2.40E-04 J	5.7E+00	1.41E-04 J	3.3E+00	2.86E-04 J	6.8E+00	6.79E+00	3.9E+00	3.58E+00	48%
1,2,3,7,8-PeCDF	1.39E-05 J	2.0E-01	4.90E-05 J	7.2E-01	3.01E-05 J	4.4E-01	6.08E-05 J	8.9E-01	8.67E-01	5.2E-01	5.82E-02	46%
2,3,4,7,8-PeCDF	2.74E-05 J	3.8E-01	1.76E-04 J	2.5E+00	4.93E-05 J	6.9E-01	8.73E-05 J	1.2E+00	2.46E+00	1.0E+00	5.76E-01	75%
1,2,3,4,7,8-HxCDF	1.80E-05 J	1.7E-01	8.62E-05 J	8.1E-01	5.17E-05 J	4.9E-01	8.36E-05 J	7.9E-01	8.14E-01	5.0E-01	7.13E-02	53%
1,2,3,6,7,8-HxCDF	2.12E-05 J	2.2E-01	6.31E-05 J	6.6E-01	5.81E-05 J	6.1E-01	8.83E-05 J	9.2E-01	9.23E-01	5.7E-01	5.78E-02	42%
2,3,4,6,7,8-HxCDF	1.01E-05 J	1.2E-01	3.58E-05 J	4.2E-01	2.89E-05 J	3.4E-01	3.49E-05 J	4.1E-01	4.20E-01	3.2E-01	1.21E-02	34%
1,2,3,4,6,7,8-HpCDF	4.34E-05 J	8.9E-02	1.30E-04 J	2.7E-01	2.25E-04 J	4.6E-01	1.69E-04 J	3.5E-01	4.64E-01	3.1E-01	2.14E-02	47%
1,2,3,4,7,8,9-HpCDF	3.17E-06 J	1.8E-01	1.58E-05 J	8.9E-01	1.18E-05 J	6.7E-01	9.26E-06 J	5.2E-01	1.12E+00	6.8E-01	1.03E-01	48%
OCDF	6.99E-06 UJ	3.5E-01	3.10E-04 J	1.5E+01	4.37E-05 UJ	2.2E+00	1.27E-05 UJ	6.3E-01	1.54E+01	3.5E+00	3.43E+01	165%
Total TCDD	1.17E-02 J	1.4E+00	2.90E-02 J	3.5E+00	2.19E-02 J	2.7E+00	5.26E-02 J	6.4E+00	6.39E+00	3.0E+00	3.44E+00	62%
Total HxCDD	1.57E-04 J	2.2E-01	1.02E-03 J	1.4E+00	5.49E-04 J	7.7E-01	6.29E-04 J	8.8E-01	1.44E+00	7.6E-01	1.68E-01	54%
Total HpCDD	2.98E-04 J	1.1E-01	1.14E-03 J	4.1E-01	2.26E-03 J	8.2E-01	1.05E-03 J	3.8E-01	8.16E-01	4.4E-01	1.01E-01	72%
Total TCDF	1.08E-04 J	9.4E-01	2.40E-04 J	2.1E+00	1.87E-04 J	1.6E+00	4.00E-04 J	3.5E+00	3.50E+00	1.7E+00	1.01E+00	58%
Total PeCDF	7.64E-05 J	2.1E-01	3.82E-04 J	1.1E+00	1.41E-04 J	3.9E-01	2.57E-04 J	7.2E-01	1.06E+00	5.1E-01	1.03E-01	63%
Total HxCDF	7.33E-05 J	7.0E-02	3.40E-04 J	3.2E-01	1.89E-04 J	1.8E-01	2.94E-04 J	2.8E-01	3.25E-01	1.9E-01	1.02E-02	54%
Total HpCDF	5.41E-05 J	2.1E-01	2.39E-04 J	9.2E-01	2.56E-04 J	9.8E-01	2.13E-04 J	8.2E-01	9.84E-01	6.9E-01	1.41E-01	55%
Toxicity Equivalency - Birds	1.19E-02	1.4E+00	2.96E-02	3.5E+00	2.22E-02	2.6E+00	5.31E-02	6.3E+00	6.29E+00	3.0E+00	3.33E+00	62%
Toxicity Equivalency - Fish	1.18E-02	1.4E+00	2.93E-02	3.5E+00	2.21E-02	2.6E+00	5.28E-02	6.3E+00	6.28E+00	3.0E+00	3.33E+00	62%
Toxicity Equivalency - Mammals	1.18E-02	1.4E+00	2.93E-02	3.5E+00	*0.022085308*	2.6E+00	*5.28E-02*	6.3E+00	6.28E+00	3.0E+00	3.33E+00	62%
2-Monochlorobiphenyl (1)												
4-Chlorobiphenyl (3)												
2,2'-Dichlorobiphenyl (4)												
2,6-Dichlorobiphenyl (10)												
3,4-Dichlorobiphenyl (12)												
16/32 (2,2',3'/2,4',6)												
2,2',3'-Trichlorobiphenyl (16)												
2,2',4-Trichlorobiphenyl (17)												
2,2',5-Trichlorobiphenyl (18)												
2,2',6-Trichlorobiphenyl (19)												
2,3,3'-Trichlorobiphenyl (20)												
2,3,4'-Trichlorobiphenyl (22)												
24/27 (2,3,6/2,3',6)												
2,3',4-Trichlorobiphenyl (25)												
2,3',5-Trichlorobiphenyl (26)												
2,4,4'-Trichlorobiphenyl (28)												
2,4',5-Trichlorobiphenyl (31)												
2,4',6-Trichlorobiphenyl (32)												

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Baseline Ecological Risk Assessment - Interim Final
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North Providence, Rhode Island

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2,2',3,3'-Tetrachlorobiphenyl (40)												
2,2',3,4'-Tetrachlorobiphenyl (42)												
2,2',3,5-Tetrachlorobiphenyl (43)												
2,2',3,5'-Tetrachlorobiphenyl (44)												
2,2',3,6-Tetrachlorobiphenyl (45)												
2,2',3,6'-Tetrachlorobiphenyl (46)												
47/75 (2,2',4,4'/2,4,4',6)												
2,2',4,5-Tetrachlorobiphenyl (48)												
2,2',4,5'-Tetrachlorobiphenyl (49)												
2,2',4,6-Tetrachlorobiphenyl (50)												
2,2',4,6'-Tetrachlorobiphenyl (51)												
2,2',5,5'-Tetrachlorobiphenyl (52)												
2,2',5,6'-Tetrachlorobiphenyl (53)												
2,3,3',4'-Tetrachlorobiphenyl (56)												
2,3,3',6-Tetrachlorobiphenyl (59)												
2,3,4,4'-Tetrachlorobiphenyl (60)												
PCB60/56												
2,3,4,5-Tetrachlorobiphenyl (61)												
2,3,4',5-Tetrachlorobiphenyl (63)												
2,3,4',6-Tetrachlorobiphenyl (64)												
2,3',4,4'-Tetrachlorobiphenyl (66)												
70/76 (2,3',4',5/2,3',4',5)												
2,3',4',5-Tetrachlorobiphenyl (74)												
3,3',4,4'-Tetrachlorobiphenyl (77)												
3,4,4',5-Tetrachlorobiphenyl (81)												
2,2',3,3',4-Pentachlorobiphenyl (82)												
2,2',3,3',5-Pentachlorobiphenyl (83)												
2,2',3,3',6-Pentachlorobiphenyl (84)												
2,2',3,4,4'-Pentachlorobiphenyl (85)												
2,2',3,4,5-Pentachlorobiphenyl (86)												
2,2',3,4,6-Pentachlorobiphenyl (88)												
2,2',3,4,6'-Pentachlorobiphenyl (89)												
2,2',3,4',5-Pentachlorobiphenyl (90)												
2,2',3,4',6-Pentachlorobiphenyl (91)												
2,2',3,5,5'-Pentachlorobiphenyl (92)												
2,2',3,5,6-Pentachlorobiphenyl (93)												
2,2',3,5',6-Pentachlorobiphenyl (95)												
2,2',3,4',5'-Pentachlorobiphenyl (97)												
2,2',4,4',5-Pentachlorobiphenyl (99)												
2,2',4,4',6-Pentachlorobiphenyl (100)												
101/90 (2,2',4,5,5'/2,2',3,4',5)												
2,3,3',4,4'-Pentachlorobiphenyl (105)												
2,3,3',4,5-Pentachlorobiphenyl (106)												
2,3,3',4',5-Pentachlorobiphenyl (107)												
2,3,3',4',5'-Pentachlorobiphenyl (108)												
2,3,3',4',6-Pentachlorobiphenyl (110)												
2,3,4,4',5-Pentachlorobiphenyl (114)												
2,3',4,4',5-Pentachlorobiphenyl (118)												

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2,3',4,4',6-Pentachlorobiphenyl (119)												
2,3',4,4',5'-Pentachlorobiphenyl (123)												
2,3',4',5,5'-Pentachlorobiphenyl (124)												
3,3',4,4',5-Pentachlorobiphenyl (126)												
2,2',3,3',4,4'-Hexachlorobiphenyl (128)												
2,2',3,3',4,5-Hexachlorobiphenyl (129)												
2,2',3,3',4,5'-Hexachlorobiphenyl (130)												
2,2',3,3',4,6-Hexachlorobiphenyl (131)												
2,2',3,3',4,6'-Hexachlorobiphenyl (132)												
2,2',3,3',5,6-Hexachlorobiphenyl (134)												
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)												
2,2',3,3',6,6'-Hexachlorobiphenyl (136)												
2,2',3,4,4',5-Hexachlorobiphenyl (137)												
PCB 138/160/163												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)												
2,2',3,4,5',6-Hexachlorobiphenyl (144)												
2,2',3,4',5,5'-Hexachlorobiphenyl (146)												
2,2',3,4',5,6-Hexachlorobiphenyl (147)												
2,2',3,4',5',6-Hexachlorobiphenyl (149)												
2,2',3,5,5',6-Hexachlorobiphenyl (151)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)												
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')												
2,3,3',4,4',5-Hexachlorobiphenyl (156)												
2,3,3',4,4',6-Hexachlorobiphenyl (158)												
2,3',4,4',5,5'-Hexachlorobiphenyl (167)												
3,3',4,4',5,5'-Hexachlorobiphenyl (169)												
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)												
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)												
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)												
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)												
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)												
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)												
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)												
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)												
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)												
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)												
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)												
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)												
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)												
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)												
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)												
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)												

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2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)												
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)												
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)												
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)												
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)												
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)												
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)												
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)												
PCB 203/196												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)												
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl												
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl												
Decachlorobiphenyl (209)												
PCB Congeners, Total												
Toxicity Equivalency (PCB) - Birds												
Toxicity Equivalency (PCB) - Fish												
Toxicity Equivalency (PCB) - Mammals												
Technical Chlordane	4.963219741 J		17.63549296 J		10.08436019 J		25.79876543 J					
Heptachlor Epoxide	0.159459459 J		0.556619718 J		0.204265403		0.547222222 J					
Dieldrin	0.097297297 J		0.321126761 J		0.150473934		0.265740741 J					
4,4'-DDE	0.303407756 J		0.709859155 J		0.612559242		1.587345679					
4,4'-DDD	0.050058754 J		0.10028169 J		0.090758294		0.187345679					
Endosulfan Sulfate	0.017567568 UJ		0.098450704 UJ		0.045260664 U		0.043518519 UJ					
4,4'-DDT	0.035957697 J		0.063380282 J		0.046919431 J		0.172530864					
alpha-Chlordane	0.05640423 J		0.337746479 J		0.074881517 J		0.950925926 J					
gamma-Chlordane	0.017567568 UJ		0.098450704 UJ		0.045260664 U		0.057098765 J					
Aroclor-1254	7.445240893 J		12.50507042 J		11.13720379		17.30771605 J					
Aroclor-1268	0.425146886 J		0.592676056 J		0.727725118 J		0.84537037 J					
Aroclor, Total	7.870505288 J		13.09774648 J		11.86469194 J		18.15277778 J					

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North Providence, Rhode Island

	LYMAN MILL POND 2001																			
PARAMETER	DIET-LP 6/12/2001		LPX-EI-4006-4010-0000-01 7/20/2001		L-TS-62-N 6/8/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-N 6/8/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-N 6/7/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-N 6/9/2001	
HCX	8.12E-03	J	6.57E-03	JK	6.44E-04	J	7.9E-02	9.8E-02	2.13E-04	UJ	2.6E-02	3.2E-02	3.02E-04	J	3.7E-02	4.6E-02	4.45E-04	J
2,3,7,8-TCDD	4.80E-03	J	9.86E-03		2.60E-02	J	5.4E+00	2.6E+00	2.05E-03	J	4.3E-01	2.1E-01	0.021599573	J	4.5E+00	2.2E+00	1.74E-02	J
1,2,3,7,8-PeCDD	1.41E-05	UJ	9.50E-04	U	5.32E-05	J	3.8E+00	5.6E-02	3.54E-05	J	2.5E+00	3.7E-02	6.19E-05	J	4.4E+00	6.5E-02	9.02E-05	J
1,2,3,4,7,8-HxCDD	3.29E-05	J	9.50E-04	U	4.99E-05	J	1.5E+00	5.3E-02	2.91E-05	J	8.8E-01	3.1E-02	6.46E-05	J	2.0E+00	6.8E-02	8.45E-05	J
1,2,3,6,7,8-HxCDD	8.92E-05	J	1.01E-04	J	1.30E-04	J	1.5E+00	1.3E+00	6.64E-05	J	7.4E-01	6.6E-01	2.03E-04	J	2.3E+00	2.0E+00	3.19E-04	J
1,2,3,7,8,9-HxCDD	2.33E-05	J	9.50E-04	U	3.44E-05	J	1.5E+00	3.6E-02	1.27E-05	J	5.4E-01	1.3E-02	3.21E-05	J	1.4E+00	3.4E-02	3.97E-05	J
1,2,3,4,6,7,8-HpCDD	9.66E-04	J	5.00E-04	J	3.74E-04	J	3.9E-01	7.5E-01	2.15E-04	J	2.2E-01	4.3E-01	4.85E-04	J	5.0E-01	9.7E-01	9.88E-04	J
OCDD	2.05E-03	J	1.26E-03	J	1.16E-04	UJ	5.7E-02	9.2E-02	2.97E-04	J	1.4E-01	2.4E-01	3.03E-04	J	1.5E-01	2.4E-01	1.13E-03	J
2,3,7,8-TCDF	1.85E-05	UJ$	7.03E-05	J	1.42E-04	J	7.7E+00	2.0E+00	7.19E-05	J	3.9E+00	1.0E+00	1.31E-04	J	7.1E+00	1.9E+00	1.30E-04	J
1,2,3,7,8-PeCDF	1.65E-05	UJ	9.50E-04	U	2.39E-05	J	1.5E+00	2.5E-02	1.08E-05	J	6.6E-01	1.1E-02	3.34E-05	J	2.0E+00	3.5E-02	2.73E-05	J
2,3,4,7,8-PeCDF	1.73E-05	UJ	9.50E-04	U	3.38E-05	J	2.0E+00	3.6E-02	6.50E-05	UJ	3.8E+00	6.8E-02	8.18E-05	J	4.7E+00	8.6E-02	3.87E-05	J
1,2,3,4,7,8-HxCDF	1.22E-05	UJ	9.50E-04	U	4.33E-05	J	3.5E+00	4.6E-02	2.61E-05	J	2.1E+00	2.7E-02	4.30E-05	J	3.5E+00	4.5E-02	4.32E-05	J
1,2,3,6,7,8-HxCDF	1.65E-05	J	9.50E-04	U	4.78E-05	J	2.9E+00	5.0E-02	1.84E-05	J	1.1E+00	1.9E-02	4.08E-05	J	2.5E+00	4.3E-02	3.65E-05	J
2,3,4,6,7,8-HxCDF	6.83E-06	J	9.50E-04	U	1.49E-05	J	2.2E+00	1.6E-02	7.05E-06	J	1.0E+00	7.4E-03	1.39E-05	J	2.0E+00	1.5E-02	1.55E-05	J
1,2,3,4,6,7,8-HpCDF	1.29E-04	J	5.58E-05	J	6.01E-05	J	4.7E-01	1.1E+00	4.44E-05	J	3.5E-01	8.0E-01	8.34E-05	J	6.5E-01	1.5E+00	0.0001	J
1,2,3,4,7,8,9-HpCDF	3.01E-06	UJ	9.50E-04	U	1.42E-05	UJ	4.7E+00	1.5E-02	1.30E-05	UJ	4.3E+00	1.4E-02	5.41E-06	J	1.8E+00	5.7E-03	7.75E-06	J
OCDF	1.43E-05	UJ	5.74E-05	J	5.33E-06	UJ	3.7E-01	9.3E-02	1.69E-05	UJ	1.2E+00	2.9E-01	8.18E-06	UJ	5.7E-01	1.4E-01	1.11E-05	UJ
Total TCDD	4.88E-03	J	9.86E-03	J	2.60E-02	J	5.3E+00	2.6E+00	2.05E-03	J	4.2E-01	2.1E-01	0.021599573	J	4.4E+00	2.2E+00	1.74E-02	J
Total HxCDD	3.52E-04	J	1.01E-04	J	2.14E-04	J	6.1E-01	2.1E+00	1.08E-04	J	3.1E-01	1.1E+00	3.15E-04	J	9.0E-01	3.1E+00	4.85E-04	J
Total HpCDD	1.17E-03	J	7.86E-04	J	3.90E-04	J	3.3E-01	5.0E-01	2.47E-04	J	2.1E-01	3.2E-01	5.05E-04	J	4.3E-01	6.4E-01	1.01E-03	J
Total TCDF	8.88E-05	J	7.03E-05	J	1.99E-04	J	2.2E+00	2.8E+00	9.15E-05	J	1.0E+00	1.3E+00	4.57E-04	J	5.2E+00	6.5E+00	1.82E-04	J
Total PeCDF	1.13E-04	J	1.55E-04	J	1.15E-04	J	1.0E+00	7.4E-01	4.99E-05	J	4.4E-01	3.2E-01	1.56E-04	J	1.4E+00	1.0E+00	1.23E-04	J
Total HxCDF	1.44E-04	J	3.65E-05	J	1.52E-04	J	1.1E+00	4.2E+00	1.19E-04	J	8.2E-01	3.3E+00	1.32E-04	J	9.2E-01	3.6E+00	1.20E-04	J
Total HpCDF	8.84E-05	UJ	1.11E-04	J	8.85E-05	J	1.0E+00	8.0E-01	9.84E-05	J	1.1E+00	8.8E-01	1.25E-04	J	1.4E+00	1.1E+00	1.33E-04	J
Toxicity Equivalency - Birds	4.86E-03		1.24E-02		2.63E-02		5.4E+00	2.1E+00	2.23E-03		4.6E-01	1.8E-01	2.19E-02		4.5E+00	1.8E+00	1.77E-02	
Toxicity Equivalency - Fish	4.86E-03		1.22E-02		2.62E-02		5.4E+00	2.1E+00	2.15E-03		4.4E-01	1.8E-01	2.18E-02		4.5E+00	1.8E+00	1.76E-02	
Toxicity Equivalency - Mammals	4.86E-03		1.19E-02		2.62E-02		5.4E+00	2.2E+00	2.15E-03		4.4E-01	1.8E-01	2.18E-02		4.5E+00	1.8E+00	0.017619926	
2-Monochlorobiphenyl (1)			2.50E-03	J	8.78E-05	UJ		3.5E-02										
4-Chlorobiphenyl (3)			2.25E-03	J	7.37E-05	UJ		3.3E-02										
2,2'-Dichlorobiphenyl (4)			4.79E-03	J	1.53E-03	UJ		3.2E-01										
2,6-Dichlorobiphenyl (10)			1.90E-03	U	1.53E-04	UJ		8.0E-02										
3,4-Dichlorobiphenyl (12)			3.80E-03	UC	3.06E-04	UJ		8.0E-02										
16/32 (2,2',3'/2,4',6)																		
2,2',3'-Trichlorobiphenyl (16)			3.23E-03	JC	1.87E-03	J		5.8E-01										
2,2',4-Trichlorobiphenyl (17)			3.15E-03	J	1.34E-03	J		4.3E-01										
2,2',5-Trichlorobiphenyl (18)			6.60E-03	JC	3.02E-03	J		4.6E-01										
2,2',6-Trichlorobiphenyl (19)			8.48E-04	J	4.40E-04	J		5.2E-01										
2,3,3'-Trichlorobiphenyl (20)			3.21E-02	JC	0.354361228	J		1.1E+01										
2,3,4'-Trichlorobiphenyl (22)			5.04E-03	J	4.24E-03	J		8.4E-01										
24/27 (2,3,6/2,3',6)																		
2,3',4-Trichlorobiphenyl (25)			1.48E-03	J	4.93E-03	J		3.3E+00										
2,3',5-Trichlorobiphenyl (26)			2.67E-03	JC	3.04E-03	J		1.1E+00										
2,4,4'-Trichlorobiphenyl (28)																		
2,4',5-Trichlorobiphenyl (31)			1.79E-02	J	7.57E-02	J		4.2E+00										
2,4',6-Trichlorobiphenyl (32)			3.09E-03	J	3.04E-03	J		9.8E-01										

TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	LYMAN MILL POND 2001											
PARAMETER	DIET-LP 6/12/2001	LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-N 6/8/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-N 6/8/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-N 6/7/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-N 6/9/2001
2,2',3,3'-Tetrachlorobiphenyl (40)		9.47E-03 JC	3.45E-02 J		3.6E+00							
2,2',3,4'-Tetrachlorobiphenyl (42)		7.58E-03 J	6.02E-02 J		7.9E+00							
2,2',3,5-Tetrachlorobiphenyl (43)		6.35E-02 C	0.78022391 J		1.2E+01							
2,2',3,5'-Tetrachlorobiphenyl (44)		3.25E-02 JC	3.14E-01 J		9.7E+00							
2,2',3,6-Tetrachlorobiphenyl (45)		1.84E-03 JC	3.30E-03 J		1.8E+00							
2,2',3,6'-Tetrachlorobiphenyl (46)		6.82E-04 J	1.30E-03 J		1.9E+00							
47/75 (2,2',4,4'/2,4,4',6)												
2,2',4,5-Tetrachlorobiphenyl (48)		2.92E-03 J	5.82E-03 J		2.0E+00							
2,2',4,5'-Tetrachlorobiphenyl (49)		3.09E-02 JC	0.375313409 J		1.2E+01							
2,2',4,6-Tetrachlorobiphenyl (50)		1.77E-03 JC	1.32E-02 J		7.4E+00							
2,2',4,6'-Tetrachlorobiphenyl (51)												
2,2',5,5'-Tetrachlorobiphenyl (52)												
2,2',5,6'-Tetrachlorobiphenyl (53)												
2,3,3',4'-Tetrachlorobiphenyl (56)		1.04E-02 J	0.018978352 J		1.8E+00							
2,3,3',6-Tetrachlorobiphenyl (59)		3.32E-03 JC	3.05E-02 J		9.2E+00							
2,3,4,4'-Tetrachlorobiphenyl (60)		1.16E-02 J	7.84E-02 J		6.8E+00							
PCB60/56												
2,3,4,5-Tetrachlorobiphenyl (61)		1.21E-01 C	0.6080937 J		5.0E+00							
2,3,4',5-Tetrachlorobiphenyl (63)		6.00E-03 J	3.79E-02 J		6.3E+00							
2,3,4',6-Tetrachlorobiphenyl (64)		1.78E-02	0.207212924 J		1.2E+01							
2,3',4,4'-Tetrachlorobiphenyl (66)		5.67E-02	0.855021325 J		1.5E+01							
70/76 (2,3',4',5/2,3',4',5)												
2,3',4',5-Tetrachlorobiphenyl (74)												
3,3',4,4'-Tetrachlorobiphenyl (77)		1.22E-02 J	4.47E-02 J		3.7E+00							
3,4,4',5-Tetrachlorobiphenyl (81)		2.25E-03 J	1.53E-03 UJ		6.8E-01							
2,2',3,3',4-Pentachlorobiphenyl (82)		1.58E-02 J	7.01E-02 J		4.4E+00							
2,2',3,3',5-Pentachlorobiphenyl (83)		1.83E-01 C	1.497211309 J		8.2E+00							
2,2',3,3',6-Pentachlorobiphenyl (84)		1.30E-02 J	9.46E-02 J		7.3E+00							
2,2',3,4,4'-Pentachlorobiphenyl (85)		6.75E-02 C	0.420756058 J		6.2E+00							
2,2',3,4,5-Pentachlorobiphenyl (86)		1.06E-01 C	1.049145073 J		9.9E+00							
2,2',3,4,6-Pentachlorobiphenyl (88)		1.17E-02 JC	0.15489273 J		1.3E+01							
2,2',3,4,6'-Pentachlorobiphenyl (89)		2.88E-04 J	1.82E-03 J		6.3E+00							
2,2',3,4',5-Pentachlorobiphenyl (90)		2.05E-01 C	2.518176252 J		1.2E+01							
2,2',3,4',6-Pentachlorobiphenyl (91)												
2,2',3,5,5'-Pentachlorobiphenyl (92)		3.40E-02 J	0.439346365 J		1.3E+01							
2,2',3,5,6-Pentachlorobiphenyl (93)		2.66E-03 JC	2.87E-02 J		1.1E+01							
2,2',3,5',6-Pentachlorobiphenyl (95)		9.21E-02	0.770141034 J		8.4E+00							
2,2',3,4',5'-Pentachlorobiphenyl (97)												
2,2',4,4',5-Pentachlorobiphenyl (99)												
2,2',4,4',6-Pentachlorobiphenyl (100)												
101/90 (2,2',4,5,5'/2,2',3,4',5)												
2,3,3',4,4'-Pentachlorobiphenyl (105)		8.64E-02	0.562272213 J		6.5E+00							
2,3,3',4,5-Pentachlorobiphenyl (106)		2.17E-02 JC	0.221872213 J		1.0E+01							
2,3,3',4',5-Pentachlorobiphenyl (107)												
2,3,3',4',5'-Pentachlorobiphenyl (108)		6.30E-03 JC	2.26E-02 J		3.6E+00							
2,3,3',4',6-Pentachlorobiphenyl (110)		1.67E-01 C	1.842032633 J		1.1E+01							
2,3,4,4',5-Pentachlorobiphenyl (114)		7.85E-03 J	3.94E-02 J		5.0E+00							
2,3',4,4',5-Pentachlorobiphenyl (118)		2.80E-01	2.253043296 J		8.1E+00							

US EPA ARCHIVE DOCUMENT

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2,3',4,4',6-Pentachlorobiphenyl (119)												
2,3',4,4',5-Pentachlorobiphenyl (123)												
2,3',4',5,5'-Pentachlorobiphenyl (124)												
3,3',4,4',5-Pentachlorobiphenyl (126)		1.89E-03 J	5.37E-03 J		2.8E+00							
2,2',3,3',4,4'-Hexachlorobiphenyl (128)		9.50E-02 C	3.91E-01 J		4.1E+00							
2,2',3,3',4,5-Hexachlorobiphenyl (129)		5.20E-01 C	2.73E+00 J		5.2E+00							
2,2',3,3',4,5'-Hexachlorobiphenyl (130)		5.25E-02	1.90E-01 J		3.6E+00							
2,2',3,3',4,6-Hexachlorobiphenyl (131)		3.36E-03 J	1.53E-03 UJ		4.6E-01							
2,2',3,3',4,6'-Hexachlorobiphenyl (132)		3.56E-02 J	2.92E-01 J		8.2E+00							
2,2',3,3',5,6-Hexachlorobiphenyl (134)		1.90E-02 UC	4.58E-02 J		2.4E+00							
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)												
2,2',3,3',5,6'-Hexachlorobiphenyl (135)		4.62E-02 C	0.345536995 J		7.5E+00							
2,2',3,3',6,6'-Hexachlorobiphenyl (136)		6.65E-03 J	5.43E-02 J		8.2E+00							
2,2',3,4,4',5-Hexachlorobiphenyl (137)		2.58E-02 JC	0.287689499 J		1.1E+01							
PCB 138/160/163												
2,2',3,4,5,5'-Hexachlorobiphenyl (141)		2.65E-02	0.354275444 J		1.3E+01							
2,2',3,4,5',6-Hexachlorobiphenyl (144)		9.12E-03 J	0.059859774 J		6.6E+00							
2,2',3,4',5,5'-Hexachlorobiphenyl (146)		1.11E-01 C	0.336238449 J		3.0E+00							
2,2',3,4',5,6-Hexachlorobiphenyl (147)		1.28E-01 C	1.158852666 J		9.0E+00							
2,2',3,4',5',6-Hexachlorobiphenyl (149)												
2,2',3,5,5',6-Hexachlorobiphenyl (151)												
2,2',4,4',5,5'-Hexachlorobiphenyl (153)		5.32E-01 C	2.200515347 J		4.1E+00							
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')												
2,3,3',4,4',5-Hexachlorobiphenyl (156)		1.02E-01 C	0.32127916 J		3.1E+00							
2,3,3',4,4',6-Hexachlorobiphenyl (158)		2.72E-02	0.290671729 J		1.1E+01							
2,3',4,4',5,5'-Hexachlorobiphenyl (167)		1.32E-02 J	0.126003069 J		9.5E+00							
3,3',4,4',5,5'-Hexachlorobiphenyl (169)		5.55E-03 J	0.006898384 J		1.2E+00							
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)												
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)		8.69E-02	0.289668821 J		3.3E+00							
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)		7.09E-03 JC	0.077337964 J		1.1E+01							
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)		1.64E-02 J	0.062960905 J		3.8E+00							
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)												
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)		3.60E-02 JC	0.246970759 J		6.9E+00							
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)		2.47E-03 J	0.007685945 J		3.1E+00							
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)		1.31E-03 J	0.008959451 J		6.8E+00							
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)		2.27E-02 J	0.128542488 J		5.7E+00							
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)		1.09E-02 J	0.048357512 J		4.4E+00							
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)		1.09E-01 C	0.546373506 J		5.0E+00							
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)		1.37E-04 J	0.002753796 J		2.0E+01							
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)												
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)		3.57E-05 J	0.000512278 J		1.4E+01							
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)												
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')												
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)		8.97E-02	0.24475412 J		2.7E+00							
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)		5.19E-03 J	0.011872213 J		2.3E+00							
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)		1.98E-02 J	0.047961228 J		2.4E+00							
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)		1.07E-03 J	0.01009063 J		9.5E+00							
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)												

TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001													
	DIET-LP 6/12/2001	LPX-EI-4006-4010-0000-01 7/20/2001	L-TS-62-N 6/8/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-63-N 6/8/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-70-N 6/7/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-84-N 6/9/2001
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)		3.24E-02 J	0.074740065 J		2.3E+00							
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)		6.12E-03 J	0.02010727 J		3.3E+00							
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)		1.14E-02 J	0.047939418 J		4.2E+00							
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)		1.33E-03 JC	0.006056543 J		4.6E+00							
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)		9.47E-02 C	0.273980937 J		2.9E+00							
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)		9.47E-02										
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)												
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)		4.28E-03 J	0.016889984 J		3.9E+00							
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)		5.70E-02 J	0.127632149 J		2.2E+00							
PCB 203/196												
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)		2.17E-03 J	0.00419483 J		1.9E+00							
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl		1.28E-01	0.239739257 J		1.9E+00							
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl		6.02E-03 J	0.01840517 J		3.1E+00							
Decachlorobiphenyl (209)		6.92E-02 J	0.118449758 J		1.7E+00							
PCB Congeners, Total		4.20E+00	27.78649645 J		6.8E+00							
Toxicity Equivalency (PCB) - Birds		1.05E-03	0.003053312		2.9E+00							
Toxicity Equivalency (PCB) - Fish		1.45E-05	4.89499E-05		3.4E+00							
Toxicity Equivalency (PCB) - Mammals		3.39E-04	0.001075929		3.2E+00							
Technical Chlordane			3.644911147 J			2.224206816 J			4.468278805 J			4.173247232 J
Heptachlor Epoxide			0.08174475 J			0.054641598 J			0.113371266 J			0.083763838 J
Dieldrin			0.099192246 J			0.061574618 J			0.13655761 J			0.076383764 J
4,4'-DDE			0.499353796 J			0.284371328 J			0.957041252 J			0.457380074 J
4,4'-DDD			0.06187399 J			0.047356052			0.068847795 J			0.10701107 J
Endosulfan Sulfate			0.023182553 UJ			0.018742656 UJ			0.02972973 UJ			0.025830258 UJ
4,4'-DDT			0.00726979 J			0.014159812 U			0.014793741 J			0.01900369 J
alpha-Chlordane			0.068820679 J			0.034312573 J			0.044523471 J			0.048892989 J
gamma-Chlordane			0.023182553 UJ			0.018742656 UJ			0.02972973 UJ			0.025830258 UJ
Aroclor-1254			12.18562197 J			6.129494712 J			11.35305832 J			8.866789668 J
Aroclor-1268			0.753473344 J			0.367215041 J			0.610099573 J			0.9099631 J
Aroclor, Total			12.93909532 J			6.496709753 J			11.96301565 J			9.776752768 J

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Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001					BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001			
	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-N 6/12/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
HCX	5.5E-02	6.8E-02	2.57E-04 J	3.2E-02	3.9E-02	7.94E-02	4.6E-02	4.66E-04	47%	9.81E-02	5.7E-02	7.13E-04	47%
2,3,7,8-TCDD	3.6E+00	1.8E+00	1.74E-02 J	3.6E+00	1.8E+00	5.42E+00	3.5E+00	3.54E+00	53%	2.64E+00	1.7E+00	8.38E-01	53%
1,2,3,7,8-PeCDD	6.4E+00	9.5E-02	7.53E-05 J	5.4E+00	7.9E-02	6.42E+00	4.5E+00	2.22E+00	33%	9.49E-02	6.6E-02	4.85E-04	33%
1,2,3,4,7,8-HxCDD	2.6E+00	8.9E-02	7.53E-05 J	2.3E+00	7.9E-02	2.57E+00	1.8E+00	4.39E-01	36%	8.89E-02	6.4E-02	5.27E-04	36%
1,2,3,6,7,8-HxCDD	3.6E+00	3.2E+00	2.53E-04 J	2.8E+00	2.5E+00	3.58E+00	2.2E+00	1.25E+00	51%	3.15E+00	1.9E+00	9.68E-01	51%
1,2,3,7,8,9-HxCDD	1.7E+00	4.2E-02	4.17E-05 J	1.8E+00	4.4E-02	1.79E+00	1.4E+00	2.45E-01	36%	4.39E-02	3.4E-02	1.47E-04	36%
1,2,3,4,6,7,8-HpCDD	1.0E+00	2.0E+00	7.55E-04 J	7.8E-01	1.5E+00	1.02E+00	5.8E-01	1.02E-01	55%	1.97E+00	1.1E+00	3.80E-01	55%
OCDD	5.5E-01	9.0E-01	9.53E-04 J	4.6E-01	7.8E-01	5.51E-01	2.7E-01	4.82E-02	80%	8.98E-01	4.4E-01	1.28E-01	80%
2,3,7,8-TCDF	7.0E+00	1.8E+00	1.23E-04 J	6.6E+00	1.7E+00	7.69E+00	6.5E+00	2.21E+00	23%	2.02E+00	1.7E+00	1.53E-01	23%
1,2,3,7,8-PeCDF	1.7E+00	2.9E-02	2.25E-05 J	1.4E+00	2.4E-02	2.03E+00	1.4E+00	2.54E-01	35%	3.52E-02	2.5E-02	7.61E-05	35%
2,3,4,7,8-PeCDF	2.2E+00	4.1E-02	3.54E-05 J	2.1E+00	3.7E-02	4.74E+00	3.0E+00	1.54E+00	42%	8.61E-02	5.4E-02	5.08E-04	42%
1,2,3,4,7,8-HxCDF	3.5E+00	4.5E-02	3.68E-05 J	3.0E+00	3.9E-02	3.53E+00	3.1E+00	3.69E-01	19%	4.56E-02	4.0E-02	6.14E-05	19%
1,2,3,6,7,8-HxCDF	2.2E+00	3.8E-02	3.41E-05 J	2.1E+00	3.6E-02	2.90E+00	2.2E+00	4.37E-01	31%	5.03E-02	3.7E-02	1.31E-04	31%
2,3,4,6,7,8-HxCDF	2.3E+00	1.6E-02	1.63E-05 J	2.4E+00	1.7E-02	2.38E+00	2.0E+00	2.97E-01	27%	1.71E-02	1.4E-02	1.53E-05	27%
1,2,3,4,6,7,8-HpCDF	7.8E-01	1.8E+00	7.49E-05 J	5.8E-01	1.3E+00	7.78E-01	5.6E-01	2.76E-02	29%	1.79E+00	1.3E+00	1.46E-01	29%
1,2,3,4,7,8,9-HpCDF	2.6E+00	8.2E-03	5.42E-06 J	1.8E+00	5.7E-03	4.72E+00	3.0E+00	1.95E+00	46%	1.50E-02	9.6E-03	1.96E-05	46%
OCDF	7.8E-01	1.9E-01	5.42E-06 UJ	3.8E-01	9.4E-02	1.19E+00	6.6E-01	1.15E-01	51%	2.95E-01	1.6E-01	7.07E-03	51%
Total TCDD	3.6E+00	1.8E+00	1.74E-02 J	3.6E+00	1.8E+00	5.33E+00	3.5E+00	3.42E+00	53%	2.64E+00	1.7E+00	8.38E-01	53%
Total HxCDD	1.4E+00	4.8E+00	3.91E-04 J	1.1E+00	3.9E+00	1.38E+00	8.6E-01	1.75E-01	49%	4.79E+00	3.0E+00	2.12E+00	49%
Total HpCDD	6.7E-01	1.3E+00	7.85E-04 J	6.7E-01	1.0E+00	8.70E-01	5.0E-01	7.03E-02	53%	1.29E+00	7.5E-01	1.55E-01	53%
Total TCDF	2.1E+00	2.6E+00	1.64E-04 J	1.8E+00	2.3E+00	5.15E+00	2.5E+00	2.47E+00	64%	6.51E+00	3.1E+00	3.94E+00	64%
Total PeCDF	1.1E+00	7.9E-01	8.80E-05 J	7.8E-01	5.7E-01	1.38E+00	9.4E-01	1.24E-01	37%	1.01E+00	6.9E-01	6.62E-02	37%
Total HxCDF	8.3E-01	3.3E+00	1.16E-04 J	8.0E-01	3.2E+00	1.06E+00	8.9E-01	1.10E-02	12%	4.17E+00	3.5E+00	1.71E-01	12%
Total HpCDF	1.5E+00	1.2E+00	8.90E-05 J	1.0E+00	8.0E-01	1.50E+00	1.2E+00	5.54E-02	19%	1.19E+00	9.6E-01	3.49E-02	19%
Toxicity Equivalency - Birds	3.6E+00	1.4E+00	1.76E-02	3.6E+00	1.4E+00	5.42E+00	3.5E+00	3.49E+00	53%	2.12E+00	1.4E+00	5.32E-01	53%
Toxicity Equivalency - Fish	3.6E+00	1.4E+00	1.75E-02	3.6E+00	1.4E+00	5.39E+00	3.5E+00	3.47E+00	53%	2.14E+00	1.4E+00	5.50E-01	53%
Toxicity Equivalency - Mammals	3.6E+00	1.5E+00	1.75E-02	3.6E+00	1.5E+00	5.39E+00	3.5E+00	3.47E+00	53%	2.19E+00	1.4E+00	5.76E-01	53%
2-Monochlorobiphenyl (1)										3.51E-02	3.5E-02		
4-Chlorobiphenyl (3)										3.27E-02	3.3E-02		
2,2'-Dichlorobiphenyl (4)										3.20E-01	3.2E-01		
2,6-Dichlorobiphenyl (10)										8.05E-02	8.0E-02		
3,4-Dichlorobiphenyl (12)										8.05E-02	8.0E-02		
16/32 (2,2',3'/2,4',6)													
2,2',3'-Trichlorobiphenyl (16)										5.79E-01	5.8E-01		
2,2',4-Trichlorobiphenyl (17)										4.26E-01	4.3E-01		
2,2',5-Trichlorobiphenyl (18)										4.58E-01	4.6E-01		
2,2',6-Trichlorobiphenyl (19)										5.19E-01	5.2E-01		
2,3,3'-Trichlorobiphenyl (20)										1.10E+01	1.1E+01		
2,3,4'-Trichlorobiphenyl (22)										8.42E-01	8.4E-01		
24/27 (2,3,6/2,3',6)													
2,3',4-Trichlorobiphenyl (25)										3.32E+00	3.3E+00		
2,3',5-Trichlorobiphenyl (26)										1.14E+00	1.1E+00		
2,4,4'-Trichlorobiphenyl (28)													
2,4',5-Trichlorobiphenyl (31)										4.23E+00	4.2E+00		
2,4',6-Trichlorobiphenyl (32)										9.84E-01	9.8E-01		

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PARAMETER	LYMAN MILL POND 2001													
						BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001				
	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-N 6/12/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3'-Tetrachlorobiphenyl (40)										3.64E+00	3.6E+00		
2,2',3,4'-Tetrachlorobiphenyl (42)										7.95E+00	7.9E+00		
2,2',3,5-Tetrachlorobiphenyl (43)										1.23E+01	1.2E+01		
2,2',3,5'-Tetrachlorobiphenyl (44)										9.67E+00	9.7E+00		
2,2',3,6-Tetrachlorobiphenyl (45)										1.79E+00	1.8E+00		
2,2',3,6'-Tetrachlorobiphenyl (46)										1.91E+00	1.9E+00		
47/75 (2,2',4,4'/2,4,4',6)													
2,2',4,5-Tetrachlorobiphenyl (48)										1.99E+00	2.0E+00		
2,2',4,5'-Tetrachlorobiphenyl (49)										1.21E+01	1.2E+01		
2,2',4,6-Tetrachlorobiphenyl (50)										7.43E+00	7.4E+00		
2,2',4,6'-Tetrachlorobiphenyl (51)													
2,2',5,5'-Tetrachlorobiphenyl (52)													
2,2',5,6'-Tetrachlorobiphenyl (53)													
2,3,3',4'-Tetrachlorobiphenyl (56)										1.83E+00	1.8E+00		
2,3,3',6-Tetrachlorobiphenyl (59)										9.18E+00	9.2E+00		
2,3,4,4'-Tetrachlorobiphenyl (60)										6.77E+00	6.8E+00		
PCB60/56													
2,3,4,5-Tetrachlorobiphenyl (61)										5.01E+00	5.0E+00		
2,3,4',5-Tetrachlorobiphenyl (63)										6.32E+00	6.3E+00		
2,3,4',6-Tetrachlorobiphenyl (64)										1.16E+01	1.2E+01		
2,3',4,4'-Tetrachlorobiphenyl (66)										1.51E+01	1.5E+01		
70/76 (2,3',4',5/2,3',4',5)													
2,3',4',5-Tetrachlorobiphenyl (74)													
3,3',4,4'-Tetrachlorobiphenyl (77)										3.68E+00	3.7E+00		
3,4,4',5-Tetrachlorobiphenyl (81)										6.80E-01	6.8E-01		
2,2',3,3',4-Pentachlorobiphenyl (82)										4.42E+00	4.4E+00		
2,2',3,3',5-Pentachlorobiphenyl (83)										8.19E+00	8.2E+00		
2,2',3,3',6-Pentachlorobiphenyl (84)										7.27E+00	7.3E+00		
2,2',3,4,4'-Pentachlorobiphenyl (85)										6.23E+00	6.2E+00		
2,2',3,4,5-Pentachlorobiphenyl (86)										9.89E+00	9.9E+00		
2,2',3,4,6-Pentachlorobiphenyl (88)										1.33E+01	1.3E+01		
2,2',3,4,6'-Pentachlorobiphenyl (89)										6.30E+00	6.3E+00		
2,2',3,4',5-Pentachlorobiphenyl (90)										1.23E+01	1.2E+01		
2,2',3,4',6-Pentachlorobiphenyl (91)													
2,2',3,5,5'-Pentachlorobiphenyl (92)										1.29E+01	1.3E+01		
2,2',3,5,6-Pentachlorobiphenyl (93)										1.08E+01	1.1E+01		
2,2',3,5',6-Pentachlorobiphenyl (95)										8.36E+00	8.4E+00		
2,2',3,4',5'-Pentachlorobiphenyl (97)													
2,2',4,4',5-Pentachlorobiphenyl (99)													
2,2',4,4',6-Pentachlorobiphenyl (100)													
101/90 (2,2',4,5,5'/2,2',3,4',5)													
2,3,3',4,4'-Pentachlorobiphenyl (105)										6.50E+00	6.5E+00		
2,3,3',4,5-Pentachlorobiphenyl (106)										1.02E+01	1.0E+01		
2,3,3',4',5-Pentachlorobiphenyl (107)													
2,3,3',4',5'-Pentachlorobiphenyl (108)										3.59E+00	3.6E+00		
2,3,3',4',6-Pentachlorobiphenyl (110)										1.10E+01	1.1E+01		
2,3,4,4',5-Pentachlorobiphenyl (114)										5.02E+00	5.0E+00		
2,3',4,4',5-Pentachlorobiphenyl (118)										8.06E+00	8.1E+00		

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PARAMETER	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-N 6/12/2001	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',6-Pentachlorobiphenyl (119)													
2,3',4,4',5'-Pentachlorobiphenyl (123)													
2,3',4',5,5'-Pentachlorobiphenyl (124)													
3,3',4,4',5-Pentachlorobiphenyl (126)										2.84E+00	2.8E+00		
2,2',3,3',4,4'-Hexachlorobiphenyl (128)										4.11E+00	4.1E+00		
2,2',3,3',4,5-Hexachlorobiphenyl (129)										5.25E+00	5.2E+00		
2,2',3,3',4,5'-Hexachlorobiphenyl (130)										3.62E+00	3.6E+00		
2,2',3,3',4,6-Hexachlorobiphenyl (131)										4.56E-01	4.6E-01		
2,2',3,3',4,6'-Hexachlorobiphenyl (132)										8.21E+00	8.2E+00		
2,2',3,3',5,6-Hexachlorobiphenyl (134)										2.41E+00	2.4E+00		
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)													
2,2',3,3',5,6'-Hexachlorobiphenyl (135)										7.48E+00	7.5E+00		
2,2',3,3',6,6'-Hexachlorobiphenyl (136)										8.17E+00	8.2E+00		
2,2',3,4,4',5-Hexachlorobiphenyl (137)										1.12E+01	1.1E+01		
PCB 138/160/163													
2,2',3,4,5,5'-Hexachlorobiphenyl (141)										1.34E+01	1.3E+01		
2,2',3,4,5',6-Hexachlorobiphenyl (144)										6.56E+00	6.6E+00		
2,2',3,4',5,5'-Hexachlorobiphenyl (146)										3.03E+00	3.0E+00		
2,2',3,4',5,6-Hexachlorobiphenyl (147)										9.02E+00	9.0E+00		
2,2',3,4',5',6-Hexachlorobiphenyl (149)													
2,2',3,5,5',6-Hexachlorobiphenyl (151)													
2,2',4,4',5,5'-Hexachlorobiphenyl (153)										4.14E+00	4.1E+00		
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')													
2,3,3',4,4',5-Hexachlorobiphenyl (156)										3.14E+00	3.1E+00		
2,3,3',4,4',6-Hexachlorobiphenyl (158)										1.07E+01	1.1E+01		
2,3',4,4',5,5'-Hexachlorobiphenyl (167)										9.53E+00	9.5E+00		
3,3',4,4',5,5'-Hexachlorobiphenyl (169)										1.24E+00	1.2E+00		
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)													
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)										3.33E+00	3.3E+00		
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)										1.09E+01	1.1E+01		
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)										3.83E+00	3.8E+00		
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)													
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)										6.86E+00	6.9E+00		
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)										3.11E+00	3.1E+00		
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)										6.84E+00	6.8E+00		
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)										5.67E+00	5.7E+00		
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)										4.45E+00	4.4E+00		
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)										5.00E+00	5.0E+00		
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)										2.01E+01	2.0E+01		
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)													
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)										1.43E+01	1.4E+01		
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)													
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')													
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)										2.73E+00	2.7E+00		
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)										2.29E+00	2.3E+00		
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)										2.43E+00	2.4E+00		
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)										9.46E+00	9.5E+00		
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)													

US EPA ARCHIVE DOCUMENT

TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	LYMAN MILL POND 2001													
						BMF-Diet Summary Statistics - Lyman Mill 2001				BMF-EI Summary Statistics - Lyman Mill 2001				
	BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	L-TS-89-N 6/12/2001		BMF-DIET LYMAN MILL 2001	BMF-EI LYMAN MILL 2001	Maximum	Mean	Variance	Coefficient of Variation	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)											2.31E+00	2.3E+00		
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)											3.28E+00	3.3E+00		
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)											4.20E+00	4.2E+00		
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)											4.55E+00	4.6E+00		
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)											2.89E+00	2.9E+00		
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)														
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)														
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)											3.95E+00	3.9E+00		
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)											2.24E+00	2.2E+00		
PCB 203/196														
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)											1.94E+00	1.9E+00		
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl											1.88E+00	1.9E+00		
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl											3.06E+00	3.1E+00		
Decachlorobiphenyl (209)											1.71E+00	1.7E+00		
PCB Congeners, Total											6.62E+00	6.6E+00		
Toxicity Equivalency (PCB) - Birds											2.90E+00	2.9E+00		
Toxicity Equivalency (PCB) - Fish											3.37E+00	3.4E+00		
Toxicity Equivalency (PCB) - Mammals											3.18E+00	3.2E+00		
Technical Chlordane			5.026610169	J										
Heptachlor Epoxide			0.076949153	J										
Dieldrin			0.236610169	J										
4,4'-DDE			0.836440678	J										
4,4'-DDD			0.100677966	J										
Endosulfan Sulfate			0.034152542	UJ										
4,4'-DDT			0.014745763	J										
alpha-Chlordane			0.056610169	J										
gamma-Chlordane			0.034152542	UJ										
Aroclor-1254			10.91355932	J										
Aroclor-1268			1.086779661	J										
Aroclor, Total			12.00050847	J										

TABLE J-11

CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003									BMF-Diet Summary Statistics - Manton 2003			
	MANTON FOOD 6/14/2003	RMP 120-N 6/14/2003	BMF-DIET MANTON 2003	RMP 123-N 6/14/2003	BMF-DIET MANTON 2003	RMP 124-N 6/14/2003	BMF-DIET MANTON 2003	RMP 129-N 6/14/2003	BMF-DIET MANTON 2003	Maximum	Mean	Variance	Coefficient of Variation
HCX													
2,3,7,8-TCDD	2.62E-03	6.64E-03	2.5E+00	8.82E-03	3.4E+00	7.65E-03	2.9E+00	7.39E-03	2.8E+00	3.37E+00	2.91E+00	1.19E-01	12%
1,2,3,7,8-PeCDD	4.32E-05 U	4.31E-05 U	1.0E+00	4.95E-05 U	1.1E+00	3.58E-05 U	8.3E-01	3.30E-05 U	7.6E-01	1.14E+00	9.33E-01	2.97E-02	18%
1,2,3,4,7,8-HxCDD	3.23E-05 U	5.80E-05 U	1.8E+00	6.33E-05 U	2.0E+00	2.99E-05 U	9.2E-01	3.94E-05 U	1.2E+00	1.96E+00	1.47E+00	2.34E-01	33%
1,2,3,6,7,8-HxCDD	3.20E-05 U	2.24E-04 U	7.0E+00	2.15E-04 U	6.7E+00	5.78E-05 U	1.8E+00	1.21E-04 U	3.8E+00	7.00E+00	4.83E+00	6.17E+00	51%
1,2,3,7,8,9-HxCDD	3.12E-05 U	8.48E-05 U	2.7E+00	8.44E-05 UJ	2.7E+00	2.72E-05 U	8.7E-01	4.82E-05 U	1.5E+00	2.72E+00	1.96E+00	8.29E-01	46%
1,2,3,4,6,7,8-HpCDD	4.13E-04 U	3.42E-03	8.3E+00	3.38E-03	8.2E+00	2.84E-04 U	6.9E-01	7.19E-04 U	1.7E+00	8.27E+00	4.72E+00	1.66E+01	86%
OCDD	6.68E-04 U	2.14E-03 U	3.2E+00	2.19E-03 U	3.3E+00	3.96E-04 U	5.9E-01	8.23E-04 U	1.2E+00	3.28E+00	2.08E+00	1.88E+00	66%
2,3,7,8-TCDF	3.20E-05 J#	9.86E-05 #	3.1E+00	1.21E-04 #	3.8E+00	9.56E-05 #	3.0E+00	1.02E-04 J	3.2E+00	3.77E+00	3.26E+00	1.25E-01	11%
1,2,3,7,8-PeCDF	3.97E-05 U	3.95E-05 J	1.0E+00	3.41E-05 J	8.6E-01	3.58E-05 J	9.0E-01	1.39E-05 U	3.5E-01	9.97E-01	7.77E-01	8.43E-02	37%
2,3,4,7,8-PeCDF	3.50E-05 U	2.14E-05 U	6.1E-01	1.99E-05 U	5.7E-01	2.04E-05 U	5.8E-01	1.23E-05 UJ	3.5E-01	6.12E-01	5.29E-01	1.44E-02	23%
1,2,3,4,7,8-HxCDF	2.29E-05 UJ	3.53E-05 UJ	1.5E+00	3.74E-05 UJ	1.6E+00	2.47E-05 UJ	1.1E+00	1.91E-05 U	8.3E-01	1.63E+00	1.27E+00	1.44E-01	30%
1,2,3,6,7,8-HxCDF	2.52E-05 U	4.65E-05 U	1.8E+00	4.60E-05 U	1.8E+00	2.50E-05 U	9.9E-01	2.67E-05 U	1.1E+00	1.85E+00	1.43E+00	2.19E-01	33%
2,3,4,6,7,8-HxCDF	2.50E-05 U	2.79E-05 U	1.1E+00	2.44E-05 U	9.8E-01	1.70E-05 U	6.8E-01	1.40E-05 U	5.8E-01	1.12E+00	8.33E-01	6.71E-02	31%
1,2,3,4,6,7,8-HpCDF	6.84E-05 UJ	2.33E-04 U	3.4E+00	2.11E-04 U	3.1E+00	5.32E-05 U	7.8E-01	8.97E-05 U	1.3E+00	3.40E+00	2.14E+00	1.67E+00	60%
1,2,3,4,7,8,9-HpCDF	2.65E-05 U	1.30E-05 U	4.9E-01	1.03E-05 U	3.9E-01	1.18E-05 U	4.4E-01	8.26E-06 UJ	3.1E-01	4.92E-01	4.09E-01	5.97E-03	19%
OCDF	4.81E-05 UJ	8.95E-05 UJ	1.9E+00	7.90E-05 UJ	1.6E+00	3.86E-05 UJ	8.0E-01	3.42E-05 UJ	7.1E-01	1.86E+00	1.25E+00	3.40E-01	46%
Total TCDD	2.62E-03 J	6.64E-03 J	2.5E+00	8.82E-03 J	3.4E+00	7.65E-03 J	2.9E+00	7.39E-03 J	2.8E+00	3.37E+00	2.91E+00	1.19E-01	12%
Total HxCDD	3.18E-05 UJ	3.66E-04 UJ	1.2E+01	3.63E-04 UJ	1.1E+01	1.15E-04 UJ	3.6E+00	2.09E-04 UJ	6.6E+00	1.15E+01	8.29E+00	1.50E+01	47%
Total HpCDD	5.12E-04 UJ	1.76E-03 UJ	3.4E+00	1.73E-03 UJ	3.4E+00	2.99E-04 UJ	5.8E-01	7.46E-04 UJ	1.5E+00	3.43E+00	2.21E+00	2.02E+00	64%
Total TCDF	2.18E-04 J	1.75E-04 J	8.0E-01	2.13E-04 J	9.8E-01	1.27E-04 J	5.8E-01	1.37E-04 J	6.3E-01	9.76E-01	7.46E-01	3.24E-02	24%
Total PeCDF	9.83E-05 UJ	4.11E-05 UJ	4.2E-01	3.70E-05 UJ	3.8E-01	3.84E-05 UJ	3.9E-01	3.16E-05 UJ	3.2E-01	4.18E-01	3.77E-01	1.67E-03	11%
Total HxCDF	8.20E-05 UJ	1.15E-04 UJ	1.4E+00	1.13E-04 UJ	1.4E+00	7.04E-05 UJ	8.6E-01	8.53E-05 UJ	1.0E+00	1.40E+00	1.17E+00	7.12E-02	23%
Total HpCDF	1.08E-04 UJ	2.89E-04 UJ	2.7E+00	2.52E-04 UJ	2.3E+00	6.50E-05 UJ	6.0E-01	1.21E-04 UJ	1.1E+00	2.68E+00	1.68E+00	9.66E-01	58%
Toxicity Equivalency - Birds	2.65E-03	6.74E-03	2.5E+00	8.94E-03	3.4E+00	7.75E-03	2.9E+00	7.49E-03	2.8E+00	3.38E+00	2.92E+00	1.19E-01	12%
Toxicity Equivalency - Fish	2.62E-03	6.65E-03	2.5E+00	8.83E-03	3.4E+00	7.66E-03	2.9E+00	7.39E-03	2.8E+00	3.37E+00	2.92E+00	1.19E-01	12%
Toxicity Equivalency - Mammals	2.62E-03	6.68E-03	2.6E+00	8.86E-03	3.4E+00	7.66E-03	2.9E+00	7.40E-03	2.8E+00	3.38E+00	2.92E+00	1.20E-01	12%
2-Monochlorobiphenyl (1)													
4-Chlorobiphenyl (3)													
2,2'-Dichlorobiphenyl (4)													
2,6-Dichlorobiphenyl (10)													
3,4-Dichlorobiphenyl (12)													
16/32 (2,2',3'/2,4',6)													
2,2',3'-Trichlorobiphenyl (16)													
2,2',4-Trichlorobiphenyl (17)													
2,2',5-Trichlorobiphenyl (18)													
2,2',6-Trichlorobiphenyl (19)													
2,3,3'-Trichlorobiphenyl (20)													
2,3,4'-Trichlorobiphenyl (22)													
24/27 (2,3,6/2,3',6)													
2,3',4-Trichlorobiphenyl (25)													
2,3',5-Trichlorobiphenyl (26)													
2,4,4'-Trichlorobiphenyl (28)													
2,4',5-Trichlorobiphenyl (31)													
2,4',6-Trichlorobiphenyl (32)													

TABLE J-11
CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003									BMF-Diet Summary Statistics - Manton 2003			
	MANTON FOOD 6/14/2003		RMP 120-N 6/14/2003	BMF-DIET MANTON 2003	RMP 123-N 6/14/2003	BMF-DIET MANTON 2003	RMP 124-N 6/14/2003	BMF-DIET MANTON 2003	RMP 129-N 6/14/2003	BMF-DIET MANTON 2003	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3'-Tetrachlorobiphenyl (40)														
2,2',3,4'-Tetrachlorobiphenyl (42)														
2,2',3,5-Tetrachlorobiphenyl (43)														
2,2',3,5'-Tetrachlorobiphenyl (44)														
2,2',3,6-Tetrachlorobiphenyl (45)														
2,2',3,6'-Tetrachlorobiphenyl (46)														
47/75 (2,2',4,4'/2,4,4',6)														
2,2',4,5-Tetrachlorobiphenyl (48)														
2,2',4,5'-Tetrachlorobiphenyl (49)														
2,2',4,6-Tetrachlorobiphenyl (50)														
2,2',4,6'-Tetrachlorobiphenyl (51)														
2,2',5,5'-Tetrachlorobiphenyl (52)														
2,2',5,6'-Tetrachlorobiphenyl (53)														
2,3,3',4'-Tetrachlorobiphenyl (56)														
2,3,3',6-Tetrachlorobiphenyl (59)														
2,3,4,4'-Tetrachlorobiphenyl (60)														
PCB60/56														
2,3,4,5-Tetrachlorobiphenyl (61)														
2,3,4',5-Tetrachlorobiphenyl (63)														
2,3,4',6-Tetrachlorobiphenyl (64)														
2,3',4,4'-Tetrachlorobiphenyl (66)														
70/76 (2,3',4',5/2,3',4',5)														
2,3',4',5-Tetrachlorobiphenyl (74)														
3,3',4,4'-Tetrachlorobiphenyl (77)														
3,4,4',5-Tetrachlorobiphenyl (81)														
2,2',3,3',4-Pentachlorobiphenyl (82)														
2,2',3,3',5-Pentachlorobiphenyl (83)														
2,2',3,3',6-Pentachlorobiphenyl (84)														
2,2',3,4,4'-Pentachlorobiphenyl (85)														
2,2',3,4,5-Pentachlorobiphenyl (86)														
2,2',3,4,6-Pentachlorobiphenyl (88)														
2,2',3,4,6'-Pentachlorobiphenyl (89)														
2,2',3,4',5-Pentachlorobiphenyl (90)														
2,2',3,4',6-Pentachlorobiphenyl (91)														
2,2',3,5,5'-Pentachlorobiphenyl (92)														
2,2',3,5,6-Pentachlorobiphenyl (93)														
2,2',3,5',6-Pentachlorobiphenyl (95)														
2,2',3,4',5'-Pentachlorobiphenyl (97)														
2,2',4,4',5-Pentachlorobiphenyl (99)														
2,2',4,4',6-Pentachlorobiphenyl (100)														
101/90 (2,2',4,5,5'/2,2',3,4',5)														
2,3,3',4,4'-Pentachlorobiphenyl (105)														
2,3,3',4,5-Pentachlorobiphenyl (106)														
2,3,3',4',5-Pentachlorobiphenyl (107)														
2,3,3',4',5'-Pentachlorobiphenyl (108)														
2,3,3',4',6-Pentachlorobiphenyl (110)														
2,3,4,4',5-Pentachlorobiphenyl (114)														
2,3',4,4',5-Pentachlorobiphenyl (118)														

TABLE J-11

CALCULATION OF SITE-SPECIFIC BIOMAGNIFICATION FACTORS (BMFs) FOR SWALLOW NESTLING TISSUE

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

	MANTON POND 2003												
										BMF-Diet Summary Statistics - Manton 2003			
PARAMETER	MANTON FOOD 6/14/2003		RMP 120-N 6/14/2003	BMF-DIET MANTON 2003	RMP 123-N 6/14/2003	BMF-DIET MANTON 2003	RMP 124-N 6/14/2003	BMF-DIET MANTON 2003	RMP 129-N 6/14/2003	BMF-DIET MANTON 2003	Maximum	Mean	Variance	Coefficient of Variation
2,3',4,4',6-Pentachlorobiphenyl (119)														
2,3',4,4',5'-Pentachlorobiphenyl (123)														
2,3',4',5,5'-Pentachlorobiphenyl (124)														
3,3',4,4',5-Pentachlorobiphenyl (126)														
2,2',3,3',4,4'-Hexachlorobiphenyl (128)														
2,2',3,3',4,5-Hexachlorobiphenyl (129)														
2,2',3,3',4,5'-Hexachlorobiphenyl (130)														
2,2',3,3',4,6-Hexachlorobiphenyl (131)														
2,2',3,3',4,6'-Hexachlorobiphenyl (132)														
2,2',3,3',5,6-Hexachlorobiphenyl (134)														
135/144 (2,2',3,3',5,6'/2,2',3,4,5',6)														
2,2',3,3',5,6'-Hexachlorobiphenyl (135)														
2,2',3,3',6,6'-Hexachlorobiphenyl (136)														
2,2',3,4,4',5-Hexachlorobiphenyl (137)														
PCB 138/160/163														
2,2',3,4,5,5'-Hexachlorobiphenyl (141)														
2,2',3,4,5',6-Hexachlorobiphenyl (144)														
2,2',3,4',5,5'-Hexachlorobiphenyl (146)														
2,2',3,4',5,6-Hexachlorobiphenyl (147)														
2,2',3,4',5',6-Hexachlorobiphenyl (149)														
2,2',3,5,5',6-Hexachlorobiphenyl (151)														
2,2',4,4',5,5'-Hexachlorobiphenyl (153)														
156/157 (2 3 3'4 4'5/2 3 3' 4 4'5')														
2,3,3',4,4',5-Hexachlorobiphenyl (156)														
2,3,3',4,4',6-Hexachlorobiphenyl (158)														
2,3',4,4',5,5'-Hexachlorobiphenyl (167)														
3,3',4,4',5,5'-Hexachlorobiphenyl (169)														
170/190 (2,2',3,3',4,4',5/2,3,3',4,4',5,6)														
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)														
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)														
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)														
2,2',3,3',4,5,6-Heptachlorobiphenyl (173)														
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)														
2,2',3,3',4,5',6-Heptachlorobiphenyl (175)														
2,2',3,3',4,6,6'-Heptachlorobiphenyl (176)														
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)														
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)														
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)														
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)														
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)														
2,2',3,4,4',6,6'-Heptachlorobiphenyl (184)														
2,2',3,4,5,5',6-Heptachlorobiphenyl (185)														
187/182 (2,2',3,4',5,5',6/2,2',3,4,4',5,6')														
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)														
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)														
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)														
2,3,3',4,4',5',6-Heptachlorobiphenyl (191)														
2,3,3',4',5,5',6-Heptachlorobiphenyl (193)														

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Centredale Manor Restoration Superfund Site
North Providence, Rhode Island

PARAMETER	MANTON POND 2003									BMF-Diet Summary Statistics - Manton 2003			
	MANTON FOOD 6/14/2003	RMP 120-N 6/14/2003	BMF-DIET MANTON 2003	RMP 123-N 6/14/2003	BMF-DIET MANTON 2003	RMP 124-N 6/14/2003	BMF-DIET MANTON 2003	RMP 129-N 6/14/2003	BMF-DIET MANTON 2003	Maximum	Mean	Variance	Coefficient of Variation
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)													
2,2',3,3',4,4',5,6-Octachlorobiphenyl (195)													
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)													
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)													
2,2',3,3',4,5,5',6-Octachlorobiphenyl (198)													
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (199)													
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)													
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)													
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)													
PCB 203/196													
2,3,3',4,4',5,5',6-Octachlorobiphenyl (205)													
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl													
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl													
Decachlorobiphenyl (209)													
PCB Congeners, Total													
Toxicity Equivalency (PCB) - Birds													
Toxicity Equivalency (PCB) - Fish													
Toxicity Equivalency (PCB) - Mammals													
Technical Chlordane													
Heptachlor Epoxide													
Dieldrin													
4,4'-DDE													
4,4'-DDD													
Endosulfan Sulfate													
4,4'-DDT													
alpha-Chlordane													
gamma-Chlordane													
Aroclor-1254													
Aroclor-1268													
Aroclor, Total													

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TABLE J-12
SUMMARY OF BIOMAGNIFICATION FACTORS FOR AVIAN RECEPTORS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Analyte	log K_{ow}[a]	Gull (Adult)[b]		Gulls (Liver)[b]		Gulls (Egg)[b]		Alewife[b]	Gull BMF (Whole Body:Alewife) (ww)[c]		Gull BMF (Whole Body:Alewife) (lipid basis)[c]	Gull Egg/Whole Body (lipid basis)[c]		Gull Egg/Alewife (lipid basis)[c]
4,4'-DDE	6.76	14	3.2	3.5	1.5	5.4	1.5	0.16	88	20	23.79	0.56	0.25	13.32
4,4'-DDT	6.45	0.05	0.03	0.01	0.01	0.03	0.01	0.015	3.3	1.7	0.91	0.76	0.36	0.69
beta-BHC	3.78	0.03	0.01	0.01	0.004	0.01	0.005	0.001	30	9.3	8.16	0.61	0.29	4.97
cis-Nonachlor	6.00	0.1	0.03	0.03	0.01	0.04	0.01	0.008	13	3.9	3.40	0.59	0.34	2.00
Dieldrin	5.30	0.28	0.09	0.12	0.04	0.12	0.04	0.017	16	5.1	4.48	0.63	0.24	2.82
Heptachlor epoxide	4.98	0.19	0.05	0.09	0.03	0.09	0.02	0.003	63	17	17.22	0.62	0.25	10.67
Mirex	6.89	4.6	0.99	1.4	0.56	1.4	0.36	0.047	98	21	26.61	0.45	0.25	11.97
trans-Nonachlor	6.00	0.21	0.06	0.05	0.03	0.06	0.05	0.023	9	2.5	2.48	0.38		0.95
Aroclor, Total	7.10	47	8.7	12	5.6	16	3.7	0.505	93	17	25	0.47	0.19	11.89
Mercury	0.62								10	d				
2,3,7,8-TCDD	7.02	127	37	72	30	83	19	4	32	9.2	8.63	0.81	0.33	6.99
1,2,3,4,6,7,8-HpCDD	8.20	6.8	4.9	25	20	6	0	nd	nc	nc	nc	1.60	0.43	
1,2,3,4,7,8-HxCDF	7.50	6.3	2.2	26	9.9	4.2	1.9	nd	nc	nc	nc	0.88	0.47	
1,2,3,6,7,8-HxCDD	7.80	20	2.5	40	15	16	5.8	1	20	2.5	5.44	1.10	0.68	5.98
1,2,3,6,7,8-HxCDF	7.50	6.3	2.3	22	9.9	4	1.2	nd	nc	nc	nc	0.84	0.43	
1,2,3,7,8-PeCDD	7.50	14	3.4	14	4.5	9.7	2.9	1	14	3.4	3.81	0.88	0.38	3.35
2,3,4,7,8-PeCDF	7.00	13	5.4	26	10	8.9	5.1	2	6.5	2.7	1.77	0.89	0.52	1.57
2,3,7,8-TCDF	6.53	2.6	1.3	2.4	1.3	nd		2	1.3	0.6	0.35	nc	nc	
OCDD	8.60	7.6	4.8	40	27	8	4	nd	nc	nc	nc	1.60	0.92	
Total PeCDD	6.50											1.20	0.33	
Total PeCDF	-											0.87	0.02	
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	7.80	0.66	0.11	0.18	0.09	0.15	0.04	0.003	220	35	59.81	0.33	0.15	19.74
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (196)	7.65	0.92	0.15	0.24	0.12	0.24	0.05	0.005	184	29	50.02	0.35		17.45
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	7.37	2.1	0.35	0.5	0.22	0.53	0.13	0.013	162	27	43.91	0.35	0.14	15.37
2,2',3,3',4,4',6,6'-Octachlorobiphenyl (197)	7.30	0.37	0.07	0.1	0.05	0.11	0.03	0.002	185	35	50.29	0.44	0.19	22.13
2,2',3,3',4,4',6-Heptachlorobiphenyl (171)	7.11	0.57	0.24	0.22	0.1	0.24	0.06	0.006	95	40	25.83	0.69	0.29	17.82
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	6.74	1.3	0.25	0.31	0.14	0.47	0.15	0.016	81	16	22.09	0.53	0.21	11.71
2,2',3,3',4,5,5'-Heptachlorobiphenyl (172)	7.33	0.37	0.07	0.1	0.05	0.11	0.03	0.002	185	35	50.29	0.44	0.19	22.13
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (200)	7.23	0.54	0.12	0.07	0.03	0.08	0.01	0.003	180	41	48.93	0.22	0.09	10.77
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (201)	7.62	1.3	0.22	0.37	0.16	0.39	0.09	0.01	130	22	35.34	0.40		14.18
2,2',3,3',4,5,6'-Heptachlorobiphenyl (174)	7.11	0.17	0.05	0.05	0.04	0.05	0.02	0.01	17	4.5	4.62	0.47	0.19	2.17
2,2',3,3',4,5',6'-Heptachlorobiphenyl (177)	7.08	0.75	0.15	0.22	0.1	0.25	0.06	0.009	83	17	22.65	0.47	0.19	10.65
2,2',3,3',4,6'-Hexachlorobiphenyl (132)	6.58	8.8	1.7	2.2	0.97	3	0.7	0.063	140	27	37.97	0.48	0.21	18.23

TABLE J-12
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North Providence, Rhode Island

Analyte	log K_{ow}[a]	Gull (Adult)[b]		Gulls (Liver)[b]		Gulls (Egg)[b]		Alewife[b]	Gull BMF (Whole Body:Alewife) (ww)[c]		Gull BMF (Whole Body:Alewife) (lipid basis)[c]	Gull Egg/Whole Body (lipid basis)[c]		Gull Egg/Alewife (lipid basis)[c]
2,2',3,3',5,5',6-Heptachlorobiphenyl (178)	7.14	0.28	0.06	0.07	0.04	0.09	0.03	0.003	93	21	25.37	0.49	0.24	12.43
2,2',3,4,4',5,5',6-Octachlorobiphenyl (203)	7.65	0.92	0.15	0.24	0.12	0.24	0.05	0.005	184	29	50.02	0.35		17.45
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	7.36	6.2	1.1	1.5	0.69	1.7	0.35	0.032	194	33	52.67	0.40	0.17	21.07
2,2',3,4,4',5,6'-Heptachlorobiphenyl (182)	7.19	2.9	0.48	0.71	0.32	0.9	0.2	0.021	138	23	37.54	0.44	0.18	16.52
2,2',3,4,4',5',6-Heptachlorobiphenyl (183)	7.20	1.4	0.25	0.37	0.17	0.47	0.11	0.011	127	23	34.60	0.48	0.19	16.61
2,2',3,4,4',5-Hexachlorobiphenyl (137)	6.80	0.26	0.05	0.06	0.02	0.11	0.03	0.002	130	25	35.34	0.59	0.25	20.85
2,2',3,4,4',5'-Hexachlorobiphenyl (138)	6.83	7.4	1.4	1.9	0.83	2.8	0.65	0.066	112	22	30.48	0.53	0.22	16.15
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	7.19	2.9	0.48	0.71	0.32	0.9	0.2	0.021	138	23	37.54	0.44	0.18	16.52
2,2',3,4,5,5'-Hexachlorobiphenyl (141)	6.82	0.18	0.08	0.05	0.04	0.06	0.02	0.009	20	8.6	5.44	0.53	0.26	2.88
2,2',3,4',5,5'-Hexachlorobiphenyl (146)	6.89	1.4	0.26	0.39	0.19	0.54	0.12	0.014	100	18	27.18	0.56	0.23	15.22
2,2',3,4',5',6-Hexachlorobiphenyl (149)	6.67	0.58	0.16	0.16	0.09	0.27	0.07	0.018	32	8.9	8.76	0.66	0.28	5.78
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	6.92	8.8	1.7	2.2	0.97	3	0.7	0.063	140	27	37.97	0.48	0.21	18.23
2,2',4,4',5-Pentachlorobiphenyl (99)	6.39	2.5	0.57	0.62	0.31	1	0.26	0.036	69	16	18.88	0.55	0.22	10.38
2,2',4,5,5'-Pentachlorobiphenyl (101)	6.38	0.64	0.29	0.18	0.14	0.3	0.11	0.038	17	7.7	4.58	0.65	0.27	2.98
2,2',5,5'-Tetrachlorobiphenyl (52)	5.84													
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	7.71	1.7		0.42		0.5		0.012	121		32.80	0.46		14.97
2,3,3',4,4',5,6-Heptachlorobiphenyl (190)	7.37	0.57	0.24	0.22	0.1	0.24	0.06	0.006	95	27	25.83	0.35	0.14	9.04
2,3,3',4,4',5-Hexachlorobiphenyl (156)	7.18	3.3		0.85		1.2		0.029	98		26.73	0.51		13.60
2,3,3',4,4',5'-Hexachlorobiphenyl (157)	7.23	1.3	0.22	0.37	0.16	0.39	0.09	0.01	130	41	35.34	0.22	0.09	7.77
2,3,3',4,4'-Pentachlorobiphenyl (105)	6.65	0.51	0.08	0.22	0.12	0.1	0.04	0.005	102	16	27.73	0.22	0.08	6.10
2,3,3',4',6-Pentachlorobiphenyl (110)	6.48	0.39	0.15	0.12	0.08	0.18	0.06	0.026	15	5.9	4.08	0.60	0.22	2.45
2,3,3',4'-Tetrachlorobiphenyl (56)	6.11	0.52	0.16	0.15	0.07	0.13	0.04	0.016	33	10	8.83	0.34	0.15	3.00
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	7.27	3.3		0.85		1.2		0.029	98		26.73	0.51		13.60
2,3',4,4',5-Pentachlorobiphenyl (114)	6.98	1.488		0.41		0.576		0.0294	57		15.45	0.51		7.82
2,3',4,4',5-Pentachlorobiphenyl (118)	6.74	3.4	0.67	0.91	0.41	1.3	0.33	0.042	81	16	22.01	0.51	0.19	11.22
2,3',4,4',5'-Pentachlorobiphenyl (123)	6.98	1.488		0.41		0.576		0.0294	57		15.45	0.51		7.82
2,3,4,4'-Tetrachlorobiphenyl (60)	6.11	0.52	0.16	0.15	0.07	0.13	0.04	0.016	33	10	8.83	0.34	0.15	3.00
2,3',4,4'-Tetrachlorobiphenyl (66)	6.20	0.7	0.17	0.22	0.1	0.31	0.09	0.019	37	7.8	10.02	0.59	0.21	5.91
2,3',4',5-Tetrachlorobiphenyl (70)	6.17													
2,3',4',5-Tetrachlorobiphenyl (74)	6.20	0.27	0.06	0.08	0.04	0.12	0.04	0.004	68	15	18.35	0.57	0.23	10.46
2,4,4'-Trichlorobiphenyl (28)	5.67													
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.41	3.3		0.85		1.18		0.029	98		26.73	0.51		13.60
3,3',4,4',5-Pentachlorobiphenyl (126)	6.89	1.5		0.41		0.58		0.029	57		15.45	0.51		7.82

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TABLE J-12
SUMMARY OF BIOMAGNIFICATION FACTORS FOR AVIAN RECEPTORS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Analyte	log K_{ow}[a]	Gull (Adult)[b]		Gulls (Liver)[b]		Gulls (Egg)[b]		Alewife[b]	Gull BMF (Whole Body:Alewife) (ww)[c]	Gull BMF (Whole Body:Alewife) (lipid basis)[c]	Gull Egg/Whole Body (lipid basis)[c]		Gull Egg/Alewife (lipid basis)[c]
3,3',4,4'-Tetrachlorobiphenyl (77)	6.36	0.5		0.15		0.17		0.014	42	11.51	0.46		5.29
3,4,4',5-Tetrachlorobiphenyl (81)	6.36	0.5		0.15		0.17		0.014	42	11.51	0.46		5.29
Mean Hepta-[d]		1.7		0.42		0.5		0.012	121	32.80	0.46		14.97
Mean Hexa-[d]		3.3		0.85		1.2		0.029	98	26.73	0.51		13.60
Mean Penta-[d]		1.488		0.41		0.576		0.0294	57	15.45	0.51		7.82
Mean Tetra-[d]		0.5025		0.15		0.1725		0.01375	42	11.51	0.46		5.29
Total Heptachlor PCBs	-										0.39	0.15	
Total Hexachloro PCBs	-										0.52	0.22	
Total Octachloro PCBs	-										0.38	0.14	
Total Pentachloro PCBs	-										0.52	0.19	
Total Tetrachloro PCBs	-										0.52	0.2	
Lipids (%)		10.3	2.2	4.2	0.9	7.7	0.8	2.8					

Notes:

Shaded values represent means for the homolog group.

a. Octanol-water partition coefficients as provided in USEPA, 1998 and supplemented by a query of the SRS Interactive LogKow database, 2003 (www.esc.syrres.com/interkow/kowdemo.htm).

b. Wet-weight tissue concentrations (and standard deviations) measured in herring gulls (Lake Ontario); (Braune and Norstrom, 1989). All units in mg/kg except dioxins/furan congeners which are reported in ng/kg. Nd - not detected; nc - not calculated.

c. Biomagnification Factors (BMFs) estimated as the ratio of the concentration (wet weight or lipid-normalized) in predator divided by prey (or secondary tissue) concentration (wet weight or lipid-normalized).

d. Value from USEPA, 1995; expressed on wet weight basis; lipid-basis assumed that prey and predator have same lipid percentage.

Prepared by: SGD
Checked by: NAR

TABLE J-13
SUMMARY OF BIOMAGNIFICATION FACTORS FOR MAMMAL RECEPTORS

Baseline Ecological Risk Assessment - Interim Final
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Analyte	log K_{ow}	Otter BMF (Whole Body:Diet) (lipid basis)[b]		Otter BMF (Whole Body:Fish) (lipid basis)[c]		Mink BMF (Liver:Diet) (lipid basis)[d]		Selected Mammal BMF[e] (lipid basis)	Basis[f]
Total Aroclors	7.55	14						1.4E+01	1
2,3,7,8-TCDD	7.02					11		1.1E+01	3
1,2,3,4,6,7,8-HpCDD	8.20					36		3.6E+01	3
1,2,3,4,7,8-HxCDD	7.80					9.3		9.3E+00	3
1,2,3,4,7,8-HxCDF	7.50					57		5.7E+01	3
1,2,3,6,7,8-HxCDD	7.80					30		3.0E+01	3
2,3,4,7,8-PeCDF	7.00					54		5.4E+01	3
2,3,7,8-TCDF	6.53					0.40		4.0E-01	3
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (194)	7.80	21						2.1E+01	1
2,2',3,3',4,4',5-Heptachlorobiphenyl (170)	7.37	15						1.5E+01	1
2,2',3,3',4,4'-Hexachlorobiphenyl (128)	6.74	9						9.0E+00	1
2,2',3,4,4',5,5'-Heptachlorobiphenyl (180)	7.36	123						1.2E+02	1
2,2',3,4,4',5'-Hexachlorobiphenyl (138)	6.83	26						2.6E+01	1
2,2',3,4',5,5',6-Heptachlorobiphenyl (187)	7.19	23						2.3E+01	1
2,2',3,4',5',6-Hexachlorobiphenyl (149)	6.67	0.20						2.0E-01	1
2,2',3,5'-Tetrachlorobiphenyl (44)	5.75	0.01						1.0E-02	1
2,2',4,4',5,5'-Hexachlorobiphenyl (153)	6.92	15		28				1.5E+01	1
2,2',4,5,5'-Pentachlorobiphenyl (101)	6.38	0.07						7.0E-02	1
2,2',4,5'-Tetrachlorobiphenyl (49)	5.85	0.02						2.0E-02	1
2,2',5,5'-Tetrachlorobiphenyl (52)	5.84	0.02						2.0E-02	1
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	7.71	50						5.0E+01	1
2,3,3',4,4',5-Hexachlorobiphenyl (156)	7.18	30		37		8.3		3.0E+01	1
2,3,3',4,4',5'-Hexachlorobiphenyl (157)	7.23	19		84				1.9E+01	1
2,3,3',4,4',6-Hexachlorobiphenyl (158)	7.02	4						4.0E+00	1
2,3,3',4,4'-Pentachlorobiphenyl (105)	6.65	12		7.9		4.9		1.2E+01	1
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	7.27	6						6.0E+00	1
2,3,4,4',5,6-Hexachlorobiphenyl (166)	7.31	2						2.0E+00	1
2,3,4,4',5-Pentachlorobiphenyl (114)	6.98	24						2.4E+01	1
2,3',4,4',5-Pentachlorobiphenyl (118)	6.74	15		35		4.2		1.5E+01	1
2,3',4,4',5'-Pentachlorobiphenyl (123)	6.98	24						2.4E+01	1
2,4,4'-Trichlorobiphenyl (28)	5.67	0.04						4.0E-02	1
2,4',5-Trichlorobiphenyl (31)	5.67	0.05						5.0E-02	1
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.41	348		108		15		3.5E+02	1
3,3',4,4',5-Pentachlorobiphenyl (126)	6.89	70		130				7.0E+01	1
3,3',4,4'-Tetrachlorobiphenyl (77)	6.36	1.4		2.5		0.13		1.4E+00	1
3,4,4',5-Tetrachlorobiphenyl (81)	6.36	0.36				1.1		3.6E-01	1
Mean Penta-		24							
Mean Tetra-		0.36							
Lipids (%)		4.42	g						

Notes:

a. Octanol-water partition coefficients as provided in USEPA, 1998 and supplemented by a query of the SRS Interactive LogKow database, 2003 (www.esc.syrres.com/interkow/kowdemo.htm).

b. Data presented in Leonards et al., 1997.

c. Data presented in Wezel et al., 2000; original data from Smit et al., 1996.

d. USEPA Bioaccumulation Summary; data from Tillit et al., 1996.

e. If multiple BMFs are available, the following hierarchy was used to select the value: Leonards et al., 1997, Smit et al., 1996, Tillit et al

f. 1 = Leonards et al., 1997, 2 = Smit et al., 1996, 3 = Tillit et al., 1997.

g. Average lipid percentage in 5 otter liver samples (Leonards et al., 1997).

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Checked by: NAR

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APPENDIX K

FOOD WEB EXPOSURE MODELS - PISCIVOROUS WILDLIFE

APPENDIX K

LIST OF TABLES

LOCATION	TABLE NO.	TITLE
Greystone	Table K -1.1	Calculation of Exposure Pathway/Medium-Specific Hazard Quotients: Surface Water / Kingfisher
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APPENDIX K

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TABLE K-1.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aluminum	8.9E-02	mg/L	9.9E-03	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	9.0E-05	9.0E-06
Beryllium	5.5E-05	mg/L	6.1E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	4.1E-05	4.1E-06
Chromium	2.5E-03	mg/L	2.8E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.8E-04	5.5E-05
Cobalt	1.2E-04	mg/L	1.3E-05	mg/kg-d					
Copper	5.4E-03	mg/L	6.0E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.3E-05	9.6E-06
Lead	2.9E-03	mg/L	3.2E-04	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	8.3E-05	8.3E-06
Manganese	1.3E-01	mg/L	1.5E-02	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.5E-05	1.5E-06
Nickel	1.9E-03	mg/L	2.2E-04	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.8E-06	2.0E-06
Selenium	8.7E-05	mg/L	9.6E-06	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.2E-05	6.4E-06
Thallium	7.4E-06	mg/L	8.2E-07	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.3E-07	1.6E-07
Zinc	2.0E-02	mg/L	2.3E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.6E-04	1.7E-05
Nitrogen, Ammonia	3.9E-01	mg/L	4.4E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	7.2E-09	mg/L	8.0E-10	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.7E-05	5.7E-06

TABLE K-1.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.4E-03	mg/kg	4.4E-04	mg/kg-d					
2-Methylnaphthalene	5.5E-03	mg/kg	1.8E-03	mg/kg-d					
Acenaphthene	4.0E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-06	7.1E-07
Acenaphthylene	3.9E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.8E-06	6.8E-07
Anthracene	4.6E-03	mg/kg	1.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.0E-06	8.0E-07
Benzo(a)anthracene	1.7E-03	mg/kg	5.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.1E-06	3.1E-07
Benzo(a)pyrene	1.1E-03	mg/kg	3.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-06	2.0E-07
Benzo(b)fluoranthene	1.5E-03	mg/kg	4.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.6E-06	2.6E-07
Benzo(g,h,i)perylene	9.9E-04	mg/kg	3.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-06	1.7E-07
Benzo(k)fluoranthene	1.4E-03	mg/kg	4.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.5E-06	2.5E-07
Chrysene	3.2E-03	mg/kg	1.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.5E-06	5.5E-07
Dibenzo(a,h)anthracene	3.9E-04	mg/kg	1.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.8E-07	6.8E-08
Dibenzofuran	3.6E-03	mg/kg	1.1E-03	mg/kg-d					
Fluoranthene	1.3E-02	mg/kg	4.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.3E-05	2.3E-06
Fluorene	6.1E-03	mg/kg	2.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-05	1.1E-06
Naphthalene	2.3E-03	mg/kg	7.4E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.4E-05	1.4E-0
Phenanthrene	1.7E-02	mg/kg	5.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.0E-05	3.0E-06
Pyrene	5.8E-03	mg/kg	1.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-05	1.0E-06
4,4'-DDD	1.7E-02	mg/kg	5.6E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**2.0E+00**	2.0E-01
4,4'-DDE	4.3E-02	mg/kg	1.4E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**4.9E+00**	4.9E-01
4,4'-DDT	6.3E-03	mg/kg	2.0E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	7.2E-01	7.2E-02
alpha-Chlordane	2.1E-02	mg/kg	6.7E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.4E-02	2.4E-03
Aroclor, Total	2.6E-01	mg/kg	8.3E-02	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	7.5E-01	3.0E-01
Aroclor-1254	2.0E-01	mg/kg	6.5E-02	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	3.6E-01	3.6E-02
Aroclor-1268	5.5E-02	mg/kg	1.8E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	1.6E-02	1.6E-03
Dieldrin	4.2E-03	mg/kg	1.3E-03	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	1.7E-02	1.7E-03
gamma-BHC	8.1E-04	mg/kg	2.6E-04	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	1.3E-04	1.3E-05
gamma-Chlordane	1.1E-02	mg/kg	3.6E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.3E-02	1.3E-03
Heptachlor Epoxide	8.1E-04	mg/kg	2.6E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	6.3E-06	6.3E-07
Technical Chlordane	2.8E-01	mg/kg	9.1E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.2E-01	3.2E-02
Aluminum	3.0E+01	mg/kg	9.8E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	8.9E-02	8.9E-03
Antimony	1.1E-03	mg/kg	3.4E-04	mg/kg-d					
Barium	9.1E-01	mg/kg	2.9E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	7.0E-03	3.5E-03
Beryllium	5.2E-03	mg/kg	1.7E-03	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.1E-02	1.1E-03
Cadmium	2.9E-02	mg/kg	9.3E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	6.4E-03	4.6E-04
Chromium	1.2E-01	mg/kg	3.8E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	3.8E-02	7.6E-03
Cobalt	7.9E-02	mg/kg	2.5E-02	mg/kg-d					
Copper	1.0E+00	mg/kg	3.2E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	6.9E-03	5.2E-03
Lead	1.2E-02	mg/kg	3.9E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.0E-03	1.0E-04
Manganese	6.2E+00	mg/kg	2.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	2.0E-03	2.0E-04
Mercury	1.9E-01	mg/kg	6.1E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	1.4E-01	6.8E-02
Mercury (methyl)	1.9E-01	mg/kg	6.2E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**9.7E+00**	9.7E-01
Nickel	7.1E-02	mg/kg	2.3E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.9E-04	2.1E-04
Silver	3.1E-02	mg/kg	9.9E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	1.1E-04	1.1E-05
Thallium	1.9E-03	mg/kg	6.2E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.8E-04	1.2E-04
Vanadium	1.0E-01	mg/kg	3.3E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.9E-03	2.9E-04

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TABLE K-1.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Zinc	1.6E+01	mg/kg	5.2E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	3.6E-01	4.0E-02
Toxicity Equivalency - Birds	6.9E-06	mg/kg	2.2E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.6E-01	1.6E-02
Toxicity Equivalency (PCB) - E	5.1E-05	mg/kg	1.6E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.2E+00**	1.2E-01
							HAZARD INDICES:	2.1E+01	2.4E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-1.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 2.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		-	-	-	9.7E+00	***9.7E+00***	***46%***
4,4'-DDE		-	-	-	4.9E+00	***4.9E+00***	***24%***
4,4'-DDD		-	-	-	2.0E+00	***2.0E+00***	10%
Toxicity Equivalency (PCB) - Birds		-	-	-	1.2E+00	***1.2E+00***	6%
Aroclor, Total		-	-	-	7.5E-01	7.5E-01	4%
4,4'-DDT					7.2E-01	7.2E-01	3%
Aroclor-1254		-	-	-	3.6E-01	3.6E-01	2%
Zinc	1.6E-04	-	-	-	3.6E-01	3.6E-01	2%
Technical Chlordane		-	-	-	3.2E-01	3.2E-01	2%
Toxicity Equivalency - Birds	5.7E-05	-	-	-	1.6E-01	1.6E-01	1%
Mercury		-	-	-	1.4E-01	1.4E-01	1%
Aluminum	9.0E-05				8.9E-02	8.9E-02	0%
Chromium	2.8E-04	-	-	-	3.8E-02	3.8E-02	0%
alpha-Chlordane		-	-	-	2.4E-02	2.4E-02	0%
Dieldrin		-	-	-	1.7E-02	1.7E-02	0%
Aroclor-1268		-	-	-	1.6E-02	1.6E-02	0%
gamma-Chlordane		-	-	-	1.3E-02	1.3E-02	0%
Beryllium	4.1E-05				1.1E-02	1.1E-02	0%
Barium		-	-	-	7.0E-03	7.0E-03	0%
Copper	1.3E-05	-	-	-	6.9E-03	6.9E-03	0%
Cadmium		-	-	-	6.4E-03	6.4E-03	0%
Vanadium					2.9E-03	2.9E-03	0%
Manganese	1.5E-05				2.0E-03	2.1E-03	0%
Lead	8.3E-05	-	-	-	1.0E-03	1.1E-03	0%
Nickel	2.8E-06				2.9E-04	3.0E-04	0%
Thallium	2.3E-07	-	-	-	1.8E-04	1.8E-04	0%
gamma-BHC					1.3E-04	1.3E-04	0%
Silver		-	-	-	1.1E-04	1.1E-04	0%
Phenanthrene		-	-	-	3.0E-05	3.0E-05	0%
Fluoranthene		-	-	-	2.3E-05	2.3E-05	0%
Selenium	2.2E-05	-	-	-		2.2E-05	0%
Naphthalene		-	-	-	1.4E-05	1.4E-05	0%
Fluorene		-	-	-	1.1E-05	1.1E-05	0%
Pyrene		-	-	-	1.0E-05	1.0E-05	0%
Anthracene		-	-	-	8.0E-06	8.0E-06	0%
Acenaphthene		-	-	-	7.1E-06	7.1E-06	0%
Acenaphthylene		-	-	-	6.8E-06	6.8E-06	0%
Heptachlor epoxide					6.3E-06	6.3E-06	0%
Chrysene		-	-	-	5.5E-06	5.5E-06	0%
Benzo(a)anthracene		-	-	-	3.1E-06	3.1E-06	0%
Benzo(b)fluoranthene		-	-	-	2.6E-06	2.6E-06	0%
Benzo(k)fluoranthene		-	-	-	2.5E-06	2.5E-06	0%
Benzo(a)pyrene		-	-	-	2.0E-06	2.0E-06	0%
Benzo(g,h,i)perylene		-	-	-	1.7E-06	1.7E-06	0%
Dibenzo(a,h)anthracene		-	-	-	6.8E-07	6.8E-07	0%

US EPA ARCHIVE DOCUMENT

TABLE K-1.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	GREYSTONE MILL POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	2.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Cobalt							
Toxicity Equivalency - Mammals							
Arsenic		-	-	-			
Antimony							
Molybdenum		-	-	-			
Toxicity Equivalency (PCB) - Mammals							
Aroclor-1260		-	-	-			
Indeno(1,2,3-cd)pyrene		-	-	-			
Endrin		-	-	-			
bis(2-Ethylhexyl)phthalate		-	-	-			
Dibenzofuran							
2-Methylnaphthalene							
Endosulfan sulfate							
Carbazole							
1,1'-Biphenyl							
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**7.6E-04**	**-**	**-**	**-**	**2.1E+01**	**2.1E+01**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-1.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	GREYSTONE MILL POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	2.4E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		-	-	-	9.7E-01	9.7E-01	***41%***
4,4'-DDE		-	-	-	4.9E-01	4.9E-01	***21%***
Aroclor, Total		-	-	-	3.0E-01	3.0E-01	***13%***
4,4'-DDD		-	-	-	2.0E-01	2.0E-01	8%
Toxicity Equivalency (PCB) - Birds		-	-	-	1.2E-01	1.2E-01	5%
4,4'-DDT					7.2E-02	7.2E-02	3%
Mercury		-	-	-	6.8E-02	6.8E-02	3%
Zinc	1.7E-05	-	-	-	4.0E-02	4.0E-02	2%
Aroclor-1254		-	-	-	3.6E-02	3.6E-02	2%
Technical Chlordane		-	-	-	3.2E-02	3.2E-02	1%
Toxicity Equivalency - Birds	5.7E-06	-	-	-	1.6E-02	1.6E-02	1%
Aluminum	9.0E-06				8.9E-03	8.9E-03	0%
Chromium	5.5E-05	-	-	-	7.6E-03	7.6E-03	0%
Copper	9.6E-06	-	-	-	5.2E-03	5.3E-03	0%
Barium		-	-	-	3.5E-03	3.5E-03	0%
alpha-Chlordane		-	-	-	2.4E-03	2.4E-03	0%
Dieldrin		-	-	-	1.7E-03	1.7E-03	0%
Aroclor-1268		-	-	-	1.6E-03	1.6E-03	0%
gamma-Chlordane		-	-	-	1.3E-03	1.3E-03	0%
Beryllium	4.1E-06				1.1E-03	1.1E-03	0%
Cadmium		-	-	-	4.6E-04	4.6E-04	0%
Vanadium					2.9E-04	2.9E-04	0%
Nickel	2.0E-06				2.1E-04	2.1E-04	0%
Manganese	1.5E-06				2.0E-04	2.1E-04	0%
Thallium	1.6E-07	-	-	-	1.2E-04	1.2E-04	0%
Lead	8.3E-06	-	-	-	1.0E-04	1.1E-04	0%
gamma-BHC					1.3E-05	1.3E-05	0%
Silver		-	-	-	1.1E-05	1.1E-05	0%
Selenium	6.4E-06	-	-	-		6.4E-06	0%
Phenanthrene		-	-	-	3.0E-06	3.0E-06	0%
Fluoranthene		-	-	-	2.3E-06	2.3E-06	0%
Naphthalene		-	-	-	1.4E-06	1.4E-06	0%
Fluorene		-	-	-	1.1E-06	1.1E-06	0%
Pyrene		-	-	-	1.0E-06	1.0E-06	0%
Anthracene		-	-	-	8.0E-07	8.0E-07	0%
Acenaphthene		-	-	-	7.1E-07	7.1E-07	0%
Acenaphthylene		-	-	-	6.8E-07	6.8E-07	0%
Heptachlor epoxide					6.3E-07	6.3E-07	0%
Chrysene		-	-	-	5.5E-07	5.5E-07	0%
Benzo(a)anthracene		-	-	-	3.1E-07	3.1E-07	0%
Benzo(b)fluoranthene		-	-	-	2.6E-07	2.6E-07	0%
Benzo(k)fluoranthene		-	-	-	2.5E-07	2.5E-07	0%
Benzo(a)pyrene		-	-	-	2.0E-07	2.0E-07	0%
Benzo(g,h,i)perylene		-	-	-	1.7E-07	1.7E-07	0%
Dibenzo(a,h)anthracene		-	-	-	6.8E-08	6.8E-08	0%

US EPA ARCHIVE DOCUMENT

TABLE K-1.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	GREYSTONE MILL POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	2.4E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Cobalt							
Toxicity Equivalency - Mammals							
Arsenic		-	-	-			
Antimony							
Molybdenum		-	-	-			
Toxicity Equivalency (PCB) - Mammals							
Aroclor-1260		-	-	-			
Indeno(1,2,3-cd)pyrene		-	-	-			
Endrin		-	-	-			
bis(2-Ethylhexyl)phthalate		-	-	-			
Dibenzofuran							
2-Methylnaphthalene							
Endosulfan sulfate							
Carbazole							
1,1'-Biphenyl							
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**1.2E-04**	**-**	**-**	**-**	**2.4E+00**	**2.4E+00**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-2.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.0E-03	mg/L	1.1E-04	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.0E-05	1.0E-06
alpha-Chlordane	6.9E-07	mg/L	7.7E-08	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.7E-07	2.7E-08
Endosulfan Sulfate	5.9E-05	mg/L	6.6E-06	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	1.1E-05	1.1E-06
gamma-Chlordane	2.5E-05	mg/L	2.8E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	9.8E-06	9.8E-07
Aluminum	6.5E-01	mg/L	7.2E-02	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	6.6E-04	6.6E-05
Beryllium	5.0E-05	mg/L	5.5E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	3.7E-05	3.7E-06
Chromium	5.1E-03	mg/L	5.7E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	5.7E-04	1.1E-04
Cobalt	6.0E-04	mg/L	6.6E-05	mg/kg-d					
Copper	1.3E-02	mg/L	1.5E-03	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.2E-05	2.4E-05
Lead	2.1E-02	mg/L	2.3E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	6.0E-04	6.0E-05
Manganese	4.0E-01	mg/L	4.4E-02	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	4.5E-05	4.5E-06
Nickel	4.9E-03	mg/L	5.5E-04	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	7.1E-06	5.1E-06
Selenium	2.4E-03	mg/L	2.7E-04	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	6.0E-04	1.8E-04
Silver	8.3E-04	mg/L	9.2E-05	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	1.0E-06	1.0E-07
Thallium	3.7E-03	mg/L	4.1E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.2E-04	8.2E-05
Zinc	6.5E-02	mg/L	7.2E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	5.0E-04	5.5E-05
Nitrogen, Ammonia	2.4E-01	mg/L	2.7E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	1.1E-06	mg/L	1.2E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	8.9E-03	8.9E-04

TABLE K-2.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	9.9E-04	mg/kg	3.2E-04	mg/kg-d					
2-Methylnaphthalene	3.8E-03	mg/kg	1.2E-03	mg/kg-d					
Acenaphthene	3.5E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.1E-06	6.1E-07
Acenaphthylene	2.2E-03	mg/kg	6.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-06	3.8E-07
Anthracene	2.7E-03	mg/kg	8.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.7E-06	4.7E-07
Benzo(a)anthracene	1.3E-03	mg/kg	4.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.2E-06	2.2E-07
Benzo(a)pyrene	9.5E-04	mg/kg	3.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-06	1.7E-07
Benzo(b)fluoranthene	1.2E-03	mg/kg	3.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-06	2.1E-07
Benzo(g,h,i)perylene	6.3E-04	mg/kg	2.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-06	1.1E-07
Benzo(k)fluoranthene	1.1E-03	mg/kg	3.4E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-06	1.8E-07
Chrysene	1.9E-03	mg/kg	6.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.4E-06	3.4E-07
Dibenzo(a,h)anthracene	2.7E-04	mg/kg	8.5E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.6E-07	4.6E-08
Dibenzofuran	2.5E-03	mg/kg	8.0E-04	mg/kg-d					
Fluoranthene	8.3E-03	mg/kg	2.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
Fluorene	4.1E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-06	7.1E-07
Indeno(1,2,3-cd)pyrene	7.9E-04	mg/kg	2.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-06	1.4E-0
Naphthalene	2.8E-03	mg/kg	9.1E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.7E-05	1.7E-06
Phenanthrene	9.6E-03	mg/kg	3.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-05	1.7E-06
Pyrene	2.3E-03	mg/kg	7.4E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.0E-06	4.0E-07
4,4'-DDD	1.3E-02	mg/kg	4.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.4E+00**	1.4E-01
4,4'-DDE	2.9E-02	mg/kg	9.2E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**3.3E+00**	3.3E-01
4,4'-DDT	6.9E-03	mg/kg	2.2E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	7.9E-01	7.9E-02
alpha-Chlordane	1.7E-02	mg/kg	5.4E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.9E-02	1.9E-03
Aroclor, Total	1.6E+00	mg/kg	5.2E-01	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**4.7E+00**	**1.9E+00**
Aroclor-1254	1.6E+00	mg/kg	5.1E-01	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**2.8E+00**	2.8E-01
Aroclor-1268	2.9E-02	mg/kg	9.5E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	8.6E-03	8.6E-04
Dieldrin	5.4E-03	mg/kg	1.7E-03	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	2.2E-02	2.2E-03
gamma-BHC	1.9E-04	mg/kg	6.2E-05	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	3.1E-05	3.1E-06
gamma-Chlordane	8.9E-03	mg/kg	2.9E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.0E-02	1.0E-03
Heptachlor Epoxide	6.1E-04	mg/kg	2.0E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	4.7E-06	4.7E-07
Technical Chlordane	3.5E-01	mg/kg	1.1E-01	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.9E-01	3.9E-02
Aluminum	8.0E+00	mg/kg	2.6E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	2.4E-02	2.4E-03
Barium	7.4E-01	mg/kg	2.4E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	5.7E-03	2.9E-03
Cadmium	2.4E-02	mg/kg	7.7E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	5.3E-03	3.9E-04
Chromium	1.1E-01	mg/kg	3.6E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	3.6E-02	7.2E-03
Cobalt	8.9E-02	mg/kg	2.9E-02	mg/kg-d					
Copper	8.7E-01	mg/kg	2.8E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	6.0E-03	4.5E-03
Lead	1.6E-01	mg/kg	5.1E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.3E-02	1.3E-03
Manganese	6.8E+00	mg/kg	2.2E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	2.2E-03	2.2E-04
Mercury	1.4E-01	mg/kg	4.4E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	9.7E-02	4.9E-02
Mercury (methyl)	1.5E-01	mg/kg	4.7E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**7.4E+00**	7.4E-01
Molybdenum	9.4E-02	mg/kg	3.0E-02	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	8.6E-03	8.6E-04
Nickel	1.5E-01	mg/kg	4.7E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	6.1E-04	4.4E-04
Selenium	2.8E-01	mg/kg	9.2E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.1E-01	6.1E-02
Vanadium	9.7E-02	mg/kg	3.1E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.7E-03	2.7E-04
Zinc	2.1E+01	mg/kg	6.7E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	4.6E-01	5.1E-02

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TABLE K-2.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	3.4E-04	mg/kg	1.1E-04	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**7.7E+00**	7.7E-01
oxicity Equivalency (PCB) - Bird	7.5E-05	mg/kg	2.4E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.7E+00**	1.7E-01
							HAZARD INDICES:	**3.1E+01**	**4.6E+00**

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-2.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 3.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Birds	8.9E-03	-	-	-	7.7E+00	***7.7E+00***	***25%***
Mercury (methyl)		-	-	-	7.4E+00	***7.4E+00***	***24%***
Aroclor, Total		-	-	-	4.7E+00	***4.7E+00***	***15%***
4,4'-DDE		-	-	-	3.3E+00	***3.3E+00***	***11%***
Aroclor-1254		-	-	-	2.8E+00	***2.8E+00***	9%
Toxicity Equivalency (PCB) - Birds		-	-	-	1.7E+00	***1.7E+00***	6%
4,4'-DDD		-	-	-	1.4E+00	***1.4E+00***	5%
4,4'-DDT					7.9E-01	7.9E-01	3%
Zinc	5.0E-04	-	-	-	4.6E-01	4.6E-01	1%
Technical Chlordane		-	-	-	3.9E-01	3.9E-01	1%
Selenium	6.0E-04	-	-	-	2.1E-01	2.1E-01	1%
Mercury		-	-	-	9.7E-02	9.7E-02	0%
Chromium	5.7E-04	-	-	-	3.6E-02	3.6E-02	0%
Aluminum	6.6E-04				2.4E-02	2.4E-02	0%
Dieldrin		-	-	-	2.2E-02	2.2E-02	0%
alpha-Chlordane	2.7E-07	-	-	-	1.9E-02	1.9E-02	0%
Lead	6.0E-04	-	-	-	1.3E-02	1.4E-02	0%
gamma-Chlordane	9.8E-06	-	-	-	1.0E-02	1.0E-02	0%
Aroclor-1268		-	-	-	8.6E-03	8.6E-03	0%
Molybdenum		-	-	-	8.6E-03	8.6E-03	0%
Copper	3.2E-05	-	-	-	6.0E-03	6.0E-03	0%
Barium		-	-	-	5.7E-03	5.7E-03	0%
Cadmium		-	-	-	5.3E-03	5.3E-03	0%
Vanadium					2.7E-03	2.7E-03	0%
Manganese	4.5E-05				2.2E-03	2.3E-03	0%
Nickel	7.1E-06				6.1E-04	6.2E-04	0%
Thallium	1.2E-04	-	-	-		1.2E-04	0%
Beryllium	3.7E-05					3.7E-05	0%
gamma-BHC					3.1E-05	3.1E-05	0%
Naphthalene		-	-	-	1.7E-05	1.7E-05	0%
Phenanthrene		-	-	-	1.7E-05	1.7E-05	0%
Fluoranthene		-	-	-	1.4E-05	1.4E-05	0%
Endosulfan sulfate	1.1E-05	-	-	-		1.1E-05	0%
bis(2-Ethylhexyl)phthalate	1.0E-05	-	-	-		1.0E-05	0%
Fluorene		-	-	-	7.1E-06	7.1E-06	0%
Acenaphthene		-	-	-	6.1E-06	6.1E-06	0%
Anthracene		-	-	-	4.7E-06	4.7E-06	0%
Heptachlor epoxide					4.7E-06	4.7E-06	0%
Pyrene		-	-	-	4.0E-06	4.0E-06	0%
Acenaphthylene		-	-	-	3.8E-06	3.8E-06	0%
Chrysene		-	-	-	3.4E-06	3.4E-06	0%
Benzo(a)anthracene		-	-	-	2.2E-06	2.2E-06	0%
Benzo(b)fluoranthene		-	-	-	2.1E-06	2.1E-06	0%
Benzo(k)fluoranthene		-	-	-	1.8E-06	1.8E-06	0%
Benzo(a)pyrene		-	-	-	1.7E-06	1.7E-06	0%

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TABLE K-2.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ALLENDALE POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	3.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Indeno(1,2,3-cd)pyrene		-	-	-	1.4E-06	1.4E-06	0%
Benzo(g,h,i)perylene		-	-	-	1.1E-06	1.1E-06	0%
Silver	1.0E-06	-	-	-		1.0E-06	0%
Dibenzo(a,h)anthracene		-	-	-	4.6E-07	4.6E-07	0%
Endrin		-	-	-			
Cyanide		-	-	-			
Arsenic		-	-	-			
Pentachlorophenol							
Aroclor-1260		-	-	-			
Aroclor-1248		-	-	-			
Endosulfan II		-	-	-			
Endrin Ketone							
Aroclor-1242							
4-Methylphenol							
Endrin aldehyde							
Methoxychlor		-	-	-			
Heptachlor							
Toxicity Equivalency - Mammals							
Antimony							
Cobalt							
Toxicity Equivalency (PCB) - Mammals							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**1.2E-02**	**-**	**-**	**-**	**3.1E+01**	**3.1E+01**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-2.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 4.6E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		-	-	-	1.9E+00	***1.9E+00***	***41%***
Toxicity Equivalency - Birds	8.9E-04	-	-	-	7.7E-01	7.7E-01	***17%***
Mercury (methyl)		-	-	-	7.4E-01	7.4E-01	***16%***
4,4'-DDE		-	-	-	3.3E-01	3.3E-01	7%
Aroclor-1254		-	-	-	2.8E-01	2.8E-01	6%
Toxicity Equivalency (PCB) - Birds		-	-	-	1.7E-01	1.7E-01	4%
4,4'-DDD		-	-	-	1.4E-01	1.4E-01	3%
4,4'-DDT					7.9E-02	7.9E-02	2%
Selenium	1.8E-04	-	-	-	6.1E-02	6.1E-02	1%
Zinc	5.5E-05	-	-	-	5.1E-02	5.1E-02	1%
Mercury		-	-	-	4.9E-02	4.9E-02	1%
Technical Chlordane		-	-	-	3.9E-02	3.9E-02	1%
Chromium	1.1E-04	-	-	-	7.2E-03	7.3E-03	0%
Copper	2.4E-05	-	-	-	4.5E-03	4.6E-03	0%
Barium		-	-	-	2.9E-03	2.9E-03	0%
Aluminum	6.6E-05				2.4E-03	2.4E-03	0%
Dieldrin		-	-	-	2.2E-03	2.2E-03	0%
alpha-Chlordane	2.7E-08	-	-	-	1.9E-03	1.9E-03	0%
Lead	6.0E-05	-	-	-	1.3E-03	1.4E-03	0%
gamma-Chlordane	9.8E-07	-	-	-	1.0E-03	1.0E-03	0%
Aroclor-1268		-	-	-	8.6E-04	8.6E-04	0%
Molybdenum		-	-	-	8.6E-04	8.6E-04	0%
Nickel	5.1E-06				4.4E-04	4.5E-04	0%
Cadmium		-	-	-	3.9E-04	3.9E-04	0%
Vanadium					2.7E-04	2.7E-04	0%
Manganese	4.5E-06				2.2E-04	2.3E-04	0%
Thallium	8.2E-05	-	-	-		8.2E-05	0%
Beryllium	3.7E-06					3.7E-06	0%
gamma-BHC					3.1E-06	3.1E-06	0%
Naphthalene		-	-	-	1.7E-06	1.7E-06	0%
Phenanthrene		-	-	-	1.7E-06	1.7E-06	0%
Fluoranthene		-	-	-	1.4E-06	1.4E-06	0%
Endosulfan sulfate	1.1E-06	-	-	-		1.1E-06	0%
bis(2-Ethylhexyl)phthalate	1.0E-06	-	-	-		1.0E-06	0%
Fluorene		-	-	-	7.1E-07	7.1E-07	0%
Acenaphthene		-	-	-	6.1E-07	6.1E-07	0%
Anthracene		-	-	-	4.7E-07	4.7E-07	0%
Heptachlor epoxide					4.7E-07	4.7E-07	0%
Pyrene		-	-	-	4.0E-07	4.0E-07	0%
Acenaphthylene		-	-	-	3.8E-07	3.8E-07	0%
Chrysene		-	-	-	3.4E-07	3.4E-07	0%
Benzo(a)anthracene		-	-	-	2.2E-07	2.2E-07	0%
Benzo(b)fluoranthene		-	-	-	2.1E-07	2.1E-07	0%
Benzo(k)fluoranthene		-	-	-	1.8E-07	1.8E-07	0%
Benzo(a)pyrene		-	-	-	1.7E-07	1.7E-07	0%

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TABLE K-2.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ALLENDALE POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	4.6E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Indeno(1,2,3-cd)pyrene		-	-	-	1.4E-07	1.4E-07	0%
Benzo(g,h,i)perylene		-	-	-	1.1E-07	1.1E-07	0%
Silver	1.0E-07	-	-	-		1.0E-07	0%
Dibenzo(a,h)anthracene		-	-	-	4.6E-08	4.6E-08	0%
Endrin		-	-	-			
Cyanide		-	-	-			
Arsenic		-	-	-			
Pentachlorophenol							
Aroclor-1260		-	-	-			
Aroclor-1248		-	-	-			
Endosulfan II		-	-	-			
Endrin Ketone							
Aroclor-1242							
4-Methylphenol							
Endrin aldehyde							
Methoxychlor		-	-	-			
Heptachlor							
Toxicity Equivalency - Mammals							
Antimony							
Cobalt							
Toxicity Equivalency (PCB) - Mammals							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**1.5E-03**	**-**	**-**	**-**	**4.6E+00**	**4.6E+00**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-3.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.7E-02	mg/L	1.9E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.7E-04	1.7E-05
alpha-Chlordane	1.9E-05	mg/L	2.1E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	7.5E-06	7.5E-07
Endosulfan Sulfate	3.2E-06	mg/L	3.6E-07	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	5.7E-07	5.7E-08
gamma-Chlordane	2.1E-05	mg/L	2.3E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	8.3E-06	8.3E-07
Aluminum	1.8E-01	mg/L	2.0E-02	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.8E-04	1.8E-05
Beryllium	2.0E-04	mg/L	2.2E-05	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.5E-04	1.5E-05
Chromium	2.3E-03	mg/L	2.5E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.5E-04	5.0E-05
Cobalt	4.2E-04	mg/L	4.6E-05	mg/kg-d					
Copper	8.7E-03	mg/L	9.7E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.1E-05	1.6E-05
Lead	4.4E-03	mg/L	4.9E-04	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.3E-04	1.3E-05
Manganese	1.3E-01	mg/L	1.4E-02	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.4E-05	1.4E-06
Nickel	1.9E-03	mg/L	2.1E-04	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.7E-06	1.9E-06
Silver	5.9E-04	mg/L	6.6E-05	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	7.3E-07	7.3E-08
Thallium	2.2E-03	mg/L	2.5E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	7.1E-05	5.0E-05
Zinc	2.8E-02	mg/L	3.1E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.1E-04	2.4E-05
Nitrogen, Ammonia	1.4E-01	mg/L	1.6E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	1.3E-07	mg/L	1.5E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.0E-03	1.0E-04

TABLE K-3.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.2E-03	mg/kg	3.7E-04	mg/kg-d					
2-Methylnaphthalene	4.2E-03	mg/kg	1.4E-03	mg/kg-d					
Acenaphthene	4.1E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-06	7.1E-07
Acenaphthylene	3.0E-03	mg/kg	9.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.2E-06	5.2E-07
Anthracene	3.5E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.2E-06	6.2E-07
Benzo(a)anthracene	4.5E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.8E-06	7.8E-07
Benzo(a)pyrene	4.9E-03	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.5E-06	8.5E-07
Benzo(b)fluoranthene	6.7E-03	mg/kg	2.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-05	1.2E-06
Benzo(g,h,i)perylene	3.8E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.6E-06	6.6E-07
Benzo(k)fluoranthene	5.9E-03	mg/kg	1.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-05	1.0E-06
Chrysene	8.1E-03	mg/kg	2.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
Dibenzo(a,h)anthracene	9.6E-04	mg/kg	3.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-06	1.7E-07
Dibenzofuran	3.3E-03	mg/kg	1.1E-03	mg/kg-d					
Fluoranthene	2.2E-02	mg/kg	7.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-05	3.8E-06
Fluorene	5.2E-03	mg/kg	1.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.0E-06	9.0E-07
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.6E-06	7.6E-07
Naphthalene	3.5E-03	mg/kg	1.1E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	2.1E-05	2.1E-06
Phenanthrene	1.5E-02	mg/kg	4.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.7E-05	2.7E-06
Pyrene	1.1E-02	mg/kg	3.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-05	1.8E-06
4,4'-DDD	3.9E-02	mg/kg	1.2E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**4.4E+00**	4.4E-01
4,4'-DDE	1.3E-01	mg/kg	4.2E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.5E+01**	**1.5E+00**
4,4'-DDT	3.7E-03	mg/kg	1.2E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	4.3E-01	4.3E-02
alpha-Chlordane	4.0E-02	mg/kg	1.3E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	4.5E-02	4.5E-03
Aroclor, Total	4.2E+00	mg/kg	1.4E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**1.2E+01**	**4.9E+00**
Aroclor-1254	4.2E+00	mg/kg	1.3E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**7.5E+00**	7.5E-01
Aroclor-1268	3.6E-02	mg/kg	1.2E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	1.0E-02	1.0E-03
Dieldrin	5.6E-03	mg/kg	1.8E-03	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	2.3E-02	2.3E-03
gamma-BHC	2.1E-04	mg/kg	6.6E-05	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	3.3E-05	3.3E-06
gamma-Chlordane	2.9E-02	mg/kg	9.4E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.3E-02	3.3E-03
Heptachlor Epoxide	1.4E-03	mg/kg	4.4E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	1.1E-05	1.1E-06
Technical Chlordane	1.4E+00	mg/kg	4.4E-01	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	**1.6E+00**	1.6E-01
Aluminum	4.9E+01	mg/kg	1.6E+01	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.4E-01	1.4E-02
Antimony	1.0E-02	mg/kg	3.2E-03	mg/kg-d					
Arsenic	2.8E-02	mg/kg	8.9E-03	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	1.7E-03	6.9E-04
Barium	1.1E+00	mg/kg	3.5E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	8.5E-03	4.3E-03
Beryllium	5.8E-03	mg/kg	1.9E-03	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.3E-02	1.3E-03
Cadmium	1.8E-02	mg/kg	5.9E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	4.1E-03	2.9E-04
Chromium	2.7E-01	mg/kg	8.7E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	8.7E-02	1.7E-02
Cobalt	7.7E-02	mg/kg	2.5E-02	mg/kg-d					
Copper	8.4E-01	mg/kg	2.7E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.7E-03	4.4E-03
Lead	4.3E-01	mg/kg	1.4E-01	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.6E-02	3.6E-03
Manganese	7.5E+00	mg/kg	2.4E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	2.5E-03	2.5E-04
Mercury	9.8E-02	mg/kg	3.2E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	7.0E-02	3.5E-02
Mercury (methyl)	9.3E-02	mg/kg	3.0E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**4.7E+00**	4.7E-01
Molybdenum	3.6E-02	mg/kg	1.2E-02	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.3E-03	3.3E-04
Nickel	1.5E-01	mg/kg	5.0E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	6.4E-04	4.6E-04

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TABLE K-3.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Selenium	2.1E-01	mg/kg	6.9E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.6E-01	4.6E-02
Silver	1.7E-02	mg/kg	5.4E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	6.0E-05	6.0E-06
Vanadium	1.3E-01	mg/kg	4.1E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	3.6E-03	3.6E-04
Zinc	2.1E+01	mg/kg	6.6E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	4.6E-01	5.1E-02
Toxicity Equivalency - Birds	5.6E-04	mg/kg	1.8E-04	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.3E+01**	**1.3E+00**
Toxicity Equivalency (PCB) - E	4.0E-04	mg/kg	1.3E-04	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**9.2E+00**	9.2E-01
							HAZARD INDICES:	6.9E+01	1.1E+01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-3.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 6.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
4,4'-DDE		-	-	-	1.5E+01	***1.5E+01***	***22%***
Toxicity Equivalency - Birds	1.0E-03	-	-	-	1.3E+01	***1.3E+01***	***19%***
Aroclor, Total		-	-	-	1.2E+01	***1.2E+01***	***18%***
Toxicity Equivalency (PCB) - Birds		-	-	-	9.2E+00	***9.2E+00***	***13%***
Aroclor-1254		-	-	-	7.5E+00	***7.5E+00***	***11%***
Mercury (methyl)		-	-	-	4.7E+00	***4.7E+00***	7%
4,4'-DDD		-	-	-	4.4E+00	***4.4E+00***	6%
Technical Chlordane		-	-	-	1.6E+00	***1.6E+00***	2%
Zinc	2.1E-04	-	-	-	4.6E-01	4.6E-01	1%
4,4'-DDT					4.3E-01	4.3E-01	1%
Selenium		-	-	-	1.6E-01	1.6E-01	0%
Aluminum	1.8E-04				1.4E-01	1.4E-01	0%
Chromium	2.5E-04	-	-	-	8.7E-02	8.7E-02	0%
Mercury		-	-	-	7.0E-02	7.0E-02	0%
alpha-Chlordane	7.5E-06	-	-	-	4.5E-02	4.5E-02	0%
Lead	1.3E-04	-	-	-	3.6E-02	3.6E-02	0%
gamma-Chlordane	8.3E-06	-	-	-	3.3E-02	3.3E-02	0%
Dieldrin		-	-	-	2.3E-02	2.3E-02	0%
Beryllium	1.5E-04				1.3E-02	1.3E-02	0%
Aroclor-1268		-	-	-	1.0E-02	1.0E-02	0%
Barium		-	-	-	8.5E-03	8.5E-03	0%
Copper	2.1E-05	-	-	-	5.7E-03	5.8E-03	0%
Cadmium		-	-	-	4.1E-03	4.1E-03	0%
Vanadium					3.6E-03	3.6E-03	0%
Molybdenum		-	-	-	3.3E-03	3.3E-03	0%
Manganese	1.4E-05				2.5E-03	2.5E-03	0%
Arsenic		-	-	-	1.7E-03	1.7E-03	0%
Nickel	2.7E-06				6.4E-04	6.4E-04	0%
bis(2-Ethylhexyl)phthalate	1.7E-04	-	-	-		1.7E-04	0%
Thallium	7.1E-05	-	-	-		7.1E-05	0%
Silver	7.3E-07	-	-	-	6.0E-05	6.0E-05	0%
Fluoranthene		-	-	-	3.8E-05	3.8E-05	0%
gamma-BHC					3.3E-05	3.3E-05	0%
Phenanthrene		-	-	-	2.7E-05	2.7E-05	0%
Naphthalene		-	-	-	2.1E-05	2.1E-05	0%
Pyrene		-	-	-	1.8E-05	1.8E-05	0%
Chrysene		-	-	-	1.4E-05	1.4E-05	0%
Benzo(b)fluoranthene		-	-	-	1.2E-05	1.2E-05	0%
Heptachlor epoxide					1.1E-05	1.1E-05	0%
Benzo(k)fluoranthene		-	-	-	1.0E-05	1.0E-05	0%
Fluorene		-	-	-	9.0E-06	9.0E-06	0%
Benzo(a)pyrene		-	-	-	8.5E-06	8.5E-06	0%
Benzo(a)anthracene		-	-	-	7.8E-06	7.8E-06	0%
Indeno(1,2,3-cd)pyrene		-	-	-	7.6E-06	7.6E-06	0%
Acenaphthene		-	-	-	7.1E-06	7.1E-06	0%

US EPA ARCHIVE DOCUMENT

TABLE K-3.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	LYMAN MILL POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	6.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Benzo(g,h,i)perylene		-	-	-	6.6E-06	6.6E-06	0%
Anthracene		-	-	-	6.2E-06	6.2E-06	0%
Acenaphthylene		-	-	-	5.2E-06	5.2E-06	0%
Dibenzo(a,h)anthracene		-	-	-	1.7E-06	1.7E-06	0%
Endosulfan sulfate	5.7E-07	-	-	-		5.7E-07	0%
Toxicity Equivalency - Mammals							
Antimony							
Cobalt							
Pentachlorophenol							
Aroclor-1260		-	-	-			
Aroclor-1248		-	-	-			
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin		-	-	-			
Endosulfan II		-	-	-			
Endrin aldehyde							
Toxicity Equivalency (PCB) - Mammals							
Heptachlor							
4-Methylphenol							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
Methoxychlor		-	-	-			
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**2.3E-03**	**-**	**-**	**-**	**6.9E+01**	**6.9E+01**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-3.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 1.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		-	-	-	4.9E+00	***4.9E+00***	***46%***
4,4'-DDE		-	-	-	1.5E+00	***1.5E+00***	***14%***
Toxicity Equivalency - Birds	1.0E-04	-	-	-	1.3E+00	***1.3E+00***	***12%***
Toxicity Equivalency (PCB) - Birds		-	-	-	9.2E-01	9.2E-01	9%
Aroclor-1254		-	-	-	7.5E-01	7.5E-01	7%
Mercury (methyl)		-	-	-	4.7E-01	4.7E-01	4%
4,4'-DDD		-	-	-	4.4E-01	4.4E-01	4%
Technical Chlordane		-	-	-	1.6E-01	1.6E-01	1%
Zinc	2.4E-05	-	-	-	5.1E-02	5.1E-02	0%
Selenium		-	-	-	4.6E-02	4.6E-02	0%
4,4'-DDT					4.3E-02	4.3E-02	0%
Mercury		-	-	-	3.5E-02	3.5E-02	0%
Chromium	5.0E-05	-	-	-	1.7E-02	1.7E-02	0%
Aluminum	1.8E-05				1.4E-02	1.4E-02	0%
alpha-Chlordane	7.5E-07	-	-	-	4.5E-03	4.5E-03	0%
Copper	1.6E-05	-	-	-	4.4E-03	4.4E-03	0%
Barium		-	-	-	4.3E-03	4.3E-03	0%
Lead	1.3E-05	-	-	-	3.6E-03	3.6E-03	0%
gamma-Chlordane	8.3E-07	-	-	-	3.3E-03	3.3E-03	0%
Dieldrin		-	-	-	2.3E-03	2.3E-03	0%
Beryllium	1.5E-05				1.3E-03	1.3E-03	0%
Aroclor-1268		-	-	-	1.0E-03	1.0E-03	0%
Arsenic		-	-	-	6.9E-04	6.9E-04	0%
Nickel	1.9E-06				4.6E-04	4.6E-04	0%
Vanadium					3.6E-04	3.6E-04	0%
Molybdenum		-	-	-	3.3E-04	3.3E-04	0%
Cadmium		-	-	-	2.9E-04	2.9E-04	0%
Manganese	1.4E-06				2.5E-04	2.5E-04	0%
Thallium	5.0E-05	-	-	-		5.0E-05	0%
bis(2-Ethylhexyl)phthalate	1.7E-05	-	-	-		1.7E-05	0%
Silver	7.3E-08	-	-	-	6.0E-06	6.0E-06	0%
Fluoranthene		-	-	-	3.8E-06	3.8E-06	0%
gamma-BHC					3.3E-06	3.3E-06	0%
Phenanthrene		-	-	-	2.7E-06	2.7E-06	0%
Naphthalene		-	-	-	2.1E-06	2.1E-06	0%
Pyrene		-	-	-	1.8E-06	1.8E-06	0%
Chrysene		-	-	-	1.4E-06	1.4E-06	0%
Benzo(b)fluoranthene		-	-	-	1.2E-06	1.2E-06	0%
Heptachlor epoxide					1.1E-06	1.1E-06	0%
Benzo(k)fluoranthene		-	-	-	1.0E-06	1.0E-06	0%
Fluorene		-	-	-	9.0E-07	9.0E-07	0%
Benzo(a)pyrene		-	-	-	8.5E-07	8.5E-07	0%
Benzo(a)anthracene		-	-	-	7.8E-07	7.8E-07	0%
Indeno(1,2,3-cd)pyrene		-	-	-	7.6E-07	7.6E-07	0%
Acenaphthene		-	-	-	7.1E-07	7.1E-07	0%

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TABLE K-3.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	LYMAN MILL POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	1.1E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Benzo(g,h,i)perylene		-	-	-	6.6E-07	6.6E-07	0%
Anthracene		-	-	-	6.2E-07	6.2E-07	0%
Acenaphthylene		-	-	-	5.2E-07	5.2E-07	0%
Dibenzo(a,h)anthracene		-	-	-	1.7E-07	1.7E-07	0%
Endosulfan sulfate	5.7E-08	-	-	-		5.7E-08	0%
Toxicity Equivalency - Mammals							
Antimony							
Cobalt							
Pentachlorophenol							
Aroclor-1260		-	-	-			
Aroclor-1248		-	-	-			
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin		-	-	-			
Endosulfan II		-	-	-			
Endrin aldehyde							
Toxicity Equivalency (PCB) - Mammals							
Heptachlor							
4-Methylphenol							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
Methoxychlor		-	-	-			
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	**3.1E-04**	**-**	**-**	**-**	**1.1E+01**	**1.1E+01**	
PERCENTAGE OF TOTAL RISK	**0%**				**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-4.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	2.8E-04	mg/kg	9.0E-05	mg/kg-d					
2-Methylnaphthalene	4.6E-03	mg/kg	1.5E-03	mg/kg-d					
Acenaphthene	1.0E-03	mg/kg	3.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-06	1.8E-07
Acenaphthylene	6.7E-04	mg/kg	2.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-06	1.2E-07
Anthracene	9.1E-04	mg/kg	2.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-06	1.6E-07
Benzo(a)anthracene	1.0E-03	mg/kg	3.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-06	1.7E-07
Benzo(a)pyrene	1.1E-03	mg/kg	3.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-06	2.0E-07
Benzo(b)fluoranthene	1.6E-03	mg/kg	5.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.8E-06	2.8E-07
Benzo(g,h,i)perylene	1.3E-03	mg/kg	4.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.3E-06	2.3E-07
Benzo(k)fluoranthene	1.5E-03	mg/kg	4.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.6E-06	2.6E-07
Chrysene	2.1E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Dibenzo(a,h)anthracene	1.9E-04	mg/kg	6.1E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.3E-07	3.3E-08
Dibenzofuran	9.5E-04	mg/kg	3.1E-04	mg/kg-d					
Fluoranthene	8.0E-03	mg/kg	2.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
Fluorene	2.1E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Indeno(1,2,3-cd)pyrene	1.0E-03	mg/kg	3.4E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-06	1.8E-07
Naphthalene	4.1E-03	mg/kg	1.3E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	2.5E-05	2.5E-06
Phenanthrene	9.0E-03	mg/kg	2.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-05	1.6E-06
Pyrene	4.2E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.4E-06	7.4E-07
4,4'-DDD	6.2E-03	mg/kg	2.0E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	7.2E-01	7.2E-02
4,4'-DDE	5.5E-02	mg/kg	1.8E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**6.3E+00**	6.3E-01
4,4'-DDT	2.2E-03	mg/kg	7.1E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.6E-01	2.6E-02
alpha-Chlordane	5.4E-03	mg/kg	1.7E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	6.1E-03	6.1E-04
Aroclor, Total	6.4E-01	mg/kg	2.1E-01	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**1.9E+00**	7.4E-01
Aroclor-1254	5.1E-01	mg/kg	1.6E-01	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	9.2E-01	9.2E-02
Aroclor-1268	1.3E-01	mg/kg	4.1E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	3.7E-02	3.7E-03
Dieldrin	1.3E-03	mg/kg	4.2E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	5.4E-03	5.4E-04
gamma-Chlordane	1.9E-03	mg/kg	6.1E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.2E-03	2.2E-04
Heptachlor Epoxide	2.6E-04	mg/kg	8.5E-05	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	2.0E-06	2.0E-07
Technical Chlordane	1.4E-01	mg/kg	4.6E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.6E-01	1.6E-02
Aluminum	2.4E+01	mg/kg	7.7E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	7.0E-02	7.0E-03
Barium	2.3E+00	mg/kg	7.4E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	1.8E-02	8.8E-03
Cadmium	1.1E-02	mg/kg	3.5E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	2.4E-03	1.7E-04
Chromium	2.2E-01	mg/kg	7.0E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	7.0E-02	1.4E-02
Cobalt	3.4E-02	mg/kg	1.1E-02	mg/kg-d					
Copper	4.6E-01	mg/kg	1.5E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.2E-03	2.4E-03
Lead	1.5E-01	mg/kg	4.8E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.3E-02	1.3E-03
Manganese	4.9E+00	mg/kg	1.6E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.6E-03	1.6E-04
Mercury	1.5E-01	mg/kg	4.9E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	1.1E-01	5.5E-02
Mercury (methyl)	1.2E-01	mg/kg	3.9E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**6.1E+00**	6.1E-01
Molybdenum	2.3E-02	mg/kg	7.5E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	2.1E-03	2.1E-04
Nickel	5.2E-02	mg/kg	1.7E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.2E-04	1.6E-04
Selenium	1.4E-01	mg/kg	4.5E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.0E-01	3.0E-02
Thallium	4.9E-03	mg/kg	1.6E-03	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	4.5E-04	3.1E-04
Vanadium	5.6E-02	mg/kg	1.8E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.6E-03	1.6E-04
Toxicity Equivalency - Birds	8.8E-05	mg/kg	2.8E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**2.0E+00**	2.0E-01

US EPA ARCHIVE DOCUMENT

TABLE K-4.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	1.9E+01	2.5E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-4.2
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 1.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
4,4'-DDE					6.3E+00	***6.3E+00***	***34%***
Mercury (methyl)					6.1E+00	***6.1E+00***	***32%***
Toxicity Equivalency - Birds		-	-	-	2.0E+00	***2.0E+00***	***11%***
Aroclor, Total					1.9E+00	***1.9E+00***	10%
Aroclor-1254					9.2E-01	9.2E-01	5%
4,4'-DDD					7.2E-01	7.2E-01	4%
4,4'-DDT					2.6E-01	2.6E-01	1%
Technical Chlordane					1.6E-01	1.6E-01	1%
Mercury					1.1E-01	1.1E-01	1%
Selenium					1.0E-01	1.0E-01	1%
Aluminum					7.0E-02	7.0E-02	0%
Chromium		-	-	-	7.0E-02	7.0E-02	0%
Aroclor-1268					3.7E-02	3.7E-02	0%
Barium		-	-	-	1.8E-02	1.8E-02	0%
Lead		-	-	-	1.3E-02	1.3E-02	0%
alpha-Chlordane		-	-	-	6.1E-03	6.1E-03	0%
Dieldrin					5.4E-03	5.4E-03	0%
Copper		-	-	-	3.2E-03	3.2E-03	0%
Cadmium		-	-	-	2.4E-03	2.4E-03	0%
gamma-Chlordane		-	-	-	2.2E-03	2.2E-03	0%
Molybdenum					2.1E-03	2.1E-03	0%
Manganese					1.6E-03	1.6E-03	0%
Vanadium					1.6E-03	1.6E-03	0%
Thallium					4.5E-04	4.5E-04	0%
Nickel					2.2E-04	2.2E-04	0%
Naphthalene					2.5E-05	2.5E-05	0%
Phenanthrene		-	-	-	1.6E-05	1.6E-05	0%
Fluoranthene		-	-	-	1.4E-05	1.4E-05	0%
Pyrene		-	-	-	7.4E-06	7.4E-06	0%
Chrysene		-	-	-	3.7E-06	3.7E-06	0%
Fluorene					3.7E-06	3.7E-06	0%
Benzo(b)fluoranthene		-	-	-	2.8E-06	2.8E-06	0%
Benzo(k)fluoranthene		-	-	-	2.6E-06	2.6E-06	0%
Benzo(g,h,i)perylene		-	-	-	2.3E-06	2.3E-06	0%
Heptachlor epoxide					2.0E-06	2.0E-06	0%
Benzo(a)pyrene		-	-	-	2.0E-06	2.0E-06	0%
Indeno(1,2,3-cd)pyrene		-	-	-	1.8E-06	1.8E-06	0%
Acenaphthene					1.8E-06	1.8E-06	0%
Benzo(a)anthracene		-	-	-	1.7E-06	1.7E-06	0%
Anthracene					1.6E-06	1.6E-06	0%
Acenaphthylene					1.2E-06	1.2E-06	0%
Dibenzo(a,h)anthracene					3.3E-07	3.3E-07	0%
Toxicity Equivalency - Mammals							
Cobalt							
Arsenic		-	-	-			

US EPA ARCHIVE DOCUMENT

TABLE K-4.2
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: MANTON POND REACH - CT	
RECEPTOR: KINGFISHER	
TOTAL RISK (HI):	1.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Antimony							
Toxicity Equivalency (PCB) - Mammals							
N-Nitroso-di-n-propylamine							
Zinc		-	-	-			
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248							
bis(2-Ethylhexyl)phthalate		-	-	-			
Aroclor-1260							
gamma-BHC							
4-Chloro-3-methylphenol							
Beryllium							
2-Chlorophenol							
Endrin							
4-Nitrophenol							
Silver							
Phenol							
Endosulfan II							
Endosulfan sulfate							
Heptachlor							
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Toxicity Equivalency (PCB) - Birds							
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	-	-	-	1.9E+01	1.9E+01	
PERCENTAGE OF TOTAL RISK					100%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-4.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 2.5E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total					7.4E-01	7.4E-01	***30%***
4,4'-DDE					6.3E-01	6.3E-01	***25%***
Mercury (methyl)					6.1E-01	6.1E-01	***24%***
Toxicity Equivalency - Birds		-	-	-	2.0E-01	2.0E-01	8%
Aroclor-1254					9.2E-02	9.2E-02	4%
4,4'-DDD					7.2E-02	7.2E-02	3%
Mercury					5.5E-02	5.5E-02	2%
Selenium					3.0E-02	3.0E-02	1%
4,4'-DDT					2.6E-02	2.6E-02	1%
Technical Chlordane					1.6E-02	1.6E-02	1%
Chromium		-	-	-	1.4E-02	1.4E-02	1%
Barium		-	-	-	8.8E-03	8.8E-03	0%
Aluminum					7.0E-03	7.0E-03	0%
Aroclor-1268					3.7E-03	3.7E-03	0%
Copper		-	-	-	2.4E-03	2.4E-03	0%
Lead		-	-	-	1.3E-03	1.3E-03	0%
alpha-Chlordane		-	-	-	6.1E-04	6.1E-04	0%
Dieldrin					5.4E-04	5.4E-04	0%
Thallium					3.1E-04	3.1E-04	0%
gamma-Chlordane		-	-	-	2.2E-04	2.2E-04	0%
Molybdenum					2.1E-04	2.1E-04	0%
Cadmium		-	-	-	1.7E-04	1.7E-04	0%
Manganese					1.6E-04	1.6E-04	0%
Vanadium					1.6E-04	1.6E-04	0%
Nickel					1.6E-04	1.6E-04	0%
Naphthalene					2.5E-06	2.5E-06	0%
Phenanthrene		-	-	-	1.6E-06	1.6E-06	0%
Fluoranthene		-	-	-	1.4E-06	1.4E-06	0%
Pyrene		-	-	-	7.4E-07	7.4E-07	0%
Chrysene		-	-	-	3.7E-07	3.7E-07	0%
Fluorene					3.7E-07	3.7E-07	0%
Benzo(b)fluoranthene		-	-	-	2.8E-07	2.8E-07	0%
Benzo(k)fluoranthene		-	-	-	2.6E-07	2.6E-07	0%
Benzo(g,h,i)perylene		-	-	-	2.3E-07	2.3E-07	0%
Heptachlor epoxide					2.0E-07	2.0E-07	0%
Benzo(a)pyrene		-	-	-	2.0E-07	2.0E-07	0%
Indeno(1,2,3-cd)pyrene		-	-	-	1.8E-07	1.8E-07	0%
Acenaphthene					1.8E-07	1.8E-07	0%
Benzo(a)anthracene		-	-	-	1.7E-07	1.7E-07	0%
Anthracene					1.6E-07	1.6E-07	0%
Acenaphthylene					1.2E-07	1.2E-07	0%
Dibenzo(a,h)anthracene					3.3E-08	3.3E-08	0%
Toxicity Equivalency - Mammals							
Cobalt							
Arsenic		-	-	-			

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TABLE K-4.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	MANTON POND REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	2.5E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Antimony							
Toxicity Equivalency (PCB) - Mammals							
N-Nitroso-di-n-propylamine							
Zinc		-	-	-			
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248							
bis(2-Ethylhexyl)phthalate		-	-	-			
Aroclor-1260							
gamma-BHC							
4-Chloro-3-methylphenol							
Beryllium							
2-Chlorophenol							
Endrin							
4-Nitrophenol							
Silver							
Phenol							
Endosulfan II							
Endosulfan sulfate							
Heptachlor							
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Toxicity Equivalency (PCB) - Birds							
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	-	-	-	2.5E+00	2.5E+00	
PERCENTAGE OF TOTAL RISK					100%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-5.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	4.6E-05	mg/kg	1.5E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.1E+00**	1.1E-01
oxicity Equivalency - Mamma	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Arsenic	4.4E-02	mg/kg	1.4E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	2.7E-03	1.1E-03
Barium	1.6E+00	mg/kg	5.3E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	1.3E-02	6.4E-03
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Cadmium	1.5E-01	mg/kg	4.9E-02	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	3.4E-02	2.4E-03
Chromium	8.6E-01	mg/kg	2.8E-01	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.8E-01	5.5E-02
Cobalt	2.2E-01	mg/kg	7.1E-02	mg/kg-d					
Copper	3.0E+00	mg/kg	9.8E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.1E-02	1.6E-02
Iron	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Lead	4.4E-01	mg/kg	1.4E-01	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.7E-02	3.7E-03
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	0.0E+00	0.0E+00
Mercury	7.1E-01	mg/kg	2.3E-01	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	5.1E-01	2.5E-01
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	0.0E+00	0.0E+00
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Zinc	1.6E+02	mg/kg	5.0E+01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	**3.5E+00**	3.8E-01
Naphthalene	3.4E-04	mg/kg	1.1E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	2.1E-06	2.1E-07
2-Methylnaphthalene	2.6E-04	mg/kg	8.4E-05	mg/kg-d					
Acenaphthylene	8.7E-04	mg/kg	2.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.5E-06	1.5E-07
Acenaphthene	1.1E-03	mg/kg	3.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-06	2.0E-07
Dibenzofuran	6.3E-04	mg/kg	2.0E-04	mg/kg-d					
Fluorene	1.4E-03	mg/kg	4.4E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.4E-06	2.4E-07
Phenanthrene	2.0E-02	mg/kg	6.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.4E-05	3.4E-06
Anthracene	2.1E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Fluoranthene	2.4E-02	mg/kg	7.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.1E-05	4.1E-06
Pyrene	9.6E-03	mg/kg	3.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-05	1.7E-06
Benzo(a)anthracene	4.3E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.5E-06	7.5E-07
Chrysene	7.0E-03	mg/kg	2.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-05	1.2E-06
Benzo(b)fluoranthene	6.9E-03	mg/kg	2.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-05	1.2E-06
Benzo(k)fluoranthene	3.1E-03	mg/kg	9.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.4E-06	5.4E-07
Benzo(a)pyrene	4.0E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.0E-06	7.0E-07
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.5E-06	7.5E-07
Dibenzo(a,h)anthracene	3.1E-04	mg/kg	9.9E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.4E-07	5.4E-08
Benzo(g,h,i)perylene	3.4E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.9E-06	5.9E-07
1,1'-Biphenyl	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
xicity Equivalency (PCB) - Bi	4.3E-05	mg/kg	1.4E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	9.9E-01	9.9E-02
ity Equivalency (PCB) - Mam	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00

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TABLE K-5.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: KINGFISHER

Prepared:	**10-Apr-03**	**SJD**
Checked:	**16-Jul-03**	**RAR**

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.7E-01	6.7E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.3E+00	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	1.8E-02	mg/kg	5.7E-03	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	7.4E-02	7.4E-03
4,4'-DDE	7.2E-02	mg/kg	2.3E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**8.3E+00**	8.3E-01
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	3.0E-02	mg/kg	9.7E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**3.5E+00**	3.5E-01
Endosulfan Sulfate	1.8E-03	mg/kg	5.9E-04	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	9.4E-04	9.4E-05
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-02	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	2.2E-02	mg/kg	7.0E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.5E-02	2.5E-03
gamma-Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.1E-01	4.1E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	7.5E+00	mg/kg	2.4E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**1.3E+01**	**1.3E+00**
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	1.6E-01	mg/kg	5.0E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.5E-02	4.5E-03
Aroclor, Total	1.9E+01	mg/kg	6.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**5.4E+01**	**2.2E+01**
							HAZARD INDICES:	**8.6E+01**	**2.5E+01**

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

TABLE K-5.2
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: DYERVILLE REACH - CT	
RECEPTOR: KINGFISHER	
TOTAL RISK (HI):	8.6E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total	-	-	-	-	5.4E+01	***5.4E+01***	***63%***
Aroclor-1254	-	-	-	-	1.3E+01	***1.3E+01***	***16%***
4,4'-DDE	-	-	-	-	8.3E+00	***8.3E+00***	10%
4,4'-DDD	-	-	-	-	3.5E+00	***3.5E+00***	4%
Zinc	-	-	-	-	3.5E+00	***3.5E+00***	4%
Toxicity Equivalency - Birds	-	-	-	-	1.1E+00	***1.1E+00***	1%
Toxicity Equivalency (PCB) - Birds	-	-	-	-	9.9E-01	9.9E-01	1%
Mercury	-	-	-	-	5.1E-01	5.1E-01	1%
Chromium	-	-	-	-	2.8E-01	2.8E-01	0%
Dieldrin	-	-	-	-	7.4E-02	7.4E-02	0%
Aroclor-1268	-	-	-	-	4.5E-02	4.5E-02	0%
Lead	-	-	-	-	3.7E-02	3.7E-02	0%
Cadmium	-	-	-	-	3.4E-02	3.4E-02	0%
alpha-Chlordane	-	-	-	-	2.5E-02	2.5E-02	0%
Copper	-	-	-	-	2.1E-02	2.1E-02	0%
Barium	-	-	-	-	1.3E-02	1.3E-02	0%
Arsenic	-	-	-	-	2.7E-03	2.7E-03	0%
Endosulfan sulfate	-	-	-	-	9.4E-04	9.4E-04	0%
Fluoranthene	-	-	-	-	4.1E-05	4.1E-05	0%
Phenanthrene	-	-	-	-	3.4E-05	3.4E-05	0%
Pyrene	-	-	-	-	1.7E-05	1.7E-05	0%
Chrysene	-	-	-	-	1.2E-05	1.2E-05	0%
Benzo(b)fluoranthene	-	-	-	-	1.2E-05	1.2E-05	0%
Indeno(1,2,3-cd)pyrene	-	-	-	-	7.5E-06	7.5E-06	0%
Benzo(a)anthracene	-	-	-	-	7.5E-06	7.5E-06	0%
Benzo(a)pyrene	-	-	-	-	7.0E-06	7.0E-06	0%
Benzo(g,h,i)perylene	-	-	-	-	5.9E-06	5.9E-06	0%
Benzo(k)fluoranthene	-	-	-	-	5.4E-06	5.4E-06	0%
Anthracene	-	-	-	-	3.7E-06	3.7E-06	0%
Fluorene	-	-	-	-	2.4E-06	2.4E-06	0%
Naphthalene	-	-	-	-	2.1E-06	2.1E-06	0%
Acenaphthene	-	-	-	-	2.0E-06	2.0E-06	0%
Acenaphthylene	-	-	-	-	1.5E-06	1.5E-06	0%
Dibenzo(a,h)anthracene	-	-	-	-	5.4E-07	5.4E-07	0%
Toxicity Equivalency - Mammals							
Cobalt							
Mercury (methyl)					-		
Antimony							
Selenium					-		
Molybdenum					-		
Toxicity Equivalency (PCB) - Mammals							
Vanadium					-		
Technical Chlordane					-		
N-Nitroso-di-n-propylamine							
Manganese					-		

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TABLE K-5.2
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: DYERVILLE REACH - CT	
RECEPTOR: KINGFISHER	
TOTAL RISK (HI):	8.6E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Pentachlorophenol							
Aluminum					-		
Thallium					-		
2,4-Dinitrotoluene							
Aroclor-1248					-		
bis(2-Ethylhexyl)phthalate		-	-	-			
Aroclor-1260					-		
gamma-BHC					-		
Heptachlor epoxide					-		
Nickel					-		
4-Chloro-3-methylphenol							
Beryllium					-		
4,4'-DDT					-		
gamma-Chlordane					-		
2-Chlorophenol							
Endrin					-		
4-Nitrophenol							
Silver					-		
Phenol							
Endosulfan II					-		
Heptachlor					-		
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor					-		
Cyanide							
Aroclor-1242					-		
Endrin Ketone					-		
Endrin aldehyde					-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	-	-	-	-	**8.6E+01**	**8.6E+01**	
PERCENTAGE OF TOTAL RISK					**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-5.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: KINGFISHER
TOTAL RISK (HI): 2.5E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		-	-	-	2.2E+01	***2.2E+01***	***86%***
Aroclor-1254		-	-	-	1.3E+00	***1.3E+00***	5%
4,4'-DDE		-	-	-	8.3E-01	8.3E-01	3%
Zinc		-	-	-	3.8E-01	3.8E-01	2%
4,4'-DDD		-	-	-	3.5E-01	3.5E-01	1%
Mercury		-	-	-	2.5E-01	2.5E-01	1%
Toxicity Equivalency - Birds		-	-	-	1.1E-01	1.1E-01	0%
Toxicity Equivalency (PCB) - Birds		-	-	-	9.9E-02	9.9E-02	0%
Chromium		-	-	-	5.5E-02	5.5E-02	0%
Copper		-	-	-	1.6E-02	1.6E-02	0%
Dieldrin		-	-	-	7.4E-03	7.4E-03	0%
Barium		-	-	-	6.4E-03	6.4E-03	0%
Aroclor-1268		-	-	-	4.5E-03	4.5E-03	0%
Lead		-	-	-	3.7E-03	3.7E-03	0%
alpha-Chlordane		-	-	-	2.5E-03	2.5E-03	0%
Cadmium		-	-	-	2.4E-03	2.4E-03	0%
Arsenic		-	-	-	1.1E-03	1.1E-03	0%
Endosulfan sulfate		-	-	-	9.4E-05	9.4E-05	0%
Fluoranthene		-	-	-	4.1E-06	4.1E-06	0%
Phenanthrene		-	-	-	3.4E-06	3.4E-06	0%
Pyrene		-	-	-	1.7E-06	1.7E-06	0%
Chrysene		-	-	-	1.2E-06	1.2E-06	0%
Benzo(b)fluoranthene		-	-	-	1.2E-06	1.2E-06	0%
Indeno(1,2,3-cd)pyrene		-	-	-	7.5E-07	7.5E-07	0%
Benzo(a)anthracene		-	-	-	7.5E-07	7.5E-07	0%
Benzo(a)pyrene		-	-	-	7.0E-07	7.0E-07	0%
Benzo(g,h,i)perylene		-	-	-	5.9E-07	5.9E-07	0%
Benzo(k)fluoranthene		-	-	-	5.4E-07	5.4E-07	0%
Anthracene		-	-	-	3.7E-07	3.7E-07	0%
Fluorene		-	-	-	2.4E-07	2.4E-07	0%
Naphthalene		-	-	-	2.1E-07	2.1E-07	0%
Acenaphthene		-	-	-	2.0E-07	2.0E-07	0%
Acenaphthylene		-	-	-	1.5E-07	1.5E-07	0%
Dibenzo(a,h)anthracene		-	-	-	5.4E-08	5.4E-08	0%
Toxicity Equivalency - Mammals							
Cobalt							
Mercury (methyl)					-		
Antimony							
Selenium					-		
Molybdenum					-		
Toxicity Equivalency (PCB) - Mammals							
Vanadium					-		
Technical Chlordane					-		
N-Nitroso-di-n-propylamine							
Manganese					-		

US EPA ARCHIVE DOCUMENT

TABLE K-5.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	DYERVILLE REACH - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	2.5E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Pentachlorophenol							
Aluminum					-		
Thallium					-		
2,4-Dinitrotoluene							
Aroclor-1248					-		
bis(2-Ethylhexyl)phthalate		-	-	-			
Aroclor-1260					-		
gamma-BHC					-		
Heptachlor epoxide					-		
Nickel					-		
4-Chloro-3-methylphenol							
Beryllium					-		
4,4'-DDT					-		
gamma-Chlordane					-		
2-Chlorophenol							
Endrin					-		
4-Nitrophenol							
Silver					-		
Phenol							
Endosulfan II					-		
Heptachlor					-		
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor					-		
Cyanide							
Aroclor-1242					-		
Endrin Ketone					-		
Endrin aldehyde					-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Di-n-Butylphthalate		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	-	-	-	-	**2.5E+01**	**2.5E+01**	
PERCENTAGE OF TOTAL RISK					**100%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-6.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)*phthalate*	1.0E-03	mg/L	1.1E-04	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.0E-05	1.0E-06
Aluminum	1.6E-01	mg/L	1.7E-02	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.6E-04	1.6E-05
Beryllium	4.9E-05	mg/L	5.4E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	3.7E-05	3.7E-06
Cobalt	1.1E-04	mg/L	1.3E-05	mg/kg-d					
Copper	2.1E-03	mg/L	2.3E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	4.9E-06	3.7E-06
Lead	3.7E-04	mg/L	4.1E-05	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.1E-05	1.1E-06
Manganese	1.4E-01	mg/L	1.5E-02	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.5E-05	1.5E-06
Nickel	1.7E-03	mg/L	1.9E-04	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.4E-06	1.8E-06
Selenium	8.2E-05	mg/L	9.0E-06	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.1E-05	6.0E-06
Thallium	5.1E-06	mg/L	5.7E-07	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.6E-07	1.1E-07
Zinc	3.4E-02	mg/L	3.8E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.6E-04	2.9E-05
Nitrogen, Ammonia	1.1E-02	mg/L	1.2E-03	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	7.0E-09	mg/L	7.8E-10	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.5E-05	5.5E-06
							HAZARD INDICES:	5.7E-04	6.9E-05

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-6.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	6.4E-04	mg/kg	2.1E-04	mg/kg-d					
2-Methylnaphthalene	1.7E-02	mg/kg	5.6E-03	mg/kg-d					
Acenaphthene	4.1E-04	mg/kg	1.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.2E-07	7.2E-08
Acenaphthylene	9.1E-04	mg/kg	2.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-06	1.6E-07
Anthracene	7.9E-04	mg/kg	2.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-06	1.4E-07
Benzo(a)anthracene	3.3E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.8E-06	5.8E-07
Benzo(a)pyrene	3.3E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.7E-06	5.7E-07
Benzo(b)fluoranthene	4.2E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.3E-06	7.3E-07
Benzo(g,h,i)perylene	2.2E-03	mg/kg	7.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-06	3.8E-07
Benzo(k)fluoranthene	3.6E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.3E-06	6.3E-07
Chrysene	4.5E-03	mg/kg	1.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.9E-06	7.9E-07
Dibenzo(a,h)anthracene	1.1E-03	mg/kg	3.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-06	1.9E-07
Dibenzofuran	5.5E-04	mg/kg	1.8E-04	mg/kg-d					
Fluoranthene	9.6E-03	mg/kg	3.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-05	1.7E-06
Fluorene	9.0E-04	mg/kg	2.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-06	1.6E-07
Indeno(1,2,3-cd)pyrene	2.8E-03	mg/kg	9.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.9E-06	4.9E-07
Naphthalene	7.7E-03	mg/kg	2.5E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	4.6E-05	4.6E-06
Phenanthrene	7.1E-03	mg/kg	2.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-05	1.2E-06
Pyrene	5.9E-03	mg/kg	1.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-05	1.0E-06
4,4'-DDD	2.4E-03	mg/kg	7.6E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.7E-01	2.7E-02
4,4'-DDE	1.3E-02	mg/kg	4.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.5E+00**	1.5E-01
alpha-Chlordane	1.7E-03	mg/kg	5.6E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.0E-03	2.0E-04
gamma-Chlordane	9.4E-04	mg/kg	3.0E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.1E-03	1.1E-04
Aluminum	9.9E+00	mg/kg	3.2E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	2.9E-02	2.9E-03
Barium	9.2E-01	mg/kg	3.0E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	7.1E-03	3.6E-03
Beryllium	3.5E-04	mg/kg	1.1E-04	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	7.6E-04	7.6E-05
Cadmium	1.5E-02	mg/kg	4.8E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	3.3E-03	2.4E-04
Chromium	9.1E-02	mg/kg	2.9E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.9E-02	5.9E-03
Cobalt	4.0E-02	mg/kg	1.3E-02	mg/kg-d					
Copper	5.8E-01	mg/kg	1.9E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	4.0E-03	3.0E-03
Lead	8.9E-02	mg/kg	2.9E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	7.5E-03	7.5E-04
Manganese	4.3E+00	mg/kg	1.4E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.4E-03	1.4E-04
Mercury	7.7E-02	mg/kg	2.5E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	5.5E-02	2.7E-02
Mercury (methyl)	7.7E-02	mg/kg	2.5E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**3.9E+00**	3.9E-01
Nickel	3.8E-02	mg/kg	1.2E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.6E-04	1.1E-04
Selenium	1.9E-01	mg/kg	6.2E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.4E-01	4.2E-02
Silver	2.1E-02	mg/kg	6.8E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	7.6E-05	7.6E-06
Thallium	3.2E-03	mg/kg	1.0E-03	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.9E-04	2.0E-04
Vanadium	7.1E-02	mg/kg	2.3E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.0E-03	2.0E-04
Zinc	9.8E+00	mg/kg	3.1E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.2E-01	2.4E-02
Toxicity Equivalency - Birds	2.4E-06	mg/kg	7.7E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.5E-02	5.5E-03

US EPA ARCHIVE DOCUMENT

TABLE K-6.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: KINGFISHER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	6.2E+00	6.8E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-2.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-6.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	6.2E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		-	-	-	3.9E+00	***3.9E+00***	***63%***
4,4'-DDE		-	-	-	1.5E+00	***1.5E+00***	***24%***
4,4'-DDD		-	-	-	2.7E-01	2.7E-01	4%
Zinc	2.6E-04	-	-	-	2.2E-01	2.2E-01	4%
Selenium	2.1E-05	-	-	-	1.4E-01	1.4E-01	2%
Toxicity Equivalency - Birds	5.5E-05	-	-	-	5.5E-02	5.5E-02	1%
Mercury		-	-	-	5.5E-02	5.5E-02	1%
Chromium		-	-	-	2.9E-02	2.9E-02	0%
Aluminum	1.6E-04				2.9E-02	2.9E-02	0%
Lead	1.1E-05	-	-	-	7.5E-03	7.5E-03	0%
Barium		-	-	-	7.1E-03	7.1E-03	0%
Copper	4.9E-06	-	-	-	4.0E-03	4.0E-03	0%
Cadmium		-	-	-	3.3E-03	3.3E-03	0%
Vanadium					2.0E-03	2.0E-03	0%
alpha-Chlordane		-	-	-	2.0E-03	2.0E-03	0%
Manganese	1.5E-05				1.4E-03	1.4E-03	0%
gamma-Chlordane		-	-	-	1.1E-03	1.1E-03	0%
Beryllium	3.7E-05				7.6E-04	7.9E-04	0%
Thallium	1.6E-07	-	-	-	2.9E-04	2.9E-04	0%
Nickel	2.4E-06				1.6E-04	1.6E-04	0%
Silver		-	-	-	7.6E-05	7.6E-05	0%
Naphthalene		-	-	-	4.6E-05	4.6E-05	0%
Fluoranthene		-	-	-	1.7E-05	1.7E-05	0%
Phenanthrene		-	-	-	1.2E-05	1.2E-05	0%
Pyrene		-	-	-	1.0E-05	1.0E-05	0%
bis(2-Ethylhexyl)phthalate	1.0E-05	-	-	-		1.0E-05	0%
Chrysene		-	-	-	7.9E-06	7.9E-06	0%
Benzo(b)fluoranthene		-	-	-	7.3E-06	7.3E-06	0%
Benzo(k)fluoranthene		-	-	-	6.3E-06	6.3E-06	0%
Benzo(a)anthracene		-	-	-	5.8E-06	5.8E-06	0%
Benzo(a)pyrene		-	-	-	5.7E-06	5.7E-06	0%
Indeno(1,2,3-cd)pyrene		-	-	-	4.9E-06	4.9E-06	0%
Benzo(g,h,i)perylene		-	-	-	3.8E-06	3.8E-06	0%
Dibenzo(a,h)anthracene		-	-	-	1.9E-06	1.9E-06	0%
Acenaphthylene		-	-	-	1.6E-06	1.6E-06	0%
Fluorene		-	-	-	1.6E-06	1.6E-06	0%
Anthracene		-	-	-	1.4E-06	1.4E-06	0%
Acenaphthene		-	-	-	7.2E-07	7.2E-07	0%
Toxicity Equivalency - Mammals							
Aroclor, Total		-	-	-			
Aroclor-1254		-	-	-			
Cobalt							
Arsenic		-	-	-			
Antimony							
Aroclor-1268		-	-	-			

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TABLE K-6.3
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	6.2E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Molybdenum		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	5.7E-04	-	-	-	6.2E+00	6.2E+00	
PERCENTAGE OF TOTAL RISK	0%				100%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-6.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	6.8E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		-	-	-	3.9E-01	3.9E-01	***57%***
4,4'-DDE		-	-	-	1.5E-01	1.5E-01	***22%***
Selenium	6.0E-06	-	-	-	4.2E-02	4.2E-02	6%
Mercury		-	-	-	2.7E-02	2.7E-02	4%
4,4'-DDD		-	-	-	2.7E-02	2.7E-02	4%
Zinc	2.9E-05	-	-	-	2.4E-02	2.4E-02	4%
Chromium		-	-	-	5.9E-03	5.9E-03	1%
Toxicity Equivalency - Birds	5.5E-06	-	-	-	5.5E-03	5.5E-03	1%
Barium		-	-	-	3.6E-03	3.6E-03	1%
Copper	3.7E-06	-	-	-	3.0E-03	3.0E-03	0%
Aluminum	1.6E-05				2.9E-03	2.9E-03	0%
Lead	1.1E-06	-	-	-	7.5E-04	7.5E-04	0%
Cadmium		-	-	-	2.4E-04	2.4E-04	0%
Thallium	1.1E-07	-	-	-	2.0E-04	2.0E-04	0%
Vanadium					2.0E-04	2.0E-04	0%
alpha-Chlordane		-	-	-	2.0E-04	2.0E-04	0%
Manganese	1.5E-06				1.4E-04	1.4E-04	0%
Nickel	1.8E-06				1.1E-04	1.2E-04	0%
gamma-Chlordane		-	-	-	1.1E-04	1.1E-04	0%
Beryllium	3.7E-06				7.6E-05	7.9E-05	0%
Silver		-	-	-	7.6E-06	7.6E-06	0%
Naphthalene		-	-	-	4.6E-06	4.6E-06	0%
Fluoranthene		-	-	-	1.7E-06	1.7E-06	0%
Phenanthrene		-	-	-	1.2E-06	1.2E-06	0%
Pyrene		-	-	-	1.0E-06	1.0E-06	0%
bis(2-Ethylhexyl)phthalate	1.0E-06	-	-	-		1.0E-06	0%
Chrysene		-	-	-	7.9E-07	7.9E-07	0%
Benzo(b)fluoranthene		-	-	-	7.3E-07	7.3E-07	0%
Benzo(k)fluoranthene		-	-	-	6.3E-07	6.3E-07	0%
Benzo(a)anthracene		-	-	-	5.8E-07	5.8E-07	0%
Benzo(a)pyrene		-	-	-	5.7E-07	5.7E-07	0%
Indeno(1,2,3-cd)pyrene		-	-	-	4.9E-07	4.9E-07	0%
Benzo(g,h,i)perylene		-	-	-	3.8E-07	3.8E-07	0%
Dibenzo(a,h)anthracene		-	-	-	1.9E-07	1.9E-07	0%
Acenaphthylene		-	-	-	1.6E-07	1.6E-07	0%
Fluorene		-	-	-	1.6E-07	1.6E-07	0%
Anthracene		-	-	-	1.4E-07	1.4E-07	0%
Acenaphthene		-	-	-	7.2E-08	7.2E-08	0%
Toxicity Equivalency - Mammals							
Aroclor, Total		-	-	-			
Aroclor-1254		-	-	-			
Cobalt							
Arsenic		-	-	-			
Antimony							
Aroclor-1268		-	-	-			

US EPA ARCHIVE DOCUMENT

TABLE K-6.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : KINGFISHER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	KINGFISHER
TOTAL RISK (HI):	6.8E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Molybdenum		-	-	-			
TOTAL MEDIUM-SPECIFIC RISK	6.9E-05	-	-	-	6.8E-01	6.8E-01	
PERCENTAGE OF TOTAL RISK	0%				100%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-7.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aluminum	8.9E-02	mg/L	4.1E-03	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	3.7E-05	3.7E-06
Beryllium	5.5E-05	mg/L	2.5E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.7E-05	1.7E-06
Chromium	2.5E-03	mg/L	1.1E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.1E-04	2.3E-05
Cobalt	1.2E-04	mg/L	5.5E-06	mg/kg-d					
Copper	5.4E-03	mg/L	2.4E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.2E-06	4.0E-06
Lead	2.9E-03	mg/L	1.3E-04	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.4E-05	3.4E-06
Manganese	1.3E-01	mg/L	5.9E-03	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	6.1E-06	6.1E-07
Nickel	1.9E-03	mg/L	8.8E-05	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.1E-06	8.2E-07
Selenium	8.7E-05	mg/L	3.9E-06	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	9.0E-06	2.6E-06
Thallium	7.4E-06	mg/L	3.4E-07	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	9.6E-08	6.7E-08
Zinc	2.0E-02	mg/L	9.2E-04	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	6.4E-05	7.0E-06
Nitrogen, Ammonia	3.9E-01	mg/L	1.8E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	7.2E-09	mg/L	3.3E-10	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.3E-05	2.3E-06
							HAZARD INDICES:	3.1E-04	4.9E-05

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-7.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	7.5E-02	mg/kg	6.6E-04	mg/kg-d					
Acenaphthene	4.8E-01	mg/kg	4.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.3E-05	2.3E-06
Acenaphthylene	1.9E-01	mg/kg	1.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.2E-06	9.2E-07
Anthracene	9.3E-01	mg/kg	8.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.5E-05	4.5E-06
Benzo(a)anthracene	1.5E+00	mg/kg	1.3E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-05	7.1E-06
Benzo(a)pyrene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-05	6.7E-06
Benzo(b)fluoranthene	1.5E+00	mg/kg	1.3E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.2E-05	7.2E-06
Benzo(g,h,i)perylene	8.6E-01	mg/kg	7.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.1E-05	4.1E-06
Benzo(k)fluoranthene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-05	6.7E-06
bis(2-Ethylhexyl)phthalate	9.5E-01	mg/kg	8.4E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	7.6E-04	7.6E-05
Carbazole	6.6E-01	mg/kg	5.8E-03	mg/kg-d					
Chrysene	1.8E+00	mg/kg	1.6E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.7E-05	8.7E-06
Dibenzo(a,h)anthracene	7.7E-01	mg/kg	6.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-05	3.7E-06
Dibenzofuran	2.9E-01	mg/kg	2.6E-03	mg/kg-d					
Di-n-Butylphthalate	4.7E-01	mg/kg	4.1E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	3.7E-03	3.7E-04
Fluoranthene	3.3E+00	mg/kg	2.9E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-04	1.6E-05
Fluorene	4.7E-01	mg/kg	4.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.3E-05	2.3E-06
Indeno(1,2,3-cd)pyrene	1.0E+00	mg/kg	9.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.9E-05	4.9E-06
Naphthalene	9.4E-02	mg/kg	8.3E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.5E-05	1.5E-06
Phenanthrene	2.1E+00	mg/kg	1.8E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.9E-05	9.9E-06
Pyrene	2.8E+00	mg/kg	2.5E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-04	1.3E-05
4,4'-DDD	4.9E-03	mg/kg	4.3E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.5E-02	1.5E-03
4,4'-DDE	6.0E-03	mg/kg	5.3E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.9E-02	1.9E-03
alpha-Chlordane	6.1E-03	mg/kg	5.3E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.9E-04	1.9E-05
Aroclor, Total	2.1E-01	mg/kg	1.8E-03	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	1.7E-02	6.7E-03
Aroclor-1254	1.5E-01	mg/kg	1.3E-03	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	7.3E-03	7.3E-04
Aroclor-1260	2.5E-02	mg/kg	2.2E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.2E-03	1.2E-04
Aroclor-1268	1.4E-01	mg/kg	1.2E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	1.1E-03	1.1E-04
Dieldrin	2.6E-03	mg/kg	2.3E-05	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	2.9E-04	2.9E-05
Endrin	1.9E-03	mg/kg	1.7E-05	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	1.6E-04	1.6E-04
gamma-Chlordane	4.8E-03	mg/kg	4.2E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.5E-04	1.5E-05
Technical Chlordane	4.0E-01	mg/kg	3.5E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.3E-02	1.3E-03
Antimony	7.3E-01	mg/kg	6.5E-03	mg/kg-d					
Arsenic	3.9E+00	mg/kg	3.4E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	6.7E-03	2.7E-03
Barium	1.3E+02	mg/kg	1.2E+00	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	2.8E-02	1.4E-02
Cadmium	8.1E-01	mg/kg	7.1E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	4.9E-03	3.5E-04
Chromium	9.9E+01	mg/kg	8.8E-01	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	8.8E-01	1.8E-01
Cobalt	8.1E+00	mg/kg	7.1E-02	mg/kg-d					
Copper	7.3E+01	mg/kg	6.4E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.4E-02	1.0E-02
Lead	1.8E+02	mg/kg	1.6E+00	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	4.1E-01	4.1E-02
Mercury	2.1E-01	mg/kg	1.9E-03	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	4.1E-03	2.1E-03
Mercury (methyl)	2.6E-04	mg/kg	2.2E-06	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	3.5E-04	3.5E-05
Molybdenum	1.3E+01	mg/kg	1.1E-01	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.1E-02	3.1E-03
Selenium	1.1E+00	mg/kg	1.0E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.3E-02	6.7E-03
Silver	2.6E+00	mg/kg	2.3E-02	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.5E-04	2.5E-05
Thallium	3.7E-01	mg/kg	3.2E-03	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	9.3E-04	6.5E-04

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TABLE K-7.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Zinc	2.2E+02	mg/kg	1.9E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.3E-01	1.5E-02
Toxicity Equivalency - Birds	4.5E-05	mg/kg	4.0E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.8E-02	2.8E-03
Toxicity Equivalency (PCB) - Birds	3.4E-05	mg/kg	3.0E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.1E-02	2.1E-03

TABLE K-7.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDE	4.3E-03	mg/kg	3.9E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.4E-02	1.4E-03
alpha-Chlordane	2.8E-04	mg/kg	2.5E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	8.8E-06	8.8E-07
Aroclor, Total	4.4E-02	mg/kg	3.9E-04	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	3.5E-03	1.4E-03
Aroclor-1254	3.8E-02	mg/kg	3.4E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.9E-03	1.9E-04
Aroclor-1268	6.2E-03	mg/kg	5.5E-05	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	5.0E-05	5.0E-06
Endosulfan Sulfate	5.1E-04	mg/kg	4.6E-06	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	7.3E-06	7.3E-07
gamma-Chlordane	9.0E-05	mg/kg	8.0E-07	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.8E-06	2.8E-07
Technical Chlordane	1.8E-02	mg/kg	1.6E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	5.8E-04	5.8E-05
Aluminum	9.0E-01	mg/kg	8.0E-03	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	7.3E-05	7.3E-06
Antimony	1.4E-02	mg/kg	1.2E-04	mg/kg-d					
Barium	2.6E+01	mg/kg	2.3E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	5.5E-03	2.7E-03
Cadmium	8.6E-02	mg/kg	7.6E-04	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	5.3E-04	3.8E-05
Chromium	2.2E-01	mg/kg	2.0E-03	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.0E-03	4.0E-04
Cobalt	2.4E-01	mg/kg	2.1E-03	mg/kg-d					
Copper	2.7E+01	mg/kg	2.4E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.1E-03	3.9E-0
Lead	5.2E-01	mg/kg	4.6E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.2E-03	1.2E-0
Manganese	1.2E+02	mg/kg	1.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.1E-03	1.1E-04
Mercury	2.2E-02	mg/kg	2.0E-04	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	4.4E-04	2.2E-04
Mercury (methyl)	2.2E-02	mg/kg	2.0E-04	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	3.1E-02	3.1E-03
Molybdenum	1.4E-01	mg/kg	1.3E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.5E-04	3.5E-05
Nickel	2.8E-01	mg/kg	2.5E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	3.2E-05	2.3E-05
Selenium	1.2E-01	mg/kg	1.1E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.5E-03	7.4E-04
Silver	2.2E-01	mg/kg	1.9E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.1E-05	2.1E-06
Thallium	9.9E-03	mg/kg	8.8E-05	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.5E-05	1.8E-05
Vanadium	1.7E-01	mg/kg	1.5E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.3E-04	1.3E-05
Zinc	2.3E+01	mg/kg	2.0E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.4E-02	1.5E-03
Toxicity Equivalency - Birds	4.3E-06	mg/kg	3.8E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.7E-03	2.7E-04
Toxicity Equivalency (PCB) - Birds	2.3E-06	mg/kg	2.0E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.5E-03	1.5E-04
							HAZARD INDICES:	8.8E-02	1.6E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-7.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.4E-03	mg/kg	2.3E-04	mg/kg-d					
2-Methylnaphthalene	5.5E-03	mg/kg	9.3E-04	mg/kg-d					
Acenaphthene	4.0E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Acenaphthylene	3.9E-03	mg/kg	6.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.5E-06	3.5E-07
Anthracene	4.6E-03	mg/kg	7.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.2E-06	4.2E-07
Benzo(a)anthracene	1.7E-03	mg/kg	2.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-06	1.6E-07
Benzo(a)pyrene	1.1E-03	mg/kg	1.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-06	1.0E-07
Benzo(b)fluoranthene	1.5E-03	mg/kg	2.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-06	1.3E-07
Benzo(g,h,i)perylene	9.9E-04	mg/kg	1.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.0E-07	9.0E-08
Benzo(k)fluoranthene	1.4E-03	mg/kg	2.4E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-06	1.3E-07
Chrysene	3.2E-03	mg/kg	5.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.9E-06	2.9E-07
Dibenzo(a,h)anthracene	3.9E-04	mg/kg	6.5E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.5E-07	3.5E-08
Dibenzofuran	3.6E-03	mg/kg	5.9E-04	mg/kg-d					
Fluoranthene	1.3E-02	mg/kg	2.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-05	1.2E-06
Fluorene	6.1E-03	mg/kg	1.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.5E-06	5.5E-07
Naphthalene	2.3E-03	mg/kg	3.9E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	7.2E-06	7.2E-07
Phenanthrene	1.7E-02	mg/kg	2.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-05	1.6E-06
Pyrene	5.8E-03	mg/kg	9.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.2E-06	5.2E-07
4,4'-DDD	1.7E-02	mg/kg	2.9E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.0E+00**	1.0E-01
4,4'-DDE	4.3E-02	mg/kg	7.2E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**2.6E+00**	2.6E-01
4,4'-DDT	6.3E-03	mg/kg	1.0E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	3.7E-01	3.7E-02
alpha-Chlordane	2.1E-02	mg/kg	3.5E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.2E-02	1.2E-03
Aroclor, Total	2.6E-01	mg/kg	4.3E-02	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	3.9E-01	1.6E-01
Aroclor-1254	2.0E-01	mg/kg	3.4E-02	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.9E-01	1.9E-02
Aroclor-1268	5.5E-02	mg/kg	9.2E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	8.3E-03	8.3E-04
Dieldrin	4.2E-03	mg/kg	7.0E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	9.1E-03	9.1E-04
gamma-BHC	8.1E-04	mg/kg	1.4E-04	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	6.8E-05	6.8E-06
gamma-Chlordane	1.1E-02	mg/kg	1.9E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	6.6E-03	6.6E-04
Heptachlor Epoxide	8.1E-04	mg/kg	1.4E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	3.3E-06	3.3E-07
Technical Chlordane	2.8E-01	mg/kg	4.7E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.7E-01	1.7E-02
Aluminum	3.0E+01	mg/kg	5.1E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	4.6E-02	4.6E-03
Antimony	1.1E-03	mg/kg	1.8E-04	mg/kg-d					
Barium	9.1E-01	mg/kg	1.5E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	3.7E-03	1.8E-03
Beryllium	5.2E-03	mg/kg	8.7E-04	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	5.9E-03	5.9E-04
Cadmium	2.9E-02	mg/kg	4.8E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	3.3E-03	2.4E-04
Chromium	1.2E-01	mg/kg	2.0E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.0E-02	3.9E-03
Cobalt	7.9E-02	mg/kg	1.3E-02	mg/kg-d					
Copper	1.0E+00	mg/kg	1.7E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.6E-03	2.7E-03
Lead	1.2E-02	mg/kg	2.0E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	5.3E-04	5.3E-05
Manganese	6.2E+00	mg/kg	1.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.1E-03	1.1E-04
Mercury	1.9E-01	mg/kg	3.2E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	7.1E-02	3.5E-02
Mercury (methyl)	1.9E-01	mg/kg	3.2E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**5.0E+00**	5.0E-01
Nickel	7.1E-02	mg/kg	1.2E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.5E-04	1.1E-04
Silver	3.1E-02	mg/kg	5.2E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	5.7E-05	5.7E-06
Thallium	1.9E-03	mg/kg	3.2E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	9.2E-05	6.5E-05
Vanadium	1.0E-01	mg/kg	1.7E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.5E-03	1.5E-04

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TABLE K-7.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Zinc	1.6E+01	mg/kg	2.7E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.9E-01	2.1E-02
Toxicity Equivalency - Birds	6.9E-06	mg/kg	1.2E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	8.2E-02	8.2E-03
Toxicity Equivalency (PCB) - Birds	5.1E-05	mg/kg	8.6E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	6.1E-01	6.1E-02

TABLE K-7.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 1.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		3.5E-04	-	3.1E-02	5.0E+00	***5.1E+00***	***40%***
4,4'-DDE		1.9E-02	-	1.4E-02	2.6E+00	***2.6E+00***	***21%***
4,4'-DDD		1.5E-02	-		1.0E+00	***1.1E+00***	8%
Chromium	1.1E-04	8.8E-01	-	2.0E-03	2.0E-02	9.0E-01	7%
Toxicity Equivalency (PCB) - Birds		2.1E-02	-	1.5E-03	6.1E-01	6.3E-01	5%
Lead	3.4E-05	4.1E-01	-	1.2E-03	5.3E-04	4.1E-01	3%
Aroclor, Total		1.7E-02	-	3.5E-03	3.9E-01	4.1E-01	3%
4,4'-DDT					3.7E-01	3.7E-01	3%
Zinc	6.4E-05	1.3E-01	-	1.4E-02	1.9E-01	3.3E-01	3%
Aroclor-1254		7.3E-03	-	1.9E-03	1.9E-01	2.0E-01	2%
Technical Chlordane		1.3E-02	-	5.8E-04	1.7E-01	1.8E-01	1%
Toxicity Equivalency - Birds	2.3E-05	2.8E-02	-	2.7E-03	8.2E-02	1.1E-01	1%
Mercury		4.1E-03	-	4.4E-04	7.1E-02	7.5E-02	1%
Aluminum	3.7E-05			7.3E-05	4.6E-02	4.6E-02	0%
Barium		2.8E-02	-	5.5E-03	3.7E-03	3.7E-02	0%
Molybdenum		3.1E-02	-	3.5E-04		3.2E-02	0%
Selenium	9.0E-06	2.3E-02	-	2.5E-03		2.5E-02	0%
Copper	5.2E-06	1.4E-02	-	5.1E-03	3.6E-03	2.2E-02	0%
alpha-Chlordane		1.9E-04	-	8.8E-06	1.2E-02	1.3E-02	0%
Aroclor-1268		1.1E-03	-	5.0E-05	8.3E-03	9.5E-03	0%
Dieldrin		2.9E-04	-		9.1E-03	9.3E-03	0%
Cadmium		4.9E-03	-	5.3E-04	3.3E-03	8.8E-03	0%
gamma-Chlordane		1.5E-04	-	2.8E-06	6.6E-03	6.8E-03	0%
Arsenic		6.7E-03	-			6.7E-03	0%
Beryllium	1.7E-05				5.9E-03	5.9E-03	0%
Di-n-Butylphthalate		3.7E-03	-			3.7E-03	0%
Manganese	6.1E-06			1.1E-03	1.1E-03	2.1E-03	0%
Vanadium				1.3E-04	1.5E-03	1.6E-03	0%
Aroclor-1260		1.2E-03	-			1.2E-03	0%
Thallium	9.6E-08	9.3E-04	-	2.5E-05	9.2E-05	1.0E-03	0%
bis(2-Ethylhexyl)phthalate		7.6E-04	-			7.6E-04	0%
Silver		2.5E-04	-	2.1E-05	5.7E-05	3.3E-04	0%
Nickel	1.1E-06			3.2E-05	1.5E-04	1.9E-04	0%
Fluoranthene		1.6E-04	-		1.2E-05	1.7E-04	0%
Endrin		1.6E-04	-			1.6E-04	0%
Pyrene		1.3E-04	-		5.2E-06	1.4E-04	0%
Phenanthrene		9.9E-05	-		1.6E-05	1.1E-04	0%
Chrysene		8.7E-05	-		2.9E-06	9.0E-05	0%
Benzo(b)fluoranthene		7.2E-05	-		1.3E-06	7.4E-05	0%
Benzo(a)anthracene		7.1E-05	-		1.6E-06	7.2E-05	0%
Benzo(k)fluoranthene		6.7E-05	-		1.3E-06	6.8E-05	0%
Benzo(a)pyrene		6.7E-05	-		1.0E-06	6.8E-05	0%
gamma-BHC					6.8E-05	6.8E-05	0%
Indeno(1,2,3-cd)pyrene		4.9E-05	-			4.9E-05	0%
Anthracene		4.5E-05	-		4.2E-06	4.9E-05	0%

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TABLE K-7.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	GREYSTONE MILL POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	1.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Benzo(g,h,i)perylene		4.1E-05	-		9.0E-07	4.2E-05	0%
Dibenzo(a,h)anthracene		3.7E-05	-		3.5E-07	3.7E-05	0%
Fluorene		2.3E-05	-		5.5E-06	2.8E-05	0%
Acenaphthene		2.3E-05	-		3.7E-06	2.7E-05	0%
Naphthalene		1.5E-05	-		7.2E-06	2.3E-05	0%
Acenaphthylene		9.2E-06	-		3.5E-06	1.3E-05	0%
Endosulfan sulfate				7.3E-06		7.3E-06	0%
Heptachlor epoxide					3.3E-06	3.3E-06	0%
Cobalt							
Antimony							
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
1,1'-Biphenyl							
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**3.1E-04**	**1.7E+00**	**-**	**8.8E-02**	**1.1E+01**	**1.3E+01**	
PERCENTAGE OF TOTAL RISK	**0%**	**13%**		**1%**	**86%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-7.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 1.5E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		3.5E-05	-	3.1E-03	5.0E-01	5.1E-01	***33%***
4,4'-DDE		1.9E-03	-	1.4E-03	2.6E-01	2.6E-01	***17%***
Chromium	2.3E-05	1.8E-01	-	4.0E-04	3.9E-03	1.8E-01	***12%***
Aroclor, Total		6.7E-03	-	1.4E-03	1.6E-01	1.6E-01	***11%***
4,4'-DDD		1.5E-03	-		1.0E-01	1.1E-01	7%
Toxicity Equivalency (PCB) - Birds		2.1E-03	-	1.5E-04	6.1E-02	6.3E-02	4%
Lead	3.4E-06	4.1E-02	-	1.2E-04	5.3E-05	4.1E-02	3%
Mercury		2.1E-03	-	2.2E-04	3.5E-02	3.8E-02	2%
4,4'-DDT					3.7E-02	3.7E-02	2%
Zinc	7.0E-06	1.5E-02	-	1.5E-03	2.1E-02	3.7E-02	2%
Aroclor-1254		7.3E-04	-	1.9E-04	1.9E-02	2.0E-02	1%
Barium		1.4E-02	-	2.7E-03	1.8E-03	1.9E-02	1%
Technical Chlordane		1.3E-03	-	5.8E-05	1.7E-02	1.8E-02	1%
Copper	4.0E-06	1.0E-02	-	3.9E-03	2.7E-03	1.7E-02	1%
Toxicity Equivalency - Birds	2.3E-06	2.8E-03	-	2.7E-04	8.2E-03	1.1E-02	1%
Selenium	2.6E-06	6.7E-03	-	7.4E-04		7.5E-03	0%
Aluminum	3.7E-06			7.3E-06	4.6E-03	4.6E-03	0%
Molybdenum		3.1E-03	-	3.5E-05		3.2E-03	0%
Arsenic		2.7E-03	-			2.7E-03	0%
alpha-Chlordane		1.9E-05	-	8.8E-07	1.2E-03	1.3E-03	0%
Aroclor-1268		1.1E-04	-	5.0E-06	8.3E-04	9.5E-04	0%
Dieldrin		2.9E-05	-		9.1E-04	9.3E-04	0%
Thallium	6.7E-08	6.5E-04	-	1.8E-05	6.5E-05	7.3E-04	0%
gamma-Chlordane		1.5E-05	-	2.8E-07	6.6E-04	6.8E-04	0%
Cadmium		3.5E-04	-	3.8E-05	2.4E-04	6.3E-04	0%
Beryllium	1.7E-06				5.9E-04	5.9E-04	0%
Di-n-Butylphthalate		3.7E-04	-			3.7E-04	0%
Manganese	6.1E-07			1.1E-04	1.1E-04	2.1E-04	0%
Endrin		1.6E-04	-			1.6E-04	0%
Vanadium				1.3E-05	1.5E-04	1.6E-04	0%
Nickel	8.2E-07			2.3E-05	1.1E-04	1.3E-04	0%
Aroclor-1260		1.2E-04	-			1.2E-04	0%
bis(2-Ethylhexyl)phthalate		7.6E-05	-			7.6E-05	0%
Silver		2.5E-05	-	2.1E-06	5.7E-06	3.3E-05	0%
Fluoranthene		1.6E-05	-		1.2E-06	1.7E-05	0%
Pyrene		1.3E-05	-		5.2E-07	1.4E-05	0%
Phenanthrene		9.9E-06	-		1.6E-06	1.1E-05	0%
Chrysene		8.7E-06	-		2.9E-07	9.0E-06	0%
Benzo(b)fluoranthene		7.2E-06	-		1.3E-07	7.4E-06	0%
Benzo(a)anthracene		7.1E-06	-		1.6E-07	7.2E-06	0%
Benzo(k)fluoranthene		6.7E-06	-		1.3E-07	6.8E-06	0%
Benzo(a)pyrene		6.7E-06	-		1.0E-07	6.8E-06	0%
gamma-BHC					6.8E-06	6.8E-06	0%
Indeno(1,2,3-cd)pyrene		4.9E-06	-			4.9E-06	0%
Anthracene		4.5E-06	-		4.2E-07	4.9E-06	0%

US EPA ARCHIVE DOCUMENT

TABLE K-7.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	GREYSTONE MILL POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	1.5E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Benzo(g,h,i)perylene		4.1E-06	-		9.0E-08	4.2E-06	0%
Dibenzo(a,h)anthracene		3.7E-06	-		3.5E-08	3.7E-06	0%
Fluorene		2.3E-06	-		5.5E-07	2.8E-06	0%
Acenaphthene		2.3E-06	-		3.7E-07	2.7E-06	0%
Naphthalene		1.5E-06	-		7.2E-07	2.3E-06	0%
Acenaphthylene		9.2E-07	-		3.5E-07	1.3E-06	0%
Endosulfan sulfate				7.3E-07		7.3E-07	0%
Heptachlor epoxide					3.3E-07	3.3E-07	0%
Cobalt							
Antimony							
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
1,1'-Biphenyl							
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**4.9E-05**	**2.9E-01**	**-**	**1.6E-02**	**1.2E+00**	**1.5E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**19%**		**1%**	**80%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-8.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.0E-03	mg/L	4.5E-05	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	4.1E-06	4.1E-07
alpha-Chlordane	6.9E-07	mg/L	3.1E-08	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.1E-07	1.1E-08
Endosulfan Sulfate	5.9E-05	mg/L	2.7E-06	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	4.3E-06	4.3E-07
gamma-Chlordane	2.5E-05	mg/L	1.1E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	4.0E-06	4.0E-07
Aluminum	6.5E-01	mg/L	2.9E-02	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	2.7E-04	2.7E-05
Beryllium	5.0E-05	mg/L	2.3E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.5E-05	1.5E-06
Chromium	5.1E-03	mg/L	2.3E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.3E-04	4.7E-05
Cobalt	6.0E-04	mg/L	2.7E-05	mg/kg-d					
Copper	1.3E-02	mg/L	6.1E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.3E-05	9.8E-06
Lead	2.1E-02	mg/L	9.4E-04	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	2.5E-04	2.5E-05
Manganese	4.0E-01	mg/L	1.8E-02	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.9E-05	1.9E-06
Nickel	4.9E-03	mg/L	2.2E-04	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.9E-06	2.1E-06
Selenium	2.4E-03	mg/L	1.1E-04	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.5E-04	7.2E-05
Silver	8.3E-04	mg/L	3.8E-05	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	4.2E-07	4.2E-08
Thallium	3.7E-03	mg/L	1.7E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	4.8E-05	3.3E-05
Zinc	6.5E-02	mg/L	2.9E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.0E-04	2.2E-05
Nitrogen, Ammonia	2.4E-01	mg/L	1.1E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	1.1E-06	mg/L	5.1E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	3.7E-03	3.7E-04
							HAZARD INDICES:	5.0E-03	6.1E-04

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-8.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.4E-01	mg/kg	1.2E-03	mg/kg-d					
Acenaphthene	1.2E+00	mg/kg	1.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.7E-05	5.7E-06
Acenaphthylene	9.7E-01	mg/kg	8.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.6E-05	4.6E-06
Anthracene	1.2E+00	mg/kg	1.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.9E-05	5.9E-06
Benzo(a)anthracene	2.2E+00	mg/kg	1.9E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-04	1.1E-05
Benzo(a)pyrene	2.3E+00	mg/kg	2.0E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-04	1.1E-05
Benzo(b)fluoranthene	2.8E+00	mg/kg	2.4E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-04	1.3E-05
Benzo(g,h,i)perylene	2.0E+00	mg/kg	1.8E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.6E-05	9.6E-06
Benzo(k)fluoranthene	2.6E+00	mg/kg	2.3E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-04	1.2E-05
bis(2-Ethylhexyl)phthalate	2.3E+00	mg/kg	2.0E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.8E-03	1.8E-04
Carbazole	1.5E+00	mg/kg	1.3E-02	mg/kg-d					
Chrysene	3.0E+00	mg/kg	2.6E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-04	1.4E-05
Dibenzo(a,h)anthracene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-05	6.7E-06
Dibenzofuran	6.4E-01	mg/kg	5.6E-03	mg/kg-d					
Di-n-Butylphthalate	6.1E-01	mg/kg	5.4E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.8E-03	4.8E-04
Fluoranthene	5.2E+00	mg/kg	4.6E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.5E-04	2.5E-
Fluorene	9.3E-01	mg/kg	8.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.5E-05	4.5E-
Indeno(1,2,3-cd)pyrene	1.9E+00	mg/kg	1.7E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.2E-05	9.2E-06
Naphthalene	1.8E-01	mg/kg	1.6E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	3.0E-05	3.0E-06
Phenanthrene	2.9E+00	mg/kg	2.6E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-04	1.4E-05
Pyrene	4.4E+00	mg/kg	3.9E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-04	2.1E-05
4,4'-DDD	6.0E-03	mg/kg	5.3E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.9E-02	1.9E-03
4,4'-DDE	1.6E-02	mg/kg	1.4E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	5.0E-02	5.0E-03
alpha-Chlordane	1.1E-02	mg/kg	9.9E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.5E-04	3.5E-05
Aroclor, Total	1.5E+00	mg/kg	1.4E-02	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	1.2E-01	4.9E-02
Aroclor-1248	1.4E-01	mg/kg	1.2E-03	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	1.1E-02	4.5E-03
Aroclor-1254	1.5E+00	mg/kg	1.3E-02	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	7.4E-02	7.4E-03
Aroclor-1260	2.0E-01	mg/kg	1.8E-03	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	9.7E-03	9.7E-04
Aroclor-1268	7.9E-02	mg/kg	7.0E-04	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	6.3E-04	6.3E-05
Dieldrin	9.0E-03	mg/kg	8.0E-05	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	1.0E-03	1.0E-04
Endosulfan II	3.7E-02	mg/kg	3.3E-04	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	5.3E-04	5.3E-05
Endosulfan sulfate	2.7E-03	mg/kg	2.3E-05	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	3.7E-05	3.7E-06
Endrin	3.2E-03	mg/kg	2.8E-05	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	2.7E-04	2.7E-04
gamma-Chlordane	9.7E-03	mg/kg	8.5E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.0E-04	3.0E-05
Methoxychlor	1.1E-02	mg/kg	9.6E-05	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	1.2E-06	1.2E-07
Technical Chlordane	5.2E-01	mg/kg	4.5E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.6E-02	1.6E-03
Antimony	2.3E+00	mg/kg	2.0E-02	mg/kg-d					
Arsenic	5.8E+00	mg/kg	5.1E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	1.0E-02	4.0E-03
Barium	1.4E+02	mg/kg	1.2E+00	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	2.9E-02	1.5E-02
Cadmium	1.2E+00	mg/kg	1.1E-02	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	7.4E-03	5.3E-04
Chromium	1.4E+02	mg/kg	1.2E+00	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	**1.2E+00**	2.5E-01
Cobalt	7.1E+00	mg/kg	6.3E-02	mg/kg-d					
Copper	1.2E+02	mg/kg	1.1E+00	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.2E-02	1.7E-02
Cyanide	2.4E+00	mg/kg	2.1E-02	mg/kg-d	2.1E-01	2.1E+00	mg/kg-d	1.0E-01	1.0E-
Lead	3.3E+02	mg/kg	2.9E+00	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	7.5E-01	7.5E-02
Mercury	4.7E-01	mg/kg	4.1E-03	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	9.2E-03	4.6E-03

US EPA ARCHIVE DOCUMENT

TABLE K-8.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Mercury (methyl)	8.0E-04	mg/kg	7.1E-06	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	1.1E-03	1.1E-04
Molybdenum	1.3E+01	mg/kg	1.2E-01	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.3E-02	3.3E-03
Selenium	1.1E+00	mg/kg	9.4E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.1E-02	6.2E-03
Silver	2.8E+00	mg/kg	2.5E-02	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.7E-04	2.7E-05
Thallium	6.8E+00	mg/kg	6.0E-02	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.7E-02	1.2E-02
Zinc	3.5E+02	mg/kg	3.1E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.2E-01	2.4E-02
Toxicity Equivalency - Birds	5.8E-03	mg/kg	5.1E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**3.6E+00**	3.6E-01
Toxicity Equivalency (PCB) - Birds	5.6E-05	mg/kg	4.9E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	3.5E-02	3.5E-03
							HAZARD INDICES:	**6.4E+00**	8.6E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-8.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDD	3.7E-04	mg/kg	3.3E-06	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.2E-03	1.2E-04
4,4'-DDE	3.2E-03	mg/kg	2.9E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.0E-02	1.0E-03
alpha-Chlordane	3.0E-04	mg/kg	2.7E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	9.5E-06	9.5E-07
Aroclor, Total	7.6E-02	mg/kg	6.8E-04	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	6.1E-03	2.4E-03
Aroclor-1254	7.0E-02	mg/kg	6.2E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	3.5E-03	3.5E-04
Aroclor-1268	6.0E-03	mg/kg	5.3E-05	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.8E-05	4.8E-06
Dieldrin	4.7E-04	mg/kg	4.2E-06	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	5.4E-05	5.4E-06
Technical Chlordane	1.6E-02	mg/kg	1.5E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	5.2E-04	5.2E-05
Aluminum	1.6E+00	mg/kg	1.4E-02	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.3E-04	1.3E-05
Antimony	1.7E-02	mg/kg	1.5E-04	mg/kg-d					
Barium	2.1E+01	mg/kg	1.9E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	4.5E-03	2.2E-03
Cadmium	9.2E-02	mg/kg	8.2E-04	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	5.6E-04	4.1E-05
Chromium	2.8E-01	mg/kg	2.5E-03	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.5E-03	5.0E-04
Cobalt	1.7E-01	mg/kg	1.5E-03	mg/kg-d					
Copper	3.0E+01	mg/kg	2.7E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.7E-03	4.4E-03
Lead	5.9E-01	mg/kg	5.2E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.4E-03	1.4E-04
Manganese	7.2E+01	mg/kg	6.4E-01	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	6.5E-04	6.5E-05
Mercury	2.5E-02	mg/kg	2.2E-04	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	4.9E-04	2.4E-04
Mercury (methyl)	2.3E-02	mg/kg	2.0E-04	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	3.1E-02	3.1E-03
Molybdenum	1.3E-01	mg/kg	1.1E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.2E-04	3.2E-05
Nickel	3.2E-01	mg/kg	2.8E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	3.6E-05	2.6E-05
Selenium	1.3E-01	mg/kg	1.1E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.6E-03	7.5E-04
Silver	2.1E-01	mg/kg	1.9E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.1E-05	2.1E-06
Thallium	8.9E-03	mg/kg	7.9E-05	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.3E-05	1.6E-05
Vanadium	2.2E-01	mg/kg	2.0E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.7E-04	1.7E-05
Zinc	2.1E+01	mg/kg	1.9E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.3E-02	1.4E-03
Toxicity Equivalency - Birds	1.8E-04	mg/kg	1.6E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.2E-01	1.2E-02
							HAZARD INDICES:	2.0E-01	2.9E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-8.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	9.9E-04	mg/kg	1.6E-04	mg/kg-d					
2-Methylnaphthalene	3.8E-03	mg/kg	6.4E-04	mg/kg-d					
Acenaphthene	3.5E-03	mg/kg	5.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.2E-06	3.2E-07
Acenaphthylene	2.2E-03	mg/kg	3.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-06	2.0E-07
Anthracene	2.7E-03	mg/kg	4.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.5E-06	2.5E-07
Benzo(a)anthracene	1.3E-03	mg/kg	2.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-06	1.2E-07
Benzo(a)pyrene	9.5E-04	mg/kg	1.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.7E-07	8.7E-08
Benzo(b)fluoranthene	1.2E-03	mg/kg	2.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-06	1.1E-07
Benzo(g,h,i)perylene	6.3E-04	mg/kg	1.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.8E-07	5.8E-08
Benzo(k)fluoranthene	1.1E-03	mg/kg	1.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.6E-07	9.6E-08
Chrysene	1.9E-03	mg/kg	3.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-06	1.8E-07
Dibenzo(a,h)anthracene	2.7E-04	mg/kg	4.4E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.4E-07	2.4E-08
Dibenzofuran	2.5E-03	mg/kg	4.1E-04	mg/kg-d					
Fluoranthene	8.3E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.5E-06	7.5E-07
Fluorene	4.1E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Indeno(1,2,3-cd)pyrene	7.9E-04	mg/kg	1.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.2E-07	7.2E-08
Naphthalene	2.8E-03	mg/kg	4.7E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	8.8E-06	8.8E-07
Phenanthrene	9.6E-03	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.7E-06	8.7E-07
Pyrene	2.3E-03	mg/kg	3.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-06	2.1E-07
4,4'-DDD	1.3E-02	mg/kg	2.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	7.5E-01	7.5E-02
4,4'-DDE	2.9E-02	mg/kg	4.8E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.7E+00**	1.7E-01
4,4'-DDT	6.9E-03	mg/kg	1.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	4.1E-01	4.1E-02
alpha-Chlordane	1.7E-02	mg/kg	2.8E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.0E-02	1.0E-03
Aroclor, Total	1.6E+00	mg/kg	2.7E-01	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**2.4E+00**	9.8E-01
Aroclor-1254	1.6E+00	mg/kg	2.7E-01	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**1.5E+00**	1.5E-01
Aroclor-1268	2.9E-02	mg/kg	4.9E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.5E-03	4.5E-04
Dieldrin	5.4E-03	mg/kg	9.0E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	1.2E-02	1.2E-03
gamma-BHC	1.9E-04	mg/kg	3.2E-05	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	1.6E-05	1.6E-06
gamma-Chlordane	8.9E-03	mg/kg	1.5E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	5.3E-03	5.3E-04
Heptachlor Epoxide	6.1E-04	mg/kg	1.0E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	2.5E-06	2.5E-07
Technical Chlordane	3.5E-01	mg/kg	5.8E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.1E-01	2.1E-02
Aluminum	8.0E+00	mg/kg	1.3E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.2E-02	1.2E-03
Barium	7.4E-01	mg/kg	1.2E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	3.0E-03	1.5E-03
Cadmium	2.4E-02	mg/kg	4.0E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	2.8E-03	2.0E-04
Chromium	1.1E-01	mg/kg	1.9E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.9E-02	3.7E-03
Cobalt	8.9E-02	mg/kg	1.5E-02	mg/kg-d					
Copper	8.7E-01	mg/kg	1.5E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.1E-03	2.4E-03
Lead	1.6E-01	mg/kg	2.6E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	6.9E-03	6.9E-04
Manganese	6.8E+00	mg/kg	1.1E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.2E-03	1.2E-04
Mercury	1.4E-01	mg/kg	2.3E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	5.1E-02	2.5E-02
Mercury (methyl)	1.5E-01	mg/kg	2.5E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**3.9E+00**	3.9E-01
Molybdenum	9.4E-02	mg/kg	1.6E-02	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	4.5E-03	4.5E-04
Nickel	1.5E-01	mg/kg	2.5E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	3.2E-04	2.3E-04
Selenium	2.8E-01	mg/kg	4.8E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.1E-01	3.2E-02
Vanadium	9.7E-02	mg/kg	1.6E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.4E-03	1.4E-04
Zinc	2.1E+01	mg/kg	3.5E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.4E-01	2.7E-02

US EPA ARCHIVE DOCUMENT

TABLE K-8.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	3.4E-04	mg/kg	5.6E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**4.0E+00**	4.0E-01
Toxicity Equivalency (PCB) - Birds	7.5E-05	mg/kg	1.3E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	9.0E-01	9.0E-02
							HAZARD INDICES:	**1.6E+01**	**2.4E+00**

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-8.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 2.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Birds	3.7E-03	3.6E+00	-	1.2E-01	4.0E+00	***7.8E+00***	***34%***
Mercury (methyl)		1.1E-03	-	3.1E-02	3.9E+00	***3.9E+00***	***17%***
Aroclor, Total		1.2E-01	-	6.1E-03	2.4E+00	***2.6E+00***	***11%***
4,4'-DDE		5.0E-02	-	1.0E-02	1.7E+00	***1.8E+00***	8%
Aroclor-1254		7.4E-02	-	3.5E-03	1.5E+00	***1.6E+00***	7%
Chromium	2.3E-04	1.2E+00	-	2.5E-03	1.9E-02	***1.3E+00***	6%
Toxicity Equivalency (PCB) - Birds		3.5E-02	-		9.0E-01	9.3E-01	4%
4,4'-DDD		1.9E-02	-	1.2E-03	7.5E-01	7.7E-01	3%
Lead	2.5E-04	7.5E-01	-	1.4E-03	6.9E-03	7.6E-01	3%
Zinc	2.0E-04	2.2E-01	-	1.3E-02	2.4E-01	4.7E-01	2%
4,4'-DDT					4.1E-01	4.1E-01	2%
Technical Chlordane		1.6E-02	-	5.2E-04	2.1E-01	2.2E-01	1%
Selenium	2.5E-04	2.1E-02	-	2.6E-03	1.1E-01	1.3E-01	1%
Cyanide		1.0E-01	-			1.0E-01	0%
Mercury		9.2E-03	-	4.9E-04	5.1E-02	6.0E-02	0%
Molybdenum		3.3E-02	-	3.2E-04	4.5E-03	3.8E-02	0%
Barium		2.9E-02	-	4.5E-03	3.0E-03	3.7E-02	0%
Copper	1.3E-05	2.2E-02	-	5.7E-03	3.1E-03	3.1E-02	0%
Thallium	4.8E-05	1.7E-02	-	2.3E-05		1.7E-02	0%
Dieldrin		1.0E-03	-	5.4E-05	1.2E-02	1.3E-02	0%
Aluminum	2.7E-04			1.3E-04	1.2E-02	1.3E-02	0%
Aroclor-1248		1.1E-02	-			1.1E-02	0%
Cadmium		7.4E-03	-	5.6E-04	2.8E-03	1.1E-02	0%
alpha-Chlordane	1.1E-07	3.5E-04	-	9.5E-06	1.0E-02	1.0E-02	0%
Arsenic		1.0E-02	-			1.0E-02	0%
Aroclor-1260		9.7E-03	-			9.7E-03	0%
gamma-Chlordane	4.0E-06	3.0E-04	-		5.3E-03	5.6E-03	0%
Aroclor-1268		6.3E-04	-	4.8E-05	4.5E-03	5.1E-03	0%
Di-n-Butylphthalate		4.8E-03	-			4.8E-03	0%
Manganese	1.9E-05			6.5E-04	1.2E-03	1.8E-03	0%
bis(2-Ethylhexyl)phthalate	4.1E-06	1.8E-03	-			1.8E-03	0%
Vanadium				1.7E-04	1.4E-03	1.6E-03	0%
Endosulfan II		5.3E-04	-			5.3E-04	0%
Nickel	2.9E-06			3.6E-05	3.2E-04	3.6E-04	0%
Silver	4.2E-07	2.7E-04	-	2.1E-05		2.9E-04	0%
Endrin		2.7E-04	-			2.7E-04	0%
Fluoranthene		2.5E-04	-		7.5E-06	2.6E-04	0%
Pyrene		2.1E-04	-		2.1E-06	2.1E-04	0%
Phenanthrene		1.4E-04	-		8.7E-06	1.5E-04	0%
Chrysene		1.4E-04	-		1.8E-06	1.4E-04	0%
Benzo(b)fluoranthene		1.3E-04	-		1.1E-06	1.3E-04	0%
Benzo(k)fluoranthene		1.2E-04	-		9.6E-07	1.2E-04	0%
Benzo(a)pyrene		1.1E-04	-		8.7E-07	1.1E-04	0%
Benzo(a)anthracene		1.1E-04	-		1.2E-06	1.1E-04	0%
Benzo(g,h,i)perylene		9.6E-05	-		5.8E-07	9.7E-05	0%

US EPA ARCHIVE DOCUMENT

TABLE K-8.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ALLENDALE POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	2.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Indeno(1,2,3-cd)pyrene		9.2E-05	-		7.2E-07	9.3E-05	0%
Dibenzo(a,h)anthracene		6.7E-05	-		2.4E-07	6.8E-05	0%
Anthracene		5.9E-05	-		2.5E-06	6.2E-05	0%
Acenaphthene		5.7E-05	-		3.2E-06	6.1E-05	0%
Acenaphthylene		4.6E-05	-		2.0E-06	4.8E-05	0%
Fluorene		4.5E-05	-		3.7E-06	4.8E-05	0%
Endosulfan sulfate	4.3E-06	3.7E-05	-			4.2E-05	0%
Naphthalene		3.0E-05	-		8.8E-06	3.9E-05	0%
gamma-BHC					1.6E-05	1.6E-05	0%
Beryllium	1.5E-05					1.5E-05	0%
Heptachlor epoxide					2.5E-06	2.5E-06	0%
Methoxychlor		1.2E-06	-			1.2E-06	0%
Pentachlorophenol							
Aroclor-1242							
4-Methylphenol							
Endrin aldehyde							
Endrin Ketone							
Heptachlor							
Antimony							
Cobalt							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**5.0E-03**	**6.4E+00**	**-**	**2.0E-01**	**1.6E+01**	**2.3E+01**	
PERCENTAGE OF TOTAL RISK	**0%**	**28%**		**1%**	**71%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-8.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 3.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		4.9E-02	-	2.4E-03	9.8E-01	***1.0E+00***	***31%***
Toxicity Equivalency - Birds	3.7E-04	3.6E-01	-	1.2E-02	4.0E-01	7.8E-01	***24%***
Mercury (methyl)		1.1E-04	-	3.1E-03	3.9E-01	3.9E-01	***12%***
Chromium	4.7E-05	2.5E-01	-	5.0E-04	3.7E-03	2.5E-01	8%
4,4'-DDE		5.0E-03	-	1.0E-03	1.7E-01	1.8E-01	5%
Aroclor-1254		7.4E-03	-	3.5E-04	1.5E-01	1.6E-01	5%
Toxicity Equivalency (PCB) - Birds		3.5E-03	-		9.0E-02	9.3E-02	3%
4,4'-DDD		1.9E-03	-	1.2E-04	7.5E-02	7.7E-02	2%
Lead	2.5E-05	7.5E-02	-	1.4E-04	6.9E-04	7.6E-02	2%
Zinc	2.2E-05	2.4E-02	-	1.4E-03	2.7E-02	5.2E-02	2%
4,4'-DDT					4.1E-02	4.1E-02	1%
Selenium	7.2E-05	6.2E-03	-	7.5E-04	3.2E-02	3.9E-02	1%
Mercury		4.6E-03	-	2.4E-04	2.5E-02	3.0E-02	1%
Copper	9.8E-06	1.7E-02	-	4.4E-03	2.4E-03	2.4E-02	1%
Technical Chlordane		1.6E-03	-	5.2E-05	2.1E-02	2.2E-02	1%
Barium		1.5E-02	-	2.2E-03	1.5E-03	1.8E-02	1%
Thallium	3.3E-05	1.2E-02	-	1.6E-05		1.2E-02	0%
Cyanide		1.0E-02	-			1.0E-02	0%
Aroclor-1248		4.5E-03	-			4.5E-03	0%
Arsenic		4.0E-03	-			4.0E-03	0%
Molybdenum		3.3E-03	-	3.2E-05	4.5E-04	3.8E-03	0%
Dieldrin		1.0E-04	-	5.4E-06	1.2E-03	1.3E-03	0%
Aluminum	2.7E-05			1.3E-05	1.2E-03	1.3E-03	0%
alpha-Chlordane	1.1E-08	3.5E-05	-	9.5E-07	1.0E-03	1.0E-03	0%
Aroclor-1260		9.7E-04	-			9.7E-04	0%
Cadmium		5.3E-04	-	4.1E-05	2.0E-04	7.8E-04	0%
gamma-Chlordane	4.0E-07	3.0E-05	-		5.3E-04	5.6E-04	0%
Aroclor-1268		6.3E-05	-	4.8E-06	4.5E-04	5.1E-04	0%
Di-n-Butylphthalate		4.8E-04	-			4.8E-04	0%
Endrin		2.7E-04	-			2.7E-04	0%
Nickel	2.1E-06			2.6E-05	2.3E-04	2.6E-04	0%
Manganese	1.9E-06			6.5E-05	1.2E-04	1.8E-04	0%
bis(2-Ethylhexyl)phthalate	4.1E-07	1.8E-04	-			1.8E-04	0%
Vanadium				1.7E-05	1.4E-04	1.6E-04	0%
Endosulfan II		5.3E-05	-			5.3E-05	0%
Silver	4.2E-08	2.7E-05	-	2.1E-06		2.9E-05	0%
Fluoranthene		2.5E-05	-		7.5E-07	2.6E-05	0%
Pyrene		2.1E-05	-		2.1E-07	2.1E-05	0%
Phenanthrene		1.4E-05	-		8.7E-07	1.5E-05	0%
Chrysene		1.4E-05	-		1.8E-07	1.4E-05	0%
Benzo(b)fluoranthene		1.3E-05	-		1.1E-07	1.3E-05	0%
Benzo(k)fluoranthene		1.2E-05	-		9.6E-08	1.2E-05	0%
Benzo(a)pyrene		1.1E-05	-		8.7E-08	1.1E-05	0%
Benzo(a)anthracene		1.1E-05	-		1.2E-07	1.1E-05	0%
Benzo(g,h,i)perylene		9.6E-06	-		5.8E-08	9.7E-06	0%

US EPA ARCHIVE DOCUMENT

TABLE K-8.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 3.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Indeno(1,2,3-cd)pyrene		9.2E-06	-		7.2E-08	9.3E-06	0%
Dibenzo(a,h)anthracene		6.7E-06	-		2.4E-08	6.8E-06	0%
Anthracene		5.9E-06	-		2.5E-07	6.2E-06	0%
Acenaphthene		5.7E-06	-		3.2E-07	6.1E-06	0%
Acenaphthylene		4.6E-06	-		2.0E-07	4.8E-06	0%
Fluorene		4.5E-06	-		3.7E-07	4.8E-06	0%
Endosulfan sulfate	4.3E-07	3.7E-06	-			4.2E-06	0%
Naphthalene		3.0E-06	-		8.8E-07	3.9E-06	0%
gamma-BHC					1.6E-06	1.6E-06	0%
Beryllium	1.5E-06					1.5E-06	0%
Heptachlor epoxide					2.5E-07	2.5E-07	0%
Methoxychlor		1.2E-07	-			1.2E-07	0%
Pentachlorophenol							
Aroclor-1242							
Endrin Ketone							
4-Methylphenol							
Endrin aldehyde							
Heptachlor							
Antimony							
Cobalt							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**6.1E-04**	**8.6E-01**	**-**	**2.9E-02**	**2.4E+00**	**3.3E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**26%**		**1%**	**73%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-9.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.7E-02	mg/L	7.7E-04	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	7.0E-05	7.0E-06
alpha-Chlordane	1.9E-05	mg/L	8.6E-07	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.1E-06	3.1E-07
Endosulfan Sulfate	3.2E-06	mg/L	1.5E-07	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	2.3E-07	2.3E-08
gamma-Chlordane	2.1E-05	mg/L	9.5E-07	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.4E-06	3.4E-07
Aluminum	1.8E-01	mg/L	8.1E-03	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	7.4E-05	7.4E-06
Beryllium	2.0E-04	mg/L	9.1E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	6.1E-05	6.1E-06
Chromium	2.3E-03	mg/L	1.0E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.0E-04	2.1E-05
Cobalt	4.2E-04	mg/L	1.9E-05	mg/kg-d					
Copper	8.7E-03	mg/L	4.0E-04	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	8.4E-06	6.4E-06
Lead	4.4E-03	mg/L	2.0E-04	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	5.2E-05	5.2E-06
Manganese	1.3E-01	mg/L	5.8E-03	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	5.9E-06	5.9E-07
Nickel	1.9E-03	mg/L	8.4E-05	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.1E-06	7.9E-07
Silver	5.9E-04	mg/L	2.7E-05	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	3.0E-07	3.0E-08
Thallium	2.2E-03	mg/L	1.0E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.9E-05	2.0E-05
Zinc	2.8E-02	mg/L	1.3E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	8.7E-05	9.7E-06
Nitrogen, Ammonia	1.4E-01	mg/L	6.4E-03	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	1.3E-07	mg/L	6.0E-09	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	4.3E-04	4.3E-05
							HAZARD INDICES:	9.2E-04	1.3E-04

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-9.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.0E-01	mg/kg	8.8E-04	mg/kg-d					
Acenaphthene	9.3E-01	mg/kg	8.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.4E-05	4.4E-06
Acenaphthylene	4.3E-01	mg/kg	3.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-05	2.1E-06
Anthracene	7.9E-01	mg/kg	6.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-05	3.8E-06
Benzo(a)anthracene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-05	6.7E-06
Benzo(a)pyrene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.5E-05	6.5E-06
Benzo(b)fluoranthene	2.1E+00	mg/kg	1.9E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-04	1.0E-05
Benzo(g,h,i)perylene	1.3E+00	mg/kg	1.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.0E-05	6.0E-06
Benzo(k)fluoranthene	1.1E+00	mg/kg	9.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.3E-05	5.3E-06
bis(2-Ethylhexyl)phthalate	2.6E+00	mg/kg	2.3E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.1E-03	2.1E-04
Carbazole	8.0E-01	mg/kg	7.0E-03	mg/kg-d					
Chrysene	1.7E+00	mg/kg	1.5E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.0E-05	8.0E-06
Dibenzo(a,h)anthracene	7.7E-01	mg/kg	6.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-05	3.7E-06
Dibenzofuran	3.1E-01	mg/kg	2.7E-03	mg/kg-d					
Di-n-Butylphthalate	9.9E-01	mg/kg	8.7E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	7.8E-03	7.8E-04
Fluoranthene	2.7E+00	mg/kg	2.4E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-04	1.3E-05
Fluorene	6.7E-01	mg/kg	5.9E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.2E-05	3.2E-06
Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.1E-05	6.1E-06
Naphthalene	1.9E-01	mg/kg	1.6E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	3.0E-05	3.0E-06
Phenanthrene	1.5E+00	mg/kg	1.4E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.3E-05	7.3E-06
Pyrene	2.4E+00	mg/kg	2.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-04	1.2E-05
4,4'-DDD	9.3E-03	mg/kg	8.2E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.9E-02	2.9E-03
4,4'-DDE	8.3E-03	mg/kg	7.3E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.6E-02	2.6E-03
alpha-Chlordane	1.6E-02	mg/kg	1.4E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	4.9E-04	4.9E-05
Aroclor, Total	2.6E-01	mg/kg	2.3E-03	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	2.1E-02	8.4E-03
Aroclor-1248	2.5E-02	mg/kg	2.2E-04	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	2.0E-03	7.9E-04
Aroclor-1254	2.7E-01	mg/kg	2.4E-03	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.3E-02	1.3E-03
Aroclor-1260	2.4E-02	mg/kg	2.1E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.2E-03	1.2E-04
Dieldrin	3.8E-03	mg/kg	3.4E-05	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	4.4E-04	4.4E-05
Endosulfan II	3.8E-03	mg/kg	3.4E-05	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	5.4E-05	5.4E-06
Endosulfan sulfate	2.9E-03	mg/kg	2.5E-05	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	4.0E-05	4.0E-06
Endrin	2.6E-03	mg/kg	2.3E-05	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	2.2E-04	2.2E-04
Methoxychlor	5.3E-03	mg/kg	4.7E-05	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	5.8E-07	5.8E-08
Aroclor-1268	1.2E-01	mg/kg	1.0E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	9.3E-04	9.3E-05
gamma-Chlordane	8.9E-03	mg/kg	7.9E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.8E-04	2.8E-05
Technical Chlordane	1.3E+00	mg/kg	1.1E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	4.0E-02	4.0E-03
Antimony	1.3E+00	mg/kg	1.2E-02	mg/kg-d					
Arsenic	5.2E+00	mg/kg	4.6E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	9.0E-03	3.6E-03
Barium	1.3E+02	mg/kg	1.1E+00	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	2.8E-02	1.4E-02
Cadmium	2.1E+00	mg/kg	1.9E-02	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	1.3E-02	9.4E-04
Chromium	9.9E+01	mg/kg	8.7E-01	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	8.7E-01	1.7E-01
Cobalt	7.8E+00	mg/kg	6.9E-02	mg/kg-d					
Copper	1.1E+02	mg/kg	9.9E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.1E-02	1.6E-02
Lead	2.4E+02	mg/kg	2.1E+00	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	5.4E-01	5.4E-02
Mercury	2.9E-01	mg/kg	2.5E-03	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	5.6E-03	2.8E-03
Mercury (methyl)	2.1E-03	mg/kg	1.8E-05	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	2.9E-03	2.9E-04

US EPA ARCHIVE DOCUMENT

TABLE K-9.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Molybdenum	6.5E+00	mg/kg	5.7E-02	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	1.6E-02	1.6E-03
Selenium	9.6E-01	mg/kg	8.4E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.9E-02	5.6E-03
Silver	2.9E+00	mg/kg	2.5E-02	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.8E-04	2.8E-05
Thallium	5.8E-01	mg/kg	5.1E-03	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.5E-03	1.0E-03
Zinc	3.9E+02	mg/kg	3.4E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.4E-01	2.6E-02
Toxicity Equivalency - Birds	1.8E-03	mg/kg	1.6E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.1E+00**	1.1E-01
Toxicity Equivalency (PCB) - Birds	1.5E-04	mg/kg	1.3E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	9.3E-02	9.3E-03
							HAZARD INDICES:	**3.1E+00**	4.5E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-9.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDD	2.7E-04	mg/kg	2.4E-06	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	8.6E-04	8.6E-05
4,4'-DDE	4.0E-03	mg/kg	3.6E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.3E-02	1.3E-03
alpha-Chlordane	3.2E-04	mg/kg	2.9E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.0E-05	1.0E-06
Aroclor, Total	7.7E-02	mg/kg	6.8E-04	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	6.2E-03	2.5E-03
Aroclor-1254	7.1E-02	mg/kg	6.3E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	3.5E-03	3.5E-04
Aroclor-1268	5.2E-03	mg/kg	4.6E-05	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.2E-05	4.2E-06
Dieldrin	4.4E-04	mg/kg	3.9E-06	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	5.1E-05	5.1E-06
Endosulfan Sulfate	5.5E-04	mg/kg	4.9E-06	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	7.8E-06	7.8E-07
gamma-Chlordane	3.6E-04	mg/kg	3.2E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.1E-05	1.1E-06
Heptachlor	2.2E-04	mg/kg	2.0E-06	mg/kg-d	6.7E-01	6.7E+00	mg/kg-d	2.9E-06	2.9E-07
Technical Chlordane	2.3E-02	mg/kg	2.0E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	7.1E-04	7.1E-05
Antimony	1.5E-02	mg/kg	1.3E-04	mg/kg-d					
Barium	2.8E+01	mg/kg	2.5E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	6.0E-03	3.0E-03
Cadmium	8.9E-02	mg/kg	7.9E-04	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	5.5E-04	3.9E-05
Chromium	2.4E-01	mg/kg	2.2E-03	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	2.2E-03	4.4E-04
Cobalt	2.6E-01	mg/kg	2.3E-03	mg/kg-d					
Copper	3.0E+01	mg/kg	2.7E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.7E-03	4.3E-03
Lead	8.6E-01	mg/kg	7.6E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	2.0E-03	2.0E-04
Manganese	1.3E+02	mg/kg	1.1E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.1E-03	1.1E-04
Mercury	2.0E-02	mg/kg	1.8E-04	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	4.0E-04	2.0E-04
Mercury (methyl)	1.5E-02	mg/kg	1.4E-04	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	2.1E-02	2.1E-03
Molybdenum	1.2E-01	mg/kg	1.1E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.1E-04	3.1E-05
Nickel	4.9E-01	mg/kg	4.3E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	5.6E-05	4.0E-05
Selenium	1.4E-01	mg/kg	1.2E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.8E-03	8.2E-04
Silver	2.4E-01	mg/kg	2.2E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.4E-05	2.4E-06
Thallium	9.6E-03	mg/kg	8.6E-05	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.4E-05	1.7E-05
Vanadium	2.7E-01	mg/kg	2.4E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.1E-04	2.1E-05
Zinc	2.6E+01	mg/kg	2.3E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.6E-02	1.8E-03
Toxicity Equivalency - Birds	1.0E-04	mg/kg	9.3E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	6.7E-02	6.7E-03
Toxicity Equivalency (PCB) - Birds	8.1E-06	mg/kg	7.2E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.2E-03	5.2E-04
							HAZARD INDICES:	1.5E-01	2.5E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-9.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.2E-03	mg/kg	1.9E-04	mg/kg-d					
2-Methylnaphthalene	4.2E-03	mg/kg	7.1E-04	mg/kg-d					
Acenaphthene	4.1E-03	mg/kg	6.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-06	3.7E-07
Acenaphthylene	3.0E-03	mg/kg	5.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.7E-06	2.7E-07
Anthracene	3.5E-03	mg/kg	5.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.2E-06	3.2E-07
Benzo(a)anthracene	4.5E-03	mg/kg	7.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.1E-06	4.1E-07
Benzo(a)pyrene	4.9E-03	mg/kg	8.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.4E-06	4.4E-07
Benzo(b)fluoranthene	6.7E-03	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.1E-06	6.1E-07
Benzo(g,h,i)perylene	3.8E-03	mg/kg	6.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.4E-06	3.4E-07
Benzo(k)fluoranthene	5.9E-03	mg/kg	9.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.4E-06	5.4E-07
Chrysene	8.1E-03	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.4E-06	7.4E-07
Dibenzo(a,h)anthracene	9.6E-04	mg/kg	1.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.8E-07	8.8E-08
Dibenzofuran	3.3E-03	mg/kg	5.5E-04	mg/kg-d					
Fluoranthene	2.2E-02	mg/kg	3.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-05	2.0E-06
Fluorene	5.2E-03	mg/kg	8.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.7E-06	4.7E-07
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	7.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.9E-06	3.9E-07
Naphthalene	3.5E-03	mg/kg	5.9E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.1E-05	1.1E-06
Phenanthrene	1.5E-02	mg/kg	2.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
Pyrene	1.1E-02	mg/kg	1.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.6E-06	9.6E-07
4,4'-DDD	3.9E-02	mg/kg	6.5E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**2.3E+00**	2.3E-01
4,4'-DDE	1.3E-01	mg/kg	2.2E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**7.8E+00**	7.8E-01
4,4'-DDT	3.7E-03	mg/kg	6.3E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.2E-01	2.2E-02
alpha-Chlordane	4.0E-02	mg/kg	6.6E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.4E-02	2.4E-03
Aroclor, Total	4.2E+00	mg/kg	7.1E-01	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**6.4E+00**	**2.6E+00**
Aroclor-1254	4.2E+00	mg/kg	7.0E-01	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**3.9E+00**	3.9E-01
Aroclor-1268	3.6E-02	mg/kg	6.0E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	5.4E-03	5.4E-04
Dieldrin	5.6E-03	mg/kg	9.3E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	1.2E-02	1.2E-03
gamma-BHC	2.1E-04	mg/kg	3.4E-05	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	1.7E-05	1.7E-06
gamma-Chlordane	2.9E-02	mg/kg	4.9E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.7E-02	1.7E-03
Heptachlor Epoxide	1.4E-03	mg/kg	2.3E-04	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	5.5E-06	5.5E-07
Technical Chlordane	1.4E+00	mg/kg	2.3E-01	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	8.1E-01	8.1E-02
Aluminum	4.9E+01	mg/kg	8.1E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	7.4E-02	7.4E-03
Antimony	1.0E-02	mg/kg	1.7E-03	mg/kg-d					
Arsenic	2.8E-02	mg/kg	4.6E-03	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	9.0E-04	3.6E-04
Barium	1.1E+00	mg/kg	1.8E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	4.4E-03	2.2E-03
Beryllium	5.8E-03	mg/kg	9.7E-04	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	6.6E-03	6.6E-04
Cadmium	1.8E-02	mg/kg	3.1E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	2.1E-03	1.5E-04
Chromium	2.7E-01	mg/kg	4.5E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	4.5E-02	9.1E-03
Cobalt	7.7E-02	mg/kg	1.3E-02	mg/kg-d					
Copper	8.4E-01	mg/kg	1.4E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.0E-03	2.3E-03
Lead	4.3E-01	mg/kg	7.2E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.9E-02	1.9E-03
Manganese	7.5E+00	mg/kg	1.3E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.3E-03	1.3E-04
Mercury	9.8E-02	mg/kg	1.6E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	3.7E-02	1.8E-02
Mercury (methyl)	9.3E-02	mg/kg	1.6E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**2.4E+00**	2.4E-01
Molybdenum	3.6E-02	mg/kg	6.1E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	1.7E-03	1.7E-04
Nickel	1.5E-01	mg/kg	2.6E-02	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	3.3E-04	2.4E-04

US EPA ARCHIVE DOCUMENT

TABLE K-9.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Selenium	2.1E-01	mg/kg	3.6E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	8.1E-02	2.4E-02
Silver	1.7E-02	mg/kg	2.8E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	3.1E-05	3.1E-06
Vanadium	1.3E-01	mg/kg	2.1E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.9E-03	1.9E-04
Zinc	2.1E+01	mg/kg	3.5E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	2.4E-01	2.6E-02
Toxicity Equivalency - Birds	5.6E-04	mg/kg	9.4E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**6.7E+00**	6.7E-01
Toxicity Equivalency (PCB) - Birds	4.0E-04	mg/kg	6.7E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**4.8E+00**	4.8E-01
							HAZARD INDICES:	**3.6E+01**	**5.6E+00**

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-9.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 3.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Birds	4.3E-04	1.1E+00	-	6.7E-02	6.7E+00	***7.9E+00***	***20%***
4,4'-DDE		2.6E-02	-	1.3E-02	7.8E+00	***7.9E+00***	***20%***
Aroclor, Total		2.1E-02	-	6.2E-03	6.4E+00	***6.4E+00***	***16%***
Toxicity Equivalency (PCB) - Birds		9.3E-02	-	5.2E-03	4.8E+00	***4.9E+00***	***12%***
Aroclor-1254		1.3E-02	-	3.5E-03	3.9E+00	***3.9E+00***	10%
Mercury (methyl)		2.9E-03	-	2.1E-02	2.4E+00	***2.4E+00***	6%
4,4'-DDD		2.9E-02	-	8.6E-04	2.3E+00	***2.3E+00***	6%
Chromium	1.0E-04	8.7E-01	-	2.2E-03	4.5E-02	9.2E-01	2%
Technical Chlordane		4.0E-02	-	7.1E-04	8.1E-01	8.5E-01	2%
Lead	5.2E-05	5.4E-01	-	2.0E-03	1.9E-02	5.6E-01	1%
Zinc	8.7E-05	2.4E-01	-	1.6E-02	2.4E-01	4.9E-01	1%
4,4'-DDT					2.2E-01	2.2E-01	1%
Selenium		1.9E-02	-	2.8E-03	8.1E-02	1.0E-01	0%
Aluminum	7.4E-05				7.4E-02	7.4E-02	0%
Mercury		5.6E-03	-	4.0E-04	3.7E-02	4.3E-02	0%
Barium		2.8E-02	-	6.0E-03	4.4E-03	3.8E-02	0%
Copper	8.4E-06	2.1E-02	-	5.7E-03	3.0E-03	3.0E-02	0%
alpha-Chlordane	3.1E-06	4.9E-04	-	1.0E-05	2.4E-02	2.4E-02	0%
Molybdenum		1.6E-02	-	3.1E-04	1.7E-03	1.8E-02	0%
gamma-Chlordane	3.4E-06	2.8E-04	-	1.1E-05	1.7E-02	1.8E-02	0%
Cadmium		1.3E-02	-	5.5E-04	2.1E-03	1.6E-02	0%
Dieldrin		4.4E-04	-	5.1E-05	1.2E-02	1.3E-02	0%
Arsenic		9.0E-03	-		9.0E-04	9.9E-03	0%
Di-n-Butylphthalate		7.8E-03	-			7.8E-03	0%
Beryllium	6.1E-05				6.6E-03	6.6E-03	0%
Aroclor-1268		9.3E-04	-	4.2E-05	5.4E-03	6.4E-03	0%
Manganese	5.9E-06			1.1E-03	1.3E-03	2.4E-03	0%
bis(2-Ethylhexyl)phthalate	7.0E-05	2.1E-03	-			2.1E-03	0%
Vanadium				2.1E-04	1.9E-03	2.1E-03	0%
Aroclor-1248		2.0E-03	-			2.0E-03	0%
Thallium	2.9E-05	1.5E-03	-	2.4E-05		1.5E-03	0%
Aroclor-1260		1.2E-03	-			1.2E-03	0%
Nickel	1.1E-06			5.6E-05	3.3E-04	3.9E-04	0%
Silver	3.0E-07	2.8E-04	-	2.4E-05	3.1E-05	3.4E-04	0%
Endrin		2.2E-04	-			2.2E-04	0%
Fluoranthene		1.3E-04	-		2.0E-05	1.5E-04	0%
Pyrene		1.2E-04	-		9.6E-06	1.2E-04	0%
Benzo(b)fluoranthene		1.0E-04	-		6.1E-06	1.1E-04	0%
Phenanthrene		7.3E-05	-		1.4E-05	8.7E-05	0%
Chrysene		8.0E-05	-		7.4E-06	8.7E-05	0%
Benzo(a)anthracene		6.7E-05	-		4.1E-06	7.1E-05	0%
Benzo(a)pyrene		6.5E-05	-		4.4E-06	7.0E-05	0%
Indeno(1,2,3-cd)pyrene		6.1E-05	-		3.9E-06	6.5E-05	0%
Benzo(g,h,i)perylene		6.0E-05	-		3.4E-06	6.4E-05	0%
Benzo(k)fluoranthene		5.3E-05	-		5.4E-06	5.8E-05	0%

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TABLE K-9.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	LYMAN MILL POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	3.9E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Endosulfan II		5.4E-05	-			5.4E-05	0%
Endosulfan sulfate	2.3E-07	4.0E-05	-	7.8E-06		4.8E-05	0%
Acenaphthene		4.4E-05	-		3.7E-06	4.8E-05	0%
Naphthalene		3.0E-05	-		1.1E-05	4.1E-05	0%
Anthracene		3.8E-05	-		3.2E-06	4.1E-05	0%
Dibenzo(a,h)anthracene		3.7E-05	-		8.8E-07	3.8E-05	0%
Fluorene		3.2E-05	-		4.7E-06	3.7E-05	0%
Acenaphthylene		2.1E-05	-		2.7E-06	2.3E-05	0%
gamma-BHC					1.7E-05	1.7E-05	0%
Heptachlor epoxide					5.5E-06	5.5E-06	0%
Heptachlor				2.9E-06		2.9E-06	0%
Methoxychlor		5.8E-07	-			5.8E-07	0%
Pentachlorophenol							
Dimethylphthalate							
Antimony							
Cobalt							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**9.2E-04**	**3.1E+00**	**-**	**1.5E-01**	**3.6E+01**	**3.9E+01**	
PERCENTAGE OF TOTAL RISK	**0%**	**8%**		**0%**	**92%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

TABLE K-9.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 6.0E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		8.4E-03	-	2.5E-03	2.6E+00	***2.6E+00***	***43%***
Toxicity Equivalency - Birds	4.3E-05	1.1E-01	-	6.7E-03	6.7E-01	7.9E-01	***13%***
4,4'-DDE		2.6E-03	-	1.3E-03	7.8E-01	7.9E-01	***13%***
Toxicity Equivalency (PCB) - Birds		9.3E-03	-	5.2E-04	4.8E-01	4.9E-01	8%
Aroclor-1254		1.3E-03	-	3.5E-04	3.9E-01	3.9E-01	6%
Mercury (methyl)		2.9E-04	-	2.1E-03	2.4E-01	2.4E-01	4%
4,4'-DDD		2.9E-03	-	8.6E-05	2.3E-01	2.3E-01	4%
Chromium	2.1E-05	1.7E-01	-	4.4E-04	9.1E-03	1.8E-01	3%
Technical Chlordane		4.0E-03	-	7.1E-05	8.1E-02	8.5E-02	1%
Lead	5.2E-06	5.4E-02	-	2.0E-04	1.9E-03	5.6E-02	1%
Zinc	9.7E-06	2.6E-02	-	1.8E-03	2.6E-02	5.4E-02	1%
Selenium		5.6E-03	-	8.2E-04	2.4E-02	3.0E-02	1%
Copper	6.4E-06	1.6E-02	-	4.3E-03	2.3E-03	2.3E-02	0%
4,4'-DDT					2.2E-02	2.2E-02	0%
Mercury		2.8E-03	-	2.0E-04	1.8E-02	2.1E-02	0%
Barium		1.4E-02	-	3.0E-03	2.2E-03	1.9E-02	0%
Aluminum	7.4E-06				7.4E-03	7.4E-03	0%
Arsenic		3.6E-03	-		3.6E-04	3.9E-03	0%
alpha-Chlordane	3.1E-07	4.9E-05	-	1.0E-06	2.4E-03	2.4E-03	0%
Molybdenum		1.6E-03	-	3.1E-05	1.7E-04	1.8E-03	0%
gamma-Chlordane	3.4E-07	2.8E-05	-	1.1E-06	1.7E-03	1.8E-03	0%
Dieldrin		4.4E-05	-	5.1E-06	1.2E-03	1.3E-03	0%
Cadmium		9.4E-04	-	3.9E-05	1.5E-04	1.1E-03	0%
Thallium	2.0E-05	1.0E-03	-	1.7E-05		1.1E-03	0%
Aroclor-1248		7.9E-04	-			7.9E-04	0%
Di-n-Butylphthalate		7.8E-04	-			7.8E-04	0%
Beryllium	6.1E-06				6.6E-04	6.6E-04	0%
Aroclor-1268		9.3E-05	-	4.2E-06	5.4E-04	6.4E-04	0%
Nickel	7.9E-07			4.0E-05	2.4E-04	2.8E-04	0%
Manganese	5.9E-07			1.1E-04	1.3E-04	2.4E-04	0%
Endrin		2.2E-04	-			2.2E-04	0%
bis(2-Ethylhexyl)phthalate	7.0E-06	2.1E-04	-			2.1E-04	0%
Vanadium				2.1E-05	1.9E-04	2.1E-04	0%
Aroclor-1260		1.2E-04	-			1.2E-04	0%
Silver	3.0E-08	2.8E-05	-	2.4E-06	3.1E-06	3.4E-05	0%
Fluoranthene		1.3E-05	-		2.0E-06	1.5E-05	0%
Pyrene		1.2E-05	-		9.6E-07	1.2E-05	0%
Benzo(b)fluoranthene		1.0E-05	-		6.1E-07	1.1E-05	0%
Phenanthrene		7.3E-06	-		1.4E-06	8.7E-06	0%
Chrysene		8.0E-06	-		7.4E-07	8.7E-06	0%
Benzo(a)anthracene		6.7E-06	-		4.1E-07	7.1E-06	0%
Benzo(a)pyrene		6.5E-06	-		4.4E-07	7.0E-06	0%
Indeno(1,2,3-cd)pyrene		6.1E-06	-		3.9E-07	6.5E-06	0%
Benzo(g,h,i)perylene		6.0E-06	-		3.4E-07	6.4E-06	0%
Benzo(k)fluoranthene		5.3E-06	-		5.4E-07	5.8E-06	0%

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TABLE K-9.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 6.0E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Endosulfan II		5.4E-06	-			5.4E-06	0%
Endosulfan sulfate	2.3E-08	4.0E-06	-	7.8E-07		4.8E-06	0%
Acenaphthene		4.4E-06	-		3.7E-07	4.8E-06	0%
Naphthalene		3.0E-06	-		1.1E-06	4.1E-06	0%
Anthracene		3.8E-06	-		3.2E-07	4.1E-06	0%
Dibenzo(a,h)anthracene		3.7E-06	-		8.8E-08	3.8E-06	0%
Fluorene		3.2E-06	-		4.7E-07	3.7E-06	0%
Acenaphthylene		2.1E-06	-		2.7E-07	2.3E-06	0%
gamma-BHC					1.7E-06	1.7E-06	0%
Heptachlor epoxide					5.5E-07	5.5E-07	0%
Heptachlor				2.9E-07		2.9E-07	0%
Methoxychlor		5.8E-08	-			5.8E-08	0%
Pentachlorophenol							
Dimethylphthalate							
Antimony							
Cobalt							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
Dibenzofuran							
2,4,5-Trichlorophenol							
Carbazole							
2-Methylnaphthalene							
1,1'-Biphenyl							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**1.3E-04**	**4.5E-01**	**-**	**2.5E-02**	**5.6E+00**	**6.0E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**7%**		**0%**	**92%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-10.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Benzo(a)anthracene	1.5E-01	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.9E-06	6.9E-07
Benzo(a)pyrene	1.8E-01	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.5E-06	8.5E-07
Benzo(b)fluoranthene	3.1E-01	mg/kg	2.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.5E-05	1.5E-06
Benzo(g,h,i)perylene	1.1E-01	mg/kg	1.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.5E-06	5.5E-07
Benzo(k)fluoranthene	1.8E-01	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.5E-06	8.5E-07
bis(2-Ethylhexyl)phthalate	3.1E-01	mg/kg	2.7E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	2.4E-04	2.4E-05
Carbazole	5.2E-02	mg/kg	4.6E-04	mg/kg-d					
Chrysene	2.3E-01	mg/kg	2.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-05	1.1E-06
Fluoranthene	3.9E-01	mg/kg	3.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-05	1.9E-06
Indeno(1,2,3-cd)pyrene	1.5E-01	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.0E-06	7.0E-07
Phenanthrene	1.4E-01	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-06	6.7E-07
Pyrene	3.0E-01	mg/kg	2.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
alpha-Chlordane	2.2E-03	mg/kg	1.9E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	6.8E-05	6.8E-06
Arsenic	7.7E-01	mg/kg	6.8E-03	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	1.3E-03	5.3E-04
Barium	2.4E+01	mg/kg	2.1E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	5.2E-03	2.6E-03
Cadmium	6.8E-01	mg/kg	6.0E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	4.2E-03	3.0E-04
Chromium	1.3E+01	mg/kg	1.2E-01	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.2E-01	2.4E-02
Cobalt	2.3E+00	mg/kg	2.1E-02	mg/kg-d					
Copper	3.0E+01	mg/kg	2.6E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	5.5E-03	4.2E-03
gamma-Chlordane	2.5E-03	mg/kg	2.2E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	7.8E-05	7.8E-06
Lead	4.6E+01	mg/kg	4.0E-01	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.1E-01	1.1E-02
Zinc	7.9E+01	mg/kg	6.9E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	4.8E-02	5.3E-03
Toxicity Equivalency - Birds	4.3E-04	mg/kg	3.8E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.7E-01	2.7E-02
							HAZARD INDICES:	5.6E-01	7.4E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-10.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	2.7E-04	mg/kg	2.4E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.7E-01	1.7E-02
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Arsenic	3.2E-02	mg/kg	2.8E-04	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	5.5E-05	2.2E-05
Barium	5.3E+00	mg/kg	4.8E-02	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	1.1E-03	5.7E-04
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Cadmium	1.4E-01	mg/kg	1.3E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	8.7E-04	6.3E-05
Chromium	4.5E-02	mg/kg	4.0E-04	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	4.0E-04	8.1E-05
Cobalt	1.0E-01	mg/kg	9.0E-04	mg/kg-d					
Copper	1.9E+01	mg/kg	1.7E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	3.6E-03	2.7E-03
Lead	3.0E-01	mg/kg	2.6E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	6.8E-04	6.8E-05
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	0.0E+00	0.0E+00
Mercury	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	0.0E+00	0.0E+00
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	0.0E+00	0.0E+00
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Zinc	7.6E+00	mg/kg	6.8E-02	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	4.7E-03	5.2E-04
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
xicity Equivalency (PCB) - Bi	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	0.0E+00	0.0E+00
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.7E-01	6.7E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.3E+00	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDE	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan Sulfate	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-02	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	2.8E-04	mg/kg	2.5E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	8.8E-06	8.8E-07
gamma-Chlordane	1.8E-03	mg/kg	1.6E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	5.7E-05	5.7E-06
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00

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TABLE K-10.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.1E-01	4.1E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor, Total	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
							HAZARD INDICES:	1.8E-01	2.1E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-10.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	2.8E-04	mg/kg	4.7E-05	mg/kg-d					
2-Methylnaphthalene	4.6E-03	mg/kg	7.7E-04	mg/kg-d					
Acenaphthene	1.0E-03	mg/kg	1.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.3E-07	9.3E-08
Acenaphthylene	6.7E-04	mg/kg	1.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.1E-07	6.1E-08
Anthracene	9.1E-04	mg/kg	1.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.3E-07	8.3E-08
Benzo(a)anthracene	1.0E-03	mg/kg	1.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.1E-07	9.1E-08
Benzo(a)pyrene	1.1E-03	mg/kg	1.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-06	1.0E-07
Benzo(b)fluoranthene	1.6E-03	mg/kg	2.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.5E-06	1.5E-07
Benzo(g,h,i)perylene	1.3E-03	mg/kg	2.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-06	1.2E-07
Benzo(k)fluoranthene	1.5E-03	mg/kg	2.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-06	1.4E-07
Chrysene	2.1E-03	mg/kg	3.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-06	1.9E-07
Dibenzo(a,h)anthracene	1.9E-04	mg/kg	3.2E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.7E-07	1.7E-08
Dibenzofuran	9.5E-04	mg/kg	1.6E-04	mg/kg-d					
Fluoranthene	8.0E-03	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.3E-06	7.3E-07
Fluorene	2.1E-03	mg/kg	3.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-06	1.9E-07
Indeno(1,2,3-cd)pyrene	1.0E-03	mg/kg	1.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.5E-07	9.5E-08
Naphthalene	4.1E-03	mg/kg	6.9E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.3E-05	1.3E-06
Phenanthrene	9.0E-03	mg/kg	1.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.2E-06	8.2E-07
Pyrene	4.2E-03	mg/kg	7.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-06	3.8E-07
4,4'-DDD	6.2E-03	mg/kg	1.0E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	3.7E-01	3.7E-02
4,4'-DDE	5.5E-02	mg/kg	9.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**3.3E+00**	3.3E-01
4,4'-DDT	2.2E-03	mg/kg	3.7E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.3E-01	1.3E-02
alpha-Chlordane	5.4E-03	mg/kg	9.0E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.2E-03	3.2E-04
Aroclor, Total	6.4E-01	mg/kg	1.1E-01	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	9.7E-01	3.9E-01
Aroclor-1254	5.1E-01	mg/kg	8.6E-02	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	4.8E-01	4.8E-02
Aroclor-1268	1.3E-01	mg/kg	2.1E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	1.9E-02	1.9E-03
Dieldrin	1.3E-03	mg/kg	2.2E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	2.8E-03	2.8E-04
gamma-Chlordane	1.9E-03	mg/kg	3.2E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.1E-03	1.1E-04
Heptachlor Epoxide	2.6E-04	mg/kg	4.4E-05	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	1.1E-06	1.1E-07
Technical Chlordane	1.4E-01	mg/kg	2.4E-02	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	8.6E-02	8.6E-03
Aluminum	2.4E+01	mg/kg	4.0E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	3.6E-02	3.6E-03
Barium	2.3E+00	mg/kg	3.8E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	9.2E-03	4.6E-03
Cadmium	1.1E-02	mg/kg	1.8E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	1.3E-03	9.1E-05
Chromium	2.2E-01	mg/kg	3.6E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	3.6E-02	7.3E-03
Cobalt	3.4E-02	mg/kg	5.7E-03	mg/kg-d					
Copper	4.6E-01	mg/kg	7.7E-02	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.6E-03	1.3E-03
Lead	1.5E-01	mg/kg	2.5E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	6.5E-03	6.5E-04
Manganese	4.9E+00	mg/kg	8.2E-01	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	8.4E-04	8.4E-05
Mercury	1.5E-01	mg/kg	2.6E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	5.7E-02	2.8E-02
Mercury (methyl)	1.2E-01	mg/kg	2.0E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**3.2E+00**	3.2E-01
Molybdenum	2.3E-02	mg/kg	3.9E-03	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	1.1E-03	1.1E-04
Nickel	5.2E-02	mg/kg	8.7E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.1E-04	8.1E-05
Selenium	1.4E-01	mg/kg	2.4E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	5.4E-02	1.6E-02
Thallium	4.9E-03	mg/kg	8.2E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	2.3E-04	1.6E-04
Vanadium	5.6E-02	mg/kg	9.4E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	8.3E-04	8.3E-05
Toxicity Equivalency - Birds	8.8E-05	mg/kg	1.5E-05	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	**1.0E+00**	1.0E-01

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TABLE K-10.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	9.7E+00	1.3E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-10.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 1.0E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
4,4'-DDE				-	3.3E+00	***3.3E+00***	***31%***
Mercury (methyl)				-	3.2E+00	***3.2E+00***	***30%***
Toxicity Equivalency - Birds		2.7E-01	-	1.7E-01	1.0E+00	***1.5E+00***	***14%***
Aroclor, Total				-	9.7E-01	9.7E-01	9%
Aroclor-1254				-	4.8E-01	4.8E-01	5%
4,4'-DDD				-	3.7E-01	3.7E-01	4%
Chromium		1.2E-01	-	4.0E-04	3.6E-02	1.6E-01	1%
4,4'-DDT				-	1.3E-01	1.3E-01	1%
Lead		1.1E-01	-	6.8E-04	6.5E-03	1.1E-01	1%
Technical Chlordane				-	8.6E-02	8.6E-02	1%
Mercury				-	5.7E-02	5.7E-02	1%
Selenium				-	5.4E-02	5.4E-02	1%
Zinc		4.8E-02	-	4.7E-03		5.2E-02	1%
Aluminum				-	3.6E-02	3.6E-02	0%
Aroclor-1268				-	1.9E-02	1.9E-02	0%
Barium		5.2E-03	-	1.1E-03	9.2E-03	1.5E-02	0%
Copper		5.5E-03	-	3.6E-03	1.6E-03	1.1E-02	0%
Cadmium		4.2E-03	-	8.7E-04	1.3E-03	6.3E-03	0%
alpha-Chlordane		6.8E-05	-	8.8E-06	3.2E-03	3.3E-03	0%
Dieldrin				-	2.8E-03	2.8E-03	0%
Arsenic		1.3E-03	-	5.5E-05		1.4E-03	0%
gamma-Chlordane		7.8E-05	-	5.7E-05	1.1E-03	1.3E-03	0%
Molybdenum				-	1.1E-03	1.1E-03	0%
Manganese				-	8.4E-04	8.4E-04	0%
Vanadium				-	8.3E-04	8.3E-04	0%
bis(2-Ethylhexyl)phthalate		2.4E-04	-			2.4E-04	0%
Thallium				-	2.3E-04	2.3E-04	0%
Nickel				-	1.1E-04	1.1E-04	0%
Fluoranthene		1.9E-05	-		7.3E-06	2.6E-05	0%
Pyrene		1.4E-05	-		3.8E-06	1.8E-05	0%
Benzo(b)fluoranthene		1.5E-05	-		1.5E-06	1.6E-05	0%
Phenanthrene		6.7E-06	-		8.2E-06	1.5E-05	0%
Naphthalene					1.3E-05	1.3E-05	0%
Chrysene		1.1E-05	-		1.9E-06	1.3E-05	0%
Benzo(k)fluoranthene		8.5E-06	-		1.4E-06	9.8E-06	0%
Benzo(a)pyrene		8.5E-06	-		1.0E-06	9.5E-06	0%
Indeno(1,2,3-cd)pyrene		7.0E-06	-		9.5E-07	7.9E-06	0%
Benzo(a)anthracene		6.9E-06	-		9.1E-07	7.9E-06	0%
Benzo(g,h,i)perylene		5.5E-06	-		1.2E-06	6.7E-06	0%
Fluorene					1.9E-06	1.9E-06	0%
Heptachlor epoxide				-	1.1E-06	1.1E-06	0%
Acenaphthene					9.3E-07	9.3E-07	0%
Anthracene					8.3E-07	8.3E-07	0%
Acenaphthylene					6.1E-07	6.1E-07	0%
Dibenzo(a,h)anthracene					1.7E-07	1.7E-07	0%

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TABLE K-10.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	MANTON POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	1.0E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
4-Nitrophenol							
Endosulfan sulfate				-			
4-Methylphenol							
Phenol							
Aroclor-1260				-			
2,4-Dinitrotoluene							
Aroclor-1248				-			
Dimethylphthalate							
Dibenzofuran							
Atrazine							
Endosulfan II				-			
Aroclor-1242				-			
Endrin Ketone				-			
Cyanide							
gamma-BHC				-			
4-Chloro-3-methylphenol							
N-Nitroso-di-n-propylamine							
Endrin				-			
Methoxychlor				-			
Endrin aldehyde				-			
Iron							
Silver				-			
Antimony							
Beryllium				-			
Cobalt							
Heptachlor				-			
Carbazole							
Pentachlorophenol							
2-Methylnaphthalene							
1,1'-Biphenyl							
2-Chlorophenol							
2,4,5-Trichlorophenol							
Toxicity Equivalency (PCB) - Birds				-			
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	5.6E-01	-	1.8E-01	9.7E+00	1.0E+01	
PERCENTAGE OF TOTAL RISK		5%		2%	93%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-10.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 1.4E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total				-	3.9E-01	3.9E-01	***28%***
4,4'-DDE				-	3.3E-01	3.3E-01	***23%***
Mercury (methyl)				-	3.2E-01	3.2E-01	***23%***
Toxicity Equivalency - Birds		2.7E-02	-	1.7E-02	1.0E-01	1.5E-01	***11%***
Aroclor-1254				-	4.8E-02	4.8E-02	3%
4,4'-DDD				-	3.7E-02	3.7E-02	3%
Chromium		2.4E-02	-	8.1E-05	7.3E-03	3.1E-02	2%
Mercury				-	2.8E-02	2.8E-02	2%
Selenium				-	1.6E-02	1.6E-02	1%
4,4'-DDT				-	1.3E-02	1.3E-02	1%
Lead		1.1E-02	-	6.8E-05	6.5E-04	1.1E-02	1%
Technical Chlordane				-	8.6E-03	8.6E-03	1%
Copper		4.2E-03	-	2.7E-03	1.3E-03	8.2E-03	1%
Barium		2.6E-03	-	5.7E-04	4.6E-03	7.7E-03	1%
Zinc		5.3E-03	-	5.2E-04		5.8E-03	0%
Aluminum				-	3.6E-03	3.6E-03	0%
Aroclor-1268				-	1.9E-03	1.9E-03	0%
Arsenic		5.3E-04	-	2.2E-05		5.5E-04	0%
Cadmium		3.0E-04	-	6.3E-05	9.1E-05	4.5E-04	0%
alpha-Chlordane		6.8E-06	-	8.8E-07	3.2E-04	3.3E-04	0%
Dieldrin				-	2.8E-04	2.8E-04	0%
Thallium				-	1.6E-04	1.6E-04	0%
gamma-Chlordane		7.8E-06	-	5.7E-06	1.1E-04	1.3E-04	0%
Molybdenum				-	1.1E-04	1.1E-04	0%
Manganese				-	8.4E-05	8.4E-05	0%
Vanadium				-	8.3E-05	8.3E-05	0%
Nickel				-	8.1E-05	8.1E-05	0%
bis(2-Ethylhexyl)phthalate		2.4E-05	-			2.4E-05	0%
Fluoranthene		1.9E-06	-		7.3E-07	2.6E-06	0%
Pyrene		1.4E-06	-		3.8E-07	1.8E-06	0%
Benzo(b)fluoranthene		1.5E-06	-		1.5E-07	1.6E-06	0%
Phenanthrene		6.7E-07	-		8.2E-07	1.5E-06	0%
Naphthalene					1.3E-06	1.3E-06	0%
Chrysene		1.1E-06	-		1.9E-07	1.3E-06	0%
Benzo(k)fluoranthene		8.5E-07	-		1.4E-07	9.8E-07	0%
Benzo(a)pyrene		8.5E-07	-		1.0E-07	9.5E-07	0%
Indeno(1,2,3-cd)pyrene		7.0E-07	-		9.5E-08	7.9E-07	0%
Benzo(a)anthracene		6.9E-07	-		9.1E-08	7.9E-07	0%
Benzo(g,h,i)perylene		5.5E-07	-		1.2E-07	6.7E-07	0%
Fluorene					1.9E-07	1.9E-07	0%
Heptachlor epoxide				-	1.1E-07	1.1E-07	0%
Acenaphthene					9.3E-08	9.3E-08	0%
Anthracene					8.3E-08	8.3E-08	0%
Acenaphthylene					6.1E-08	6.1E-08	0%
Dibenzo(a,h)anthracene					1.7E-08	1.7E-08	0%

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TABLE K-10.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	MANTON POND REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	1.4E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Cobalt							
Antimony							
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248				-			
Aroclor-1260				-			
gamma-BHC				-			
4-Chloro-3-methylphenol							
Beryllium				-			
2-Chlorophenol							
Endrin				-			
4-Nitrophenol							
Silver				-			
Phenol							
Endosulfan II				-			
Endosulfan sulfate				-			
Heptachlor				-			
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor				-			
Cyanide							
Aroclor-1242				-			
Endrin Ketone				-			
Endrin aldehyde				-			
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Toxicity Equivalency (PCB) - Birds				-			
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	7.4E-02	-	2.1E-02	1.3E+00	1.4E+00	
PERCENTAGE OF TOTAL RISK		5%		1%	93%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-11.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	3.1E-02	mg/kg	2.7E-04	mg/kg-d					
Acenaphthene	1.4E-01	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.5E-06	6.5E-07
Acenaphthylene	1.6E-01	mg/kg	1.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.6E-06	7.6E-07
Anthracene	3.0E-01	mg/kg	2.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.4E-05	1.4E-06
Benzo(a)anthracene	1.4E+00	mg/kg	1.3E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.8E-05	6.8E-06
Benzo(a)pyrene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.7E-05	6.7E-06
Benzo(b)fluoranthene	2.5E+00	mg/kg	2.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-04	1.2E-05
Benzo(g,h,i)perylene	1.1E+00	mg/kg	9.4E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.1E-05	5.1E-06
Benzo(k)fluoranthene	7.1E-01	mg/kg	6.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.4E-05	3.4E-06
bis(2-Ethylhexyl)phthalate	1.1E+00	mg/kg	9.7E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	8.8E-04	8.8E-05
Carbazole	2.2E-01	mg/kg	2.0E-03	mg/kg-d					
Chrysene	1.5E+00	mg/kg	1.3E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.3E-05	7.3E-06
Dibenzo(a,h)anthracene	2.0E-01	mg/kg	1.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.7E-06	9.7E-07
Dibenzofuran	1.0E-01	mg/kg	8.8E-04	mg/kg-d					
Di-n-Butylphthalate	5.1E-02	mg/kg	4.5E-04	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	4.1E-04	4.1E-05
Fluoranthene	2.8E+00	mg/kg	2.5E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.3E-04	1.3E-05
Fluorene	1.2E-01	mg/kg	1.1E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.0E-06	6.0E-07
Indeno(1,2,3-cd)pyrene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.5E-05	6.5E-06
Naphthalene	6.4E-02	mg/kg	5.6E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.0E-05	1.0E-06
Phenanthrene	1.4E+00	mg/kg	1.2E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.5E-05	6.5E-06
Pyrene	2.4E+00	mg/kg	2.1E-02	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.1E-04	1.1E-05
4,4'-DDD	5.8E-03	mg/kg	5.1E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.8E-02	1.8E-03
4,4'-DDE	3.9E-03	mg/kg	3.5E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.2E-02	1.2E-03
alpha-Chlordane	4.3E-03	mg/kg	3.8E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.4E-04	1.4E-05
Aroclor, Total	1.4E+00	mg/kg	1.3E-02	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	1.1E-01	4.5E-02
Aroclor-1254	4.9E-01	mg/kg	4.3E-03	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	2.4E-02	2.4E-03
Aroclor-1268	1.2E-01	mg/kg	1.1E-03	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	9.6E-04	9.6E-05
Dieldrin	1.2E-02	mg/kg	1.0E-04	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	1.3E-03	1.3E-04
Endosulfan sulfate	5.2E-03	mg/kg	4.6E-05	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	7.3E-05	7.3E-06
Arsenic	2.1E+00	mg/kg	1.9E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	3.6E-03	1.4E-03
Barium	6.8E+01	mg/kg	6.0E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	1.4E-02	7.2E-03
Cadmium	1.7E+00	mg/kg	1.5E-02	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	1.0E-02	7.4E-04
Chromium	1.6E+02	mg/kg	1.4E+00	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	**1.4E+00**	2.7E-01
Cobalt	5.8E+00	mg/kg	5.1E-02	mg/kg-d					
Copper	9.0E+01	mg/kg	8.0E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.7E-02	1.3E-02
Lead	1.6E+02	mg/kg	1.4E+00	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.7E-01	3.7E-02
Mercury	4.0E-01	mg/kg	3.5E-03	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	7.7E-03	3.9E-03
Zinc	7.2E+02	mg/kg	6.3E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	4.4E-01	4.8E-02
Toxicity Equivalency - Birds	9.8E-05	mg/kg	8.7E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	6.2E-02	6.2E-03
Toxicity Equivalency (PCB) - Birds	1.3E-05	mg/kg	1.1E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	8.0E-03	8.0E-04
							HAZARD INDICES:	**2.5E+00**	4.4E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

TABLE K-11.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	7.2E-05	mg/kg	6.4E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	4.6E-02	4.6E-03
oxicity Equivalency - Mamma	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Arsenic	1.0E-01	mg/kg	9.1E-04	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	1.8E-04	7.1E-05
Barium	1.8E+01	mg/kg	1.6E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	3.8E-03	1.9E-03
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Cadmium	4.1E-01	mg/kg	3.7E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	2.5E-03	1.8E-04
Chromium	6.3E-01	mg/kg	5.6E-03	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	5.6E-03	1.1E-03
Cobalt	3.0E-01	mg/kg	2.7E-03	mg/kg-d					
Copper	6.9E+01	mg/kg	6.2E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.3E-02	1.0E-02
Lead	1.2E+00	mg/kg	1.1E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	2.8E-03	2.8E-04
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	0.0E+00	0.0E+00
Mercury	1.9E-01	mg/kg	1.7E-03	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	3.7E-03	1.8E-03
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	0.0E+00	0.0E+00
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Zinc	8.4E+01	mg/kg	7.4E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	5.1E-02	5.7E-03
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
xicity Equivalency (PCB) - Bi	2.9E-06	mg/kg	2.6E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	1.8E-03	1.8E-04
ity Equivalency (PCB) - Mam	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.7E-01	6.7E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.3E+00	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	4.1E-03	mg/kg	3.6E-05	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	4.7E-04	4.7E-05
4,4'-DDE	6.4E-03	mg/kg	5.7E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	2.0E-02	2.0E-03
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	2.8E-02	mg/kg	2.5E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	8.8E-02	8.8E-03
Endosulfan Sulfate	7.4E-03	mg/kg	6.6E-05	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	1.1E-04	1.1E-05
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-02	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	6.7E-04	mg/kg	5.9E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.1E-05	2.1E-06
gamma-Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00

US EPA ARCHIVE DOCUMENT

TABLE K-11.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.1E-01	4.1E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	4.0E-01	mg/kg	3.6E-03	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	2.0E-02	2.0E-03
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	3.4E-02	mg/kg	3.1E-04	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	2.8E-04	2.8E-05
Aroclor, Total	9.8E-01	mg/kg	8.7E-03	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	7.9E-02	3.1E-02
							HAZARD INDICES:	3.4E-01	7.0E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-11.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	4.6E-05	mg/kg	7.7E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.5E-01	5.5E-02
oxicity Equivalency - Mamma	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Arsenic	4.4E-02	mg/kg	7.3E-03	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	1.4E-03	5.7E-04
Barium	1.6E+00	mg/kg	2.8E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	6.6E-03	3.3E-03
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Cadmium	1.5E-01	mg/kg	2.5E-02	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	1.8E-02	1.3E-03
Chromium	8.6E-01	mg/kg	1.4E-01	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.4E-01	2.9E-02
Cobalt	2.2E-01	mg/kg	3.7E-02	mg/kg-d					
Copper	3.0E+00	mg/kg	5.1E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	1.1E-02	8.2E-03
Iron	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Lead	4.4E-01	mg/kg	7.4E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	1.9E-02	1.9E-03
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	0.0E+00	0.0E+00
Mercury	7.1E-01	mg/kg	1.2E-01	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	2.6E-01	1.3E-01
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	0.0E+00	0.0E+00
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	0.0E+00	0.0E+00
Zinc	1.6E+02	mg/kg	2.6E+01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	**1.8E+00**	2.0E-01
Naphthalene	3.4E-04	mg/kg	5.8E-05	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	1.1E-06	1.1E-07
2-Methylnaphthalene	2.6E-04	mg/kg	4.4E-05	mg/kg-d					
Acenaphthylene	8.7E-04	mg/kg	1.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.9E-07	7.9E-08
Acenaphthene	1.1E-03	mg/kg	1.9E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.0E-06	1.0E-07
Dibenzofuran	6.3E-04	mg/kg	1.1E-04	mg/kg-d					
Fluorene	1.4E-03	mg/kg	2.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.2E-06	1.2E-07
Phenanthrene	2.0E-02	mg/kg	3.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.8E-05	1.8E-06
Anthracene	2.1E-03	mg/kg	3.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-06	1.9E-07
Fluoranthene	2.4E-02	mg/kg	4.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-05	2.1E-06
Pyrene	9.6E-03	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.7E-06	8.7E-07
Benzo(a)anthracene	4.3E-03	mg/kg	7.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.9E-06	3.9E-07
Chrysene	7.0E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.3E-06	6.3E-07
Benzo(b)fluoranthene	6.9E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.3E-06	6.3E-07
Benzo(k)fluoranthene	3.1E-03	mg/kg	5.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.8E-06	2.8E-07
Benzo(a)pyrene	4.0E-03	mg/kg	6.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.6E-06	3.6E-07
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	7.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.9E-06	3.9E-07
Dibenzo(a,h)anthracene	3.1E-04	mg/kg	5.2E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.8E-07	2.8E-08
Benzo(g,h,i)perylene	3.4E-03	mg/kg	5.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.1E-06	3.1E-07
1,1'-Biphenyl	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
xicity Equivalency (PCB) - Bi	4.3E-05	mg/kg	7.2E-06	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	5.2E-01	5.2E-02
ity Equivalency (PCB) - Mam	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00

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TABLE K-11.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.6E-01	2.3E+00	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E+00	2.0E+01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.7E-01	6.7E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.3E+00	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	1.8E-02	mg/kg	3.0E-03	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	3.9E-02	3.9E-03
4,4'-DDE	7.2E-02	mg/kg	1.2E-02	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**4.3E+00**	4.3E-01
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	3.0E-02	mg/kg	5.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	**1.8E+00**	1.8E-01
Endosulfan Sulfate	1.8E-03	mg/kg	3.1E-04	mg/kg-d	6.2E-01	6.2E+00	mg/kg-d	4.9E-04	4.9E-05
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E+01	8.0E+02	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-02	1.0E-01	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	2.2E-02	mg/kg	3.6E-03	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.3E-02	1.3E-03
gamma-Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	0.0E+00	0.0E+00
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.1E-01	4.1E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	7.5E+00	mg/kg	1.3E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	**7.0E+00**	7.0E-01
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	1.6E-01	mg/kg	2.6E-02	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	2.4E-02	2.4E-03
Aroclor, Total	1.9E+01	mg/kg	3.1E+00	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	**2.8E+01**	**1.1E+01**
							HAZARD INDICES:	**4.5E+01**	**1.3E+01**

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-11.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	DYERVILLE REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	4.7E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		1.1E-01	-	7.9E-02	2.8E+01	***2.8E+01***	***60%***
Aroclor-1254		2.4E-02	-	2.0E-02	7.0E+00	***7.0E+00***	***15%***
4,4'-DDE		1.2E-02	-	2.0E-02	4.3E+00	***4.4E+00***	9%
Zinc		4.4E-01	-	5.1E-02	1.8E+00	***2.3E+00***	5%
4,4'-DDD		1.8E-02	-	8.8E-02	1.8E+00	***1.9E+00***	4%
Chromium		1.4E+00	-	5.6E-03	1.4E-01	***1.5E+00***	3%
Toxicity Equivalency - Birds		6.2E-02	-	4.6E-02	5.5E-01	6.6E-01	1%
Toxicity Equivalency (PCB) - Birds		8.0E-03	-	1.8E-03	5.2E-01	5.3E-01	1%
Lead		3.7E-01	-	2.8E-03	1.9E-02	3.9E-01	1%
Mercury		7.7E-03	-	3.7E-03	2.6E-01	2.8E-01	1%
Copper		1.7E-02	-	1.3E-02	1.1E-02	4.1E-02	0%
Dieldrin		1.3E-03	-	4.7E-04	3.9E-02	4.0E-02	0%
Cadmium		1.0E-02	-	2.5E-03	1.8E-02	3.0E-02	0%
Aroclor-1268		9.6E-04	-	2.8E-04	2.4E-02	2.5E-02	0%
Barium		1.4E-02	-	3.8E-03	6.6E-03	2.5E-02	0%
alpha-Chlordane		1.4E-04	-	2.1E-05	1.3E-02	1.3E-02	0%
Arsenic		3.6E-03	-	1.8E-04	1.4E-03	5.2E-03	0%
bis(2-Ethylhexyl)phthalate		8.8E-04	-			8.8E-04	0%
Endosulfan sulfate		7.3E-05	-	1.1E-04	4.9E-04	6.7E-04	0%
Di-n-Butylphthalate		4.1E-04	-			4.1E-04	0%
Fluoranthene		1.3E-04	-		2.1E-05	1.6E-04	0%
Benzo(b)fluoranthene		1.2E-04	-		6.3E-06	1.2E-04	0%
Pyrene		1.1E-04	-		8.7E-06	1.2E-04	0%
Phenanthrene		6.5E-05	-		1.8E-05	8.3E-05	0%
Chrysene		7.3E-05	-		6.3E-06	7.9E-05	0%
Benzo(a)anthracene		6.8E-05	-		3.9E-06	7.2E-05	0%
Benzo(a)pyrene		6.7E-05	-		3.6E-06	7.1E-05	0%
Indeno(1,2,3-cd)pyrene		6.5E-05	-		3.9E-06	6.9E-05	0%
Benzo(g,h,i)perylene		5.1E-05	-		3.1E-06	5.4E-05	0%
Benzo(k)fluoranthene		3.4E-05	-		2.8E-06	3.7E-05	0%
Anthracene		1.4E-05	-		1.9E-06	1.6E-05	0%
Naphthalene		1.0E-05	-		1.1E-06	1.2E-05	0%
Dibenzo(a,h)anthracene		9.7E-06	-		2.8E-07	1.0E-05	0%
Acenaphthylene		7.6E-06	-		7.9E-07	8.3E-06	0%
Acenaphthene		6.5E-06	-		1.0E-06	7.5E-06	0%
Fluorene		6.0E-06	-		1.2E-06	7.2E-06	0%
Atrazine							
Cobalt							
Mercury (methyl)				-	-		
Antimony							
Selenium				-	-		
Molybdenum				-	-		
Vanadium				-	-		

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TABLE K-11.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 4.7E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Technical Chlordane				-	-		
N-Nitroso-di-n-propylamine							
Manganese				-	-		
Pentachlorophenol							
Aluminum				-	-		
Thallium				-	-		
2,4-Dinitrotoluene							
Aroclor-1248				-	-		
Aroclor-1260				-	-		
gamma-BHC				-	-		
Heptachlor epoxide				-	-		
Nickel				-	-		
4-Chloro-3-methylphenol							
Beryllium				-	-		
4,4'-DDT				-	-		
gamma-Chlordane				-	-		
2-Chlorophenol							
Endrin				-	-		
4-Nitrophenol							
Silver				-	-		
Phenol							
Endosulfan II				-	-		
Heptachlor				-	-		
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor				-	-		
Cyanide							
Aroclor-1242				-	-		
Endrin Ketone				-	-		
Endrin aldehyde				-	-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	-	2.5E+00	-	3.4E-01	4.5E+01	4.7E+01	
PERCENTAGE OF TOTAL RISK		5%		1%	94%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-11.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: HERON
TOTAL RISK (HI): 1.4E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		4.5E-02	-	3.1E-02	1.1E+01	***1.1E+01***	***83%***
Aroclor-1254		2.4E-03	-	2.0E-03	7.0E-01	7.0E-01	5%
4,4'-DDE		1.2E-03	-	2.0E-03	4.3E-01	4.4E-01	3%
Chromium		2.7E-01	-	1.1E-03	2.9E-02	3.0E-01	2%
Zinc		4.8E-02	-	5.7E-03	2.0E-01	2.5E-01	2%
4,4'-DDD		1.8E-03	-	8.8E-03	1.8E-01	1.9E-01	1%
Mercury		3.9E-03	-	1.8E-03	1.3E-01	1.4E-01	1%
Toxicity Equivalency - Birds		6.2E-03	-	4.6E-03	5.5E-02	6.6E-02	0%
Toxicity Equivalency (PCB) - Birds		8.0E-04	-	1.8E-04	5.2E-02	5.3E-02	0%
Lead		3.7E-02	-	2.8E-04	1.9E-03	3.9E-02	0%
Copper		1.3E-02	-	1.0E-02	8.2E-03	3.1E-02	0%
Barium		7.2E-03	-	1.9E-03	3.3E-03	1.2E-02	0%
Dieldrin		1.3E-04	-	4.7E-05	3.9E-03	4.0E-03	0%
Aroclor-1268		9.6E-05	-	2.8E-05	2.4E-03	2.5E-03	0%
Cadmium		7.4E-04	-	1.8E-04	1.3E-03	2.2E-03	0%
Arsenic		1.4E-03	-	7.1E-05	5.7E-04	2.1E-03	0%
alpha-Chlordane		1.4E-05	-	2.1E-06	1.3E-03	1.3E-03	0%
bis(2-Ethylhexyl)phthalate		8.8E-05	-			8.8E-05	0%
Endosulfan sulfate		7.3E-06	-	1.1E-05	4.9E-05	6.7E-05	0%
Di-n-Butylphthalate		4.1E-05	-			4.1E-05	0%
Fluoranthene		1.3E-05	-		2.1E-06	1.6E-05	0%
Benzo(b)fluoranthene		1.2E-05	-		6.3E-07	1.2E-05	0%
Pyrene		1.1E-05	-		8.7E-07	1.2E-05	0%
Phenanthrene		6.5E-06	-		1.8E-06	8.3E-06	0%
Chrysene		7.3E-06	-		6.3E-07	7.9E-06	0%
Benzo(a)anthracene		6.8E-06	-		3.9E-07	7.2E-06	0%
Benzo(a)pyrene		6.7E-06	-		3.6E-07	7.1E-06	0%
Indeno(1,2,3-cd)pyrene		6.5E-06	-		3.9E-07	6.9E-06	0%
Benzo(g,h,i)perylene		5.1E-06	-		3.1E-07	5.4E-06	0%
Benzo(k)fluoranthene		3.4E-06	-		2.8E-07	3.7E-06	0%
Anthracene		1.4E-06	-		1.9E-07	1.6E-06	0%
Naphthalene		1.0E-06	-		1.1E-07	1.2E-06	0%
Dibenzo(a,h)anthracene		9.7E-07	-		2.8E-08	1.0E-06	0%
Acenaphthylene		7.6E-07	-		7.9E-08	8.3E-07	0%
Acenaphthene		6.5E-07	-		1.0E-07	7.5E-07	0%
Fluorene		6.0E-07	-		1.2E-07	7.2E-07	0%
Atrazine							
Cobalt							
Mercury (methyl)				-	-		
Antimony							
Selenium				-	-		
Molybdenum				-	-		
Vanadium				-	-		

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TABLE K-11.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	DYERVILLE REACH - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	1.4E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Technical Chlordane				-	-		
N-Nitroso-di-n-propylamine							
Manganese				-	-		
Pentachlorophenol							
Aluminum				-	-		
Thallium				-	-		
2,4-Dinitrotoluene							
Aroclor-1248				-	-		
Aroclor-1260				-	-		
gamma-BHC				-	-		
Heptachlor epoxide				-	-		
Nickel				-	-		
4-Chloro-3-methylphenol							
Beryllium				-	-		
4,4'-DDT				-	-		
gamma-Chlordane				-	-		
2-Chlorophenol							
Endrin				-	-		
4-Nitrophenol							
Silver				-	-		
Phenol							
Endosulfan II				-	-		
Heptachlor				-	-		
Dibenzofuran							
2-Methylnaphthalene							
Carbazole							
Dimethylphthalate							
1,1'-Biphenyl							
Methoxychlor				-	-		
Cyanide							
Aroclor-1242				-	-		
Endrin Ketone				-	-		
Endrin aldehyde				-	-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	-	4.4E-01	-	7.0E-02	1.3E+01	1.4E+01	
PERCENTAGE OF TOTAL RISK		3%		1%	96%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-12.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.0E-03	mg/L	4.5E-05	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	4.1E-06	4.1E-07
Aluminum	1.6E-01	mg/L	7.1E-03	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	6.5E-05	6.5E-06
Beryllium	4.9E-05	mg/L	2.2E-06	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	1.5E-05	1.5E-06
Cobalt	1.1E-04	mg/L	5.2E-06	mg/kg-d					
Copper	2.1E-03	mg/L	9.5E-05	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.0E-06	1.5E-06
Lead	3.7E-04	mg/L	1.7E-05	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	4.3E-06	4.3E-07
Manganese	1.4E-01	mg/L	6.1E-03	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	6.3E-06	6.3E-07
Nickel	1.7E-03	mg/L	7.7E-05	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	1.0E-06	7.2E-07
Selenium	8.2E-05	mg/L	3.7E-06	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	8.4E-06	2.5E-06
Thallium	5.1E-06	mg/L	2.3E-07	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	6.6E-08	4.6E-08
Zinc	3.4E-02	mg/L	1.5E-03	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.1E-04	1.2E-05
Nitrogen, Ammonia	1.1E-02	mg/L	5.0E-04	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Birds	7.0E-09	mg/L	3.2E-10	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.3E-05	2.3E-06
							HAZARD INDICES:	2.4E-04	2.8E-05

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-12.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.9E-02	mg/kg	1.6E-04	mg/kg-d					
Acenaphthene	3.4E-02	mg/kg	3.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.6E-06	1.6E-07
Acenaphthylene	5.9E-02	mg/kg	5.2E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.8E-06	2.8E-07
Anthracene	1.5E-01	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-06	7.1E-07
Benzo(a)anthracene	5.2E-01	mg/kg	4.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.5E-05	2.5E-06
Benzo(a)pyrene	5.3E-01	mg/kg	4.7E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.6E-05	2.6E-06
Benzo(b)fluoranthene	6.3E-01	mg/kg	5.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.0E-05	3.0E-06
Benzo(g,h,i)perylene	4.0E-01	mg/kg	3.5E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	1.9E-05	1.9E-06
Benzo(k)fluoranthene	4.1E-01	mg/kg	3.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-05	2.0E-06
bis(2-Ethylhexyl)phthalate	4.7E-01	mg/kg	4.1E-03	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	3.7E-04	3.7E-05
Carbazole	8.9E-02	mg/kg	7.8E-04	mg/kg-d					
Chrysene	6.8E-01	mg/kg	6.0E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.2E-05	3.2E-06
Dibenzo(a,h)anthracene	1.5E-01	mg/kg	1.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.1E-06	7.1E-07
Dibenzofuran	3.6E-02	mg/kg	3.2E-04	mg/kg-d					
Di-n-Butylphthalate	8.0E-02	mg/kg	7.1E-04	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	6.4E-04	6.4E-05
Fluoranthene	1.1E+00	mg/kg	9.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.2E-05	5.2E-06
Fluorene	8.1E-02	mg/kg	7.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.9E-06	3.9E-07
Indeno(1,2,3-cd)pyrene	4.3E-01	mg/kg	3.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.1E-05	2.1E-06
Naphthalene	1.9E-02	mg/kg	1.7E-04	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	3.1E-06	3.1E-07
Phenanthrene	5.4E-01	mg/kg	4.8E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.6E-05	2.6E-06
Pyrene	9.4E-01	mg/kg	8.3E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.5E-05	4.5E-06
4,4'-DDD	2.6E-03	mg/kg	2.3E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	8.3E-03	8.3E-04
4,4'-DDE	3.3E-03	mg/kg	2.9E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.0E-02	1.0E-03
alpha-Chlordane	1.3E-03	mg/kg	1.2E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	4.2E-05	4.2E-06
Aroclor, Total	5.8E-02	mg/kg	5.1E-04	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	4.6E-03	1.8E-03
Aroclor-1254	3.2E-02	mg/kg	2.8E-04	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	1.6E-03	1.6E-04
Aroclor-1268	2.3E-02	mg/kg	2.0E-04	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	1.8E-04	1.8E-05
Dieldrin	1.9E-03	mg/kg	1.7E-05	mg/kg-d	7.7E-02	7.7E-01	mg/kg-d	2.2E-04	2.2E-05
gamma-Chlordane	6.5E-04	mg/kg	5.7E-06	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.0E-05	2.0E-06
Technical Chlordane	1.1E-01	mg/kg	9.5E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	3.4E-03	3.4E-04
Arsenic	2.7E+00	mg/kg	2.4E-02	mg/kg-d	5.1E+00	1.3E+01	mg/kg-d	4.6E-03	1.8E-03
Barium	9.4E+01	mg/kg	8.2E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	2.0E-02	9.9E-03
Cadmium	3.7E-01	mg/kg	3.2E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	2.2E-03	1.6E-04
Chromium	1.0E+01	mg/kg	9.1E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	9.1E-02	1.8E-02
Cobalt	6.2E+00	mg/kg	5.5E-02	mg/kg-d					
Copper	1.2E+01	mg/kg	1.0E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.2E-03	1.7E-03
Lead	4.1E+01	mg/kg	3.6E-01	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	9.3E-02	9.3E-03
Mercury	5.1E-02	mg/kg	4.5E-04	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	1.0E-03	5.0E-04
Mercury (methyl)	5.6E-04	mg/kg	4.9E-06	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	7.7E-04	7.7E-05
Molybdenum	1.6E+00	mg/kg	1.4E-02	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	3.9E-03	3.9E-04
Selenium	6.2E-01	mg/kg	5.5E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	1.3E-02	3.7E-03
Silver	1.6E+00	mg/kg	1.4E-02	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	1.5E-04	1.5E-05
Thallium	3.5E-01	mg/kg	3.1E-03	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	8.9E-04	6.2E-04
Zinc	1.0E+02	mg/kg	8.9E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	6.1E-02	6.8E-03
Toxicity Equivalency - Birds	5.1E-06	mg/kg	4.5E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	3.2E-03	3.2E-04

US EPA ARCHIVE DOCUMENT

TABLE K-12.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	3.3E-01	5.8E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-12.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDE	3.6E-03	mg/kg	3.2E-05	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.1E-02	1.1E-03
Aroclor, Total	1.1E-02	mg/kg	9.8E-05	mg/kg-d	1.1E-01	2.8E-01	mg/kg-d	8.9E-04	3.6E-04
Aroclor-1254	1.0E-02	mg/kg	9.2E-05	mg/kg-d	1.8E-01	1.8E+00	mg/kg-d	5.1E-04	5.1E-05
Aroclor-1268	6.9E-04	mg/kg	6.1E-06	mg/kg-d	1.1E+00	1.1E+01	mg/kg-d	5.6E-06	5.6E-07
Heptachlor Epoxide	9.0E-05	mg/kg	8.0E-07	mg/kg-d	4.2E+01	4.2E+02	mg/kg-d	1.9E-08	1.9E-09
Technical Chlordane	8.8E-03	mg/kg	7.9E-05	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	2.8E-04	2.8E-05
Barium	4.0E+01	mg/kg	3.5E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	8.5E-03	4.2E-03
Cadmium	8.2E-02	mg/kg	7.3E-04	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	5.0E-04	3.6E-05
Cobalt	8.3E-02	mg/kg	7.4E-04	mg/kg-d					
Copper	1.5E+01	mg/kg	1.3E-01	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.8E-03	2.2E-03
Lead	1.4E-01	mg/kg	1.2E-03	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.2E-04	3.2E-05
Manganese	1.1E+02	mg/kg	1.0E+00	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	1.0E-03	1.0E-04
Mercury	3.9E-02	mg/kg	3.5E-04	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	7.7E-04	3.8E-04
Mercury (methyl)	3.9E-02	mg/kg	3.5E-04	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	5.4E-02	5.4E-03
Molybdenum	4.3E-02	mg/kg	3.8E-04	mg/kg-d	3.5E+00	3.5E+01	mg/kg-d	1.1E-04	1.1E-05
Nickel	2.5E-01	mg/kg	2.2E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	2.9E-05	2.1E-05
Selenium	1.3E-01	mg/kg	1.1E-03	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	2.5E-03	7.4E-04
Silver	2.2E-01	mg/kg	1.9E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	2.1E-05	2.1E-06
Thallium	7.1E-03	mg/kg	6.3E-05	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.8E-05	1.3E-05
Zinc	2.3E+01	mg/kg	2.0E-01	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.4E-02	1.6E-03
Toxicity Equivalency - Birds	3.7E-06	mg/kg	3.3E-08	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.4E-03	2.4E-04
							HAZARD INDICES:	1.0E-01	1.7E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-12.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	6.4E-04	mg/kg	1.1E-04	mg/kg-d					
2-Methylnaphthalene	1.7E-02	mg/kg	2.9E-03	mg/kg-d					
Acenaphthene	4.1E-04	mg/kg	6.9E-05	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.7E-07	3.7E-08
Acenaphthylene	9.1E-04	mg/kg	1.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.3E-07	8.3E-08
Anthracene	7.9E-04	mg/kg	1.3E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	7.2E-07	7.2E-08
Benzo(a)anthracene	3.3E-03	mg/kg	5.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.0E-06	3.0E-07
Benzo(a)pyrene	3.3E-03	mg/kg	5.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.0E-06	3.0E-07
Benzo(b)fluoranthene	4.2E-03	mg/kg	7.0E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.8E-06	3.8E-07
Benzo(g,h,i)perylene	2.2E-03	mg/kg	3.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.0E-06	2.0E-07
Benzo(k)fluoranthene	3.6E-03	mg/kg	6.1E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	3.3E-06	3.3E-07
Chrysene	4.5E-03	mg/kg	7.6E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	4.1E-06	4.1E-07
Dibenzo(a,h)anthracene	1.1E-03	mg/kg	1.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	9.8E-07	9.8E-08
Dibenzofuran	5.5E-04	mg/kg	9.3E-05	mg/kg-d					
Fluoranthene	9.6E-03	mg/kg	1.6E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.7E-06	8.7E-07
Fluorene	9.0E-04	mg/kg	1.5E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	8.2E-07	8.2E-08
Indeno(1,2,3-cd)pyrene	2.8E-03	mg/kg	4.7E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	2.6E-06	2.6E-07
Naphthalene	7.7E-03	mg/kg	1.3E-03	mg/kg-d	5.4E+01	5.4E+02	mg/kg-d	2.4E-05	2.4E-06
Phenanthrene	7.1E-03	mg/kg	1.2E-03	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	6.5E-06	6.5E-07
Pyrene	5.9E-03	mg/kg	9.8E-04	mg/kg-d	1.8E+02	1.8E+03	mg/kg-d	5.3E-06	5.3E-07
4,4'-DDD	2.4E-03	mg/kg	4.0E-04	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	1.4E-01	1.4E-02
4,4'-DDE	1.3E-02	mg/kg	2.1E-03	mg/kg-d	2.8E-03	2.8E-02	mg/kg-d	7.6E-01	7.6E-02
alpha-Chlordane	1.7E-03	mg/kg	2.9E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	1.0E-03	1.0E-04
gamma-Chlordane	9.4E-04	mg/kg	1.6E-04	mg/kg-d	2.8E-01	2.8E+00	mg/kg-d	5.6E-04	5.6E-05
Aluminum	9.9E+00	mg/kg	1.7E+00	mg/kg-d	1.1E+02	1.1E+03	mg/kg-d	1.5E-02	1.5E-03
Barium	9.2E-01	mg/kg	1.5E-01	mg/kg-d	4.2E+01	8.3E+01	mg/kg-d	3.7E-03	1.9E-03
Beryllium	3.5E-04	mg/kg	5.8E-05	mg/kg-d	1.5E-01	1.5E+00	mg/kg-d	3.9E-04	3.9E-05
Cadmium	1.5E-02	mg/kg	2.5E-03	mg/kg-d	1.5E+00	2.0E+01	mg/kg-d	1.7E-03	1.2E-04
Chromium	9.1E-02	mg/kg	1.5E-02	mg/kg-d	1.0E+00	5.0E+00	mg/kg-d	1.5E-02	3.1E-03
Cobalt	4.0E-02	mg/kg	6.6E-03	mg/kg-d					
Copper	5.8E-01	mg/kg	9.7E-02	mg/kg-d	4.7E+01	6.2E+01	mg/kg-d	2.1E-03	1.6E-03
Lead	8.9E-02	mg/kg	1.5E-02	mg/kg-d	3.9E+00	3.9E+01	mg/kg-d	3.9E-03	3.9E-04
Manganese	4.3E+00	mg/kg	7.2E-01	mg/kg-d	9.8E+02	9.8E+03	mg/kg-d	7.4E-04	7.4E-05
Mercury	7.7E-02	mg/kg	1.3E-02	mg/kg-d	4.5E-01	9.0E-01	mg/kg-d	2.8E-02	1.4E-02
Mercury (methyl)	7.7E-02	mg/kg	1.3E-02	mg/kg-d	6.4E-03	6.4E-02	mg/kg-d	**2.0E+00**	2.0E-01
Nickel	3.8E-02	mg/kg	6.4E-03	mg/kg-d	7.7E+01	1.1E+02	mg/kg-d	8.2E-05	6.0E-05
Selenium	1.9E-01	mg/kg	3.2E-02	mg/kg-d	4.4E-01	1.5E+00	mg/kg-d	7.4E-02	2.2E-02
Silver	2.1E-02	mg/kg	3.5E-03	mg/kg-d	9.0E+01	9.0E+02	mg/kg-d	3.9E-05	3.9E-06
Thallium	3.2E-03	mg/kg	5.3E-04	mg/kg-d	3.5E+00	5.0E+00	mg/kg-d	1.5E-04	1.1E-04
Vanadium	7.1E-02	mg/kg	1.2E-02	mg/kg-d	1.1E+01	1.1E+02	mg/kg-d	1.0E-03	1.0E-04
Zinc	9.8E+00	mg/kg	1.6E+00	mg/kg-d	1.5E+01	1.3E+02	mg/kg-d	1.1E-01	1.3E-02
Toxicity Equivalency - Birds	2.4E-06	mg/kg	4.0E-07	mg/kg-d	1.4E-05	1.4E-04	mg/kg-d	2.9E-02	2.9E-03
							HAZARD INDICES:	**3.2E+00**	3.5E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-1.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-12.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON
TOTAL RISK (HI): 3.6E+00

Prepared:	**10-Apr-03**	**SJD**
Checked:	**16-Jul-03**	**RAR**

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		7.7E-04	-	5.4E-02	2.0E+00	***2.1E+00***	***57%***
4,4'-DDE		1.0E-02	-	1.1E-02	7.6E-01	7.8E-01	***21%***
Zinc	1.1E-04	6.1E-02	-	1.4E-02	1.1E-01	1.9E-01	5%
4,4'-DDD		8.3E-03	-		1.4E-01	1.5E-01	4%
Chromium		9.1E-02	-		1.5E-02	1.1E-01	3%
Lead	4.3E-06	9.3E-02	-	3.2E-04	3.9E-03	9.7E-02	3%
Selenium	8.4E-06	1.3E-02	-	2.5E-03	7.4E-02	8.9E-02	2%
Toxicity Equivalency - Birds	2.3E-05	3.2E-03	-	2.4E-03	2.9E-02	3.4E-02	1%
Barium		2.0E-02	-	8.5E-03	3.7E-03	3.2E-02	1%
Mercury		1.0E-03	-	7.7E-04	2.8E-02	3.0E-02	1%
Aluminum	6.5E-05				1.5E-02	1.5E-02	0%
Copper	2.0E-06	2.2E-03	-	2.8E-03	2.1E-03	7.1E-03	0%
Aroclor, Total		4.6E-03	-	8.9E-04		5.5E-03	0%
Arsenic		4.6E-03	-			4.6E-03	0%
Cadmium		2.2E-03	-	5.0E-04	1.7E-03	4.5E-03	0%
Molybdenum		3.9E-03	-	1.1E-04		4.0E-03	0%
Technical Chlordane		3.4E-03	-	2.8E-04		3.7E-03	0%
Aroclor-1254		1.6E-03	-	5.1E-04		2.1E-03	0%
Manganese	6.3E-06			1.0E-03	7.4E-04	1.8E-03	0%
alpha-Chlordane		4.2E-05	-		1.0E-03	1.1E-03	0%
Thallium	6.6E-08	8.9E-04	-	1.8E-05	1.5E-04	1.1E-03	0%
Vanadium					1.0E-03	1.0E-03	0%
Di-n-Butylphthalate		6.4E-04	-			6.4E-04	0%
gamma-Chlordane		2.0E-05	-		5.6E-04	5.8E-04	0%
Beryllium	1.5E-05				3.9E-04	4.1E-04	0%
bis(2-Ethylhexyl)phthalate	4.1E-06	3.7E-04	-			3.8E-04	0%
Dieldrin		2.2E-04	-			2.2E-04	0%
Silver		1.5E-04	-	2.1E-05	3.9E-05	2.1E-04	0%
Aroclor-1268		1.8E-04	-	5.6E-06		1.9E-04	0%
Nickel	1.0E-06			2.9E-05	8.2E-05	1.1E-04	0%
Fluoranthene		5.2E-05	-		8.7E-06	6.1E-05	0%
Pyrene		4.5E-05	-		5.3E-06	5.1E-05	0%
Chrysene		3.2E-05	-		4.1E-06	3.6E-05	0%
Benzo(b)fluoranthene		3.0E-05	-		3.8E-06	3.4E-05	0%
Phenanthrene		2.6E-05	-		6.5E-06	3.2E-05	0%
Benzo(a)pyrene		2.6E-05	-		3.0E-06	2.9E-05	0%
Benzo(a)anthracene		2.5E-05	-		3.0E-06	2.8E-05	0%
Naphthalene		3.1E-06	-		2.4E-05	2.7E-05	0%
Indeno(1,2,3-cd)pyrene		2.1E-05	-		2.6E-06	2.3E-05	0%
Benzo(k)fluoranthene		2.0E-05	-		3.3E-06	2.3E-05	0%
Benzo(g,h,i)perylene		1.9E-05	-		2.0E-06	2.1E-05	0%
Dibenzo(a,h)anthracene		7.1E-06	-		9.8E-07	8.1E-06	0%
Anthracene		7.1E-06	-		7.2E-07	7.8E-06	0%
Fluorene		3.9E-06	-		8.2E-07	4.7E-06	0%
Acenaphthylene		2.8E-06	-		8.3E-07	3.7E-06	0%

US EPA ARCHIVE DOCUMENT

TABLE K-12.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	HERON
TOTAL RISK (HI):	3.6E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthene		1.6E-06	-		3.7E-07	2.0E-06	0%
TOTAL MEDIUM-SPECIFIC RISK	2.4E-04	3.3E-01	-	1.0E-01	3.2E+00	3.6E+00	
PERCENTAGE OF TOTAL RISK	0%	9%		3%	88%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-12.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: HERON
TOTAL RISK (HI): 4.3E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		7.7E-05	-	5.4E-03	2.0E-01	2.1E-01	***49%***
4,4'-DDE		1.0E-03	-	1.1E-03	7.6E-02	7.8E-02	***18%***
Selenium	2.5E-06	3.7E-03	-	7.4E-04	2.2E-02	2.6E-02	6%
Chromium		1.8E-02	-		3.1E-03	2.1E-02	5%
Zinc	1.2E-05	6.8E-03	-	1.6E-03	1.3E-02	2.1E-02	5%
Barium		9.9E-03	-	4.2E-03	1.9E-03	1.6E-02	4%
Mercury		5.0E-04	-	3.8E-04	1.4E-02	1.5E-02	4%
4,4'-DDD		8.3E-04	-		1.4E-02	1.5E-02	3%
Lead	4.3E-07	9.3E-03	-	3.2E-05	3.9E-04	9.7E-03	2%
Copper	1.5E-06	1.7E-03	-	2.2E-03	1.6E-03	5.4E-03	1%
Toxicity Equivalency - Birds	2.3E-06	3.2E-04	-	2.4E-04	2.9E-03	3.4E-03	1%
Aroclor, Total		1.8E-03	-	3.6E-04		2.2E-03	1%
Arsenic		1.8E-03	-			1.8E-03	0%
Aluminum	6.5E-06				1.5E-03	1.5E-03	0%
Thallium	4.6E-08	6.2E-04	-	1.3E-05	1.1E-04	7.4E-04	0%
Molybdenum		3.9E-04	-	1.1E-05		4.0E-04	0%
Technical Chlordane		3.4E-04	-	2.8E-05		3.7E-04	0%
Cadmium		1.6E-04	-	3.6E-05	1.2E-04	3.2E-04	0%
Aroclor-1254		1.6E-04	-	5.1E-05		2.1E-04	0%
Manganese	6.3E-07			1.0E-04	7.4E-05	1.8E-04	0%
alpha-Chlordane		4.2E-06	-		1.0E-04	1.1E-04	0%
Vanadium					1.0E-04	1.0E-04	0%
Nickel	7.2E-07			2.1E-05	6.0E-05	8.1E-05	0%
Di-n-Butylphthalate		6.4E-05	-			6.4E-05	0%
gamma-Chlordane		2.0E-06	-		5.6E-05	5.8E-05	0%
Beryllium	1.5E-06				3.9E-05	4.1E-05	0%
bis(2-Ethylhexyl)phthalate	4.1E-07	3.7E-05	-			3.8E-05	0%
Dieldrin		2.2E-05	-			2.2E-05	0%
Silver		1.5E-05	-	2.1E-06	3.9E-06	2.1E-05	0%
Aroclor-1268		1.8E-05	-	5.6E-07		1.9E-05	0%
Fluoranthene		5.2E-06	-		8.7E-07	6.1E-06	0%
Pyrene		4.5E-06	-		5.3E-07	5.1E-06	0%
Chrysene		3.2E-06	-		4.1E-07	3.6E-06	0%
Benzo(b)fluoranthene		3.0E-06	-		3.8E-07	3.4E-06	0%
Phenanthrene		2.6E-06	-		6.5E-07	3.2E-06	0%
Benzo(a)pyrene		2.6E-06	-		3.0E-07	2.9E-06	0%
Benzo(a)anthracene		2.5E-06	-		3.0E-07	2.8E-06	0%
Naphthalene		3.1E-07	-		2.4E-06	2.7E-06	0%
Indeno(1,2,3-cd)pyrene		2.1E-06	-		2.6E-07	2.3E-06	0%
Benzo(k)fluoranthene		2.0E-06	-		3.3E-07	2.3E-06	0%
Benzo(g,h,i)perylene		1.9E-06	-		2.0E-07	2.1E-06	0%
Dibenzo(a,h)anthracene		7.1E-07	-		9.8E-08	8.1E-07	0%
Anthracene		7.1E-07	-		7.2E-08	7.8E-07	0%
Fluorene		3.9E-07	-		8.2E-08	4.7E-07	0%
Acenaphthylene		2.8E-07	-		8.3E-08	3.7E-07	0%

US EPA ARCHIVE DOCUMENT

TABLE K-12.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : HERON

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: ASSAPUMPSET POND - CT	
RECEPTOR: HERON	
TOTAL RISK (HI):	4.3E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthene		1.6E-07	-		3.7E-08	2.0E-07	0%
TOTAL MEDIUM-SPECIFIC RISK	**2.8E-05**	**5.8E-02**	**-**	**1.7E-02**	**3.5E-01**	**4.3E-01**	
PERCENTAGE OF TOTAL RISK	**0%**	**14%**		**4%**	**83%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-13.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aluminum	8.9E-02	mg/L	7.2E-03	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	3.7E-03	3.7E-04
Beryllium	5.5E-05	mg/L	4.5E-06	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	3.7E-06	3.7E-07
Chromium	2.5E-03	mg/L	2.0E-04	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	1.4E-07	1.4E-08
Cobalt	1.2E-04	mg/L	9.7E-06	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	1.3E-04	1.3E-05
Copper	5.4E-03	mg/L	4.4E-04	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	3.7E-05	2.9E-05
Lead	2.9E-03	mg/L	2.3E-04	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.8E-06	6.2E-07
Manganese	1.3E-01	mg/L	1.1E-02	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	1.2E-04	3.7E-05
Nickel	1.9E-03	mg/L	1.6E-04	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	6.3E-06	2.5E-06
Selenium	8.7E-05	mg/L	7.0E-06	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	3.5E-05	2.1E-05
Thallium	7.4E-06	mg/L	6.0E-07	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	4.3E-06	4.3E-07
Zinc	2.0E-02	mg/L	1.6E-03	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	8.4E-06	4.2E-06
Nitrogen, Ammonia	3.9E-01	mg/L	3.2E-02	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Mammals	5.6E-09	mg/L	4.6E-10	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	4.6E-04	4.6E-05
							HAZARD INDICES:	4.6E-03	5.3E-04

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-13.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	7.5E-02	mg/kg	2.8E-04	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	9.3E-06	9.3E-07
Acenaphthene	4.8E-01	mg/kg	1.8E-03	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	5.1E-05	5.1E-06
Acenaphthylene	1.9E-01	mg/kg	7.2E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	2.1E-05	2.1E-06
Anthracene	9.3E-01	mg/kg	3.5E-03	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	1.7E-05	1.7E-06
Benzo(a)anthracene	1.5E+00	mg/kg	5.5E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.5E-03	5.5E-04
Benzo(a)pyrene	1.4E+00	mg/kg	5.2E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.2E-03	5.2E-04
Benzo(b)fluoranthene	1.5E+00	mg/kg	5.6E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.6E-03	5.6E-04
Benzo(g,h,i)perylene	8.6E-01	mg/kg	3.2E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.2E-03	3.2E-04
Benzo(k)fluoranthene	1.4E+00	mg/kg	5.2E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.2E-03	5.2E-04
bis(2-Ethylhexyl)phthalate	9.5E-01	mg/kg	3.5E-03	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	1.9E-04	1.9E-05
Carbazole	6.6E-01	mg/kg	2.5E-03	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	2.5E-05	2.5E-06
Chrysene	1.8E+00	mg/kg	6.7E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.7E-03	6.7E-04
Dibenzo(a,h)anthracene	7.7E-01	mg/kg	2.9E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.9E-03	2.9E-04
Dibenzofuran	2.9E-01	mg/kg	1.1E-03	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	4.3E-05	4.3E-06
Di-n-Butylphthalate	4.7E-01	mg/kg	1.8E-03	mg/kg-d	1.0E+02	4.0E+02	mg/kg-d	1.8E-05	4.4E-06
Fluoranthene	3.3E+00	mg/kg	1.2E-02	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	9.8E-05	4.9
Fluorene	4.7E-01	mg/kg	1.8E-03	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	7.0E-05	7.0E-06
Indeno(1,2,3-cd)pyrene	1.0E+00	mg/kg	3.8E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.8E-03	3.8E-04
Naphthalene	9.4E-02	mg/kg	3.5E-04	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.2E-05	1.2E-06
Phenanthrene	2.1E+00	mg/kg	7.7E-03	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	5.1E-04	5.1E-05
Pyrene	2.8E+00	mg/kg	1.0E-02	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.4E-04	8.3E-05
4,4'-DDD	4.9E-03	mg/kg	1.8E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.3E-05	4.5E-06
4,4'-DDE	6.0E-03	mg/kg	2.2E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.8E-05	5.6E-06
alpha-Chlordane	6.1E-03	mg/kg	2.3E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	4.9E-06	2.5E-06
Aroclor, Total	2.1E-01	mg/kg	7.8E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.2E-02	5.2E-03
Aroclor-1254	1.5E-01	mg/kg	5.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	3.7E-02	3.7E-03
Aroclor-1260	2.5E-02	mg/kg	9.3E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	6.2E-03	6.2E-04
Aroclor-1268	1.4E-01	mg/kg	5.1E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	3.4E-02	3.4E-03
Dieldrin	2.6E-03	mg/kg	9.5E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	6.3E-04	6.3E-05
Endrin	1.9E-03	mg/kg	7.1E-06	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	2.8E-04	1.4E-04
gamma-Chlordane	4.8E-03	mg/kg	1.8E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.9E-06	1.9E-06
Technical Chlordane	4.0E-01	mg/kg	1.5E-03	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.3E-04	1.6E-04
Antimony	7.3E-01	mg/kg	2.7E-03	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	1.0E-01	1.0E-02
Arsenic	3.9E+00	mg/kg	1.5E-02	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	3.0E-01	3.0E-02
Barium	1.3E+02	mg/kg	5.0E-01	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	6.7E-03	3.1E-03
Cadmium	8.1E-01	mg/kg	3.0E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.0E-03	3.0E-04
Chromium	9.9E+01	mg/kg	3.7E-01	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.5E-04	2.5E-05
Cobalt	8.1E+00	mg/kg	3.0E-02	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	4.0E-01	4.0E-02
Copper	7.3E+01	mg/kg	2.7E-01	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	2.3E-02	1.8E-02
Lead	1.8E+02	mg/kg	6.7E-01	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	5.3E-03	1.8E-03
Mercury	2.1E-01	mg/kg	7.9E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.8E-04	7.8E-05
Mercury (methyl)	2.6E-04	mg/kg	9.5E-07	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	6.3E-05	3.8E-05
Molybdenum	1.3E+01	mg/kg	4.7E-02	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	2.5E-01	2.5E-02
Selenium	1.1E+00	mg/kg	4.3E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	2.1E-02	1.3
Silver	2.6E+00	mg/kg	9.6E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	4.3E-04	4.3E-05
Thallium	3.7E-01	mg/kg	1.4E-03	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	9.8E-03	9.8E-04

US EPA ARCHIVE DOCUMENT

TABLE K-13.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Zinc	2.2E+02	mg/kg	8.2E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	4.2E-03	2.1E-03
Toxicity Equivalency - Mammals	3.5E-05	mg/kg	1.3E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	1.3E-01	1.3E-02
Toxicity Equivalency (PCB) - Mammals	2.5E-05	mg/kg	9.3E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	9.3E-02	9.3E-03
							HAZARD INDICES:	1.5E+00	1.8E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-13.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDE	4.3E-03	mg/kg	1.2E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.5E-04	3.0E-05
alpha-Chlordane	2.8E-04	mg/kg	7.8E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.7E-06	8.5E-07
Aroclor, Total	4.4E-02	mg/kg	1.2E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	8.1E-02	8.1E-03
Aroclor-1254	3.8E-02	mg/kg	1.0E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	7.0E-02	7.0E-03
Aroclor-1268	6.2E-03	mg/kg	1.7E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.2E-02	1.2E-03
Endosulfan Sulfate	5.1E-04	mg/kg	1.4E-05	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	2.5E-05	7.5E-06
gamma-Chlordane	9.0E-05	mg/kg	2.5E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.5E-07	2.7E-07
Technical Chlordane	1.8E-02	mg/kg	5.1E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.1E-04	5.5E-05
Aluminum	9.0E-01	mg/kg	2.5E-02	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	1.3E-02	1.3E-03
Antimony	1.4E-02	mg/kg	3.9E-04	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	1.5E-02	1.5E-03
Barium	2.6E+01	mg/kg	7.1E-01	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	9.5E-03	4.4E-03
Cadmium	8.6E-02	mg/kg	2.4E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.4E-03	2.4E-04
Chromium	2.2E-01	mg/kg	6.2E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	4.2E-06	4.2E-07
Cobalt	2.4E-01	mg/kg	6.7E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	8.8E-02	8.8E-03
Copper	2.7E+01	mg/kg	7.4E-01	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	6.3E-02	4.9E-02
Lead	5.2E-01	mg/kg	1.4E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.1E-04	3.8E-05
Manganese	1.2E+02	mg/kg	3.2E+00	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	3.7E-02	1.1E-02
Mercury	2.2E-02	mg/kg	6.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.2E-04	6.2E-05
Mercury (methyl)	2.2E-02	mg/kg	6.2E-04	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	4.1E-02	2.5E-02
Molybdenum	1.4E-01	mg/kg	3.9E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	2.1E-02	2.1E-03
Nickel	2.8E-01	mg/kg	7.8E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	3.1E-04	1.2E-04
Selenium	1.2E-01	mg/kg	3.5E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.7E-02	1.0E-02
Silver	2.2E-01	mg/kg	6.0E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.7E-04	2.7E-05
Thallium	9.9E-03	mg/kg	2.7E-04	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	2.0E-03	2.0E-04
Vanadium	1.7E-01	mg/kg	4.6E-03	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	1.1E-02	2.2E-03
Zinc	2.3E+01	mg/kg	6.3E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	3.2E-03	1.6E-03
Toxicity Equivalency - Mammals	3.1E-06	mg/kg	8.7E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	8.7E-02	8.7E-03
Toxicity Equivalency (PCB) - Mammals	1.2E-06	mg/kg	3.4E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	3.4E-02	3.4E-03
							HAZARD INDICES:	6.1E-01	1.5E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-13.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.4E-03	mg/kg	2.2E-04	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	4.3E-06	8.6E-07
2-Methylnaphthalene	5.5E-03	mg/kg	8.8E-04	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	2.9E-05	2.9E-06
Acenaphthene	4.0E-03	mg/kg	6.4E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.8E-05	1.8E-06
Acenaphthylene	3.9E-03	mg/kg	6.1E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.8E-05	1.8E-06
Anthracene	4.6E-03	mg/kg	7.3E-04	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	3.6E-06	3.6E-07
Benzo(a)anthracene	1.7E-03	mg/kg	2.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.8E-04	2.8E-05
Benzo(a)pyrene	1.1E-03	mg/kg	1.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.8E-04	1.8E-05
Benzo(b)fluoranthene	1.5E-03	mg/kg	2.3E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.3E-04	2.3E-05
Benzo(g,h,i)perylene	9.9E-04	mg/kg	1.6E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.6E-04	1.6E-05
Benzo(k)fluoranthene	1.4E-03	mg/kg	2.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.2E-04	2.2E-05
Chrysene	3.2E-03	mg/kg	5.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.0E-04	5.0E-05
Dibenzo(a,h)anthracene	3.9E-04	mg/kg	6.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.2E-05	6.2E-06
Dibenzofuran	3.6E-03	mg/kg	5.6E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	2.3E-05	2.3E-06
Fluoranthene	1.3E-02	mg/kg	2.1E-03	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	1.7E-05	8.3E-06
Fluorene	6.1E-03	mg/kg	9.6E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	3.9E-05	3.9E-06
Naphthalene	2.3E-03	mg/kg	3.7E-04	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.2E-05	1.2E-06
Phenanthrene	1.7E-02	mg/kg	2.7E-03	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	1.8E-04	1.8E-05
Pyrene	5.8E-03	mg/kg	9.1E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.2E-05	7.3E-06
4,4'-DDD	1.7E-02	mg/kg	2.8E-03	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	3.5E-03	6.9E-04
4,4'-DDE	4.3E-02	mg/kg	6.8E-03	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	8.5E-03	1.7E-03
4,4'-DDT	6.3E-03	mg/kg	9.9E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.2E-03	2.5E-04
alpha-Chlordane	2.1E-02	mg/kg	3.3E-03	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	7.2E-04	3.6E-04
Aroclor, Total	2.6E-01	mg/kg	4.1E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**2.7E+00**	2.7E-01
Aroclor-1254	2.0E-01	mg/kg	3.2E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**2.1E+00**	2.1E-01
Aroclor-1268	5.5E-02	mg/kg	8.7E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.8E-01	5.8E-02
Dieldrin	4.2E-03	mg/kg	6.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.4E-02	4.4E-03
gamma-BHC	8.1E-04	mg/kg	1.3E-04	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	9.3E-03	9.3E-04
gamma-Chlordane	1.1E-02	mg/kg	1.8E-03	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.9E-04	1.9E-04
Heptachlor Epoxide	8.1E-04	mg/kg	1.3E-04	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	1.0E-03	7.3E-04
Technical Chlordane	2.8E-01	mg/kg	4.5E-02	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	9.8E-03	4.9E-03
Aluminum	3.0E+01	mg/kg	4.8E+00	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	**2.5E+00**	2.5E-01
Antimony	1.1E-03	mg/kg	1.7E-04	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	6.4E-03	6.4E-04
Barium	9.1E-01	mg/kg	1.4E-01	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	1.9E-03	9.0E-04
Beryllium	5.2E-03	mg/kg	8.2E-04	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	6.8E-04	6.8E-05
Cadmium	2.9E-02	mg/kg	4.6E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.6E-03	4.6E-04
Chromium	1.2E-01	mg/kg	1.9E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	1.3E-05	1.3E-06
Cobalt	7.9E-02	mg/kg	1.3E-02	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	1.7E-01	1.7E-02
Copper	1.0E+00	mg/kg	1.6E-01	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	1.4E-02	1.1E-02
Lead	1.2E-02	mg/kg	1.9E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.5E-05	5.1E-06
Manganese	6.2E+00	mg/kg	9.8E-01	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	1.1E-02	3.5E-03
Mercury	1.9E-01	mg/kg	3.0E-02	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.0E-02	3.0E-03
Mercury (methyl)	1.9E-01	mg/kg	3.1E-02	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	**2.0E+00**	**1.2E+00**
Nickel	7.1E-02	mg/kg	1.1E-02	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	4.5E-04	1.8E-04
Silver	3.1E-02	mg/kg	4.9E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.2E-04	2.2E-05
Thallium	1.9E-03	mg/kg	3.1E-04	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	2.2E-03	2.2E-04
Vanadium	1.0E-01	mg/kg	1.6E-02	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	3.8E-02	7.6E-03

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TABLE K-13.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Zinc	1.6E+01	mg/kg	2.6E+00	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.3E-02	6.6E-03
Toxicity Equivalency - Mammals	2.1E-06	mg/kg	3.3E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	3.3E-01	3.3E-02
Toxicity Equivalency (PCB) - Mammals	1.2E-05	mg/kg	1.8E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**1.8E+00**	1.8E-01
							HAZARD INDICES:	1.3E+01	2.3E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

TABLE K-13.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 1.5E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		5.2E-02	-	8.1E-02	2.7E+00	***2.9E+00***	***19%***
Aluminum	3.7E-03			1.3E-02	2.5E+00	***2.5E+00***	***17%***
Aroclor-1254		3.7E-02	-	7.0E-02	2.1E+00	***2.2E+00***	***15%***
Mercury (methyl)		6.3E-05	-	4.1E-02	2.0E+00	***2.1E+00***	***14%***
Toxicity Equivalency (PCB) - Mammals		9.3E-02	-	3.4E-02	1.8E+00	***2.0E+00***	***13%***
Cobalt	1.3E-04	4.0E-01	-	8.8E-02	1.7E-01	6.5E-01	4%
Aroclor-1268		3.4E-02	-	1.2E-02	5.8E-01	6.3E-01	4%
Toxicity Equivalency - Mammals	4.6E-04	1.3E-01	-	8.7E-02	3.3E-01	5.5E-01	4%
Arsenic		3.0E-01	-			3.0E-01	2%
Molybdenum		2.5E-01	-	2.1E-02		2.7E-01	2%
Antimony		1.0E-01	-	1.5E-02	6.4E-03	1.3E-01	1%
Copper	3.7E-05	2.3E-02	-	6.3E-02	1.4E-02	1.0E-01	1%
Vanadium				1.1E-02	3.8E-02	4.9E-02	0%
Manganese	1.2E-04			3.7E-02	1.1E-02	4.8E-02	0%
Dieldrin		6.3E-04	-		4.4E-02	4.5E-02	0%
Selenium	3.5E-05	2.1E-02	-	1.7E-02		3.9E-02	0%
Mercury		7.8E-04	-	6.2E-04	3.0E-02	3.1E-02	0%
Zinc	8.4E-06	4.2E-03	-	3.2E-03	1.3E-02	2.1E-02	0%
Barium		6.7E-03	-	9.5E-03	1.9E-03	1.8E-02	0%
Thallium	4.3E-06	9.8E-03	-	2.0E-03	2.2E-03	1.4E-02	0%
Technical Chlordane		3.3E-04	-	1.1E-04	9.8E-03	1.0E-02	0%
Cadmium		3.0E-03	-	2.4E-03	4.6E-03	1.0E-02	0%
gamma-BHC					9.3E-03	9.3E-03	0%
4,4'-DDE		2.8E-05	-	1.5E-04	8.5E-03	8.7E-03	0%
Chrysene		6.7E-03	-		5.0E-04	7.2E-03	0%
Aroclor-1260		6.2E-03	-			6.2E-03	0%
Benzo(b)fluoranthene		5.6E-03	-		2.3E-04	5.9E-03	0%
Benzo(a)anthracene		5.5E-03	-		2.8E-04	5.8E-03	0%
Benzo(k)fluoranthene		5.2E-03	-		2.2E-04	5.4E-03	0%
Lead	1.8E-06	5.3E-03	-	1.1E-04	1.5E-05	5.4E-03	0%
Benzo(a)pyrene		5.2E-03	-		1.8E-04	5.4E-03	0%
Indeno(1,2,3-cd)pyrene		3.8E-03	-			3.8E-03	0%
4,4'-DDD		2.3E-05	-		3.5E-03	3.5E-03	0%
Benzo(g,h,i)perylene		3.2E-03	-		1.6E-04	3.3E-03	0%
Dibenzo(a,h)anthracene		2.9E-03	-		6.2E-05	2.9E-03	0%
4,4'-DDT					1.2E-03	1.2E-03	0%
Heptachlor epoxide					1.0E-03	1.0E-03	0%
Silver		4.3E-04	-	2.7E-04	2.2E-04	9.2E-04	0%
Nickel	6.3E-06			3.1E-04	4.5E-04	7.7E-04	0%
alpha-Chlordane		4.9E-06	-	1.7E-06	7.2E-04	7.3E-04	0%
Phenanthrene		5.1E-04	-		1.8E-04	6.9E-04	0%
Beryllium	3.7E-06				6.8E-04	6.9E-04	0%
gamma-Chlordane		3.9E-06	-	5.5E-07	3.9E-04	3.9E-04	0%
Endrin		2.8E-04	-			2.8E-04	0%
Chromium	1.4E-07	2.5E-04	-	4.2E-06	1.3E-05	2.7E-04	0%

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TABLE K-13.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 1.5E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
bis(2-Ethylhexyl)phthalate		1.9E-04	-			1.9E-04	0%
Pyrene		1.4E-04	-		1.2E-05	1.5E-04	0%
Fluoranthene		9.8E-05	-		1.7E-05	1.2E-04	0%
Fluorene		7.0E-05	-		3.9E-05	1.1E-04	0%
Acenaphthene		5.1E-05	-		1.8E-05	6.9E-05	0%
Dibenzofuran		4.3E-05	-		2.3E-05	6.6E-05	0%
2-Methylnaphthalene		9.3E-06	-		2.9E-05	3.9E-05	0%
Acenaphthylene		2.1E-05	-		1.8E-05	3.8E-05	0%
Endosulfan sulfate				2.5E-05		2.5E-05	0%
Carbazole		2.5E-05	-			2.5E-05	0%
Naphthalene		1.2E-05	-		1.2E-05	2.4E-05	0%
Anthracene		1.7E-05	-		3.6E-06	2.1E-05	0%
Di-n-Butylphthalate		1.8E-05	-			1.8E-05	0%
1,1'-Biphenyl					4.3E-06	4.3E-06	0%
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**4.6E-03**	**1.5E+00**	**-**	**6.1E-01**	**1.3E+01**	**1.5E+01**	
PERCENTAGE OF TOTAL RISK	**0%**	**10%**		**4%**	**85%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-13.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 2.6E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		3.8E-05	-	2.5E-02	1.2E+00	***1.3E+00***	***48%***
Aroclor, Total		5.2E-03	-	8.1E-03	2.7E-01	2.9E-01	***11%***
Aluminum	3.7E-04			1.3E-03	2.5E-01	2.5E-01	9%
Aroclor-1254		3.7E-03	-	7.0E-03	2.1E-01	2.2E-01	8%
Toxicity Equivalency (PCB) - Mammals		9.3E-03	-	3.4E-03	1.8E-01	2.0E-01	7%
Copper	2.9E-05	1.8E-02	-	4.9E-02	1.1E-02	7.8E-02	3%
Cobalt	1.3E-05	4.0E-02	-	8.8E-03	1.7E-02	6.5E-02	2%
Aroclor-1268		3.4E-03	-	1.2E-03	5.8E-02	6.3E-02	2%
Toxicity Equivalency - Mammals	4.6E-05	1.3E-02	-	8.7E-03	3.3E-02	5.5E-02	2%
Arsenic		3.0E-02	-			3.0E-02	1%
Molybdenum		2.5E-02	-	2.1E-03		2.7E-02	1%
Selenium	2.1E-05	1.3E-02	-	1.0E-02		2.3E-02	1%
Manganese	3.7E-05			1.1E-02	3.5E-03	1.5E-02	1%
Antimony		1.0E-02	-	1.5E-03	6.4E-04	1.3E-02	0%
Zinc	4.2E-06	2.1E-03	-	1.6E-03	6.6E-03	1.0E-02	0%
Vanadium				2.2E-03	7.6E-03	9.8E-03	0%
Barium		3.1E-03	-	4.4E-03	9.0E-04	8.5E-03	0%
Technical Chlordane		1.6E-04	-	5.5E-05	4.9E-03	5.1E-03	0%
Dieldrin		6.3E-05	-		4.4E-03	4.5E-03	0%
Mercury		7.8E-05	-	6.2E-05	3.0E-03	3.1E-03	0%
Lead	6.2E-07	1.8E-03	-	3.8E-05	5.1E-06	1.8E-03	0%
4,4'-DDE		5.6E-06	-	3.0E-05	1.7E-03	1.7E-03	0%
Thallium	4.3E-07	9.8E-04	-	2.0E-04	2.2E-04	1.4E-03	0%
Cadmium		3.0E-04	-	2.4E-04	4.6E-04	1.0E-03	0%
gamma-BHC					9.3E-04	9.3E-04	0%
Heptachlor epoxide					7.3E-04	7.3E-04	0%
Chrysene		6.7E-04	-		5.0E-05	7.2E-04	0%
4,4'-DDD		4.5E-06	-		6.9E-04	6.9E-04	0%
Aroclor-1260		6.2E-04	-			6.2E-04	0%
Benzo(b)fluoranthene		5.6E-04	-		2.3E-05	5.9E-04	0%
Benzo(a)anthracene		5.5E-04	-		2.8E-05	5.8E-04	0%
Benzo(k)fluoranthene		5.2E-04	-		2.2E-05	5.4E-04	0%
Benzo(a)pyrene		5.2E-04	-		1.8E-05	5.4E-04	0%
Indeno(1,2,3-cd)pyrene		3.8E-04	-			3.8E-04	0%
alpha-Chlordane		2.5E-06	-	8.5E-07	3.6E-04	3.7E-04	0%
Benzo(g,h,i)perylene		3.2E-04	-		1.6E-05	3.3E-04	0%
Nickel	2.5E-06			1.2E-04	1.8E-04	3.0E-04	0%
Dibenzo(a,h)anthracene		2.9E-04	-		6.2E-06	2.9E-04	0%
4,4'-DDT					2.5E-04	2.5E-04	0%
gamma-Chlordane		1.9E-06	-	2.7E-07	1.9E-04	2.0E-04	0%
Endrin		1.4E-04	-			1.4E-04	0%
Silver		4.3E-05	-	2.7E-05	2.2E-05	9.2E-05	0%
Pyrene		8.3E-05	-		7.3E-06	9.0E-05	0%
Phenanthrene		5.1E-05	-		1.8E-05	6.9E-05	0%
Beryllium	3.7E-07				6.8E-05	6.9E-05	0%

US EPA ARCHIVE DOCUMENT

TABLE K-13.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: GREYSTONE MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 2.6E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Fluoranthene		4.9E-05	-		8.3E-06	5.8E-05	0%
Chromium	1.4E-08	2.5E-05	-	4.2E-07	1.3E-06	2.7E-05	0%
bis(2-Ethylhexyl)phthalate		1.9E-05	-			1.9E-05	0%
Fluorene		7.0E-06	-		3.9E-06	1.1E-05	0%
Endosulfan sulfate				7.5E-06		7.5E-06	0%
Acenaphthene		5.1E-06	-		1.8E-06	6.9E-06	0%
Dibenzofuran		4.3E-06	-		2.3E-06	6.6E-06	0%
Di-n-Butylphthalate		4.4E-06	-			4.4E-06	0%
2-Methylnaphthalene		9.3E-07	-		2.9E-06	3.9E-06	0%
Acenaphthylene		2.1E-06	-		1.8E-06	3.8E-06	0%
Carbazole		2.5E-06	-			2.5E-06	0%
Naphthalene		1.2E-06	-		1.2E-06	2.4E-06	0%
Anthracene		1.7E-06	-		3.6E-07	2.1E-06	0%
1,1'-Biphenyl					8.6E-07	8.6E-07	0%
Pentachlorophenol							
Aroclor-1248							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endosulfan II							
Endrin aldehyde							
Heptachlor							
4-Methylphenol							
2,4,5-Trichlorophenol							
Methoxychlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**5.3E-04**	**1.8E-01**	**-**	**1.5E-01**	**2.3E+00**	**2.6E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**7%**		**6%**	**87%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-14.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.0E-03	mg/L	6.3E-06	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	3.4E-07	3.4E-08
alpha-Chlordane	6.9E-07	mg/L	4.3E-09	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	9.5E-10	4.7E-10
Endosulfan Sulfate	5.9E-05	mg/L	3.7E-07	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	6.6E-07	2.0E-07
gamma-Chlordane	2.5E-05	mg/L	1.6E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.4E-08	1.7E-08
Aluminum	6.5E-01	mg/L	4.1E-03	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	2.1E-03	2.1E-04
Beryllium	5.0E-05	mg/L	3.1E-07	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	2.6E-07	2.6E-08
Chromium	5.1E-03	mg/L	3.2E-05	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.2E-08	2.2E-09
Cobalt	6.0E-04	mg/L	3.8E-06	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	5.0E-05	5.0E-06
Copper	1.3E-02	mg/L	8.4E-05	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	7.2E-06	5.6E-06
Lead	2.1E-02	mg/L	1.3E-04	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.0E-06	3.5E-07
Manganese	4.0E-01	mg/L	2.5E-03	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	2.9E-05	8.9E-06
Nickel	4.9E-03	mg/L	3.1E-05	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	1.2E-06	4.9E-07
Selenium	2.4E-03	mg/L	1.5E-05	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	7.5E-05	4.6E-05
Silver	8.3E-04	mg/L	5.2E-06	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.4E-07	2.4E-08
Thallium	3.7E-03	mg/L	2.3E-05	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.7E-04	1.7E-05
Zinc	6.5E-02	mg/L	4.1E-04	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	2.1E-06	1.0E-06
Nitrogen, Ammonia	2.4E-01	mg/L	1.5E-03	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Mammals	1.1E-06	mg/L	7.1E-09	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	7.1E-03	7.1E-04
							HAZARD INDICES:	9.5E-03	1.0E-03

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-14.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.4E-01	mg/kg	3.9E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.3E-06	1.3E-07
Acenaphthene	1.2E+00	mg/kg	3.5E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	9.9E-06	9.9E-07
Acenaphthylene	9.7E-01	mg/kg	2.8E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	8.0E-06	8.0E-07
Anthracene	1.2E+00	mg/kg	3.6E-04	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	1.8E-06	1.8E-07
Benzo(a)anthracene	2.2E+00	mg/kg	6.4E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.4E-04	6.4E-05
Benzo(a)pyrene	2.3E+00	mg/kg	6.7E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.7E-04	6.7E-05
Benzo(b)fluoranthene	2.8E+00	mg/kg	8.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.0E-04	8.0E-05
Benzo(g,h,i)perylene	2.0E+00	mg/kg	5.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.8E-04	5.8E-05
Benzo(k)fluoranthene	2.6E+00	mg/kg	7.4E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.4E-04	7.4E-05
bis(2-Ethylhexyl)phthalate	2.3E+00	mg/kg	6.6E-04	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	3.6E-05	3.6E-06
Carbazole	1.5E+00	mg/kg	4.4E-04	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	4.4E-06	4.4E-07
Chrysene	3.0E+00	mg/kg	8.6E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.6E-04	8.6E-05
Dibenzo(a,h)anthracene	1.4E+00	mg/kg	4.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.1E-04	4.1E-05
Dibenzofuran	6.4E-01	mg/kg	1.9E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	7.4E-06	7.4E-07
Di-n-Butylphthalate	6.1E-01	mg/kg	1.8E-04	mg/kg-d	1.0E+02	4.0E+02	mg/kg-d	1.8E-06	4.4E-07
Fluoranthene	5.2E+00	mg/kg	1.5E-03	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	1.2E-05	6.0E-0
Fluorene	9.3E-01	mg/kg	2.7E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.1E-05	1.1E-06
Indeno(1,2,3-cd)pyrene	1.9E+00	mg/kg	5.6E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.6E-04	5.6E-05
Naphthalene	1.8E-01	mg/kg	5.2E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.7E-06	1.7E-07
Phenanthrene	2.9E+00	mg/kg	8.4E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	5.6E-05	5.6E-06
Pyrene	4.4E+00	mg/kg	1.3E-03	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.7E-05	1.0E-05
4,4'-DDD	6.0E-03	mg/kg	1.7E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.2E-06	4.4E-07
4,4'-DDE	1.6E-02	mg/kg	4.6E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	5.8E-06	1.2E-06
alpha-Chlordane	1.1E-02	mg/kg	3.3E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	7.1E-07	3.6E-07
Aroclor, Total	1.5E+00	mg/kg	4.4E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	3.0E-02	3.0E-03
Aroclor-1248	1.4E-01	mg/kg	4.0E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.7E-03	2.7E-04
Aroclor-1254	1.5E+00	mg/kg	4.4E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.9E-02	2.9E-03
Aroclor-1260	2.0E-01	mg/kg	5.7E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	3.8E-03	3.8E-04
Aroclor-1268	7.9E-02	mg/kg	2.3E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.5E-03	1.5E-04
Dieldrin	9.0E-03	mg/kg	2.6E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.7E-04	1.7E-05
Endosulfan II	3.7E-02	mg/kg	1.1E-05	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	1.9E-05	5.7E-06
Endosulfan sulfate	2.7E-03	mg/kg	7.7E-07	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	1.3E-06	4.0E-07
Endrin	3.2E-03	mg/kg	9.2E-07	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	3.7E-05	1.8E-05
gamma-Chlordane	9.7E-03	mg/kg	2.8E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	6.1E-07	3.1E-07
Methoxychlor	1.1E-02	mg/kg	3.1E-06	mg/kg-d	5.0E+00	3.6E+01	mg/kg-d	6.3E-07	8.8E-08
Technical Chlordane	5.2E-01	mg/kg	1.5E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.3E-05	1.6E-05
Antimony	2.3E+00	mg/kg	6.6E-04	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	2.5E-02	2.5E-03
Arsenic	5.8E+00	mg/kg	1.7E-03	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	3.5E-02	3.5E-03
Barium	1.4E+02	mg/kg	4.0E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	5.3E-04	2.5E-04
Cadmium	1.2E+00	mg/kg	3.5E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.5E-04	3.5E-05
Chromium	1.4E+02	mg/kg	4.1E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.8E-05	2.8E-06
Cobalt	7.1E+00	mg/kg	2.1E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	2.7E-02	2.7E-03
Copper	1.2E+02	mg/kg	3.4E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	2.9E-03	2.3E-03
Cyanide	2.4E+00	mg/kg	6.9E-04	mg/kg-d	4.8E-01	4.8E+00	mg/kg-d	1.4E-03	1.4E-04
Lead	3.3E+02	mg/kg	9.5E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	7.5E-04	2.5E-04
Mercury	4.7E-01	mg/kg	1.4E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.3E-04	1.3E-05

US EPA ARCHIVE DOCUMENT

TABLE K-14.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Mercury (methyl)	8.0E-04	mg/kg	2.3E-07	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	1.6E-05	9.4E-06
Molybdenum	1.3E+01	mg/kg	3.8E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	2.0E-02	2.0E-03
Selenium	1.1E+00	mg/kg	3.1E-04	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.5E-03	9.3E-04
Silver	2.8E+00	mg/kg	8.1E-04	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	3.6E-05	3.6E-06
Thallium	6.8E+00	mg/kg	2.0E-03	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.4E-02	1.4E-03
Zinc	3.5E+02	mg/kg	1.0E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	5.2E-04	2.6E-04
Toxicity Equivalency - Mammals	5.8E-03	mg/kg	1.7E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**1.7E+00**	1.7E-01
icity Equivalency (PCB) - Mamm	1.1E-07	mg/kg	3.2E-11	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	3.2E-05	3.2E-06
						HAZARD INDICES:		**1.9E+00**	1.9E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-14.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDD	3.7E-04	mg/kg	8.0E-07	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.0E-06	2.0E-07
4,4'-DDE	3.2E-03	mg/kg	6.9E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	8.7E-06	1.7E-06
alpha-Chlordane	3.0E-04	mg/kg	6.5E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.4E-07	7.1E-08
Aroclor, Total	7.6E-02	mg/kg	1.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.1E-02	1.1E-03
Aroclor-1254	7.0E-02	mg/kg	1.5E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.0E-02	1.0E-03
Aroclor-1268	6.0E-03	mg/kg	1.3E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	8.6E-04	8.6E-05
Dieldrin	4.7E-04	mg/kg	1.0E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	6.8E-05	6.8E-06
Technical Chlordane	1.6E-02	mg/kg	3.5E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	7.8E-06	3.9E-06
Aluminum	1.6E+00	mg/kg	3.4E-03	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	1.8E-03	1.8E-04
Antimony	1.7E-02	mg/kg	3.6E-05	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	1.4E-03	1.4E-04
Barium	2.1E+01	mg/kg	4.5E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	6.0E-04	2.8E-04
Cadmium	9.2E-02	mg/kg	2.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.0E-04	2.0E-05
Chromium	2.8E-01	mg/kg	6.1E-04	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	4.1E-07	4.1E-08
Cobalt	1.7E-01	mg/kg	3.7E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	4.9E-03	4.9E-04
Copper	3.0E+01	mg/kg	6.5E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	5.6E-03	4.3E-03
Lead	5.9E-01	mg/kg	1.3E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.0E-05	3.4E-0
Manganese	7.2E+01	mg/kg	1.5E-01	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	1.8E-03	5.4E-04
Mercury	2.5E-02	mg/kg	5.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.3E-05	5.3E-06
Mercury (methyl)	2.3E-02	mg/kg	4.9E-05	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	3.2E-03	2.0E-03
Molybdenum	1.3E-01	mg/kg	2.8E-04	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	1.4E-03	1.4E-04
Nickel	3.2E-01	mg/kg	6.8E-04	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	2.7E-05	1.1E-05
Selenium	1.3E-01	mg/kg	2.7E-04	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.4E-03	8.2E-04
Silver	2.1E-01	mg/kg	4.5E-04	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.0E-05	2.0E-06
Thallium	8.9E-03	mg/kg	1.9E-05	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.4E-04	1.4E-05
Vanadium	2.2E-01	mg/kg	4.7E-04	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	1.1E-03	2.3E-04
Zinc	2.1E+01	mg/kg	4.5E-02	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	2.3E-04	1.2E-04
Toxicity Equivalency - Mammals	1.8E-04	mg/kg	3.9E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	3.9E-01	3.9E-02
							HAZARD INDICES:	4.3E-01	5.0E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-14.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	9.9E-04	mg/kg	1.2E-05	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	2.4E-07	4.8E-08
2-Methylnaphthalene	3.8E-03	mg/kg	4.7E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.6E-06	1.6E-07
Acenaphthene	3.5E-03	mg/kg	4.3E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.2E-06	1.2E-07
Acenaphthylene	2.2E-03	mg/kg	2.6E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	7.6E-07	7.6E-08
Anthracene	2.7E-03	mg/kg	3.3E-05	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	1.7E-07	1.7E-08
Benzo(a)anthracene	1.3E-03	mg/kg	1.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.6E-05	1.6E-06
Benzo(a)pyrene	9.5E-04	mg/kg	1.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.2E-05	1.2E-06
Benzo(b)fluoranthene	1.2E-03	mg/kg	1.5E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.5E-05	1.5E-06
Benzo(g,h,i)perylene	6.3E-04	mg/kg	7.8E-06	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.8E-06	7.8E-07
Benzo(k)fluoranthene	1.1E-03	mg/kg	1.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.3E-05	1.3E-06
Chrysene	1.9E-03	mg/kg	2.4E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.4E-05	2.4E-06
Dibenzo(a,h)anthracene	2.7E-04	mg/kg	3.3E-06	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.3E-06	3.3E-07
Dibenzofuran	2.5E-03	mg/kg	3.0E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.2E-06	1.2E-07
Fluoranthene	8.3E-03	mg/kg	1.0E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	8.1E-07	4.1E-07
Fluorene	4.1E-03	mg/kg	5.0E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	2.0E-06	2.0E-07
Indeno(1,2,3-cd)pyrene	7.9E-04	mg/kg	9.8E-06	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	9.8E-06	9.8E-07
Naphthalene	2.8E-03	mg/kg	3.5E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.2E-06	1.2E-07
Phenanthrene	9.6E-03	mg/kg	1.2E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	7.9E-06	7.9E-07
Pyrene	2.3E-03	mg/kg	2.8E-05	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	3.8E-07	2.3E-07
4,4'-DDD	1.3E-02	mg/kg	1.6E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.9E-04	3.9E-05
4,4'-DDE	2.9E-02	mg/kg	3.5E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	4.4E-04	8.8E-05
4,4'-DDT	6.9E-03	mg/kg	8.4E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.1E-04	2.1E-05
alpha-Chlordane	1.7E-02	mg/kg	2.1E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	4.5E-05	2.3E-05
Aroclor, Total	1.6E+00	mg/kg	2.0E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**1.3E+00**	1.3E-01
Aroclor-1254	1.6E+00	mg/kg	1.9E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**1.3E+00**	1.3E-01
Aroclor-1268	2.9E-02	mg/kg	3.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.4E-02	2.4E-03
Dieldrin	5.4E-03	mg/kg	6.6E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.4E-03	4.4E-04
gamma-BHC	1.9E-04	mg/kg	2.4E-06	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	1.7E-04	1.7E-05
gamma-Chlordane	8.9E-03	mg/kg	1.1E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	2.4E-05	1.2E-05
Heptachlor Epoxide	6.1E-04	mg/kg	7.5E-06	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	6.0E-05	4.3E-05
Technical Chlordane	3.5E-01	mg/kg	4.3E-03	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	9.3E-04	4.7E-04
Aluminum	8.0E+00	mg/kg	9.9E-02	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	5.1E-02	5.1E-03
Barium	7.4E-01	mg/kg	9.2E-03	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	1.2E-04	5.7E-05
Cadmium	2.4E-02	mg/kg	3.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.0E-04	3.0E-05
Chromium	1.1E-01	mg/kg	1.4E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	9.4E-07	9.4E-08
Cobalt	8.9E-02	mg/kg	1.1E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	1.4E-02	1.4E-03
Copper	8.7E-01	mg/kg	1.1E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	9.2E-04	7.1E-04
Lead	1.6E-01	mg/kg	1.9E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.5E-05	5.1E-06
Manganese	6.8E+00	mg/kg	8.3E-02	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	9.5E-04	2.9E-04
Mercury	1.4E-01	mg/kg	1.7E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.7E-03	1.7E-04
Mercury (methyl)	1.5E-01	mg/kg	1.8E-03	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	1.2E-01	7.3E-02
Molybdenum	9.4E-02	mg/kg	1.2E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	6.1E-03	6.1E-04
Nickel	1.5E-01	mg/kg	1.8E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	7.2E-05	2.9E-05
Selenium	2.8E-01	mg/kg	3.5E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.8E-02	1.1E-02
Vanadium	9.7E-02	mg/kg	1.2E-03	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	2.8E-03	5.7E-04
Zinc	2.1E+01	mg/kg	2.6E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.3E-03	6.6E-04

US EPA ARCHIVE DOCUMENT

TABLE K-14.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Mammals	3.3E-04	mg/kg	4.1E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**4.1E+00**	4.1E-01
Toxicity Equivalency (PCB) - Mammals	4.9E-05	mg/kg	6.0E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	6.0E-01	6.0E-02
							HAZARD INDICES:	**7.6E+00**	8.3E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-14.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 9.9E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals	7.1E-03	1.7E+00	-	3.9E-01	4.1E+00	***6.2E+00***	***62%***
Aroclor, Total		3.0E-02	-	1.1E-02	1.3E+00	***1.4E+00***	***14%***
Aroclor-1254		2.9E-02	-	1.0E-02	1.3E+00	***1.3E+00***	***14%***
Toxicity Equivalency (PCB) - Mammals		3.2E-05	-		6.0E-01	6.0E-01	6%
Mercury (methyl)		1.6E-05	-	3.2E-03	1.2E-01	1.2E-01	1%
Aluminum	2.1E-03			1.8E-03	5.1E-02	5.5E-02	1%
Cobalt	5.0E-05	2.7E-02	-	4.9E-03	1.4E-02	4.7E-02	0%
Arsenic		3.5E-02	-			3.5E-02	0%
Molybdenum		2.0E-02	-	1.4E-03	6.1E-03	2.8E-02	0%
Antimony		2.5E-02	-	1.4E-03		2.7E-02	0%
Aroclor-1268		1.5E-03	-	8.6E-04	2.4E-02	2.7E-02	0%
Selenium	7.5E-05	1.5E-03	-	1.4E-03	1.8E-02	2.0E-02	0%
Thallium	1.7E-04	1.4E-02	-	1.4E-04		1.4E-02	0%
Copper	7.2E-06	2.9E-03	-	5.6E-03	9.2E-04	9.4E-03	0%
Dieldrin		1.7E-04	-	6.8E-05	4.4E-03	4.6E-03	0%
Vanadium				1.1E-03	2.8E-03	4.0E-03	0%
Aroclor-1260		3.8E-03	-			3.8E-03	0%
Manganese	2.9E-05			1.8E-03	9.5E-04	2.7E-03	0%
Aroclor-1248		2.7E-03	-			2.7E-03	0%
Zinc	2.1E-06	5.2E-04	-	2.3E-04	1.3E-03	2.1E-03	0%
Mercury		1.3E-04	-	5.3E-05	1.7E-03	1.8E-03	0%
Cyanide		1.4E-03	-			1.4E-03	0%
Barium		5.3E-04	-	6.0E-04	1.2E-04	1.3E-03	0%
Technical Chlordane		3.3E-05	-	7.8E-06	9.3E-04	9.7E-04	0%
Chrysene		8.6E-04	-		2.4E-05	8.8E-04	0%
Cadmium		3.5E-04	-	2.0E-04	3.0E-04	8.4E-04	0%
Benzo(b)fluoranthene		8.0E-04	-		1.5E-05	8.1E-04	0%
Lead	1.0E-06	7.5E-04	-	1.0E-05	1.5E-05	7.8E-04	0%
Benzo(k)fluoranthene		7.4E-04	-		1.3E-05	7.6E-04	0%
Benzo(a)pyrene		6.7E-04	-		1.2E-05	6.8E-04	0%
Benzo(a)anthracene		6.4E-04	-		1.6E-05	6.6E-04	0%
Benzo(g,h,i)perylene		5.8E-04	-		7.8E-06	5.9E-04	0%
Indeno(1,2,3-cd)pyrene		5.6E-04	-		9.8E-06	5.7E-04	0%
4,4'-DDE		5.8E-06	-	8.7E-06	4.4E-04	4.6E-04	0%
Dibenzo(a,h)anthracene		4.1E-04	-		3.3E-06	4.1E-04	0%
4,4'-DDD		2.2E-06	-	1.0E-06	1.9E-04	2.0E-04	0%
gamma-BHC					1.7E-04	1.7E-04	0%
4,4'-DDT					1.1E-04	1.1E-04	0%
Nickel	1.2E-06			2.7E-05	7.2E-05	1.0E-04	0%
Phenanthrene		5.6E-05	-		7.9E-06	6.4E-05	0%
Heptachlor epoxide					6.0E-05	6.0E-05	0%
Silver	2.4E-07	3.6E-05	-	2.0E-05		5.7E-05	0%
alpha-Chlordane	9.5E-10	7.1E-07	-	1.4E-07	4.5E-05	4.6E-05	0%
Endrin		3.7E-05	-			3.7E-05	0%
bis(2-Ethylhexyl)phthalate	3.4E-07	3.6E-05	-			3.6E-05	0%

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TABLE K-14.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: ALLENDALE POND REACH - CT	
RECEPTOR: OTTER	
TOTAL RISK (HI):	9.9E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Chromium	2.2E-08	2.8E-05	-	4.1E-07	9.4E-07	2.9E-05	0%
gamma-Chlordane	3.4E-08	6.1E-07	-		2.4E-05	2.5E-05	0%
Endosulfan II		1.9E-05	-			1.9E-05	0%
Pyrene		1.7E-05	-		3.8E-07	1.7E-05	0%
Fluoranthene		1.2E-05	-		8.1E-07	1.3E-05	0%
Fluorene		1.1E-05	-		2.0E-06	1.3E-05	0%
Acenaphthene		9.9E-06	-		1.2E-06	1.1E-05	0%
Acenaphthylene		8.0E-06	-		7.6E-07	8.8E-06	0%
Dibenzofuran		7.4E-06	-		1.2E-06	8.6E-06	0%
Carbazole		4.4E-06	-			4.4E-06	0%
Naphthalene		1.7E-06	-		1.2E-06	2.9E-06	0%
2-Methylnaphthalene		1.3E-06	-		1.6E-06	2.9E-06	0%
Endosulfan sulfate	6.6E-07	1.3E-06	-			2.0E-06	0%
Anthracene		1.8E-06	-		1.7E-07	2.0E-06	0%
Di-n-Butylphthalate		1.8E-06	-			1.8E-06	0%
Methoxychlor		6.3E-07	-			6.3E-07	0%
Beryllium	2.6E-07					2.6E-07	0%
1,1'-Biphenyl					2.4E-07	2.4E-07	0%
Pentachlorophenol							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Heptachlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**9.5E-03**	**1.9E+00**	**-**	**4.3E-01**	**7.6E+00**	**9.9E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**19%**		**4%**	**77%**	**100%**	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-14.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ALLENDALE POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 1.1E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals	7.1E-04	1.7E-01	-	3.9E-02	4.1E-01	6.2E-01	***58%***
Aroclor, Total		3.0E-03	-	1.1E-03	1.3E-01	1.4E-01	***13%***
Aroclor-1254		2.9E-03	-	1.0E-03	1.3E-01	1.3E-01	***12%***
Mercury (methyl)		9.4E-06	-	2.0E-03	7.3E-02	7.5E-02	7%
Toxicity Equivalency (PCB) - Mammals		3.2E-06	-		6.0E-02	6.0E-02	6%
Selenium	4.6E-05	9.3E-04	-	8.2E-04	1.1E-02	1.2E-02	1%
Copper	5.6E-06	2.3E-03	-	4.3E-03	7.1E-04	7.3E-03	1%
Aluminum	2.1E-04			1.8E-04	5.1E-03	5.5E-03	1%
Cobalt	5.0E-06	2.7E-03	-	4.9E-04	1.4E-03	4.7E-03	0%
Arsenic		3.5E-03	-			3.5E-03	0%
Molybdenum		2.0E-03	-	1.4E-04	6.1E-04	2.8E-03	0%
Antimony		2.5E-03	-	1.4E-04		2.7E-03	0%
Aroclor-1268		1.5E-04	-	8.6E-05	2.4E-03	2.7E-03	0%
Thallium	1.7E-05	1.4E-03	-	1.4E-05		1.4E-03	0%
Zinc	1.0E-06	2.6E-04	-	1.2E-04	6.6E-04	1.0E-03	0%
Manganese	8.9E-06			5.4E-04	2.9E-04	8.5E-04	0%
Vanadium				2.3E-04	5.7E-04	7.9E-04	0%
Barium		2.5E-04	-	2.8E-04	5.7E-05	5.9E-04	0%
Technical Chlordane		1.6E-05	-	3.9E-06	4.7E-04	4.9E-04	0%
Dieldrin		1.7E-05	-	6.8E-06	4.4E-04	4.6E-04	0%
Aroclor-1260		3.8E-04	-			3.8E-04	0%
Aroclor-1248		2.7E-04	-			2.7E-04	0%
Lead	3.5E-07	2.5E-04	-	3.4E-06	5.1E-06	2.6E-04	0%
Mercury		1.3E-05	-	5.3E-06	1.7E-04	1.8E-04	0%
Cyanide		1.4E-04	-			1.4E-04	0%
4,4'-DDE		1.2E-06	-	1.7E-06	8.8E-05	9.1E-05	0%
Chrysene		8.6E-05	-		2.4E-06	8.8E-05	0%
Cadmium		3.5E-05	-	2.0E-05	3.0E-05	8.4E-05	0%
Benzo(b)fluoranthene		8.0E-05	-		1.5E-06	8.1E-05	0%
Benzo(k)fluoranthene		7.4E-05	-		1.3E-06	7.6E-05	0%
Benzo(a)pyrene		6.7E-05	-		1.2E-06	6.8E-05	0%
Benzo(a)anthracene		6.4E-05	-		1.6E-06	6.6E-05	0%
Benzo(g,h,i)perylene		5.8E-05	-		7.8E-07	5.9E-05	0%
Indeno(1,2,3-cd)pyrene		5.6E-05	-		9.8E-07	5.7E-05	0%
Heptachlor epoxide					4.3E-05	4.3E-05	0%
Dibenzo(a,h)anthracene		4.1E-05	-		3.3E-07	4.1E-05	0%
Nickel	4.9E-07			1.1E-05	2.9E-05	4.0E-05	0%
4,4'-DDD		4.4E-07	-	2.0E-07	3.9E-05	3.9E-05	0%
alpha-Chlordane	4.7E-10	3.6E-07	-	7.1E-08	2.3E-05	2.3E-05	0%
4,4'-DDT					2.1E-05	2.1E-05	0%
Endrin		1.8E-05	-			1.8E-05	0%
gamma-BHC					1.7E-05	1.7E-05	0%
gamma-Chlordane	1.7E-08	3.1E-07	-		1.2E-05	1.2E-05	0%
Pyrene		1.0E-05	-		2.3E-07	1.0E-05	0%
Fluoranthene		6.0E-06	-		4.1E-07	6.4E-06	0%

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TABLE K-14.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: ALLENDALE POND REACH - CT	
RECEPTOR: OTTER	
TOTAL RISK (HI):	1.1E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Phenanthrene		5.6E-06	-		7.9E-07	6.4E-06	0%
Silver	2.4E-08	3.6E-06	-	2.0E-06		5.7E-06	0%
Endosulfan II		5.7E-06	-			5.7E-06	0%
bis(2-Ethylhexyl)phthalate	3.4E-08	3.6E-06	-			3.6E-06	0%
Chromium	2.2E-09	2.8E-06	-	4.1E-08	9.4E-08	2.9E-06	0%
Fluorene		1.1E-06	-		2.0E-07	1.3E-06	0%
Acenaphthene		9.9E-07	-		1.2E-07	1.1E-06	0%
Acenaphthylene		8.0E-07	-		7.6E-08	8.8E-07	0%
Dibenzofuran		7.4E-07	-		1.2E-07	8.6E-07	0%
Endosulfan sulfate	2.0E-07	4.0E-07	-			6.0E-07	0%
Di-n-Butylphthalate		4.4E-07	-			4.4E-07	0%
Carbazole		4.4E-07	-			4.4E-07	0%
Naphthalene		1.7E-07	-		1.2E-07	2.9E-07	0%
2-Methylnaphthalene		1.3E-07	-		1.6E-07	2.9E-07	0%
Anthracene		1.8E-07	-		1.7E-08	2.0E-07	0%
Methoxychlor		8.8E-08	-			8.8E-08	0%
1,1'-Biphenyl					4.8E-08	4.8E-08	0%
Beryllium	2.6E-08					2.6E-08	0%
Pentachlorophenol							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Heptachlor							
Phenol							
4-Nitrophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Dimethylphthalate							
N-Nitroso-di-n-propylamine							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**1.0E-03**	**1.9E-01**	**-**	**5.0E-02**	**8.3E-01**	**1.1E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**18%**		**5%**	**77%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-15.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.7E-02	mg/L	1.1E-04	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	5.8E-06	5.8E-07
alpha-Chlordane	1.9E-05	mg/L	1.2E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	2.6E-08	1.3E-08
Endosulfan Sulfate	3.2E-06	mg/L	2.0E-08	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	3.5E-08	1.1E-08
gamma-Chlordane	2.1E-05	mg/L	1.3E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	2.9E-08	1.4E-08
Aluminum	1.8E-01	mg/L	1.1E-03	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	5.8E-04	5.8E-05
Beryllium	2.0E-04	mg/L	1.3E-06	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	1.0E-06	1.0E-07
Chromium	2.3E-03	mg/L	1.4E-05	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	9.7E-09	9.7E-10
Cobalt	4.2E-04	mg/L	2.6E-06	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	3.5E-05	3.5E-06
Copper	8.7E-03	mg/L	5.5E-05	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	4.7E-06	3.6E-06
Lead	4.4E-03	mg/L	2.8E-05	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	2.2E-07	7.4E-08
Manganese	1.3E-01	mg/L	8.0E-04	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	9.1E-06	2.8E-06
Nickel	1.9E-03	mg/L	1.2E-05	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	4.7E-07	1.9E-07
Silver	5.9E-04	mg/L	3.7E-06	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	1.7E-07	1.7E-08
Thallium	2.2E-03	mg/L	1.4E-05	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.0E-04	1.0E-05
Zinc	2.8E-02	mg/L	1.8E-04	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	9.0E-07	4.5E-07
Nitrogen, Ammonia	1.4E-01	mg/L	8.8E-04	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Mammals	1.3E-07	mg/L	8.2E-10	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	8.2E-04	8.2E-05
							HAZARD INDICES:	1.6E-03	1.6E-04

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-15.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.0E-01	mg/kg	2.9E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	9.6E-07	9.6E-08
Acenaphthene	9.3E-01	mg/kg	2.7E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	7.6E-06	7.6E-07
Acenaphthylene	4.3E-01	mg/kg	1.2E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	3.5E-06	3.5E-07
Anthracene	7.9E-01	mg/kg	2.3E-04	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	1.1E-06	1.1E-07
Benzo(a)anthracene	1.4E+00	mg/kg	4.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.0E-04	4.0E-05
Benzo(a)pyrene	1.4E+00	mg/kg	4.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.0E-04	4.0E-05
Benzo(b)fluoranthene	2.1E+00	mg/kg	6.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.1E-04	6.1E-05
Benzo(g,h,i)perylene	1.3E+00	mg/kg	3.6E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.6E-04	3.6E-05
Benzo(k)fluoranthene	1.1E+00	mg/kg	3.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.2E-04	3.2E-05
bis(2-Ethylhexyl)phthalate	2.6E+00	mg/kg	7.5E-04	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	4.1E-05	4.1E-06
Carbazole	8.0E-01	mg/kg	2.3E-04	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	2.3E-06	2.3E-07
Chrysene	1.7E+00	mg/kg	4.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.8E-04	4.8E-05
Dibenzo(a,h)anthracene	7.7E-01	mg/kg	2.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.2E-04	2.2E-05
Dibenzofuran	3.1E-01	mg/kg	9.0E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	3.6E-06	3.6E-07
Di-n-Butylphthalate	9.9E-01	mg/kg	2.9E-04	mg/kg-d	1.0E+02	4.0E+02	mg/kg-d	2.9E-06	7.1E-07
Fluoranthene	2.7E+00	mg/kg	7.8E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	6.3E-06	3.1E-06
Fluorene	6.7E-01	mg/kg	1.9E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	7.8E-06	7.8E-07
Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	3.7E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.7E-04	3.7E-05
Naphthalene	1.9E-01	mg/kg	5.4E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.8E-06	1.8E-07
Phenanthrene	1.5E+00	mg/kg	4.4E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	3.0E-05	3.0E-06
Pyrene	2.4E+00	mg/kg	6.9E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	9.3E-06	5.6E-06
4,4'-DDD	9.3E-03	mg/kg	2.7E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	3.3E-06	6.7E-07
4,4'-DDE	8.3E-03	mg/kg	2.4E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	3.0E-06	6.0E-07
alpha-Chlordane	1.6E-02	mg/kg	4.5E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	9.8E-07	4.9E-07
Aroclor, Total	2.6E-01	mg/kg	7.6E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.1E-03	5.1E-04
Aroclor-1248	2.5E-02	mg/kg	7.2E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.8E-04	4.8E-05
Aroclor-1254	2.7E-01	mg/kg	7.8E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.2E-03	5.2E-04
Aroclor-1260	2.4E-02	mg/kg	7.0E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.7E-04	4.7E-05
Dieldrin	3.8E-03	mg/kg	1.1E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	7.3E-05	7.3E-06
Endosulfan II	3.8E-03	mg/kg	1.1E-06	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	1.9E-06	5.8E-07
Endosulfan sulfate	2.9E-03	mg/kg	8.3E-07	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	1.5E-06	4.4E-07
Endrin	2.6E-03	mg/kg	7.6E-07	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	3.0E-05	1.5E-05
Methoxychlor	5.3E-03	mg/kg	1.5E-06	mg/kg-d	5.0E+00	3.6E+01	mg/kg-d	3.1E-07	4.3E-08
Aroclor-1268	1.2E-01	mg/kg	3.4E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.2E-03	2.2E-04
gamma-Chlordane	8.9E-03	mg/kg	2.6E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.6E-07	2.8E-07
Technical Chlordane	1.3E+00	mg/kg	3.7E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	8.2E-05	4.1E-05
Antimony	1.3E+00	mg/kg	3.8E-04	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	1.5E-02	1.5E-03
Arsenic	5.2E+00	mg/kg	1.5E-03	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	3.1E-02	3.1E-03
Barium	1.3E+02	mg/kg	3.8E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	5.0E-04	2.4E-04
Cadmium	2.1E+00	mg/kg	6.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.2E-04	6.2E-05
Chromium	9.9E+01	mg/kg	2.9E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	1.9E-05	1.9E-06
Cobalt	7.8E+00	mg/kg	2.3E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	3.0E-02	3.0E-03
Copper	1.1E+02	mg/kg	3.2E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	2.8E-03	2.1E-03
Lead	2.4E+02	mg/kg	6.8E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	5.4E-04	1.8E-04
Mercury	2.9E-01	mg/kg	8.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.3E-05	8.3E-06
Mercury (methyl)	2.1E-03	mg/kg	6.0E-07	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	4.0E-05	2.4E-05

US EPA ARCHIVE DOCUMENT

TABLE K-15.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Molybdenum	6.5E+00	mg/kg	1.9E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	9.8E-03	9.8E-04
Selenium	9.6E-01	mg/kg	2.8E-04	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.4E-03	8.4E-04
Silver	2.9E+00	mg/kg	8.3E-04	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	3.8E-05	3.8E-06
Thallium	5.8E-01	mg/kg	1.7E-04	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.2E-03	1.2E-04
Zinc	3.9E+02	mg/kg	1.1E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	5.8E-04	2.9E-04
Toxicity Equivalency - Mammals	1.8E-03	mg/kg	5.2E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	5.2E-01	5.2E-02
Toxicity Equivalency (PCB) - Mammals	3.3E-05	mg/kg	9.6E-09	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	9.6E-03	9.6E-04
							HAZARD INDICES:	6.4E-01	6.7E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-15.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDD	2.7E-04	mg/kg	5.8E-07	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	7.3E-07	1.5E-07
4,4'-DDE	4.0E-03	mg/kg	8.7E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.1E-05	2.2E-06
alpha-Chlordane	3.2E-04	mg/kg	7.0E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.5E-07	7.6E-08
Aroclor, Total	7.7E-02	mg/kg	1.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.1E-02	1.1E-03
Aroclor-1254	7.1E-02	mg/kg	1.5E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.0E-02	1.0E-03
Aroclor-1268	5.2E-03	mg/kg	1.1E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	7.5E-04	7.5E-05
Dieldrin	4.4E-04	mg/kg	9.5E-07	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	6.3E-05	6.3E-06
Endosulfan Sulfate	5.5E-04	mg/kg	1.2E-06	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	2.1E-06	6.2E-07
gamma-Chlordane	3.6E-04	mg/kg	7.8E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.7E-07	8.6E-08
Heptachlor	2.2E-04	mg/kg	4.7E-07	mg/kg-d	1.0E-01	1.0E+00	mg/kg-d	4.7E-06	4.7E-07
Technical Chlordane	2.3E-02	mg/kg	4.9E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.1E-05	5.3E-06
Antimony	1.5E-02	mg/kg	3.1E-05	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	1.2E-03	1.2E-04
Barium	2.8E+01	mg/kg	6.1E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	8.1E-04	3.8E-04
Cadmium	8.9E-02	mg/kg	1.9E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-04	1.9E-05
Chromium	2.4E-01	mg/kg	5.3E-04	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	3.6E-07	3.6E-08
Cobalt	2.6E-01	mg/kg	5.6E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	7.5E-03	7.5E-04
Copper	3.0E+01	mg/kg	6.5E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	5.5E-03	4.3E-03
Lead	8.6E-01	mg/kg	1.9E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.5E-05	4.9E-06
Manganese	1.3E+02	mg/kg	2.7E-01	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	3.1E-03	9.5E-04
Mercury	2.0E-02	mg/kg	4.4E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.3E-05	4.3E-06
Mercury (methyl)	1.5E-02	mg/kg	3.3E-05	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	2.2E-03	1.3E-03
Molybdenum	1.2E-01	mg/kg	2.7E-04	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	1.4E-03	1.4E-04
Nickel	4.9E-01	mg/kg	1.0E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	4.2E-05	1.7E-05
Selenium	1.4E-01	mg/kg	3.0E-04	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.5E-03	9.0E-04
Silver	2.4E-01	mg/kg	5.2E-04	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.4E-05	2.4E-06
Thallium	9.6E-03	mg/kg	2.1E-05	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.5E-04	1.5E-05
Vanadium	2.7E-01	mg/kg	5.8E-04	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	1.4E-03	2.8E-04
Zinc	2.6E+01	mg/kg	5.6E-02	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	2.9E-04	1.4E-04
Toxicity Equivalency - Mammals	1.0E-04	mg/kg	2.2E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	2.2E-01	2.2E-02
Toxicity Equivalency (PCB) - Mammals	2.6E-06	mg/kg	5.7E-09	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	5.7E-03	5.7E-04
							HAZARD INDICES:	2.8E-01	3.4E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-15.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	1.2E-03	mg/kg	1.4E-05	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	2.9E-07	5.7E-08
2-Methylnaphthalene	4.2E-03	mg/kg	5.2E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.7E-06	1.7E-07
Acenaphthene	4.1E-03	mg/kg	5.0E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.4E-06	1.4E-07
Acenaphthylene	3.0E-03	mg/kg	3.7E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.0E-06	1.0E-07
Anthracene	3.5E-03	mg/kg	4.3E-05	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	2.2E-07	2.2E-08
Benzo(a)anthracene	4.5E-03	mg/kg	5.5E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.5E-05	5.5E-06
Benzo(a)pyrene	4.9E-03	mg/kg	6.0E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.0E-05	6.0E-06
Benzo(b)fluoranthene	6.7E-03	mg/kg	8.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.2E-05	8.2E-06
Benzo(g,h,i)perylene	3.8E-03	mg/kg	4.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.6E-05	4.6E-06
Benzo(k)fluoranthene	5.9E-03	mg/kg	7.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.2E-05	7.2E-06
Chrysene	8.1E-03	mg/kg	1.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.0E-04	1.0E-05
Dibenzo(a,h)anthracene	9.6E-04	mg/kg	1.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.2E-05	1.2E-06
Dibenzofuran	3.3E-03	mg/kg	4.0E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.6E-06	1.6E-07
Fluoranthene	2.2E-02	mg/kg	2.7E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	2.2E-06	1.1E-06
Fluorene	5.2E-03	mg/kg	6.3E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	2.5E-06	2.5E-07
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	5.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.3E-05	5.3E-06
Naphthalene	3.5E-03	mg/kg	4.3E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.4E-06	1.4E-07
Phenanthrene	1.5E-02	mg/kg	1.9E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	1.3E-05	1.3E-06
Pyrene	1.1E-02	mg/kg	1.3E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.7E-06	1.0E-06
4,4'-DDD	3.9E-02	mg/kg	4.8E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	5.9E-04	1.2E-04
4,4'-DDE	1.3E-01	mg/kg	1.6E-03	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.0E-03	4.0E-04
4,4'-DDT	3.7E-03	mg/kg	4.6E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	5.8E-05	1.2E-05
alpha-Chlordane	4.0E-02	mg/kg	4.9E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.1E-04	5.3E-05
Aroclor, Total	4.2E+00	mg/kg	5.2E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**3.5E+00**	3.5E-01
Aroclor-1254	4.2E+00	mg/kg	5.2E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**3.4E+00**	3.4E-01
Aroclor-1268	3.6E-02	mg/kg	4.4E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.9E-02	2.9E-03
Dieldrin	5.6E-03	mg/kg	6.8E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.6E-03	4.6E-04
gamma-BHC	2.1E-04	mg/kg	2.5E-06	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	1.8E-04	1.8E-05
gamma-Chlordane	2.9E-02	mg/kg	3.6E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	7.8E-05	3.9E-05
Heptachlor Epoxide	1.4E-03	mg/kg	1.7E-05	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	1.3E-04	9.6E-05
Technical Chlordane	1.4E+00	mg/kg	1.7E-02	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.7E-03	1.8E-03
Aluminum	4.9E+01	mg/kg	6.0E-01	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	3.1E-01	3.1E-02
Antimony	1.0E-02	mg/kg	1.2E-04	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	4.7E-03	4.7E-04
Arsenic	2.8E-02	mg/kg	3.4E-04	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	7.1E-03	7.1E-04
Barium	1.1E+00	mg/kg	1.4E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	1.8E-04	8.5E-05
Beryllium	5.8E-03	mg/kg	7.1E-05	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	5.9E-05	5.9E-06
Cadmium	1.8E-02	mg/kg	2.3E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.3E-04	2.3E-05
Chromium	2.7E-01	mg/kg	3.3E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.3E-06	2.3E-07
Cobalt	7.7E-02	mg/kg	9.5E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	1.3E-02	1.3E-03
Copper	8.4E-01	mg/kg	1.0E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	8.8E-04	6.8E-04
Lead	4.3E-01	mg/kg	5.3E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	4.2E-05	1.4E-05
Manganese	7.5E+00	mg/kg	9.2E-02	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	1.0E-03	3.2E-04
Mercury	9.8E-02	mg/kg	1.2E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.2E-03	1.2E-04
Mercury (methyl)	9.3E-02	mg/kg	1.1E-03	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	7.6E-02	4.6E-02
Molybdenum	3.6E-02	mg/kg	4.5E-04	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	2.3E-03	2.3E-04
Nickel	1.5E-01	mg/kg	1.9E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	7.6E-05	3.0E-05

US EPA ARCHIVE DOCUMENT

TABLE K-15.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Selenium	2.1E-01	mg/kg	2.6E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.3E-02	8.0E-03
Silver	1.7E-02	mg/kg	2.1E-04	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	9.3E-06	9.3E-07
Vanadium	1.3E-01	mg/kg	1.6E-03	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	3.7E-03	7.4E-04
Zinc	2.1E+01	mg/kg	2.5E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.3E-03	6.5E-04
Toxicity Equivalency - Mammals	5.6E-04	mg/kg	6.8E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**6.8E+00**	6.8E-01
Toxicity Equivalency (PCB) - Mammals	2.5E-04	mg/kg	3.0E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**3.0E+00**	3.0E-01
							HAZARD INDICES:	1.7E+01	1.8E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-15.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 1.8E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals	8.2E-04	5.2E-01	-	2.2E-01	6.8E+00	***7.6E+00***	***42%***
Aroclor, Total		5.1E-03	-	1.1E-02	3.5E+00	***3.5E+00***	***19%***
Aroclor-1254		5.2E-03	-	1.0E-02	3.4E+00	***3.5E+00***	***19%***
Toxicity Equivalency (PCB) - Mammals		9.6E-03	-	5.7E-03	3.0E+00	***3.1E+00***	***17%***
Aluminum	5.8E-04				3.1E-01	3.1E-01	2%
Mercury (methyl)		4.0E-05	-	2.2E-03	7.6E-02	7.8E-02	0%
Cobalt	3.5E-05	3.0E-02	-	7.5E-03	1.3E-02	5.0E-02	0%
Arsenic		3.1E-02	-		7.1E-03	3.9E-02	0%
Aroclor-1268		2.2E-03	-	7.5E-04	2.9E-02	3.2E-02	0%
Antimony		1.5E-02	-	1.2E-03	4.7E-03	2.1E-02	0%
Selenium		1.4E-03	-	1.5E-03	1.3E-02	1.6E-02	0%
Molybdenum		9.8E-03	-	1.4E-03	2.3E-03	1.4E-02	0%
Copper	4.7E-06	2.8E-03	-	5.5E-03	8.8E-04	9.2E-03	0%
Vanadium				1.4E-03	3.7E-03	5.1E-03	0%
Dieldrin		7.3E-05	-	6.3E-05	4.6E-03	4.7E-03	0%
Manganese	9.1E-06			3.1E-03	1.0E-03	4.1E-03	0%
Technical Chlordane		8.2E-05	-	1.1E-05	3.7E-03	3.8E-03	0%
Zinc	9.0E-07	5.8E-04	-	2.9E-04	1.3E-03	2.2E-03	0%
4,4'-DDE		3.0E-06	-	1.1E-05	2.0E-03	2.0E-03	0%
Barium		5.0E-04	-	8.1E-04	1.8E-04	1.5E-03	0%
Thallium	1.0E-04	1.2E-03	-	1.5E-04		1.4E-03	0%
Mercury		8.3E-05	-	4.3E-05	1.2E-03	1.3E-03	0%
Cadmium		6.2E-04	-	1.9E-04	2.3E-04	1.0E-03	0%
Benzo(b)fluoranthene		6.1E-04	-		8.2E-05	6.9E-04	0%
4,4'-DDD		3.3E-06	-	7.3E-07	5.9E-04	6.0E-04	0%
Lead	2.2E-07	5.4E-04	-	1.5E-05	4.2E-05	6.0E-04	0%
Chrysene		4.8E-04	-		1.0E-04	5.8E-04	0%
Aroclor-1248		4.8E-04	-			4.8E-04	0%
Aroclor-1260		4.7E-04	-			4.7E-04	0%
Benzo(a)anthracene		4.0E-04	-		5.5E-05	4.6E-04	0%
Benzo(a)pyrene		4.0E-04	-		6.0E-05	4.6E-04	0%
Indeno(1,2,3-cd)pyrene		3.7E-04	-		5.3E-05	4.2E-04	0%
Benzo(g,h,i)perylene		3.6E-04	-		4.6E-05	4.1E-04	0%
Benzo(k)fluoranthene		3.2E-04	-		7.2E-05	3.9E-04	0%
Dibenzo(a,h)anthracene		2.2E-04	-		1.2E-05	2.4E-04	0%
gamma-BHC					1.8E-04	1.8E-04	0%
Heptachlor epoxide					1.3E-04	1.3E-04	0%
Nickel	4.7E-07			4.2E-05	7.6E-05	1.2E-04	0%
alpha-Chlordane	2.6E-08	9.8E-07	-	1.5E-07	1.1E-04	1.1E-04	0%
gamma-Chlordane	2.9E-08	5.6E-07	-	1.7E-07	7.8E-05	7.9E-05	0%
Silver	1.7E-07	3.8E-05	-	2.4E-05	9.3E-06	7.1E-05	0%
Beryllium	1.0E-06				5.9E-05	6.0E-05	0%
4,4'-DDT					5.8E-05	5.8E-05	0%
bis(2-Ethylhexyl)phthalate	5.8E-06	4.1E-05	-			4.7E-05	0%
Phenanthrene		3.0E-05	-		1.3E-05	4.2E-05	0%

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TABLE K-15.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	LYMAN MILL POND REACH - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	1.8E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Endrin		3.0E-05	-			3.0E-05	0%
Chromium	9.7E-09	1.9E-05	-	3.6E-07	2.3E-06	2.2E-05	0%
Pyrene		9.3E-06	-		1.7E-06	1.1E-05	0%
Fluorene		7.8E-06	-		2.5E-06	1.0E-05	0%
Acenaphthene		7.6E-06	-		1.4E-06	9.1E-06	0%
Fluoranthene		6.3E-06	-		2.2E-06	8.4E-06	0%
Dibenzofuran		3.6E-06	-		1.6E-06	5.2E-06	0%
Heptachlor				4.7E-06		4.7E-06	0%
Acenaphthylene		3.5E-06	-		1.0E-06	4.6E-06	0%
Endosulfan sulfate	3.5E-08	1.5E-06	-	2.1E-06		3.6E-06	0%
Naphthalene		1.8E-06	-		1.4E-06	3.2E-06	0%
Di-n-Butylphthalate		2.9E-06	-			2.9E-06	0%
2-Methylnaphthalene		9.6E-07	-		1.7E-06	2.7E-06	0%
Carbazole		2.3E-06	-			2.3E-06	0%
Endosulfan II		1.9E-06	-			1.9E-06	0%
Anthracene		1.1E-06	-		2.2E-07	1.4E-06	0%
Methoxychlor		3.1E-07	-			3.1E-07	0%
1,1'-Biphenyl					2.9E-07	2.9E-07	0%
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
4-Nitrophenol							
Phenol							
Dimethylphthalate							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**1.6E-03**	**6.4E-01**	**-**	**2.8E-01**	**1.7E+01**	**1.8E+01**	
PERCENTAGE OF TOTAL RISK	**0%**	**4%**		**2%**	**95%**	**100%**	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-15.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: LYMAN MILL POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 1.9E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals	8.2E-05	5.2E-02	-	2.2E-02	6.8E-01	7.6E-01	***40%***
Aroclor, Total		5.1E-04	-	1.1E-03	3.5E-01	3.5E-01	***19%***
Aroclor-1254		5.2E-04	-	1.0E-03	3.4E-01	3.5E-01	***18%***
Toxicity Equivalency (PCB) - Mammals		9.6E-04	-	5.7E-04	3.0E-01	3.1E-01	***16%***
Mercury (methyl)		2.4E-05	-	1.3E-03	4.6E-02	4.8E-02	3%
Aluminum	5.8E-05				3.1E-02	3.1E-02	2%
Selenium		8.4E-04	-	9.0E-04	8.0E-03	9.7E-03	1%
Copper	3.6E-06	2.1E-03	-	4.3E-03	6.8E-04	7.1E-03	0%
Cobalt	3.5E-06	3.0E-03	-	7.5E-04	1.3E-03	5.0E-03	0%
Arsenic		3.1E-03	-		7.1E-04	3.9E-03	0%
Aroclor-1268		2.2E-04	-	7.5E-05	2.9E-03	3.2E-03	0%
Antimony		1.5E-03	-	1.2E-04	4.7E-04	2.1E-03	0%
Technical Chlordane		4.1E-05	-	5.3E-06	1.8E-03	1.9E-03	0%
Molybdenum		9.8E-04	-	1.4E-04	2.3E-04	1.4E-03	0%
Manganese	2.8E-06			9.5E-04	3.2E-04	1.3E-03	0%
Zinc	4.5E-07	2.9E-04	-	1.4E-04	6.5E-04	1.1E-03	0%
Vanadium				2.8E-04	7.4E-04	1.0E-03	0%
Barium		2.4E-04	-	3.8E-04	8.5E-05	7.0E-04	0%
Dieldrin		7.3E-06	-	6.3E-06	4.6E-04	4.7E-04	0%
4,4'-DDE		6.0E-07	-	2.2E-06	4.0E-04	4.1E-04	0%
Lead	7.4E-08	1.8E-04	-	4.9E-06	1.4E-05	2.0E-04	0%
Thallium	1.0E-05	1.2E-04	-	1.5E-05		1.4E-04	0%
Mercury		8.3E-06	-	4.3E-06	1.2E-04	1.3E-04	0%
4,4'-DDD		6.7E-07	-	1.5E-07	1.2E-04	1.2E-04	0%
Cadmium		6.2E-05	-	1.9E-05	2.3E-05	1.0E-04	0%
Heptachlor epoxide					9.6E-05	9.6E-05	0%
Benzo(b)fluoranthene		6.1E-05	-		8.2E-06	6.9E-05	0%
Chrysene		4.8E-05	-		1.0E-05	5.8E-05	0%
alpha-Chlordane	1.3E-08	4.9E-07	-	7.6E-08	5.3E-05	5.4E-05	0%
Aroclor-1248		4.8E-05	-			4.8E-05	0%
Nickel	1.9E-07			1.7E-05	3.0E-05	4.7E-05	0%
Aroclor-1260		4.7E-05	-			4.7E-05	0%
Benzo(a)anthracene		4.0E-05	-		5.5E-06	4.6E-05	0%
Benzo(a)pyrene		4.0E-05	-		6.0E-06	4.6E-05	0%
Indeno(1,2,3-cd)pyrene		3.7E-05	-		5.3E-06	4.2E-05	0%
Benzo(g,h,i)perylene		3.6E-05	-		4.6E-06	4.1E-05	0%
gamma-Chlordane	1.4E-08	2.8E-07	-	8.6E-08	3.9E-05	4.0E-05	0%
Benzo(k)fluoranthene		3.2E-05	-		7.2E-06	3.9E-05	0%
Dibenzo(a,h)anthracene		2.2E-05	-		1.2E-06	2.4E-05	0%
gamma-BHC					1.8E-05	1.8E-05	0%
Endrin		1.5E-05	-			1.5E-05	0%
4,4'-DDT					1.2E-05	1.2E-05	0%
Silver	1.7E-08	3.8E-06	-	2.4E-06	9.3E-07	7.1E-06	0%
Pyrene		5.6E-06	-		1.0E-06	6.6E-06	0%
Beryllium	1.0E-07				5.9E-06	6.0E-06	0%

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TABLE K-15.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	LYMAN MILL POND REACH - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	1.9E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
bis(2-Ethylhexyl)phthalate	5.8E-07	4.1E-06	-			4.7E-06	0%
Fluoranthene		3.1E-06	-		1.1E-06	4.2E-06	0%
Phenanthrene		3.0E-06	-		1.3E-06	4.2E-06	0%
Chromium	9.7E-10	1.9E-06	-	3.6E-08	2.3E-07	2.2E-06	0%
Endosulfan sulfate	1.1E-08	4.4E-07	-	6.2E-07		1.1E-06	0%
Fluorene		7.8E-07	-		2.5E-07	1.0E-06	0%
Acenaphthene		7.6E-07	-		1.4E-07	9.1E-07	0%
Di-n-Butylphthalate		7.1E-07	-			7.1E-07	0%
Endosulfan II		5.8E-07	-			5.8E-07	0%
Dibenzofuran		3.6E-07	-		1.6E-07	5.2E-07	0%
Heptachlor				4.7E-07		4.7E-07	0%
Acenaphthylene		3.5E-07	-		1.0E-07	4.6E-07	0%
Naphthalene		1.8E-07	-		1.4E-07	3.2E-07	0%
2-Methylnaphthalene		9.6E-08	-		1.7E-07	2.7E-07	0%
Carbazole		2.3E-07	-			2.3E-07	0%
Anthracene		1.1E-07	-		2.2E-08	1.4E-07	0%
1,1'-Biphenyl					5.7E-08	5.7E-08	0%
Methoxychlor		4.3E-08	-			4.3E-08	0%
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
4-Chloro-3-methylphenol							
2-Chlorophenol							
Phenol							
4-Nitrophenol							
Dimethylphthalate							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**1.6E-04**	**6.7E-02**	**-**	**3.4E-02**	**1.8E+00**	**1.9E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**4%**		**2%**	**95%**	**100%**	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

TABLE K-16.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Benzo(a)anthracene	1.5E-01	mg/kg	4.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.2E-05	4.2E-06
Benzo(a)pyrene	1.8E-01	mg/kg	5.1E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.1E-05	5.1E-06
Benzo(b)fluoranthene	3.1E-01	mg/kg	8.9E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.9E-05	8.9E-06
Benzo(g,h,i)perylene	1.1E-01	mg/kg	3.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.3E-05	3.3E-06
Benzo(k)fluoranthene	1.8E-01	mg/kg	5.1E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.1E-05	5.1E-06
bis(2-Ethylhexyl)phthalate	3.1E-01	mg/kg	8.9E-05	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	4.8E-06	4.8E-07
Carbazole	5.2E-02	mg/kg	1.5E-05	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	1.5E-07	1.5E-08
Chrysene	2.3E-01	mg/kg	6.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.6E-05	6.6E-06
Fluoranthene	3.9E-01	mg/kg	1.1E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	9.0E-07	4.5E-07
Indeno(1,2,3-cd)pyrene	1.5E-01	mg/kg	4.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.2E-05	4.2E-06
Phenanthrene	1.4E-01	mg/kg	4.1E-05	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	2.7E-06	2.7E-07
Pyrene	3.0E-01	mg/kg	8.6E-05	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.1E-06	6.9E-07
alpha-Chlordane	2.2E-03	mg/kg	6.3E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.4E-07	6.8E-08
Arsenic	7.7E-01	mg/kg	2.2E-04	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	4.7E-03	4.7E-04
Barium	2.4E+01	mg/kg	7.0E-03	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	9.4E-05	4.4E-05
Cadmium	6.8E-01	mg/kg	2.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.0E-04	2.0E-05
Chromium	1.3E+01	mg/kg	3.9E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.6E-06	2.6E-07
Cobalt	2.3E+00	mg/kg	6.7E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	8.9E-03	8.9E-04
Copper	3.0E+01	mg/kg	8.5E-03	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	7.3E-04	5.6E-04
gamma-Chlordane	2.5E-03	mg/kg	7.2E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.6E-07	7.9E-08
Lead	4.6E+01	mg/kg	1.3E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.1E-04	3.5E-05
Zinc	7.9E+01	mg/kg	2.3E-02	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.2E-04	5.8E-05
Toxicity Equivalency - Mammals	4.3E-04	mg/kg	1.3E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	1.3E-01	1.3E-02
							HAZARD INDICES:	1.4E-01	1.5E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-16.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Birds	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Toxicity Equivalency - Mammals	2.9E-04	mg/kg	6.2E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	6.2E-01	6.2E-02
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	0.0E+00	0.0E+00
Arsenic	3.2E-02	mg/kg	6.8E-05	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	1.4E-03	1.4E-04
Barium	5.3E+00	mg/kg	1.2E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	1.5E-04	7.2E-05
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	0.0E+00	0.0E+00
Cadmium	1.4E-01	mg/kg	3.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.0E-04	3.0E-05
Chromium	4.5E-02	mg/kg	9.8E-05	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	6.7E-08	6.7E-09
Cobalt	1.0E-01	mg/kg	2.2E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	2.9E-03	2.9E-04
Copper	1.9E+01	mg/kg	4.1E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	3.5E-03	2.7E-03
Lead	3.0E-01	mg/kg	6.4E-04	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	5.1E-06	1.7E-06
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	0.0E+00	0.0E+00
Mercury	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	0.0E+00	0.0E+00
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+0
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	0.0E+00	0.0E+00
Zinc	7.6E+00	mg/kg	1.6E-02	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	8.4E-05	4.2E-05
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Toxicity Equivalency (PCB) - Birds	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
xicity Equivalency (PCB) - Mamm	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	0.0E+00	0.0E+00
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	0.0E+00	0.0E+00
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDE	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Endosulfan Sulfate	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.0E+00	3.6E+01	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	2.8E-04	mg/kg	6.0E-07	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.3E-07	6.6E-0
gamma-Chlordane	1.8E-03	mg/kg	3.9E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	8.6E-07	4.3E-07
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-02	8.0E-01	mg/kg-d	0.0E+00	0.0E+00

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TABLE K-16.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	3.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.9E-02	6.9E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor, Total	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
							HAZARD INDICES:	6.3E-01	6.6E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-16.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	2.8E-04	mg/kg	3.4E-06	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	6.9E-08	1.4E-08
2-Methylnaphthalene	4.6E-03	mg/kg	5.7E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.9E-06	1.9E-07
Acenaphthene	1.0E-03	mg/kg	1.3E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	3.6E-07	3.6E-08
Acenaphthylene	6.7E-04	mg/kg	8.3E-06	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	2.4E-07	2.4E-08
Anthracene	9.1E-04	mg/kg	1.1E-05	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	5.6E-08	5.6E-09
Benzo(a)anthracene	1.0E-03	mg/kg	1.2E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.2E-05	1.2E-06
Benzo(a)pyrene	1.1E-03	mg/kg	1.4E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.4E-05	1.4E-06
Benzo(b)fluoranthene	1.6E-03	mg/kg	2.0E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.0E-05	2.0E-06
Benzo(g,h,i)perylene	1.3E-03	mg/kg	1.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.6E-05	1.6E-06
Benzo(k)fluoranthene	1.5E-03	mg/kg	1.9E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-05	1.9E-06
Chrysene	2.1E-03	mg/kg	2.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.6E-05	2.6E-06
Dibenzo(a,h)anthracene	1.9E-04	mg/kg	2.3E-06	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.3E-06	2.3E-07
Dibenzofuran	9.5E-04	mg/kg	1.2E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	4.7E-07	4.7E-08
Fluoranthene	8.0E-03	mg/kg	9.8E-05	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	7.9E-07	3.9E-07
Fluorene	2.1E-03	mg/kg	2.6E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.0E-06	1.0E-07
Indeno(1,2,3-cd)pyrene	1.0E-03	mg/kg	1.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.3E-05	1.3E-06
Naphthalene	4.1E-03	mg/kg	5.1E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.7E-06	1.7E-07
Phenanthrene	9.0E-03	mg/kg	1.1E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	7.4E-06	7.4E-07
Pyrene	4.2E-03	mg/kg	5.2E-05	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	6.9E-07	4.1E-07
4,4'-DDD	6.2E-03	mg/kg	7.7E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	9.6E-05	1.9E-05
4,4'-DDE	5.5E-02	mg/kg	6.7E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	8.4E-04	1.7E-04
4,4'-DDT	2.2E-03	mg/kg	2.7E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	3.4E-05	6.8E-06
alpha-Chlordane	5.4E-03	mg/kg	6.6E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.4E-05	7.2E-06
Aroclor, Total	6.4E-01	mg/kg	7.9E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.2E-01	5.2E-02
Aroclor-1254	5.1E-01	mg/kg	6.3E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.2E-01	4.2E-02
Aroclor-1268	1.3E-01	mg/kg	1.6E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.0E-01	1.0E-02
Dieldrin	1.3E-03	mg/kg	1.6E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.1E-03	1.1E-04
gamma-Chlordane	1.9E-03	mg/kg	2.3E-05	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.1E-06	2.5E-06
Heptachlor Epoxide	2.6E-04	mg/kg	3.2E-06	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	2.6E-05	1.9E-05
Technical Chlordane	1.4E-01	mg/kg	1.8E-03	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.9E-04	1.9E-04
Aluminum	2.4E+01	mg/kg	2.9E-01	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	1.5E-01	1.5E-02
Barium	2.3E+00	mg/kg	2.8E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	3.7E-04	1.8E-04
Cadmium	1.1E-02	mg/kg	1.3E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.3E-04	1.3E-05
Chromium	2.2E-01	mg/kg	2.7E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	1.8E-06	1.8E-07
Cobalt	3.4E-02	mg/kg	4.2E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	5.5E-03	5.5E-04
Copper	4.6E-01	mg/kg	5.7E-03	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	4.8E-04	3.7E-04
Lead	1.5E-01	mg/kg	1.8E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.5E-05	4.9E-06
Manganese	4.9E+00	mg/kg	6.0E-02	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	6.8E-04	2.1E-04
Mercury	1.5E-01	mg/kg	1.9E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-03	1.9E-04
Mercury (methyl)	1.2E-01	mg/kg	1.5E-03	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	9.9E-02	6.0E-02
Molybdenum	2.3E-02	mg/kg	2.9E-04	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	1.5E-03	1.5E-04
Nickel	5.2E-02	mg/kg	6.4E-04	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	2.6E-05	1.0E-05
Selenium	1.4E-01	mg/kg	1.7E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	8.7E-03	5.3E-03
Thallium	4.9E-03	mg/kg	6.0E-05	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	4.3E-04	4.3E-05
Vanadium	5.6E-02	mg/kg	6.9E-04	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	1.6E-03	3.3E-04
Toxicity Equivalency - Mammals	8.7E-05	mg/kg	1.1E-06	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	**1.1E+00**	1.1E-01

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TABLE K-16.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	2.4E+00	3.0E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-16.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 3.2E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals		1.3E-01	-	6.2E-01	1.1E+00	***1.8E+00***	***58%***
Aroclor, Total				-	5.2E-01	5.2E-01	***17%***
Aroclor-1254				-	4.2E-01	4.2E-01	***13%***
Aluminum				-	1.5E-01	1.5E-01	5%
Aroclor-1268				-	1.0E-01	1.0E-01	3%
Mercury (methyl)				-	9.9E-02	9.9E-02	3%
Cobalt		8.9E-03	-	2.9E-03	5.5E-03	1.7E-02	1%
Selenium				-	8.7E-03	8.7E-03	0%
Arsenic		4.7E-03	-	1.4E-03		6.1E-03	0%
Copper		7.3E-04	-	3.5E-03	4.8E-04	4.7E-03	0%
Mercury				-	1.9E-03	1.9E-03	0%
Vanadium				-	1.6E-03	1.6E-03	0%
Molybdenum				-	1.5E-03	1.5E-03	0%
Dieldrin				-	1.1E-03	1.1E-03	0%
4,4'-DDE				-	8.4E-04	8.4E-04	0%
Manganese				-	6.8E-04	6.8E-04	0%
Cadmium		2.0E-04	-	3.0E-04	1.3E-04	6.4E-04	0%
Barium		9.4E-05	-	1.5E-04	3.7E-04	6.2E-04	0%
Thallium				-	4.3E-04	4.3E-04	0%
Technical Chlordane				-	3.9E-04	3.9E-04	0%
Zinc		1.2E-04	-	8.4E-05		2.0E-04	0%
Lead		1.1E-04	-	5.1E-06	1.5E-05	1.3E-04	0%
Benzo(b)fluoranthene		8.9E-05	-		2.0E-05	1.1E-04	0%
4,4'-DDD				-	9.6E-05	9.6E-05	0%
Chrysene		6.6E-05	-		2.6E-05	9.2E-05	0%
Benzo(k)fluoranthene		5.1E-05	-		1.9E-05	7.0E-05	0%
Benzo(a)pyrene		5.1E-05	-		1.4E-05	6.5E-05	0%
Indeno(1,2,3-cd)pyrene		4.2E-05	-		1.3E-05	5.5E-05	0%
Benzo(a)anthracene		4.2E-05	-		1.2E-05	5.4E-05	0%
Benzo(g,h,i)perylene		3.3E-05	-		1.6E-05	4.9E-05	0%
4,4'-DDT				-	3.4E-05	3.4E-05	0%
Heptachlor epoxide				-	2.6E-05	2.6E-05	0%
Nickel				-	2.6E-05	2.6E-05	0%
alpha-Chlordane		1.4E-07	-	1.3E-07	1.4E-05	1.5E-05	0%
Phenanthrene		2.7E-06	-		7.4E-06	1.0E-05	0%
gamma-Chlordane		1.6E-07	-	8.6E-07	5.1E-06	6.1E-06	0%
bis(2-Ethylhexyl)phthalate		4.8E-06	-			4.8E-06	0%
Chromium		2.6E-06	-	6.7E-08	1.8E-06	4.5E-06	0%
Dibenzo(a,h)anthracene					2.3E-06	2.3E-06	0%
2-Methylnaphthalene					1.9E-06	1.9E-06	0%
Pyrene		1.1E-06	-		6.9E-07	1.8E-06	0%
Naphthalene					1.7E-06	1.7E-06	0%
Fluoranthene		9.0E-07	-		7.9E-07	1.7E-06	0%
Fluorene					1.0E-06	1.0E-06	0%
Dibenzofuran					4.7E-07	4.7E-07	0%

US EPA ARCHIVE DOCUMENT

TABLE K-16.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	MANTON POND REACH - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	3.2E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthene					3.6E-07	3.6E-07	0%
Acenaphthylene					2.4E-07	2.4E-07	0%
Carbazole		1.5E-07	-			1.5E-07	0%
1,1'-Biphenyl					6.9E-08	6.9E-08	0%
Anthracene					5.6E-08	5.6E-08	0%
Antimony				-			
Toxicity Equivalency (PCB) - Mammals				-			
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248				-			
Aroclor-1260				-			
gamma-BHC				-			
4-Chloro-3-methylphenol							
Beryllium				-			
2-Chlorophenol							
Endrin				-			
4-Nitrophenol							
Silver				-			
Phenol							
Endosulfan II				-			
Endosulfan sulfate				-			
Heptachlor				-			
Dimethylphthalate							
Methoxychlor				-			
Cyanide							
Aroclor-1242				-			
Endrin Ketone				-			
Endrin aldehyde				-			
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	1.4E-01	-	6.3E-01	2.4E+00	3.2E+00	
PERCENTAGE OF TOTAL RISK		4%		20%	76%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-16.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: MANTON POND REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 3.8E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Toxicity Equivalency - Mammals		1.3E-02	-	6.2E-02	1.1E-01	1.8E-01	***49%***
Mercury (methyl)				-	6.0E-02	6.0E-02	***16%***
Aroclor, Total				-	5.2E-02	5.2E-02	***14%***
Aroclor-1254				-	4.2E-02	4.2E-02	***11%***
Aluminum				-	1.5E-02	1.5E-02	4%
Aroclor-1268				-	1.0E-02	1.0E-02	3%
Selenium				-	5.3E-03	5.3E-03	1%
Copper		5.6E-04	-	2.7E-03	3.7E-04	3.6E-03	1%
Cobalt		8.9E-04	-	2.9E-04	5.5E-04	1.7E-03	0%
Arsenic		4.7E-04	-	1.4E-04		6.1E-04	0%
Vanadium				-	3.3E-04	3.3E-04	0%
Barium		4.4E-05	-	7.2E-05	1.8E-04	2.9E-04	0%
Manganese				-	2.1E-04	2.1E-04	0%
Technical Chlordane				-	1.9E-04	1.9E-04	0%
Mercury				-	1.9E-04	1.9E-04	0%
4,4'-DDE				-	1.7E-04	1.7E-04	0%
Molybdenum				-	1.5E-04	1.5E-04	0%
Dieldrin				-	1.1E-04	1.1E-04	0%
Zinc		5.8E-05	-	4.2E-05		1.0E-04	0%
Cadmium		2.0E-05	-	3.0E-05	1.3E-05	6.4E-05	0%
Thallium				-	4.3E-05	4.3E-05	0%
Lead		3.5E-05	-	1.7E-06	4.9E-06	4.2E-05	0%
4,4'-DDD				-	1.9E-05	1.9E-05	0%
Heptachlor epoxide				-	1.9E-05	1.9E-05	0%
Benzo(b)fluoranthene		8.9E-06	-		2.0E-06	1.1E-05	0%
Nickel				-	1.0E-05	1.0E-05	0%
Chrysene		6.6E-06	-		2.6E-06	9.2E-06	0%
alpha-Chlordane		6.8E-08	-	6.6E-08	7.2E-06	7.3E-06	0%
Benzo(k)fluoranthene		5.1E-06	-		1.9E-06	7.0E-06	0%
4,4'-DDT				-	6.8E-06	6.8E-06	0%
Benzo(a)pyrene		5.1E-06	-		1.4E-06	6.5E-06	0%
Indeno(1,2,3-cd)pyrene		4.2E-06	-		1.3E-06	5.5E-06	0%
Benzo(a)anthracene		4.2E-06	-		1.2E-06	5.4E-06	0%
Benzo(g,h,i)perylene		3.3E-06	-		1.6E-06	4.9E-06	0%
gamma-Chlordane		7.9E-08	-	4.3E-07	2.5E-06	3.1E-06	0%
Pyrene		6.9E-07	-		4.1E-07	1.1E-06	0%
Phenanthrene		2.7E-07	-		7.4E-07	1.0E-06	0%
Fluoranthene		4.5E-07	-		3.9E-07	8.4E-07	0%
bis(2-Ethylhexyl)phthalate		4.8E-07	-			4.8E-07	0%
Chromium		2.6E-07	-	6.7E-09	1.8E-07	4.5E-07	0%
Dibenzo(a,h)anthracene					2.3E-07	2.3E-07	0%
2-Methylnaphthalene					1.9E-07	1.9E-07	0%
Naphthalene					1.7E-07	1.7E-07	0%
Fluorene					1.0E-07	1.0E-07	0%
Dibenzofuran					4.7E-08	4.7E-08	0%

US EPA ARCHIVE DOCUMENT

TABLE K-16.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE	
EXPOSURE POINT: MANTON POND REACH - CT	
RECEPTOR: OTTER	
TOTAL RISK (HI):	3.8E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthene					3.6E-08	3.6E-08	0%
Acenaphthylene					2.4E-08	2.4E-08	0%
Carbazole		1.5E-08	-			1.5E-08	0%
1,1'-Biphenyl					1.4E-08	1.4E-08	0%
Anthracene					5.6E-09	5.6E-09	0%
Antimony				-			
Toxicity Equivalency (PCB) - Mammals				-			
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248				-			
Aroclor-1260				-			
gamma-BHC				-			
4-Chloro-3-methylphenol							
Beryllium				-			
2-Chlorophenol							
Endrin				-			
4-Nitrophenol							
Silver				-			
Phenol							
Endosulfan II				-			
Endosulfan sulfate				-			
Heptachlor				-			
Dimethylphthalate							
Methoxychlor				-			
Cyanide							
Aroclor-1242				-			
Endrin Ketone				-			
Endrin aldehyde				-			
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
Di-n-Butylphthalate							
TOTAL MEDIUM-SPECIFIC RISK	-	1.5E-02	-	6.6E-02	3.0E-01	3.8E-01	
PERCENTAGE OF TOTAL RISK		4%		17%	79%	100%	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-17.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	3.1E-02	mg/kg	9.0E-06	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	3.0E-07	3.0E-08
Acenaphthene	1.4E-01	mg/kg	3.9E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.1E-06	1.1E-07
Acenaphthylene	1.6E-01	mg/kg	4.6E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.3E-06	1.3E-07
Anthracene	3.0E-01	mg/kg	8.6E-05	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	4.3E-07	4.3E-08
Benzo(a)anthracene	1.4E+00	mg/kg	4.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.1E-04	4.1E-05
Benzo(a)pyrene	1.4E+00	mg/kg	4.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.1E-04	4.1E-05
Benzo(b)fluoranthene	2.5E+00	mg/kg	7.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.1E-04	7.1E-05
Benzo(g,h,i)perylene	1.1E+00	mg/kg	3.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.1E-04	3.1E-05
Benzo(k)fluoranthene	7.1E-01	mg/kg	2.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.0E-04	2.0E-05
bis(2-Ethylhexyl)phthalate	1.1E+00	mg/kg	3.2E-04	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	1.7E-05	1.7E-06
Carbazole	2.2E-01	mg/kg	6.5E-05	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	6.5E-07	6.5E-08
Chrysene	1.5E+00	mg/kg	4.4E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.4E-04	4.4E-05
Dibenzo(a,h)anthracene	2.0E-01	mg/kg	5.9E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.9E-05	5.9E-06
Dibenzofuran	1.0E-01	mg/kg	2.9E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.2E-06	1.2E-07
Di-n-Butylphthalate	5.1E-02	mg/kg	1.5E-05	mg/kg-d	1.0E+02	4.0E+02	mg/kg-d	1.5E-07	3.7E-08
Fluoranthene	2.8E+00	mg/kg	8.1E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	6.5E-06	3.2E-06
Fluorene	1.2E-01	mg/kg	3.6E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.4E-06	1.4E-07
Indeno(1,2,3-cd)pyrene	1.4E+00	mg/kg	3.9E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.9E-04	3.9E-05
Naphthalene	6.4E-02	mg/kg	1.9E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	6.2E-07	6.2E-08
Phenanthrene	1.4E+00	mg/kg	4.0E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	2.6E-05	2.6E-06
Pyrene	2.4E+00	mg/kg	6.8E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	9.1E-06	5.5E-06
4,4'-DDD	5.8E-03	mg/kg	1.7E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.1E-06	4.2E-07
4,4'-DDE	3.9E-03	mg/kg	1.1E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.4E-06	2.8E-07
alpha-Chlordane	4.3E-03	mg/kg	1.3E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	2.7E-07	1.4E-07
Aroclor, Total	1.4E+00	mg/kg	4.1E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.7E-02	2.7E-03
Aroclor-1254	4.9E-01	mg/kg	1.4E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	9.5E-03	9.5E-04
Aroclor-1268	1.2E-01	mg/kg	3.5E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.3E-03	2.3E-04
Dieldrin	1.2E-02	mg/kg	3.3E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.2E-04	2.2E-05
Endosulfan sulfate	5.2E-03	mg/kg	1.5E-06	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	2.6E-06	7.9E-07
Arsenic	2.1E+00	mg/kg	6.1E-04	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	1.3E-02	1.3E-03
Barium	6.8E+01	mg/kg	2.0E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	2.6E-04	1.2E-04
Cadmium	1.7E+00	mg/kg	4.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.8E-04	4.8E-05
Chromium	1.6E+02	mg/kg	4.5E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	3.1E-05	3.1E-06
Cobalt	5.8E+00	mg/kg	1.7E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	2.2E-02	2.2E-03
Copper	9.0E+01	mg/kg	2.6E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	2.2E-03	1.7E-03
Lead	1.6E+02	mg/kg	4.6E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	3.7E-04	1.2E-04
Mercury	4.0E-01	mg/kg	1.1E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.1E-04	1.1E-05
Zinc	7.2E+02	mg/kg	2.1E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.1E-03	5.3E-04
Toxicity Equivalency - Mammals	8.3E-05	mg/kg	2.4E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	2.4E-02	2.4E-03
Toxicity Equivalency (PCB) - Mammals	2.5E-08	mg/kg	7.3E-12	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	7.3E-06	7.3E-07
							HAZARD INDICES:	1.1E-01	1.3E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-17.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Mammals	6.6E-05	mg/kg	1.4E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	1.4E-01	1.4E-02
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	0.0E+00	0.0E+00
Arsenic	1.0E-01	mg/kg	2.2E-04	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	4.6E-03	4.6E-04
Barium	1.8E+01	mg/kg	3.8E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	5.1E-04	2.4E-04
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	0.0E+00	0.0E+00
Cadmium	4.1E-01	mg/kg	8.9E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.9E-04	8.9E-05
Chromium	6.3E-01	mg/kg	1.4E-03	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	9.2E-07	9.2E-08
Cobalt	3.0E-01	mg/kg	6.5E-04	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	8.6E-03	8.6E-04
Copper	6.9E+01	mg/kg	1.5E-01	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	1.3E-02	9.8E-03
Lead	1.2E+00	mg/kg	2.6E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	2.1E-05	7.0E-06
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	0.0E+00	0.0E+00
Mercury	1.9E-01	mg/kg	4.0E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.0E-04	4.0E-05
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	0.0E+00	0.0E+00
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	0.0E+00	0.0E
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	0.0E+00	0.0E+00
Zinc	8.4E+01	mg/kg	1.8E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	9.2E-04	4.6E-04
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Toxicity Equivalency (PCB) - Mammals	1.2E-08	mg/kg	2.6E-11	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	2.6E-05	2.6E-06
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	0.0E+00	0.0E+00
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	4.1E-03	mg/kg	8.8E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.8E-04	5.8E-05
4,4'-DDE	6.4E-03	mg/kg	1.4E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.7E-05	3.4E-06
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	2.8E-02	mg/kg	6.0E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	7.4E-05	1.5E-05
Endosulfan Sulfate	7.4E-03	mg/kg	1.6E-05	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	2.8E-05	8.4E-06
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.0E+00	3.6E+01	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	6.7E-04	mg/kg	1.4E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.1E-07	1.6E-07
gamma-Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	0.0E+00	0.0E+00
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-02	8.0E-01	mg/kg-d	0.0E+00	0.0E
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	3.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00

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TABLE K-17.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.9E-02	6.9E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	4.0E-01	mg/kg	8.6E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.7E-02	5.7E-03
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	3.4E-02	mg/kg	7.4E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.9E-03	4.9E-04
Aroclor, Total	9.8E-01	mg/kg	2.1E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.4E-01	1.4E-02
							HAZARD INDICES:	3.7E-01	4.7E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-17.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
Toxicity Equivalency - Mammals	3.3E-05	mg/kg	4.1E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	4.1E-01	4.1E-02
Aluminum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	0.0E+00	0.0E+00
Antimony	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.6E-02	2.6E-01	mg/kg-d	0.0E+00	0.0E+00
Arsenic	4.4E-02	mg/kg	5.4E-04	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	1.1E-02	1.1E-03
Barium	1.6E+00	mg/kg	2.0E-02	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	2.7E-04	1.3E-04
Beryllium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	0.0E+00	0.0E+00
Cadmium	1.5E-01	mg/kg	1.9E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-03	1.9E-04
Chromium	8.6E-01	mg/kg	1.1E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	7.2E-06	7.2E-07
Cobalt	2.2E-01	mg/kg	2.7E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	3.6E-02	3.6E-03
Copper	3.0E+00	mg/kg	3.7E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	3.2E-03	2.5E-03
Iron	0.0E+00	mg/kg	0.0E+00	mg/kg-d					
Lead	4.4E-01	mg/kg	5.4E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	4.3E-05	1.4E-05
Manganese	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	0.0E+00	0.0E+00
Mercury	7.1E-01	mg/kg	8.7E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.6E-03	8.6E-04
Mercury (methyl)	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	0.0E+00	0.0E
Molybdenum	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E
Nickel	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	0.0E+00	0.0E+00
Selenium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	0.0E+00	0.0E+00
Silver	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	0.0E+00	0.0E+00
Thallium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	0.0E+00	0.0E+00
Vanadium	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	0.0E+00	0.0E+00
Zinc	1.6E+02	mg/kg	1.9E+00	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	9.8E-03	4.9E-03
Naphthalene	3.4E-04	mg/kg	4.2E-06	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.4E-07	1.4E-08
2-Methylnaphthalene	2.6E-04	mg/kg	3.2E-06	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	1.1E-07	1.1E-08
Acenaphthylene	8.7E-04	mg/kg	1.1E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	3.0E-07	3.0E-08
Acenaphthene	1.1E-03	mg/kg	1.4E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	3.9E-07	3.9E-08
Dibenzofuran	6.3E-04	mg/kg	7.7E-06	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	3.1E-07	3.1E-08
Fluorene	1.4E-03	mg/kg	1.7E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	6.7E-07	6.7E-08
Phenanthrene	2.0E-02	mg/kg	2.4E-04	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	1.6E-05	1.6E-06
Anthracene	2.1E-03	mg/kg	2.6E-05	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	1.3E-07	1.3E-08
Fluoranthene	2.4E-02	mg/kg	2.9E-04	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	2.3E-06	1.2E-06
Pyrene	9.6E-03	mg/kg	1.2E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.6E-06	9.4E-07
Benzo(a)anthracene	4.3E-03	mg/kg	5.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.3E-05	5.3E-06
Chrysene	7.0E-03	mg/kg	8.6E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.6E-05	8.6E-06
Benzo(b)fluoranthene	6.9E-03	mg/kg	8.5E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	8.5E-05	8.5E-06
Benzo(k)fluoranthene	3.1E-03	mg/kg	3.8E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.8E-05	3.8E-06
Benzo(a)pyrene	4.0E-03	mg/kg	4.9E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.9E-05	4.9E-06
Indeno(1,2,3-cd)pyrene	4.3E-03	mg/kg	5.3E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.3E-05	5.3E-06
Dibenzo(a,h)anthracene	3.1E-04	mg/kg	3.8E-06	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.8E-06	3.8E-07
Benzo(g,h,i)perylene	3.4E-03	mg/kg	4.1E-05	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.1E-05	4.1E-06
1,1'-Biphenyl	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	0.0E+00	0.0E+00
alpha-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Toxicity Equivalency (PCB) - Mammals	8.5E-06	mg/kg	1.0E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	1.0E-01	1.0E
Technical Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	0.0E+00	0.0E
beta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
delta-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00

US EPA ARCHIVE DOCUMENT

TABLE K-17.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
gamma-BHC	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.4E-02	1.4E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.0E-01	1.0E+00	mg/kg-d	0.0E+00	0.0E+00
Aldrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Heptachlor Epoxide	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	0.0E+00	0.0E+00
Endosulfan I	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
Dieldrin	1.8E-02	mg/kg	2.2E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.5E-02	1.5E-03
4,4'-DDE	7.2E-02	mg/kg	8.9E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.1E-03	2.2E-04
Endrin	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endosulfan II	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	0.0E+00	0.0E+00
4,4'-DDD	3.0E-02	mg/kg	3.7E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	4.6E-04	9.3E-05
Endosulfan Sulfate	1.8E-03	mg/kg	2.3E-05	mg/kg-d	5.7E-01	1.9E+00	mg/kg-d	4.0E-05	1.2E-05
4,4'-DDT	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	0.0E+00	0.0E+00
Methoxychlor	0.0E+00	mg/kg	0.0E+00	mg/kg-d	5.0E+00	3.6E+01	mg/kg-d	0.0E+00	0.0E+00
Endrin Ketone	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
Endrin Aldehyde	0.0E+00	mg/kg	0.0E+00	mg/kg-d	2.5E-02	5.0E-02	mg/kg-d	0.0E+00	0.0E+00
alpha-Chlordane	2.2E-02	mg/kg	2.7E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.8E-05	2.9E-05
gamma-Chlordane	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	0.0E+00	0.0E+00
Toxaphene	0.0E+00	mg/kg	0.0E+00	mg/kg-d	8.0E-02	8.0E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1016	0.0E+00	mg/kg	0.0E+00	mg/kg-d	4.0E-01	3.8E+00	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1221	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1232	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1242	0.0E+00	mg/kg	0.0E+00	mg/kg-d	6.9E-02	6.9E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1248	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1254	7.5E+00	mg/kg	9.3E-02	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**6.2E+00**	6.2E-01
Aroclor-1260	0.0E+00	mg/kg	0.0E+00	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	0.0E+00	0.0E+00
Aroclor-1268	1.6E-01	mg/kg	1.9E-03	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.3E-01	1.3E-02
Aroclor, Total	1.9E+01	mg/kg	2.3E-01	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	**1.5E+01**	**1.5E+00**
							HAZARD INDICES:	2.2E+01	2.2E+00

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-17.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 2.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		2.7E-02	-	1.4E-01	1.5E+01	***1.5E+01***	***68%***
Aroclor-1254		9.5E-03	-	5.7E-02	6.2E+00	***6.2E+00***	***28%***
Toxicity Equivalency - Mammals		2.4E-02	-	1.4E-01	4.1E-01	5.7E-01	3%
Aroclor-1268		2.3E-03	-	4.9E-03	1.3E-01	1.3E-01	1%
Toxicity Equivalency (PCB) - Mammals		7.3E-06	-	2.6E-05	1.0E-01	1.0E-01	0%
Cobalt		2.2E-02	-	8.6E-03	3.6E-02	6.7E-02	0%
Arsenic		1.3E-02	-	4.6E-03	1.1E-02	2.9E-02	0%
Copper		2.2E-03	-	1.3E-02	3.2E-03	1.8E-02	0%
Dieldrin		2.2E-04	-	5.8E-04	1.5E-02	1.5E-02	0%
Zinc		1.1E-03	-	9.2E-04	9.8E-03	1.2E-02	0%
Mercury		1.1E-04	-	4.0E-04	8.6E-03	9.1E-03	0%
Cadmium		4.8E-04	-	8.9E-04	1.9E-03	3.2E-03	0%
4,4'-DDE		1.4E-06	-	1.7E-05	1.1E-03	1.1E-03	0%
Barium		2.6E-04	-	5.1E-04	2.7E-04	1.0E-03	0%
Benzo(b)fluoranthene		7.1E-04	-		8.5E-05	8.0E-04	0%
4,4'-DDD		2.1E-06	-	7.4E-05	4.6E-04	5.4E-04	0%
Chrysene		4.4E-04	-		8.6E-05	5.3E-04	0%
Benzo(a)anthracene		4.1E-04	-		5.3E-05	4.7E-04	0%
Benzo(a)pyrene		4.1E-04	-		4.9E-05	4.5E-04	0%
Indeno(1,2,3-cd)pyrene		3.9E-04	-		5.3E-05	4.5E-04	0%
Lead		3.7E-04	-	2.1E-05	4.3E-05	4.3E-04	0%
Benzo(g,h,i)perylene		3.1E-04	-		4.1E-05	3.5E-04	0%
Benzo(k)fluoranthene		2.0E-04	-		3.8E-05	2.4E-04	0%
Endosulfan sulfate		2.6E-06	-	2.8E-05	4.0E-05	7.0E-05	0%
Dibenzo(a,h)anthracene		5.9E-05	-		3.8E-06	6.2E-05	0%
alpha-Chlordane		2.7E-07	-	3.1E-07	5.8E-05	5.9E-05	0%
Phenanthrene		2.6E-05	-		1.6E-05	4.2E-05	0%
Chromium		3.1E-05	-	9.2E-07	7.2E-06	3.9E-05	0%
bis(2-Ethylhexyl)phthalate		1.7E-05	-			1.7E-05	0%
Pyrene		9.1E-06	-		1.6E-06	1.1E-05	0%
Fluoranthene		6.5E-06	-		2.3E-06	8.8E-06	0%
Fluorene		1.4E-06	-		6.7E-07	2.1E-06	0%
Acenaphthylene		1.3E-06	-		3.0E-07	1.6E-06	0%
Acenaphthene		1.1E-06	-		3.9E-07	1.5E-06	0%
Dibenzofuran		1.2E-06	-		3.1E-07	1.5E-06	0%
Naphthalene		6.2E-07	-		1.4E-07	7.6E-07	0%
Carbazole		6.5E-07	-			6.5E-07	0%
Anthracene		4.3E-07	-		1.3E-07	5.6E-07	0%
2-Methylnaphthalene		3.0E-07	-		1.1E-07	4.1E-07	0%
Di-n-Butylphthalate		1.5E-07	-			1.5E-07	0%
Atrazine							
Mercury (methyl)				-	-		
Antimony				-	-		
Selenium				-	-		
Molybdenum				-	-		

US EPA ARCHIVE DOCUMENT

TABLE K-17.4
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 2.3E+01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Vanadium				-	-		
Technical Chlordane				-	-		
N-Nitroso-di-n-propylamine							
Manganese				-	-		
Pentachlorophenol							
Aluminum				-	-		
Thallium				-	-		
2,4-Dinitrotoluene							
Aroclor-1248				-	-		
Aroclor-1260				-	-		
gamma-BHC				-	-		
Heptachlor epoxide				-	-		
Nickel				-	-		
4-Chloro-3-methylphenol							
Beryllium				-	-		
4,4'-DDT				-	-		
gamma-Chlordane				-	-		
2-Chlorophenol							
Endrin				-	-		
4-Nitrophenol							
Silver				-	-		
Phenol							
Endosulfan II				-	-		
Heptachlor				-	-		
Dimethylphthalate							
1,1'-Biphenyl					-		
Methoxychlor				-	-		
Cyanide							
Aroclor-1242				-	-		
Endrin Ketone				-	-		
Endrin aldehyde				-	-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	-	1.1E-01	-	3.7E-01	2.2E+01	2.3E+01	
PERCENTAGE OF TOTAL RISK		0%		2%	98%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-17.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: DYERVILLE REACH - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 2.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Aroclor, Total		2.7E-03	-	1.4E-02	1.5E+00	***1.5E+00***	***68%***
Aroclor-1254		9.5E-04	-	5.7E-03	6.2E-01	6.2E-01	***27%***
Toxicity Equivalency - Mammals		2.4E-03	-	1.4E-02	4.1E-02	5.7E-02	3%
Copper		1.7E-03	-	9.8E-03	2.5E-03	1.4E-02	1%
Aroclor-1268		2.3E-04	-	4.9E-04	1.3E-02	1.3E-02	1%
Toxicity Equivalency (PCB) - Mammals		7.3E-07	-	2.6E-06	1.0E-02	1.0E-02	0%
Cobalt		2.2E-03	-	8.6E-04	3.6E-03	6.7E-03	0%
Zinc		5.3E-04	-	4.6E-04	4.9E-03	5.9E-03	0%
Arsenic		1.3E-03	-	4.6E-04	1.1E-03	2.9E-03	0%
Dieldrin		2.2E-05	-	5.8E-05	1.5E-03	1.5E-03	0%
Mercury		1.1E-05	-	4.0E-05	8.6E-04	9.1E-04	0%
Barium		1.2E-04	-	2.4E-04	1.3E-04	4.9E-04	0%
Cadmium		4.8E-05	-	8.9E-05	1.9E-04	3.2E-04	0%
4,4'-DDE		2.8E-07	-	3.4E-06	2.2E-04	2.3E-04	0%
Lead		1.2E-04	-	7.0E-06	1.4E-05	1.4E-04	0%
4,4'-DDD		4.2E-07	-	1.5E-05	9.3E-05	1.1E-04	0%
Benzo(b)fluoranthene		7.1E-05	-		8.5E-06	8.0E-05	0%
Chrysene		4.4E-05	-		8.6E-06	5.3E-05	0%
Benzo(a)anthracene		4.1E-05	-		5.3E-06	4.7E-05	0%
Benzo(a)pyrene		4.1E-05	-		4.9E-06	4.5E-05	0%
Indeno(1,2,3-cd)pyrene		3.9E-05	-		5.3E-06	4.5E-05	0%
Benzo(g,h,i)perylene		3.1E-05	-		4.1E-06	3.5E-05	0%
alpha-Chlordane		1.4E-07	-	1.6E-07	2.9E-05	2.9E-05	0%
Benzo(k)fluoranthene		2.0E-05	-		3.8E-06	2.4E-05	0%
Endosulfan sulfate		7.9E-07	-	8.4E-06	1.2E-05	2.1E-05	0%
Pyrene		5.5E-06	-		9.4E-07	6.4E-06	0%
Dibenzo(a,h)anthracene		5.9E-06	-		3.8E-07	6.2E-06	0%
Fluoranthene		3.2E-06	-		1.2E-06	4.4E-06	0%
Phenanthrene		2.6E-06	-		1.6E-06	4.2E-06	0%
Chromium		3.1E-06	-	9.2E-08	7.2E-07	3.9E-06	0%
bis(2-Ethylhexyl)phthalate		1.7E-06	-			1.7E-06	0%
Fluorene		1.4E-07	-		6.7E-08	2.1E-07	0%
Acenaphthylene		1.3E-07	-		3.0E-08	1.6E-07	0%
Acenaphthene		1.1E-07	-		3.9E-08	1.5E-07	0%
Dibenzofuran		1.2E-07	-		3.1E-08	1.5E-07	0%
Naphthalene		6.2E-08	-		1.4E-08	7.6E-08	0%
Carbazole		6.5E-08	-			6.5E-08	0%
Anthracene		4.3E-08	-		1.3E-08	5.6E-08	0%
2-Methylnaphthalene		3.0E-08	-		1.1E-08	4.1E-08	0%
Di-n-Butylphthalate		3.7E-08	-			3.7E-08	0%
Atrazine							
Mercury (methyl)				-	-		
Antimony				-	-		
Selenium				-	-		
Molybdenum				-	-		

US EPA ARCHIVE DOCUMENT

TABLE K-17.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	DYERVILLE REACH - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	2.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Vanadium				-	-		
Technical Chlordane				-	-		
N-Nitroso-di-n-propylamine							
Manganese				-	-		
Pentachlorophenol							
Aluminum				-	-		
Thallium				-	-		
2,4-Dinitrotoluene							
Aroclor-1248				-	-		
Aroclor-1260				-	-		
gamma-BHC				-	-		
Heptachlor epoxide				-	-		
Nickel				-	-		
4-Chloro-3-methylphenol							
Beryllium				-	-		
4,4'-DDT				-	-		
gamma-Chlordane				-	-		
2-Chlorophenol							
Endrin				-	-		
4-Nitrophenol							
Silver				-	-		
Phenol							
Endosulfan II				-	-		
Heptachlor				-	-		
Dimethylphthalate							
1,1'-Biphenyl					-		
Methoxychlor				-	-		
Cyanide							
Aroclor-1242				-	-		
Endrin Ketone				-	-		
Endrin aldehyde				-	-		
4-Methylphenol							
2,4,5-Trichlorophenol							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	-	1.3E-02	-	4.7E-02	2.2E+00	2.3E+00	
PERCENTAGE OF TOTAL RISK		1%		2%	97%	100%	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

US EPA ARCHIVE DOCUMENT

TABLE K-18.1
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SURFACE WATER / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SURFACE WATER
EXPOSURE MEDIUM: SURFACE WATER
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
bis(2-Ethylhexyl)phthalate	1.0E-03	mg/L	8.1E-05	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	4.4E-06	4.4E-07
Aluminum	1.6E-01	mg/L	1.3E-02	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	6.5E-03	6.5E-04
Beryllium	4.9E-05	mg/L	4.0E-06	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	3.3E-06	3.3E-07
Cobalt	1.1E-04	mg/L	9.2E-06	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	1.2E-04	1.2E-05
Copper	2.1E-03	mg/L	1.7E-04	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	1.4E-05	1.1E-05
Lead	3.7E-04	mg/L	3.0E-05	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	2.4E-07	7.9E-08
Manganese	1.4E-01	mg/L	1.1E-02	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	1.2E-04	3.9E-05
Nickel	1.7E-03	mg/L	1.4E-04	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	5.5E-06	2.2E-06
Selenium	8.2E-05	mg/L	6.6E-06	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	3.3E-05	2.0E-05
Thallium	5.1E-06	mg/L	4.1E-07	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	3.0E-06	3.0E-07
Zinc	3.4E-02	mg/L	2.8E-03	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.4E-05	7.1E-06
Nitrogen, Ammonia	1.1E-02	mg/L	8.9E-04	mg/kg-d	#N/A	#N/A			
Toxicity Equivalency - Mammals	5.3E-09	mg/L	4.3E-10	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	4.3E-04	4.3E-05
							HAZARD INDICES:	7.3E-03	7.9E-04

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

US EPA ARCHIVE DOCUMENT

TABLE K-18.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
2-Methylnaphthalene	1.9E-02	mg/kg	6.9E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	2.3E-06	2.3E-07
Acenaphthene	3.4E-02	mg/kg	1.3E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	3.6E-06	3.6E-07
Acenaphthylene	5.9E-02	mg/kg	2.2E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	6.3E-06	6.3E-07
Anthracene	1.5E-01	mg/kg	5.5E-04	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	2.7E-06	2.7E-07
Benzo(a)anthracene	5.2E-01	mg/kg	1.9E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-03	1.9E-04
Benzo(a)pyrene	5.3E-01	mg/kg	2.0E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.0E-03	2.0E-04
Benzo(b)fluoranthene	6.3E-01	mg/kg	2.3E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.3E-03	2.3E-04
Benzo(g,h,i)perylene	4.0E-01	mg/kg	1.5E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.5E-03	1.5E-04
Benzo(k)fluoranthene	4.1E-01	mg/kg	1.5E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.5E-03	1.5E-04
bis(2-Ethylhexyl)phthalate	4.7E-01	mg/kg	1.8E-03	mg/kg-d	1.8E+01	1.8E+02	mg/kg-d	9.6E-05	9.6E-06
Carbazole	8.9E-02	mg/kg	3.3E-04	mg/kg-d	1.0E+02	1.0E+03	mg/kg-d	3.3E-06	3.3E-07
Chrysene	6.8E-01	mg/kg	2.5E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.5E-03	2.5E-04
Dibenzo(a,h)anthracene	1.5E-01	mg/kg	5.5E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.5E-04	5.5E-05
Dibenzofuran	3.6E-02	mg/kg	1.3E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	5.3E-06	5.3E-07
Di-n-Butylphthalate	8.0E-02	mg/kg	3.0E-04	mg/kg-d	1.0E+02	4.0E+02	mg/kg-d	3.0E-06	7.5E-07
Fluoranthene	1.1E+00	mg/kg	4.1E-03	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	3.2E-05	1.6E-0
Fluorene	8.1E-02	mg/kg	3.0E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	1.2E-05	1.2E-06
Indeno(1,2,3-cd)pyrene	4.3E-01	mg/kg	1.6E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.6E-03	1.6E-04
Naphthalene	1.9E-02	mg/kg	7.1E-05	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	2.4E-06	2.4E-07
Phenanthrene	5.4E-01	mg/kg	2.0E-03	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	1.3E-04	1.3E-05
Pyrene	9.4E-01	mg/kg	3.5E-03	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	4.7E-05	2.8E-05
4,4'-DDD	2.6E-03	mg/kg	9.8E-06	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.2E-05	2.5E-06
4,4'-DDE	3.3E-03	mg/kg	1.2E-05	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.6E-05	3.1E-06
alpha-Chlordane	1.3E-03	mg/kg	5.0E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	1.1E-06	5.4E-07
Aroclor, Total	5.8E-02	mg/kg	2.2E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.4E-02	1.4E-03
Aroclor-1254	3.2E-02	mg/kg	1.2E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	8.0E-03	8.0E-04
Aroclor-1268	2.3E-02	mg/kg	8.6E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	5.7E-03	5.7E-04
Dieldrin	1.9E-03	mg/kg	7.1E-06	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	4.7E-04	4.7E-05
gamma-Chlordane	6.5E-04	mg/kg	2.4E-06	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.3E-07	2.6E-07
Technical Chlordane	1.1E-01	mg/kg	4.0E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	8.8E-05	4.4E-05
Arsenic	2.7E+00	mg/kg	1.0E-02	mg/kg-d	4.8E-02	4.8E-01	mg/kg-d	2.1E-01	2.1E-02
Barium	9.4E+01	mg/kg	3.5E-01	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	4.6E-03	2.2E-03
Cadmium	3.7E-01	mg/kg	1.4E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.4E-03	1.4E-04
Chromium	1.0E+01	mg/kg	3.9E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	2.6E-05	2.6E-06
Cobalt	6.2E+00	mg/kg	2.3E-02	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	3.0E-01	3.0E-02
Copper	1.2E+01	mg/kg	4.4E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	3.8E-03	2.9E-03
Lead	4.1E+01	mg/kg	1.5E-01	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.2E-03	4.0E-04
Mercury	5.1E-02	mg/kg	1.9E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.9E-04	1.9E-05
Mercury (methyl)	5.6E-04	mg/kg	2.1E-06	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	1.4E-04	8.5E-05
Molybdenum	1.6E+00	mg/kg	5.9E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	3.1E-02	3.1E-03
Selenium	6.2E-01	mg/kg	2.3E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.2E-02	7.1E-03
Silver	1.6E+00	mg/kg	5.8E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.6E-04	2.6E-05
Thallium	3.5E-01	mg/kg	1.3E-03	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	9.4E-03	9.4E-04
Zinc	1.0E+02	mg/kg	3.7E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	1.9E-03	9.6E-04
Toxicity Equivalency - Mammals	3.8E-06	mg/kg	1.4E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	1.4E-02	1.4E-03

US EPA ARCHIVE DOCUMENT

TABLE K-18.2
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : SEDIMENT (0-2 feet) / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: SEDIMENT
EXPOSURE MEDIUM: SEDIMENT (0-2 feet)
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
							HAZARD INDICES:	6.3E-01	7.5E-02

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-18.3
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : AQUATIC INVERTEBRATES / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 2
EXPOSURE MEDIUM: AQUATIC INVERTEBRATES
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
4,4'-DDE	3.6E-03	mg/kg	1.0E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	1.3E-04	2.5E-05
Aroclor, Total	1.1E-02	mg/kg	3.1E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	2.0E-02	2.0E-03
Aroclor-1254	1.0E-02	mg/kg	2.9E-04	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.9E-02	1.9E-03
Aroclor-1268	6.9E-04	mg/kg	1.9E-05	mg/kg-d	1.5E-02	1.5E-01	mg/kg-d	1.3E-03	1.3E-04
Heptachlor Epoxide	9.0E-05	mg/kg	2.5E-06	mg/kg-d	1.3E-01	1.8E-01	mg/kg-d	2.0E-05	1.4E-05
Technical Chlordane	8.8E-03	mg/kg	2.5E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	5.4E-05	2.7E-05
Barium	4.0E+01	mg/kg	1.1E+00	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	1.5E-02	6.9E-03
Cadmium	8.2E-02	mg/kg	2.3E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.3E-03	2.3E-04
Cobalt	8.3E-02	mg/kg	2.3E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	3.0E-02	3.0E-03
Copper	1.5E+01	mg/kg	4.2E-01	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	3.6E-02	2.8E-02
Lead	1.4E-01	mg/kg	3.9E-03	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	3.1E-05	1.0E-05
Manganese	1.1E+02	mg/kg	3.1E+00	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	3.5E-02	1.1E-02
Mercury	3.9E-02	mg/kg	1.1E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.1E-03	1.1E-04
Mercury (methyl)	3.9E-02	mg/kg	1.1E-03	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	7.2E-02	4.4E-02
Molybdenum	4.3E-02	mg/kg	1.2E-03	mg/kg-d	1.9E-01	1.9E+00	mg/kg-d	6.2E-03	6.2E-04
Nickel	2.5E-01	mg/kg	6.9E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	2.8E-04	1.1E-0
Selenium	1.3E-01	mg/kg	3.5E-03	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.7E-02	1.1E-02
Silver	2.2E-01	mg/kg	6.0E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	2.7E-04	2.7E-05
Thallium	7.1E-03	mg/kg	2.0E-04	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	1.4E-03	1.4E-04
Zinc	2.3E+01	mg/kg	6.4E-01	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	3.3E-03	1.6E-03
Toxicity Equivalency - Mammals	3.0E-06	mg/kg	8.3E-08	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	8.3E-02	8.3E-03
							HAZARD INDICES:	3.4E-01	1.2E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

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TABLE K-18.4
CALCULATION OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS : FISH / OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
MEDIUM: BIOTA 3
EXPOSURE MEDIUM: FISH
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Medium EPC	Medium EPC Units	Estimated Daily Intake[a]	Daily Intake Units	Reference Dose (NOAEL)[b]	Reference Dose (LOAEL)[b]	Reference Dose Units	Hazard Quotient (NOAEL)[c]	Hazard Quotient (LOAEL)[c]
1,1'-Biphenyl	6.4E-04	mg/kg	1.0E-04	mg/kg-d	5.0E+01	2.5E+02	mg/kg-d	2.0E-06	4.1E-07
2-Methylnaphthalene	1.7E-02	mg/kg	2.7E-03	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	9.1E-05	9.1E-06
Acenaphthene	4.1E-04	mg/kg	6.5E-05	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	1.9E-06	1.9E-07
Acenaphthylene	9.1E-04	mg/kg	1.4E-04	mg/kg-d	3.5E+01	3.5E+02	mg/kg-d	4.1E-06	4.1E-07
Anthracene	7.9E-04	mg/kg	1.2E-04	mg/kg-d	2.0E+02	2.0E+03	mg/kg-d	6.2E-07	6.2E-08
Benzo(a)anthracene	3.3E-03	mg/kg	5.3E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.3E-04	5.3E-05
Benzo(a)pyrene	3.3E-03	mg/kg	5.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.2E-04	5.2E-05
Benzo(b)fluoranthene	4.2E-03	mg/kg	6.6E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	6.6E-04	6.6E-05
Benzo(g,h,i)perylene	2.2E-03	mg/kg	3.5E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	3.5E-04	3.5E-05
Benzo(k)fluoranthene	3.6E-03	mg/kg	5.8E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	5.8E-04	5.8E-05
Chrysene	4.5E-03	mg/kg	7.2E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	7.2E-04	7.2E-05
Dibenzo(a,h)anthracene	1.1E-03	mg/kg	1.7E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.7E-04	1.7E-05
Dibenzofuran	5.5E-04	mg/kg	8.8E-05	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	3.5E-06	3.5E-07
Fluoranthene	9.6E-03	mg/kg	1.5E-03	mg/kg-d	1.3E+02	2.5E+02	mg/kg-d	1.2E-05	6.1E-06
Fluorene	9.0E-04	mg/kg	1.4E-04	mg/kg-d	2.5E+01	2.5E+02	mg/kg-d	5.7E-06	5.7E-07
Indeno(1,2,3-cd)pyrene	2.8E-03	mg/kg	4.5E-04	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	4.5E-04	4.5E-05
Naphthalene	7.7E-03	mg/kg	1.2E-03	mg/kg-d	3.0E+01	3.0E+02	mg/kg-d	4.1E-05	4.1E-06
Phenanthrene	7.1E-03	mg/kg	1.1E-03	mg/kg-d	1.5E+01	1.5E+02	mg/kg-d	7.5E-05	7.5E-06
Pyrene	5.9E-03	mg/kg	9.3E-04	mg/kg-d	7.5E+01	1.3E+02	mg/kg-d	1.2E-05	7.4E-06
4,4'-DDD	2.4E-03	mg/kg	3.7E-04	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	4.7E-04	9.4E-05
4,4'-DDE	1.3E-02	mg/kg	2.0E-03	mg/kg-d	8.0E-01	4.0E+00	mg/kg-d	2.5E-03	5.0E-04
alpha-Chlordane	1.7E-03	mg/kg	2.8E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	6.0E-05	3.0E-05
gamma-Chlordane	9.4E-04	mg/kg	1.5E-04	mg/kg-d	4.6E+00	9.2E+00	mg/kg-d	3.3E-05	1.6E-05
Aluminum	9.9E+00	mg/kg	1.6E+00	mg/kg-d	1.9E+00	1.9E+01	mg/kg-d	8.2E-01	8.2E-02
Barium	9.2E-01	mg/kg	1.5E-01	mg/kg-d	7.5E+01	1.6E+02	mg/kg-d	2.0E-03	9.1E-04
Beryllium	3.5E-04	mg/kg	5.5E-05	mg/kg-d	1.2E+00	1.2E+01	mg/kg-d	4.6E-05	4.6E-06
Cadmium	1.5E-02	mg/kg	2.4E-03	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	2.4E-03	2.4E-04
Chromium	9.1E-02	mg/kg	1.4E-02	mg/kg-d	1.5E+03	1.5E+04	mg/kg-d	9.9E-06	9.9E-07
Cobalt	4.0E-02	mg/kg	6.3E-03	mg/kg-d	7.6E-02	7.6E-01	mg/kg-d	8.3E-02	8.3E-03
Copper	5.8E-01	mg/kg	9.2E-02	mg/kg-d	1.2E+01	1.5E+01	mg/kg-d	7.9E-03	6.1E-03
Lead	8.9E-02	mg/kg	1.4E-02	mg/kg-d	1.3E+02	3.8E+02	mg/kg-d	1.1E-04	3.8E-05
Manganese	4.3E+00	mg/kg	6.8E-01	mg/kg-d	8.8E+01	2.8E+02	mg/kg-d	7.8E-03	2.4E-03
Mercury	7.7E-02	mg/kg	1.2E-02	mg/kg-d	1.0E+00	1.0E+01	mg/kg-d	1.2E-02	1.2E-03
Mercury (methyl)	7.7E-02	mg/kg	1.2E-02	mg/kg-d	1.5E-02	2.5E-02	mg/kg-d	8.2E-01	5.0E-01
Nickel	3.8E-02	mg/kg	6.0E-03	mg/kg-d	2.5E+01	6.3E+01	mg/kg-d	2.4E-04	9.6E-05
Selenium	1.9E-01	mg/kg	3.1E-02	mg/kg-d	2.0E-01	3.3E-01	mg/kg-d	1.5E-01	9.3E-02
Silver	2.1E-02	mg/kg	3.4E-03	mg/kg-d	2.2E+01	2.2E+02	mg/kg-d	1.5E-04	1.5E-05
Thallium	3.2E-03	mg/kg	5.0E-04	mg/kg-d	1.4E-01	1.4E+00	mg/kg-d	3.6E-03	3.6E-04
Vanadium	7.1E-02	mg/kg	1.1E-02	mg/kg-d	4.2E-01	2.1E+00	mg/kg-d	2.7E-02	5.3E-03
Zinc	9.8E+00	mg/kg	1.6E+00	mg/kg-d	2.0E+02	3.9E+02	mg/kg-d	8.0E-03	4.0E-03
Toxicity Equivalency - Mammals	2.2E-06	mg/kg	3.4E-07	mg/kg-d	1.0E-06	1.0E-05	mg/kg-d	3.4E-01	3.4E-02
							HAZARD INDICES:	2.3E+00	7.4E-01

Notes:
a. Estimated Daily Intake (EDI) calculated using parameters presented in Table I-3.
b. Reference Dose Values presented in Table D-4.
c. Hazard Quotients (HQs) calculated by dividing the Estimated Daily Intake dose by either the NOAEL- or LOAEL-based Reference Dose.

TABLE K-18.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME: CURRENT/FUTURE
EXPOSURE POINT: ASSAPUMPSET POND - CT
RECEPTOR: OTTER
TOTAL RISK (HI): 3.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		1.4E-04	-	7.2E-02	8.2E-01	8.9E-01	***27%***
Aluminum	6.5E-03				8.2E-01	8.2E-01	***25%***
Toxicity Equivalency - Mammals	4.3E-04	1.4E-02	-	8.3E-02	3.4E-01	4.4E-01	***13%***
Cobalt	1.2E-04	3.0E-01	-	3.0E-02	8.3E-02	4.2E-01	***13%***
Arsenic		2.1E-01	-			2.1E-01	6%
Selenium	3.3E-05	1.2E-02	-	1.7E-02	1.5E-01	1.8E-01	6%
Copper	1.4E-05	3.8E-03	-	3.6E-02	7.9E-03	4.7E-02	1%
Manganese	1.2E-04			3.5E-02	7.8E-03	4.3E-02	1%
Molybdenum		3.1E-02	-	6.2E-03		3.7E-02	1%
Aroclor, Total		1.4E-02	-	2.0E-02		3.5E-02	1%
Aroclor-1254		8.0E-03	-	1.9E-02		2.7E-02	1%
Vanadium					2.7E-02	2.7E-02	1%
Barium		4.6E-03	-	1.5E-02	2.0E-03	2.1E-02	1%
Thallium	3.0E-06	9.4E-03	-	1.4E-03	3.6E-03	1.4E-02	0%
Mercury		1.9E-04	-	1.1E-03	1.2E-02	1.3E-02	0%
Zinc	1.4E-05	1.9E-03	-	3.3E-03	8.0E-03	1.3E-02	0%
Aroclor-1268		5.7E-03	-	1.3E-03		7.0E-03	0%
Cadmium		1.4E-03	-	2.3E-03	2.4E-03	6.0E-03	0%
Chrysene		2.5E-03	-		7.2E-04	3.2E-03	0%
Benzo(b)fluoranthene		2.3E-03	-		6.6E-04	3.0E-03	0%
4,4'-DDE		1.6E-05	-	1.3E-04	2.5E-03	2.7E-03	0%
Benzo(a)pyrene		2.0E-03	-		5.2E-04	2.5E-03	0%
Benzo(a)anthracene		1.9E-03	-		5.3E-04	2.5E-03	0%
Benzo(k)fluoranthene		1.5E-03	-		5.8E-04	2.1E-03	0%
Indeno(1,2,3-cd)pyrene		1.6E-03	-		4.5E-04	2.0E-03	0%
Benzo(g,h,i)perylene		1.5E-03	-		3.5E-04	1.8E-03	0%
Lead	2.4E-07	1.2E-03	-	3.1E-05	1.1E-04	1.3E-03	0%
Dibenzo(a,h)anthracene		5.5E-04	-		1.7E-04	7.3E-04	0%
Silver		2.6E-04	-	2.7E-04	1.5E-04	6.8E-04	0%
Nickel	5.5E-06			2.8E-04	2.4E-04	5.3E-04	0%
4,4'-DDD		1.2E-05	-		4.7E-04	4.8E-04	0%
Dieldrin		4.7E-04	-			4.7E-04	0%
Phenanthrene		1.3E-04	-		7.5E-05	2.1E-04	0%
Technical Chlordane		8.8E-05	-	5.4E-05		1.4E-04	0%
bis(2-Ethylhexyl)phthalate	4.4E-06	9.6E-05	-			1.0E-04	0%
2-Methylnaphthalene		2.3E-06	-		9.1E-05	9.4E-05	0%
alpha-Chlordane		1.1E-06	-		6.0E-05	6.1E-05	0%
Pyrene		4.7E-05	-		1.2E-05	5.9E-05	0%
Beryllium	3.3E-06				4.6E-05	4.9E-05	0%
Fluoranthene		3.2E-05	-		1.2E-05	4.5E-05	0%
Naphthalene		2.4E-06	-		4.1E-05	4.3E-05	0%
Chromium		2.6E-05	-		9.9E-06	3.6E-05	0%
gamma-Chlordane		5.3E-07	-		3.3E-05	3.3E-05	0%
Heptachlor epoxide				2.0E-05		2.0E-05	0%
Fluorene		1.2E-05	-		5.7E-06	1.8E-05	0%

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TABLE K-18.5
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING NOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	3.3E+00

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthylene		6.3E-06	-		4.1E-06	1.0E-05	0%
Dibenzofuran		5.3E-06	-		3.5E-06	8.9E-06	0%
Acenaphthene		3.6E-06	-		1.9E-06	5.5E-06	0%
Anthracene		2.7E-06	-		6.2E-07	3.4E-06	0%
Carbazole		3.3E-06	-			3.3E-06	0%
Di-n-Butylphthalate		3.0E-06	-			3.0E-06	0%
1,1'-Biphenyl					2.0E-06	2.0E-06	0%
Antimony							
Toxicity Equivalency (PCB) - Mammals							
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248							
Aroclor-1260							
gamma-BHC							
4-Chloro-3-methylphenol							
4,4'-DDT							
2-Chlorophenol							
Endrin							
4-Nitrophenol							
Phenol							
Endosulfan II							
Endosulfan sulfate							
Heptachlor							
Dimethylphthalate							
Methoxychlor							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**7.3E-03**	**6.3E-01**	**-**	**3.4E-01**	**2.3E+00**	**3.3E+00**	
PERCENTAGE OF TOTAL RISK	**0%**	**19%**		**11%**	**70%**	**100%**	

Footnotes:

a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.

b. Combined risk across all media exposures.

c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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TABLE K-18.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	9.3E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Mercury (methyl)		8.5E-05	-	4.4E-02	5.0E-01	5.4E-01	***58%***
Selenium	2.0E-05	7.1E-03	-	1.1E-02	9.3E-02	1.1E-01	***12%***
Aluminum	6.5E-04				8.2E-02	8.2E-02	9%
Toxicity Equivalency - Mammals	4.3E-05	1.4E-03	-	8.3E-03	3.4E-02	4.4E-02	5%
Cobalt	1.2E-05	3.0E-02	-	3.0E-03	8.3E-03	4.2E-02	4%
Copper	1.1E-05	2.9E-03	-	2.8E-02	6.1E-03	3.7E-02	4%
Arsenic		2.1E-02	-			2.1E-02	2%
Manganese	3.9E-05			1.1E-02	2.4E-03	1.3E-02	1%
Barium		2.2E-03	-	6.9E-03	9.1E-04	1.0E-02	1%
Zinc	7.1E-06	9.6E-04	-	1.6E-03	4.0E-03	6.6E-03	1%
Vanadium					5.3E-03	5.3E-03	1%
Molybdenum		3.1E-03	-	6.2E-04		3.7E-03	0%
Aroclor, Total		1.4E-03	-	2.0E-03		3.5E-03	0%
Aroclor-1254		8.0E-04	-	1.9E-03		2.7E-03	0%
Thallium	3.0E-07	9.4E-04	-	1.4E-04	3.6E-04	1.4E-03	0%
Mercury		1.9E-05	-	1.1E-04	1.2E-03	1.3E-03	0%
Aroclor-1268		5.7E-04	-	1.3E-04		7.0E-04	0%
Cadmium		1.4E-04	-	2.3E-04	2.4E-04	6.0E-04	0%
4,4'-DDE		3.1E-06	-	2.5E-05	5.0E-04	5.3E-04	0%
Lead	7.9E-08	4.0E-04	-	1.0E-05	3.8E-05	4.5E-04	0%
Chrysene		2.5E-04	-		7.2E-05	3.2E-04	0%
Benzo(b)fluoranthene		2.3E-04	-		6.6E-05	3.0E-04	0%
Benzo(a)pyrene		2.0E-04	-		5.2E-05	2.5E-04	0%
Benzo(a)anthracene		1.9E-04	-		5.3E-05	2.5E-04	0%
Benzo(k)fluoranthene		1.5E-04	-		5.8E-05	2.1E-04	0%
Nickel	2.2E-06			1.1E-04	9.6E-05	2.1E-04	0%
Indeno(1,2,3-cd)pyrene		1.6E-04	-		4.5E-05	2.0E-04	0%
Benzo(g,h,i)perylene		1.5E-04	-		3.5E-05	1.8E-04	0%
4,4'-DDD		2.5E-06	-		9.4E-05	9.6E-05	0%
Dibenzo(a,h)anthracene		5.5E-05	-		1.7E-05	7.3E-05	0%
Technical Chlordane		4.4E-05	-	2.7E-05		7.1E-05	0%
Silver		2.6E-05	-	2.7E-05	1.5E-05	6.8E-05	0%
Dieldrin		4.7E-05	-			4.7E-05	0%
Pyrene		2.8E-05	-		7.4E-06	3.6E-05	0%
alpha-Chlordane		5.4E-07	-		3.0E-05	3.1E-05	0%
Fluoranthene		1.6E-05	-		6.1E-06	2.2E-05	0%
Phenanthrene		1.3E-05	-		7.5E-06	2.1E-05	0%
gamma-Chlordane		2.6E-07	-		1.6E-05	1.7E-05	0%
Heptachlor epoxide				1.4E-05		1.4E-05	0%
bis(2-Ethylhexyl)phthalate	4.4E-07	9.6E-06	-			1.0E-05	0%
2-Methylnaphthalene		2.3E-07	-		9.1E-06	9.4E-06	0%
Beryllium	3.3E-07				4.6E-06	4.9E-06	0%
Naphthalene		2.4E-07	-		4.1E-06	4.3E-06	0%
Chromium		2.6E-06	-		9.9E-07	3.6E-06	0%
Fluorene		1.2E-06	-		5.7E-07	1.8E-06	0%

US EPA ARCHIVE DOCUMENT

TABLE K-18.6
SUMMARY OF EXPOSURE PATHWAY/MEDIUM-SPECIFIC HAZARD QUOTIENTS USING LOAEL-BASED RTVs : OTTER

BASELINE ECOLOGICAL RISK ASSESSMENT - INTERIM FINAL
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SCENARIO TIMEFRAME:	CURRENT/FUTURE
EXPOSURE POINT:	ASSAPUMPSET POND - CT
RECEPTOR:	OTTER
TOTAL RISK (HI):	9.3E-01

Prepared:	10-Apr-03	SJD
Checked:	16-Jul-03	RAR

Analyte	Exposure Medium[a]					Combined HQs[b]	Percent Contribution[c]
	Surface Water	Sediment	Aquatic Plants	Aquatic Invertebrates	Fish		
Acenaphthylene		6.3E-07	-		4.1E-07	1.0E-06	0%
Dibenzofuran		5.3E-07	-		3.5E-07	8.9E-07	0%
Di-n-Butylphthalate		7.5E-07	-			7.5E-07	0%
Acenaphthene		3.6E-07	-		1.9E-07	5.5E-07	0%
1,1'-Biphenyl					4.1E-07	4.1E-07	0%
Anthracene		2.7E-07	-		6.2E-08	3.4E-07	0%
Carbazole		3.3E-07	-			3.3E-07	0%
Antimony							
Toxicity Equivalency (PCB) - Mammals							
N-Nitroso-di-n-propylamine							
Pentachlorophenol							
2,4-Dinitrotoluene							
Aroclor-1248							
Aroclor-1260							
gamma-BHC							
4-Chloro-3-methylphenol							
4,4'-DDT							
2-Chlorophenol							
Endrin							
4-Nitrophenol							
Phenol							
Endosulfan II							
Endosulfan sulfate							
Heptachlor							
Dimethylphthalate							
Methoxychlor							
Cyanide							
Aroclor-1242							
Endrin Ketone							
Endrin aldehyde							
4-Methylphenol							
2,4,5-Trichlorophenol							
Atrazine							
Iron							
TOTAL MEDIUM-SPECIFIC RISK	**7.9E-04**	**7.5E-02**	**-**	**1.2E-01**	**7.4E-01**	**9.3E-01**	
PERCENTAGE OF TOTAL RISK	**0%**	**8%**		**13%**	**79%**	**100%**	

Footnotes:
a. Hazard Quotients presented by exposure medium; a blank cell indicates that the analyte was not a CPC for that medium; a dash entry indicates that there was no assumed exposure to that medium.
b. Combined risk across all media exposures.
c. Relative contribution of CPC to total risk associated with the ingestion exposure pathway.

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