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Remedial Investigation/Feasibility Study for the Clinch River/Poplar Creek Operable Unit

Volume 3. Appendix E



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Remedial Investigation/Feasibility Study for the Clinch River/Poplar Creek Operable Unit

Volume 3. Appendix E

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Appendix E

HUMAN HEALTH RISK ASSESSMENT

Table E.1. Summary statistics for surface water collected in the Clinch River

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Inorganic	Alkalinity as CaCO3	48/48	1.7E+00	1.2E+02	5.8E+01	6.9E+01	mg/L	-
1	Inorganic	Aluminum	47/48	5.0E-02	1.8E+00	2.5E-01	3.3E-01	mg/L	+
1	Inorganic	Ammonium nitrogen	27/28	3.0E-02	9.0E-02	4.4E-02	5.0E-02	mg/L	-
1	Inorganic	Antimony	Jan-51	1.0E-03	5.0E-02	1.1E-03	5.0E-02	mg/L	FD
1	Inorganic	Arsenic	Apr-51	1.0E-03	5.0E-02	1.1E-03	1.2E-03	mg/L	+
1	Inorganic	Barium	48/48	2.3E-02	9.2E-02	3.2E-02	3.5E-02	mg/L	+
1	Inorganic	Beryllium	Jan-51	1.0E-03	3.9E-03	1.4E-03	3.9E-03	mg/L	FD
1	Inorganic	Boron	16/20	1.1E-02	1.1E-01	5.2E-02	6.5E-02	mg/L	+
1	Inorganic	Cadmium	0/51	2.1E-04	5.0E-03		5.0E-03	mg/L	ND
1	Inorganic	Calcium	51/51	2.3E+01	3.9E+01	3.1E+01	3.2E+01	mg/L	-
1	Inorganic	Chloride	28/28	2.4E+00	5.3E+00	3.4E+00	3.6E+00	mg/L	-
1	Inorganic	Chromium	20/51	1.0E-03	1.2E-02	2.6E-03	3.1E-03	mg/L	+
1	Inorganic	Cobalt	Jan-48	1.0E-03	4.5E-03	4.5E-03	4.5E-03	mg/L	FD
1	Inorganic	Copper	19/51	1.5E-03	8.3E-02	5.1E-03	7.9E-03	mg/L	-
1	Inorganic	Cyanide	0/53	2.0E-03	2.0E-02		2.0E-02	mg/L	ND
1	Inorganic	Fluoride	28-Nov	1.0E-01	3.5E-01	1.2E-01	1.3E-01	mg/L	-
1	Inorganic	Iron	47/51	5.0E-02	2.3E+00	3.2E-01	4.1E-01	mg/L	+
1	Inorganic	Lead	Oct-51	9.0E-04	5.0E-02	1.5E-03	1.7E-03	mg/L	-
1	Inorganic	Magnesium	51/51	5.8E+00	1.1E+01	8.6E+00	8.9E+00	mg/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Inorganic	Manganese	47/48	1.0E-03	1.2E-01	5.6E-02	6.3E-02	mg/L	+
1	Inorganic	Mercury	Aug-71	1.2E-06	2.0E-04	9.9E-06	1.5E-05	mg/L	+
1	Inorganic	Methyl mercury	0/20	3.6E-08	1.4E-07		1.4E-07	mg/L	ND
1	Inorganic	Molybdenum	0/20	1.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Inorganic	Nickel	18/51	1.0E-03	1.9E-02	3.0E-03	3.6E-03	mg/L	+
1	Inorganic	Nitrate	28/28	8.2E-01	2.5E+01	3.5E+00	5.0E+00	mg/L	+
1	Inorganic	Phosphorus	18/28	1.3E-01	5.2E-01	2.7E-01	3.1E-01	mg/L	-
1	Inorganic	Potassium	34/48	1.0E+00	2.6E+00	1.6E+00	1.7E+00	mg/L	-
1	Inorganic	Selenium	0/51	9.7E-04	5.0E-02		5.0E-02	mg/L	ND
1	Inorganic	Silver	0/51	7.4E-04	5.0E-03		5.0E-03	mg/L	ND
1	Inorganic	Sodium	51/51	2.5E+00	7.4E+00	4.4E+00	4.7E+00	mg/L	-
1	Inorganic	Sulfate	28/28	1.4E+01	3.0E+01	2.1E+01	2.2E+01	mg/L	+
1	Inorganic	Thallium	Jan-48	1.0E-03	1.1E+00	1.1E+00	1.1E+00	mg/L	FD
1	Inorganic	Total hardness	28/28	8.9E+01	1.5E+02	1.2E+02	1.2E+02	mg/L	-
1	Inorganic	Uranium	17/45	1.0E-04	1.6E-03	3.2E-04	4.2E-04	mg/L	+
1	Inorganic	Vanadium	Nov-48	1.0E-03	2.3E-02	2.0E-03	2.8E-03	mg/L	+
1	Inorganic	Zinc	27/51	2.2E-03	1.9E-01	1.1E-02	1.8E-02	mg/L	+
1	Organic	1,1,1-Trichloroethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,1,2,2-Tetrachloroethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	1,1,2-Trichloroethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,1-Dichloroethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,1-Dichloroethene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,2,4-Trichlorobenzene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	1,2-Dichlorobenzene	0/3	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	1,2-Dichloroethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,2-Dichloroethene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,2-Dichloropropane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	1,3-Dichlorobenzene	0/3	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	1,4-Dichlorobenzene	0/3	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,2'-oxybis(1-chloropropane)	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,4,5-Trichlorophenol	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	2,4,6-Trichlorophenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,4-Dichlorophenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,4-Dimethylphenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,4-Dinitrophenol	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	2,4-Dinitrotoluene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2,6-Dinitrotoluene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Butanone	28-Apr	1.0E-03	1.1E-02	3.4E-03	5.9E-03	mg/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	2-Chloronaphthalene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Chlorophenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Hexanone	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Methyl-4,6-dinitrophenol	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	2-Methylnaphthalene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Methylphenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	2-Nitroaniline	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	2-Nitrophenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	3,3'-Dichlorobenzidine	0/23	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
1	Organic	3-Nitroaniline	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	4,4'-DDD	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	4,4'-DDE	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	4,4'-DDT	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	4-Bromophenyl phenyl ether	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	4-Chloro-3-methylphenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	4-Chlorobenzenamine	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	4-Chlorophenylphenyl ether	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	4-Methyl-2-pentanone	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	4-Methylphenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	4-Nitroaniline	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	4-Nitrophenol	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	Acenaphthene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Acenaphthylene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Acetone	28-Jan	7.0E-03	1.0E-02	7.0E-03	1.0E-02	mg/L	FD
1	Organic	Aldrin	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	Anthracene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Benzene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Benzo(a)anthracene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Benzo(a)pyrene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Benzo(b)fluoranthene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Benzo(ghi)perylene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	-
1	Organic	Benzo(k)fluoranthene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Benzoic acid	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	Benzyl alcohol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Bis(2-chloroethoxy)methane	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Bis(2-chloroethyl) ether	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Bis(2-ethylhexyl)phthalate	23-Jan	2.0E-03	1.0E-02	2.0E-03	1.0E-02	mg/L	FD
1	Organic	Bromodichloromethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Bromoform	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Bromomethane	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Butylbenzylphthalate	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Carbazole	0/20	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Carbon disulfide	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Carbon tetrachloride	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Chlordane, total	0/22	2.0E-05	1.0E-03		1.0E-03	mg/L	ND
1	Organic	Chlorobenzene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Chloroethane	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Chloroform	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Chloromethane	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Chrysene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Di-n-butylphthalate	23-Jun	1.0E-03	1.0E-02	1.9E-03	2.5E-03	mg/L	+
1	Organic	Di-n-octylphthlate	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Dibenz(a,h)anthracene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Dibenzofuran	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Dibromochloromethane	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Dieldrin	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	Diethylphthalate	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Dimethylbenzene	28-Jan	1.4E-03	5.0E-03	1.4E-03	5.0E-03	mg/L	FD
1	Organic	Dimethylphthalate	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Endosulfan	0/22	3.0E-05	1.5E-04		1.5E-04	mg/L	ND
1	Organic	Endosulfan I	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	Endosulfan II	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	Endosulfan sulfate	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	Endrin	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	Endrin aldehyde	0/20	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
1	Organic	Endrin ketone	0/22	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
1	Organic	Ethylbenzene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Fluoranthene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Fluorene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Heptachlor	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	Heptachlor epoxide	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	Hexachlorobenzene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Hexachlorobutadiene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Hexachlorocyclopentadiene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Hexachloroethane	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Indeno(1,2,3-cd)pyrene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Isophorone	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Lindane	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	Methoxychlor	0/22	9.9E-05	5.0E-04		5.0E-04	mg/L	ND
1	Organic	Methylene chloride	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	N-Nitroso-di-n-propylamine	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	N-Nitrosodiphenylamine	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Naphthalene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	-
1	Organic	Nitrobenzene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	PCB-1016	0/22	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
1	Organic	PCB-1221	0/22	4.0E-04	5.0E-04		5.0E-04	mg/L	ND
1	Organic	PCB-1232	0/22	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
1	Organic	PCB-1242	0/22	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
1	Organic	PCB-1248	0/22	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
1	Organic	PCB-1254	0/22	2.0E-04	1.0E-03		1.0E-03	mg/L	ND
1	Organic	PCB-1260	0/22	2.0E-04	1.0E-03		1.0E-03	mg/L	ND
1	Organic	Pentachlorophenol	0/23	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
1	Organic	Phenanthrene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	-
1	Organic	Phenol	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
1	Organic	Pyrene	0/23	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Styrene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Tetrachloroethene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Toluene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	Toxaphene	0/22	9.9E-04	1.0E-03		1.0E-03	mg/L	ND
1	Organic	Trichloroethene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	-
1	Organic	Vinyl chloride	0/28	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
1	Organic	alpha-BHC	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	alpha-Chlordane	0/22	9.9E-06	5.0E-04		5.0E-04	mg/L	ND
1	Organic	beta-BHC	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	ND
1	Organic	cis-1,3-Dichloropropene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Organic	delta-BHC	0/22	9.9E-06	5.0E-05		5.0E-05	mg/L	-
1	Organic	gamma-Chlordane	0/22	9.9E-06	5.0E-04		5.0E-04	mg/L	ND
1	Organic	trans-1,3-Dichloropropene	0/28	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
1	Radionuclide	Cesium-137	0/31	-4.0E+00	2.9E+00		2.9E+00	pCi/L	ND
1	Radionuclide	Cobalt-60	31-Jul	-1.1E+00	1.2E+01	3.3E+00	3.9E+00	pCi/L	+
1	Radionuclide	Gross alpha activity	15/48	-6.5E-01	4.8E+00	1.1E+00	1.3E+00	pCi/L	-
1	Radionuclide	Gross beta activity	36/48	8.1E-01	1.9E+01	4.4E+00	5.2E+00	pCi/L	-
1	Radionuclide	Strontium-90	17/51	-8.0E-01	4.8E+00	8.4E-01	1.1E+00	pCi/L	+
1	Radionuclide	Technetium-99	28-Jun	-3.8E+00	2.3E+01	5.8E+00	7.0E+00	pCi/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Radionuclide	Tritium	May-45	-4.2E+02	2.7E+03	5.8E+02	6.7E+02	pCi/L	+
1	Radionuclide	Uranium - radioactive	17/28	-6.2E-01	3.5E+00	9.0E-01	1.2E+00	pCi/L	+
2	Inorganic	Alkalinity as CaCO3	40/40	1.6E+00	1.2E+02	4.6E+01	6.0E+01	mg/L	-
2	Inorganic	Aluminum	40/40	3.9E-02	1.2E+00	2.2E-01	2.8E-01	mg/L	+
2	Inorganic	Ammonium nitrogen	17/18	2.0E-02	1.6E-01	5.3E-02	6.7E-02	mg/L	-
2	Inorganic	Antimony	Jan-42	1.0E-03	5.0E-02	1.3E-03	5.0E-02	mg/L	FD
2	Inorganic	Arsenic	Feb-42	1.0E-03	5.0E-02	1.1E-03	1.1E-03	mg/L	FD
2	Inorganic	Barium	39/40	1.0E-03	4.6E-02	3.0E-02	3.1E-02	mg/L	+
2	Inorganic	Beryllium	0/42	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
2	Inorganic	Boron	22-Dec	3.0E-03	9.0E-02	4.4E-02	4.9E-02	mg/L	+
2	Inorganic	Cadmium	0/42	2.1E-04	5.0E-03		5.0E-03	mg/L	ND
2	Inorganic	Calcium	42/42	2.3E+01	3.8E+01	3.0E+01	3.1E+01	mg/L	-
2	Inorganic	Chloride	18/18	3.0E+00	5.3E+00	3.8E+00	4.0E+00	mg/L	-
2	Inorganic	Chromium	15/42	1.0E-03	3.2E-02	2.4E-03	3.7E-03	mg/L	+
2	Inorganic	Cobalt	Jan-40	1.0E-03	4.5E-03	4.5E-03	4.5E-03	mg/L	FD
2	Inorganic	Copper	23/42	1.0E-03	2.2E-02	4.9E-03	6.1E-03	mg/L	-
2	Inorganic	Cyanide	0/36	2.0E-03	2.0E-02		2.0E-02	mg/L	ND
2	Inorganic	Fluoride	18-Jul	1.0E-01	1.3E-01	1.1E-01	1.1E-01	mg/L	-
2	Inorganic	Iron	39/42	4.9E-02	1.1E+00	3.0E-01	3.7E-01	mg/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Inorganic	Lead	Dec-42	3.6E-04	5.0E-02	1.3E-03	1.5E-03	mg/L	-
2	Inorganic	Magnesium	42/42	6.0E+00	1.0E+01	8.1E+00	8.4E+00	mg/L	+
2	Inorganic	Manganese	40/40	9.8E-03	3.8E-01	5.5E-02	7.0E-02	mg/L	+
2	Inorganic	Mercury	Mar-49	4.8E-07	2.0E-04	8.6E-06	1.5E-05	mg/L	+
2	Inorganic	Methyl mercury	7-Jan	4.2E-08	8.3E-08	5.0E-08	8.3E-08	mg/L	+
2	Inorganic	Molybdenum	0/22	1.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Inorganic	Nickel	19/42	1.0E-03	1.9E-02	3.4E-03	4.2E-03	mg/L	+
2	Inorganic	Nitrate	18/18	1.0E+00	5.6E+00	2.8E+00	3.4E+00	mg/L	+
2	Inorganic	Phosphorus	14/18	1.8E-01	4.8E-01	2.8E-01	3.2E-01	mg/L	-
2	Inorganic	Potassium	28/40	1.0E+00	2.3E+00	1.5E+00	1.6E+00	mg/L	-
2	Inorganic	Selenium	0/42	9.7E-04	5.0E-02		5.0E-02	mg/L	ND
2	Inorganic	Silver	0/42	7.4E-04	5.0E-03		5.0E-03	mg/L	ND
2	Inorganic	Sodium	42/42	3.0E+00	9.2E+00	4.7E+00	5.0E+00	mg/L	-
2	Inorganic	Sulfate	18/18	1.6E+01	2.7E+01	2.0E+01	2.1E+01	mg/L	+
2	Inorganic	Thallium	0/40	1.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Inorganic	Total hardness	18/18	1.0E+02	1.3E+02	1.2E+02	1.2E+02	mg/L	-
2	Inorganic	Uranium	Sep-38	1.0E-04	3.0E-03	3.0E-04	4.7E-04	mg/L	+
2	Inorganic	Vanadium	Oct-40	1.0E-03	3.0E-03	1.4E-03	1.6E-03	mg/L	+
2	Inorganic	Zinc	27/42	3.6E-03	5.2E-02	1.1E-02	1.4E-02	mg/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	1,1,1-Trichloroethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,1,2,2-Tetrachloroethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,1,2-Trichloroethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,1-Dichloroethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,1-Dichloroethene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,2,4-Trichlorobenzene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	1,2-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	1,2-Dichloroethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,2-Dichloroethene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,2-Dichloropropane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	1,3-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	1,4-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2,2'-oxybis(1-chloropropane)	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2,4,5-Trichlorophenol	0/21	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	2,4,6-Trichlorophenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2,4-Dichlorophenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2,4-Dimethylphenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2,4-Dinitrophenol	0/21	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	2,4-Dinitrotoluene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	2,6-Dinitrotoluene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Butanone	18-Jan	2.0E-03	1.0E-02	2.0E-03	1.0E-02	mg/L	+
2	Organic	2-Chloronaphthalene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Chlorophenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Hexanone	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Methyl-4,6-dinitrophenol	0/21	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	2-Methylnaphthalene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Methylphenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	2-Nitroaniline	0/22	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	2-Nitrophenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	3,3'-Dichlorobenzidine	0/22	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
2	Organic	3-Nitroaniline	0/22	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	4,4'-DDD	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	4,4'-DDE	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	4,4'-DDT	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	4-Bromophenyl phenyl ether	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	4-Chloro-3-methylphenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	4-Chlorobenzenamine	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	4-Chlorophenylphenyl ether	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	4-Methyl-2-pentanone	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	4-Methylphenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	4-Nitroaniline	0/22	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	4-Nitrophenol	0/21	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	Acenaphthene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Acenaphthylene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Acetone	18-Jan	1.0E-02	1.4E-02	1.4E-02	1.4E-02	mg/L	+
2	Organic	Aldrin	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	Anthracene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Benzene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Benzo(a)anthracene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Benzo(a)pyrene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Benzo(b)fluoranthene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Benzo(ghi)perylene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	-
2	Organic	Benzo(k)fluoranthene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Benzoic acid	0/22	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	Benzyl alcohol	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Bis(2-chloroethoxy)methane	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Bis(2-chloroethyl) ether	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	Bis(2-ethylhexyl)phthalate	22-Jan	5.0E-03	3.8E-02	3.8E-02	3.8E-02	mg/L	FD
2	Organic	Bromodichloromethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Bromoform	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Bromomethane	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Butylbenzylphthalate	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Carbazole	0/20	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Carbon disulfide	18-Jan	5.0E-03	1.0E-02	1.0E-02	1.0E-02	mg/L	+
2	Organic	Carbon tetrachloride	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Chlordane, total	0/20	1.2E-05	1.0E-03		1.0E-03	mg/L	ND
2	Organic	Chlorobenzene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Chloroethane	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Chloroform	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Chloromethane	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Chrysene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Di-n-butylphthalate	22-Mar	1.0E-03	1.0E-02	1.7E-03	2.8E-03	mg/L	+
2	Organic	Di-n-octylphthlate	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Dibenz(a,h)anthracene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Dibenzofuran	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Dibromochloromethane	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	Dieldrin	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	Diethylphthalate	22-Jan	1.0E-03	1.0E-02	1.0E-03	1.0E-02	mg/L	FD
2	Organic	Dimethylbenzene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Dimethylphthalate	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Endosulfan	0/20	1.8E-05	1.5E-04		1.5E-04	mg/L	ND
2	Organic	Endosulfan I	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	Endosulfan II	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	Endosulfan sulfate	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	Endrin	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	Endrin aldehyde	0/18	1.2E-05	2.1E-05		2.1E-05	mg/L	ND
2	Organic	Endrin ketone	0/20	1.2E-05	1.0E-04		1.0E-04	mg/L	ND
2	Organic	Ethylbenzene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Fluoranthene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Fluorene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Heptachlor	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	Heptachlor epoxide	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	Hexachlorobenzene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Hexachlorobutadiene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Hexachlorocyclopentadiene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	Hexachloroethane	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Indeno(1,2,3-cd)pyrene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Isophorone	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Lindane	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	Methoxychlor	0/20	6.2E-05	5.0E-04		5.0E-04	mg/L	ND
2	Organic	Methylene chloride	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	N-Nitroso-di-n-propylamine	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	N-Nitrosodiphenylamine	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Naphthalene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	-
2	Organic	Nitrobenzene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	PCB-1016	0/20	1.2E-04	5.0E-04		5.0E-04	mg/L	ND
2	Organic	PCB-1221	0/20	2.5E-04	5.0E-04		5.0E-04	mg/L	ND
2	Organic	PCB-1232	0/20	1.2E-04	5.0E-04		5.0E-04	mg/L	ND
2	Organic	PCB-1242	0/20	1.2E-04	5.0E-04		5.0E-04	mg/L	ND
2	Organic	PCB-1248	0/20	1.2E-04	5.0E-04		5.0E-04	mg/L	ND
2	Organic	PCB-1254	0/20	1.2E-04	1.0E-03		1.0E-03	mg/L	ND
2	Organic	PCB-1260	0/20	1.2E-04	1.0E-03		1.0E-03	mg/L	ND
2	Organic	Pentachlorophenol	0/21	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
2	Organic	Phenanthrene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	-

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Organic	Phenol	0/21	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Pyrene	0/22	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
2	Organic	Styrene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Tetrachloroethene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	Toluene	18-Jan	1.0E-03	5.0E-03	1.0E-03	5.0E-03	mg/L	+
2	Organic	Toxaphene	0/20	6.2E-04	1.1E-03		1.1E-03	mg/L	ND
2	Organic	Trichloroethene	18-Jan	3.0E-03	5.0E-03	3.0E-03	5.0E-03	mg/L	-
2	Organic	Vinyl chloride	0/18	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
2	Organic	alpha-BHC	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	alpha-Chlordane	0/20	6.0E-06	5.0E-04		5.0E-04	mg/L	ND
2	Organic	beta-BHC	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	ND
2	Organic	cis-1,3-Dichloropropene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Organic	delta-BHC	0/20	6.0E-06	5.0E-05		5.0E-05	mg/L	-
2	Organic	gamma-Chlordane	0/20	6.0E-06	5.0E-04		5.0E-04	mg/L	ND
2	Organic	trans-1,3-Dichloropropene	0/18	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
2	Radionuclide	Cesium-137	20-Mar	-2.7E+00	5.5E+00	5.0E-01	1.2E+00	pCi/L	+
2	Radionuclide	Cobalt-60	0/20	-2.5E+00	5.0E+00		5.0E+00	pCi/L	ND
2	Radionuclide	Gross alpha activity	Dec-38	-1.6E-01	2.7E+01	2.4E+00	3.6E+00	pCi/L	-
2	Radionuclide	Gross beta activity	35/39	1.8E+00	1.7E+02	1.7E+01	2.7E+01	pCi/L	-

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Radionuclide	Strontium-90	25/42	-7.4E-01	6.6E+01	5.2E+00	8.6E+00	pCi/L	+
2	Radionuclide	Technetium-99	18-Apr	-1.9E+00	1.3E+01	3.4E+00	4.9E+00	pCi/L	+
2	Radionuclide	Tritium	20/40	-5.1E+01	6.3E+04	4.9E+03	8.5E+03	pCi/L	+
2	Radionuclide	Uranium - radioactive	14/18	1.4E-01	1.6E+00	5.7E-01	7.4E-01	pCi/L	+
2	Radionuclide	Uranium-234	1-Jan	1.8E-01	1.8E-01	1.8E-01	1.8E-01	pCi/L	+
2	Radionuclide	Uranium-235	0/1	5.1E-02	5.1E-02		5.1E-02	pCi/L	ND
4	Inorganic	Alkalinity as CaCO3	39/39	1.1E+00	1.1E+02	2.2E+01	3.3E+01	mg/L	-
4	Inorganic	Aluminum	39/39	3.4E-02	1.3E+00	2.6E-01	3.4E-01	mg/L	+
4	Inorganic	Ammonium nitrogen	9-Aug	3.0E-02	9.0E-02	5.2E-02	6.3E-02	mg/L	-
4	Inorganic	Antimony	Apr-42	1.0E-03	5.0E-02	1.6E-03	1.6E-03	mg/L	+
4	Inorganic	Arsenic	Aug-42	1.0E-03	5.0E-02	1.1E-03	1.2E-03	mg/L	+
4	Inorganic	Barium	38/39	1.0E-03	4.4E-02	2.9E-02	3.0E-02	mg/L	+
4	Inorganic	Beryllium	0/41	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
4	Inorganic	Boron	20/30	1.1E-02	1.3E-01	4.1E-02	5.1E-02	mg/L	+
4	Inorganic	Cadmium	0/42	2.1E-04	5.0E-03		5.0E-03	mg/L	ND
4	Inorganic	Calcium	41/41	1.9E+01	3.4E+01	2.7E+01	2.8E+01	mg/L	-
4	Inorganic	Chloride	9-Sep	2.2E+00	5.3E+00	3.6E+00	4.1E+00	mg/L	-
4	Inorganic	Chromium	20/41	1.0E-03	9.8E-03	1.8E-03	2.1E-03	mg/L	+
4	Inorganic	Cobalt	0/39	1.0E-03	4.0E-03		4.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Inorganic	Copper	29/41	1.1E-03	8.3E-02	7.4E-03	1.2E-02	mg/L	-
4	Inorganic	Cyanide	0/38	2.0E-03	2.0E-02		2.0E-02	mg/L	ND
4	Inorganic	Fluoride	9-Apr	1.0E-01	1.1E-01	1.0E-01	1.0E-01	mg/L	-
4	Inorganic	Iron	40/41	5.0E-02	1.5E+00	3.8E-01	4.7E-01	mg/L	+
4	Inorganic	Lead	Dec-42	1.0E-03	5.0E-02	1.3E-03	1.5E-03	mg/L	-
4	Inorganic	Magnesium	41/41	5.1E+00	1.0E+01	7.6E+00	7.9E+00	mg/L	+
4	Inorganic	Manganese	39/39	3.1E-03	1.3E-01	5.3E-02	5.9E-02	mg/L	+
4	Inorganic	Mercury	18/72	1.7E-06	2.5E-04	3.2E-05	4.2E-05	mg/L	+
4	Inorganic	Methyl mercury	0/30	3.4E-08	3.0E-07		3.0E-07	mg/L	ND
4	Inorganic	Molybdenum	30-Jan	1.0E-03	5.0E-03	1.8E-03	5.0E-03	mg/L	FD
4	Inorganic	Nickel	24/41	1.0E-03	1.9E-02	2.3E-03	2.7E-03	mg/L	+
4	Inorganic	Nitrate	9-Sep	1.5E+00	1.0E+01	2.7E+00	4.4E+00	mg/L	+
4	Inorganic	Phosphorus	9-Jun	1.6E-01	4.9E-01	2.8E-01	3.6E-01	mg/L	-
4	Inorganic	Potassium	35/40	1.0E+00	2.4E+00	1.5E+00	1.6E+00	mg/L	-
4	Inorganic	Selenium	0/42	9.7E-04	5.0E-02		5.0E-02	mg/L	ND
4	Inorganic	Silver	0/42	7.4E-04	5.0E-03		5.0E-03	mg/L	ND
4	Inorganic	Sodium	41/41	1.7E+00	7.1E+00	4.1E+00	4.4E+00	mg/L	-
4	Inorganic	Sulfate	9-Sep	1.1E+01	2.7E+01	1.8E+01	2.1E+01	mg/L	+
4	Inorganic	Thallium	0/41	1.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Inorganic	Total hardness	9-Sep	6.7E+01	1.5E+02	1.1E+02	1.3E+02	mg/L	-
4	Inorganic	Uranium	Oct-38	1.0E-04	2.0E-03	4.2E-04	6.1E-04	mg/L	+
4	Inorganic	Vanadium	14/39	1.0E-03	3.8E-03	1.2E-03	1.4E-03	mg/L	+
4	Inorganic	Zinc	31/41	2.7E-03	2.0E-01	1.8E-02	2.9E-02	mg/L	+
4	Organic	1,1,1-Trichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,1,2,2-Tetrachloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,1,2-Trichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,1-Dichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,1-Dichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,2,4-Trichlorobenzene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	1,2-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	1,2-Dichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,2-Dichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,2-Dichloropropane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	1,3-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	1,4-Dichlorobenzene	0/2	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2,2'-oxybis(1-chloropropane)	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2,4,5-Trichlorophenol	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	2,4,6-Trichlorophenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	2,4-Dichlorophenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2,4-Dimethylphenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2,4-Dinitrophenol	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	2,4-Dinitrotoluene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2,6-Dinitrotoluene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Butanone	9-Jan	3.0E-03	1.0E-02	3.0E-03	1.0E-02	mg/L	+
4	Organic	2-Chloronaphthalene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Chlorophenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Hexanone	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Methyl-4,6-dinitrophenol	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	2-Methylnaphthalene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Methylphenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	2-Nitroaniline	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	2-Nitrophenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	3,3'-Dichlorobenzidine	0/31	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
4	Organic	3-Nitroaniline	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	4,4'-DDD	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	4,4'-DDE	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	4,4'-DDT	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	4-Bromophenyl phenyl ether	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Chloro-3-methylphenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Chlorobenzenamine	0/28	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Chlorophenylphenyl ether	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Methyl-2-pentanone	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Methylphenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	4-Nitroaniline	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	4-Nitrophenol	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	Acenaphthene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Acenaphthylene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Acetone	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Aldrin	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	Anthracene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Benzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Benzo(a)anthracene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Benzo(a)pyrene	0/30	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Benzo(b)fluoranthene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Benzo(ghi)perylene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	-
4	Organic	Benzo(k)fluoranthene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	Benzoic acid	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	Benzyl alcohol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Bis(2-chloroethoxy)methane	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Bis(2-chloroethyl) ether	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Bis(2-ethylhexyl)phthalate	0/31	5.0E-03	2.2E-02		2.2E-02	mg/L	ND
4	Organic	Bromodichloromethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Bromoform	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Bromomethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Butylbenzylphthalate	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Carbazole	0/29	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Carbon disulfide	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Carbon tetrachloride	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Chlordane, total	Jan-32	2.0E-05	1.0E-03	2.0E-05	1.0E-03	mg/L	FD
4	Organic	Chlorobenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Chloroethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Chloroform	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Chloromethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Chrysene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Di-n-butylphthalate	31-Jul	1.0E-03	1.0E-02	1.6E-03	2.2E-03	mg/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	Di-n-octylphthlate	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Dibenz(a,h)anthracene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Dibenzofuran	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Dibromochloromethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Dieldrin	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	Diethylphthalate	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Dimethylbenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Dimethylphthalate	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Endosulfan	0/32	3.0E-05	1.5E-04		1.5E-04	mg/L	ND
4	Organic	Endosulfan I	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	Endosulfan II	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	Endosulfan sulfate	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	Endrin	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	Endrin aldehyde	0/29	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
4	Organic	Endrin ketone	0/32	2.0E-05	1.0E-04		1.0E-04	mg/L	ND
4	Organic	Ethylbenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Fluoranthene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Fluorene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Heptachlor	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	Heptachlor epoxide	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	Hexachlorobenzene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Hexachlorobutadiene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Hexachlorocyclopentadiene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Hexachloroethane	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Indeno(1,2,3-cd)pyrene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Isophorone	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Lindane	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	Methoxychlor	0/32	1.0E-04	5.0E-04		5.0E-04	mg/L	ND
4	Organic	Methylene chloride	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	N-Nitroso-di-n-propylamine	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	N-Nitrosodiphenylamine	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Naphthalene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	-
4	Organic	Nitrobenzene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	PCB-1016	0/32	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
4	Organic	PCB-1221	0/32	4.0E-04	5.0E-04		5.0E-04	mg/L	ND
4	Organic	PCB-1232	0/32	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
4	Organic	PCB-1242	0/32	2.0E-04	5.0E-04		5.0E-04	mg/L	ND
4	Organic	PCB-1248	0/32	2.0E-04	5.0E-04		5.0E-04	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Organic	PCB-1254	0/32	2.0E-04	1.0E-03		1.0E-03	mg/L	ND
4	Organic	PCB-1260	0/32	2.0E-04	1.0E-03		1.0E-03	mg/L	ND
4	Organic	Pentachlorophenol	0/31	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
4	Organic	Phenanthrene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	-
4	Organic	Phenol	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Pyrene	0/31	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
4	Organic	Styrene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Tetrachloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Toluene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	Toxaphene	0/32	1.0E-03	1.0E-03		1.0E-03	mg/L	ND
4	Organic	Trichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	-
4	Organic	Vinyl chloride	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
4	Organic	alpha-BHC	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	alpha-Chlordane	0/32	1.0E-05	5.0E-04		5.0E-04	mg/L	ND
4	Organic	beta-BHC	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	ND
4	Organic	cis-1,3-Dichloropropene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
4	Organic	delta-BHC	0/32	1.0E-05	5.0E-05		5.0E-05	mg/L	-
4	Organic	gamma-Chlordane	Jan-32	1.0E-05	5.0E-04	1.0E-05	5.0E-04	mg/L	FD
4	Organic	trans-1,3-Dichloropropene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Inorganic	Copper	20/22	1.1E-03	3.7E-02	7.5E-03	1.1E-02	mg/L	-
7	Inorganic	Cyanide	0/22	1.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Inorganic	Iron	21/22	1.8E-02	7.6E-01	2.1E-01	2.8E-01	mg/L	+
7	Inorganic	Lead	22-Oct	1.0E-03	2.2E-03	1.3E-03	1.4E-03	mg/L	-
7	Inorganic	Magnesium	22/22	6.1E+00	9.1E+00	8.0E+00	8.3E+00	mg/L	+
7	Inorganic	Manganese	21/22	1.0E-03	2.2E-01	5.6E-02	7.1E-02	mg/L	+
7	Inorganic	Mercury	Jun-44	1.2E-06	2.0E-04	2.9E-06	3.6E-06	mg/L	+
7	Inorganic	Methyl mercury	0/22	3.1E-08	2.6E-07		2.6E-07	mg/L	ND
7	Inorganic	Molybdenum	0/22	1.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Inorganic	Nickel	14/22	1.0E-03	1.0E-02	3.0E-03	3.9E-03	mg/L	+
7	Inorganic	Potassium	22/22	1.3E+00	1.6E+00	1.5E+00	1.5E+00	mg/L	-
7	Inorganic	Selenium	22-Jan	1.0E-03	3.0E-03	1.1E-03	3.0E-03	mg/L	FD
7	Inorganic	Silver	0/22	1.0E-03	1.0E-03		1.0E-03	mg/L	ND
7	Inorganic	Sodium	22/22	2.7E+00	6.8E+00	4.3E+00	4.9E+00	mg/L	-
7	Inorganic	Thallium	0/22	1.0E-03	1.0E-03		1.0E-03	mg/L	ND
7	Inorganic	Uranium	22-Feb	1.0E-03	5.4E-03	2.2E-03	2.6E-03	mg/L	+
7	Inorganic	Vanadium	22-Jul	1.0E-03	1.6E-03	1.1E-03	1.2E-03	mg/L	+
7	Inorganic	Zinc	20/22	2.0E-03	2.7E-02	1.1E-02	1.4E-02	mg/L	+
7	Organic	1,2,4-Trichlorobenzene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	2,2'-oxybis(1-chloropropane)	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2,4,5-Trichlorophenol	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	2,4,6-Trichlorophenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2,4-Dichlorophenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2,4-Dimethylphenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2,4-Dinitrophenol	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	2,4-Dinitrotoluene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2,6-Dinitrotoluene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2-Chloronaphthalene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2-Chlorophenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2-Methyl-4,6-dinitrophenol	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	2-Methylnaphthalene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2-Methylphenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	2-Nitroaniline	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	2-Nitrophenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	3,3'-Dichlorobenzidine	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	3-Nitroaniline	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	4,4'-DDD	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	4,4'-DDE	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	4,4'-DDT	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	4-Bromophenyl phenyl ether	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	4-Chloro-3-methylphenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	4-Chlorobenzenamine	22-Jan	1.0E-03	5.0E-03	1.0E-03	5.0E-03	mg/L	FD
7	Organic	4-Chlorophenylphenyl ether	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	4-Methylphenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	4-Nitroaniline	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	4-Nitrophenol	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	Acenaphthene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Acenaphthylene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Aldrin	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	Anthracene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Benzo(a)anthracene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Benzo(a)pyrene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Benzo(b)fluoranthene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Benzo(ghi)perylene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	-
7	Organic	Benzo(k)fluoranthene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Benzoic acid	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	Benzyl alcohol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	Bis(2-chloroethoxy)methane	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Bis(2-chloroethyl) ether	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Bis(2-ethylhexyl)phthalate	22-Feb	1.0E-03	6.0E-03	1.2E-03	1.8E-03	mg/L	+
7	Organic	Butylbenzylphthalate	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Carbazole	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Chlordane, total	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Chrysene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Di-n-butylphthalate	22-Apr	2.0E-03	5.0E-03	3.0E-03	4.0E-03	mg/L	+
7	Organic	Di-n-octylphthlate	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Dibenz(a,h)anthracene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Dibenzofuran	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Dieldrin	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Diethylphthalate	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Dimethylphthalate	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Endosulfan	0/22	3.0E-05	3.0E-05		3.0E-05	mg/L	ND
7	Organic	Endosulfan I	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	Endosulfan II	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Endosulfan sulfate	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Endrin	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	Endrin aldehyde	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Endrin ketone	0/22	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
7	Organic	Fluoranthene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Fluorene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Heptachlor	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	Heptachlor epoxide	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	Hexachlorobenzene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Hexachlorobutadiene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Hexachlorocyclopentadiene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Hexachloroethane	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Indeno(1,2,3-cd)pyrene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Isophorone	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Lindane	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	Methoxychlor	0/22	1.0E-04	1.0E-04		1.0E-04	mg/L	ND
7	Organic	N-Nitroso-di-n-propylamine	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	N-Nitrosodiphenylamine	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Naphthalene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	-
7	Organic	Nitrobenzene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	PCB-1016	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	PCB-1221	0/22	4.0E-04	4.1E-04		4.1E-04	mg/L	ND
7	Organic	PCB-1232	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND
7	Organic	PCB-1242	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND
7	Organic	PCB-1248	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND
7	Organic	PCB-1254	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND
7	Organic	PCB-1260	0/22	2.0E-04	2.0E-04		2.0E-04	mg/L	ND
7	Organic	Pentachlorophenol	0/22	2.0E-02	2.0E-02		2.0E-02	mg/L	ND
7	Organic	Phenanthrene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	-
7	Organic	Phenol	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Pyrene	0/22	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
7	Organic	Toxaphene	0/22	1.0E-03	1.0E-03		1.0E-03	mg/L	ND
7	Organic	alpha-BHC	22-Jan	1.0E-05	1.3E-05	1.3E-05	1.3E-05	mg/L	FD
7	Organic	alpha-Chlordane	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	beta-BHC	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Organic	delta-BHC	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	-
7	Organic	gamma-Chlordane	0/22	1.0E-05	1.0E-05		1.0E-05	mg/L	ND
7	Radionuclide	Gross alpha activity	22-Feb	6.6E-01	4.7E+00	1.1E+00	1.1E+00	pCi/L	-
7	Radionuclide	Gross beta activity	16/22	1.3E+00	1.0E+01	4.3E+00	5.2E+00	pCi/L	-
7	Radionuclide	Strontium-90	22-Jun	1.1E+00	5.6E+00	1.7E+00	2.1E+00	pCi/L	+

Table E.1. Summary statistics for surface water collected in the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Radionuclide	Tritium	0/21	9.2E+01	2.7E+02		2.7E+02	pCi/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Inorganic	Alkalinity as CaCO3	26/26	5.0E-01	2.4E+00	1.3E+00	1.4E+00	MEQ/L	-
3.01	Inorganic	Aluminum	33/33	5.1E-02	1.2E+00	4.5E-01	5.4E-01	mg/L	+
3.01	Inorganic	Antimony	Feb-34	1.0E-03	1.9E-03	1.4E-03	1.4E-03	mg/L	+
3.01	Inorganic	Arsenic	0/34	1.0E-03	3.0E-03		3.0E-03	mg/L	ND
3.01	Inorganic	Barium	33/33	2.8E-02	5.1E-02	3.5E-02	3.6E-02	mg/L	+
3.01	Inorganic	Beryllium	0/34	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
3.01	Inorganic	Boron	22/33	3.0E-03	1.4E-01	2.7E-02	3.7E-02	mg/L	+
3.01	Inorganic	Cadmium	0/34	2.1E-04	1.0E-03		1.0E-03	mg/L	ND
3.01	Inorganic	Calcium	33/34	2.7E-02	4.4E+01	2.4E+01	2.6E+01	mg/L	-
3.01	Inorganic	Chromium	32/34	1.0E-03	9.8E-03	1.9E-03	2.1E-03	mg/L	+
3.01	Inorganic	Cobalt	Oct-33	1.0E-03	1.7E-03	1.1E-03	1.1E-03	mg/L	+
3.01	Inorganic	Copper	33/34	1.4E-03	1.1E-02	3.7E-03	4.3E-03	mg/L	-
3.01	Inorganic	Cyanide	0/12	1.0E-02	2.0E-02		2.0E-02	mg/L	ND
3.01	Inorganic	Iron	34/34	2.7E-01	1.7E+00	7.7E-01	8.9E-01	mg/L	+
3.01	Inorganic	Lead	19/34	1.0E-03	3.0E-03	1.6E-03	1.8E-03	mg/L	-
3.01	Inorganic	Magnesium	33/34	9.0E-03	9.9E+00	6.1E+00	6.6E+00	mg/L	+
3.01	Inorganic	Manganese	33/33	2.4E-02	1.3E-01	8.3E-02	9.1E-02	mg/L	+
3.01	Inorganic	Mercury	38/67	4.3E-07	6.7E-04	1.0E-04	1.3E-04	mg/L	+
3.01	Inorganic	Methyl mercury	Nov-32	5.0E-08	4.9E-07	1.3E-07	1.6E-07	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Inorganic	Molybdenum	Feb-33	1.0E-03	5.0E-03	1.1E-03	1.1E-03	mg/L	+
3.01	Inorganic	Nickel	33/34	2.4E-03	1.9E-02	4.4E-03	4.7E-03	mg/L	+
3.01	Inorganic	Potassium	33/34	1.3E-02	3.1E+00	1.5E+00	1.7E+00	mg/L	-
3.01	Inorganic	Selenium	0/34	9.7E-04	3.0E-03		3.0E-03	mg/L	ND
3.01	Inorganic	Silver	Jan-34	1.0E-03	4.8E-03	4.8E-03	4.8E-03	mg/L	FD
3.01	Inorganic	Sodium	33/34	2.0E-02	1.0E+01	4.5E+00	4.9E+00	mg/L	-
3.01	Inorganic	Thallium	0/34	1.0E-03	2.7E-03		2.7E-03	mg/L	ND
3.01	Inorganic	Uranium	24/33	1.0E-03	1.0E-02	2.7E-03	3.3E-03	mg/L	+
3.01	Inorganic	Vanadium	17/33	1.0E-03	2.4E-03	1.3E-03	1.4E-03	mg/L	+
3.01	Inorganic	Zinc	33/34	5.4E-03	4.7E-02	1.5E-02	1.7E-02	mg/L	+
3.01	Organic	1,2,4-Trichlorobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	1,2-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	1,3-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	1,4-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2,2'-oxybis(1-chloropropane)	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2,4,5-Trichlorophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	2,4,6-Trichlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2,4-Dichlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2,4-Dimethylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	2,4-Dinitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	2,4-Dinitrotoluene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2,6-Dinitrotoluene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2-Chloronaphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2-Chlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2-Methyl-4,6-dinitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	2-Methylnaphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2-Methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	2-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	2-Nitrophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	3,3'-Dichlorobenzidine	0/13	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.01	Organic	3-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	4,4'-DDD	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	4,4'-DDE	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	4,4'-DDT	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	4-Bromophenyl phenyl ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	4-Chloro-3-methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	4-Chlorobenzenamine	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	4-Chlorophenylphenyl ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	4-Methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	4-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	4-Nitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	Acenaphthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Acenaphthylene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Aldrin	0/12	6.3E-06	1.5E-05		1.5E-05	mg/L	ND
3.01	Organic	Anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Benzo(a)anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Benzo(a)pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Benzo(b)fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Benzo(ghi)perylene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.01	Organic	Benzo(k)fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Benzoic acid	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	Benzyl alcohol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Bis(2-chloroethoxy)methane	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Bis(2-chloroethyl) ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Bis(2-ethylhexyl)phthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Butylbenzylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Carbazole	0/12	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Chlordane, total	0/12	1.3E-05	2.0E-05		2.0E-05	mg/L	ND
3.01	Organic	Chrysene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Di-n-butylphthalate	13-Jan	1.0E-03	1.1E-02	1.0E-03	1.1E-02	mg/L	+
3.01	Organic	Di-n-octylphthlate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Dibenz(a,h)anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Dibenzofuran	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Dieldrin	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Diethylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Dimethylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Endosulfan	0/12	1.9E-05	3.1E-05		3.1E-05	mg/L	ND
3.01	Organic	Endosulfan I	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	Endosulfan II	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Endosulfan sulfate	0/11	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Endrin	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Endrin aldehyde	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Endrin ketone	0/12	1.3E-05	2.1E-05		2.1E-05	mg/L	ND
3.01	Organic	Fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Fluorene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Heptachlor	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Heptachlor epoxide	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	Hexachlorobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Hexachlorobutadiene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Hexachlorocyclopentadiene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Hexachloroethane	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Indeno(1,2,3-cd)pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Isophorone	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Lindane	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	Methoxychlor	0/12	6.3E-05	1.0E-04		1.0E-04	mg/L	ND
3.01	Organic	N-Nitroso-di-n-propylamine	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	N-Nitrosodiphenylamine	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Naphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.01	Organic	Nitrobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	PCB-1016	0/12	1.3E-04	2.1E-04		2.1E-04	mg/L	ND
3.01	Organic	PCB-1221	0/12	2.5E-04	4.1E-04		4.1E-04	mg/L	ND
3.01	Organic	PCB-1232	0/12	1.3E-04	2.1E-04		2.1E-04	mg/L	ND
3.01	Organic	PCB-1242	0/12	1.3E-04	2.1E-04		2.1E-04	mg/L	ND
3.01	Organic	PCB-1248	0/12	1.3E-04	2.1E-04		2.1E-04	mg/L	ND
3.01	Organic	PCB-1254	12-Jan	2.0E-04	2.9E-04	2.9E-04	2.9E-04	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	PCB-1260	0/12	1.3E-04	2.1E-04		2.1E-04	mg/L	ND
3.01	Organic	Pentachlorophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.01	Organic	Phenanthrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.01	Organic	Phenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.01	Organic	Toxaphene	0/12	6.3E-04	1.0E-03		1.0E-03	mg/L	ND
3.01	Organic	alpha-BHC	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	alpha-Chlordane	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	beta-BHC	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Organic	delta-BHC	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	-
3.01	Organic	gamma-Chlordane	0/12	6.3E-06	1.0E-05		1.0E-05	mg/L	ND
3.01	Radionuclide	Cesium-137	1-Jan	1.4E-01	1.4E-01	1.4E-01	1.4E-01	pCi/L	+
3.01	Radionuclide	Cobalt-60	0/1	1.3E-01	1.3E-01		1.3E-01	pCi/L	ND
3.01	Radionuclide	Gross alpha activity	12-May	9.4E-01	4.8E+00	1.3E+00	1.5E+00	pCi/L	-
3.01	Radionuclide	Gross beta activity	12-Jun	1.7E+00	7.2E+00	3.4E+00	4.4E+00	pCi/L	-
3.01	Radionuclide	Strontium-90	14-Mar	1.8E-01	3.2E+00	1.1E+00	2.2E+00	pCi/L	+
3.01	Radionuclide	Tritium	13-Jan	9.2E+01	1.9E+03	1.9E+03	1.9E+03	pCi/L	+
3.02	Inorganic	Alkalinity as CaCO3	19/19	7.0E-01	2.4E+00	1.5E+00	1.7E+00	MEQ/L	-
3.02	Inorganic	Aluminum	13/13	1.2E-01	1.1E+00	3.4E-01	4.8E-01	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Inorganic	Antimony	14-Jan	1.0E-03	1.9E-03	1.2E-03	1.9E-03	mg/L	+
3.02	Inorganic	Arsenic	14-Jan	1.0E-03	3.0E-03	1.4E-03	3.0E-03	mg/L	+
3.02	Inorganic	Barium	13/13	2.8E-02	4.6E-02	3.8E-02	4.0E-02	mg/L	+
3.02	Inorganic	Beryllium	0/14	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
3.02	Inorganic	Boron	13-Dec	1.1E-02	1.2E-01	5.0E-02	6.8E-02	mg/L	+
3.02	Inorganic	Cadmium	0/14	2.1E-04	1.0E-03		1.0E-03	mg/L	ND
3.02	Inorganic	Calcium	14/14	1.6E+01	3.8E+01	2.9E+01	3.2E+01	mg/L	-
3.02	Inorganic	Chromium	14-Nov	1.0E-03	9.8E-03	1.6E-03	1.9E-03	mg/L	+
3.02	Inorganic	Cobalt	0/13	1.0E-03	1.0E-03		1.0E-03	mg/L	ND
3.02	Inorganic	Copper	13/14	1.1E-03	5.2E-03	2.8E-03	3.4E-03	mg/L	-
3.02	Inorganic	Cyanide	0/12	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.02	Inorganic	Iron	14/14	2.2E-01	1.1E+00	5.3E-01	6.5E-01	mg/L	+
3.02	Inorganic	Lead	14-May	1.0E-03	1.8E-03	1.2E-03	1.3E-03	mg/L	-
3.02	Inorganic	Magnesium	14/14	4.4E+00	1.0E+01	7.7E+00	8.6E+00	mg/L	+
3.02	Inorganic	Manganese	13/13	4,6E-02	1.2E-01	7.6E-02	8.9E-02	mg/L	+
3.02	Inorganic	Mercury	13/27	4.1E-06	3.8E-04	8.9E-05	1.2E-04	mg/L	+
3.02	Inorganic	Methyl mercury	12-Apr	9.4E-08	4.1E-07	3.0E-07	3.2E-07	mg/L	+
3.02	Inorganic	Molybdenum	13-Feb	1.0E-03	5.0E-03	1.0E-03	1.1E-03	mg/L	+
3.02	Inorganic	Nickel	13/14	1.5E-03	1.9E-02	3.5E-03	4.2E-03	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Inorganic	Potassium	14/14	1.0E+00	2.5E+00	1.8E+00	2.0E+00	mg/L	-
3.02	Inorganic	Selenium	0/14	9.7E-04	3.0E-03		3.0E-03	mg/L	ND
3.02	Inorganic	Silver	0/14	7.4E-04	1.0E-03		1.0E-03	mg/L	ND
3.02	Inorganic	Sodium	14/14	2.5E+00	8.7E+00	5.2E+00	6.1E+00	mg/L	-
3.02	Inorganic	Thallium	0/14	1.0E-03	2.7E-03		2.7E-03	mg/L	ND
3.02	Inorganic	Uranium	13/13	1.1E-03	3.6E-03	2.4E-03	2.7E-03	mg/L	+
3.02	Inorganic	Vanadium	13-Mar	1.0E-03	1.7E-03	1.2E-03	1.3E-03	mg/L	+
3.02	Inorganic	Zinc	13/14	4.8E-03	2.3E-02	9.9E-03	1.2E-02	mg/L	+
3.02	Organic	1,2,4-Trichlorobenzene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	1,2-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	1,3-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	1,4-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2,2'-oxybis(1-chloropropane)	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2,4,5-Trichlorophenol	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	2,4,6-Trichlorophenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2,4-Dichlorophenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2,4-Dimethylphenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2,4-Dinitrophenol	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	2,4-Dinitrotoluene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	2,6-Dinitrotoluene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2-Chloronaphthalene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2-Chlorophenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2-Methyl-4,6-dinitrophenol	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	2-Methylnaphthalene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2-Methylphenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	2-Nitroaniline	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	2-Nitrophenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	3,3'-Dichlorobenzidine	0/12	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.02	Organic	3-Nitroaniline	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	4,4'-DDD	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	4,4'-DDE	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	4,4'-DDT	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	4-Bromophenyl phenyl ether	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	4-Chloro-3-methylphenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	4-Chlorobenzenamine	0/11	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	4-Chlorophenylphenyl ether	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	4-Methylphenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	4-Nitroaniline	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	4-Nitrophenol	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	Acenaphthene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Acenaphthylene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Aldrin	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	Anthracene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Benzo(a)anthracene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Benzo(a)pyrene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Benzo(b)fluoranthene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Benzo(ghi)perylene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.02	Organic	Benzo(k)fluoranthene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Benzoic acid	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.02	Organic	Benzyl alcohol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Bis(2-chloroethoxy)methane	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Bis(2-chloroethyl) ether	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Bis(2-ethylhexyl)phthalate	12-Feb	2.0E-03	1.0E-02	2.5E-03	3.6E-03	mg/L	+
3.02	Organic	Butylbenzylphthalate	12-Jan	4.0E-03	1.0E-02	4.0E-03	1.0E-02	mg/L	+
3.02	Organic	Carbazole	0/11	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.02	Organic	Chlordane, total	0/11	2.0E-05	2.2E-05		2.2E-05	mg/L	ND
3.02	Organic	Chrysene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Di-n-butylphthalate	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Di-n-octylphthlate	12-Jan	2.0E-03	1.0E-02	2.0E-03	1.0E-02	mg/L	+
3.02	Organic	Dibenz(a,h)anthracene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Dibenzofuran	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Dieldrin	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Diethylphthalate	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Dimethylphthalate	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Endosulfan	0/11	3.0E-05	3.2E-05		3.2E-05	mg/L	ND
3.02	Organic	Endosulfan I	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	Endosulfan II	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Endosulfan sulfate	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Endrin	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Endrin aldehyde	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Endrin ketone	0/11	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.02	Organic	Fluoranthene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Fluorene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Heptachlor	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	Heptachlor epoxide	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	Hexachlorobenzene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Hexachlorobutadiene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Hexachlorocyclopentadiene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Hexachloroethane	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Indeno(1,2,3-cd)pyrene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Isophorone	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Lindane	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	Methoxychlor	0/11	1.0E-04	1.1E-04		1.1E-04	mg/L	ND
3.02	Organic	N-Nitroso-di-n-propylamine	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	N-Nitrosodiphenylamine	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Naphthalene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.02	Organic	Nitrobenzene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	PCB-1016	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	PCB-1221	0/11	4.0E-04	4.3E-04		4.3E-04	mg/L	ND
3.02	Organic	PCB-1232	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	PCB-1242	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	PCB-1248	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	PCB-1254	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	PCB-1260	0/11	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.02	Organic	Pentachlorophenol	0/12	2.0E-02	5.0E-02		5.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Phenanthrene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.02	Organic	Phenol	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Pyrene	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.02	Organic	Toxaphene	0/11	1.0E-03	1.1E-03		1.1E-03	mg/L	ND
3.02	Organic	alpha-BHC	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	alpha-Chlordane	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	beta-BHC	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Organic	delta-BHC	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	-
3.02	Organic	gamma-Chlordane	0/11	1.0E-05	1.1E-05		1.1E-05	mg/L	ND
3.02	Radionuclide	Cesium-137	0/1	1.2E-01	1.2E-01		1.2E-01	pCi/L	ND
3.02	Radionuclide	Cobalt-60	0/1	6.7E-02	6.7E-02		6.7E-02	pCi/L	ND
3.02	Radionuclide	Gross alpha activity	37/43	9.5E-01	7.8E+00	1.8E+00	2.0E+00	pCi/L	-
3.02	Radionuclide	Gross beta activity	37/43	1.7E+00	9.4E+00	3.5E+00	4.0E+00	pCi/L	-
3.02	Radionuclide	Strontium-90	15-Apr	-2.7E-01	4.1E+00	7.3E-01	1.5E+00	pCi/L	+
3.02	Radionuclide	Tritium	13-Jan	9.4E+01	8.2E+02	8.2E+02	8.2E+02	pCi/L	+
3.03	Inorganic	Alkalinity as CaCO3	22/22	6.0E-01	1.1E+02	3.3E+01	4.8E+01	mg/L	-
3.03	Inorganic	Aluminum	22/22	1.5E-01	1.5E+00	5.2E-01	6.5E-01	mg/L	+
3.03	Inorganic	Ammonium nitrogen	9-Sep	3.0E-02	6.9E-02	4.7E-02	5.5E-02	mg/L	-
3.03	Inorganic	Antimony	0/23	1.0E-03	5.0E-02		5.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Inorganic	Arsenic	23-Mar	1.0E-03	5.0E-02	1.3E-03	1.5E-03	mg/L	+
3.03	Inorganic	Barium	21/22	1.0E-03	4.7E-02	3.5E-02	3.7E-02	mg/L	+
3.03	Inorganic	Beryllium	0/23	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
3.03	Inorganic	Boron	13-Oct	3.0E-03	9.9E-02	3.4E-02	4.7E-02	mg/L	+
3.03	Inorganic	Cadmium	0/23	2.1E-04	5.0E-03		5.0E-03	mg/L	ND
3.03	Inorganic	Calcium	23/23	1.4E+01	4.1E+01	2.7E+01	2.9E+01	mg/L	-
3.03	Inorganic	Chloride	9-Sep	1.6E+00	1.1E+01	6.0E+00	7.9E+00	mg/L	-
3.03	Inorganic	Chromium	13/23	1.0E-03	9.8E-03	2.2E-03	2.6E-03	mg/L	+
3.03	Inorganic	Cobalt	22-Feb	1.0E-03	5.2E-03	1.5E-03	1.9E-03	mg/L	+
3.03	Inorganic	Copper	23-Dec	1.6E-03	8.8E-03	3.8E-03	4.7E-03	mg/L	-
3.03	Inorganic	Cyanide	0/21	2.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.03	Inorganic	Fluoride	9-Jul	1.0E-01	4.0E-01	1.9E-01	2.5E-01	mg/L	-
3.03	Inorganic	Iron	23/23	2.3E-01	1.6E+00	6.8E-01	8.2E-01	mg/L	+
3.03	Inorganic	Lead	23-Sep	3.6E-04	5.0E-02	1.6E-03	1.9E-03	mg/L	-
3.03	Inorganic	Magnesium	23/23	4.2E+00	9.8E+00	6.9E+00	7.5E+00	mg/L	+
3.03	Inorganic	Manganese	22/22	5.6E-02	1.2E-01	8.2E-02	8.9E-02	mg/L	+
3.03	Inorganic	Mercury	18/36	3.8E-05	4.6E-04	1.0E-04	1.3E-04	mg/L	+
3.03	Inorganic	Methyl mercury	13-Apr	9.9E-08	4.6E-07	2.4E-07	2.7E-07	mg/L	+
3.03	Inorganic	Molybdenum	0/13	1.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Inorganic	Nickel	13/23	2.0E-03	1.9E-02	3.6E-03	4.2E-03	mg/L	+
3.03	Inorganic	Nitrate	9-Sep	1.2E+00	9.6E+00	3.6E+00	5.1E+00	mg/L	+
3.03	Inorganic	Phosphorus	9-Jun	2.0E-01	4.8E-01	3.0E-01	3.7E-01	mg/L	-
3.03	Inorganic	Potassium	19/22	1.0E+00	3.0E+00	1.9E+00	2.1E+00	mg/L	-
3.03	Inorganic	Selenium	0/23	9.7E-04	5.0E-02		5.0E-02	mg/L	ND
3.03	Inorganic	Silver	0/23	7.4E-04	5.0E-03		5.0E-03	mg/L	ND
3.03	Inorganic	Sodium	23/23	1.8E+00	9.1E+00	5.1E+00	5.8E+00	mg/L	-
3.03	Inorganic	Sulfate	9-Sep	1.7E+01	3.5E+01	2.6E+01	3.0E+01	mg/L	+
3.03	Inorganic	Thallium	22-Jan	1.0E-03	7.0E-03	7.0E-03	7.0E-03	mg/L	FD
3.03	Inorganic	Total hardness	9-Sep	4.9E+01	1.5E+02	1.0E+02	1.2E+02	mg/L	-
3.03	Inorganic	Uranium	18/21	1.0E-04	8.5E-03	2.5E-03	3.1E-03	mg/L	+
3.03	Inorganic	Vanadium	22-Aug	1.0E-03	4.2E-03	1.5E-03	1.9E-03	mg/L	+
3.03	Inorganic	Zinc	18/23	4.9E-03	3.3E-02	1.1E-02	1.4E-02	mg/L	+
3.03	Organic	1,1,1-Trichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,1,2,2-Tetrachloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,1,2-Trichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,1-Dichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,1-Dichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,2,4-Trichlorobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	1,2-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	1,2-Dichloroethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,2-Dichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,2-Dichloropropane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	1,3-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	1,4-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,2'-oxybis(1-chloropropane)	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,4,5-Trichlorophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	2,4,6-Trichlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,4-Dichlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,4-Dimethylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,4-Dinitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	2,4-Dinitrotoluene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2,6-Dinitrotoluene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Butanone	9-Jan	2.0E-03	1.0E-02	2.0E-03	1.0E-02	mg/L	+
3.03	Organic	2-Chloronaphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Chlorophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Hexanone	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Methyl-4,6-dinitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	2-Methylnaphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	2-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	2-Nitrophenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	3,3'-Dichlorobenzidine	0/13	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.03	Organic	3-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	4,4'-DDD	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	4,4'-DDE	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	4,4'-DDT	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	4-Bromophenyl phenyl ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Chloro-3-methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Chlorobenzenamine	0/12	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Chlorophenylphenyl ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Methyl-2-pentanone	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Methylphenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	4-Nitroaniline	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	4-Nitrophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	Acenaphthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Acenaphthylene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Acetone	9-Jan	1.0E-02	1.3E-02	1.3E-02	1.3E-02	mg/L	+
3.03	Organic	Aldrin	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	Anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Benzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Benzo(a)anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Benzo(a)pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Benzo(b)fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Benzo(ghi)perylene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.03	Organic	Benzo(k)fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Benzoic acid	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	Benzyl alcohol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Bis(2-chloroethoxy)methane	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Bis(2-chloroethyl) ether	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Bis(2-ethylhexyl)phthalate	13-Jan	1.0E-03	1.0E-02	1.0E-03	1.0E-02	mg/L	+
3.03	Organic	Bromodichloromethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Bromoform	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Bromomethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Butylbenzylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Carbazole	0/12	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Carbon disulfide	9-Feb	4.0E-03	2.0E-02	5.8E-03	1.0E-02	mg/L	+
3.03	Organic	Carbon tetrachloride	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Chlordane, total	0/12	1.9E-05	2.0E-05		2.0E-05	mg/L	ND
3.03	Organic	Chlorobenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Chloroethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Chloroform	9-Jan	4.0E-03	5.0E-03	4.0E-03	5.0E-03	mg/L	+
3.03	Organic	Chloromethane	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Chrysene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Di-n-butylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Di-n-octylphthlate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Dibenz(a,h)anthracene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Dibenzofuran	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Dibromochloromethane	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Dieldrin	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Diethylphthalate	13-Jan	2.0E-03	1.0E-02	2.0E-03	1.0E-02	mg/L	+
3.03	Organic	Dimethylbenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Dimethylphthalate	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Endosulfan	0/12	2.9E-05	3.1E-05		3.1E-05	mg/L	ND
3.03	Organic	Endosulfan I	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Endosulfan II	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Endosulfan sulfate	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Endrin	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Endrin aldehyde	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Endrin ketone	0/12	1.9E-05	2.1E-05		2.1E-05	mg/L	ND
3.03	Organic	Ethylbenzene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Fluoranthene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Fluorene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Heptachlor	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	Heptachlor epoxide	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	Hexachlorobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Hexachlorobutadiene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Hexachlorocyclopentadiene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Hexachloroethane	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Indeno(1,2,3-cd)pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Isophorone	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Lindane	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	Methoxychlor	0/12	9.5E-05	1.0E-04		1.0E-04	mg/L	ND
3.03	Organic	Methylene chloride	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	N-Nitroso-di-n-propylamine	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	N-Nitrosodiphenylamine	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Naphthalene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.03	Organic	Nitrobenzene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	PCB-1016	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	PCB-1221	0/12	3.8E-04	4.1E-04		4.1E-04	mg/L	ND
3.03	Organic	PCB-1232	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	PCB-1242	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	PCB-1248	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	PCB-1254	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	PCB-1260	0/12	1.9E-04	2.1E-04		2.1E-04	mg/L	ND
3.03	Organic	Pentachlorophenol	0/13	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.03	Organic	Phenanthrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.03	Organic	Phenol	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Pyrene	0/13	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	Styrene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Tetrachloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Toluene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	Toxaphene	0/12	9.5E-04	1.0E-03		1.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Trichloroethene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	-
3.03	Organic	Vinyl chloride	0/9	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.03	Organic	alpha-BHC	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	alpha-Chlordane	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	beta-BHC	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	cis-1,3-Dichloropropene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Organic	delta-BHC	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	-
3.03	Organic	gamma-Chlordane	0/12	9.5E-06	1.0E-05		1.0E-05	mg/L	ND
3.03	Organic	trans-1,3-Dichloropropene	0/9	5.0E-03	5.0E-03		5.0E-03	mg/L	ND
3.03	Radionuclide	Cesium-137	10-Feb	-1.1E+00	4.8E+00	4.9E-01	1.5E+00	pCi/L	+
3.03	Radionuclide	Cobalt-60	0/10	-1.9E+00	3.8E+00		3.8E+00	pCi/L	ND
3.03	Radionuclide	Gross alpha activity	16/22	9.2E-01	5.7E+00	1.9E+00	2.4E+00	pCi/L	-
3.03	Radionuclide	Gross beta activity	18/22	3.0E-01	1.2E+01	4.2E+00	5.1E+00	pCi/L	-
3.03	Radionuclide	Strontium-90	22-Feb	-7.9E-01	4.1E+00	2.2E+00	2.4E+00	pCi/L	+
3.03	Radionuclide	Technetium-99	9-Mar	-4.1E+00	8.4E+00	7.7E+00	7.9E+00	pCi/L	+
3.03	Radionuclide	Tritium	21-Feb	-5.0E+02	2.7E+03	6.3E+02	8.8E+02	pCi/L	+
3.03	Radionuclide	Uranium - radioactive	9-Aug	2.2E-04	2.2E+00	1.4E+00	1.7E+00	pCi/L	+
3.03	Radionuclide	Uranium-234	2-Feb	1.1E+00	1.9E+00	1.5E+00	1.9E+00	pCi/L	+
3.03	Radionuclide	Uranium-235	0/2	3.5E-02	7.3E-02		7.3E-02	pCi/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Inorganic	Alkalinity as CaCO3	15/15	1.0E+00	2.1E+00	1.5E+00	1.7E+00	MEQ/L	-
3.04	Inorganic	Aluminum	15/15	1.3E-01	1.5E+00	4.0E-01	5.5E-01	mg/L	+
3.04	Inorganic	Antimony	16-Mar	1.0E-03	1.9E-03	1.7E-03	1.7E-03	mg/L	+
3.04	Inorganic	Arsenic	16-Apr	1.0E-03	3.0E-03	1.1E-03	1.2E-03	mg/L	+
3.04	Inorganic	Barium	15/15	2.4E-02	4.1E-02	3.5E-02	3.7E-02	mg/L	+
3.04	Inorganic	Beryllium	0/16	1.0E-03	3.9E-03		3.9E-03	mg/L	ND
3.04	Inorganic	Boron	13/15	3.0E-03	1.2E-01	4.8E-02	6.5E-02	mg/L	+
3.04	Inorganic	Cadmium	0/16	2.1E-04	1.0E-03		1.0E-03	mg/L	ND
3.04	Inorganic	Calcium	15/16	2.7E-02	3.4E+01	2.5E+01	2.8E+01	mg/L	-
3.04	Inorganic	Chromium	16-Dec	1.0E-03	9.8E-03	2.0E-03	2.3E-03	mg/L	+
3.04	Inorganic	Cobalt	15-Feb	1.0E-03	1.5E-03	1.1E-03	1.2E-03	mg/L	+
3.04	Inorganic	Copper	14/16	1.7E-03	1.0E-02	3.7E-03	4.7E-03	mg/L	-
3.04	Inorganic	Cyanide	0/15	1.0E-02	2.0E-02		2.0E-02	mg/L	ND
3.04	Inorganic	Iron	16/16	1.7E-01	1.9E+00	5.9E-01	7.6E-01	mg/L	+
3.04	Inorganic	Lead	16-Aug	1.0E-03	4.3E-03	1.5E-03	1.9E-03	mg/L	-
3.04	Inorganic	Magnesium	15/16	9.0E-03	9.6E+00	7.0E+00	7.7E+00	mg/L	+
3.04	Inorganic	Manganese	15/15	4.5E-02	1.1E-01	8.0E-02	8.9E-02	mg/L	+
3.04	Inorganic	Mercury	20/31	3.0E-05	1.1E-03	1.9E-04	2.6E-04	mg/L	+
3.04	Inorganic	Methyl mercury	14-Feb	7.6E-08	7.0E-07	3.2E-07	3.9E-07	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Inorganic	Molybdenum	15-Jan	1.0E-03	5.0E-03	2.1E-03	5.0E-03	mg/L	+
3.04	Inorganic	Nickel	15/16	1.4E-03	1.9E-02	3.6E-03	4.3E-03	mg/L	+
3.04	Inorganic	Potassium	15/16	1.3E-02	2.7E+00	1.7E+00	1.9E+00	mg/L	-
3.04	Inorganic	Selenium	0/16	9.7E-04	5.0E-03		5.0E-03	mg/L	ND
3.04	Inorganic	Silver	0/16	7.4E-04	1.0E-03		1.0E-03	mg/L	ND
3.04	Inorganic	Sodium	15/16	2.0E-02	9.2E+00	4.6E+00	5.4E+00	mg/L	-
3.04	Inorganic	Thallium	0/16	1.0E-03	2.7E-03		2.7E-03	mg/L	ND
3.04	Inorganic	Uranium	15-Dec	1.0E-03	3.2E-03	2.0E-03	2.2E-03	mg/L	+
3.04	Inorganic	Vanadium	15-May	1.0E-03	3.2E-03	1.3E-03	1.6E-03	mg/L	+
3.04	Inorganic	Zinc	14/16	2.7E-03	3.5E-02	1.4E-02	1.8E-02	mg/L	+
3.04	Organic	1,2,4-Trichlorobenzene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	1,2-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	1,3-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	1,4-Dichlorobenzene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2,2'-oxybis(1-chloropropane)	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2,4,5-Trichlorophenol	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	2,4,6-Trichlorophenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2,4-Dichlorophenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2,4-Dimethylphenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	2,4-Dinitrophenol	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	2,4-Dinitrotoluene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2,6-Dinitrotoluene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2-Chloronaphthalene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2-Chlorophenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2-Methyl-4,6-dinitrophenol	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	2-Methylnaphthalene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2-Methylphenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	2-Nitroaniline	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	2-Nitrophenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	3,3'-Dichlorobenzidine	0/15	5.0E-03	2.0E-02		2.0E-02	mg/L	ND
3.04	Organic	3-Nitroaniline	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	4,4'-DDD	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	4,4'-DDE	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	4,4'-DDT	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	4-Bromophenyl phenyl ether	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	4-Chloro-3-methylphenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	4-Chlorobenzenamine	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	4-Chlorophenylphenyl ether	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	4-Methylphenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	4-Nitroaniline	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	4-Nitrophenol	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	Acenaphthene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Acenaphthylene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Aldrin	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	Anthracene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Benzo(a)anthracene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Benzo(a)pyrene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Benzo(b)fluoranthene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Benzo(ghi)perylene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.04	Organic	Benzo(k)fluoranthene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Benzoic acid	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	Benzyl alcohol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Bis(2-chloroethoxy)methane	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Bis(2-chloroethyl) ether	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Bis(2-ethylhexyl)phthalate	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Butylbenzylphthalate	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Carbazole	0/14	5.0E-03	5.0E-03		5.0E-03	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Chlordane, total	0/14	2.0E-05	2.0E-05		2.0E-05	mg/L	ND
3.04	Organic	Chrysene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Di-n-butylphthalate	15-Jan	5.0E-03	1.0E-02	7.0E-03	1.0E-02	mg/L	+
3.04	Organic	Di-n-octylphthlate	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Dibenz(a,h)anthracene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Dibenzofuran	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Dieldrin	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Diethylphthalate	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Dimethylphthalate	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Endosulfan	0/14	3.0E-05	3.1E-05		3.1E-05	mg/L	ND
3.04	Organic	Endosulfan I	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	Endosulfan II	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Endosulfan sulfate	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Endrin	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Endrin aldehyde	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Endrin ketone	0/14	2.0E-05	2.1E-05		2.1E-05	mg/L	ND
3.04	Organic	Fluoranthene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Fluorene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Heptachlor	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Heptachlor epoxide	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	Hexachlorobenzene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Hexachlorobutadiene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Hexachlorocyclopentadiene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Hexachloroethane	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Indeno(1,2,3-cd)pyrene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Isophorone	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Lindane	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	Methoxychlor	0/14	9.9E-05	1.0E-04		1.0E-04	mg/L	ND
3.04	Organic	N-Nitroso-di-n-propylamine	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	N-Nitrosodiphenylamine	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Naphthalene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.04	Organic	Nitrobenzene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	PCB-1016	0/14	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.04	Organic	PCB-1221	0/14	4.0E-04	4.2E-04		4.2E-04	mg/L	ND
3.04	Organic	PCB-1232	0/14	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.04	Organic	PCB-1242	0/14	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.04	Organic	PCB-1248	0/14	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.04	Organic	PCB-1254	14-Jan	1.4E-04	2.1E-04	1.4E-04	2.1E-04	mg/L	+

Table E.2. Summary statistics for surface water collected in Poplar Creek (continued)

Reach	Chemical Type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	PCB-1260	0/14	2.0E-04	2.1E-04		2.1E-04	mg/L	ND
3.04	Organic	Pentachlorophenol	0/15	2.0E-02	5.0E-02		5.0E-02	mg/L	ND
3.04	Organic	Phenanthrene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	-
3.04	Organic	Phenol	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Pyrene	0/15	5.0E-03	1.0E-02		1.0E-02	mg/L	ND
3.04	Organic	Toxaphene	0/14	9.9E-04	1.0E-03		1.0E-03	mg/L	ND
3.04	Organic	alpha-BHC	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	alpha-Chlordane	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	beta-BHC	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Organic	delta-BHC	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	-
3.04	Organic	gamma-Chlordane	0/14	9.9E-06	1.0E-05		1.0E-05	mg/L	ND
3.04	Radionuclide	Cesium-137	1-Jan	2.0E-01	2.0E-01	2.0E-01	2.0E-01	pCi/L	+
3.04	Radionuclide	Cobalt-60	0/1	7.5E-02	7.5E-02		7.5E-02	pCi/L	ND
3.04	Radionuclide	Gross alpha activity	15-Sep	1.2E+00	1.1E+01	1.9E+00	2.2E+00	pCi/L	-
3.04	Radionuclide	Gross beta activity	15-Nov	1.9E+00	1.7E+01	4.6E+00	6.6E+00	pCi/L	-
3.04	Radionuclide	Strontium-90	16-Apr	-3.5E-01	8.5E+01	6.2E+00	1.7E+01	pCi/L	+
3.04	Radionuclide	Tritium	15-Feb	1.5E+02	9.2E+02	3.4E+02	4.4E+02	pCi/L	+

Table E.3. Summary statistics for nearshore sediment for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Inorganic	Aluminum	3-Mar	8.5E+03	1.8E+04	1.2E+04	1.8E+04	mg/kg	+
2.04	Inorganic	Antimony	0/2	4.2E-01	4.9E-01		4.9E-01	mg/kg	ND
2.04	Inorganic	Arsenic	3-Mar	3.6E+00	6.2E+00	4.5E+00	6.2E+00	mg/kg	+
2.04	Inorganic	Barium	3-Mar	7.4E+01	1.9E+02	1.3E+02	1.9E+02	mg/kg	+
2.04	Inorganic	Beryllium	3-Mar	6.4E-01	1.3E+00	9.0E-01	1.3E+00	mg/kg	+
2.04	Inorganic	Boron	3-Mar	2.9E+00	4.9E+00	4.1E+00	4.9E+00	mg/kg	+
2.04	Inorganic	Cadmium	3-Mar	1.9E-01	4.8E-01	3.0E-01	4.8E-01	mg/kg	+
2.04	Inorganic	Calcium	3-Mar	2.2E+03	3.5E+03	2.7E+03	3.5E+03	mg/kg	-
2.04	Inorganic	Chromium	3-Mar	1.3E+01	2.1E+01	1.6E+01	2.1E+01	mg/kg	+
2.04	Inorganic	Cobalt	3-Mar	8.8E+00	1.6E+01	1.2E+01	1.6E+01	mg/kg	+
2.04	Inorganic	Copper	3-Mar	5.9E+00	1.2E+01	9.8E+00	1.2E+01	mg/kg	-
2.04	Inorganic	Iron	3-Mar	1.5E+04	2.6E+04	2.0E+04	2.6E+04	mg/kg	+
2.04	Inorganic	Kjeldahl nitrogen	3-Mar	2.2E+02	7.2E+02	4.4E+02	7.2E+02	mg/kg	-
2.04	Inorganic	Lead	3-Mar	1.6E+01	3.3E+01	2.2E+01	3.3E+01	mg/kg	-
2.04	Inorganic	Magnesium	3-Mar	1.7E+03	2.6E+03	2.0E+03	2.6E+03	mg/kg	+
2.04	Inorganic	Manganese	3-Mar	9.3E+02	1.9E+03	1.4E+03	1.9E+03	mg/kg	+
2.04	Inorganic	Mercury	3-Mar	5.5E-02	1.8E-01	1.0E-01	1.8E-01	mg/kg	+
2.04	Inorganic	Methyl mercury	3-Mar	5.3E-05	3.1E-04	2.0E-04	3.1E-04	mg/kg	+
2.04	Inorganic	Molybdenum	0/3	3.2E-01	4.2E-01		4.2E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Inorganic	Nickel	3-Mar	1.4E+01	2.5E+01	1.8E+01	2.5E+01	mg/kg	+
2.04	Inorganic	Potassium	3-Mar	1.0E+03	2.0E+03	1.4E+03	2.0E+03	mg/kg	-
2.04	Inorganic	Selenium	0/2	1.9E+00	2.6E+00		2.6E+00	mg/kg	ND
2.04	Inorganic	Silver	3-Feb	1.9E-02	7.0E-02	5.1E-02	7.0E-02	mg/kg	+
2.04	Inorganic	Sodium	3-Mar	2.8E+01	4.4E+01	3.5E+01	4.4E+01	mg/kg	-
2.04	Inorganic	Thallium	0/3	1.4E-01	1.9E-01		1.9E-01	mg/kg	ND
2.04	Inorganic	Uranium	3-Mar	3.3E-01	7.2E-01	4.8E-01	7.2E-01	mg/kg	+
2.04	Inorganic	Vanadium	3-Mar	1.4E+01	2.1E+01	1.7E+01	2.1E+01	mg/kg	+
2.04	Inorganic	Zinc	3-Mar	4.7E+01	8.2E+01	6.1E+01	8.2E+01	mg/kg	+
2.04	Organic	1,2,4-Trichlorobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	1,2-Dichlorobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	1,3-Dichlorobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	1,4-Dichlorobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,2'-oxybis(1-chloropropane)	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,4,5-Trichlorophenol	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	2,4,6-Trichlorophenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,4-Dichlorophenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,4-Dimethylphenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,4-Dinitrophenol	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	2,4-Dinitrotoluene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2,6-Dinitrotoluene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2-Chloronaphthalene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2-Chlorophenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2-Methyl-4,6-dinitrophenol	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	2-Methylnaphthalene	3-Jan	3.8E-02	2.3E-01	3.8E-02	2.3E-01	mg/kg	+
2.04	Organic	2-Methylphenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	2-Nitroaniline	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	2-Nitrophenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	3,3'-Dichlorobenzidine	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	3-Nitroaniline	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	4,4'-DDD	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	4,4'-DDE	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	4,4'-DDT	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	4-Bromophenyl phenyl ether	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	4-Chloro-3-methylphenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	4-Chlorobenzenamine	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	4-Chlorophenylphenyl ether	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	4-Methylphenol	3-Jan	3.8E-02	2.3E-01	3.8E-02	2.3E-01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	4-Nitroaniline	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	4-Nitrophenol	3-Jan	2.7E-01	6.4E-01	2.7E-01	6.4E-01	mg/kg	+
2.04	Organic	Acenaphthene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Acenaphthylene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Aldrin	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	Anthracene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Benzo(a)anthracene	3-Jan	1.1E-01	2.6E-01	1.1E-01	2.6E-01	mg/kg	+
2.04	Organic	Benzo(a)pyrene	3-Jan	2.1E-02	2.3E-01	2.1E-02	2.3E-01	mg/kg	+
2.04	Organic	Benzo(b)fluoranthene	3-Feb	3.3E-02	2.3E-01	7.1E-02	1.8E-01	mg/kg	+
2.04	Organic	Benzo(ghi)perylene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	-
2.04	Organic	Benzo(k)fluoranthene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Benzoic acid	0/3	4.9E-01	6.4E-01		6.4E-01	mg/kg	ND
2.04	Organic	Benzyl alcohol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Bis(2-chloroethoxy)methane	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Bis(2-chloroethyl) ether	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Bis(2-ethylhexyl)phthalate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Butylbenzylphthalate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Carbazole	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Chlordane, total	0/3	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Chrysene	3-Feb	1.7E-02	2.3E-01	6.2E-02	1.9E-01	mg/kg	+
2.04	Organic	Di-n-butylphthalate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Di-n-octylphthlate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Dibenz(a,h)anthracene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Dibenzofuran	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Dieldrin	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Diethylphthalate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Dimethylphthalate	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Endosulfan	0/3	1.2E-03	1.6E-03		1.6E-03	mg/kg	ND
2.04	Organic	Endosulfan I	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	Endosulfan II	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Endosulfan sulfate	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Endrin	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Endrin aldehyde	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Endrin ketone	0/3	8.1E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Fluoranthene	3-Feb	2.3E-02	2.3E-01	6.6E-02	1.9E-01	mg/kg	+
2.04	Organic	Fluorene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Heptachlor	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	Heptachlor epoxide	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Hexachlorobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Hexachlorobutadiene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Hexachlorocyclopentadiene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Hexachloroethane	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Indeno(1,2,3-cd)pyrene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Isophorone	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Lindane	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	Methoxychlor	0/3	4.2E-03	5.4E-03		5.4E-03	mg/kg	ND
2.04	Organic	N-Nitroso-di-n-propylamine	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	N-Nitrosodiphenylamine	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Naphthalene	3-Jan	2.6E-02	2.3E-01	2.6E-02	2.3E-01	mg/kg	-
2.04	Organic	Nitrobenzene	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	PCB-1016	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND
2.04	Organic	PCB-1221	0/3	1.7E-02	2.1E-02		2.1E-02	mg/kg	ND
2.04	Organic	PCB-1232	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND
2.04	Organic	PCB-1242	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND
2.04	Organic	PCB-1248	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND
2.04	Organic	PCB-1254	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND
2.04	Organic	PCB-1260	0/3	8.1E-03	1.1E-02		1.1E-02	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Pentachlorophenol	3-Jan	2.6E-01	6.4E-01	2.6E-01	6.4E-01	mg/kg	+
2.04	Organic	Phenanthrene	3-Jan	2.7E-02	2.3E-01	2.7E-02	2.3E-01	mg/kg	-
2.04	Organic	Phenol	0/3	2.0E-01	2.6E-01		2.6E-01	mg/kg	ND
2.04	Organic	Pyrene	3-Feb	2.7E-02	2.3E-01	7.2E-02	2.0E-01	mg/kg	+
2.04	Organic	Total combustible organics (TCO)	3-Mar	3.1E+05	3.6E+05	3.4E+05	3.6E+05	mg/kg	-
2.04	Organic	Total organic carbon (TOC)	3-Mar	8.9E+03	1.4E+04	1.2E+04	1.4E+04	mg/kg	-
2.04	Organic	Toxaphene	0/3	4.2E-02	5.4E-02		5.4E-02	mg/kg	ND
2.04	Organic	alpha-BHC	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	alpha-Chlordane	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	beta-BHC	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Organic	delta-BHC	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	-
2.04	Organic	gamma-Chlordane	0/3	4.2E-04	5.4E-04		5.4E-04	mg/kg	ND
2.04	Radionuclide	Americium-241	0/3	1.9E-01	1.9E-01		1.9E-01	pCi/g	ND
2.04	Radionuclide	Beryllium-7	10-Mar	3.2E-08	1.1E-05	1.2E-06	3.5E-06	pCi/g	+
2.04	Radionuclide	Cesium-137	25/25	2.4E-01	1.0E+01	2.7E+00	3.5E+00	pCi/g	+
2.04	Radionuclide	Cobalt-60	21/25	2.0E-02	2.2E-01	6.7E-02	8.1E-02	pCi/g	+
2.04	Radionuclide	Europium-152	0/10	1.1E-01	1.8E-01		1.8E-01	pCi/g	ND
2.04	Radionuclide	Europium-154	0/3	8.1E-02	8.9E-02		8.9E-02	pCi/g	ND
2.04	Radionuclide	Potassium-40	10-Oct	6.5E+00	1.6E+01	1.2E+01	1.4E+01	pCi/g	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Radionuclide	Strontium-90	0/4	9.0E-01	1.3E+00		1.3E+00	pCi/g	ND
2.04	Radionuclide	Technetium-99	0/1	1.5E+00	1.5E+00		1.5E+00	pCi/g	ND
2.04	Radionuclide	Uranium-234	1-Jan	6.6E-01	6.6E-01	6.6E-01	6.6E-01	pCi/g	+
2.04	Radionuclide	Uranium-235	0/1	2.4E-02	2.4E-02		2.4E-02	pCi/g	ND
2.04	Radionuclide	Uranium-238	1-Jan	6.6E-01	6.6E-01	6.6E-01	6.6E-01	pCi/g	+
3.01	Inorganic	Aluminum	1-Jan	1.1E+04	1.1E+04	1.1E+04	1.1E+04	mg/kg	+
3.01	Inorganic	Antimony	0/1	5.2E-01	5.2E-01		5.2E-01	mg/kg	ND
3.01	Inorganic	Arsenic	1-Jan	4.1E+00	4.1E+00	4.1E+00	4.1E+00	mg/kg	+
3.01	Inorganic	Barium	1-Jan	8.6E+01	8.6E+01	8.6E+01	8.6E+01	mg/kg	+
3.01	Inorganic	Beryllium	1-Jan	7.0E-01	7.0E-01	7.0E-01	7.0E-01	mg/kg	+
3.01	Inorganic	Boron	1-Jan	3.8E+00	3.8E+00	3.8E+00	3.8E+00	mg/kg	+
3.01	Inorganic	Cadmium	1-Jan	2.1E+00	2.1E+00	2.1E+00	2.1E+00	mg/kg	+
3.01	Inorganic	Calcium	1-Jan	1.9E+03	1.9E+03	1.9E+03	1.9E+03	mg/kg	-
3.01	Inorganic	Chromium	1-Jan	2.1E+01	2.1E+01	2.1E+01	2.1E+01	mg/kg	+
3.01	Inorganic	Cobalt	1-Jan	2.0E+01	2.0E+01	2.0E+01	2.0E+01	mg/kg	+
3.01	Inorganic	Copper	1-Jan	2.6E+01	2.6E+01	2.6E+01	2.6E+01	mg/kg	-
3.01	Inorganic	Iron	1-Jan	1.8E+04	1.8E+04	1.8E+04	1.8E+04	mg/kg	+
3.01	Inorganic	Kjeldahl nitrogen	1-Jan	1.5E+03	1.5E+03	1.5E+03	1.5E+03	mg/kg	-
3.01	Inorganic	Lead	1-Jan	1.9E+01	1.9E+01	1.9E+01	1.9E+01	mg/kg	-

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Inorganic	Magnesium	1-Jan	1.5E+03	1.5E+03	1.5E+03	1.5E+03	mg/kg	+
3.01	Inorganic	Manganese	1-Jan	3.8E+02	3.8E+02	3.8E+02	3.8E+02	mg/kg	+
3.01	Inorganic	Mercury	1-Jan	4.6E+00	4.6E+00	4.6E+00	4.6E+00	mg/kg	+
3.01	Inorganic	Methyl mercury	1-Jan	2.8E-03	2.8E-03	2.8E-03	2.8E-03	mg/kg	+
3.01	Inorganic	Molybdenum	0/1	5.4E+00	5.4E+00		5.4E+00	mg/kg	ND
3.01	Inorganic	Nickel	1-Jan	2.9E+01	2.9E+01	2.9E+01	2.9E+01	mg/kg	+
3.01	Inorganic	Potassium	1-Jan	1.4E+03	1.4E+03	1.4E+03	1.4E+03	mg/kg	-
3.01	Inorganic	Selenium	0/1	2.5E-01	2.5E-01		2.5E-01	mg/kg	ND
3.01	Inorganic	Silver	1-Jan	5.0E-01	5.0E-01	5.0E-01	5.0E-01	mg/kg	+
3.01	Inorganic	Sodium	1-Jan	5.1E+01	5.1E+01	5.1E+01	5.1E+01	mg/kg	-
3.01	Inorganic	Thallium	0/1	3.0E-01	3.0E-01		3.0E-01	mg/kg	ND
3.01	Inorganic	Uranium	1-Jan	3.3E+00	3.3E+00	3.3E+00	3.3E+00	mg/kg	+
3.01	Inorganic	Vanadium	1-Jan	1.8E+01	1.8E+01	1.8E+01	1.8E+01	mg/kg	+
3.01	Inorganic	Zinc	1-Jan	7.7E+01	7.7E+01	7.7E+01	7.7E+01	mg/kg	+
3.01	Organic	1,2,4-Trichlorobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	1,2-Dichlorobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	1,3-Dichlorobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	1,4-Dichlorobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2,2'-oxybis(1-chloropropane)	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	2,4,5-Trichlorophenol	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	2,4,6-Trichlorophenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2,4-Dichlorophenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2,4-Dimethylphenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2,4-Dinitrophenol	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	2,4-Dinitrotoluene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2,6-Dinitrotoluene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2-Chloronaphthalene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2-Chlorophenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2-Methyl-4,6-dinitrophenol	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	2-Methylnaphthalene	1-Jan	1.8E-02	1.8E-02	1.8E-02	1.8E-02	mg/kg	+
3.01	Organic	2-Methylphenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	2-Nitroaniline	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	2-Nitrophenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	3,3'-Dichlorobenzidine	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	3-Nitroaniline	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	4,4'-DDD	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	4,4'-DDE	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	4,4'-DDT	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	4-Bromophenyl phenyl ether	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	4-Chloro-3-methylphenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	4-Chlorobenzenamine	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	4-Chlorophenylphenyl ether	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	4-Methylphenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	4-Nitroaniline	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	4-Nitrophenol	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	Acenaphthene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Acenaphthylene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Aldrin	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	Anthracene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Benzo(a)anthracene	1-Jan	1.0E-01	1.0E-01	1.0E-01	1.0E-01	mg/kg	+
3.01	Organic	Benzo(a)pyrene	1-Jan	6.5E-02	6.5E-02	6.5E-02	6.5E-02	mg/kg	+
3.01	Organic	Benzo(b)fluoranthene	1-Jan	1.7E-01	1.7E-01	1.7E-01	1.7E-01	mg/kg	+
3.01	Organic	Benzo(ghi)perylene	1-Jan	9.4E-02	9.4E-02	9.4E-02	9.4E-02	mg/kg	-
3.01	Organic	Benzo(k)fluoranthene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Benzoic acid	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	Benzyl alcohol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Bis(2-chloroethoxy)methane	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Bis(2-chloroethyl) ether	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Bis(2-ethylhexyl)phthalate	1-Jan	3.0E-02	3.0E-02	3.0E-02	3.0E-02	mg/kg	+
3.01	Organic	Butylbenzylphthalate	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Carbazole	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Chlordane, total	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Chrysene	1-Jan	8.8E-02	8.8E-02	8.8E-02	8.8E-02	mg/kg	+
3.01	Organic	Di-n-butylphthalate	0/1	3.9E-01	3.9E-01		3.9E-01	mg/kg	ND
3.01	Organic	Di-n-octylphthlate	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Dibenz(a,h)anthracene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Dibenzofuran	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Dieldrin	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Diethylphthalate	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Dimethylphthalate	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Endosulfan	0/1	1.6E-03	1.6E-03		1.6E-03	mg/kg	ND
3.01	Organic	Endosulfan I	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	Endosulfan II	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Endosulfan sulfate	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Endrin	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Endrin aldehyde	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Endrin ketone	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.01	Organic	Fluoranthene	1-Jan	1.4E-01	1.4E-01	1.4E-01	1.4E-01	mg/kg	+
3.01	Organic	Fluorene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Heptachlor	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	Heptachlor epoxide	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	Hexachlorobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Hexachlorobutadiene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Hexachlorocyclopentadiene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Hexachloroethane	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Indeno(1,2,3-cd)pyrene	1-Jan	8.9E-02	8.9E-02	8.9E-02	8.9E-02	mg/kg	+
3.01	Organic	Isophorone	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Lindane	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	Methoxychlor	0/1	5.4E-03	5.4E-03		5.4E-03	mg/kg	ND
3.01	Organic	N-Nitroso-di-n-propylamine	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	N-Nitrosodiphenylamine	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Naphthalene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	-
3.01	Organic	Nitrobenzene	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	PCB-1016	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.01	Organic	PCB-1221	0/1	2.1E-02	2.1E-02		2.1E-02	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	PCB-1232	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.01	Organic	PCB-1242	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.01	Organic	PCB-1248	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.01	Organic	PCB-1254	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.01	Organic	PCB-1260	1-Jan	1.9E-02	1.9E-02	1.9E-02	1.9E-02	mg/kg	+
3.01	Organic	Pentachlorophenol	0/1	6.3E-01	6.3E-01		6.3E-01	mg/kg	ND
3.01	Organic	Phenanthrene	1-Jan	7.4E-02	7.4E-02	7.4E-02	7.4E-02	mg/kg	-
3.01	Organic	Phenol	0/1	2.6E-01	2.6E-01		2.6E-01	mg/kg	ND
3.01	Organic	Pyrene	1-Jan	1.3E-01	1.3E-01	1.3E-01	1.3E-01	mg/kg	+
3.01	Organic	Total combustible organics (TCO)	1-Jan	5.0E+05	5.0E+05	5.0E+05	5.0E+05	mg/kg	-
3.01	Organic	Total organic carbon (TOC)	1-Jan	1.2E+04	1.2E+04	1.2E+04	1.2E+04	mg/kg	-
3.01	Organic	Toxaphene	0/1	5.4E-02	5.4E-02		5.4E-02	mg/kg	ND
3.01	Organic	alpha-BHC	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	alpha-Chlordane	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	beta-BHC	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Organic	delta-BHC	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	-
3.01	Organic	gamma-Chlordane	0/1	5.4E-04	5.4E-04		5.4E-04	mg/kg	ND
3.01	Radionuclide	Cesium-137	0/1	2.1E-01	2.1E-01		2.1E-01	pCi/g	ND
3.01	Radionuclide	Cobalt-60	0/1	1.9E-01	1.9E-01		1.9E-01	pCi/g	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Radionuclide	Strontium-90	0/1	9.4E-01	9.4E-01		9.4E-01	pCi/g	ND
3.01	Radionuclide	Technetium-99	0/1	1.5E+00	1.5E+00		1.5E+00	pCi/g	ND
3.01	Radionuclide	Uranium-234	1-Jan	1.9E+00	1.9E+00	1.9E+00	1.9E+00	pCi/g	+
3.01	Radionuclide	Uranium-235	1-Jan	6.6E-02	6.6E-02	6.6E-02	6.6E-02	pCi/g	+
3.01	Radionuclide	Uranium-238	1-Jan	1.2E+00	1.2E+00	1.2E+00	1.2E+00	pCi/g	+
3.02	Inorganic	Aluminum	5-May	7.6E+03	2.0E+04	1.2E+04	1.6E+04	mg/kg	+
3.02	Inorganic	Antimony	0/5	3.8E-01	6.4E-01		6.4E-01	mg/kg	ND
3.02	Inorganic	Arsenic	5-May	2.5E+00	1.8E+01	6.8E+00	1.3E+01	mg/kg	+
3.02	Inorganic	Barium	5-May	6.3E+01	1.9E+02	1.1E+02	1.6E+02	mg/kg	+
3.02	Inorganic	Beryllium	5-May	5.3E-01	1.0E+00	7.2E-01	9.2E-01	mg/kg	+
3.02	Inorganic	Boron	5-Mar	8.9E-01	6.8E+00	5.1E+00	6.4E+00	mg/kg	+
3.02	Inorganic	Cadmium	5-May	6.6E-01	5.3E+00	2.2E+00	4.0E+00	mg/kg	+
3.02	Inorganic	Calcium	5-May	1.5E+03	4.2E+04	1.0E+04	2.7E+04	mg/kg	-
3.02	Inorganic	Chromium	5-May	1.8E+01	2.3E+02	7.6E+01	1.6E+02	mg/kg	+
3.02	Inorganic	Cobalt	5-May	1.1E+01	2.1E+01	1.7E+01	2.1E+01	mg/kg	+
3.02	Inorganic	Copper	5-May	1.5E+01	1.4E+02	6.2E+01	1.2E+02	mg/kg	-
3.02	Inorganic	Iron	5-May	1.3E+04	2.4E+04	1.9E+04	2.4E+04	mg/kg	+
3.02	Inorganic	Kjeldahl nitrogen	5-May	1.3E+02	1.6E+03	5.8E+02	1.2E+03	mg/kg	-
3.02	Inorganic	Lead	5-May	1.2E+01	5.3E+01	2.5E+01	4.1E+01	mg/kg	-

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Inorganic	Magnesium	5-May	1.2E+03	2.9E+03	1.8E+03	2.5E+03	mg/kg	+
3.02	Inorganic	Manganese	5-May	3.4E+02	8.5E+02	5.2E+02	7.2E+02	mg/kg	+
3.02	Inorganic	Mercury	5-May	8.4E+00	3.7E+01	2.0E+01	3.2E+01	mg/kg	+
3.02	Inorganic	Methyl mercury	5-May	3.0E-03	1.2E-02	6.6E-03	9.9E-03	mg/kg	+
3.02	Inorganic	Molybdenum	0/5	4.0E+00	6.7E+00		6.7E+00	mg/kg	ND
3.02	Inorganic	Nickel	5-May	3.0E+01	2.3E+02	1.2E+02	2.0E+02	mg/kg	+
3.02	Inorganic	Potassium	5-May	9.5E+02	2.3E+03	1.4E+03	1.9E+03	mg/kg	-
3.02	Inorganic	Selenium	0/5	3.0E-01	1.2E+00		1.2E+00	mg/kg	ND
3.02	Inorganic	Silver	5-May	3.4E-01	5.6E+00	1.6E+00	3.8E+00	mg/kg	+
3.02	Inorganic	Sodium	5-May	2.7E+01	7.1E+01	5.1E+01	6.6E+01	mg/kg	-
3.02	Inorganic	Thallium	0/5	2.4E-01	3.7E-01		3.7E-01	mg/kg	ND
3.02	Inorganic	Uranium	5-May	3.3E+00	5.2E+01	1.9E+01	3.9E+01	mg/kg	+
3.02	Inorganic	Vanadium	5-May	1.1E+01	2.2E+01	1.7E+01	2.1E+01	mg/kg	+
3.02	Inorganic	Zinc	5-May	6.8E+01	2.4E+02	1.3E+02	2.1E+02	mg/kg	+
3.02	Organic	1,2,4-Trichlorobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	1,2-Dichlorobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	1,3-Dichlorobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	1,4-Dichlorobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2,2'-oxybis(1-chloropropane)	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	2,4,5-Trichlorophenol	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	2,4,6-Trichlorophenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2,4-Dichlorophenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2,4-Dimethylphenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2,4-Dinitrophenol	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	2,4-Dinitrotoluene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2,6-Dinitrotoluene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2-Chloronaphthalene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2-Chlorophenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2-Methyl-4,6-dinitrophenol	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	2-Methylnaphthalene	5-May	7.7E-02	1.8E-01	1.3E-01	1.7E-01	mg/kg	+
3.02	Organic	2-Methylphenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	2-Nitroaniline	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	2-Nitrophenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	3,3'-Dichlorobenzidine	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	3-Nitroaniline	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	4,4'-DDD	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	4,4'-DDE	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	4,4'-DDT	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	4-Bromophenyl phenyl ether	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	4-Chloro-3-methylphenol	5-Jan	6.2E-02	2.5E-01	6.2E-02	2.5E-01	mg/kg	-
3.02	Organic	4-Chlorobenzenamine	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	4-Chlorophenylphenyl ether	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	4-Methylphenol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	4-Nitroaniline	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	4-Nitrophenol	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	Acenaphthene	5-Mar	1.8E-02	2.5E-01	2.9E-02	5.0E-02	mg/kg	+
3.02	Organic	Acenaphthylene	5-Jan	2.6E-02	2.8E-01	2.6E-02	2.8E-01	mg/kg	+
3.02	Organic	Aldrin	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	Anthracene	5-Mar	4.9E-02	2.5E-01	5.3E-02	5.7E-02	mg/kg	+
3.02	Organic	Benzo(a)anthracene	5-May	7.8E-02	4.1E-01	2.0E-01	3.3E-01	mg/kg	+
3.02	Organic	Benzo(a)pyrene	5-May	4.4E-02	2.5E-01	1.3E-01	2.1E-01	mg/kg	+
3.02	Organic	Benzo(b)fluoranthene	5-May	1.0E-01	5.1E-01	2.4E-01	4.0E-01	mg/kg	+
3.02	Organic	Benzo(ghi)perylene	5-May	5.3E-02	1.8E-01	1.1E-01	1.6E-01	mg/kg	-
3.02	Organic	Benzo(k)fluoranthene	5-May	2.1E-02	7.9E-02	4.5E-02	6.8E-02	mg/kg	+
3.02	Organic	Benzoic acid	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	Benzyl alcohol	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Bis(2-chloroethoxy)methane	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Bis(2-chloroethyl) ether	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Bis(2-ethylhexyl)phthalate	5-Jan	2.3E-01	4.3E-01	4.3E-01	4.3E-01	mg/kg	+
3.02	Organic	Butylbenzylphthalate	5-Mar	1.6E-02	2.5E-01	2.4E-02	3.4E-02	mg/kg	+
3.02	Organic	Carbazole	5-Mar	4.6E-02	2.5E-01	4.8E-02	5.0E-02	mg/kg	+
3.02	Organic	Chlordane, total	0/5	9.6E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Chrysene	5-May	7.9E-02	3.3E-01	1.6E-01	2.6E-01	mg/kg	+
3.02	Organic	Di-n-butylphthalate	0/5	2.5E-01	5.5E-01		5.5E-01	mg/kg	ND
3.02	Organic	Di-n-octylphthlate	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Dibenz(a,h)anthracene	5-Feb	2.9E-02	2.8E-01	3.2E-02	3.7E-02	mg/kg	+
3.02	Organic	Dibenzofuran	5-May	2.2E-02	6.0E-02	3.7E-02	5.2E-02	mg/kg	-
3.02	Organic	Dieldrin	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Diethylphthalate	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Dimethylphthalate	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Endosulfan	0/5	1.4E-03	3.3E-03		3.3E-03	mg/kg	ND
3.02	Organic	Endosulfan I	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	Endosulfan II	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Endosulfan sulfate	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Endrin	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Endrin aldehyde	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Endrin ketone	0/5	9.2E-04	2.2E-03		2.2E-03	mg/kg	ND
3.02	Organic	Fluoranthene	5-May	8.3E-02	5.9E-01	3.3E-01	5.3E-01	mg/kg	+
3.02	Organic	Fluorene	5-Feb	2.5E-02	2.5E-01	3.7E-02	6.3E-02	mg/kg	+
3.02	Organic	Heptachlor	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	Heptachlor epoxide	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	Hexachlorobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Hexachlorobutadiene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Hexachlorocyclopentadiene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Hexachloroethane	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Indeno(1,2,3-cd)pyrene	5-Mar	1.2E-01	2.5E-01	1.4E-01	1.8E-01	mg/kg	+
3.02	Organic	Isophorone	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Lindane	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	Methoxychlor	0/5	4.8E-03	1.1E-02		1.1E-02	mg/kg	ND
3.02	Organic	N-Nitroso-di-n-propylamine	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	N-Nitrosodiphenylamine	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	Naphthalene	5-May	5.0E-02	1.2E-01	8.0E-02	1.1E-01	mg/kg	-
3.02	Organic	Nitrobenzene	0/5	2.3E-01	2.8E-01		2.8E-01	mg/kg	ND
3.02	Organic	PCB-1016	0/5	9.2E-03	2.2E-02		2.2E-02	mg/kg	ND
3.02	Organic	PCB-1221	0/5	1.9E-02	4.5E-02		4.5E-02	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	PCB-1232	0/5	9.2E-03	2.2E-02		2.2E-02	mg/kg	ND
3.02	Organic	PCB-1242	0/5	9.2E-03	2.2E-02		2.2E-02	mg/kg	ND
3.02	Organic	PCB-1248	5-Feb	1.0E-02	2.9E-01	1.0E-01	2.3E-01	mg/kg	+
3.02	Organic	PCB-1254	5-Apr	1.0E-02	5.1E-01	2.4E-01	4.0E-01	mg/kg	+
3.02	Organic	PCB-1260	5-May	3.3E-02	5.6E-01	1.9E-01	3.9E-01	mg/kg	+
3.02	Organic	Pentachlorophenol	0/5	5.7E-01	6.7E-01		6.7E-01	mg/kg	ND
3.02	Organic	Phenanthrene	5-May	1.1E-01	4.9E-01	2.5E-01	4.0E-01	mg/kg	-
3.02	Organic	Phenol	5-Jan	6.8E-02	2.8E-01	6.8E-02	2.8E-01	mg/kg	+
3.02	Organic	Pyrene	5-May	1.3E-01	5.7E-01	2.7E-01	4.4E-01	mg/kg	+
3.02	Organic	Total combustible organics (TCO)	4-Apr	3.2E+03	6.6E+04	3.0E+04	6.6E+04	mg/kg	-
3.02	Organic	Total organic carbon (TOC)	2-Feb	1.7E+04	2.4E+04	2.1E+04	2.4E+04	mg/kg	-
3.02	Organic	Toxaphene	0/5	4.8E-02	1.1E-01		1.1E-01	mg/kg	ND
3.02	Organic	alpha-BHC	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	alpha-Chlordane	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	beta-BHC	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Organic	delta-BHC	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	-
3.02	Organic	gamma-Chlordane	0/5	4.8E-04	1.1E-03		1.1E-03	mg/kg	ND
3.02	Radionuclide	Cesium-137	6-Jun	3.0E-01	1.8E+00	7.3E-01	1.2E+00	pCi/g	+
3.02	Radionuclide	Cobalt-60	6-Jan	6.8E-03	1.6E-01	6.8E-03	1.6E-01	pCi/g	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Radionuclide	Strontium-90	5-Jan	4.2E-01	1.8E+00	7.4E-01	1.8E+00	pCi/g	+
3.02	Radionuclide	Technetium-99	5-Apr	1.8E+00	1.8E+02	4.0E+01	1.2E+02	pCi/g	+
3.02	Radionuclide	Uranium-234	5-May	1.6E+00	8.3E+01	2.5E+01	5.9E+01	pCi/g	+
3.02	Radionuclide	Uranium-235	5-May	8.5E-02	4.5E+00	1.3E+00	3.1E+00	pCi/g	+
3.02	Radionuclide	Uranium-238	5-May	1.2E+00	5.8E+01	1.7E+01	4.1E+01	pCi/g	+
3.03	Inorganic	Aluminum	8-Aug	4.8E+03	1.6E+04	9.8E+03	1.2E+04	mg/kg	+
3.03	Inorganic	Antimony	0/6	3.9E-01	4.5E-01		4.5E-01	mg/kg	ND
3.03	Inorganic	Arsenic	8-Aug	1.9E+00	1.1E+01	4.4E+00	6.2E+00	mg/kg	+
3.03	Inorganic	Barium	8-Aug	5.1E+01	1.2E+02	8.2E+01	9.7E+01	mg/kg	+
3.03	Inorganic	Beryllium	8-Aug	3.1E-01	8.3E-01	6.2E-01	7.3E-01	mg/kg	+
3.03	Inorganic	Boron	8-Apr	9.0E-01	8.1E+00	3.4E+00	4.8E+00	mg/kg	+
3.03	Inorganic	Cadmium	8-Aug	3.9E-01	3.5E+00	1.5E+00	2.3E+00	mg/kg	+
3.03	Inorganic	Calcium	8-Aug	1.3E+03	3.3E+03	2.0E+03	2.5E+03	mg/kg	-
3.03	Inorganic	Chromium	8-Aug	1.5E+01	1.2E+02	4.2E+01	6.7E+01	mg/kg	+
3.03	Inorganic	Cobalt	8-Aug	9.9E+00	2.4E+01	1.5E+01	1.8E+01	mg/kg	+
3.03	Inorganic	Copper	8-Aug	8.8E+00	5.9E+01	2.8E+01	4.1E+01	mg/kg	-
3.03	Inorganic	Iron	8-Aug	1.1E+04	3.3E+04	1.9E+04	2.3E+04	mg/kg	+
3.03	Inorganic	Kjeldahl nitrogen	8-Aug	1.2E+02	1.2E+03	6.6E+02	8.7E+02	mg/kg	-
3.03	Inorganic	Lead	8-Aug	7.0E+00	3.8E+01	2.1E+01	2.8E+01	mg/kg	-

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Inorganic	Magnesium	8-Aug	9.2E+02	1.7E+03	1.4E+03	1.6E+03	mg/kg	+
3.03	Inorganic	Manganese	8-Aug	3.6E+02	1.4E+03	6.7E+02	9.2E+02	mg/kg	+
3.03	Inorganic	Mercury	8-Aug	2.0E+00	1.2E+01	5.4E+00	7.5E+00	mg/kg	+
3.03	Inorganic	Methyl mercury	8-Aug	9.3E-04	5.5E-03	2.4E-03	3.4E-03	mg/kg	+
3.03	Inorganic	Molybdenum	0/8	3.5E-01	4.9E+00		4.9E+00	mg/kg	ND
3.03	Inorganic	Nickel	8-Aug	1.7E+01	8.6E+01	4.3E+01	6.0E+01	mg/kg	+
3.03	Inorganic	Potassium	8-Aug	6.6E+02	1.3E+03	1.0E+03	1.2E+03	mg/kg	-
3.03	Inorganic	Selenium	0/7	2.1E-01	1.2E+00		1.2E+00	mg/kg	ND
3.03	Inorganic	Silver	8-Aug	1.4E-01	1.9E+00	6.8E-01	1.1E+00	mg/kg	+
3.03	Inorganic	Sodium	8-Aug	2.3E+01	1.0E+02	4.0E+01	5.7E+01	mg/kg	-
3.03	Inorganic	Thallium	0/8	1.4E-01	3.0E-01		3.0E-01	mg/kg	ND
3.03	Inorganic	Uranium	8-Aug	9.2E-01	3.3E+01	9.4E+00	1.6E+01	mg/kg	+
3.03	Inorganic	Vanadium	8-Aug	7.9E+00	3.3E+01	1.6E+01	2.1E+01	mg/kg	+
3.03	Inorganic	Zinc	8-Aug	5.6E+01	1.5E+02	9.6E+01	1.2E+02	mg/kg	+
3.03	Organic	1,2,4-Trichlorobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	1,2-Dichlorobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	1,3-Dichlorobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	1,4-Dichlorobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2,2'-oxybis(1-chloropropane)	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	2,4,5-Trichlorophenol	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	2,4,6-Trichlorophenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2,4-Dichlorophenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2,4-Dimethylphenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2,4-Dinitrophenol	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	2,4-Dinitrotoluene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2,6-Dinitrotoluene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2-Chloronaphthalene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2-Chlorophenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2-Methyl-4,6-dinitrophenol	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	2-Methylnaphthalene	8-Aug	5.2E-02	5.1E-01	1.7E-01	2.8E-01	mg/kg	+
3.03	Organic	2-Methylphenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	2-Nitroaniline	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	2-Nitrophenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	3,3'-Dichlorobenzidine	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	3-Nitroaniline	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	4,4'-DDD	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	4,4'-DDE	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	4,4'-DDT	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	4-Bromophenyl phenyl ether	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	4-Chloro-3-methylphenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	4-Chlorobenzenamine	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	4-Chlorophenylphenyl ether	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	4-Methylphenol	8-Jan	5.5E-02	2.6E-01	5.5E-02	2.6E-01	mg/kg	+
3.03	Organic	4-Nitroaniline	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	4-Nitrophenol	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	Acenaphthene	8-Jun	1.5E-02	2.4E-01	6.3E-02	1.1E-01	mg/kg	+
3.03	Organic	Acenaphthylene	8-Feb	1.7E-02	2.7E-01	1.8E-02	2.0E-02	mg/kg	+
3.03	Organic	Aldrin	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	Anthracene	8-Jun	2.4E-02	2.4E-01	8.5E-02	1.4E-01	mg/kg	+
3.03	Organic	Benzo(a)anthracene	8-Aug	7.8E-02	8.7E-01	2.6E-01	4.3E-01	mg/kg	+
3.03	Organic	Benzo(a)pyrene	8-Aug	4.6E-02	6.7E-01	1.8E-01	3.2E-01	mg/kg	+
3.03	Organic	Benzo(b)fluoranthene	8-Aug	8.4E-02	1.0E+00	3.2E-01	5.2E-01	mg/kg	+
3.03	Organic	Benzo(ghi)perylene	8-Aug	3.9E-02	4.8E-01	1.1E-01	2.1E-01	mg/kg	-
3.03	Organic	Benzo(k)fluoranthene	8-Aug	2.7E-02	4.2E-01	9.8E-02	1.9E-01	mg/kg	+
3.03	Organic	Benzoic acid	8-Jan	4.8E-01	6.4E-01	4.8E-01	6.4E-01	mg/kg	+
3.03	Organic	Benzyl alcohol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Bis(2-chloroethoxy)methane	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Bis(2-chloroethyl) ether	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Bis(2-ethylhexyl)phthalate	8-Apr	1.5E-01	2.6E-01	1.8E-01	2.1E-01	mg/kg	+
3.03	Organic	Butylbenzylphthalate	8-Jan	1.6E-02	2.7E-01	1.6E-02	2.7E-01	mg/kg	+
3.03	Organic	Carbazole	8-Jul	1.7E-02	2.3E-01	7.3E-02	1.2E-01	mg/kg	+
3.03	Organic	Chlordane, total	0/8	9.6E-04	5.0E-03		5.0E-03	mg/kg	ND
3.03	Organic	Chrysene	8-Aug	7.8E-02	7.3E-01	2.3E-01	3.7E-01	mg/kg	+
3.03	Organic	Di-n-butylphthalate	0/8	2.3E-01	4.8E-01		4.8E-01	mg/kg	ND
3.03	Organic	Di-n-octylphthlate	8-Jan	5.7E-02	2.6E-01	5.7E-02	2.6E-01	mg/kg	+
3.03	Organic	Dibenz(a,h)anthracene	8-Jun	2.1E-02	2.4E-01	4.2E-02	7.2E-02	mg/kg	+
3.03	Organic	Dibenzofuran	8-Jul	1.7E-02	2.3E-01	5.7E-02	9.6E-02	mg/kg	-
3.03	Organic	Dieldrin	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	Diethylphthalate	8-Jan	1.4E-01	2.7E-01	1.4E-01	2.7E-01	mg/kg	+
3.03	Organic	Dimethylphthalate	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Endosulfan	0/8	1.4E-03	7.3E-03		7.3E-03	mg/kg	ND
3.03	Organic	Endosulfan I	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	Endosulfan II	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	Endosulfan sulfate	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	Endrin	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	Endrin aldehyde	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Endrin ketone	0/8	9.4E-04	4.8E-03		4.8E-03	mg/kg	ND
3.03	Organic	Fluoranthene	8-Aug	1.1E-01	1.4E+00	4.1E-01	7.0E-01	mg/kg	+
3.03	Organic	Fluorene	8-May	3.7E-02	2.4E-01	7.6E-02	1.2E-01	mg/kg	+
3.03	Organic	Heptachlor	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	Heptachlor epoxide	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	Hexachlorobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Hexachlorobutadiene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Hexachlorocyclopentadiene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Hexachloroethane	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Indeno(1,2,3-cd)pyrene	8-Aug	4.4E-02	5.6E-01	1.3E-01	2.5E-01	mg/kg	+
3.03	Organic	Isophorone	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Lindane	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	Methoxychlor	8-Jan	5.0E-03	1.5E-01	1.5E-01	1.5E-01	mg/kg	+
3.03	Organic	N-Nitroso-di-n-propylamine	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	N-Nitrosodiphenylamine	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Naphthalene	8-Aug	3.6E-02	3.9E-01	1.1E-01	1.9E-01	mg/kg	-
3.03	Organic	Nitrobenzene	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	PCB-1016	0/8	9.4E-03	4.8E-02		4.8E-02	mg/kg	ND
3.03	Organic	PCB-1221	0/8	1.9E-02	9.8E-02		9.8E-02	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	PCB-1232	0/8	9.4E-03	4.8E-02		4.8E-02	mg/kg	ND
3.03	Organic	PCB-1242	0/8	9.4E-03	4.8E-02		4.8E-02	mg/kg	ND
3.03	Organic	PCB-1248	0/8	9.4E-03	4.8E-02		4.8E-02	mg/kg	ND
3.03	Organic	PCB-1254	8-Aug	2.0E-02	5.3E-01	1.5E-01	2.6E-01	mg/kg	+
3.03	Organic	PCB-1260	8-Aug	2.1E-02	2.8E-01	8.7E-02	1.4E-01	mg/kg	+
3.03	Organic	Pentachlorophenol	0/8	5.7E-01	6.4E-01		6.4E-01	mg/kg	ND
3.03	Organic	Phenanthrene	8-Aug	9.6E-02	1.2E+00	3.3E-01	5.8E-01	mg/kg	-
3.03	Organic	Phenol	0/8	2.3E-01	2.7E-01		2.7E-01	mg/kg	ND
3.03	Organic	Pyrene	8-Aug	1.4E-01	1.3E+00	4.1E-01	6.5E-01	mg/kg	+
3.03	Organic	Total combustible organics (TCO)	8-Aug	3.3E+03	4.3E+05	2.9E+05	4.0E+05	mg/kg	-
3.03	Organic	Toxaphene	0/8	4.8E-02	2.5E-01		2.5E-01	mg/kg	ND
3.03	Organic	alpha-BHC	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	alpha-Chlordane	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	beta-BHC	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Organic	delta-BHC	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	-
3.03	Organic	gamma-Chlordane	0/8	4.8E-04	2.5E-03		2.5E-03	mg/kg	ND
3.03	Radionuclide	Cesium-137	8-Jul	1.1E-01	3.1E+00	9.3E-01	1.7E+00	pCi/g	+
3.03	Radionuclide	Cobalt-60	0/8	5.8E-02	1.6E-01		1.6E-01	pCi/g	ND
3.03	Radionuclide	Strontium-90	8-Jan	3.6E-01	2.2E+00	9.7E-01	2.2E+00	pCi/g	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Radionuclide	Technetium-99	8-Aug	3.7E+00	2.2E+01	8.7E+00	1.3E+01	pCi/g	+
3.03	Radionuclide	Uranium-234	8-Aug	1.3E+00	1.4E+01	5.1E+00	7.9E+00	pCi/g	+
3.03	Radionuclide	Uranium-235	8-Aug	4.5E-02	7.4E-01	2.6E-01	4.1E-01	pCi/g	+
3.03	Radionuclide	Uranium-238	8-Aug	1.3E+00	1.0E+01	4.0E+00	6.0E+00	pCi/g	+
3.04	Inorganic	Aluminum	3-Mar	4.6E+03	1.0E+04	7.1E+03	1.0E+04	mg/kg	+
3.04	Inorganic	Antimony	4-Jan	3.0E-01	4.7E-01	3.0E-01	4.7E-01	mg/kg	+
3.04	Inorganic	Arsenic	4-Apr	3.1E+00	5.4E+01	1.8E+01	4.6E+01	mg/kg	+
3.04	Inorganic	Barium	3-Mar	4.8E+01	1.1E+02	7.7E+01	1.1E+02	mg/kg	+
3.04	Inorganic	Beryllium	4-Apr	3.3E-01	1.3E+00	7.9E-01	1.3E+00	mg/kg	+
3.04	Inorganic	Boron	3-Mar	8.4E+00	1.2E+01	9.9E+00	1.2E+01	mg/kg	+
3.04	Inorganic	Cadmium	4-Apr	1.2E-01	1.9E+00	1.0E+00	1.9E+00	mg/kg	+
3.04	Inorganic	Calcium	3-Mar	1.2E+03	1.8E+03	1.5E+03	1.8E+03	mg/kg	-
3.04	Inorganic	Chromium	4-Apr	1.3E+01	5.6E+01	2.7E+01	5.1E+01	mg/kg	+
3.04	Inorganic	Cobalt	3-Mar	9.3E+00	1.3E+01	1.1E+01	1.3E+01	mg/kg	+
3.04	Inorganic	Copper	4-Apr	5.5E+00	4.1E+01	2.4E+01	4.1E+01	mg/kg	-
3.04	Inorganic	Iron	3-Mar	1.1E+04	1.9E+04	1.5E+04	1.9E+04	mg/kg	+
3.04	Inorganic	Kjeldahl nitrogen	3-Mar	5.2E+02	9.3E+02	6.7E+02	9.3E+02	mg/kg	-
3.04	Inorganic	Lead	4-Apr	1.0E+01	2.5E+01	1.7E+01	2.5E+01	mg/kg	-
3.04	Inorganic	Magnesium	3-Mar	9.6E+02	1.2E+03	1.0E+03	1.2E+03	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Inorganic	Manganese	3-Mar	3.8E+02	6.6E+02	5.0E+02	6.6E+02	mg/kg	+
3.04	Inorganic	Mercury	4-Apr	2.1E+00	5.3E+01	1.5E+01	4.5E+01	mg/kg	+
3.04	Inorganic	Methyl mercury	3-Mar	1.1E-03	8.8E-03	5.0E-03	8.8E-03	mg/kg	+
3.04	Inorganic	Molybdenum	0/3	3.7E+00	4.9E+00		4.9E+00	mg/kg	ND
3.04	Inorganic	Nickel	4-Apr	9.7E+00	6.3E+01	3.1E+01	6.0E+01	mg/kg	+
3.04	Inorganic	Potassium	3-Mar	5.7E+02	1.0E+03	7.4E+02	1.0E+03	mg/kg	-
3.04	Inorganic	Selenium	4-Mar	1.6E-01	1.1E+00	4.7E-01	1.0E+00	mg/kg	+
3.04	Inorganic	Silver	3-Mar	3.0E-02	1.6E+00	5.9E-01	1.6E+00	mg/kg	+
3.04	Inorganic	Sodium	3-Mar	3.8E+01	6.7E+01	5.2E+01	6.7E+01	mg/kg	-
3.04	Inorganic	Thallium	4-Jan	1.8E-01	6.4E-01	6.4E-01	6.4E-01	mg/kg	+
3.04	Inorganic	Uranium	3-Mar	4.3E-01	1.3E+01	4.9E+00	1.3E+01	mg/kg	+
3.04	Inorganic	Vanadium	3-Mar	8.4E+00	2.1E+01	1.4E+01	2.1E+01	mg/kg	+
3.04	Inorganic	Zinc	4-Apr	3.6E+01	9.1E+01	6.5E+01	9.1E+01	mg/kg	+
3.04	Organic	1,2,4-Trichlorobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	1,2-Dichlorobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	1,3-Dichlorobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	1,4-Dichlorobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,2'-oxybis(1-chloropropane)	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,4,5-Trichlorophenol	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	2,4,6-Trichlorophenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,4-Dichlorophenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,4-Dimethylphenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,4-Dinitrophenol	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	2,4-Dinitrotoluene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2,6-Dinitrotoluene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2-Chloronaphthalene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2-Chlorophenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2-Methyl-4,6-dinitrophenol	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	2-Methylnaphthalene	4-Apr	2.5E-02	1.6E-01	1.0E-01	1.6E-01	mg/kg	+
3.04	Organic	2-Methylphenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	2-Nitroaniline	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	2-Nitrophenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	3,3'-Dichlorobenzidine	0/4	2.1E-01	1.0E+00		1.0E+00	mg/kg	ND
3.04	Organic	3-Nitroaniline	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	4,4'-DDD	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	4,4'-DDE	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	4,4'-DDT	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	4-Bromophenyl phenyl ether	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	4-Chloro-3-methylphenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	4-Chlorobenzenamine	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	4-Chlorophenylphenyl ether	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	4-Methylphenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	4-Nitroaniline	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	4-Nitrophenol	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	Acenaphthene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Acenaphthylene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Aldrin	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	Anthracene	4-Feb	4.6E-02	5.3E-01	8.5E-02	1.8E-01	mg/kg	+
3.04	Organic	Benzo(a)anthracene	4-Mar	1.9E-02	5.3E-01	9.3E-02	1.8E-01	mg/kg	+
3.04	Organic	Benzo(a)pyrene	4-Mar	1.7E-02	5.3E-01	8.9E-02	1.8E-01	mg/kg	+
3.04	Organic	Benzo(b)fluoranthene	4-Apr	3.2E-02	4.7E-01	2.0E-01	4.3E-01	mg/kg	+
3.04	Organic	Benzo(ghi)perylene	4-Feb	6.7E-02	5.3E-01	8.9E-02	1.4E-01	mg/kg	-
3.04	Organic	Benzo(k)fluoranthene	4-Feb	2.5E-02	5.3E-01	3.0E-02	4.2E-02	mg/kg	+
3.04	Organic	Benzoic acid	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	Benzyl alcohol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Bis(2-chloroethoxy)methane	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Bis(2-chloroethyl) ether	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Bis(2-ethylhexyl)phthalate	4-Mar	3.6E-02	1.3E+00	6.1E-02	9.2E-02	mg/kg	+
3.04	Organic	Butylbenzylphthalate	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Carbazole	3-Feb	2.5E-02	2.1E-01	7.4E-02	2.1E-01	mg/kg	+
3.04	Organic	Chlordane, total	0/4	8.8E-04	5.8E+00		5.8E+00	mg/kg	ND
3.04	Organic	Chrysene	4-Mar	2.4E-02	5.3E-01	8.1E-02	1.5E-01	mg/kg	+
3.04	Organic	Di-n-butylphthalate	0/4	2.2E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Di-n-octylphthlate	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Dibenz(a,h)anthracene	4-Feb	2.9E-02	5.3E-01	7.8E-02	1.9E-01	mg/kg	+
3.04	Organic	Dibenzofuran	4-Feb	3.0E-02	5.3E-01	3.1E-02	3.4E-02	mg/kg	-
3.04	Organic	Dieldrin	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	Diethylphthalate	4-Jan	1.4E-01	5.3E-01	1.4E-01	5.3E-01	mg/kg	+
3.04	Organic	Dimethylphthalate	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Endosulfan	0/4	1.3E-03	8.6E-01		8.6E-01	mg/kg	ND
3.04	Organic	Endosulfan I	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	Endosulfan II	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	Endosulfan sulfate	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	Endrin	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND
3.04	Organic	Endrin aldehyde	0/3	8.5E-04	9.4E-04		9.4E-04	mg/kg	ND
3.04	Organic	Endrin ketone	0/4	8.5E-04	5.7E-01		5.7E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Fluoranthene	4-Apr	2.7E-02	2.7E-01	1.5E-01	2.7E-01	mg/kg	+
3.04	Organic	Fluorene	4-Feb	2.4E-02	5.3E-01	7.4E-02	1.9E-01	mg/kg	+
3.04	Organic	Heptachlor	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	Heptachlor epoxide	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	Hexachlorobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Hexachlorobutadiene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Hexachlorocyclopentadiene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Hexachloroethane	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Indeno(1,2,3-cd)pyrene	4-Feb	6.8E-02	5.3E-01	8.2E-02	1.2E-01	mg/kg	+
3.04	Organic	Isophorone	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Lindane	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	Methoxychlor	0/4	4.4E-03	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	N-Nitroso-di-n-propylamine	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	N-Nitrosodiphenylamine	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Naphthalene	4-Apr	1.7E-02	3.3E-01	1.2E-01	2.9E-01	mg/kg	-
3.04	Organic	Nitrobenzene	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	PCB-1016	0/4	8.5E-03	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	PCB-1221	0/4	1.7E-02	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	PCB-1232	0/4	8.5E-03	2.9E+00		2.9E+00	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	PCB-1242	0/4	8.5E-03	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	PCB-1248	0/4	8.5E-03	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	PCB-1254	4-Mar	6.5E-03	5.7E+00	5.5E-02	1.2E-01	mg/kg	+
3.04	Organic	PCB-1260	4-Feb	8.5E-03	5.7E+00	5.5E-02	1.0E-01	mg/kg	+
3.04	Organic	Pentachlorophenol	0/4	5.2E-01	2.6E+00		2.6E+00	mg/kg	ND
3.04	Organic	Phenanthrene	4-Apr	2.5E-02	3.1E-01	1.5E-01	2.9E-01	mg/kg	-
3.04	Organic	Phenol	0/4	2.1E-01	5.3E-01		5.3E-01	mg/kg	ND
3.04	Organic	Pyrene	4-Apr	3.1E-02	2.7E-01	1.7E-01	2.7E-01	mg/kg	+
3.04	Organic	Total combustible organics (TCO)	3-Mar	2.3E+05	3.4E+05	3.0E+05	3.4E+05	mg/kg	-
3.04	Organic	Total organic carbon (TOC)	3-Mar	6.0E+03	1.1E+04	7.9E+03	1.1E+04	mg/kg	-
3.04	Organic	Toxaphene	0/4	4.4E-02	5.7E+00		5.7E+00	mg/kg	ND
3.04	Organic	alpha-BHC	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	alpha-Chlordane	0/4	4.4E-04	2.9E+00		2.9E+00	mg/kg	ND
3.04	Organic	beta-BHC	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	ND
3.04	Organic	delta-BHC	0/4	4.4E-04	2.9E-01		2.9E-01	mg/kg	-
3.04	Organic	gamma-Chlordane	0/4	4.4E-04	2.9E+00		2.9E+00	mg/kg	ND
3.04	Radionuclide	Americium-241	1-Jan	7.6E-02	7.6E-02	7.6E-02	7.6E-02	pCi/g	+
3.04	Radionuclide	Cesium-137	6-Jun	3.2E-01	5.1E+00	3.3E+00	4.9E+00	pCi/g	+
3.04	Radionuclide	Cobalt-60	6-Mar	4.1E-02	1.9E-01	5.4E-02	7.3E-02	pCi/g	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Radionuclide	Curium-243/244	1-Jan	1.1E-02	1.1E-02	1.1E-02	1.1E-02	pCi/g	+
3.04	Radionuclide	Curium-245/246	1-Jan	1.2E-02	1.2E-02	1.2E-02	1.2E-02	pCi/g	+
3.04	Radionuclide	Curium-248	1-Jan	2.6E-02	2.6E-02	2.6E-02	2.6E-02	pCi/g	+
3.04	Radionuclide	Plutonium-238	1-Jan	9.6E-03	9.6E-03	9.6E-03	9.6E-03	pCi/g	+
3.04	Radionuclide	Plutonium-239/240	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	pCi/g	+
3.04	Radionuclide	Strontium-90	4-Jan	6.4E-02	1.9E+00	6.4E-02	1.9E+00	pCi/g	+
3.04	Radionuclide	Technetium-99	0/3	1.2E+00	1.4E+00		1.4E+00	pCi/g	ND
3.04	Radionuclide	Uranium-234	4-Apr	4.6E-01	4.7E+00	2.3E+00	4.6E+00	pCi/g	+
3.04	Radionuclide	Uranium-235	4-Apr	4.2E-02	1.2E-01	8.8E-02	1.2E-01	pCi/g	+
3.04	Radionuclide	Uranium-238	4-Apr	2.4E-01	4.8E+00	2.0E+00	4.4E+00	pCi/g	+
4.01	Inorganic	Aluminum	7-Jul	3.1E+03	1.2E+04	7.0E+03	9.2E+03	mg/kg	+
4.01	Inorganic	Antimony	0/6	4.4E-01	5.6E-01		5.6E-01	mg/kg	ND
4.01	Inorganic	Arsenic	7-Jul	2.2E+00	6.2E+00	3.7E+00	4.9E+00	mg/kg	+
4.01	Inorganic	Barium	7-Jul	3.3E+01	1.2E+02	6.3E+01	8.3E+01	mg/kg	+
4.01	Inorganic	Beryllium	7-Jul	2.5E-01	1.0E+00	5.1E-01	7.0E-01	mg/kg	+
4.01	Inorganic	Boron	7-Jun	1.4E+00	4.8E+00	3.3E+00	4.1E+00	mg/kg	+
4.01	Inorganic	Cadmium	7-Jul	1.3E-01	4.6E-01	2.7E-01	3.7E-01	mg/kg	+
4.01	Inorganic	Calcium	7-Jul	8.5E+02	2.8E+03	1.9E+03	2.5E+03	mg/kg	-
4.01	Inorganic	Chromium	7-Jul	8.5E+00	2.1E+01	1.6E+01	1.9E+01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Inorganic	Cobalt	7-Jul	5.4E+00	1.1E+01	8.3E+00	9.9E+00	mg/kg	+
4.01	Inorganic	Copper	7-Jul	4.4E+00	1.4E+01	8.3E+00	1.1E+01	mg/kg	-
4.01	Inorganic	Iron	7-Jul	8.6E+03	2.0E+04	1.3E+04	1.5E+04	mg/kg	+
4.01	Inorganic	Kjeldahl nitrogen	7-May	9.8E+00	2.5E+02	9.2E+01	1.6E+02	mg/kg	-
4.01	Inorganic	Lead	7-Jul	9.1E+00	4.8E+01	1.8E+01	2.8E+01	mg/kg	-
4.01	Inorganic	Magnesium	7-Jul	6.3E+02	2.0E+03	1.4E+03	1.8E+03	mg/kg	+
4.01	Inorganic	Manganese	7-Jul	3.5E+02	8.0E+02	5.7E+02	6.9E+02	mg/kg	+
4.01	Inorganic	Mercury	7-Jul	6.6E-02	6.9E+00	2.8E+00	5.0E+00	mg/kg	+
4.01	Inorganic	Methyl mercury	7-Jul	1.9E-04	3.6E-03	1.6E-03	2.5E-03	mg/kg	+
4.01	Inorganic	Molybdenum	0/7	3.7E-01	9.6E-01		9.6E-01	mg/kg	ND
4.01	Inorganic	Nickel	7-Jul	8.1E+00	2.6E+01	1.6E+01	2.1E+01	mg/kg	+
4.01	Inorganic	Potassium	7-Jul	3.9E+02	1.3E+03	8.3E+02	1.1E+03	mg/kg	-
4.01	Inorganic	Selenium	7-Mar	1.6E-01	1.5E+00	3.9E-01	8.0E-01	mg/kg	+
4.01	Inorganic	Silver	7-Jul	5.0E-02	3.1E-01	1.6E-01	2.4E-01	mg/kg	+
4.01	Inorganic	Sodium	7-Jul	2.4E+01	4.8E+01	3.3E+01	3.8E+01	mg/kg	-
4.01	Inorganic	Thallium	0/7	1.1E-01	1.4E-01		1.4E-01	mg/kg	ND
4.01	Inorganic	Uranium	7-Jul	1.5E-01	2.1E+00	9.4E-01	1.5E+00	mg/kg	+
4.01	Inorganic	Vanadium	7-Jul	6.2E+00	1.7E+01	1.1E+01	1.4E+01	mg/kg	+
4.01	Inorganic	Zinc	7-Jul	2.8E+01	6.7E+01	4.8E+01	5.9E+01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	1,2,4-Trichlorobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	1,2-Dichlorobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	1,3-Dichlorobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	1,4-Dichlorobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,2'-oxybis(1-chloropropane)	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,4,5-Trichlorophenol	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	2,4,6-Trichlorophenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,4-Dichlorophenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,4-Dimethylphenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,4-Dinitrophenol	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	2,4-Dinitrotoluene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2,6-Dinitrotoluene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2-Chloronaphthalene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2-Chlorophenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2-Methyl-4,6-dinitrophenol	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	2-Methylnaphthalene	7-May	2.9E-02	2.3E-01	5.3E-02	6.7E-02	mg/kg	+
4.01	Organic	2-Methylphenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	2-Nitroaniline	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	2-Nitrophenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	3,3'-Dichlorobenzidine	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	3-Nitroaniline	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	4,4'-DDD	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	4,4'-DDE	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	4,4'-DDT	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	4-Bromophenyl phenyl ether	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	4-Chloro-3-methylphenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	4-Chlorobenzenamine	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	4-Chlorophenylphenyl ether	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	4-Methylphenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	4-Nitroaniline	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	4-Nitrophenol	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	Acenaphthene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Acenaphthylene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Aldrin	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	Anthracene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Benzo(a)anthracene	7-Apr	3.7E-02	2.3E-01	4.9E-02	6.4E-02	mg/kg	+
4.01	Organic	Benzo(a)pyrene	7-May	1.4E-02	2.3E-01	3.3E-02	4.5E-02	mg/kg	+
4.01	Organic	Benzo(b)fluoranthene	7-May	2.2E-02	2.3E-01	6.4E-02	9.2E-02	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Benzo(ghi)perylene	7-Feb	3.1E-02	4.5E-01	4.6E-02	7.4E-02	mg/kg	-
4.01	Organic	Benzo(k)fluoranthene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Benzoic acid	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	Benzyl alcohol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Bis(2-chloroethoxy)methane	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Bis(2-chloroethyl) ether	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Bis(2-ethylhexyl)phthalate	7-Jul	1.7E-02	1.2E-01	6.4E-02	9.4E-02	mg/kg	+
4.01	Organic	Butylbenzylphthalate	7-Feb	2.3E-02	4.5E-01	2.3E-02	2.3E-02	mg/kg	+
4.01	Organic	Carbazole	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Chlordane, total	0/7	8.2E-04	1.0E-03		1.0E-03	mg/kg	ND
4.01	Organic	Chrysene	7-Apr	4.2E-02	2.3E-01	5.3E-02	6.8E-02	mg/kg	+
4.01	Organic	Di-n-butylphthalate	0/7	2.2E-01	4.8E-01		4.8E-01	mg/kg	ND
4.01	Organic	Di-n-octylphthlate	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Dibenz(a,h)anthracene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Dibenzofuran	7-Feb	1.4E-02	4.5E-01	1.6E-02	1.8E-02	mg/kg	-
4.01	Organic	Dieldrin	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Diethylphthalate	7-Jan	3.7E-02	4.5E-01	3.7E-02	4.5E-01	mg/kg	+
4.01	Organic	Dimethylphthalate	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Endosulfan	0/7	1.2E-03	1.5E-03		1.5E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Endosulfan I	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	Endosulfan II	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Endosulfan sulfate	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Endrin	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Endrin aldehyde	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Endrin ketone	0/7	8.0E-04	9.7E-04		9.7E-04	mg/kg	ND
4.01	Organic	Fluoranthene	7-May	2.4E-02	2.3E-01	8.3E-02	1.2E-01	mg/kg	+
4.01	Organic	Fluorene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Heptachlor	7-Mar	4.1E-04	1.1E-03	7.3E-04	8.9E-04	mg/kg	+
4.01	Organic	Heptachlor epoxide	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	Hexachlorobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Hexachlorobutadiene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Hexachlorocyclopentadiene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Hexachloroethane	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Indeno(1,2,3-cd)pyrene	7-Feb	4.0E-02	4.5E-01	5.4E-02	8.1E-02	mg/kg	+
4.01	Organic	Isophorone	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Lindane	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	Methoxychlor	0/7	4.1E-03	5.0E-03		5.0E-03	mg/kg	ND
4.01	Organic	N-Nitroso-di-n-propylamine	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	N-Nitrosodiphenylamine	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Naphthalene	7-May	2.5E-02	2.3E-01	3.6E-02	4.4E-02	mg/kg	-
4.01	Organic	Nitrobenzene	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	PCB-1016	0/7	8.0E-03	9.7E-03		9.7E-03	mg/kg	ND
4.01	Organic	PCB-1221	0/7	1.6E-02	2.0E-02		2.0E-02	mg/kg	ND
4.01	Organic	PCB-1232	0/7	8.0E-03	9.7E-03		9.7E-03	mg/kg	ND
4.01	Organic	PCB-1242	0/7	8.0E-03	9.7E-03		9.7E-03	mg/kg	ND
4.01	Organic	PCB-1248	0/7	8.0E-03	9.7E-03		9.7E-03	mg/kg	ND
4.01	Organic	PCB-1254	6-Apr	8.6E-03	5.5E-02	4.1E-02	5.0E-02	mg/kg	+
4.01	Organic	PCB-1260	7-Apr	8.0E-03	3.4E-02	2.5E-02	2.9E-02	mg/kg	+
4.01	Organic	Pentachlorophenol	0/7	4.9E-01	1.1E+00		1.1E+00	mg/kg	ND
4.01	Organic	Phenanthrene	7-May	2.2E-02	2.3E-01	5.6E-02	7.5E-02	mg/kg	-
4.01	Organic	Phenol	0/7	2.0E-01	4.5E-01		4.5E-01	mg/kg	ND
4.01	Organic	Pyrene	7-May	2.1E-02	2.3E-01	6.8E-02	9.6E-02	mg/kg	+
4.01	Organic	Total combustible organics (TCO)	7-Jul	1.2E+04	5.5E+04	3.3E+04	4.4E+04	mg/kg	-
4.01	Organic	Total organic carbon (TOC)	6-Jun	4.4E+03	1.3E+04	8.9E+03	1.2E+04	mg/kg	-
4.01	Organic	Toxaphene	0/7	4.1E-02	5.0E-02		5.0E-02	mg/kg	ND
4.01	Organic	alpha-BHC	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	alpha-Chlordane	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	beta-BHC	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Organic	delta-BHC	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	-
4.01	Organic	gamma-Chlordane	0/7	4.1E-04	5.0E-04		5.0E-04	mg/kg	ND
4.01	Radionuclide	Americium-241	7-Jan	2.3E-02	2.2E-01	1.9E-01	2.2E-01	pCi/g	+
4.01	Radionuclide	Beryllium-7	11-Jun	3.4E-08	3.0E-06	6.6E-07	1.2E-06	pCi/g	+
4.01	Radionuclide	Cesium-137	27/27	2.0E-01	2.8E+01	3.9E+00	5.9E+00	pCi/g	+
4.01	Radionuclide	Cobalt-60	20/27	1.5E-02	1.3E-01	5.3E-02	6.4E-02	pCi/g	+
4.01	Radionuclide	Europium-152	0/11	1.6E-02	2.3E-01		2.3E-01	pCi/g	ND
4.01	Radionuclide	Europium-154	0/7	7.7E-03	1.3E-01		1.3E-01	pCi/g	ND
4.01	Radionuclide	Potassium-40	11-Nov	6.4E+00	1.6E+01	9.3E+00	1.1E+01	pCi/g	+
4.01	Radionuclide	Strontium-90	0/7	9.7E-01	1.3E+00		1.3E+00	pCi/g	ND
4.02	Inorganic	Aluminum	5-May	4.7E+03	1.0E+04	7.1E+03	9.3E+03	mg/kg	+
4.02	Inorganic	Antimony	0/4	3.1E-01	4.6E-01		4.6E-01	mg/kg	ND
4.02	Inorganic	Arsenic	5-May	2.0E+00	5.3E+00	3.4E+00	4.9E+00	mg/kg	+
4.02	Inorganic	Barium	5-May	4.8E+01	7.9E+01	6.2E+01	7.7E+01	mg/kg	+
4.02	Inorganic	Beryllium	5-May	3.1E-01	7.8E-01	5.1E-01	7.0E-01	mg/kg	+
4.02	Inorganic	Boron	5-May	1.2E+00	5.1E+00	2.2E+00	3.8E+00	mg/kg	+
4.02	Inorganic	Cadmium	5-May	1.5E-01	5.1E-01	2.5E-01	4.0E-01	mg/kg	+
4.02	Inorganic	Calcium	5-May	1.0E+03	4.4E+03	2.3E+03	3.7E+03	mg/kg	-

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Inorganic	Chromium	5-May	1.1E+01	1.9E+01	1.6E+01	1.9E+01	mg/kg	+
4.02	Inorganic	Cobalt	5-May	7.8E+00	1.1E+01	9.4E+00	1.1E+01	mg/kg	+
4.02	Inorganic	Copper	5-May	4.4E+00	1.7E+01	9.4E+00	1.4E+01	mg/kg	-
4.02	Inorganic	Iron	5-May	9.6E+03	1.6E+04	1.3E+04	1.6E+04	mg/kg	+
4.02	Inorganic	Kjeldahl nitrogen	5-May	2.8E+02	1.3E+03	6.3E+02	1.1E+03	mg/kg	-
4.02	Inorganic	Lead	5-May	1.5E+01	3.3E+01	2.1E+01	2.8E+01	mg/kg	-
4.02	Inorganic	Magnesium	5-May	8.9E+02	2.5E+03	1.5E+03	2.1E+03	mg/kg	+
4.02	Inorganic	Manganese	5-May	3.4E+02	1.2E+03	5.5E+02	9.2E+02	mg/kg	+
4.02	Inorganic	Mercury	5-May	2.9E-03	2.9E+00	1.3E+00	2.5E+00	mg/kg	+
4.02	Inorganic	Methyl mercury	5-May	1.1E-04	2.2E-03	8.4E-04	1.6E-03	mg/kg	+
4.02	Inorganic	Molybdenum	0/5	3.1E-01	4.5E-01		4.5E-01	mg/kg	ND
4.02	Inorganic	Nickel	5-May	1.0E+01	2.1E+01	1.4E+01	1.8E+01	mg/kg	+
4.02	Inorganic	Potassium	5-May	5.9E+02	1.1E+03	7.8E+02	9.5E+02	mg/kg	-
4.02	Inorganic	Selenium	0/5	3.1E-01	4.8E-01		4.8E-01	mg/kg	ND
4.02	Inorganic	Silver	5-May	3.0E-02	1.8E-01	9.3E-02	1.6E-01	mg/kg	+
4.02	Inorganic	Sodium	5-May	1.9E+01	3.4E+01	2.6E+01	3.1E+01	mg/kg	-
4.02	Inorganic	Thallium	0/5	2.5E-01	3.8E-01		3.8E-01	mg/kg	ND
4.02	Inorganic	Uranium	5-May	2.6E-01	1.4E+00	7.0E-01	1.1E+00	mg/kg	+
4.02	Inorganic	Vanadium	5-May	8.2E+00	1.7E+01	1.3E+01	1.7E+01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Inorganic	Zinc	5-May	3.5E+01	8.0E+01	5.6E+01	7.4E+01	mg/kg	+
4.02	Organic	1,2,4-Trichlorobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	1,2-Dichlorobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	1,3-Dichlorobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	1,4-Dichlorobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,2'-oxybis(1-chloropropane)	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,4,5-Trichlorophenol	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	2,4,6-Trichlorophenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,4-Dichlorophenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,4-Dimethylphenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,4-Dinitrophenol	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	2,4-Dinitrotoluene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2,6-Dinitrotoluene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2-Chloronaphthalene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2-Chlorophenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2-Methyl-4,6-dinitrophenol	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	2-Methylnaphthalene	4-Mar	3.9E-02	2.8E-01	1.2E-01	2.7E-01	mg/kg	+
4.02	Organic	2-Methylphenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	2-Nitroaniline	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	2-Nitrophenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	3,3'-Dichlorobenzidine	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	3-Nitroaniline	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	4,4'-DDD	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	4,4'-DDE	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	4,4'-DDT	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	4-Bromophenyl phenyl ether	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	4-Chloro-3-methylphenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	4-Chlorobenzenamine	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	4-Chlorophenylphenyl ether	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	4-Methylphenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	4-Nitroaniline	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	4-Nitrophenol	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	Acenaphthene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Acenaphthylene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Aldrin	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	Anthracene	4-Jan	2.0E-02	2.8E-01	2.0E-02	2.8E-01	mg/kg	+
4.02	Organic	Benzo(a)anthracene	4-Apr	2.2E-02	1.4E-01	7.9E-02	1.4E-01	mg/kg	+
4.02	Organic	Benzo(a)pyrene	4-Apr	2.3E-02	3.1E-01	1.2E-01	2.7E-01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	Benzo(b)fluoranthene	4-Apr	3.5E-02	2.0E-01	1.1E-01	2.0E-01	mg/kg	+
4.02	Organic	Benzo(ghi)perylene	4-Apr	2.3E-02	7.0E-02	4.6E-02	7.0E-02	mg/kg	-
4.02	Organic	Benzo(k)fluoranthene	4-Feb	4.5E-02	2.1E-01	4.7E-02	5.0E-02	mg/kg	+
4.02	Organic	Benzoic acid	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	Benzyl alcohol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Bis(2-chloroethoxy)methane	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Bis(2-chloroethyl) ether	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Bis(2-ethylhexyl)phthalate	4-Feb	5.5E-02	2.8E-01	7.5E-02	1.2E-01	mg/kg	+
4.02	Organic	Butylbenzylphthalate	4-Jan	5.6E-02	2.8E-01	5.6E-02	2.8E-01	mg/kg	+
4.02	Organic	Carbazole	4-Jan	1.6E-02	2.8E-01	1.6E-02	2.8E-01	mg/kg	+
4.02	Organic	Chlordane, total	0/4	8.6E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Chrysene	4-Apr	2.9E-02	1.5E-01	9.0E-02	1.5E-01	mg/kg	+
4.02	Organic	Di-n-butylphthalate	0/4	2.1E-01	5.9E-01		5.9E-01	mg/kg	ND
4.02	Organic	Di-n-octylphthlate	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Dibenz(a,h)anthracene	4-Feb	1.8E-02	2.1E-01	1.9E-02	2.1E-02	mg/kg	+
4.02	Organic	Dibenzofuran	4-Feb	1.6E-02	2.8E-01	3.8E-02	8.8E-02	mg/kg	-
4.02	Organic	Dieldrin	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Diethylphthalate	4-Jan	3.4E-02	2.8E-01	3.4E-02	2.8E-01	mg/kg	+
4.02	Organic	Dimethylphthalate	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	Endosulfan	0/4	1.3E-03	1.7E-03		1.7E-03	mg/kg	ND
4.02	Organic	Endosulfan I	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	Endosulfan II	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Endosulfan sulfate	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Endrin	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Endrin aldehyde	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Endrin ketone	0/4	8.3E-04	1.1E-03		1.1E-03	mg/kg	ND
4.02	Organic	Fluoranthene	4-Apr	3.8E-02	2.6E-01	1.4E-01	2.6E-01	mg/kg	+
4.02	Organic	Fluorene	4-Jan	1.8E-02	2.8E-01	1.8E-02	2.8E-01	mg/kg	+
4.02	Organic	Heptachlor	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	Heptachlor epoxide	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	Hexachlorobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Hexachlorobutadiene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Hexachlorocyclopentadiene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Hexachloroethane	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Indeno(1,2,3-cd)pyrene	4-Apr	2.2E-02	9.4E-02	5.4E-02	9.4E-02	mg/kg	+
4.02	Organic	Isophorone	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Lindane	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	Methoxychlor	0/4	4.3E-03	5.7E-03		5.7E-03	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	N-Nitroso-di-n-propylamine	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	N-Nitrosodiphenylamine	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Naphthalene	4-Mar	2.3E-02	2.8E-01	7.2E-02	1.6E-01	mg/kg	-
4.02	Organic	Nitrobenzene	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	PCB-1016	0/4	8.3E-03	1.1E-02		1.1E-02	mg/kg	ND
4.02	Organic	PCB-1221	0/4	1.7E-02	2.3E-02		2.3E-02	mg/kg	ND
4.02	Organic	PCB-1232	0/4	8.3E-03	1.1E-02		1.1E-02	mg/kg	ND
4.02	Organic	PCB-1242	0/4	8.3E-03	1.1E-02		1.1E-02	mg/kg	ND
4.02	Organic	PCB-1248	0/4	8.3E-03	1.1E-02		1.1E-02	mg/kg	ND
4.02	Organic	PCB-1254	4-Feb	8.3E-03	4.5E-02	2.0E-02	4.4E-02	mg/kg	+
4.02	Organic	PCB-1260	4-Jan	8.3E-03	2.8E-02	2.8E-02	2.8E-02	mg/kg	+
4.02	Organic	Pentachlorophenol	0/4	5.1E-01	6.8E-01		6.8E-01	mg/kg	ND
4.02	Organic	Phenanthrene	4-Apr	4.5E-02	2.2E-01	1.0E-01	2.0E-01	mg/kg	-
4.02	Organic	Phenol	0/4	2.1E-01	2.8E-01		2.8E-01	mg/kg	ND
4.02	Organic	Pyrene	4-Apr	4.7E-02	2.4E-01	1.3E-01	2.4E-01	mg/kg	+
4.02	Organic	Total combustible organics (TCO)	5-May	2.2E+05	4.1E+05	3.1E+05	3.8E+05	mg/kg	-
4.02	Organic	Total organic carbon (TOC)	5-May	5.2E+03	2.1E+04	1.2E+04	1.8E+04	mg/kg	-
4.02	Organic	Toxaphene	0/4	4.3E-02	5.7E-02		5.7E-02	mg/kg	ND
4.02	Organic	alpha-BHC	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	alpha-Chlordane	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	beta-BHC	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Organic	delta-BHC	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	-
4.02	Organic	gamma-Chlordane	0/4	4.3E-04	5.7E-04		5.7E-04	mg/kg	ND
4.02	Radionuclide	Americium-241	0/3	1.7E-01	2.8E-01		2.8E-01	pCi/g	ND
4.02	Radionuclide	Beryllium-7	0/3	4.1E-06	7.0E-06		7.0E-06	pCi/g	ND
4.02	Radionuclide	Cesium-137	12-Dec	3.3E-01	7.4E+00	3.5E+00	5.0E+00	pCi/g	+
4.02	Radionuclide	Cobalt-60	13-Sep	3.3E-02	2.4E-01	1.0E-01	1.4E-01	pCi/g	+
4.02	Radionuclide	Europium-152	0/3	1.5E-01	2.7E-01		2.7E-01	pCi/g	ND
4.02	Radionuclide	Europium-154	0/3	9.4E-02	1.3E-01		1.3E-01	pCi/g	ND
4.02	Radionuclide	Potassium-40	3-Mar	1.1E+01	1.7E+01	1.4E+01	1.7E+01	pCi/g	+
4.02	Radionuclide	Strontium-90	0/5	1.1E+00	3.0E+00		3.0E+00	pCi/g	ND
4.03	Inorganic	Aluminum	5-May	6.7E+03	1.1E+04	8.4E+03	1.0E+04	mg/kg	+
4.03	Inorganic	Antimony	5-Jan	3.3E-01	5.0E-01	5.0E-01	5.0E-01	mg/kg	+
4.03	Inorganic	Arsenic	5-May	4.3E+00	1.3E+01	8.1E+00	1.1E+01	mg/kg	+
4.03	Inorganic	Barium	5-May	4.0E+01	1.0E+02	6.3E+01	8.7E+01	mg/kg	+
4.03	Inorganic	Beryllium	5-May	4.2E-01	7.1E-01	6.0E-01	7.1E-01	mg/kg	+
4.03	Inorganic	Boron	5-May	2.3E+00	4.1E+00	3.1E+00	3.8E+00	mg/kg	+
4.03	Inorganic	Cadmium	5-May	2.6E-01	5.6E-01	3.8E-01	5.0E-01	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Inorganic	Calcium	5-May	8.2E+02	5.0E+03	2.2E+03	3.8E+03	mg/kg	-
4.03	Inorganic	Chromium	5-May	2.1E+01	3.9E+01	2.9E+01	3.5E+01	mg/kg	+
4.03	Inorganic	Cobalt	5-May	6.6E+00	1.6E+01	1.2E+01	1.6E+01	mg/kg	+
4.03	Inorganic	Copper	5-May	1.4E+01	3.3E+01	2.3E+01	3.1E+01	mg/kg	-
4.03	Inorganic	Iron	5-May	1.1E+04	2.4E+04	1.7E+04	2.2E+04	mg/kg	+
4.03	Inorganic	Kjeldahl nitrogen	5-May	4.1E+02	8.9E+02	5.5E+02	7.4E+02	mg/kg	-
4.03	Inorganic	Lead	5-May	1.4E+01	7.1E+01	3.3E+01	5.4E+01	mg/kg	-
4.03	Inorganic	Magnesium	5-May	7.1E+02	2.6E+03	1.4E+03	2.1E+03	mg/kg	+
4.03	Inorganic	Manganese	5-May	4.2E+02	2.0E+03	9.2E+02	1.5E+03	mg/kg	+
4.03	Inorganic	Mercury	5-May	7.3E-01	5.3E+00	2.1E+00	3.8E+00	mg/kg	+
4.03	Inorganic	Methyl mercury	5-May	2.9E-04	1.2E-03	7.5E-04	1.1E-03	mg/kg	+
4.03	Inorganic	Molybdenum	0/5	3.3E-01	3.9E-01		3.9E-01	mg/kg	ND
4.03	Inorganic	Nickel	5-May	1.5E+01	3.0E+01	2.2E+01	2.8E+01	mg/kg	+
4.03	Inorganic	Potassium	5-May	5.7E+02	1.2E+03	8.5E+02	1.1E+03	mg/kg	-
4.03	Inorganic	Selenium	0/5	2.9E-01	4.2E-01		4.2E-01	mg/kg	ND
4.03	Inorganic	Silver	5-May	7.0E-02	3.6E-01	1.7E-01	2.8E-01	mg/kg	+
4.03	Inorganic	Sodium	5-May	2.6E+01	4.5E+01	3.3E+01	4.1E+01	mg/kg	-
4.03	Inorganic	Thallium	0/5	2.3E-01	3.4E-01		3.4E-01	mg/kg	ND
4.03	Inorganic	Uranium	5-May	4.8E-01	2.1E+00	1.0E+00	1.6E+00	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Inorganic	Vanadium	5-May	1.3E+01	2.3E+01	1.9E+01	2.2E+01	mg/kg	+
4.03	Inorganic	Zinc	5-May	4.9E+01	7.8E+01	6.4E+01	7.7E+01	mg/kg	+
4.03	Organic	1,2,4-Trichlorobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	1,2-Dichlorobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	1,3-Dichlorobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	1,4-Dichlorobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,2'-oxybis(1-chloropropane)	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,4,5-Trichlorophenol	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	2,4,6-Trichlorophenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,4-Dichlorophenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,4-Dimethylphenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,4-Dinitrophenol	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	2,4-Dinitrotoluene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2,6-Dinitrotoluene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2-Chloronaphthalene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2-Chlorophenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	2-Methyl-4,6-dinitrophenol	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	2-Methylnaphthalene	5-May	4.1E-02	1.2E-01	9.3E-02	1.2E-01	mg/kg	+
4.03	Organic	2-Methylphenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	2-Nitroaniline	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	2-Nitrophenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	3,3'-Dichlorobenzidine	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	3-Nitroaniline	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	4,4'-DDD	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	4,4'-DDE	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	4,4'-DDT	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	4-Bromophenyl phenyl ether	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	4-Chloro-3-methylphenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	4-Chlorobenzenamine	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	4-Chlorophenylphenyl ether	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	4-Methylphenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	4-Nitroaniline	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	4-Nitrophenol	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	Acenaphthene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Acenaphthylene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Aldrin	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	Anthracene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Benzo(a)anthracene	5-May	4.6E-02	5.9E-02	5.3E-02	5.8E-02	mg/kg	+

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	Benzo(a)pyrene	5-May	4.3E-02	2.9E-01	1.8E-01	2.6E-01	mg/kg	+
4.03	Organic	Benzo(b)fluoranthene	5-May	6.8E-02	9.9E-02	8.6E-02	9.9E-02	mg/kg	+
4.03	Organic	Benzo(ghi)perylene	5-May	3.3E-02	5.4E-02	4.4E-02	5.3E-02	mg/kg	-
4.03	Organic	Benzo(k)fluoranthene	5-May	1.9E-02	3.0E-02	2.5E-02	2.8E-02	mg/kg	+
4.03	Organic	Benzoic acid	0/5	5.3E-01	6.7E-01		6.7E-01	mg/kg	ND
4.03	Organic	Benzyl alcohol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Bis(2-chloroethoxy)methane	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Bis(2-chloroethyl) ether	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Bis(2-ethylhexyl)phthalate	5-May	5.5E-02	1.5E-01	1.1E-01	1.5E-01	mg/kg	+
4.03	Organic	Butylbenzylphthalate	5-Feb	2.5E-02	2.8E-01	3.0E-02	4.1E-02	mg/kg	+
4.03	Organic	Carbazole	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Chlordane, total	0/5	9.2E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Chrysene	5-May	5.7E-02	6.7E-02	6.4E-02	6.7E-02	mg/kg	+
4.03	Organic	Di-n-butylphthalate	0/5	3.5E-01	5.9E-01		5.9E-01	mg/kg	ND
4.03	Organic	Di-n-octylphthlate	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Dibenz(a,h)anthracene	5-Jan	1.4E-02	2.8E-01	1.4E-02	2.8E-01	mg/kg	+
4.03	Organic	Dibenzofuran	5-Apr	2.5E-02	2.2E-01	5.8E-02	1.2E-01	mg/kg	-
4.03	Organic	Dieldrin	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Diethylphthalate	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	Dimethylphthalate	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Endosulfan	0/5	1.4E-03	1.7E-03		1.7E-03	mg/kg	ND
4.03	Organic	Endosulfan I	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	Endosulfan II	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endosulfan sulfate	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endrin	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endrin aldehyde	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endrin ketone	0/5	8.9E-04	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Fluoranthene	5-May	6.7E-02	1.0E-01	9.0E-02	1.0E-01	mg/kg	+
4.03	Organic	Fluorene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Heptachlor	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	Heptachlor epoxide	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	Hexachlorobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Hexachlorobutadiene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Hexachlorocyclopentadiene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Hexachloroethane	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Indeno(1,2,3-cd)pyrene	5-May	3.1E-02	5.9E-02	4.4E-02	5.5E-02	mg/kg	+
4.03	Organic	Isophorone	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Lindane	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	Methoxychlor	0/5	4.6E-03	5.7E-03		5.7E-03	mg/kg	ND
4.03	Organic	N-Nitroso-di-n-propylamine	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	N-Nitrosodiphenylamine	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Naphthalene	5-May	2.2E-02	7.0E-02	5.2E-02	7.0E-02	mg/kg	-
4.03	Organic	Nitrobenzene	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	PCB-1016	0/5	8.9E-03	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1221	0/5	1.8E-02	2.3E-02		2.3E-02	mg/kg	ND
4.03	Organic	PCB-1232	0/5	8.9E-03	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1242	0/5	8.9E-03	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1248	0/5	8.9E-03	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1254	5-Jan	8.9E-03	8.2E-02	8.2E-02	8.2E-02	mg/kg	+
4.03	Organic	PCB-1260	5-Jan	8.9E-03	4.3E-02	4.3E-02	4.3E-02	mg/kg	+
4.03	Organic	Pentachlorophenol	5-Jan	3.7E-02	6.7E-01	3.7E-02	6.7E-01	mg/kg	+
4.03	Organic	Phenanthrene	5-May	5.5E-02	1.0E-01	8.2E-02	1.0E-01	mg/kg	-
4.03	Organic	Phenol	0/5	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
4.03	Organic	Pyrene	5-May	8.6E-02	1.0E-01	9.3E-02	1.0E-01	mg/kg	+
4.03	Organic	Total combustible organics (TCO)	5-May	2.7E+05	4.4E+05	3.4E+05	4.1E+05	mg/kg	-
4.03	Organic	Total organic carbon (TOC)	5-May	9.9E+03	2.2E+04	1.4E+04	1.9E+04	mg/kg	-
4.03	Organic	Toxaphene	0/5	4.6E-02	5.7E-02		5.7E-02	mg/kg	ND

Table E.3. Summary statistics for near-shore sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	alpha-BHC	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	alpha-Chlordane	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	beta-BHC	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Organic	delta-BHC	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	-
4.03	Organic	gamma-Chlordane	0/5	4.6E-04	5.7E-04		5.7E-04	mg/kg	ND
4.03	Radionuclide	Cesium-137	30/30	2.1E-01	2.9E+01	2.4E+00	4.0E+00	pCi/g	+
4.03	Radionuclide	Cobalt-60	27/30	1.3E-02	2.4E-01	6.4E-02	7.8E-02	pCi/g	+
4.03	Radionuclide	Strontium-90	0/5	2.2E+00	7.6E+00		7.6E+00	pCi/g	ND
4.04	Radionuclide	Cesium-137	16/16	2.8E-01	5.7E+00	1.9E+00	2.7E+00	pCi/g	+
4.04	Radionuclide	Cobalt-60	15/16	1.3E-02	1.6E-01	5.7E-02	7.7E-02	pCi/g	+

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Inorganic	Antimony	0/1	4.5E-01	4.5E-01		4.5E-01	mg/kg	ND
1	Inorganic	Arsenic	2-Feb	5.0E+00	1.1E+01	8.0E+00	1.1E+01	mg/kg	+
1	Inorganic	Beryllium	2-Feb	5.9E-01	8.1E-01	7.0E-01	8.1E-01	mg/kg	+
1	Inorganic	Cadmium	2-Feb	4.2E-01	7.3E-01	5.7E-01	7.3E-01	mg/kg	+
1	Inorganic	Chromium	2-Feb	9.9E+00	2.0E+01	1.5E+01	2.0E+01	mg/kg	+
1	Inorganic	Copper	2-Feb	2.6E+01	2.9E+01	2.8E+01	2.9E+01	mg/kg	-
1	Inorganic	Lead	2-Feb	3.0E+01	3.9E+01	3.5E+01	3.9E+01	mg/kg	-
1	Inorganic	Mercury	2-Feb	5.9E-02	1.2E-01	9.2E-02	1.2E-01	mg/kg	+
1	Inorganic	Nickel	2-Feb	1.4E+01	2.3E+01	1.8E+01	2.3E+01	mg/kg	+
1	Inorganic	Selenium	2-Feb	4.2E-01	6.9E-01	5.6E-01	6.9E-01	mg/kg	+
1	Inorganic	Silver	2-Feb	2.0E-01	3.3E-01	2.7E-01	3.3E-01	mg/kg	+
1	Inorganic	Thallium	0/2	3.2E-01	4.5E-01		4.5E-01	mg/kg	ND
1	Inorganic	Zinc	2-Feb	7.0E+01	1.2E+02	9.6E+01	1.2E+02	mg/kg	+
1	Organic	1,2,4-Trichlorobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	1,2-Dichlorobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	1,3-Dichlorobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	1,4-Dichlorobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,2'-oxybis(1-chloropropane)	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,4,5-Trichlorophenol	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	2,4,6-Trichlorophenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,4-Dichlorophenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,4-Dimethylphenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,4-Dinitrophenol	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	2,4-Dinitrotoluene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2,6-Dinitrotoluene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2-Chloronaphthalene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2-Chlorophenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2-Methyl-4,6-dinitrophenol	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	2-Methylnaphthalene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2-Methylphenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	2-Nitroaniline	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	2-Nitrophenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	3,3'-Dichlorobenzidine	0/2	1.0E+00	1.6E+00		1.6E+00	mg/kg	ND
1	Organic	3-Nitroaniline	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	4,4'-DDD	2-Jan	1.3E-01	3.8E-01	1.3E-01	3.8E-01	mg/kg	+
1	Organic	4,4'-DDE	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	4,4'-DDT	2-Jan	1.3E-01	3.8E-01	1.3E-01	3.8E-01	mg/kg	+
1	Organic	4-Bromophenyl phenyl ether	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	4-Chloro-3-methylphenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	4-Chlorobenzenamine	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	4-Chlorophenylphenyl ether	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	4-Methylphenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	4-Nitroaniline	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	4-Nitrophenol	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	Acenaphthene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Acenaphthylene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Aldrin	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	Anthracene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Benzo(a)anthracene	2-Jan	5.2E-01	7.9E-01	7.9E-01	7.9E-01	mg/kg	+
1	Organic	Benzo(a)pyrene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Benzo(b)fluoranthene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Benzo(ghi)perylene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	-
1	Organic	Benzo(k)fluoranthene	2-Jan	5.2E-01	7.9E-01	7.9E-01	7.9E-01	mg/kg	+
1	Organic	Benzoic acid	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	Benzyl alcohol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Bis(2-chloroethoxy)methane	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Bis(2-chloroethyl) ether	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Bis(2-ethylhexyl)phthalate	0/2	7.5E-01	1.5E+00		1.5E+00	mg/kg	ND
1	Organic	Butylbenzylphthalate	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Chlordane, total	0/2	1.2E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	Chrysene	2-Jan	5.2E-01	7.9E-01	7.9E-01	7.9E-01	mg/kg	+
1	Organic	Di-n-butylphthalate	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Di-n-octylphthlate	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Dibenz(a,h)anthracene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Dibenzofuran	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Dieldrin	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	Diethylphthalate	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Dimethylphthalate	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Endosulfan	0/2	1.8E-01	5.8E-01		5.8E-01	mg/kg	ND
1	Organic	Endosulfan I	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	Endosulfan II	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	Endosulfan sulfate	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	Endrin	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	Endrin ketone	0/2	1.2E-01	3.8E-01		3.8E-01	mg/kg	ND
1	Organic	Fluoranthene	2-Jan	5.2E-01	8.2E-01	8.2E-01	8.2E-01	mg/kg	+
1	Organic	Fluorene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	Heptachlor	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	Heptachlor epoxide	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	Hexachlorobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Hexachlorobutadiene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Hexachlorocyclopentadiene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Hexachloroethane	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Indeno(1,2,3-cd)pyrene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Isophorone	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Lindane	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	Methoxychlor	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	N-Nitroso-di-n-propylamine	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	N-Nitrosodiphenylamine	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Naphthalene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	-
1	Organic	Nitrobenzene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	PCB-1016	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	PCB-1221	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	PCB-1232	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	PCB-1242	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	PCB-1248	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Organic	PCB-1254	0/2	1.2E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	PCB-1260	0/2	1.2E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	Pentachlorophenol	0/2	2.5E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	Phenanthrene	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	-
1	Organic	Phenol	0/2	5.2E-01	7.9E-01		7.9E-01	mg/kg	ND
1	Organic	Pyrene	2-Jan	5.2E-01	8.1E-01	8.1E-01	8.1E-01	mg/kg	+
1	Organic	Toxaphene	0/2	1.2E+00	3.8E+00		3.8E+00	mg/kg	ND
1	Organic	alpha-BHC	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	alpha-Chlordane	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Organic	beta-BHC	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	ND
1	Organic	delta-BHC	0/2	6.0E-02	1.9E-01		1.9E-01	mg/kg	-
1	Organic	gamma-Chlordane	0/2	6.0E-01	1.9E+00		1.9E+00	mg/kg	ND
1	Radionuclide	Cesium-137	3-Mar	1.6E-01	9.3E-01	6.0E-01	9.3E-01	pCi/g	+
1	Radionuclide	Cobalt-60	3-Feb	6.3E-02	5.8E+00	2.0E+00	5.8E+00	pCi/g	+
7	Inorganic	Aluminum	2-Feb	1.5E+04	1.6E+04	1.5E+04	1.6E+04	mg/kg	+
7	Inorganic	Antimony	10-Apr	2.0E-01	6.8E-01	2.7E-01	3.4E-01	mg/kg	+
7	Inorganic	Arsenic	10-Oct	4.3E+00	6.4E+01	1.7E+01	2.7E+01	mg/kg	+
7	Inorganic	Barium	2-Feb	1.3E+02	1.6E+02	1.4E+02	1.6E+02	mg/kg	+
7	Inorganic	Beryllium	10-Oct	7.5E-01	1.5E+00	1.1E+00	1.2E+00	mg/kg	+

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Inorganic	Boron	2-Feb	4.8E+00	5.8E+00	5.3E+00	5.8E+00	mg/kg	+
7	Inorganic	Cadmium	10-May	2.6E-01	8.2E-01	4.0E-01	5.3E-01	mg/kg	+
7	Inorganic	Calcium	2-Feb	4.6E+03	6.5E+03	5.5E+03	6.5E+03	mg/kg	-
7	Inorganic	Chromium	10-Oct	1.9E+01	5.9E+01	3.0E+01	3.7E+01	mg/kg	+
7	Inorganic	Cobalt	2-Feb	1.3E+01	1.3E+01	1.3E+01	1.3E+01	mg/kg	+
7	Inorganic	Copper	10-Oct	1.5E+01	3.7E+01	2.4E+01	2.8E+01	mg/kg	-
7	Inorganic	Iron	2-Feb	2.4E+04	2.9E+04	2.7E+04	2.9E+04	mg/kg	+
7	Inorganic	Kjeldahl nitrogen	2-Feb	1.0E+03	1.4E+03	1.2E+03	1.4E+03	mg/kg	-
7	Inorganic	Lead	10-Oct	1.4E+01	3.0E+01	2.1E+01	2.4E+01	mg/kg	-
7	Inorganic	Magnesium	2-Feb	2.3E+03	2.7E+03	2.5E+03	2.7E+03	mg/kg	+
7	Inorganic	Manganese	2-Feb	1.0E+03	1.6E+03	1.3E+03	1.6E+03	mg/kg	+
7	Inorganic	Mercury	10-Feb	5.0E-02	2.3E-01	1.2E-01	1.4E-01	mg/kg	+
7	Inorganic	Molybdenum	0/2	5.7E-01	6.1E-01		6.1E-01	mg/kg	ND
7	Inorganic	Nickel	10-Oct	1.8E+01	4.1E+01	2.6E+01	3.0E+01	mg/kg	+
7	Inorganic	Potassium	2-Feb	1.4E+03	2.0E+03	1.7E+03	2.0E+03	mg/kg	-
7	Inorganic	Selenium	10-Aug	2.7E-01	9.5E+00	2.0E+00	3.7E+00	mg/kg	+
7	Inorganic	Silver	10-Jul	2.5E-02	2.6E-01	9.6E-02	1.4E-01	mg/kg	+
7	Inorganic	Sodium	2-Feb	4.7E+01	5.4E+01	5.1E+01	5.4E+01	mg/kg	-
7	Inorganic	Thallium	10-Jan	2.5E-01	5.7E-01	5.7E-01	5.7E-01	mg/kg	+

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Inorganic	Vanadium	2-Feb	3.1E+01	4.3E+01	3.7E+01	4.3E+01	mg/kg	+
7	Inorganic	Zinc	10-Oct	4.6E+01	1.0E+02	7.7E+01	8.8E+01	mg/kg	+
7	Organic	1,2,4-Trichlorobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	1,2-Dichlorobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	1,3-Dichlorobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	1,4-Dichlorobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,2'-oxybis(1-chloropropane)	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,4,5-Trichlorophenol	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	2,4,6-Trichlorophenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,4-Dichlorophenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,4-Dimethylphenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,4-Dinitrophenol	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	2,4-Dinitrotoluene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2,6-Dinitrotoluene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2-Chloronaphthalene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2-Chlorophenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	2-Methyl-4,6-dinitrophenol	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	2-Methylnaphthalene	2-Feb	7.2E-02	1.5E-01	1.1E-01	1.5E-01	mg/kg	+
7	Organic	2-Methylphenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	2-Nitroaniline	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	2-Nitrophenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	3,3'-Dichlorobenzidine	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	3-Nitroaniline	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	4,4'-DDD	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	4,4'-DDE	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	4,4'-DDT	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	4-Bromophenyl phenyl ether	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	4-Chloro-3-methylphenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	4-Chlorobenzenamine	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	4-Chlorophenylphenyl ether	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	4-Methylphenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	4-Nitroaniline	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	4-Nitrophenol	2-Jan	5.7E-01	8.2E-01	5.7E-01	8.2E-01	mg/kg	+
7	Organic	Acenaphthene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Acenaphthylene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Aldrin	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	Anthracene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Benzo(a)anthracene	2-Feb	1.9E-01	2.2E-01	2.1E-01	2.2E-01	mg/kg	+

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	Benzo(a)pyrene	2-Feb	4.6E-01	6.3E-01	5.4E-01	6.3E-01	mg/kg	+
7	Organic	Benzo(b)fluoranthene	2-Feb	4.3E-02	4.9E-02	4.6E-02	4.9E-02	mg/kg	+
7	Organic	Benzo(ghi)perylene	2-Feb	4.0E-02	4.6E-02	4.3E-02	4.6E-02	mg/kg	-
7	Organic	Benzo(k)fluoranthene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Benzoic acid	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	Benzyl alcohol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Bis(2-chloroethoxy)methane	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Bis(2-chloroethyl) ether	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Bis(2-ethylhexyl)phthalate	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Butylbenzylphthalate	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Carbazole	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Chlordane, total	0/2	1.4E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Chrysene	2-Feb	3.0E-02	3.6E-02	3.3E-02	3.6E-02	mg/kg	+
7	Organic	Di-n-butylphthalate	0/2	4.7E-01	5.0E-01		5.0E-01	mg/kg	ND
7	Organic	Di-n-octylphthlate	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Dibenz(a,h)anthracene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Dibenzofuran	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Dieldrin	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Diethylphthalate	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	Dimethylphthalate	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Endosulfan	0/2	2.0E-03	2.2E-03		2.2E-03	mg/kg	ND
7	Organic	Endosulfan I	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	Endosulfan II	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Endosulfan sulfate	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Endrin	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Endrin aldehyde	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Endrin ketone	0/2	1.3E-03	1.5E-03		1.5E-03	mg/kg	ND
7	Organic	Fluoranthene	2-Jan	1.7E-01	3.5E-01	1.7E-01	3.5E-01	mg/kg	+
7	Organic	Fluorene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Heptachlor	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	Heptachlor epoxide	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	Hexachlorobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Hexachlorobutadiene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Hexachlorocyclopentadiene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Hexachloroethane	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Indeno(1,2,3-cd)pyrene	2-Feb	3.8E-02	4.1E-02	3.9E-02	4.1E-02	mg/kg	+
7	Organic	Isophorone	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Lindane	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	Methoxychlor	0/2	7.0E-03	7.4E-03		7.4E-03	mg/kg	ND
7	Organic	N-Nitroso-di-n-propylamine	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	N-Nitrosodiphenylamine	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Naphthalene	2-Jan	3.7E-02	3.5E-01	3.7E-02	3.5E-01	mg/kg	-
7	Organic	Nitrobenzene	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	PCB-1016	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	PCB-1221	0/2	2.7E-02	2.9E-02		2.9E-02	mg/kg	ND
7	Organic	PCB-1232	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	PCB-1242	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	PCB-1248	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	PCB-1254	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	PCB-1260	0/2	1.3E-02	1.5E-02		1.5E-02	mg/kg	ND
7	Organic	Pentachlorophenol	0/2	8.2E-01	8.6E-01		8.6E-01	mg/kg	ND
7	Organic	Phenanthrene	2-Feb	2.7E-02	5.5E-02	4.1E-02	5.5E-02	mg/kg	-
7	Organic	Phenol	0/2	3.4E-01	3.5E-01		3.5E-01	mg/kg	ND
7	Organic	Pyrene	2-Feb	4.8E-02	7.0E-02	5.9E-02	7.0E-02	mg/kg	+
7	Organic	Total combustible organics (TCO)	2-Feb	5.7E+05	5.7E+05	5.7E+05	5.7E+05	mg/kg	-
7	Organic	Toxaphene	0/2	7.0E-02	7.4E-02		7.4E-02	mg/kg	ND
7	Organic	Uranium	2-Feb	7.3E-01	7.8E-01	7.6E-01	7.8E-01	mg/kg	+

Table E.4. Summary statistics for deep-water sediment for reaches 1 and 7 of the Clinch River (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
7	Organic	alpha-BHC	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	alpha-Chlordane	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	beta-BHC	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Organic	delta-BHC	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	-
7	Organic	gamma-Chlordane	0/2	7.0E-04	7.4E-04		7.4E-04	mg/kg	ND
7	Radionuclide	Cesium-137	2-Feb	3.4E-01	4.4E-01	3.9E-01	4.4E-01	pCi/g	+
7	Radionuclide	Cobalt-60	0/2	1.2E-01	2.8E-01		2.8E-01	pCi/g	ND
7	Radionuclide	Strontium-90	2-Jan	9.7E-01	2.1E+00	2.1E+00	2.1E+00	pCi/g	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Inorganic	Aluminum	3-Mar	7.6E+03	1.1E+04	9.2E+03	1.1E+04	mg/kg	+
2.04	Inorganic	Antimony	0/3	3.9E-01	4.6E-01		4.6E-01	mg/kg	ND
2.04	Inorganic	Arsenic	4-Apr	4.2E+00	1.0E+01	6.4E+00	9.7E+00	mg/kg	+
2.04	Inorganic	Barium	3-Mar	6.5E+01	1.3E+02	1.0E+02	1.3E+02	mg/kg	+
2.04	Inorganic	Beryllium	4-Apr	4.4E-01	7.8E-01	6.6E-01	7.8E-01	mg/kg	+
2.04	Inorganic	Boron	3-Mar	3.2E+00	3.9E+00	3.4E+00	3.9E+00	mg/kg	+
2.04	Inorganic	Cadmium	4-Apr	2.0E-01	4.8E-01	3.4E-01	4.8E-01	mg/kg	+
2.04	Inorganic	Calcium	3-Mar	4.5E+03	9.1E+03	6.5E+03	9.1E+03	mg/kg	-
2.04	Inorganic	Chromium	4-Apr	1.1E+01	1.6E+01	1.4E+01	1.6E+01	mg/kg	+
2.04	Inorganic	Cobalt	3-Mar	9.3E+00	2.1E+01	1.5E+01	2.1E+01	mg/kg	+
2.04	Inorganic	Copper	4-Apr	8.5E+00	1.2E+01	1.0E+01	1.2E+01	mg/kg	-
2.04	Inorganic	Iron	3-Mar	1.2E+04	2.0E+04	1.7E+04	2.0E+04	mg/kg	+
2.04	Inorganic	Kjeldahl nitrogen	3-Mar	3.1E+02	1.3E+03	8.9E+02	1.3E+03	mg/kg	-
2.04	Inorganic	Lead	4-Apr	2.2E+01	6.5E+01	3.6E+01	5.9E+01	mg/kg	-
2.04	Inorganic	Magnesium	3-Mar	2.3E+03	4.1E+03	2.9E+03	4.1E+03	mg/kg	+
2.04	Inorganic	Manganese	3-Mar	8.0E+02	4.5E+03	2.7E+03	4.5E+03	mg/kg	+
2.04	Inorganic	Mercury	4-Apr	7.2E-02	2.5E-01	1.2E-01	2.3E-01	mg/kg	+
2.04	Inorganic	Molybdenum	0/3	3.7E-01	4.2E-01		4.2E-01	mg/kg	ND
2.04	Inorganic	Nickel	4-Apr	1.1E+01	1.5E+01	1.4E+01	1.5E+01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Inorganic	Potassium	3-Mar	9.5E+02	9.6E+02	9.5E+02	9.6E+02	mg/kg	-
2.04	Inorganic	Selenium	3-Jan	3.3E-01	2.4E+00	3.3E-01	2.4E+00	mg/kg	+
2.04	Inorganic	Silver	4-Apr	7.3E-02	5.5E-01	2.4E-01	4.9E-01	mg/kg	+
2.04	Inorganic	Sodium	3-Mar	2.8E+01	3.6E+01	3.3E+01	3.6E+01	mg/kg	-
2.04	Inorganic	Thallium	0/4	1.8E-01	3.2E-01		3.2E-01	mg/kg	ND
2.04	Inorganic	Vanadium	3-Mar	1.2E+01	2.0E+01	1.6E+01	2.0E+01	mg/kg	+
2.04	Inorganic	Zinc	4-Apr	5.3E+01	6.8E+01	6.1E+01	6.8E+01	mg/kg	+
2.04	Organic	1,2,4-Trichlorobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	1,2-Dichlorobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	1,3-Dichlorobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	1,4-Dichlorobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,2'-oxybis(1-chloropropane)	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,4,5-Trichlorophenol	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	2,4,6-Trichlorophenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,4-Dichlorophenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,4-Dimethylphenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,4-Dinitrophenol	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	2,4-Dinitrotoluene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2,6-Dinitrotoluene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	2-Chloronaphthalene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2-Chlorophenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2-Methyl-4,6-dinitrophenol	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	2-Methylnaphthalene	4-Apr	3.3E-02	4.4E-01	1.5E-01	3.8E-01	mg/kg	+
2.04	Organic	2-Methylphenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	2-Nitroaniline	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	2-Nitrophenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	3,3'-Dichlorobenzidine	0/4	2.2E-01	1.0E+00		1.0E+00	mg/kg	ND
2.04	Organic	3-Nitroaniline	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	4,4'-DDD	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	4,4'-DDE	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	4,4'-DDT	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	4-Bromophenyl phenyl ether	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	4-Chloro-3-methylphenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	4-Chlorobenzenamine	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	4-Chlorophenylphenyl ether	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	4-Methylphenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	4-Nitroaniline	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	4-Nitrophenol	4-Jan	1.9E-01	2.4E+00	1.9E-01	2.4E+00	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Acenaphthene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Acenaphthylene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Aldrin	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	Anthracene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Benzo(a)anthracene	4-Jan	9.7E-02	5.0E-01	9.7E-02	5.0E-01	mg/kg	+
2.04	Organic	Benzo(a)pyrene	4-Mar	1.7E-01	5.0E-01	3.1E-01	4.9E-01	mg/kg	+
2.04	Organic	Benzo(b)fluoranthene	4-Mar	1.9E-02	5.0E-01	8.2E-02	1.6E-01	mg/kg	+
2.04	Organic	Benzo(ghi)perylene	4-Mar	6.2E-02	5.0E-01	9.7E-02	1.8E-01	mg/kg	-
2.04	Organic	Benzo(k)fluoranthene	4-Jan	3.1E-02	5.0E-01	3.1E-02	5.0E-01	mg/kg	+
2.04	Organic	Benzoic acid	0/4	5.4E-01	2.4E+00		2.4E+00	mg/kg	ND
2.04	Organic	Benzyl alcohol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Bis(2-chloroethoxy)methane	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Bis(2-chloroethyl) ether	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Bis(2-ethylhexyl)phthalate	4-Mar	4.5E-02	5.9E-01	1.8E-01	5.2E-01	mg/kg	+
2.04	Organic	Butylbenzylphthalate	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Carbazole	0/3	2.2E-01	2.8E-01		2.8E-01	mg/kg	ND
2.04	Organic	Chlordane, total	0/4	9.3E-04	3.7E+00		3.7E+00	mg/kg	ND
2.04	Organic	Chrysene	4-Mar	6.6E-02	5.0E-01	1.1E-01	1.8E-01	mg/kg	+
2.04	Organic	Di-n-butylphthalate	4-Feb	2.2E-01	4.4E-01	4.0E-01	4.4E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Di-n-octylphthlate	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Dibenz(a,h)anthracene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Dibenzofuran	4-Jan	3.0E-02	5.0E-01	3.0E-02	5.0E-01	mg/kg	-
2.04	Organic	Dieldrin	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	Diethylphthalate	4-Jan	3.4E-02	5.0E-01	3.4E-02	5.0E-01	mg/kg	+
2.04	Organic	Dimethylphthalate	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Endosulfan	0/4	1.4E-03	5.6E-01		5.6E-01	mg/kg	ND
2.04	Organic	Endosulfan I	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	Endosulfan II	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	Endosulfan sulfate	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	Endrin	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	Endrin aldehyde	0/3	9.0E-04	1.1E-03		1.1E-03	mg/kg	ND
2.04	Organic	Endrin ketone	0/4	9.0E-04	3.7E-01		3.7E-01	mg/kg	ND
2.04	Organic	Fluoranthene	4-Apr	9.5E-02	3.3E-01	1.9E-01	3.1E-01	mg/kg	+
2.04	Organic	Fluorene	4-Jan	1.1E-01	5.0E-01	1.1E-01	5.0E-01	mg/kg	+
2.04	Organic	Heptachlor	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	Heptachlor epoxide	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	Hexachlorobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Hexachlorobutadiene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Hexachlorocyclopentadiene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Hexachloroethane	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Indeno(1,2,3-cd)pyrene	4-Mar	5.5E-02	5.0E-01	9.7E-02	1.8E-01	mg/kg	+
2.04	Organic	Isophorone	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Lindane	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	Methoxychlor	0/4	4.7E-03	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	N-Nitroso-di-n-propylamine	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	N-Nitrosodiphenylamine	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Naphthalene	4-Apr	1.8E-02	4.7E-01	1.4E-01	4.0E-01	mg/kg	-
2.04	Organic	Nitrobenzene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	PCB-1016	0/4	9.0E-03	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	PCB-1221	0/4	1.8E-02	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	PCB-1232	0/4	9.0E-03	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	PCB-1242	0/4	9.0E-03	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	PCB-1248	0/4	9.0E-03	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	PCB-1254	0/4	9.0E-03	3.7E+00		3.7E+00	mg/kg	ND
2.04	Organic	PCB-1260	0/4	9.0E-03	3.7E+00		3.7E+00	mg/kg	ND
2.04	Organic	Pentachlorophenol	3-Jan	1.7E-01	2.4E+00	1.7E-01	2.4E+00	mg/kg	+
2.04	Organic	Phenanthrene	4-Apr	2.5E-02	3.3E-01	1.4E-01	3.0E-01	mg/kg	-

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Organic	Phenol	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
2.04	Organic	Pyrene	4-Feb	3.5E-02	3.6E-01	1.2E-01	3.5E-01	mg/kg	+
2.04	Organic	Total combustible organics (TCO)	3-Mar	2.9E+05	4.2E+05	3.5E+05	4.2E+05	mg/kg	-
2.04	Organic	Total organic carbon (TOC)	3-Mar	4.1E+03	1.3E+04	9.6E+03	1.3E+04	mg/kg	-
2.04	Organic	Toxaphene	0/4	4.7E-02	3.7E+00		3.7E+00	mg/kg	ND
2.04	Organic	Uranium	3-Mar	3.5E-01	9.6E-01	6.0E-01	9.6E-01	mg/kg	+
2.04	Organic	alpha-BHC	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	alpha-Chlordane	0/4	4.7E-04	1.9E+00		1.9E+00	mg/kg	ND
2.04	Organic	beta-BHC	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	ND
2.04	Organic	delta-BHC	0/4	4.7E-04	1.9E-01		1.9E-01	mg/kg	-
2.04	Organic	gamma-Chlordane	0/4	4.7E-04	1.9E+00		1.9E+00	mg/kg	ND
2.04	Radionuclide	Americium-241	1-Jan	1.4E-01	1.4E-01	1.4E-01	1.4E-01	pCi/g	+
2.04	Radionuclide	Cesium-137	4-Apr	1.1E+00	2.5E+01	8.2E+00	2.1E+01	pCi/g	+
2.04	Radionuclide	Cobalt-60	4-Jan	5.4E-02	1.8E-01	1.8E-01	1.8E-01	pCi/g	+
2.04	Radionuclide	Curium-243/244	1-Jan	1.4E-02	1.4E-02	1.4E-02	1.4E-02	pCi/g	+
2.04	Radionuclide	Curium-245/246	1-Jan	1.5E-02	1.5E-02	1.5E-02	1.5E-02	pCi/g	+
2.04	Radionuclide	Curium-248	1-Jan	2.9E-02	2.9E-02	2.9E-02	2.9E-02	pCi/g	+
2.04	Radionuclide	Plutonium-238	1-Jan	2.8E-02	2.8E-02	2.8E-02	2.8E-02	pCi/g	+
2.04	Radionuclide	Plutonium-239/240	1-Jan	1.9E-01	1.9E-01	1.9E-01	1.9E-01	pCi/g	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2.04	Radionuclide	Strontium-90	4-Apr	3.2E-01	3.5E+00	1.8E+00	3.3E+00	pCi/g	+
2.04	Radionuclide	Uranium-234	1-Jan	1.4E+00	1.4E+00	1.4E+00	1.4E+00	pCi/g	+
2.04	Radionuclide	Uranium-235	1-Jan	6.2E-02	6.2E-02	6.2E-02	6.2E-02	pCi/g	+
2.04	Radionuclide	Uranium-238	1-Jan	1.2E+00	1.2E+00	1.2E+00	1.2E+00	pCi/g	+
3.01	Inorganic	Aluminum	1-Jan	7.0E+03	7.0E+03	7.0E+03	7.0E+03	mg/kg	+
3.01	Inorganic	Antimony	0/1	4.0E-01	4.0E-01		4.0E-01	mg/kg	ND
3.01	Inorganic	Arsenic	1-Jan	1.3E+00	1.3E+00	1.3E+00	1.3E+00	mg/kg	+
3.01	Inorganic	Barium	1-Jan	6.0E+01	6.0E+01	6.0E+01	6.0E+01	mg/kg	+
3.01	Inorganic	Beryllium	1-Jan	5.3E-01	5.3E-01	5.3E-01	5.3E-01	mg/kg	+
3.01	Inorganic	Boron	0/1	1.1E+00	1.1E+00		1.1E+00	mg/kg	ND
3.01	Inorganic	Cadmium	1-Jan	9.2E-02	9.2E-02	9.2E-02	9.2E-02	mg/kg	+
3.01	Inorganic	Calcium	1-Jan	5.0E+02	5.0E+02	5.0E+02	5.0E+02	mg/kg	-
3.01	Inorganic	Chromium	1-Jan	1.0E+01	1.0E+01	1.0E+01	1.0E+01	mg/kg	+
3.01	Inorganic	Cobalt	1-Jan	9.7E+00	9.7E+00	9.7E+00	9.7E+00	mg/kg	+
3.01	Inorganic	Copper	1-Jan	5.4E+00	5.4E+00	5.4E+00	5.4E+00	mg/kg	-
3.01	Inorganic	Iron	1-Jan	1.1E+04	1.1E+04	1.1E+04	1.1E+04	mg/kg.	+
3.01	Inorganic	Kjeldahl nitrogen	1-Jan	7.7E+01	7.7E+01	7.7E+01	7.7E+01	mg/kg	-
3.01	Inorganic	Lead	1-Jan	8.5E+00	8.5E+00	8.5E+00	8.5E+00	mg/kg	-
3.01	Inorganic	Magnesium	1-Jan	9.5E+02	9.5E+02	9.5E+02	9.5E+02	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Inorganic	Manganese	1-Jan	3.2E+02	3.2E+02	3.2E+02	3.2E+02	mg/kg	+
3.01	Inorganic	Mercury	1-Jan	3.9E-02	3.9E-02	3.9E-02	3.9E-02	mg/kg	+
3.01	Inorganic	Molybdenum	0/1	3.0E-01	3.0E-01		3.0E-01	mg/kg	ND
3.01	Inorganic	Nickel	1-Jan	1.0E+01	1.0E+01	1.0E+01	1.0E+01	mg/kg	+
3.01	Inorganic	Potassium	1-Jan	6.1E+02	6.1E+02	6.1E+02	6.1E+02	mg/kg	-
3.01	Inorganic	Selenium	0/1	2.0E+00	2.0E+00		2.0E+00	mg/kg	ND
3.01	Inorganic	Silver	1-Jan	3.2E-02	3.2E-02	3.2E-02	3.2E-02	mg/kg	+
3.01	Inorganic	Sodium	1-Jan	2.3E+01	2.3E+01	2.3E+01	2.3E+01	mg/kg	-
3.01	Inorganic	Thallium	0/1	1.4E-01	1.4E-01		1.4E-01	mg/kg	ND
3.01	Inorganic	Uranium	1-Jan	6.1E-01	6.1E-01	6.1E-01	6.1E-01	mg/kg	+
3.01	Inorganic	Vanadium	1-Jan	1.1E+01	1.1E+01	1.1E+01	1.1E+01	mg/kg	+
3.01	Inorganic	Zinc	1-Jan	2.8E+01	2.8E+01	2.8E+01	2.8E+01	mg/kg	+
3.01	Organic	1,2,4-Trichlorobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	1,2-Dichlorobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	1,3-Dichlorobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	1,4-Dichlorobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2,2'-oxybis(1-chloropropane)	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2,4,5-Trichlorophenol	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	2,4,6-Trichlorophenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	2,4-Dichlorophenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2,4-Dimethylphenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2,4-Dinitrophenol	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	2,4-Dinitrotoluene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2,6-Dinitrotoluene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2-Chloronaphthalene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2-Chlorophenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2-Methyl-4,6-dinitrophenol	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	2-Methylnaphthalene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2-Methylphenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	2-Nitroaniline	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	2-Nitrophenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	3,3'-Dichlorobenzidine	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	3-Nitroaniline	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	4,4'-DDD	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	4,4'-DDE	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	4,4'-DDT	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	4-Bromophenyl phenyl ether	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	4-Chloro-3-methylphenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	4-Chlorobenzenamine	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	4-Chlorophenylphenyl ether	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	4-Methylphenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	4-Nitroaniline	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	4-Nitrophenol	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	Acenaphthene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Acenaphthylene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Aldrin	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	Anthracene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Benzo(a)anthracene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Benzo(a)pyrene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Benzo(b)fluoranthene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	+
3.01	Organic	Benzo(ghi)perylene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	-
3.01	Organic	Benzo(k)fluoranthene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Benzoic acid	0/1	5.0E-01	5.0E-01		5.0E-01	mg/kg	ND
3.01	Organic	Benzyl alcohol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Bis(2-chloroethoxy)methane	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Bis(2-chloroethyl) ether	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Bis(2-ethylhexyl)phthalate	1-Jan	2.5E-02	2.5E-02	2.5E-02	2.5E-02	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Butylbenzylphthalate	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Carbazole	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Chlordane, total	0/1	8.5E-04	8.5E-04		8.5E-04	mg/kg	ND
3.01	Organic	Chrysene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	+
3.01	Organic	Di-n-butylphthalate	1-Jan	2.2E-02	2.2E-02	2.2E-02	2.2E-02	mg/kg	+
3.01	Organic	Di-n-octylphthlate	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Dibenz(a,h)anthracene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Dibenzofuran	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Dieldrin	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Diethylphthalate	1-Jan	8.1E-02	8.1E-02	8.1E-02	8.1E-02	mg/kg	+
3.01	Organic	Dimethylphthalate	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Endosulfan	0/1	1.3E-03	1.3E-03		1.3E-03	mg/kg	ND
3.01	Organic	Endosulfan I	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	Endosulfan II	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Endosulfan sulfate	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Endrin	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Endrin aldehyde	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Endrin ketone	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
3.01	Organic	Fluoranthene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	Fluorene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Heptachlor	1-Jan	3.9E-04	3.9E-04	3.9E-04	3.9E-04	mg/kg	+
3.01	Organic	Heptachlor epoxide	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	Hexachlorobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Hexachlorobutadiene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Hexachlorocyclopentadiene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Hexachloroethane	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Indeno(1,2,3-cd)pyrene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Isophorone	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Lindane	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	Methoxychlor	0/1	4.3E-03	4.3E-03		4.3E-03	mg/kg	ND
3.01	Organic	N-Nitroso-di-n-propylamine	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	N-Nitrosodiphenylamine	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Naphthalene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	-
3.01	Organic	Nitrobenzene	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	PCB-1016	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
3.01	Organic	PCB-1221	0/1	1.7E-02	1.7E-02		1.7E-02	mg/kg	ND
3.01	Organic	PCB-1232	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
3.01	Organic	PCB-1242	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Organic	PCB-1248	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
3.01	Organic	PCB-1254	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
3.01	Organic	PCB-1260	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
3.01	Organic	Pentachlorophenol	1-Jan	1.5E-01	1.5E-01	1.5E-01	1.5E-01	mg/kg	+
3.01	Organic	Phenanthrene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	-
3.01	Organic	Phenol	0/1	2.1E-01	2.1E-01		2.1E-01	mg/kg	ND
3.01	Organic	Pyrene	1-Jan	2.6E-02	2.6E-02	2.6E-02	2.6E-02	mg/kg	+
3.01	Organic	Total combustible organics (TCO)	1-Jan	3.3E+04	3.3E+04	3.3E+04	3.3E+04	mg/kg	-
3.01	Organic	Total organic carbon (TOC)	1-Jan	6.3E+03	6.3E+03	6.3E+03	6.3E+03	mg/kg	-
3.01	Organic	Toxaphene	0/1	4.3E-02	4.3E-02		4.3E-02	mg/kg	ND
3.01	Organic	alpha-BHC	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	alpha-Chlordane	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	beta-BHC	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Organic	delta-BHC	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	-
3.01	Organic	gamma-Chlordane	0/1	4.3E-04	4.3E-04		4.3E-04	mg/kg	ND
3.01	Radionuclide	Cesium-137	0/1	9.9E-02	9.9E-02		9.9E-02	pCi/g	ND
3.01	Radionuclide	Cobalt-60	0/1	1.1E-01	1.1E-01		1.1E-01	pCi/g	ND
3.01	Radionuclide	Strontium-90	0/1	1.3E+00	1.3E+00		1.3E+00	pCi/g	ND
3.01	Radionuclide	Technetium-99	0/1	3.5E+00	3.5E+00		3.5E+00	pCi/g	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.01	Radionuclide	Uranium-234	1-Jan	6.1E-01	6.1E-01	6.1E-01	6.1E-01	pCi/g	+
3.01	Radionuclide	Uranium-235	0/1	2.5E-02	2.5E-02		2.5E-02	pCi/g	ND
3.01	Radionuclide	Uranium-238	1-Jan	4.7E-01	4.7E-01	4.7E-01	4.7E-01	pCi/g	+
3.02	Inorganic	Aluminum	3-Mar	9.4E+03	1.6E+04	1.2E+04	1.6E+04	mg/kg	+
3.02	Inorganic	Antimony	3-Jan	3.0E-01	5.9E-01	3.0E-01	5.9E-01	mg/kg	+
3.02	Inorganic	Arsenic	5-May	1.4E+00	6.3E+00	3.4E+00	5.0E+00	mg/kg	+
3.02	Inorganic	Barium	3-Mar	1.0E+02	1.1E+02	1.1E+02	1.1E+02	mg/kg	+
3.02	Inorganic	Beryllium	5-May	3.0E-01	8.1E-01	5.5E-01	7.7E-01	mg/kg	+
3.02	Inorganic	Boron	3-Mar	2.6E+00	9.4E+00	5.0E+00	9.4E+00	mg/kg	+
3.02	Inorganic	Cadmium	5-May	2.3E-01	1.2E+00	5.1E-01	9.1E-01	mg/kg	+
3.02	Inorganic	Calcium	3-Mar	1.3E+03	3.2E+03	2.2E+03	3.2E+03	mg/kg	-
3.02	Inorganic	Chromium	5-May	9.3E+00	2.8E+01	1.8E+01	2.4E+01	mg/kg	+
3.02	Inorganic	Cobalt	3-Mar	1.4E+01	2.0E+01	1.7E+01	2.0E+01	mg/kg	+
3.02	Inorganic	Copper	5-May	9.3E+00	3.8E+01	1.8E+01	2.9E+01	mg/kg	-
3.02	Inorganic	Iron	3-Mar	1.8E+04	2.0E+04	1.9E+04	2.0E+04	mg/kg	+
3.02	Inorganic	Kjeldahl nitrogen	3-Mar	3.7E+02	1.1E+03	6.5E+02	1.1E+03	mg/kg	-
3.02	Inorganic	Lead	5-May	7.4E+00	3.9E+01	2.0E+01	3.1E+01	mg/kg	-
3.02	Inorganic	Magnesium	3-Mar	1.2E+03	2.1E+03	1.8E+03	2.1E+03	mg/kg	+
3.02	Inorganic	Manganese	3-Mar	5.8E+02	1.1E+03	8.6E+02	1.1E+03	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Inorganic	Mercury	5-May	2.5E-02	6.1E+00	1.7E+00	4.1E+00	mg/kg	+
3.02	Inorganic	Molybdenum	0/3	4.7E-01	4.7E+00		4.7E+00	mg/kg	ND
3.02	Inorganic	Nickel	5-May	7.8E+00	7.1E+01	3.0E+01	5.2E+01	mg/kg	+
3.02	Inorganic	Potassium	3-Mar	9.2E+02	1.7E+03	1.3E+03	1.7E+03	mg/kg	-
3.02	Inorganic	Selenium	4-Feb	2.5E-01	1.4E+00	2.8E-01	3.3E-01	mg/kg	+
3.02	Inorganic	Silver	5-May	2.2E-02	1.2E+00	3.0E-01	7.6E-01	mg/kg	+
3.02	Inorganic	Sodium	3-Mar	5.0E+01	5.0E+01	5.0E+01	5.0E+01	mg/kg	-
3.02	Inorganic	Thallium	0/5	1.7E-01	3.0E-01		3.0E-01	mg/kg	ND
3.02	Inorganic	Uranium	3-Mar	1.2E+00	1.6E+01	7.0E+00	1.6E+01	mg/kg	+
3.02	Inorganic	Vanadium	3-Mar	1.5E+01	2.2E+01	1.9E+01	2.2E+01	mg/kg	+
3.02	Inorganic	Zinc	5-May	5.0E+01	1.5E+02	7.7E+01	1.2E+02	mg/kg	+
3.02	Organic	1,2,4-Trichlorobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	1,2-Dichlorobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	1,3-Dichlorobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	1,4-Dichlorobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2,2'-oxybis(1-chloropropane)	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2,4,5-Trichlorophenol	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	2,4,6-Trichlorophenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2,4-Dichlorophenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	2,4-Dimethylphenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2,4-Dinitrophenol	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	2,4-Dinitrotoluene	0/4	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND
3.02	Organic	2,6-Dinitrotoluene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2-Chloronaphthalene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2-Chlorophenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2-Methyl-4,6-dinitrophenol	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	2-Methylnaphthalene	4-Mar	6.2E-02	4.1E-01	1.3E-01	2.3E-01	mg/kg	+
3.02	Organic	2-Methylphenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	2-Nitroaniline	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	2-Nitrophenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	3,3'-Dichlorobenzidine	0/4	2.2E-01	8.3E-01		8.3E-01	mg/kg	ND
3.02	Organic	3-Nitroaniline	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	4,4'-DDD	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	4,4'-DDE	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	4,4'-DDT	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	4-Bromophenyl phenyl ether	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	4-Chloro-3-methylphenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	4-Chlorobenzenamine	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	4-Chlorophenylphenyl ether	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	4-Methylphenol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	4-Nitroaniline	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	4-Nitrophenol	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	Acenaphthene	4-Feb	1.7E-01	4.1E-01	1.9E-01	2.3E-01	mg/kg	+
3.02	Organic	Acenaphthylene	4-Jan	1.2E-01	4.1E-01	1.2E-01	4.1E-01	mg/kg	+
3.02	Organic	Aldrin	0/4	4.5E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	Anthracene	4-Feb	1.8E-01	4.1E-01	2.0E-01	2.3E-01	mg/kg	+
3.02	Organic	Benzo(a)anthracene	4-Feb	6.2E-02	9.5E-01	2.8E-01	9.2E-01	mg/kg	+
3.02	Organic	Benzo(a)pyrene	4-Mar	1.9E-01	5.7E-01	3.0E-01	5.2E-01	mg/kg	+
3.02	Organic	Benzo(b)fluoranthene	4-Mar	5.6E-02	9.8E-01	3.2E-01	8.7E-01	mg/kg	+
3.02	Organic	Benzo(ghi)perylene	4-Jan	2.2E-01	4.1E-01	2.5E-01	4.1E-01	mg/kg	-
3.02	Organic	Benzo(k)fluoranthene	4-Mar	2.1E-01	4.1E-01	3.1E-01	4.1E-01	mg/kg	+
3.02	Organic	Benzoic acid	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	Benzyl alcohol	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Bis(2-chloroethoxy)methane	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Bis(2-chloroethyl) ether	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Bis(2-ethylhexyl)phthalate	4-Mar	1.2E-01	4.0E-01	2.2E-01	4.0E-01	mg/kg	+
3.02	Organic	Butylbenzylphthalate	4-Jan	2.9E-02	4.1E-01	2.9E-02	4.1E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Carbazole	3-Feb	1.2E-01	2.2E-01	1.6E-01	2.2E-01	mg/kg	+
3.02	Organic	Chlordane, total	0/4	9.2E-04	7.8E-01		7.8E-01	mg/kg	ND
3.02	Organic	Chrysene	4-Feb	4.7E-02	7.2E-01	2.1E-01	7.0E-01	mg/kg	+
3.02	Organic	Di-n-butylphthalate	0/4	2.4E-01	5.5E-01		5.5E-01	mg/kg	ND
3.02	Organic	Di-n-octylphthlate	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Dibenz(a,h)anthracene	4-Jan	6.4E-02	4.1E-01	6.4E-02	4.1E-01	mg/kg	+
3.02	Organic	Dibenzofuran	4-Feb	1.1E-01	4.1E-01	1.6E-01	2.8E-01	mg/kg	-
3.02	Organic	Dieldrin	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	Diethylphthalate	0/4	2.2E-01	4.2E-01		4.2E-01	mg/kg	ND
3.02	Organic	Dimethylphthalate	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Endosulfan	0/4	1.4E-03	1.2E-01		1.2E-01	mg/kg	ND
3.02	Organic	Endosulfan I	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	Endosulfan II	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	Endosulfan sulfate	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	Endrin	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	Endrin aldehyde	0/3	8.9E-04	1.9E-03		1.9E-03	mg/kg	ND
3.02	Organic	Endrin ketone	0/4	8.9E-04	7.9E-02		7.9E-02	mg/kg	ND
3.02	Organic	Fluoranthene	4-Mar	8.4E-02	1.4E+00	4.9E-01	1.3E+00	mg/kg	+
3.02	Organic	Fluorene	4-Feb	2.0E-01	4.1E-01	2.0E-01	2.2E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	Heptachlor	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	Heptachlor epoxide	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	Hexachlorobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Hexachlorobutadiene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Hexachlorocyclopentadiene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Hexachloroethane	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Indeno(1,2,3-cd)pyrene	4-Feb	2.1E-01	4.1E-01	2.5E-01	3.5E-01	mg/kg	+
3.02	Organic	Isophorone	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Lindane	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	Methoxychlor	0/4	4.6E-03	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	N-Nitroso-di-n-propylamine	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	N-Nitrosodiphenylamine	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	Naphthalene	4-Feb	4.4E-02	4.1E-01	1.0E-01	2.5E-01	mg/kg	-
3.02	Organic	Nitrobenzene	0/4	2.2E-01	4.1E-01		4.1E-01	mg/kg	ND
3.02	Organic	PCB-1016	0/4	8.9E-03	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	PCB-1221	0/4	1.8E-02	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	PCB-1232	0/4	8.9E-03	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	PCB-1242	0/4	8.9E-03	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	PCB-1248	4-Jan	8.9E-03	3.9E-01	2.1E-01	3.9E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Organic	PCB-1254	4-Mar	8.9E-03	7.3E-01	3.2E-01	7.3E-01	mg/kg	+
3.02	Organic	PCB-1260	4-Jan	8.9E-03	7.9E-01	2.8E-01	7.9E-01	mg/kg	+
3.02	Organic	Pentachlorophenol	0/4	5.4E-01	2.0E+00		2.0E+00	mg/kg	ND
3.02	Organic	Phenanthrene	4-Mar	4.1E-02	1.4E+00	4.7E-01	1.3E+00	mg/kg	-
3.02	Organic	Phenol	4-Jan	2.2E-01	4.1E-01	2.2E-01	4.1E-01	mg/kg	+
3.02	Organic	Pyrene	4-Mar	7.6E-02	1.3E+00	4.6E-01	1.2E+00	mg/kg	+
3.02	Organic	Total combustible organics (TCO)	4-Apr	6.2E+04	4.0E+05	2.3E+05	4.0E+05	mg/kg	-
3.02	Organic	Total organic carbon (TOC)	3-Mar	1.3E+04	1.9E+05	7.7E+04	1.9E+05	mg/kg	-
3.02	Organic	Toxaphene	0/4	4.6E-02	7.9E-01		7.9E-01	mg/kg	ND
3.02	Organic	alpha-BHC	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	alpha-Chlordane	0/4	4.6E-04	3.9E-01		3.9E-01	mg/kg	ND
3.02	Organic	beta-BHC	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	ND
3.02	Organic	delta-BHC	0/4	4.6E-04	3.9E-02		3.9E-02	mg/kg	-
3.02	Organic	gamma-Chlordane	0/4	4.6E-04	3.9E-01		3.9E-01	mg/kg	ND
3.02	Radionuclide	Cesium-137	6-Apr	4.0E-02	3.4E-01	1.4E-01	2.5E-01	pCi/g	+
3.02	Radionuclide	Cobalt-60	6-Jan	2.7E-02	1.5E-01	3.5E-02	1.5E-01	pCi/g	+
3.02	Radionuclide	Strontium-90	4-Feb	8.4E-01	2.7E+00	1.9E+00	2.6E+00	pCi/g	+
3.02	Radionuclide	Technetium-99	4-Feb	1.6E+00	5.3E+01	3.4E+01	5.2E+01	pCi/g	+
3.02	Radionuclide	Uranium-234	4-Apr	1.1E+00	1.1E+01	5.7E+00	1.1E+01	pCi/g	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.02	Radionuclide	Uranium-235	4-Apr	5.2E-02	5.5E-01	2.5E-01	5.3E-01	pCi/g	+
3.02	Radionuclide	Uranium-238	4-Apr	1.0E+00	6.9E+00	3.7E+00	6.9E+00	pCi/g	+
3.03	Inorganic	Aluminum	1-Jan	1.5E+04	1.5E+04	1.5E+04	1.5E+04	mg/kg	+
3.03	Inorganic	Antimony	0/1	5.1E-01	5.1E-01		5.1E-01	mg/kg	ND
3.03	Inorganic	Arsenic	1-Jan	5.3E+00	5.3E+00	5.3E+00	5.3E+00	mg/kg	+
3.03	Inorganic	Barium	1-Jan	1.2E+02	1.2E+02	1.2E+02	1.2E+02	mg/kg	+
3.03	Inorganic	Beryllium	1-Jan	9.2E-01	9.2E-01	9.2E-01	9.2E-01	mg/kg	+
3.03	Inorganic	Boron	1-Jan	1.2E+01	1.2E+01	1.2E+01	1.2E+01	mg/kg	+
3.03	Inorganic	Cadmium	1-Jan	3.3E+00	3.3E+00	3.3E+00	3.3E+00	mg/kg	+
3.03	Inorganic	Calcium	1-Jan	2.6E+03	2.6E+03	2.6E+03	2.6E+03	mg/kg	-
3.03	Inorganic	Chromium	1-Jan	4.4E+01	4.4E+01	4.4E+01	4.4E+01	mg/kg	+
3.03	Inorganic	Cobalt	1-Jan	2.0E+01	2.0E+01	2.0E+01	2.0E+01	mg/kg	+
3.03	Inorganic	Copper	1-Jan	3.6E+01	3.6E+01	3.6E+01	3.6E+01	mg/kg	-
3.03	Inorganic	Iron	1-Jan	2.5E+04	2.5E+04	2.5E+04	2.5E+04	mg/kg	+
3.03	Inorganic	Kjeldahl nitrogen	1-Jan	6.1E+02	6.1E+02	6.1E+02	6.1E+02	mg/kg	-
3.03	Inorganic	Lead	1-Jan	3.8E+01	3.8E+01	3.8E+01	3.8E+01	mg/kg	-
3.03	Inorganic	Magnesium	1-Jan	2.2E+03	2.2E+03	2.2E+03	2.2E+03	mg/kg	+
3.03	Inorganic	Manganese	1-Jan	6.9E+02	6.9E+02	6.9E+02	6.9E+02	mg/kg	+
3.03	Inorganic	Mercury	1-Jan	6.7E+00	6.7E+00	6.7E+00	6.7E+00	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Inorganic	Molybdenum	0/1	5.2E+00	5.2E+00		5.2E+00	mg/kg	ND
3.03	Inorganic	Nickel	1-Jan	6.2E+01	6.2E+01	6.2E+01	6.2E+01	mg/kg	+
3.03	Inorganic	Potassium	1-Jan	1.7E+03	1.7E+03	1.7E+03	1.7E+03	mg/kg	-
3.03	Inorganic	Selenium	0/1	1.3E+00	1.3E+00		1.3E+00	mg/kg	ND
3.03	Inorganic	Silver	1-Jan	3.3E+00	3.3E+00	3.3E+00	3.3E+00	mg/kg	+
3.03	Inorganic	Sodium	1-Jan	7.4E+01	7.4E+01	7.4E+01	7.4E+01	mg/kg	-
3.03	Inorganic	Thallium	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Inorganic	Uranium	1-Jan	8.7E+00	8.7E+00	8.7E+00	8.7E+00	mg/kg	+
3.03	Inorganic	Vanadium	1-Jan	2.2E+01	2.2E+01	2.2E+01	2.2E+01	mg/kg	+
3.03	Inorganic	Zinc	1-Jan	1.6E+02	1.6E+02	1.6E+02	1.6E+02	mg/kg	+
3.03	Organic	1,2,4-Trichlorobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	1,2-Dichlorobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	1,3-Dichlorobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	1,4-Dichlorobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2,2'-oxybis(1-chloropropane)	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2,4,5-Trichlorophenol	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	2,4,6-Trichlorophenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2,4-Dichlorophenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2,4-Dimethylphenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	2,4-Dinitrophenol	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	2,4-Dinitrotoluene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2,6-Dinitrotoluene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2-Chloronaphthalene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2-Chlorophenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2-Methyl-4,6-dinitrophenol	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	2-Methylnaphthalene	1-Jan	3.5E-01	3.5E-01	3.5E-01	3.5E-01	mg/kg	+
3.03	Organic	2-Methylphenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	2-Nitroaniline	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	2-Nitrophenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	3,3'-Dichlorobenzidine	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	3-Nitroaniline	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	4,4'-DDD	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	4,4'-DDE	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	4,4'-DDT	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	4-Bromophenyl phenyl ether	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	4-Chloro-3-methylphenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	4-Chlorobenzenamine	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	4-Chlorophenylphenyl ether	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	4-Methylphenol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	4-Nitroaniline	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	4-Nitrophenol	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	Acenaphthene	1-Jan	2.7E-02	2.7E-02	2.7E-02	2.7E-02	mg/kg	+
3.03	Organic	Acenaphthylene	1-Jan	1.2E-01	1.2E-01	1.2E-01	1.2E-01	mg/kg	+
3.03	Organic	Aldrin	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	Anthracene	1-Jan	4.2E-02	4.2E-02	4.2E-02	4.2E-02	mg/kg	+
3.03	Organic	Benzo(a)anthracene	1-Jan	2.3E-01	2.3E-01	2.3E-01	2.3E-01	mg/kg	+
3.03	Organic	Benzo(a)pyrene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	+
3.03	Organic	Benzo(b)fluoranthene	1-Jan	2.8E-01	2.8E-01	2.8E-01	2.8E-01	mg/kg	+
3.03	Organic	Benzo(ghi)perylene	1-Jan	1.7E-01	1.7E-01	1.7E-01	1.7E-01	mg/kg	-
3.03	Organic	Benzo(k)fluoranthene	1-Jan	6.7E-02	6.7E-02	6.7E-02	6.7E-02	mg/kg	+
3.03	Organic	Benzoic acid	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	Benzyl alcohol	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Bis(2-chloroethoxy)methane	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Bis(2-chloroethyl) ether	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Bis(2-ethylhexyl)phthalate	0/1	3.6E-01	3.6E-01		3.6E-01	mg/kg	ND
3.03	Organic	Butylbenzylphthalate	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Carbazole	1-Jan	4.8E-02	4.8E-02	4.8E-02	4.8E-02	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Chlordane, total	0/1	1.2E-03	1.2E-03		1.2E-03	mg/kg	ND
3.03	Organic	Chrysene	1-Jan	2.4E-01	2.4E-01	2.4E-01	2.4E-01	mg/kg	+
3.03	Organic	Di-n-butylphthalate	0/1	6.2E-01	6.2E-01		6.2E-01	mg/kg	ND
3.03	Organic	Di-n-octylphthlate	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Dibenz(a,h)anthracene	1-Jan	3.6E-02	3.6E-02	3.6E-02	3.6E-02	mg/kg	+
3.03	Organic	Dibenzofuran	1-Jan	1.1E-01	1.1E-01	1.1E-01	1.1E-01	mg/kg	-
3.03	Organic	Dieldrin	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Diethylphthalate	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Dimethylphthalate	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Endosulfan	0/1	1.7E-03	1.7E-03		1.7E-03	mg/kg	ND
3.03	Organic	Endosulfan I	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	Endosulfan II	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Endosulfan sulfate	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Endrin	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Endrin aldehyde	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Endrin ketone	0/1	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
3.03	Organic	Fluoranthene	1-Jan	4.8E-01	4.8E-01	4.8E-01	4.8E-01	mg/kg	+
3.03	Organic	Fluorene	1-Jan	4.9E-02	4.9E-02	4.9E-02	4.9E-02	mg/kg	+
3.03	Organic	Heptachlor	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Heptachlor epoxide	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	Hexachlorobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Hexachlorobutadiene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Hexachlorocyclopentadiene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Hexachloroethane	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Indeno(1,2,3-cd)pyrene	1-Jan	1.6E-01	1.6E-01	1.6E-01	1.6E-01	mg/kg	+
3.03	Organic	Isophorone	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Lindane	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	Methoxychlor	0/1	6.1E-03	6.1E-03		6.1E-03	mg/kg	ND
3.03	Organic	N-Nitroso-di-n-propylamine	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	N-Nitrosodiphenylamine	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	Naphthalene	1-Jan	2.1E-01	2.1E-01	2.1E-01	2.1E-01	mg/kg	-
3.03	Organic	Nitrobenzene	0/1	2.9E-01	2.9E-01		2.9E-01	mg/kg	ND
3.03	Organic	PCB-1016	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.03	Organic	PCB-1221	0/1	2.4E-02	2.4E-02		2.4E-02	mg/kg	ND
3.03	Organic	PCB-1232	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.03	Organic	PCB-1242	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.03	Organic	PCB-1248	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
3.03	Organic	PCB-1260	0/1	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.03	Organic	Pentachlorophenol	0/1	7.1E-01	7.1E-01		7.1E-01	mg/kg	ND
3.03	Organic	Phenanthrene	1-Jan	3.8E-01	3.8E-01	3.8E-01	3.8E-01	mg/kg	-
3.03	Organic	Phenol	1-Jan	2.1E-01	2.1E-01	2.1E-01	2.1E-01	mg/kg	+
3.03	Organic	Pyrene	1-Jan	3.0E-01	3.0E-01	3.0E-01	3.0E-01	mg/kg	+
3.03	Organic	Total combustible organics (TCO)	1-Jan	8.9E+04	8.9E+04	8.9E+04	8.9E+04	mg/kg	-
3.03	Organic	Total organic carbon (TOC)	1-Jan	1.7E+04	1.7E+04	1.7E+04	1.7E+04	mg/kg	-
3.03	Organic	Toxaphene	0/1	6.1E-02	6.1E-02		6.1E-02	mg/kg	ND
3.03	Organic	alpha-BHC	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	alpha-Chlordane	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	beta-BHC	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Organic	delta-BHC	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	-
3.03	Organic	gamma-Chlordane	0/1	6.1E-04	6.1E-04		6.1E-04	mg/kg	ND
3.03	Radionuclide	Cesium-137	1-Jan	1.2E+00	1.2E+00	1.2E+00	1.2E+00	pCi/g	+
3.03	Radionuclide	Cobalt-60	0/1	1.1E-01	1.1E-01		1.1E-01	pCi/g	ND
3.03	Radionuclide	Strontium-90	0/1	1.0E+00	1.0E+00		1.0E+00	pCi/g	ND
3.03	Radionuclide	Technetium-99	0/1	3.5E+00	3.5E+00		3.5E+00	pCi/g	ND
3.03	Radionuclide	Uranium-234	1-Jan	3.5E+00	3.5E+00	3.5E+00	3.5E+00	pCi/g	+
3.03	Radionuclide	Uranium-235	1-Jan	1.7E-01	1.7E-01	1.7E-01	1.7E-01	pCi/g	+
3.03	Radionuclide	Uranium-238	1-Jan	2.0E+00	2.0E+00	2.0E+00	2.0E+00	pCi/g	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Inorganic	Aluminum	3-Mar	1.1E+04	2.0E+04	1.6E+04	2.0E+04	mg/kg	+
3.04	Inorganic	Antimony	0/3	2.8E-01	5.2E-01		5.2E-01	mg/kg	ND
3.04	Inorganic	Arsenic	3-Mar	5.3E+00	9.4E+01	4.1E+01	9.4E+01	mg/kg	+
3.04	Inorganic	Barium	3-Mar	1.0E+02	2.9E+02	2.0E+02	2.9E+02	mg/kg	+
3.04	Inorganic	Beryllium	3-Mar	7.5E-01	1.7E+00	1.2E+00	1.7E+00	mg/kg	+
3.04	Inorganic	Boron	3-Mar	1.4E+01	4.4E+01	2.4E+01	4.4E+01	mg/kg	+
3.04	Inorganic	Cadmium	3-Mar	7.9E-01	5.6E+00	2.4E+00	5.6E+00	mg/kg	+
3.04	Inorganic	Calcium	3-Mar	2.2E+03	6.4E+03	4.2E+03	6.4E+03	mg/kg	-
3.04	Inorganic	Chromium	3-Mar	2.4E+01	3.9E+01	3.4E+01	3.9E+01	mg/kg	+
3.04	Inorganic	Cobalt	3-Mar	1.5E+01	1.8E+01	1.7E+01	1.8E+01	mg/kg	+
3.04	Inorganic	Copper	3-Mar	2.4E+01	6.8E+01	5.2E+01	6.8E+01	mg/kg	-
3.04	Inorganic	Iron	3-Mar	2.1E+04	3.6E+04	2.8E+04	3.6E+04	mg/kg	+
3.04	Inorganic	Kjeldahl nitrogen	3-Mar	1.8E+02	4.4E+02	2.9E+02	4.4E+02	mg/kg	-
3.04	Inorganic	Lead	3-Mar	2.1E+01	2.7E+01	2.5E+01	2.7E+01	mg/kg	-
3.04	Inorganic	Magnesium	3-Mar	1.7E+03	2.1E+03	1.9E+03	2.1E+03	mg/kg	+
3.04	Inorganic	Manganese	3-Mar	5.9E+02	7.4E+02	6.6E+02	7.4E+02	mg/kg	+
3.04	Inorganic	Mercury	3-Mar	4.5E+00	2.6E+01	1.2E+01	2.6E+01	mg/kg	+
3.04	Inorganic	Molybdenum	0/3	4.1E-01	5.3E+00		5.3E+00	mg/kg	ND
3.04	Inorganic	Nickel	3-Mar	3.4E+01	5.1E+01	4.4E+01	5.1E+01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Inorganic	Potassium	3-Mar	1.2E+03	2.4E+03	1.8E+03	2.4E+03	mg/kg	-
3.04	Inorganic	Selenium	3-Feb	7.4E-01	1.6E+00	1.0E+00	1.6E+00	mg/kg	+
3.04	Inorganic	Silver	3-Mar	6.4E-01	1.4E+00	9.8E-01	1.4E+00	mg/kg	+
3.04	Inorganic	Sodium	3-Mar	7.5E+01	3.0E+02	1.8E+02	3.0E+02	mg/kg	-
3.04	Inorganic	Thallium	3-Feb	2.1E-01	7.2E-01	3.8E-01	7.2E-01	mg/kg	+
3.04	Inorganic	Uranium	3-Mar	3.4E+00	1.6E+01	8.5E+00	1.6E+01	mg/kg	+
3.04	Inorganic	Vanadium	3-Mar	1.8E+01	5.9E+01	3.8E+01	5.9E+01	mg/kg	+
3.04	Inorganic	Zinc	3-Mar	9.3E+01	1.2E+02	1.0E+02	1.2E+02	mg/kg	+
3.04	Organic	1,2,4-Trichlorobenzene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	1,2-Dichlorobenzene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	1,3-Dichlorobenzene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	1,4-Dichlorobenzene	3-Jan	2.3E-01	2.8E-01	2.3E-01	2.8E-01	mg/kg	+
3.04	Organic	2,2'-oxybis(1-chloropropane)	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2,4,5-Trichlorophenol	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	2,4,6-Trichlorophenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2,4-Dichlorophenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2,4-Dimethylphenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2,4-Dinitrophenol	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	2,4-Dinitrotoluene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	2,6-Dinitrotoluene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2-Chloronaphthalene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2-Chlorophenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2-Methyl-4,6-dinitrophenol	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	2-Methylnaphthalene	3-Mar	4.3E-02	2.6E-01	1.2E-01	2.6E-01	mg/kg	+
3.04	Organic	2-Methylphenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	2-Nitroaniline	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	2-Nitrophenol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	3,3'-Dichlorobenzidine	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	3-Nitroaniline	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	4,4'-DDD	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	4,4'-DDE	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	4,4'-DDT	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	4-Bromophenyl phenyl ether	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	4-Chloro-3-methylphenol	3-Jan	1.9E-01	2.8E-01	1.9E-01	2.8E-01	mg/kg	-
3.04	Organic	4-Chlorobenzenamine	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	4-Chlorophenylphenyl ether	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	4-Methylphenol	3-Jan	2.5E-01	2.8E-01	2.8E-01	2.8E-01	mg/kg	+
3.04	Organic	4-Nitroaniline	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	4-Nitrophenol	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	Acenaphthene	3-Mar	1.5E-01	1.9E-01	1.7E-01	1.9E-01	mg/kg	+
3.04	Organic	Acenaphthylene	3-Feb	1.7E-01	2.8E-01	1.8E-01	2.1E-01	mg/kg	+
3.04	Organic	Aldrin	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	Anthracene	3-Jan	1.5E-01	2.5E-01	1.5E-01	2.5E-01	mg/kg	+
3.04	Organic	Benzo(a)anthracene	3-Mar	9.0E-02	1.7E-01	1.2E-01	1.7E-01	mg/kg	+
3.04	Organic	Benzo(a)pyrene	3-Mar	8.4E-02	2.2E-01	1.3E-01	2.2E-01	mg/kg	+
3.04	Organic	Benzo(b)fluoranthene	3-Mar	1.1E-01	2.3E-01	1.7E-01	2.3E-01	mg/kg	+
3.04	Organic	Benzo(ghi)perylene	3-Feb	9.6E-02	2.5E-01	1.3E-01	2.4E-01	mg/kg	-
3.04	Organic	Benzo(k)fluoranthene	3-Jan	3.7E-02	2.5E-01	3.7E-02	2.5E-01	mg/kg	+
3.04	Organic	Benzoic acid	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND
3.04	Organic	Benzyl alcohol	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Bis(2-chloroethoxy)methane	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Bis(2-chloroethyl) ether	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Bis(2-ethylhexyl)phthalate	3-Feb	1.0E-01	9.5E-01	3.9E-01	9.5E-01	mg/kg	+
3.04	Organic	Butylbenzylphthalate	3-Feb	1.7E-01	2.5E-01	2.0E-01	2.5E-01	mg/kg	+
3.04	Organic	Carbazole	3-Jan	6.1E-02	2.5E-01	6.1E-02	2.5E-01	mg/kg	+
3.04	Organic	Chlordane, total	0/3	1.0E-03	1.2E-03		1.2E-03	mg/kg	ND
3.04	Organic	Chrysene	3-Mar	9.3E-02	1.4E-01	1.2E-01	1.4E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Di-n-butylphthalate	0/3	2.9E-01	6.0E-01		6.0E-01	mg/kg	ND
3.04	Organic	Di-n-octylphthlate	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Dibenz(a,h)anthracene	3-Jan	2.0E-02	2.5E-01	2.0E-02	2.5E-01	mg/kg	+
3.04	Organic	Dibenzofuran	3-Feb	6.9E-02	2.5E-01	1.5E-01	2.5E-01	mg/kg	-
3.04	Organic	Dieldrin	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Diethylphthalate	3-Feb	9.6E-02	2.8E-01	1.7E-01	2.8E-01	mg/kg	+
3.04	Organic	Dimethylphthalate	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Endosulfan	0/3	1.5E-03	1.7E-03		1.7E-03	mg/kg	ND
3.04	Organic	Endosulfan I	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	Endosulfan II	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Endosulfan sulfate	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Endrin	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Endrin aldehyde	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Endrin ketone	0/3	9.9E-04	1.1E-03		1.1E-03	mg/kg	ND
3.04	Organic	Fluoranthene	3-Mar	9.0E-02	2.3E-01	1.6E-01	2.3E-01	mg/kg	+
3.04	Organic	Fluorene	3-Feb	2.9E-02	2.5E-01	1.3E-01	2.5E-01	mg/kg	+
3.04	Organic	Heptachlor	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	Heptachlor epoxide	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	Hexachlorobenzene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Hexachlorobutadiene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Hexachlorocyclopentadiene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Hexachloroethane	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Indeno(1,2,3-cd)pyrene	3-Feb	7.6E-02	2.5E-01	1.2E-01	2.5E-01	mg/kg	+
3.04	Organic	Isophorone	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Lindane	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	Methoxychlor	0/3	5.1E-03	5.8E-03		5.8E-03	mg/kg	ND
3.04	Organic	N-Nitroso-di-n-propylamine	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	N-Nitrosodiphenylamine	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	Naphthalene	3-Mar	1.3E-01	2.0E-01	1.6E-01	2.0E-01	mg/kg	-
3.04	Organic	Nitrobenzene	0/3	2.5E-01	2.8E-01		2.8E-01	mg/kg	ND
3.04	Organic	PCB-1016	0/3	9.9E-03	1.1E-02		1.1E-02	mg/kg	ND
3.04	Organic	PCB-1221	0/3	2.0E-02	2.3E-02		2.3E-02	mg/kg	ND
3.04	Organic	PCB-1232	0/3	9.9E-03	1.1E-02		1.1E-02	mg/kg	ND
3.04	Organic	PCB-1242	0/3	9.9E-03	1.1E-02		1.1E-02	mg/kg	ND
3.04	Organic	PCB-1248	3-Feb	1.1E-02	6.5E-02	3.4E-02	6.5E-02	mg/kg	+
3.04	Organic	PCB-1254	3-Mar	5.5E-03	1.8E-01	7.8E-02	1.8E-01	mg/kg	+
3.04	Organic	PCB-1260	3-Mar	3.3E-02	1.3E-01	6.5E-02	1.3E-01	mg/kg	+
3.04	Organic	Pentachlorophenol	0/3	5.9E-01	6.8E-01		6.8E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3.04	Organic	Phenanthrene	3-Mar	7.0E-02	2.4E-01	1.4E-01	2.4E-01	mg/kg	-
3.04	Organic	Phenol	3-Jan	6.8E-02	2.5E-01	6.8E-02	2.5E-01	mg/kg	+
3.04	Organic	Pyrene	3-Mar	1.0E-01	2.1E-01	1.6E-01	2.1E-01	mg/kg	+
3.04	Organic	Total combustible organics (TCO)	3-Mar	4.1E+04	7.5E+04	5.6E+04	7.5E+04	mg/kg	-
3.04	Organic	Total organic carbon (TOC)	1-Jan	1.3E+04	1.3E+04	1.3E+04	1.3E+04	mg/kg	-
3.04	Organic	Toxaphene	0/3	5.1E-02	5.8E-02		5.8E-02	mg/kg	ND
3.04	Organic	alpha-BHC	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	alpha-Chlordane	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	beta-BHC	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Organic	delta-BHC	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	-
3.04	Organic	gamma-Chlordane	0/3	5.1E-04	5.8E-04		5.8E-04	mg/kg	ND
3.04	Radionuclide	Cesium-137	3-Mar	1.3E+00	7.9E+00	5.4E+00	7.9E+00	pCi/g	+
3.04	Radionuclide	Cobalt-60	3-Jan	1.4E-01	1.9E-01	1.4E-01	1.9E-01	pCi/g	+
3.04	Radionuclide	Strontium-90	0/3	9.6E-01	1.3E+00		1.3E+00	pCi/g	ND
3.04	Radionuclide	Technetium-99	3-Feb	3.6E+00	3.8E+00	3.7E+00	3.8E+00	pCi/g	+
3.04	Radionuclide	Uranium-234	3-Mar	1.5E+00	6.1E+00	4.1E+00	6.1E+00	pCi/g	+
3.04	Radionuclide	Uranium-235	3-Mar	1.1E-01	3.7E-01	2.4E-01	3.7E-01	pCi/g	+
3.04	Radionuclide	Uranium-238	3-Mar	8.8E-01	5.0E+00	3.5E+00	5.0E+00	pCi/g	+
4.01	Inorganic	Aluminum	2-Feb	6.9E+03	1.2E+04	9.4E+03	1.2E+04	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Inorganic	Antimony	0/3	3.1E-01	5.1E-01		5.1E-01	mg/kg	ND
4.01	Inorganic	Arsenic	3-Mar	2.3E+00	1.0E+01	5.4E+00	1.0E+01	mg/kg	+
4.01	Inorganic	Barium	2-Feb	6.2E+01	7.9E+01	7.0E+01	7.9E+01	mg/kg	+
4.01	Inorganic	Beryllium	3-Mar	5.0E-01	7.7E-01	6.4E-01	7.7E-01	mg/kg	+
4.01	Inorganic	Boron	2-Feb	5.1E+00	7.5E+00	6.3E+00	7.5E+00	mg/kg	+
4.01	Inorganic	Cadmium	3-Mar	1.7E-01	6.5E-01	3.6E-01	6.5E-01	mg/kg	+
4.01	Inorganic	Calcium	2-Feb	2.1E+03	2.4E+03	2.2E+03	2.4E+03	mg/kg	-
4.01	Inorganic	Chromium	3-Mar	1.5E+01	1.8E+01	1.7E+01	1.8E+01	mg/kg	+
4.01	Inorganic	Cobalt	2-Feb	7.0E+00	8.6E+00	7.8E+00	8.6E+00	mg/kg	+
4.01	Inorganic	Copper	3-Mar	6.2E+00	2.1E+01	1.2E+01	2.1E+01	mg/kg	-
4.01	Inorganic	Iron	2-Feb	1.2E+04	1.5E+04	1.3E+04	1.5E+04	mg/kg	+
4.01	Inorganic	Kjeldahl nitrogen	2-Feb	2.7E+02	4.1E+02	3.4E+02	4.1E+02	mg/kg	-
4.01	Inorganic	Lead	3-Mar	1.2E+01	1.6E+01	1.4E+01	1.6E+01	mg/kg	-
4.01	Inorganic	Magnesium	2-Feb	1.6E+03	2.1E+03	1.8E+03	2.1E+03	mg/kg	+
4.01	Inorganic	Manganese	2-Feb	2.9E+02	8.4E+02	5.7E+02	8.4E+02	mg/kg	+
4.01	Inorganic	Mercury	3-Mar	3.3E-01	1.2E+01	4.6E+00	1.2E+01	mg/kg	+
4.01	Inorganic	Molybdenum	0/2	8.5E-01	8.7E-01		8.7E-01	mg/kg	ND
4.01	Inorganic	Nickel	3-Mar	1.2E+01	2.0E+01	1.6E+01	2.0E+01	mg/kg	+
4.01	Inorganic	Potassium	2-Feb	9.2E+02	1.6E+03	1.3E+03	1.6E+03	mg/kg	-

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Inorganic	Selenium	3-Jan	1.9E-01	3.8E-01	2.1E-01	3.8E-01	mg/kg	+
4.01	Inorganic	Silver	3-Mar	5.0E-02	1.8E+00	6.4E-01	1.8E+00	mg/kg	+
4.01	Inorganic	Sodium	2-Feb	3.1E+01	4.1E+01	3.6E+01	4.1E+01	mg/kg	-
4.01	Inorganic	Thallium	0/3	1.2E-01	3.1E-01		3.1E-01	mg/kg	ND
4.01	Inorganic	Uranium	2-Feb	3.9E-01	7.1E-01	5.5E-01	7.1E-01	mg/kg	+
4.01	Inorganic	Vanadium	2-Feb	1.2E+01	1.6E+01	1.4E+01	1.6E+01	mg/kg	+
4.01	Inorganic	Zinc	3-Mar	4.6E+01	6.5E+01	5.7E+01	6.5E+01	mg/kg	+
4.01	Organic	1,2,4-Trichlorobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	1,2-Dichlorobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	1,3-Dichlorobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	1,4-Dichlorobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,2'-oxybis(1-chloropropane)	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,4,5-Trichlorophenol	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	2,4,6-Trichlorophenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,4-Dichlorophenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,4-Dimethylphenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,4-Dinitrophenol	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	2,4-Dinitrotoluene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2,6-Dinitrotoluene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	2-Chloronaphthalene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2-Chlorophenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2-Methyl-4,6-dinitrophenol	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	2-Methylnaphthalene	3-Feb	7.9E-02	5.0E-01	1.3E-01	2.6E-01	mg/kg	+
4.01	Organic	2-Methylphenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	2-Nitroaniline	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	2-Nitrophenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	3,3'-Dichlorobenzidine	0/3	2.1E-01	9.9E-01		9.9E-01	mg/kg	ND
4.01	Organic	3-Nitroaniline	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	4,4'-DDD	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	4,4'-DDE	0/3	8.4E-04	2.1E-01.		2.1E-01	mg/kg	ND
4.01	Organic	4,4'-DDT	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	4-Bromophenyl phenyl ether	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	4-Chloro-3-methylphenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	4-Chlorobenzenamine	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	4-Chlorophenylphenyl ether	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	4-Methylphenol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	4-Nitroaniline	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	4-Nitrophenol	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Acenaphthene	3-Jan	1.2E-01	5.0E-01	1.2E-01	5.0E-01	mg/kg	+
4.01	Organic	Acenaphthylene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Aldrin	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	Anthracene	3-Jan	1.2E-01	5.0E-01	1.2E-01	5.0E-01	mg/kg	+
4.01	Organic	Benzo(a)anthracene	3-Jan	9.2E-02	5.0E-01	9.2E-02	5.0E-01	mg/kg	+
4.01	Organic	Benzo(a)pyrene	3-Jan	6.9E-02	5.0E-01	6.9E-02	5.0E-01	mg/kg	+
4.01	Organic	Benzo(b)fluoranthene	3-Jan	1.2E-01	5.0E-01	1.2E-01	5.0E-01	mg/kg	+
4.01	Organic	Benzo(ghi)perylene	3-Jan	6.2E-02	5.0E-01	6.2E-02	5.0E-01	mg/kg	-
4.01	Organic	Benzo(k)fluoranthene	3-Jan	1.7E-01	5.0E-01	1.7E-01	5.0E-01	mg/kg	+
4.01	Organic	Benzoic acid	0/3	5.1E-01	2.4E+00		2.4E+00	mg/kg	ND
4.01	Organic	Benzyl alcohol	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Bis(2-chloroethoxy)methane	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Bis(2-chloroethyl) ether	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Bis(2-ethylhexyl)phthalate	3-Mar	2.0E-02	9.7E-01	3.4E-01	9.7E-01	mg/kg	+
4.01	Organic	Butylbenzylphthalate	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Carbazole	2-Jan	1.2E-01	2.2E-01	1.2E-01	2.2E-01	mg/kg	+
4.01	Organic	Chlordane, total	0/3	8.7E-04	2.1E+00		2.1E+00	mg/kg	ND
4.01	Organic	Chrysene	3-Feb	8.2E-02	5.0E-01	1.3E-01	2.6E-01	mg/kg	+
4.01	Organic	Di-n-butylphthalate	0/3	2.2E-01	5.0E-01		5.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Di-n-octylphthlate	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Dibenz(a,h)anthracene	3-Jan	1.2E-01	5.0E-01	1.2E-01	5.0E-01	mg/kg	+
4.01	Organic	Dibenzofuran	3-Jan	5.5E-02	5.0E-01	5.5E-02	5.0E-01	mg/kg	-
4.01	Organic	Dieldrin	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	Diethylphthalate	0/3	2.3E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Dimethylphthalate	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Endosulfan	0/3	1.3E-03	3.1E-01		3.1E-01	mg/kg	ND
4.01	Organic	Endosulfan I	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	Endosulfan II	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	Endosulfan sulfate	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	Endrin	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	Endrin aldehyde	0/2	8.4E-04	9.0E-04		9.0E-04	mg/kg	ND
4.01	Organic	Endrin ketone	0/3	8.4E-04	2.1E-01		2.1E-01	mg/kg	ND
4.01	Organic	Fluoranthene	3-Mar	1.7E-01	4.9E-01	2.8E-01	4.9E-01	mg/kg	+
4.01	Organic	Fluorene	3-Jan	1.5E-01	5.0E-01	1.5E-01	5.0E-01	mg/kg	+
4.01	Organic	Heptachlor	3-Feb	6.9E-04	1.0E-01	8.0E-04	1.1E-03	mg/kg	+
4.01	Organic	Heptachlor epoxide	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	Hexachlorobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Hexachlorobutadiene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Hexachlorocyclopentadiene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Hexachloroethane	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Indeno(1,2,3-cd)pyrene	3-Jan	6.9E-02	5.0E-01	6.9E-02	5.0E-01	mg/kg	+
4.01	Organic	Isophorone	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Lindane	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	Methoxychlor	0/3	4.3E-03	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	N-Nitroso-di-n-propylamine	3-Jan	2.1E-01	5.0E-01	5.0E-01	5.0E-01	mg/kg	+
4.01	Organic	N-Nitrosodiphenylamine	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	Naphthalene	3-Feb	1.6E-02	5.0E-01	3.3E-02	8.4E-02	mg/kg	-
4.01	Organic	Nitrobenzene	0/3	2.1E-01	5.0E-01		5.0E-01	mg/kg	ND
4.01	Organic	PCB-1016	0/3	8.4E-03	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	PCB-1221	0/3	1.7E-02	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	PCB-1232	0/3	8.4E-03	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	PCB-1242	0/3	8.4E-03	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	PCB-1248	0/3	8.4E-03	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	PCB-1254	3-Mar	8.4E-03	4.0E-01	1.5E-01	4.0E-01	mg/kg	+
4.01	Organic	PCB-1260	3-Jan	9.0E-03	2.1E+00	1.5E-02	2.1E+00	mg/kg	+
4.01	Organic	Pentachlorophenol	3-Jan	4.4E-01	2.4E+00	4.4E-01	2.4E+00	mg/kg	+
4.01	Organic	Phenanthrene	3-Mar	1.3E-01	5.0E-01	2.7E-01	5.0E-01	mg/kg	-

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.01	Organic	Phenol	3-Jan	1.8E-01	5.0E-01	1.8E-01	5.0E-01	mg/kg	+
4.01	Organic	Pyrene	3-Mar	1.6E-01	4.9E-01	2.7E-01	4.9E-01	mg/kg	+
4.01	Organic	Total combustible organics (TCO)	2-Feb	4.1E+04	4.6E+04	4.4E+04	4.6E+04	mg/kg	-
4.01	Organic	Total organic carbon (TOC)	2-Feb	8.2E+03	9.7E+03	9.0E+03	9.7E+03	mg/kg	-
4.01	Organic	Toxaphene	0/3	4.3E-02	2.1E+00		2.1E+00	mg/kg	ND
4.01	Organic	alpha-BHC	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	alpha-Chlordane	0/3	4.3E-04	1.0E+00		1.0E+00	mg/kg	ND
4.01	Organic	beta-BHC	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	ND
4.01	Organic	delta-BHC	0/3	4.3E-04	1.0E-01		1.0E-01	mg/kg	-
4.01	Organic	gamma-Chlordane	0/3	4.3E-04	1.0E+00		1.0E+00	mg/kg	ND
4.01	Radionuclide	Cesium-137	4-Apr	1.0E-01	2.7E+01	7.6E+00	2.3E+01	pCi/g	+
4.01	Radionuclide	Cobalt-60	4-Feb	4.5E-02	1.3E-01	1.1E-01	1.3E-01	pCi/g	+
4.01	Radionuclide	Strontium-90	0/2	1.1E+00	1.3E+00		1.3E+00	pCi/g	ND
4.02	Inorganic	Aluminum	1-Jan	7.6E+03	7.6E+03	7.6E+03	7.6E+03	mg/kg	+
4.02	Inorganic	Antimony	0/1	3.3E-01	3.3E-01		3.3E-01	mg/kg	ND
4.02	Inorganic	Arsenic	1-Jan	1.1E+01	1.1E+01	1.1E+01	1.1E+01	mg/kg	+
4.02	Inorganic	Barium	1-Jan	1.1E+02	1.1E+02	1.1E+02	1.1E+02	mg/kg	+
4.02	Inorganic	Beryllium	1-Jan	6.7E-01	6.7E-01	6.7E-01	6.7E-01	mg/kg	+
4.02	Inorganic	Boron	1-Jan	3.5E+00	3.5E+00	3.5E+00	3.5E+00	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Inorganic	Cadmium	1-Jan	1.9E-01	1.9E-01	1.9E-01	1.9E-01	mg/kg	+
4.02	Inorganic	Calcium	1-Jan	1.5E+03	1.5E+03	1.5E+03	1.5E+03	mg/kg	-
4.02	Inorganic	Chromium	1-Jan	1.4E+01	1.4E+01	1.4E+01	1.4E+01	mg/kg	+
4.02	Inorganic	Cobalt	1-Jan	8.0E+00	8.0E+00	8.0E+00	8.0E+00	mg/kg	+
4.02	Inorganic	Copper	1-Jan	6.3E+00	6.3E+00	6.3E+00	6.3E+00	mg/kg	-
4.02	Inorganic	Iron	1-Jan	1.3E+04	1.3E+04	1.3E+04	1.3E+04	mg/kg	+
4.02	Inorganic	Kjeldahl nitrogen	1-Jan	3.9E+02	3.9E+02	3.9E+02	3.9E+02	mg/kg	-
4.02	Inorganic	Lead	1-Jan	9.7E+00	9.7E+00	9.7E+00	9.7E+00	mg/kg	-
4.02	Inorganic	Magnesium	1-Jan	1.2E+03	1.2E+03	1.2E+03	1.2E+03	mg/kg	+
4.02	Inorganic	Manganese	1-Jan	6.7E+02	6.7E+02	6.7E+02	6.7E+02	mg/kg	+
4.02	Inorganic	Mercury	1-Jan	3.4E-01	3.4E-01	3.4E-01	3.4E-01	mg/kg	+
4.02	Inorganic	Molybdenum	0/1	3.3E-01	3.3E-01		3.3E-01	mg/kg	ND
4.02	Inorganic	Nickel	1-Jan	1.3E+01	1.3E+01	1.3E+01	1.3E+01	mg/kg	+
4.02	Inorganic	Potassium	1-Jan	8.5E+02	8.5E+02	8.5E+02	8.5E+02	mg/kg	-
4.02	Inorganic	Selenium	0/1	3.1E-01	3.1E-01		3.1E-01	mg/kg	ND
4.02	Inorganic	Silver	1-Jan	4.0E-02	4.0E-02	4.0E-02	4.0E-02	mg/kg	+
4.02	Inorganic	Sodium	1-Jan	2.1E+01	2.1E+01	2.1E+01	2.1E+01	mg/kg	-
4.02	Inorganic	Thallium	0/1	2.5E-01	2.5E-01		2.5E-01	mg/kg	ND
4.02	Inorganic	Uranium	1-Jan	3.1E-01	3.1E-01	3.1E-01	3.1E-01	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Inorganic	Vanadium	1-Jan	1.2E+01	1.2E+01	1.2E+01	1.2E+01	mg/kg	+
4.02	Inorganic	Zinc	1-Jan	4.7E+01	4.7E+01	4.7E+01	4.7E+01	mg/kg	+
4.02	Organic	1,2,4-Trichlorobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	1,2-Dichlorobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	1,3-Dichlorobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	1,4-Dichlorobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,2'-oxybis(1-chloropropane)	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,4,5-Trichlorophenol	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	2,4,6-Trichlorophenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,4-Dichlorophenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,4-Dimethylphenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,4-Dinitrophenol	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	2,4-Dinitrotoluene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2,6-Dinitrotoluene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2-Chloronaphthalene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2-Chlorophenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	2-Methyl-4,6-dinitrophenol	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	2-Methylnaphthalene	1-Jan	2.8E-02	2.8E-02	2.8E-02	2.8E-02	mg/kg	+
4.02	Organic	2-Methylphenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	2-Nitroaniline	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	2-Nitrophenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	3,3'-Dichlorobenzidine	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	3-Nitroaniline	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	4,4'-DDD	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	4,4'-DDE	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	4,4'-DDT	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	4-Bromophenyl phenyl ether	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	4-Chloro-3-methylphenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	4-Chlorobenzenamine	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	4-Chlorophenylphenyl ether	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	4-Methylphenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	4-Nitroaniline	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	4-Nitrophenol	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	Acenaphthene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Acenaphthylene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Aldrin	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	Anthracene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Benzo(a)anthracene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	Benzo(a)pyrene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Benzo(b)fluoranthene	1-Jan	1.6E-02	1.6E-02	1.6E-02	1.6E-02	mg/kg	+
4.02	Organic	Benzo(ghi)perylene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	-
4.02	Organic	Benzo(k)fluoranthene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Benzoic acid	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	Benzyl alcohol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Bis(2-chloroethoxy)methane	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Bis(2-chloroethyl) ether	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Bis(2-ethylhexyl)phthalate	1-Jan	5.8E-02	5.8E-02	5.8E-02	5.8E-02	mg/kg	+
4.02	Organic	Butylbenzylphthalate	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Carbazole	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Chlordane, total	0/1	8.4E-04	8.4E-04		8.4E-04	mg/kg	ND
4.02	Organic	Chrysene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Di-n-butylphthalate	0/1	5.6E-01	5.6E-01		5.6E-01	mg/kg	ND
4.02	Organic	Di-n-octylphthlate	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Dibenz(a,h)anthracene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Dibenzofuran	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Dieldrin	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Diethylphthalate	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	Dimethylphthalate	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Endosulfan	0/1	1.2E-03	1.2E-03		1.2E-03	mg/kg	ND
4.02	Organic	Endosulfan I	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	Endosulfan II	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Endosulfan sulfate	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Endrin	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Endrin aldehyde	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Endrin ketone	0/1	8.2E-04	8.2E-04		8.2E-04	mg/kg	ND
4.02	Organic	Fluoranthene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Fluorene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Heptachlor	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	Heptachlor epoxide	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	Hexachlorobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Hexachlorobutadiene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Hexachlorocyclopentadiene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Hexachloroethane	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Indeno(1,2,3-cd)pyrene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Isophorone	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Lindane	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	Methoxychlor	0/1	4.2E-03	4.2E-03		4.2E-03	mg/kg	ND
4.02	Organic	N-Nitroso-di-n-propylamine	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	N-Nitrosodiphenylamine	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Naphthalene	1-Jan	1.6E-02	1.6E-02	1.6E-02	1.6E-02	mg/kg	-
4.02	Organic	Nitrobenzene	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	PCB-1016	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	PCB-1221	0/1	1.7E-02	1.7E-02		1.7E-02	mg/kg	ND
4.02	Organic	PCB-1232	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	PCB-1242	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	PCB-1248	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	PCB-1254	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	PCB-1260	0/1	8.2E-03	8.2E-03		8.2E-03	mg/kg	ND
4.02	Organic	Pentachlorophenol	0/1	4.9E-01	4.9E-01		4.9E-01	mg/kg	ND
4.02	Organic	Phenanthrene	1-Jan	1.9E-02	1.9E-02	1.9E-02	1.9E-02	mg/kg	-
4.02	Organic	Phenol	0/1	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
4.02	Organic	Pyrene	1-Jan	1.7E-02	1.7E-02	1.7E-02	1.7E-02	mg/kg	+
4.02	Organic	Total combustible organics (TCO)	1-Jan	2.2E+05	2.2E+05	2.2E+05	2.2E+05	mg/kg	-
4.02	Organic	Total organic carbon (TOC)	1-Jan	9.5E+03	9.5E+03	9.5E+03	9.5E+03	mg/kg	-
4.02	Organic	Toxaphene	0/1	4.2E-02	4.2E-02		4.2E-02	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.02	Organic	alpha-BHC	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	alpha-Chlordane	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	beta-BHC	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Organic	delta-BHC	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	-
4.02	Organic	gamma-Chlordane	0/1	4.2E-04	4.2E-04		4.2E-04	mg/kg	ND
4.02	Radionuclide	Cesium-137	1-Jan	4.0E-01	4.0E-01	4.0E-01	4.0E-01	pCi/g	+
4.02	Radionuclide	Cobalt-60	0/1	1.1E-01	1.1E-01		1.1E-01	pCi/g	ND
4.02	Radionuclide	Strontium-90	0/1	3.0E+00	3.0E+00		3.0E+00	pCi/g	ND
4.03	Inorganic	Aluminum	2-Feb	1.2E+04	1.5E+04	1.3E+04	1.5E+04	mg/kg	+
4.03	Inorganic	Antimony	0/2	4.1E-01	4.2E-01		4.2E-01	mg/kg	ND
4.03	Inorganic	Arsenic	2-Feb	5.3E+00	7.8E+00	6.6E+00	7.8E+00	mg/kg	+
4.03	Inorganic	Barium	2-Feb	1.0E+02	1.3E+02	1.2E+02	1.3E+02	mg/kg	+
4.03	Inorganic	Beryllium	2-Feb	7.7E-01	1.1E+00	9.3E-01	1.1E+00	mg/kg	+
4.03	Inorganic	Boron	2-Feb	3.6E+00	3.9E+00	3.8E+00	3.9E+00	mg/kg	+
4.03	Inorganic	Cadmium	2-Feb	5.5E-01	6.0E-01	5.8E-01	6.0E-01	mg/kg	+
4.03	Inorganic	Calcium	2-Feb	3.1E+03	4.4E+03	3.7E+03	4.4E+03	mg/kg	-
4.03	Inorganic	Chromium	2-Feb	3.1E+01	3.7E+01	3.4E+01	3.7E+01	mg/kg	+
4.03	Inorganic	Cobalt	2-Feb	1.4E+01	2.5E+01	2.0E+01	2.5E+01	mg/kg	+
4.03	Inorganic	Copper	2-Feb	2.3E+01	3.6E+01	2.9E+01	3.6E+01	mg/kg	-

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Inorganic	Iron	2-Feb	2.1E+04	2.6E+04	2.3E+04	2.6E+04	mg/kg	+
4.03	Inorganic	Kjeldahl nitrogen	2-Feb	9.3E+02	1.5E+03	1.2E+03	1.5E+03	mg/kg	-
4.03	Inorganic	Lead	2-Feb	3.0E+01	3.9E+01	3.4E+01	3.9E+01	mg/kg	-
4.03	Inorganic	Magnesium	2-Feb	2.4E+03	2.7E+03	2.6E+03	2.7E+03	mg/kg	+
4.03	Inorganic	Manganese	2-Feb	1.3E+03	1.6E+03	1.5E+03	1.6E+03	mg/kg	+
4.03	Inorganic	Mercury	2-Feb	3.2E+00	3.5E+00	3.4E+00	3.5E+00	mg/kg	+
4.03	Inorganic	Molybdenum	0/2	3.8E-01	4.4E-01		4.4E-01	mg/kg	ND
4.03	Inorganic	Nickel	2-Feb	3.1E+01	4.0E+01	3.6E+01	4.0E+01	mg/kg	+
4.03	Inorganic	Potassium	2-Feb	1.1E+03	1.4E+03	1.2E+03	1.4E+03	mg/kg	-
4.03	Inorganic	Selenium	2-Jan	3.5E-01	9.4E-01	3.5E-01	9.4E-01	mg/kg	+
4.03	Inorganic	Silver	2-Feb	3.9E-01	4.1E-01	4.0E-01	4.1E-01	mg/kg	+
4.03	Inorganic	Sodium	2-Feb	4.6E+01	4.7E+01	4.6E+01	4.7E+01	mg/kg	-
4.03	Inorganic	Thallium	0/2	2.8E-01	3.6E-01		3.6E-01	mg/kg	ND
4.03	Inorganic	Uranium	2-Feb	1.7E+00	2.2E+00	2.0E+00	2.2E+00	mg/kg	+
4.03	Inorganic	Vanadium	2-Feb	2.1E+01	2.7E+01	2.4E+01	2.7E+01	mg/kg	+
4.03	Inorganic	Zinc	2-Feb	9.0E+01	1.1E+02	1.0E+02	1.1E+02	mg/kg	+
4.03	Organic	1,2,4-Trichlorobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	1,2-Dichlorobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	1,3-Dichlorobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	1,4-Dichlorobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,2'-oxybis(1-chloropropane)	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,4,5-Trichlorophenol	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	2,4,6-Trichlorophenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,4-Dichlorophenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,4-Dimethylphenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,4-Dinitrophenol	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	2,4-Dinitrotoluene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2,6-Dinitrotoluene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2-Chloronaphthalene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2-Chlorophenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2-Methyl-4,6-dinitrophenol	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	2-Methylnaphthalene	2-Feb	9.4E-02	2.3E-01	1.6E-01	2.3E-01	mg/kg	+
4.03	Organic	2-Methylphenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	2-Nitroaniline	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	2-Nitrophenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	3,3'-Dichlorobenzidine	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	3-Nitroaniline	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	4,4'-DDD	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	4,4'-DDE	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	4,4'-DDT	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	4-Bromophenyl phenyl ether	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	4-Chloro-3-methylphenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	4-Chlorobenzenamine	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	4-Chlorophenylphenyl ether	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	4-Methylphenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	4-Nitroaniline	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	4-Nitrophenol	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	Acenaphthene	2-Jan	1.1E-01	2.7E-01	1.1E-01	2.7E-01	mg/kg	+
4.03	Organic	Acenaphthylene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Aldrin	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	Anthracene	2-Jan	1.1E-01	2.7E-01	1.1E-01	2.7E-01	mg/kg	+
4.03	Organic	Benzo(a)anthracene	2-Feb	6.6E-02	1.1E-01	8.9E-02	1.1E-01	mg/kg	+
4.03	Organic	Benzo(a)pyrene	2-Feb	4.1E-02	4.8E-01	2.6E-01	4.8E-01	mg/kg	+
4.03	Organic	Benzo(b)fluoranthene	2-Feb	7.6E-02	1.8E-01	1.3E-01	1.8E-01	mg/kg.	+
4.03	Organic	Benzo(ghi)perylene	2-Feb	3.8E-02	8.9E-02	6.3E-02	8.9E-02	mg/kg	-
4.03	Organic	Benzo(k)fluoranthene	2-Feb	2.2E-02	4.2E-02	3.2E-02	4.2E-02	mg/kg	+
4.03	Organic	Benzoic acid	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	Benzyl alcohol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Bis(2-chloroethoxy)methane	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Bis(2-chloroethyl) ether	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Bis(2-ethylhexyl)phthalate	2-Feb	6.7E-02	2.8E-01	1.8E-01	2.8E-01	mg/kg	+
4.03	Organic	Butylbenzylphthalate	2-Jan	1.9E-01	2.7E-01	1.9E-01	2.7E-01	mg/kg	+
4.03	Organic	Carbazole	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Chlordane, total	0/2	1.1E-03	1.2E-03		1.2E-03	mg/kg	ND
4.03	Organic	Chrysene	2-Feb	7.0E-02	1.3E-01	1.0E-01	1.3E-01	mg/kg	+
4.03	Organic	Di-n-butylphthalate	0/2	5.1E-01	6.2E-01		6.2E-01	mg/kg	ND
4.03	Organic	Di-n-octylphthlate	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Dibenz(a,h)anthracene	2-Jan	2.3E-02	2.7E-01	2.3E-02	2.7E-01	mg/kg	+
4.03	Organic	Dibenzofuran	2-Feb	2.3E-02	5.7E-02	4.0E-02	5.7E-02	mg/kg	-
4.03	Organic	Dieldrin	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Diethylphthalate	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Dimethylphthalate	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Endosulfan	0/2	1.7E-03	1.7E-03		1.7E-03	mg/kg	ND
4.03	Organic	Endosulfan I	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	Endosulfan II	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endosulfan sulfate	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	Endrin	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endrin aldehyde	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Endrin ketone	0/2	1.1E-03	1.1E-03		1.1E-03	mg/kg	ND
4.03	Organic	Fluoranthene	2-Feb	1.0E-01	1.6E-01	1.3E-01	1.6E-01	mg/kg	+
4.03	Organic	Fluorene	2-Jan	2.9E-02	2.7E-01	2.9E-02	2.7E-01	mg/kg	+
4.03	Organic	Heptachlor	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	Heptachlor epoxide	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	Hexachlorobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Hexachlorobutadiene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Hexachlorocyclopentadiene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Hexachloroethane	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Indeno(1,2,3-cd)pyrene	2-Feb	4.1E-02	8.9E-02	6.5E-02	8.9E-02	mg/kg	+
4.03	Organic	Isophorone	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Lindane	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	Methoxychlor	0/2	5.5E-03	6.0E-03		6.0E-03	mg/kg	ND
4.03	Organic	N-Nitroso-di-n-propylamine	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	N-Nitrosodiphenylamine	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Naphthalene	2-Feb	5.6E-02	1.1E-01	8.5E-02	1.1E-01	mg/kg	-
4.03	Organic	Nitrobenzene	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Organic	PCB-1016	0/2	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1221	0/2	2.2E-02	2.4E-02		2.4E-02	mg/kg	ND
4.03	Organic	PCB-1232	0/2	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1242	0/2	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1248	0/2	1.1E-02	1.1E-02		1.1E-02	mg/kg	ND
4.03	Organic	PCB-1254	2-Feb	3.0E-02	6.4E-02	4.7E-02	6.4E-02	mg/kg	+
4.03	Organic	PCB-1260	2-Feb	2.8E-02	3.4E-02	3.1E-02	3.4E-02	mg/kg	+
4.03	Organic	Pentachlorophenol	0/2	6.5E-01	7.0E-01		7.0E-01	mg/kg	ND
4.03	Organic	Phenanthrene	2-Feb	9.0E-02	2.0E-01	1.5E-01	2.0E-01	mg/kg	-
4.03	Organic	Phenol	0/2	2.7E-01	2.9E-01		2.9E-01	mg/kg	ND
4.03	Organic	Pyrene	2-Feb	1.0E-01	1.7E-01	1.4E-01	1.7E-01	mg/kg	+
4.03	Organic	Total combustible organics (TCO)	2-Feb	4.2E+05	4.8E+05	4.5E+05	4.8E+05	mg/kg	-
4.03	Organic	Total organic carbon (TOC)	2-Feb	1.9E+04	2.2E+04	2.0E+04	2.2E+04	mg/kg	-
4.03	Organic	Toxaphene	0/2	5.5E-02	6.0E-02		6.0E-02	mg/kg	ND
4.03	Organic	alpha-BHC	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	alpha-Chlordane	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	beta-BHC	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND
4.03	Organic	delta-BHC	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	-
4.03	Organic	gamma-Chlordane	0/2	5.5E-04	6.0E-04		6.0E-04	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.03	Radionuclide	Cesium-137	3-Mar	1.2E+01	1.8E+01	1.4E+01	1.8E+01	pCi/g	+
4.03	Radionuclide	Cobalt-60	3-Mar	2.8E-01	3.9E-01	3.3E-01	3.9E-01	pCi/g	+
4.03	Radionuclide	Strontium-90	0/2	1.2E+00	2.2E+00		2.2E+00	pCi/g	ND
4.04	Inorganic	Aluminum	11-Nov	7.4E+03	2.0E+04	1.5E+04	1.7E+04	mg/kg	+
4.04	Inorganic	Antimony	12-Jan	2.7E-01	7.8E-01	4.1E-01	7.8E-01	mg/kg	+
4.04	Inorganic	Arsenic	12-Dec	6.0E+00	1.2E+01	9.4E+00	1.0E+01	mg/kg	+
4.04	Inorganic	Barium	11-Nov	7.6E+01	1.5E+02	1.2E+02	1.4E+02	mg/kg	+
4.04	Inorganic	Beryllium	12-Dec	8.2E-01	1.4E+00	1.1E+00	1.2E+00	mg/kg	+
4.04	Inorganic	Boron	11-Nov	3.7E+00	7.3E+00	5.5E+00	6.1E+00	mg/kg	+
4.04	Inorganic	Cadmium	12-Dec	4.5E-01	1.4E+00	5.8E-01	7.3E-01	mg/kg	+
4.04	Inorganic	Calcium	11-Nov	1.8E+03	3.3E+03	2.8E+03	3.0E+03	mg/kg	-
4.04	Inorganic	Chromium	12-Dec	1.1E+01	3.3E+01	2.2E+01	2.6E+01	mg/kg	+
4.04	Inorganic	Cobalt	11-Nov	1.2E+01	2.6E+01	1.9E+01	2.2E+01	mg/kg	+
4.04	Inorganic	Copper	12-Dec	1.9E+01	5.3E+01	3.7E+01	4.3E+01	mg/kg	-
4.04	Inorganic	Iron	11-Nov	1.3E+04	3.1E+04	2.4E+04	2.7E+04	mg/kg	+
4.04	Inorganic	Kjeldahl nitrogen	11-Nov	7.8E+02	2.1E+03	1.7E+03	1.9E+03	mg/kg	-
4.04	Inorganic	Lead	12-Dec	1.5E+01	4.6E+01	3.0E+01	3.4E+01	mg/kg	-
4.04	Inorganic	Magnesium	11-Nov	1.3E+03	2.7E+03	2.0E+03	2.3E+03	mg/kg	+
4.04	Inorganic	Manganese	11-Nov	6.2E+02	2.0E+03	1.4E+03	1.7E+03	mg/kg	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Inorganic	Mercury	12-Dec	1.0E+00	5.6E+00	2.5E+00	3.1E+00	mg/kg	+
4.04	Inorganic	Molybdenum	0/11	8.9E-01	1.3E+00		1.3E+00	mg/kg	ND
4.04	Inorganic	Nickel	12-Dec	2.1E+01	4.0E+01	3.2E+01	3.6E+01	mg/kg	+
4.04	Inorganic	Potassium	11-Nov	4.8E+02	1.7E+03	1.2E+03	1.4E+03	mg/kg	-
4.04	Inorganic	Selenium	12-Aug	1.8E-01	1.2E+00	6.3E-01	8.4E-01	mg/kg	+
4.04	Inorganic	Silver	11-Nov	2.0E-01	1.0E+00	3.9E-01	5.1E-01	mg/kg	+
4.04	Inorganic	Sodium	11-Nov	4.0E+01	7.6E+01	6.2E+01	6.8E+01	mg/kg	-
4.04	Inorganic	Thallium	0/12	1.1E-01	4.1E-01		4.1E-01	mg/kg	ND
4.04	Inorganic	Uranium	11-Nov	9.5E-01	2.2E+00	1.5E+00	1.7E+00	mg/kg	+
4.04	Inorganic	Vanadium	11-Nov	1.6E+01	3.3E+01	2.6E+01	2.9E+01	mg/kg	+
4.04	Inorganic	Zinc	12-Dec	9.2E+01	1.6E+02	1.3E+02	1.4E+02	mg/kg	+
4.04	Organic	1,2,4-Trichlorobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	1,2-Dichlorobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	1,3-Dichlorobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	1,4-Dichlorobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2,2'-oxybis(1-chloropropane)	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2,4,5-Trichlorophenol	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	2,4,6-Trichlorophenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2,4-Dichlorophenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Organic	2,4-Dimethylphenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2,4-Dinitrophenol	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	2,4-Dinitrotoluene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2,6-Dinitrotoluene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2-Chloronaphthalene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2-Chlorophenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2-Methyl-4,6-dinitrophenol	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	2-Methylnaphthalene	12-Nov	6.5E-02	3.5E+00	2.2E-01	3.5E-01	mg/kg	+
4.04	Organic	2-Methylphenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	2-Nitroaniline	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	2-Nitrophenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	3,3'-Dichlorobenzidine	0/12	8.9E-01	7.0E+00		7.0E+00	mg/kg	ND
4.04	Organic	3-Nitroaniline	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	4,4'-DDD	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	4,4'-DDE	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	4,4'-DDT	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg.	ND
4.04	Organic	4-Bromophenyl phenyl ether	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	4-Chloro-3-methylphenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	4-Chlorobenzenamine	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Organic	4-Chlorophenylphenyl ether	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	4-Methylphenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	4-Nitroaniline	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	4-Nitrophenol	0/12	2.2E+00	1.6E+01		1.6E+01	mg/kg	ND
4.04	Organic	Acenaphthene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Acenaphthylene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Aldrin	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	Anthracene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Benzo(a)anthracene	12-Oct	6.7E-02	3.5E+00	1.7E-01	3.0E-01	mg/kg	+
4.04	Organic	Benzo(a)pyrene	12-Aug	5.7E-02	3.5E+00	7.7E-01	1.0E+00	mg/kg	+
4.04	Organic	Benzo(b)fluoranthene	12-Nov	8.5E-02	3.5E+00	1.4E-01	1.6E-01	mg/kg	+
4.04	Organic	Benzo(ghi)perylene	12-Jun	7.1E-02	3.5E+00	3.5E-01	5.9E-01	mg/kg	-
4.04	Organic	Benzo(k)fluoranthene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Benzoic acid	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	Benzyl alcohol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Bis(2-chloroethoxy)methane	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Bis(2-chloroethyl) ether	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Bis(2-ethylhexyl)phthalate	12-Aug	7.0E-02	1.9E+00	1.0E-01	1.2E-01	mg/kg	+
4.04	Organic	Butylbenzylphthalate	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Organic	Carbazole	0/11	8.9E-01	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Chlordane, total	0/12	1.2E-03	1.3E+01		1.3E+01	mg/kg	ND
4.04	Organic	Chrysene	12-Aug	6.6E-02	3.5E+00	1.1E-01	1.3E-01	mg/kg	+
4.04	Organic	Di-n-butylphthalate	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Di-n-octylphthlate	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Dibenz(a,h)anthracene	12-Jan	4.1E-01	3.5E+00	4.1E-01	3.5E+00	mg/kg	+
4.04	Organic	Dibenzofuran	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Dieldrin	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Diethylphthalate	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Dimethylphthalate	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Endosulfan	0/12	1.7E-03	1.9E+00		1.9E+00	mg/kg	ND
4.04	Organic	Endosulfan I	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	Endosulfan II	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Endosulfan sulfate	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Endrin	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Endrin aldehyde	0/11	1.1E-03	1.4E-03		1.4E-03	mg/kg	ND
4.04	Organic	Endrin ketone	0/12	1.1E-03	1.2E+00		1.2E+00	mg/kg	ND
4.04	Organic	Fluoranthene	12-Nov	9.2E-02	3.5E+00	1.4E-01	1.6E-01	mg/kg	+
4.04	Organic	Fluorene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Organic	Heptachlor	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	Heptachlor epoxide	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	Hexachlorobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Hexachlorobutadiene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Hexachlorocyclopentadiene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Hexachloroethane	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Indeno(1,2,3-cd)pyrene	12-Feb	4.5E-01	3.5E+00	6.3E-01	9.6E-01	mg/kg	+
4.04	Organic	Isophorone	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Lindane	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	Methoxychlor	0/12	6.0E-03	6.2E+00		6.2E+00	mg/kg	ND
4.04	Organic	N-Nitroso-di-n-propylamine	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	N-Nitrosodiphenylamine	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Naphthalene	12-Aug	4.5E-02	3.5E+00	2.1E-01	3.7E-01	mg/kg	-
4.04	Organic	Nitrobenzene	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	PCB-1016	0/12	1.1E-02	6.3E+00		6.3E+00	mg/kg	ND
4.04	Organic	PCB-1221	0/12	2.3E-02	6.3E+00		6.3E+00	mg/kg	ND
4.04	Organic	PCB-1232	0/12	1.1E-02	6.3E+00		6.3E+00	mg/kg	ND
4.04	Organic	PCB-1242	0/12	1.1E-02	6.3E+00		6.3E+00	mg/kg	ND
4.04	Organic	PCB-1248	0/12	1.1E-02	6.3E+00		6.3E+00	mg/kg	ND

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Organic	PCB-1254	12-Jan	1.1E-02	9.8E-01	9.8E-01	9.8E-01	mg/kg	+
4.04	Organic	PCB-1260	0/12	1.1E-02	1.2E+01		1.2E+01	mg/kg	ND
4.04	Organic	Pentachlorophenol	0/12	2.2E+00	1.7E+01		1.7E+01	mg/kg	ND
4.04	Organic	Phenanthrene	12-Nov	1.0E-01	3.5E+00	1.5E-01	1.8E-01	mg/kg	-
4.04	Organic	Phenol	0/12	8.9E-01	3.5E+00		3.5E+00	mg/kg	ND
4.04	Organic	Pyrene	12-Nov	9.9E-02	3.5E+00	1.6E-01	1.8E-01	mg/kg	+
4.04	Organic	Total combustible organics (TCO)	11-Nov	1.3E+04	5.4E+05	1.2E+05	2.0E+05	mg/kg	-
4.04	Organic	Total organic carbon (TOC)	11-Nov	2.1E+04	4.6E+04	2.6E+04	3.0E+04	mg/kg	-
4.04	Organic	Toxaphene	0/12	6.0E-02	1.3E+01		1.3E+01	mg/kg	ND
4.04	Organic	alpha-BHC	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	alpha-Chlordane	0/12	6.0E-04	6.3E+00		6.3E+00	mg/kg	ND
4.04	Organic	beta-BHC	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	ND
4.04	Organic	delta-BHC	0/12	6.0E-04	6.3E-01		6.3E-01	mg/kg	-
4.04	Organic	gamma-Chlordane	0/12	6.0E-04	6.3E+00		6.3E+00	mg/kg	ND
4.04	Radionuclide	Americium-241	1-Jan	2.0E-01	2.0E-01	2.0E-01	2.0E-01	pCi/g	+
4.04	Radionuclide	Cesium-137	12-Dec	1.9E+00	2.4E+01	8.8E+00	1.2E+01	pCi/g	+
4.04	Radionuclide	Cobalt-60	12-Sep	1.3E-01	3.0E-01	2.0E-01	2.3E-01	pCi/g	+
4.04	Radionuclide	Curium-243/244	1-Jan	2.0E-02	2.0E-02	2.0E-02	2.0E-02	pCi/g	+
4.04	Radionuclide	Curium-245/246	1-Jan	2.9E-02	2.9E-02	2.9E-02	2.9E-02	pCi/g	+

Table E.5. Summary statistics for deep-water sediment for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4.04	Radionuclide	Curium-248	1-Jan	2.7E-02	2.7E-02	2.7E-02	2.7E-02	pCi/g	+
4.04	Radionuclide	Plutonium-238	1-Jan	2.1E-02	2.1E-02	2.1E-02	2.1E-02	pCi/g	+
4.04	Radionuclide	Plutonium-239/240	1-Jan	2.6E-01	2.6E-01	2.6E-01	2.6E-01	pCi/g	+
4.04	Radionuclide	Strontium-90	12-Mar	3.6E-01	1.6E+00	5.6E-01	8.6E-01	pCi/g	+
4.04	Radionuclide	Uranium-234	1-Jan	2.2E+00	2.2E+00	2.2E+00	2.2E+00	pCi/g	+
4.04	Radionuclide	Uranium-235	1-Jan	1.2E-01	1.2E-01	1.2E-01	1.2E-01	pCi/g	+
4.04	Radionuclide	Uranium-238	1-Jan	1.9E+00	1.9E+00	1.9E+00	1.9E+00	pCi/g	+

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Bluegill	Inorganic	Antimony	0/10	4.6E-01	5.8E-01		5.8E-01	mg/kg	ND
1	Bluegill	Inorganic	Arsenic	10-May	5.0E-02	9.0E-02	6.2E-02	7.2E-02	mg/kg	+
1	Bluegill	Inorganic	Beryllium	10-Jan	3.0E-03	6.0E-03	6.0E-03	6.0E-03	mg/kg	+
1	Bluegill	Inorganic	Cadmium	0/10	1.8E-01	2.3E-01		2.3E-01	mg/kg	ND
1	Bluegill	Inorganic	Chromium	0/10	4.6E-01	5.8E-01		5.8E-01	mg/kg	ND
1	Bluegill	Inorganic	Copper	0/10	4.6E-01	5.8E-01		5.8E-01	mg/kg	-
1	Bluegill	Inorganic	Lead	0/10	4.6E-01	5.8E-01		5.8E-01	mg/kg	-
1	Bluegill	Inorganic	Mercury	10-Oct	1.9E-02	5.6E-02	3.7E-02	4.4E-02	mg/kg	+
1	Bluegill	Inorganic	Nickel	0/10	4.6E-01	5.8E-01		5.8E-01	mg/kg	ND
1	Bluegill	Inorganic	Selenium	10-Oct	6.7E-01	1.0E+00	8.6E-01	9.2E-01	mg/kg	+
1	Bluegill	Inorganic	Silver	0/10	1.8E-01	2.3E-01		2.3E-01	mg/kg	ND
1	Bluegill	Inorganic	Thallium	0/10	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
1	Bluegill	Inorganic	Zinc	10-Oct	5.2E+00	1.1E+01	7.1E+00	8.0E+00	mg/kg	+
1	Bluegill	Radionuclide	Cesium-137	2-Feb	2.6E-02	2.6E-02	2.6E-02	2.6E-02	pCi/g	+
1	Bluegill	Radionuclide	Cobalt-60	0/2	5.6E-02	6.5E-02		6.5E-02	pCi/g	ND
1	Catfish	Organic	1,2,4-Trichlorobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	1,2-Dichlorobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	1,3-Dichlorobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	1,4-Dichlorobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	3-Feb	1.0E-02	2.0E-02	1.3E-02	2.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	3-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	3-Mar	3.0E-02	5.0E-02	4.0E-02	5.0E-02	mg/kg	-
1	Catfish	Organic	2,2',3,4,5'-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,5',6-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,5'-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	3-Mar	1.1E-01	1.2E-01	1.2E-01	1.2E-01	mg/kg	-
1	Catfish	Organic	2,2',4,4',5-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',4,5'-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2',5,5'-Tetrachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,2',5-Trichlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,2'-oxybis(1-chloropropane)	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3',4',5-Tetrachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,3',4,4',5'-Pentachlorobiphenyl	3-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3',4,4',5-Pentachlorobiphenyl	3-Mar	1.0E-02	2.0E-02	1.3E-02	2.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	2,3',4,4'-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,3',4',6-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,3',4,4'-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	3-Jan	1.0E-02	4.0E-02	4.0E-02	4.0E-02	mg/kg	-
1	Catfish	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,3,4,4',5-Pentachlorobiphenyl	3-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
1	Catfish	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,4',5-Trichlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,4,4'-Trichlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	2,4,5,2',5'-Pentachlorobiphenyl	3-Mar	1.0E-02	2.0E-02	1.7E-02	2.0E-02	mg/kg	-
1	Catfish	Organic	2,4,5-Trichlorophenol	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	2,4,6-Trichlorophenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,4-Dichlorophenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,4-Dimethylphenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,4-Dinitrophenol	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	2,4-Dinitrotoluene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2,6-Dinitrotoluene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2-Chloronaphthalene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2-Chlorophenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2-Methyl-4,6-dinitrophenol	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	2-Methylnaphthalene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2-Methylphenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	2-Nitroaniline	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	2-Nitrophenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	3,3',4,4'-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	3,3'-Dichlorobenzidine	0/6	1.4E+00	1.7E+00		1.7E+00	mg/kg	ND
1	Catfish	Organic	3,4,4',5-Tetrachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	3,4,4'-Trichlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/3	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
1	Catfish	Organic	3-Nitroaniline	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	4,4'-DDD	0/8	2.6E-03	2.0E-01		2.0E-01	mg/kg	ND
1	Catfish	Organic	4,4'-DDE	8-Feb	1.0E-02	2.0E-01	3.3E-02	8.5E-02	mg/kg	+
1	Catfish	Organic	4,4'-DDT	0/8	1.0E-02	2.0E-01		2.0E-01	mg/kg	ND
1	Catfish	Organic	4-Bromophenyl phenyl ether	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	4-Chloro-3-methylphenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	4-Chlorobenzenamine	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	4-Chlorophenylphenyl ether	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	4-Methylphenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	4-Nitroaniline	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	4-Nitrophenol	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	Acenaphthene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Acenaphthylene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	Aldrin	0/8	1.0E-02	2.0E-01		2.0E-01	mg/kg	ND
1	Catfish	Organic	Anthracene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Benzo(a)anthracene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Benzo(a)pyrene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Benzo(b)fluoranthene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Benzo(ghi)perylene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	-
1	Catfish	Organic	Benzo(k)fluoranthene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Benzoic acid	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	Benzyl alcohol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Bis(2-chloroethoxy)methane	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Bis(2-chloroethyl) ether	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Bis(2-ethylhexyl)phthalate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Butylbenzylphthalate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Chlordane, total	11-Jul	2.2E-02	8.2E-01	2.0E-01	3.4E-01	mg/kg	+
1	Catfish	Organic	Chlordene	0/11	1.0E-02	2.0E-01		2.0E-01	mg/kg	ND
1	Catfish	Organic	Chrysene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Di-n-butylphthalate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Di-n-octylphthlate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Dibenz(a,h)anthracene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Dibenzofuran	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Diethylphthalate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Dimethylphthalate	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Fluoranthene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	Fluorene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Hexachlorobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Hexachlorobutadiene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Hexachlorocyclopentadiene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Hexachloroethane	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Indeno(1,2,3-cd)pyrene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Isophorone	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Lipids	3-Mar	5.9E+00	7.3E+00	6.8E+00	7.3E+00	PERCEN	-
1	Catfish	Organic	N-Nitroso-di-n-propylamine	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	N-Nitrosodiphenylamine	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Naphthalene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	-
1	Catfish	Organic	Nitrobenzene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	Oxychlordane	8-Feb	3.0E-04	2.0E-01	3.2E-03	4.4E-03	mg/kg	-
1	Catfish	Organic	PCB-1016	0/3	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
1	Catfish	Organic	PCB-1221	0/3	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
1	Catfish	Organic	PCB-1232	0/3	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
1	Catfish	Organic	PCB-1242	0/3	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
1	Catfish	Organic	PCB-1248	0/3	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
1	Catfish	Organic	PCB-1254	11-Nov	1.0E-02	1.6E-01	8.7E-02	1.1E-01	mg/kg	+
1	Catfish	Organic	PCB-1260	11-Nov	1.0E-01	5.4E-01	2.8E-01	3.7E-01	mg/kg	+
1	Catfish	Organic	Pentachlorophenol	0/6	3.4E+00	4.3E+00		4.3E+00	mg/kg	ND
1	Catfish	Organic	Phenanthrene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	-
1	Catfish	Organic	Phenol	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
1	Catfish	Organic	Pyrene	0/6	6.8E-01	8.7E-01		8.7E-01	mg/kg	ND
1	Catfish	Organic	alpha-Chlordane	8-Mar	3.0E-03	1.4E-02	6.2E-03	9.0E-03	mg/kg	-
1	Catfish	Organic	alpha-Chlordene	11-Mar	4.9E-04	2.0E-01	4.8E-03	9.6E-03	mg/kg	-
1	Catfish	Organic	cis-Nonachlor	3-Mar	1.0E-02	2.0E-02	1.7E-02	2.0E-02	mg/kg	-
1	Catfish	Organic	gamma-Chlordane	11-Mar	2.5E-03	2.0E-02	2.0E-02	2.0E-02	mg/kg	-
1	Catfish	Organic	gamma-Chlordene	11-Feb	1.3E-03	2.0E-01	1.9E-02	6.4E-02	mg/kg	-
1	Catfish	Organic	trans-Nonachlor	3-Mar	3.0E-02	5.0E-02	4.0E-02	5.0E-02	mg/kg	-
1	Catfish	Radionuclide	Cesium-137	8-Feb	3.9E-02	1.0E-01	5.4E-02	8.1E-02	pCi/g	+
1	Catfish	Radionuclide	Cobalt-60	0/8	2.1E-02	9.2E-02		9.2E-02	pCi/g	ND
1	LargeMouth Bass	Inorganic	Antimony	0/3	2.8E-01	3.8E-01		3.8E-01	mg/kg	ND
1	LargeMouth Bass	Inorganic	Arsenic	3-Mar	8.0E-02	1.8E-01	1.2E-01	1.8E-01	mg/kg	+
1	LargeMouth Bass	Inorganic	Cadmium	0/3	1.1E-01	1.5E-01		1.5E-01	mg/kg	ND
1	LargeMouth Bass	Inorganic	Chromium	0/3	2.8E-01	3.8E-01		3.8E-01	mg/kg	ND
1	LargeMouth Bass	Inorganic	Copper	0/3	2.8E-01	3.8E-01		3.8E-01	mg/kg	-
1	LargeMouth Bass	Inorganic	Lead	0/3	2.8E-01	3.8E-01		3.8E-01	mg/kg	-
1	LargeMouth Bass	Inorganic	Mercury	3-Mar	3.1E-02	7.4E-02	5.3E-02	7.4E-02	mg/kg	+
1	LargeMouth Bass	Inorganic	Nickel	0/3	2.8E-01	3.8E-01		3.8E-01	mg/kg	ND
1	LargeMouth Bass	Inorganic	Selenium	3-Feb	8.3E-01	1.1E+00	9.6E-01	1.1E+00	mg/kg	+
1	LargeMouth Bass	Inorganic	Silver	0/3	1.1E-01	1.5E-01		1.5E-01	mg/kg	ND
1	LargeMouth Bass	Inorganic	Thallium	0/3	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
1	LargeMouth Bass	Inorganic	Zinc	3-Mar	4.9E+00	6.1E+00	5.4E+00	6.1E+00	mg/kg	+
1	LargeMouth Bass	Radionuclide	Cesium-137	3-Mar	7.6E-03	1.5E-02	1.1E-02	1.5E-02	pCi/g	+
1	LargeMouth Bass	Radionuclide	Cobalt-60	0/3	1.5E-02	1.8E-02		1.8E-02	pCi/g	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Bluegill	Inorganic	Antimony	0/19	3.6E-01	6.0E-01		6.0E-01	mg/kg	ND
2	Bluegill	Inorganic	Arsenic	Jul-59	6.0E-03	1.3E-01	2.5E-02	3.0E-02	mg/kg	+
2	Bluegill	Inorganic	Beryllium	Jul-59	6.0E-04	4.0E-03	2.2E-03	2.3E-03	mg/kg	+
2	Bluegill	Inorganic	Cadmium	0/19	1.4E-01	2.4E-01		2.4E-01	mg/kg	ND
2	Bluegill	Inorganic	Chromium	0/19	3.6E-01	6.0E-01		6.0E-01	mg/kg	ND
2	Bluegill	Inorganic	Copper	Dec-39	9.2E-02	5.5E+01	1.6E+00	4.1E+00	mg/kg	-
2	Bluegill	Inorganic	Lead	0/19	3.6E-01	6.0E-01		6.0E-01	mg/kg	-
2	Bluegill	Inorganic	Mercury	44/61	1.7E-02	2.4E-01	7.8E-02	8.9E-02	mg/kg	+
2	Bluegill	Inorganic	Nickel	0/19	3.6E-01	6.0E-01		6.0E-01	mg/kg	ND
2	Bluegill	Inorganic	Selenium	55/59	8.0E-03	1.1E+00	4.6E-01	5.1E-01	mg/kg	+
2	Bluegill	Inorganic	Silver	0/19	1.4E-01	2.4E-01		2.4E-01	mg/kg	ND
2	Bluegill	Inorganic	Thallium	0/19	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
2	Bluegill	Inorganic	Zinc	19/19	5.2E+00	1.2E+01	6.8E+00	7.4E+00	mg/kg	+
2	Bluegill	Radionuclide	Cesium-137	19/21	1.1E-01	8.2E+00	2.0E+00	2.9E+00	pCi/g	+
2	Bluegill	Radionuclide	Cobalt-60	0/21	1.0E-01	7.8E-01		7.8E-01	pCi/g	ND
2	Catfish	Organic	1,2,4-Trichlorobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	1,2-Dichlorobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	1,3-Dichlorobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	1,4-Dichlorobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	14/20	1.0E-02	9.0E-02	3.0E-02	3.9E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	20-Sep	9.0E-03	4.0E-02	1.3E-02	1.7E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	13/20	1.0E-02	9.0E-02	2.9E-02	3.9E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	20-May	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	14/20	1.0E-02	4.0E-02	1.7E-02	2.0E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	20-Jul	1.0E-02	3.0E-02	1.3E-02	1.6E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	14/20	1.0E-02	5.0E-02	2.1E-02	2.6E-02	mg/kg	-
2	Catfish	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	20-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	19/20	1.0E-02	1.0E-01	4.1E-02	4.9E-02	mg/kg	-
2	Catfish	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	13/20	1.0E-02	5.0E-02	2.3E-02	2.9E-02	mg/kg	-
2	Catfish	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	17/20	1.0E-02	1.2E-01	4.3E-02	5.6E-02	mg/kg	-
2	Catfish	Organic	2,2',3,4,5'-Pentachlorobiphenyl	20-Jul	1.0E-02	8.0E-02	1.7E-02	2.4E-02	mg/kg	-
2	Catfish	Organic	2,2',3,5',6-Pentachlorobiphenyl	20-Jun	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,2',3,5'-Tetrachlorobiphenyl	20-Jun	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	18/20	1.0E-02	9.0E-02	3.0E-02	3.9E-02	mg/kg	-
2	Catfish	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	20-Jun	1.0E-02	2.4E-01	9.7E-02	1.1E-01	mg/kg	-
2	Catfish	Organic	2,2',4,4',5-Pentachlorobiphenyl	20-Jan	1.0E-02	2.0E-02	2.0E-02	2.0E-02	mg/kg	-
2	Catfish	Organic	2,2',4,5'-Tetrachlorobiphenyl	20-Oct	1.0E-02	5.0E-02	1.7E-02	2.1E-02	mg/kg	-
2	Catfish	Organic	2,2',5,5'-Tetrachlorobiphenyl	15/20	1.0E-02	7.0E-02	2.6E-02	3.2E-02	mg/kg	-
2	Catfish	Organic	2,2',5-Trichlorobiphenyl	20-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,2'-oxybis(1-chloropropane)	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,3',4',5-Tetrachlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,3',4,4',5'-Pentachlorobiphenyl	19/20	1.0E-02	9.0E-02	3.7E-02	4.5E-02	mg/kg	-
2	Catfish	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	20-Jun	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
2	Catfish	Organic	2,3',4,4',5-Pentachlorobiphenyl	19/20	1.0E-02	1.0E-01	4.1E-02	5.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	2,3',4,4'-Tetrachlorobiphenyl	20-Jun	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,3,3',4',6-Pentachlorobiphenyl.	18/20	1.0E-02	1.1E-01	4.3E-02	5.3E-02	mg/kg	-
2	Catfish	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	20-Apr	1.0E-02	2.0E-02	1.1E-02	1.1E-02	mg/kg	-
2	Catfish	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	14/20	1.0E-02	4.0E-02	1.7E-02	2.0E-02	mg/kg	-
2	Catfish	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	15/20	1.0E-02	4.0E-02	1.7E-02	2.0E-02	mg/kg	-
2	Catfish	Organic	2,3,3',4,4'-Pentachlorobiphenyl	20-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	15/20	1.0E-02	9.0E-02	3.1E-02	4.0E-02	mg/kg	-
2	Catfish	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,3,4,4',5-Pentachlorobiphenyl	20-Jun	1.0E-02	5.0E-02	2.3E-02	2.6E-02	mg/kg	-
2	Catfish	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	20-Nov	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	2,4',5-Trichlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,4,4'-Trichlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	2,4,5,2',5'-Pentachlorobiphenyl	20-Feb	1.0E-02	5.0E-02	1.2E-02	1.7E-02	mg/kg	-
2	Catfish	Organic	2,4,5-Trichlorophenol	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	2,4,6-Trichlorophenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,4-Dichlorophenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,4-Dimethylphenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,4-Dinitrophenol	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	2,4-Dinitrotoluene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2,6-Dinitrotoluene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2-Chloronaphthalene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2-Chlorophenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2-Methyl-4,6-dinitrophenol	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	2-Methylnaphthalene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2-Methylphenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	2-Nitroaniline	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	2-Nitrophenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/20	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Catfish	Organic	3,3',4,4'-Tetrachlorobiphenyl	16/20	1.0E-02	7.0E-02	2.5E-02	3.2E-02	mg/kg	-
2	Catfish	Organic	3,3'-Dichlorobenzidine	0/16	1.1E+00	3.7E+00		3.7E+00	mg/kg	ND
2	Catfish	Organic	3,4,4',5-Tetrachlorobiphenyl	20-Jun	1.0E-02	3.0E-02	1.4E-02	1.6E-02	mg/kg	-
2	Catfish	Organic	3,4,4'-Trichlorobiphenyl	20-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Catfish	Organic	3,4,5,3',4'-Pentachlorobiphenyl	13/20	1.0E-02	5.0E-02	1.8E-02	2.3E-02	mg/kg	-
2	Catfish	Organic	4,4'-DDD	22-Jan	8.0E-03	1.0E-01	8.0E-03	1.0E-01	mg/kg	FD
2	Catfish	Organic	4,4'-DDE	21-Jun	1.5E-03	1.0E-01	8.3E-03	1.3E-02	mg/kg	+
2	Catfish	Organic	4,4'-DDT	21-Feb	3.3E-04	1.0E-01	5.0E-04	7.8E-04	mg/kg	+
2	Catfish	Organic	4-Bromophenyl phenyl ether	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	4-Chloro-3-methylphenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	4-Chlorobenzenamine	0/10	5.4E-01	1.8E+00		1.8E+00	mg/kg	ND
2	Catfish	Organic	4-Chlorophenylphenyl ether	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	4-Methylphenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	4-Nitroaniline	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	4-Nitrophenol	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	Acenaphthene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Acenaphthylene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Aldrin	22-Feb	1.1E-04	1.0E-01	1.3E-04	1.6E-04	mg/kg	+

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	Anthracene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Benzo(a)anthracene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Benzo(a)pyrene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Benzo(b)fluoranthene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Benzo(ghi)perylene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	-
2	Catfish	Organic	Benzo(k)fluoranthene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Benzoic acid	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	Benzyl alcohol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Bis(2-chloroethoxy)methane	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Bis(2-chloroethyl) ether	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Bis(2-ethylhexyl)phthalate	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Butylbenzylphthalate	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Chlordane, total	37/42	2.0E-02	4.2E-01	1.8E-01	2.1E-01	mg/kg	+
2	Catfish	Organic	Chlordene	Feb-42	9.9E-04	1.0E-01	1.1E-03	1.3E-03	mg/kg	FD
2	Catfish	Organic	Chrysene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Di-n-butylphthalate	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Di-n-octylphthlate	0/16	8.2E-02	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Dibenz(a,h)anthracene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Dibenzofuran	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Diethylphthalate	0/16	8.0E-02	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Dimethylphthalate	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Fluoranthene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Fluorene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	Hexachlorobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Hexachlorobutadiene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Hexachlorocyclopentadiene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Hexachloroethane	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Indeno(1,2,3-cd)pyrene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Isophorone	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Lipids	20/20	3.2E+00	1.2E+01	8.0E+00	9.0E+00	PERCEN	-
2	Catfish	Organic	N-Nitroso-di-n-propylamine	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	N-Nitrosodiphenylamine	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Naphthalene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	-
2	Catfish	Organic	Nitrobenzene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Oxychlordane	14/19	2.1E-03	1.0E-01	5.5E-03	7.1E-03	mg/kg	-
2	Catfish	Organic	PCB-1016	0/20	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Catfish	Organic	PCB-1221	0/20	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Catfish	Organic	PCB-1232	0/20	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Catfish	Organic	PCB-1242	0/20	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Catfish	Organic	PCB-1248	0/20	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Catfish	Organic	PCB-1254	37/38	1.0E-02	1.5E+00	5.4E-01	6.4E-01	mg/kg	+
2	Catfish	Organic	PCB-1260	42/42	5.0E-02	2.4E+00	9.8E-01	1.1E+00	mg/kg	+
2	Catfish	Organic	Pentachlorophenol	0/16	2.7E+00	9.3E+00		9.3E+00	mg/kg	ND
2	Catfish	Organic	Phenanthrene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	-
2	Catfish	Organic	Phenol	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND
2	Catfish	Organic	Pyrene	0/16	5.4E-01	1.9E+00		1.9E+00	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Catfish	Organic	alpha-Chlordane	17/18	1.8E-03	5.1E-02	2.0E-02	2.5E-02	mg/kg	-
2	Catfish	Organic	alpha-Chlordene	May-41	1.2E-03	1.0E-01	3.7E-03	6.2E-03	mg/kg	-
2	Catfish	Organic	cis-Nonachlor	20/20	2.0E-02	9.0E-02	4.0E-02	4.8E-02	mg/kg	-
2	Catfish	Organic	gamma-Chlordane	24/39	1.4E-03	5.0E-02	1.2E-02	1.6E-02	mg/kg	-
2	Catfish	Organic	gamma-Chlordene	Jun-42	2.3E-03	1.0E-01	6.4E-03	8.6E-03	mg/kg	-
2	Catfish	Organic	trans-Nonachlor	20/20	3.0E-02	1.9E-01	8.2E-02	1.0E-01	mg/kg	-
2	Catfish	Radionuclide	Cesium-137	17/22	6.4E-02	4.0E+00	6.7E-01	1.1E+00	pCi/g	+
2	Catfish	Radionuclide	Cobalt-60	0/22	3.2E-02	2.3E-01		2.3E-01	pCi/g	ND
2	Catfish	Radionuclide	Strontium-90	6-Jun	1.8E-01	6.2E-01	4.0E-01	5.4E-01	pCi/g	+
2	LargeMouth Bass	Inorganic	Antimony	0/8	3.3E-01	5.4E-01		5.4E-01	mg/kg	ND
2	LargeMouth Bass	Inorganic	Arsenic	33/34	5.0E-02	4.5E-01	2.6E-01	2.9E-01	mg/kg	+
2	LargeMouth Bass	Inorganic	Beryllium	28-Jun	8.0E-04	4.0E-03	2.1E-03	2.2E-03	mg/kg	+
2	LargeMouth Bass	Inorganic	Cadmium	0/8	1.3E-01	2.1E-01		2.1E-01	mg/kg	ND
2	LargeMouth Bass	Inorganic	Chromium	0/8	3.3E-01	5.4E-01		5.4E-01	mg/kg	ND
2	LargeMouth Bass	Inorganic	Copper	21-Feb	1.6E-01	1.0E+00	8.3E-01	8.5E-01	mg/kg	-
2	LargeMouth Bass	Inorganic	Lead	0/8	3.3E-01	5.4E-01		5.4E-01	mg/kg	-
2	LargeMouth Bass	Inorganic	Mercury	26/34	1.5E-02	6.6E-01	2.4E-01	2.9E-01	mg/kg	+
2	LargeMouth Bass	Inorganic	Nickel	0/8	3.3E-01	5.4E-01		5.4E-01	mg/kg	ND
2	LargeMouth Bass	Inorganic	Selenium	31/34	2.0E-01	8.5E-01	4.0E-01	4.3E-01	mg/kg	+
2	LargeMouth Bass	Inorganic	Silver	0/8	1.3E-01	2.1E-01		2.1E-01	mg/kg	ND
2	LargeMouth Bass	Inorganic	Thallium	0/8	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
2	LargeMouth Bass	Inorganic	Zinc	8-Aug	3.9E+00	8.9E+00	5.5E+00	6.6E+00	mg/kg	+
2	LargeMouth Bass	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	26-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	LargeMouth Bass	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	26-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	26-Feb	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	26-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
2	LargeMouth Bass	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	26-Mar	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	26-Apr	1.0E-02	3.0E-02	1.1E-02	1.3E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	26-Jan	1.0E-02	2.0E-02	2.0E-02	2.0E-02	mg/kg	FD
2	LargeMouth Bass	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	26-Dec	1.0E-02	7.0E-02	2.0E-02	2.5E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',3,4,5'-Pentachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,5',6-Pentachlorobiphenyl	26-Jan	1.0E-02	2.0E-02	2.0E-02	2.0E-02	mg/kg	FD
2	LargeMouth Bass	Organic	2,2',3,5'-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	26-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	16/26	1.0E-02	2.2E-01	3.2E-02	4.7E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',4,4',5-Pentachlorobiphenyl	26-Jul	1.0E-02	4.0E-02	1.3E-02	1.5E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,2',4,5'-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,2',5,5'-Tetrachlorobiphenyl	26-Jan	1.0E-02	2.0E-02	2.0E-02	2.0E-02	mg/kg	FD
2	LargeMouth Bass	Organic	2,2',5-Trichlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3',4',5-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3',4,4',5'-Pentachlorobiphenyl	26-Mar	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	LargeMouth Bass	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3',4,4',5-Pentachlorobiphenyl	26-Aug	1.0E-02	4.0E-02	2.1E-02	2.2E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,3',4,4'-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,3',4',6-Pentachlorobiphenyl	26-Jul	1.0E-02	3.0E-02	1.1E-02	1.3E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,3',4,4'-Pentachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	26-Aug	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,3,4,4',5-Pentachlorobiphenyl	26-Jun	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	26-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	LargeMouth Bass	Organic	2,4',5-Trichlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,4,4'-Trichlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	2,4,5,2',5'-Pentachlorobiphenyl	13/26	1.0E-02	5.0E-02	1.6E-02	1.9E-02	mg/kg	-
2	LargeMouth Bass	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	3,3',4,4'-Tetrachlorobiphenyl	26-Jun	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
2	LargeMouth Bass	Organic	3,4,4',5-Tetrachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	3,4,4'-Trichlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	Chlordane, total	21/26	5.4E-02	9.0E-02	6.8E-02	7.2E-02	mg/kg	+
2	LargeMouth Bass	Organic	Chlordene	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	Lipids	26/26	5.0E-01	3.9E+00	1.7E+00	2.0E+00	PERCEN	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	LargeMouth Bass	Organic	Oxychlordane	11-Jan	6.0E-03	1.0E-02	6.0E-03	1.0E-02	mg/kg	-
2	LargeMouth Bass	Organic	PCB-1016	0/26	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	LargeMouth Bass	Organic	PCB-1221	0/26	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	LargeMouth Bass	Organic	PCB-1232	0/26	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	LargeMouth Bass	Organic	PCB-1242	0/26	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	LargeMouth Bass	Organic	PCB-1248	0/26	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	LargeMouth Bass	Organic	PCB-1254	16/26	1.0E-02	6.0E-01	1.4E-01	1.8E-01	mg/kg	+
2	LargeMouth Bass	Organic	PCB-1260	16/26	1.0E-02	6.0E-01	1.4E-01	1.9E-01	mg/kg	+
2	LargeMouth Bass	Organic	alpha-Chlordane	0/11	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	alpha-Chlordene	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	cis-Nonachlor	13/26	7.0E-03	2.0E-02	9.3E-03	1.0E-02	mg/kg	-
2	LargeMouth Bass	Organic	gamma-Chlordane	26-Dec	5.0E-03	1.0E-02	7.0E-03	7.7E-03	mg/kg	-
2	LargeMouth Bass	Organic	gamma-Chlordene	0/26	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	LargeMouth Bass	Organic	trans-Nonachlor	17/26	5.0E-03	3.0E-02	1.1E-02	1.4E-02	mg/kg	-
2	LargeMouth Bass	Radionuclide	Cesium-137	8-Aug	2.5E-01	1.6E+01	5.0E+00	8.2E+00	pCi/g	+
2	LargeMouth Bass	Radionuclide	Cobalt-60	0/8	2.1E-02	9.0E-02		9.0E-02	pCi/g	ND
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	15-Apr	7.0E-03	1.0E-02	7.6E-03	8.2E-03	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	15-Aug	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	15-Feb	6.0E-03	1.0E-02	6.3E-03	6.9E-03	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	15-Sep	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	15-Feb	7.0E-03	1.0E-02	7.2E-03	7.7E-03	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Striped/hybrid Bass	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	15-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	15/15	1.0E-02	4.0E-02	2.7E-02	3.1E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	15-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	15-May	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,4,5'-Pentachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,5',6-Pentachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,5'-Tetrachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	14/15	1.0E-02	3.0E-02	1.8E-02	2.1E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	15/15	3.0E-02	9.0E-02	6.9E-02	7.8E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',4,4',5-Pentachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',4,5'-Tetrachlorobiphenyl	15/15	2.0E-02	3.0E-02	2.8E-02	3.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',5,5'-Tetrachlorobiphenyl	14/15	1.0E-02	3.0E-02	2.1E-02	2.3E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,2',5-Trichlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,3',4',5'-Tetrachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3',4',5-Tetrachlorobiphenyl	15-Jul	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3',4,4',5'-Pentachlorobiphenyl	15/15	1.0E-02	3.0E-02	1.6E-02	1.9E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,3',4,4',5-Pentachlorobiphenyl	14/15	1.0E-02	3.0E-02	1.6E-02	1.9E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3',4,4'-Tetrachlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3,3',4',6-Pentachlorobiphenyl	14/15	1.0E-02	4.0E-02	3.0E-02	3.5E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	15-Feb	6.0E-03	1.0E-02	6.3E-03	6.9E-03	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Striped/hybrid Bass	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	15-Mar	8.0E-03	1.0E-02	8.3E-03	8.6E-03	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3,3',4,4'-Pentachlorobiphenyl	15-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,3,4,4',5-Pentachlorobiphenyl	15/15	1.0E-02	3.0E-02	2.1E-02	2.3E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	15-Oct	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	2,4',5-Trichlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,4,4'-Trichlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	2,4,5,2',5'-Pentachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	3,3',4,4'-Tetrachlorobiphenyl	15-Aug	1.0E-02	2.0E-02	1.3E-02	1.5E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	3,4,4',5-Tetrachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	3,4,4'-Trichlorobiphenyl	15-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	Chlordane, total	15/15	1.0E-01	1.7E-01	1.4E-01	1.5E-01	mg/kg	+
2	Striped/hybrid Bass	Organic	Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	Lipids	15/15	7.5E+00	1.3E+01	1.0E+01	1.1E+01	PERCEN	-
2	Striped/hybrid Bass	Organic	PCB-1016	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Striped/hybrid Bass	Organic	PCB-1221	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Striped/hybrid Bass	Organic	PCB-1232	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Striped/hybrid Bass	Organic	PCB-1242	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Striped/hybrid Bass	Organic	PCB-1248	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
2	Striped/hybrid Bass	Organic	PCB-1254	15/15	4.0E-01	8.0E-01	5.6E-01	6.1E-01	mg/kg	+

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
2	Striped/hybrid Bass	Organic	PCB-1260	15/15	2.0E-01	6.0E-01	3.9E-01	4.3E-01	mg/kg	+
2	Striped/hybrid Bass	Organic	alpha-Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	cis-Nonachlor	15/15	2.0E-02	4.0E-02	2.9E-02	3.1E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	gamma-Chlordane	15/15	2.0E-02	4.0E-02	3.0E-02	3.2E-02	mg/kg	-
2	Striped/hybrid Bass	Organic	gamma-Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
2	Striped/hybrid Bass	Organic	trans-Nonachlor	15/15	3.0E-02	6.0E-02	4.9E-02	5.4E-02	mg/kg	-
3	Bluegill	Inorganic	Antimony	0/28	4.4E-01	5.9E-01		5.9E-01	mg/kg	ND
3	Bluegill	Inorganic	Arsenic	38/67	6.0E-03	2.3E-01	6.5E-02	7.4E-02	mg/kg	+
3	Bluegill	Inorganic	Beryllium	22/67	6.0E-04	1.6E-02	3.7E-03	4.3E-03	mg/kg	+
3	Bluegill	Inorganic	Cadmium	0/28	1.8E-01	2.4E-01		2.4E-01	mg/kg	ND
3	Bluegill	Inorganic	Chromium	0/28	4.4E-01	5.9E-01		5.9E-01	mg/kg	ND
3	Bluegill	Inorganic	Copper	Mar-47	1.2E-02	1.4E+00	8.2E-01	8.5E-01	mg/kg	-
3	Bluegill	Inorganic	Lead	0/18	4.8E-01	5.9E-01		5.9E-01	mg/kg	-
3	Bluegill	Inorganic	Mercury	64/67	7.2E-02	8.8E-01	4.0E-01	4.4E-01	mg/kg	+
3	Bluegill	Inorganic	Nickel	0/28	4.4E-01	5.9E-01		5.9E-01	mg/kg	ND
3	Bluegill	Inorganic	Selenium	38/67	1.2E-01	1.1E+00	3.1E-01	3.5E-01	mg/kg	+
3	Bluegill	Inorganic	Silver	0/28	1.8E-01	2.4E-01		2.4E-01	mg/kg	ND
3	Bluegill	Inorganic	Thallium	0/28	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
3	Bluegill	Inorganic	Zinc	28/28	2.2E+00	8.6E+00	6.1E+00	6.5E+00	mg/kg	+
3	Bluegill	Radionuclide	Cesium-137	11-Aug	4.2E-03	1.1E-01	5.7E-02	7.6E-02	pCi/g	+
3	Bluegill	Radionuclide	Cobalt-60	0/11	2.8E-02	8.0E-02		8.0E-02	pCi/g	ND
3	Catfish	Organic	1,2,4-Trichlorobenzene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	1,2-Dichlorobenzene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	1,3-Dichlorobenzene	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	1,4-Dichlorobenzene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	Sep-33	1.0E-02	1.0E-01	3.1E-02	3.8E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	Nov-33	7.0E-03	2.0E-02	9.2E-03	1.0E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	20/33	8.0E-03	1.0E-01	2.3E-02	3.0E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	May-33	5.0E-03	1.0E-02	5.6E-03	6.2E-03	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	Dec-33	5.0E-03	6.0E-02	1.1E-02	1.5E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	16/33	1.0E-02	6.0E-02	1.7E-02	2.0E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	23/33	8.0E-03	7.0E-02	2.0E-02	2.6E-02	mg/kg	-
3	Catfish	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	Feb-33	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	Catfish	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	Dec-33	7.0E-03	1.2E-01	1.7E-02	2.4E-02	mg/kg	-
3	Catfish	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	24/33	6.0E-03	1.0E-01	2.3E-02	2.9E-02	mg/kg	-
3	Catfish	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	24/33	9.0E-03	1.0E-01	2.5E-02	3.2E-02	mg/kg	-
3	Catfish	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	27/33	1.0E-02	2.9E-01	8.1E-02	1.0E-01	mg/kg	-
3	Catfish	Organic	2,2',3,4,5'-Pentachlorobiphenyl	Dec-33	5.0E-03	8.0E-02	1.1E-02	1.5E-02	mg/kg	-
3	Catfish	Organic	2,2',3,5',6-Pentachlorobiphenyl	16/33	1.0E-02	1.4E-01	1.9E-02	2.7E-02	mg/kg	-
3	Catfish	Organic	2,2',3,5'-Tetrachlorobiphenyl	May-33	5.0E-03	3.0E-02	6.2E-03	7.7E-03	mg/kg	-
3	Catfish	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	22/33	1.0E-02	7.0E-02	1.9E-02	2.3E-02	mg/kg	-
3	Catfish	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	18/33	1.0E-02	2.6E-01	7.1E-02	9.6E-02	mg/kg	-
3	Catfish	Organic	2,2',4,4',5-Pentachlorobiphenyl	20/33	1.0E-02	2.5E-01	5.8E-02	7.9E-02	mg/kg	-
3	Catfish	Organic	2,2',4,5'-Tetrachlorobiphenyl	Nov-33	7.0E-03	5.0E-02	1.1E-02	1.3E-02	mg/kg	-
3	Catfish	Organic	2,2',5,5'-Tetrachlorobiphenyl	Nov-33	1.0E-02	7.0E-02	1.4E-02	1.7E-02	mg/kg	-
3	Catfish	Organic	2,2',5-Trichlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	2,2'-oxybis(1-chloropropane)	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	Catfish	Organic	2,3',4',5-Tetrachlorobiphenyl	Jan-33	5.0E-03	1.0E-02	5.0E-03	1.0E-02	mg/kg	FD
3	Catfish	Organic	2,3',4,4',5'-Pentachlorobiphenyl	15/33	7.0E-03	1.8E-01	2.9E-02	4.1E-02	mg/kg	-
3	Catfish	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	Apr-33	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
3	Catfish	Organic	2,3',4,4',5-Pentachlorobiphenyl	29/33	1.0E-02	2.3E-01	5.8E-02	7.2E-02	mg/kg	-
3	Catfish	Organic	2,3',4,4'-Tetrachlorobiphenyl	Sep-33	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	Catfish	Organic	2,3,3',4',6-Pentachlorobiphenyl	18/33	6.0E-03	1.6E-01	2.3E-02	3.2E-02	mg/kg	-
3	Catfish	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	Aug-33	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
3	Catfish	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	21/33	5.0E-03	9.0E-02	2.1E-02	2.7E-02	mg/kg	-
3	Catfish	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	19/33	5.0E-03	5.0E-02	1.3E-02	1.7E-02	mg/kg	-
3	Catfish	Organic	2,3,3',4,4'-Pentachlorobiphenyl	Jun-33	1.0E-02	5.0E-02	1.2E-02	1.5E-02	mg/kg	-
3	Catfish	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	30/33	1.0E-02	5.1E-01	1.2E-01	1.5E-01	mg/kg	-
3	Catfish	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	Catfish	Organic	2,3,4,4',5-Pentachlorobiphenyl	23/33	7.0E-03	3.0E-02	1.5E-02	1.8E-02	mg/kg	-
3	Catfish	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Jul-33	6.0E-03	1.0E-02	6.8E-03	7.4E-03	mg/kg	-
3	Catfish	Organic	2,4',5-Trichlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	Catfish	Organic	2,4,4'-Trichlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	Catfish	Organic	2,4,5,2',5'-Pentachlorobiphenyl	25/33	1.0E-02	1.9E-01	3.4E-02	4.4E-02	mg/kg	-
3	Catfish	Organic	2,4,5-Trichlorophenol	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	2,4,6-Trichlorophenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2,4-Dichlorophenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2,4-Dimethylphenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	2,4-Dinitrophenol	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	2,4-Dinitrotoluene	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2,6-Dinitrotoluene	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2-Chloronaphthalene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2-Chlorophenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2-Methyl-4,6-dinitrophenol	0/44	3.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	2-Methylnaphthalene	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2-Methylphenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	2-Nitroaniline	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	2-Nitrophenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/33	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	Catfish	Organic	3,3',4,4'-Tetrachlorobiphenyl	25/33	6.0E-03	3.5E-01	4.3E-02	6.3E-02	mg/kg	-
3	Catfish	Organic	3,3'-Dichlorobenzidine	0/43	1.3E-01	8.3E-01		8.3E-01	mg/kg	ND
3	Catfish	Organic	3,4,4',5-Tetrachlorobiphenyl	19/33	5.0E-03	1.3E-01	1.8E-02	2.6E-02	mg/kg	-
3	Catfish	Organic	3,4,4'-Trichlorobiphenyl	Apr-33	6.0E-03	4.0E-02	7.3E-03	9.3E-03	mg/kg	-
3	Catfish	Organic	3,4,5,3',4'-Pentachlorobiphenyl	Sep-33	1.0E-02	4.0E-02	1.3E-02	1.5E-02	mg/kg	-
3	Catfish	Organic	3-Nitroaniline	0/37	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	4,4'-DDD	Feb-34	3.0E-04	1.7E-02	3.0E-04	3.0E-04	mg/kg	+
3	Catfish	Organic	4,4'-DDE	34/34	1.2E-04	4.3E-02	4.4E-03	7.0E-03	mg/kg	+
3	Catfish	Organic	4,4'-DDT	0/34	1.0E-02	1.7E-02		1.7E-02	mg/kg	ND
3	Catfish	Organic	4-Bromophenyl phenyl ether	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	4-Chloro-3-methylphenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	4-Chlorobenzenamine	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	4-Chlorophenylphenyl ether	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	4-Methylphenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	4-Nitroaniline	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	4-Nitrophenol	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	Acenaphthene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Acenaphthylene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Aldrin	0/34	7.7E-03	8.5E-03		8.5E-03	mg/kg	ND
3	Catfish	Organic	Anthracene	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Benzo(a)anthracene	0/43	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Benzo(a)pyrene	0/34	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Benzo(b)fluoranthene	0/34	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Benzo(ghi)perylene	0/33	3.3E-02	4.1E-01		4.1E-01	mg/kg	-
3	Catfish	Organic	Benzo(k)fluoranthene	0/34	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Benzoic acid	0/35	6.7E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	Benzyl alcohol	0/35	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Bis(2-chloroethoxy)methane	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Bis(2-chloroethyl) ether	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Bis(2-ethylhexyl)phthalate	Jan-42	3.3E-02	4.1E-01	4.7E-02	4.1E-01	mg/kg	FD
3	Catfish	Organic	Butylbenzylphthalate	0/43	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Carbazole	0/10	3.3E-02	3.3E-02		3.3E-02	mg/kg	ND
3	Catfish	Organic	Chlordane, total	67/67	3.8E-02	2.2E-01	8.7E-02	9.4E-02	mg/kg	+
3	Catfish	Organic	Chlordene	Feb-67	1.0E-02	1.5E-02	1.3E-02	1.3E-02	mg/kg	FD
3	Catfish	Organic	Chrysene	0/43	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	Di-n-butylphthalate	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Di-n-octylphthlate	Jan-34	2.4E-02	4.1E-01	2.4E-02	4.1E-01	mg/kg	FD
3	Catfish	Organic	Dibenz(a,h)anthracene	0/34	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Dibenzofuran	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Diethylphthalate	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Dimethylphthalate	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Fluoranthene	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Fluorene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Hexachlorobenzene	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Hexachlorobutadiene	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Hexachlorocyclopentadiene	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Hexachloroethane	0/44	1.3E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Indeno(1,2,3-cd)pyrene	0/34	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Isophorone	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Lipids	33/33	7.0E-01	7.3E+00	4.0E+00	4.5E+00	PERCEN	-
3	Catfish	Organic	N-Nitroso-di-n-propylamine	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	N-Nitrosodiphenylamine	0/44	6.7E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Naphthalene	Mar-44	2.8E-02	4.1E-01	2.9E-02	3.1E-02	mg/kg	-
3	Catfish	Organic	Nitrobenzene	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Oxychlordane	24/34	5.2E-04	7.3E-02	6.1E-03	9.7E-03	mg/kg	-
3	Catfish	Organic	PCB-1016	Jan-33	1.0E-01	1.0E-01	1.0E-01	1.0E-01	mg/kg	FD
3	Catfish	Organic	PCB-1221	0/33	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	Catfish	Organic	PCB-1232	0/33	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	Catfish	Organic	PCB-1242	0/33	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	Catfish	Organic	PCB-1248	0/33	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	Catfish	Organic	PCB-1254	64/64	2.0E-02	2.0E+00	3.0E-01	3.7E-01	mg/kg	+
3	Catfish	Organic	PCB-1260	69/69	3.0E-02	3.0E+00	6.8E-01	7.9E-01	mg/kg	+
3	Catfish	Organic	Pentachlorophenol	0/44	9.3E-01	2.1E+00		2.1E+00	mg/kg	ND
3	Catfish	Organic	Phenanthrene	0/44	3.3E-02	4.1E-01		4.1E-01	mg/kg	-
3	Catfish	Organic	Phenol	0/44	1.9E-01	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	Pyrene	0/43	3.3E-02	4.1E-01		4.1E-01	mg/kg	ND
3	Catfish	Organic	alpha-Chlordane	34/34	1.6E-03	3.3E-02	1.1E-02	1.3E-02	mg/kg	-
3	Catfish	Organic	alpha-Chlordene	Feb-67	1.9E-03	2.5E-02	6.4E-03	7.0E-03	mg/kg	FD
3	Catfish	Organic	cis-Nonachlor	23/33	5.0E-03	3.0E-02	1.2E-02	1.4E-02	mg/kg	-
3	Catfish	Organic	gamma-Chlordane	58/67	1.4E-03	8.0E-02	2.1E-02	2.5E-02	mg/kg	-
3	Catfish	Organic	gamma-Chlordene	24/67	2.6E-03	4.2E-02	8.4E-03	1.0E-02	mg/kg	-
3	Catfish	Organic	trans-Nonachlor	32/33	7.0E-03	1.0E-01	3.5E-02	4.2E-02	mg/kg	-
3	Catfish	Radionuclide	Cesium-137	Nov-36	1.8E-02	3.0E-01	5.5E-02	6.8E-02	pCi/g	+
3	Catfish	Radionuclide	Cobalt-60	Jan-36	2.7E-02	1.9E-01	7.7E-02	1.9E-01	pCi/g	FD
3	Catfish	Radionuclide	Strontium-90	22/22	-2.6E-01	7.1E-01	2.5E-01	3.2E-01	pCi/g	+
3	LargeMouth Bass	Inorganic	Antimony	0/7	3.0E-01	5.1E-01		5.1E-01	mg/kg	ND
3	LargeMouth Bass	Inorganic	Arsenic	33/36	5.0E-02	4.2E-01	1.7E-01	2.0E-01	mg/kg	+
3	LargeMouth Bass	Inorganic	Beryllium	13/36	6.0E-04	9.0E-03	3.0E-03	3.6E-03	mg/kg	+
3	LargeMouth Bass	Inorganic	Cadmium	0/7	1.2E-01	2.0E-01		2.0E-01	mg/kg	ND
3	LargeMouth Bass	Inorganic	Chromium	0/7	3.0E-01	5.1E-01		5.1E-01	mg/kg	ND
3	LargeMouth Bass	Inorganic	Copper	0/16	1.8E-01	5.1E-01		5.1E-01	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	LargeMouth Bass	Inorganic	Lead	0/7	3.0E-01	5.1E-01		5.1E-01	mg/kg	-
3	LargeMouth Bass	Inorganic	Mercury	36/36	8.6E-02	1.9E+00	6.2E-01	7.3E-01	mg/kg	+
3	LargeMouth Bass	Inorganic	Nickel	0/7	3.0E-01	5.1E-01		5.1E-01	mg/kg	ND
3	LargeMouth Bass	Inorganic	Selenium	22/36	1.0E-01	6.1E-01	2.7E-01	3.0E-01	mg/kg	+
3	LargeMouth Bass	Inorganic	Silver	0/7	1.2E-01	2.0E-01		2.0E-01	mg/kg	ND
3	LargeMouth Bass	Inorganic	Thallium	0/7	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
3	LargeMouth Bass	Inorganic	Zinc	7-Jul	4.1E+00	7.6E+00	5.4E+00	6.3E+00	mg/kg	+
3	LargeMouth Bass	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	29-Jun	1.0E-02	5.0E-02	1.2E-02	1.4E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	29-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	29-Nov	1.0E-02	3.0E-02	1.1E-02	1.3E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	Feb-29	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	29-Jun	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	29-Apr	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	29-Sep	1.0E-02	4.0E-02	1.4E-02	1.7E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	29-Sep	1.0E-02	3.0E-02	1.3E-02	1.6E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	29-Mar	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	29-Dec	1.0E-02	2.2E-01	2.5E-02	3.8E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,4,5'-Pentachlorobiphenyl	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	2,2',3,5',6-Pentachlorobiphenyl	29-Apr	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,5'-Tetrachlorobiphenyl	Feb-29	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	29-May	1.0E-02	2.0E-02	1.1E-02	1.3E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	LargeMouth Bass	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	21/29	1.0E-02	7.0E-02	2.9E-02	3.6E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',4,4',5-Pentachlorobiphenyl	29-Jun	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',4,5'-Tetrachlorobiphenyl	29-Mar	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',5,5'-Tetrachlorobiphenyl	29-Oct	1.0E-02	3.0E-02	1.2E-02	1.4E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,2',5-Trichlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,3',4',5-Tetrachlorobiphenyl	Feb-29	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3',4,4',5'-Pentachlorobiphenyl	29-Aug	1.0E-02	3.0E-02	1.2E-02	1.4E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,3',4,4',5-Pentachlorobiphenyl	15/29	1.0E-02	5.0E-02	1.6E-02	1.9E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3',4,4'-Tetrachlorobiphenyl	Feb-29	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,3',4',6-Pentachlorobiphenyl	13/29	1.0E-02	4.0E-02	1.5E-02	1.8E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	Feb-29	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	29-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,3',4,4'-Pentachlorobiphenyl	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	29-May	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,3,4,4',5-Pentachlorobiphenyl	29-Apr	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	29-May	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	2,4',5-Trichlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,4,4'-Trichlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	2,4,5,2',5'-Pentachlorobiphenyl	20/29	1.0E-02	7.0E-02	2.3E-02	3.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	LargeMouth Bass	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	3,3',4,4'-Tetrachlorobiphenyl	29-Oct	1.0E-02	4.0E-02	1.2E-02	1.4E-02	mg/kg	-
3	LargeMouth Bass	Organic	3,4,4',5-Tetrachlorobiphenyl	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	3,4,4'-Trichlorobiphenyl	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	Chlordane, total	27/29	5.5E-02	1.5E-01	7.2E-02	7.9E-02	mg/kg	+
3	LargeMouth Bass	Organic	Chlordene	29-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
3	LargeMouth Bass	Organic	Lipids	28/29	1.0E-01	2.4E+00	1.1E+00	1.3E+00	PERCEN	-
3	LargeMouth Bass	Organic	Oxychlordane	10-Jan	5.0E-03	1.0E-02	5.0E-03	1.0E-02	mg/kg	-
3	LargeMouth Bass	Organic	PCB-1016	0/29	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	LargeMouth Bass	Organic	PCB-1221	0/29	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	LargeMouth Bass	Organic	PCB-1232	0/29	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	LargeMouth Bass	Organic	PCB-1242	0/29	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	LargeMouth Bass	Organic	PCB-1248	0/29	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
3	LargeMouth Bass	Organic	PCB-1254	27/29	5.0E-02	7.0E-01	3.1E-01	3.7E-01	mg/kg	+
3	LargeMouth Bass	Organic	PCB-1260	27/29	1.0E-02	9.0E-01	2.9E-01	3.8E-01	mg/kg	+
3	LargeMouth Bass	Organic	alpha-Chlordane	0/10	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	alpha-Chlordene	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	cis-Nonachlor	23/29	6.0E-03	2.0E-02	1.0E-02	1.2E-02	mg/kg	-
3	LargeMouth Bass	Organic	gamma-Chlordane	26/29	5.0E-03	2.0E-02	8.7E-03	9.8E-03	mg/kg	-
3	LargeMouth Bass	Organic	gamma-Chlordene	0/29	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
3	LargeMouth Bass	Organic	trans-Nonachlor	25/29	6.0E-03	6.0E-02	1.7E-02	2.1E-02	mg/kg	-
3	LargeMouth Bass	Radionuclide	Cesium-137	7-Jul	1.5E-02	1.5E-01	6.7E-02	1.0E-01	pCi/g	+

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
3	LargeMouth Bass	Radionuclide	Cobalt-60	0/7	1.6E-02	7.6E-02		7.6E-02	pCi/g	ND
4	Bluegill	Inorganic	Antimony	0/19	4.8E-01	6.1E-01		6.1E-01	mg/kg	ND
4	Bluegill	Inorganic	Arsenic	37/59	6.0E-03	1.4E-01	4.6E-02	5.5E-02	mg/kg	+
4	Bluegill	Inorganic	Beryllium	Oct-59	6.0E-04	6.0E-03	2.2E-03	2.4E-03	mg/kg	+
4	Bluegill	Inorganic	Cadmium	0/19	1.9E-01	2.4E-01		2.4E-01	mg/kg	ND
4	Bluegill	Inorganic	Chromium	0/19	4.8E-01	6.1E-01		6.1E-01	mg/kg	ND
4	Bluegill	Inorganic	Copper	Apr-39	1.7E-01	2.8E+00	5.6E-01	6.7E-01	mg/kg	-
4	Bluegill	Inorganic	Lead	0/9	5.2E-01	6.1E-01		6.1E-01	mg/kg	-
4	Bluegill	Inorganic	Mercury	40/59	3.0E-02	7.7E-01	1.5E-01	1.9E-01	mg/kg	+
4	Bluegill	Inorganic	Nickel	0/19	4.8E-01	6.1E-01		6.1E-01	mg/kg	ND
4	Bluegill	Inorganic	Selenium	49/59	1.2E-02	9.7E-01	4.7E-01	5.1E-01	mg/kg	+
4	Bluegill	Inorganic	Silver	0/19	1.9E-01	2.4E-01		2.4E-01	mg/kg	ND
4	Bluegill	Inorganic	Thallium	0/19	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
4	Bluegill	Inorganic	Zinc	19/19	5.0E+00	9.5E+00	6.6E+00	7.1E+00	mg/kg	+
4	Bluegill	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Bluegill	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Bluegill	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Bluegill	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,4,5'-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,5',6-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,5'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',4,4',5-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',4,5'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',5,5'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,2',5-Trichlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3',4',5-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3',4,4',5'-Pentachlorobiphenyl	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Bluegill	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3',4,4',5-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3',4,4'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,3',4',6-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,3',4,4'-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Bluegill	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	1-Jan	4.0E-02	4.0E-02	4.0E-02	4.0E-02	mg/kg	-
4	Bluegill	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,4,4',5-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	1-Jan	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Bluegill	Organic	2,4',5-Trichlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,4,4'-Trichlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	2,4,5,2',5'-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	3,3',4,4'-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	3,4,4',5-Tetrachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	3,4,4'-Trichlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	Chlordane, total	1-Jan	5.7E-02	5.7E-02	5.7E-02	5.7E-02	mg/kg	+
4	Bluegill	Organic	Chlordene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	Lipids	1-Jan	6.9E+00	6.9E+00	6.9E+00	6.9E+00	PERCEN	-
4	Bluegill	Organic	PCB-1016	0/1	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Bluegill	Organic	PCB-1221	0/1	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Bluegill	Organic	PCB-1232	0/1	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Bluegill	Organic	PCB-1242	0/1	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Bluegill	Organic	PCB-1248	0/1	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Bluegill	Organic	PCB-1254	1-Jan	2.0E-01	2.0E-01	2.0E-01	2.0E-01	mg/kg	+
4	Bluegill	Organic	PCB-1260	1-Jan	4.0E-01	4.0E-01	4.0E-01	4.0E-01	mg/kg	+
4	Bluegill	Organic	alpha-Chlordene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Bluegill	Organic	cis-Nonachlor	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	gamma-Chlordane	1-Jan	9.0E-03	9.0E-03	9.0E-03	9.0E-03	mg/kg	-
4	Bluegill	Organic	gamma-Chlordene	0/1	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Bluegill	Organic	trans-Nonachlor	1-Jan	8.0E-03	8.0E-03	8.0E-03	8.0E-03	mg/kg	-
4	Bluegill	Radionuclide	Cesium-137	14-Dec	3.1E-02	9.2E-01	1.3E-01	1.6E-01	pCi/g	+
4	Bluegill	Radionuclide	Cobalt-60	0/13	5.3E-02	6.2E-01		6.2E-01	pCi/g	ND
4	Catfish	Inorganic	Arsenic	25-Jun	6.0E-03	1.1E-01	2.6E-02	3.7E-02	mg/kg	+
4	Catfish	Inorganic	Beryllium	25-Apr	8.0E-04	6.0E-03	2.3E-03	2.7E-03	mg/kg	+
4	Catfish	Inorganic	Copper	25-Nov	1.9E-01	7.4E+00	5.7E-01	1.1E+00	mg/kg	-
4	Catfish	Inorganic	Mercury	19/25	1.5E-02	7.6E-01	2.3E-01	2.9E-01	mg/kg	+
4	Catfish	Inorganic	Selenium	24-Dec	1.2E-02	1.6E-01	4.6E-02	6.1E-02	mg/kg	+
4	Catfish	Organic	1,2,4-Trichlorobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	1,2-Dichlorobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	1,3-Dichlorobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	1,4-Dichlorobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	13/64	1.0E-02	2.0E-01	1.9E-02	2.6E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	14/64	1.0E-02	5.0E-02	1.3E-02	1.4E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	29/64	1.0E-02	7.0E-02	1.8E-02	2.1E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	Nov-64	1.0E-02	5.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	27/64	1.0E-02	1.3E-01	1.9E-02	2.3E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	32/64	1.0E-02	8.0E-02	1.8E-02	2.2E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	25/64	1.0E-02	1.0E-01	1.7E-02	2.0E-02	mg/kg	-
4	Catfish	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	May-64	1.0E-02	2.0E-02	1.0E-02	1.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	16/64	1.0E-02	1.1E-01	1.6E-02	1.9E-02	mg/kg	-
4	Catfish	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	30/64	1.0E-02	1.1E-01	2.1E-02	2.6E-02	mg/kg	-
4	Catfish	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	33/64	1.0E-02	8.0E-02	2.1E-02	2.5E-02	mg/kg	-
4	Catfish	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	43/64	1.0E-02	2.2E-01	5.8E-02	7.1E-02	mg/kg	-
4	Catfish	Organic	2,2',3,4,5'-Pentachlorobiphenyl	13/64	1.0E-02	2.1E-01	1.6E-02	2.2E-02	mg/kg	-
4	Catfish	Organic	2,2',3,5',6-Pentachlorobiphenyl	27/64	1.0E-02	1.0E-01	1.7E-02	2.1E-02	mg/kg	-
4	Catfish	Organic	2,2',3,5'-Tetrachlorobiphenyl	Aug-64	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Catfish	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	33/64	1.0E-02	9.0E-02	1.9E-02	2.2E-02	mg/kg	-
4	Catfish	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	32/64	1.0E-02	4.8E-01	7.8E-02	1.0E-01	mg/kg	-
4	Catfish	Organic	2,2',4,4',5-Pentachlorobiphenyl	19/64	1.0E-02	4.5E-01	4.7E-02	6.4E-02	mg/kg	-
4	Catfish	Organic	2,2',4,5'-Tetrachlorobiphenyl	18/64	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Catfish	Organic	2,2',5,5'-Tetrachlorobiphenyl	20/64	1.0E-02	6.0E-02	1.3E-02	1.5E-02	mg/kg	-
4	Catfish	Organic	2,2',5-Trichlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	2,2'-oxybis(1-chloropropane)	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	2,3',4',5-Tetrachlorobiphenyl	Feb-64	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	Catfish	Organic	2,3',4,4',5'-Pentachlorobiphenyl	22/64	1.0E-02	2.0E-01	2.5E-02	3.2E-02	mg/kg	-
4	Catfish	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	Apr-64	1.0E-02	5.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Catfish	Organic	2,3',4,4',5-Pentachlorobiphenyl	45/64	1.0E-02	2.4E-01	4.7E-02	5.7E-02	mg/kg	-
4	Catfish	Organic	2,3',4,4'-Tetrachlorobiphenyl	18/64	1.0E-02	3.0E-02	1.2E-02	1.3E-02	mg/kg	-
4	Catfish	Organic	2,3,3',4',6-Pentachlorobiphenyl	41/64	1.0E-02	1.7E-01	2.8E-02	3.4E-02	mg/kg	-
4	Catfish	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	Dec-64	1.0E-02	2.0E-01	1.5E-02	2.0E-02	mg/kg	-
4	Catfish	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	29/64	1.0E-02	9.0E-02	1.6E-02	1.9E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	23/64	1.0E-02	7.0E-02	1.4E-02	1.6E-02	mg/kg	-
4	Catfish	Organic	2,3,3',4,4'-Pentachlorobiphenyl	May-64	1.0E-02	4.0E-02	1.0E-02	1.1E-02	mg/kg	-
4	Catfish	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	41/64	1.0E-02	5.8E-01	7.7E-02	9.7E-02	mg/kg	-
4	Catfish	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	2,3,4,4',5-Pentachlorobiphenyl	37/64	1.0E-02	1.2E-01	2.5E-02	3.1E-02	mg/kg	-
4	Catfish	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Sep-64	1.0E-02	2.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Catfish	Organic	2,4',5-Trichlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	2,4,4'-Trichlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	2,4,5,2',5'-Pentachlorobiphenyl	37/64	1.0E-02	1.5E-01	2.9E-02	3.4E-02	mg/kg	-
4	Catfish	Organic	2,4,5-Trichlorophenol	0/13	3.3E+00	4.1E+00		4.1E+00	mg/kg	ND
4	Catfish	Organic	2,4,6-Trichlorophenol	0/13	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	2,4-Dichlorophenol	0/14	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	2,4-Dimethylphenol	0/14	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	2,4-Dinitrophenol	0/13	3.3E+00	4.1E+00		4.1E+00	mg/kg	ND
4	Catfish	Organic	2,4-Dinitrotoluene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2,6-Dinitrotoluene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2-Chloronaphthalene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2-Chlorophenol	0/14	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	2-Methyl-4,6-dinitrophenol	0/13	3.3E+00	4.1E+00		4.1E+00	mg/kg	ND
4	Catfish	Organic	2-Methylnaphthalene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	2-Methylphenol	0/13	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	2-Nitroaniline	0/5	3.3E+00	3.6E+00		3.6E+00	mg/kg	ND
4	Catfish	Organic	2-Nitrophenol	0/13	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/64	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Catfish	Organic	3,3',4,4'-Tetrachlorobiphenyl	41/64	1.0E-02	2.0E-01	3.5E-02	4.3E-02	mg/kg	-
4	Catfish	Organic	3,3'-Dichlorobenzidine	0/6	1.3E+00	1.4E+00		1.4E+00	mg/kg	ND
4	Catfish	Organic	3,4,4',5-Tetrachlorobiphenyl	21/64	1.0E-02	2.0E-01	1.9E-02	2.5E-02	mg/kg	-
4	Catfish	Organic	3,4,4'-Trichlorobiphenyl	Jun-64	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Catfish	Organic	3,4,5,3',4'-Pentachlorobiphenyl	16/64	1.0E-02	7.0E-02	1.4E-02	1.7E-02	mg/kg	-
4	Catfish	Organic	3-Nitroaniline	0/2	3.3E+00	3.6E+00		3.6E+00	mg/kg	ND
4	Catfish	Organic	4,4'-DDD	18-Apr	2.7E-03	2.0E-01	5.3E-03	8.6E-03	mg/kg	+
4	Catfish	Organic	4,4'-DDE	18-Dec	4.5E-03	2.0E-01	1.7E-02	2.6E-02	mg/kg	+
4	Catfish	Organic	4,4'-DDT	18-Jan	1.6E-03	2.0E-01	1.6E-03	2.0E-01	mg/kg	+
4	Catfish	Organic	4-Bromophenyl phenyl ether	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	4-Chloro-3-methylphenol	0/15	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	4-Chlorobenzenamine	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	4-Chlorophenylphenyl ether	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	4-Methylphenol	0/14	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	4-Nitroaniline	0/2	3.3E+00	3.6E+00		3.6E+00	mg/kg	ND
4	Catfish	Organic	4-Nitrophenol	0/13	3.3E+00	4.1E+00		4.1E+00	mg/kg	ND
4	Catfish	Organic	Acenaphthene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Acenaphthylene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Aldrin	14-Feb	6.5E-04	2.0E-01	8.8E-04	1.3E-03	mg/kg	+
4	Catfish	Organic	Anthracene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Benzo(a)anthracene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Benzo(a)pyrene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	Benzo(b)fluoranthene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Benzo(ghi)perylene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	-
4	Catfish	Organic	Benzo(k)fluoranthene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Benzoic acid	0/2	3.3E+00	3.6E+00		3.6E+00	mg/kg	ND
4	Catfish	Organic	Benzyl alcohol	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Bis(2-chloroethoxy)methane	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Bis(2-chloroethyl) ether	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Bis(2-ethylhexyl)phthalate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Butylbenzylphthalate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Chlordane, total	91/92	4.1E-02	4.5E-01	1.2E-01	1.3E-01	mg/kg	+
4	Catfish	Organic	Chlordene	Jan-92	1.0E-02	2.0E-01	1.0E-02	2.0E-01	mg/kg	FD
4	Catfish	Organic	Chrysene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Di-n-butylphthalate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Di-n-octylphthlate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Dibenz(a,h)anthracene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Dibenzofuran	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Diethylphthalate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Dimethylphthalate	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Fluoranthene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Fluorene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Hexachlorobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Hexachlorobutadiene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Hexachlorocyclopentadiene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	Hexachloroethane	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Indeno(1,2,3-cd)pyrene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Isophorone	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Lipids	74/74	8.0E-01	2.1E+01	6.3E+00	7.0E+00	PERCEN	-
4	Catfish	Organic	N-Nitroso-di-n-propylamine	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	N-Nitrosodiphenylamine	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Naphthalene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	-
4	Catfish	Organic	Nitrobenzene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	Oxychlordane	23-Oct	4.7E-04	9.4E-02	1.6E-02	2.4E-02	mg/kg	-
4	Catfish	Organic	PCB-1016	0/74	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Catfish	Organic	PCB-1221	0/74	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Catfish	Organic	PCB-1232	0/74	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Catfish	Organic	PCB-1242	0/74	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Catfish	Organic	PCB-1248	0/74	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Catfish	Organic	PCB-1254	88/92	1.0E-02	2.0E+00	4.7E-01	5.4E-01	mg/kg	+
4	Catfish	Organic	PCB-1260	91/92	1.0E-02	3.6E+00	7.7E-01	8.7E-01	mg/kg	+
4	Catfish	Organic	Pentachlorophenol	0/13	3.3E+00	4.1E+00		4.1E+00	mg/kg	ND
4	Catfish	Organic	Phenanthrene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	-
4	Catfish	Organic	Phenol	0/13	6.6E-01	8.3E-01		8.3E-01	mg/kg	ND
4	Catfish	Organic	Pyrene	0/6	6.6E-01	7.2E-01		7.2E-01	mg/kg	ND
4	Catfish	Organic	alpha-Chlordane	17/19	1.2E-03	5.6E-02	1.6E-02	2.3E-02	mg/kg	-
4	Catfish	Organic	alpha-Chlordene	Aug-92	9.1E-04	2.0E-01	3.3E-03	5.1E-03	mg/kg	-
4	Catfish	Organic	cis-Nonachlor	67/74	6.0E-03	1.1E-01	2.4E-02	2.8E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Catfish	Organic	gamma-Chlordane	48/92	5.9E-04	3.1E-02	7.6E-03	8.6E-03	mg/kg	-
4	Catfish	Organic	gamma-Chlordene	Sep-91	2.0E-03	1.5E-02	4.5E-03	5.8E-03	mg/kg	-
4	Catfish	Organic	trans-Nonachlor	73/74	7.0E-03	2.8E-01	5.8E-02	6.7E-02	mg/kg	-
4	Catfish	Radionuclide	Cesium-137	18-Sep	3.6E-02	2.2E-01	5.5E-02	6.8E-02	pCi/g	+
4	Catfish	Radionuclide	Cobalt-60	0/17	4.3E-02	1.2E-01		1.2E-01	pCi/g	ND
4	Catfish	Radionuclide	Strontium-90	6-Jun	8.8E-02	3.5E-01	2.2E-01	3.0E-01	pCi/g	+
4	LargeMouth Bass	Inorganic	Antimony	0/8	4.8E-01	5.4E-01		5.4E-01	mg/kg	ND
4	LargeMouth Bass	Inorganic	Arsenic	48/48	8.0E-03	5.1E-01	2.2E-01	2.4E-01	mg/kg	+
4	LargeMouth Bass	Inorganic	Beryllium	0/48	8.0E-04	6.0E-03		6.0E-03	mg/kg	ND
4	LargeMouth Bass	Inorganic	Cadmium	0/8	1.9E-01	2.2E-01		2.2E-01	mg/kg	ND
4	LargeMouth Bass	Inorganic	Chromium	0/8	4.8E-01	5.4E-01		5.4E-01	mg/kg	ND
4	LargeMouth Bass	Inorganic	Copper	28-Nov	1.9E-01	1.0E+01	1.1E+00	1.9E+00	mg/kg	-
4	LargeMouth Bass	Inorganic	Lead	0/8	4.8E-01	5.4E-01		5.4E-01	mg/kg	-
4	LargeMouth Bass	Inorganic	Mercury	40/48	6.8E-02	7.7E-01	2.9E-01	3.3E-01	mg/kg	+
4	LargeMouth Bass	Inorganic	Nickel	0/8	4.8E-01	5.4E-01		5.4E-01	mg/kg	ND
4	LargeMouth Bass	Inorganic	Selenium	39/48	2.4E-02	9.1E-01	3.8E-01	4.2E-01	mg/kg	+
4	LargeMouth Bass	Inorganic	Silver	0/8	1.9E-01	2.2E-01		2.2E-01	mg/kg	ND
4	LargeMouth Bass	Inorganic	Thallium	0/8	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
4	LargeMouth Bass	Inorganic	Zinc	8-Aug	4.0E+00	5.2E+00	4.3E+00	4.5E+00	mg/kg	+
4	LargeMouth Bass	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	Mar-40	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	May-40	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	LargeMouth Bass	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	Mar-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	Sep-40	1.0E-02	3.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	May-40	1.0E-02	3.0E-02	1.1E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	Mar-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	21/40	1.0E-02	4.0E-01	3.1E-02	4.7E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,4,5'-Pentachlorobiphenyl	May-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,5',6-Pentachlorobiphenyl	Feb-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',3,5'-Tetrachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	Feb-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	19/40	1.0E-02	1.2E-01	2.9E-02	3.7E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',4,4',5-Pentachlorobiphenyl	14/40	1.0E-02	4.0E-02	1.2E-02	1.3E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',4,5'-Tetrachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	2,2',5,5'-Tetrachlorobiphenyl	Apr-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,2',5-Trichlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3',4',5'-Tetrachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3',4',5-Tetrachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3',4,4',5'-Pentachlorobiphenyl	Aug-40	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3',4,4',5-Pentachlorobiphenyl	17/40	1.0E-02	3.0E-02	1.3E-02	1.4E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,3',4,4'-Tetrachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	LargeMouth Bass	Organic	2,3,3',4',6-Pentachlorobiphenyl	Oct-40	1.0E-02	2.0E-02	1.1E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	2,3,3',4,4'-Pentachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	Mar-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,3,4,4',5-Pentachlorobiphenyl	17/40	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	Mar-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	2,4',5-Trichlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,4,4'-Trichlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	2,4,5,2',5'-Pentachlorobiphenyl	17/40	1.0E-02	5.0E-02	1.4E-02	1.6E-02	mg/kg	-
4	LargeMouth Bass	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	Jan-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	FD
4	LargeMouth Bass	Organic	3,3',4,4'-Tetrachlorobiphenyl	Jul-40	1.0E-02	2.0E-02	1.0E-02	1.1E-02	mg/kg	-
4	LargeMouth Bass	Organic	3,4,4',5-Tetrachlorobiphenyl	May-40	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	3,4,4'-Trichlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/40	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	Chlordane, total	49/50	5.2E-02	1.4E-01	7.0E-02	7.3E-02	mg/kg	+
4	LargeMouth Bass	Organic	Chlordene	0/50	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	Lipids	50/50	2.0E-01	9.0E+00	1.9E+00	2.2E+00	PERCEN	-
4	LargeMouth Bass	Organic	Oxychlordane	0/11	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	PCB-1016	0/50	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	LargeMouth Bass	Organic	PCB-1221	0/50	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	LargeMouth Bass	Organic	PCB-1232	0/50	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	LargeMouth Bass	Organic	PCB-1242	0/50	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	LargeMouth Bass	Organic	PCB-1248	0/50	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	LargeMouth Bass	Organic	PCB-1254	49/50	5.0E-02	5.0E-01	2.0E-01	2.2E-01	mg/kg	+
4	LargeMouth Bass	Organic	PCB-1260	48/50	6.0E-02	9.0E-01	2.1E-01	2.4E-01	mg/kg	+
4	LargeMouth Bass	Organic	alpha-Chlordane	6-Jan	1.0E-02	2.0E-02	2.0E-02	2.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	alpha-Chlordene	0/50	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	cis-Nonachlor	41/50	5.0E-03	2.0E-02	9.6E-03	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	gamma-Chlordane	31/50	5.0E-03	2.0E-02	9.2E-03	1.0E-02	mg/kg	-
4	LargeMouth Bass	Organic	gamma-Chlordene	0/50	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	LargeMouth Bass	Organic	trans-Nonachlor	48/50	5.0E-03	6.0E-02	1.6E-02	1.9E-02	mg/kg	-
4	LargeMouth Bass	Radionuclide	Cesium-137	8-Jul	8.3E-02	1.4E-01	1.0E-01	1.2E-01	pCi/g	+
4	LargeMouth Bass	Radionuclide	Cobalt-60	0/8	3.2E-03	8.1E-02		8.1E-02	pCi/g	ND
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5 Heptachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4',5,6-Octachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4',6-Heptachlorobiphenyl	15-May	1.0E-02	3.0E-02	1.3E-02	1.6E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,3',4,4'-Hexachlorobiphenyl	15-Jun	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	15-Jan	1.0E-02	3.0E-02	3.0E-02	3.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,3',4,6'-Hexachlorobiphenyl	15-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,4',5',6-Hexachlorobiphenyl	15-Apr	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,4',5,5'-Hexachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Striped/hybrid Bass	Organic	2,2',3,4,4',5',6-HeptaChlorobiphenyl	15-Apr	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,4,4',5,5'-Heptachlorobiphenyl	15-Jun	1.0E-02	3.0E-02	1.3E-02	1.6E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,4,5'-Pentachlorobiphenyl	15-Apr	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,5',6-Pentachlorobiphenyl	15-Nov	1.0E-02	4.0E-02	2.8E-02	3.2E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,5'-Tetrachlorobiphenyl	15-May	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',3,5,5',6-Hexachlorobiphenyl	15-Jun	1.0E-02	2.0E-02	1.3E-02	1.5E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',4,4',5,5'-Hexachlorobiphenyl	15-Mar	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',4,4',5-Pentachlorobiphenyl	13/15	1.0E-02	1.4E-01	9.2E-02	1.1E-01	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',4,5'-Tetrachlorobiphenyl	15-Aug	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',5,5'-Tetrachlorobiphenyl	15-Aug	1.0E-02	2.0E-02	1.3E-02	1.5E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,2',5-Trichlorobiphenyl	15-Feb	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3',4',5'-Tetrachlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3',4',5-Tetrachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3',4,4',5'-Pentachlorobiphenyl	13/15	1.0E-02	5.0E-02	3.6E-02	4.1E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3',4,4',5,5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3',4,4',5-Pentachlorobiphenyl	15-Oct	1.0E-02	6.0E-02	3.5E-02	3.9E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3',4,4'-Tetrachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3,3',4',6-Pentachlorobiphenyl	15-May	1.0E-02	3.0E-02	1.4E-02	1.8E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3,3',4,4',5'-Hexachlorobiphenyl	15-May	1.0E-02	2.0E-02	1.1E-02	1.2E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3,3',4,4',5-Hexachlorobiphenyl	15-Aug	1.0E-02	3.0E-02	1.5E-02	1.8E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3,3',4,4',6-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3,3',4,4'-Pentachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3,4,2',4',5'-Hexachlorobiphenyl	13/15	1.0E-02	1.1E-01	7.2E-02	8.4E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Striped/hybrid Bass	Organic	2,3,4,4',5,6-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,3,4,4',5-Pentachlorobiphenyl	15-Nov	1.0E-02	3.0E-02	2.4E-02	2.6E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,3,4,5,3',4',5'-Heptachlorobiphenyl	15-May	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	2,4',5-Trichlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,4,4'-Trichlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	2,4,5,2',5'-Pentachlorobiphenyl	15-Nov	1.0E-02	4.0E-02	2.9E-02	3.3E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	3,3',4,4',5,5'-Hexachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	3,3',4,4'-Tetrachlorobiphenyl	13/15	1.0E-02	1.1E-01	4.6E-02	6.1E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	3,4,4',5-Tetrachlorobiphenyl	15-Nov	1.0E-02	3.0E-02	1.9E-02	2.3E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	3,4,4'-Trichlorobiphenyl	15-Mar	1.0E-02	1.0E-02	1.0E-02	1.0E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	3,4,5,3',4'-Pentachlorobiphenyl	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	Chlordane, total	15/15	5.9E-02	1.2E-01	1.0E-01	1.1E-01	mg/kg	+
4	Striped/hybrid Bass	Organic	Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	Lipids	15/15	2.6E+00	1.2E+01	8.4E+00	1.0E+01	PERCEN	-
4	Striped/hybrid Bass	Organic	PCB-1016	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Striped/hybrid Bass	Organic	PCB-1221	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Striped/hybrid Bass	Organic	PCB-1232	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Striped/hybrid Bass	Organic	PCB-1242	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Striped/hybrid Bass	Organic	PCB-1248	0/15	1.0E-01	1.0E-01		1.0E-01	mg/kg	ND
4	Striped/hybrid Bass	Organic	PCB-1254	15/15	3.0E-01	6.0E-01	4.5E-01	4.9E-01	mg/kg	+
4	Striped/hybrid Bass	Organic	PCB-1260	15/15	4.0E-01	9.0E-01	6.9E-01	7.6E-01	mg/kg	+
4	Striped/hybrid Bass	Organic	alpha-Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	cis-Nonachlor	15/15	6.0E-03	2.0E-02	1.1E-02	1.3E-02	mg/kg	-

Table E.6. Summary statistics for fish species collected in the Clinch River and Poplar Creek (continued)

Reach	Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE mean	Representative concentration	Units of measure	Flag
4	Striped/hybrid Bass	Organic	gamma-Chlordane	13/15	1.0E-02	3.0E-02	2.3E-02	2.5E-02	mg/kg	-
4	Striped/hybrid Bass	Organic	gamma-Chlordene	0/15	1.0E-02	1.0E-02		1.0E-02	mg/kg	ND
4	Striped/hybrid Bass	Organic	trans-Nonachlor	15/15	9.0E-03	5.0E-02	3.7E-02	4.3E-02	mg/kg	-

Table E.7. Summary statistics for Canadian geese

Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE Mean	Representative concentration	Units of measure	Flag
Canadian Goose	Inorganic	Cadmium	15-Feb	3.7E-01	1.1E+00	4.6E-01	5.7E-01	mg/kg	+
Canadian Goose	Inorganic	Chromium	0/15	3.8E-01	1.7E+00		1.7E+00	mg/kg	ND
Canadian Goose	Inorganic	Lead	15-Jan	1.9E-01	2.3E+00	2.3E+00	2.3E+00	mg/kg	-
Canadian Goose	Inorganic	Mercury	25-Oct	1.0E-02	1.0E-01	2.3E-02	3.2E-02	mg/kg	+
Canadian Goose	Inorganic	Nickel	0/15	1.1E+00	2.6E+00		2.6E+00	mg/kg	ND
Canadian Goose	Inorganic	Selenium	15-Jan	7.2E+00	1.7E+01	1.5E+01	1.7E+01	mg/kg	+
Canadian Goose	Organic	4,4'-DDD	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	4,4'-DDE	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	4,4'-DDT	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Aldrin	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	Chlordane, total	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Dieldrin	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Endosulfan	0/10	6.0E-03	6.0E-03		6.0E-03	mg/kg	ND
Canadian Goose	Organic	Endosulfan I	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	Endosulfan II	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Endosulfan sulfate	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Endrin	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Endrin aldehyde	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND
Canadian Goose	Organic	Endrin ketone	0/10	4.0E-03	4.0E-03		4.0E-03	mg/kg	ND

Table E.7. Summary statistics for Canadian geese (continued)

Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE Mean	Representative concentration	Units of measure	Flag
Canadian Goose	Organic	Heptachlor	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	Heptachlor epoxide	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	Lindane	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	Lipids	5-May	5.8E-01	1.3E+00	8.7E-01	1.1E+00	PERCEN	-
Canadian Goose	Organic	Methoxychlor	0/10	2.0E-02	2.0E-02		2.0E-02	mg/kg	ND
Canadian Goose	Organic	PCB-1016	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1221	0/15	8.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1232	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1242	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1248	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1254	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	PCB-1260	0/15	4.0E-02	3.5E-01		3.5E-01	mg/kg	ND
Canadian Goose	Organic	Toxaphene	0/10	2.0E-01	2.0E-01		2.0E-01	mg/kg	ND
Canadian Goose	Organic	alpha-BHC	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	alpha-Chlordane	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	beta-BHC	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Organic	delta-BHC	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	-
Canadian Goose	Organic	gamma-Chlordane	0/10	2.0E-03	2.0E-03		2.0E-03	mg/kg	ND
Canadian Goose	Radionuclide	Cesium-137	24-Apr	7.1E-03	3.3E+00	2.2E-01	5.0E-01	pCi/g	+

Table E.7. Summary statistics for Canadian geese (continued)

Species	Chemical type	Chemical	Frequency of detection	Minimum	Maximum	PLE Mean	Representative concentration	Units of measure	Flag
Canadian Goose	Radionuclide	Cobalt-60	0/10	5.8E-02	1.2E-01		1.2E-01	pCi/g	ND
Canadian Goose	Radionuclide	Plutonium-238	15-Jan	7.0E-03	1.5E-01	1.6E-02	1.5E-01	pCi/g	+
Canadian Goose	Radionuclide	Plutonium-239/240	15-Feb	4.0E-03	1.1E-01	7.4E-03	1.5E-02	pCi/g	+
Canadian Goose	Radionuclide	Strontium-90	0/5	2.4E-01	3.6E-01		3.6E-01	pCi/g	ND
Canadian Goose	Radionuclide	Technetium-99	0/15	5.3E-01	1.5E+01		1.5E+01	pCi/g	ND
Canadian Goose	Radionuclide	Uranium-234	15-Feb	7.0E-03	1.1E-01	1.3E-02	1.5E-02	pCi/g	+
Canadian Goose	Radionuclide	Uranium-235	0/15	7.0E-03	7.0E-02		7.0E-02	pCi/g	ND
Canadian Goose	Radionuclide	Uranium-236	0/10	6.0E-03	1.6E-02		1.6E-02	pCi/g	ND
Canadian Goose	Radionuclide	Uranium-238	15-Jun	8.0E-03	9.0E-02	1.2E-02	1.4E-02	pCi/g	+

Table E.8. Ingestion of contaminants in drinking water

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CW \times IR \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CW =	Concentration in water	Chemical-specific (mg/L or pCi/L)	95% UCL on the mean
IR =	Ingestion rate	1.0 L/day 2.0 L/day	Child rate (EFH, EPA 1989) Adult rate (OSWER Directive, EPA 1991a)
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (EPA 1989b; EPA 1991a)

Table E.9. Inadvertent ingestion of sediment in near-shore pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times IR \times FI \times EF \times CF \times ET \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}(pCi) = CS \times IR \times FI \times EF \times CF \times ET \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in near-shore sediments	Chemical-specific (mg/kg, pCi/g, dry wt)	95% UCL on the mean
IR =	Ingestion rate	0.0002 kg/day or 0.2 g/day	Child (OSWER Directive, EPA 1991a)
		0.0001 kg/day or 0.1 g/day	Adult (OSWER Directive, EPA 1991a)
FI =	Fraction ingested	1 (unitless)	Maximum value; equivalent to 100%
EF =	Exposure frequency	175 days/year	Based on the average time near-shore sediments are known to be available for exposure.
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to the near-shore sediments
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
ED =	Exposure duration	6 years	Child exposure (RAGS, EPA 1989b)
		30 years	Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg	Child (OSWER Directive, EPA 1991a)
		70 kg	Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED	Averaging time for non-carcinogens
		365 days/year × 70 years	Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.10. Dermal contact with sediment in the near-shore pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times AF \times ABS \times SA \times ET \times CF \times EF \times ED}{BW \times AT}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in near-shore sediment	Chemical-specific (mg/kg, dry wt)	Concentration listed in Appendix E
AF =	Adherence factor	0.01 kg/m^2	Unit-adjusted adherence factor for soil 1.0 mg/cm^2 (10^{-6} kg/mg x 10^4 cm^2/m^2) (EPA 1992b)
ABS =	Absorption factor	0.001 (unitless) 0.01 (unitless)	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
SA =	Available surface area	0.2295 m^2/day 0.57 m^2/day	(0.918 m^2/day)(0.25), children (2.28 m^2/day)(0.25), adults 25% of the 95th percentile total body surface area (represents summer exposure) (DEA, EPA 1992a)
EF =	Exposure frequency	175 days/year	Equilvalent to 350 days/year · 0.5; six months exposure per year
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to near-shore sediment
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.11. Inhalation of resuspended sediment in the near-shore pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CA \times IR \times ET \times EF \times ED$$

Where,

$$CA\left(\frac{mg}{m^3}, \frac{pCi}{m^3}\right) = CS \times r_c \times \rho$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CA =	Concentration in air	Chemical-specific (mg/m^3, pCi/m^3)	Concentration calculated as above
CS =	Concentration in sediment	Chemical specific (mg/kg, pCi/g, dry wt)	Measured values listed in Appendix E
r_c =	Soil resuspension constant	2.0E-10 (unitless)	Till & Meyer, 1983
ρ =	Soil density	1600 kg/m^3	Till & Meyer, 1983
IR =	Air inhalation rate	2.0 m^3/hour 2.1 m^3/hour	Moderate child rate (EFH, EPA 1989a) Moderate adult rate (EFH, EPA 1989a)
ET =	Exposure time	8 hours/day	Estimated; fraction of day an individual is exposed to near-shore sediment
EF =	Exposure frequency	175 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens

Table E.12. External exposure to radionuclides in sediment in the near-shore pathway

$$Dose_{near-shore}\left(\frac{pCi \cdot yr}{g}\right) = CS \times \left(\frac{1 - e^{-\lambda_i ED}}{\lambda_i}\right) \times ET \times CF_1 \times EF \times CF_2$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in near-shore sediment	Radionuclide-specific (pCi/g, dry wt)	95% UCL on the mean
λ_i =	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
TR =	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
ED =	Exposure duration	30 years	Adult exposure (RAGS, EPA 1989b)
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to near-shore sediment
CF_1 =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	175 days/year	Estimated; based on the number of days per year near-shore sediments are exposed
CF_2 =	Conversion factor	1 year/365 days	Necessary to convert to appropriate units

Table E.13. Permeability constants

Chemical	Permeability Constant (m/hour)
2-Butanone	5.0E-05
4,4'-DDD	2.8E-03
4,4'-DDE	2.4E-03
4,4'-DDT	4.3E-03
Acetone	5.7E-06
Aldrin	1.6E-05
Antimony	1.0E-05
Arsenic	1.0E-05
Barium	1.0E-05
Benzo(a)anthracene	8.1E-03
Benzo(a)pyrene	1.2E-02
Benzo(b)fluoranthene	1.2E-02
Benzo(ghi)perylene	4.3E-02
Benzo(k)fluoranthene	4.0E-02
Beryllium	1.0E-05
Bis(2-ethylhexyl)phthalate	1.7E-02
Boron	1.0E-05
Butylbenzylphthalate	7.3E-04
Cadmium	1.0E-05
Carbon disulfide	5.0E-03
Chlordane, total	5.2E-04
Chloroform	1.3E-03
Chromium	1.0E-05
Chrysene	8.1E-03
Copper	1.0E-05
Di-n-butylphthalate	3.3E-04
Di-n-octylphthlate	2.7E-01
Diethylphthlate	4.8E-05
Fluoranthene	3.6E-03

Table E.13. Permeability constants (continued)

Chemical	Permeability Constant (m/hour)
Indeno(1,2,3-cd)pyrene	1.9E-02
Lead	1.0E-05
Manganese	1.0E-05
Mercury	1.0E-05
Molybdenum	1.0E-05
Naphthalene	6.9E-04
Nitrate	1.0E-05
Phenanthrene	2.7E-03
Pyrene	6.7E-03
Selenium	1.0E-05
Silver	1.0E-05
Toluene	1.0E-02
Trichloroethene	2.3E-03
Vanadium	1.0E-05
Zinc	1.0E-05

Table E.14. Ingestion of contaminants in water while swimming

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CW \times IR \times ET \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CW \times IR \times ET \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CW =	Concentration in water	Chemical-specific (mg/L or pCi/L)	95% UCL on the mean
IR =	Intake rate	0.05 L/h	Children and adult (RAGS, EPA 1989b)
ET =	Exposure time	2.6 h/day	National average for swimming (RAGS, EPA 1989b)
EF =	Exposure frequency	45 days/year	USEPA Region IV Guidance, (EPA 1991b)
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (EPA 1989a; EPA 1991a)

Table E.15. Dermal contact with water while swimming

$$Dermal\ \ Dose\ \ Rate_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CW =	Concentration in water	Chemical-specific (mg/L)	95% UCL on mean
SA =	Available surface area	0.918 m^2 2.28 m^2	95th percentile total body surface area of a child and adult, respectively (DEA, EPA 1992)
PC =	Permeability constant	Chemical-specific (m/h)	DEA, EPA 1992
ET =	Exposure time	2.6 h/day	National average for swimming (RAGS, EPA 1989b)
EF =	Exposure frequency	45 days/year	USEPA Region IV Guidance (EPA 1991b)
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
CF =	Conversion factor	10^3 L/m^3	Volumetric conversion: 1000 L = 1 m^3
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.16. Ingestion of fish

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CF \times IR \times FI \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\ (pCi) = CF \times IR \times FI \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CF =	Concentration in fish fillets (by species)	Chemical-specific (mg/kg, pCi/g)	95% UCL or maximum value
IR =	Fish ingestion rate	0.030 kg/day or 30 g/day 0.054 kg/day or 54 g/day	Child, ages 3-6 (Yang & Nelson 1986) Adult (OSWER Directive EPA 1991a)
FI =	Fraction ingested from local source	1 (unitless)	Maximum value; equivalent to 100%
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.17. Ingestion of Canada Geese

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CG \times IR \times FI \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CG \times IR \times FI \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CG =	Concentration in goose breast tissue	Chemical-specific (mg/kg, pCi/g)	95% UCL or maximum value
IR =	Ingestion rate		
	Adult	0.130 kg/day or 130 g	Best professional judgement
	Child	0.065 kg/day or 65 g	Best professional judgement
FI =	Fraction ingested from local source	1 (unitless)	Maximum value; equivalent to 100%
EF =	Exposure frequency	14 days/year	Best professional judgement
ED =	Exposure duration	6 years	Child exposure (RAGS, EPA 1989b)
		30 years	Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg	Child (OSWER Directive, EPA 1991a)
		70 kg	Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED	Averaging time for non-carcinogens
		365 days/year × 70 years	Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.18. Contaminant concentration in vegetables

Concentration in irrigated soil [1]:

$$CS_{irrigated} = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_B t_b})}{P \lambda_B}$$

Concentration in Vegetables [2]:

$$CV = (CW)(I_r)\left[\frac{f_R}{Y_v}\frac{(1 - e^{-\lambda_E t_f})}{\lambda_E}\right] + (CS)(B_{v_{wet}}) + (CS)(r_c)(\rho)(d)\left[\frac{f_R\,(1 - e^{-\lambda_E t_f})}{Y_v \quad \lambda_E}\right]$$

where

Parameter Explanation

	Parameter	Value used	Explanation/Source
CS =	Concentration in soil	Chemical-specific (pCi/g or mg/kg)	Measured value for dredging scenario Calculated value for irrigation (see above)
CW =	Concentration in water	Chemical-specific (pCi/L or mg/L)	Measured values listed in Appendix E.
I_r =	irrigation rate	1321.3 L/m^2-year or 3.62 L/m^2-day	Personal communication with the Roane County Agricultural Extension Agent
F =	fraction of the year crops are irrigated	0.25 (unitless)	Based on 3 months per year
λ_B =	Loss rate from decay and harvesting/leaching	Calculated (1/year)	$\lambda_B = \lambda_i + \lambda_{HL}$ (NCRP 1984)
λ_i =	radioactive decay	Calculated (1/year or 1/day)	$\lambda_i = 0.693/TR$ (NCRP 1984)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03/year	(2.7E-05/day)(365 days/year) NCRP 1984
TR =	Radioactive half-life	Radionuclide-specific	BEIAS (IRIS/HEAST databases)
t_b =	time of long-term build up in the soil	30 years	NCRP 1984
P =	areal density for the effective root zone (15 cm depth)	240 kg/m^2	Till & Meyer 1983
CV =	Concentration in vegetables	pCi/kg or mg/kg	Calculated as above

Table E.18. Contaminant concentration in vegetables (continued)

Parameter Explanation

	Parameter	Value used	Explanation/Source
f_R	= Interception fraction	0.25 (unitless)	fraction of deposited contaminant intercepted and retained by edible portion of crop (RAPS 1987)
Y_v	= Standing crop biomass (edible portion of vegetation)	2 kg/m^2	RAPS 1987
λ_E	= Effective decay constant for removal of contaminant deposited on vegetation	Calculated (1/day)	$\lambda_E = \lambda_i + (0.693/t_w)$
t_w	= Weathering half-life	14 days	the time required for one-half of the originally deposited contaminant to be lost from vegetation (RAPS 1987)
t_v	= Time period vegetables are exposed to above-ground contamination	60 days	RAPS 1987
$B_{v\text{-wet}}$	= Plant to soil concentration ratio (wet weight)	Calculated	$B_{v\text{-wet}} = B_{v\text{-organics}} \times 0.25$ (conversion factor from dry wt to wet wt)
$B_{v\text{-organics}}$	= Plant to soil concentration ratio (dry weight) contaminants	Unitless	Table E.35, NCRP, 1989 (commentary 3)
r_c	= soil resuspension constant	2.0E-10	NCRP 1984
ρ	= soil density	1600 kg/m^3	NCRP 1984
d	= deposition velocity	1000 m/day	RAPS 1987

[1] Based on IAEA, *Generic Models and Parameters for Assessing the Environmental Transfer of Radionuclides from Routine Releases*, Safety Series No. 57, International Atomic Energy Agency, Vienna, 1982.

[2] Based on *Remedial Actions Priority Systems (RAPS) Mathematical Formulations*, August 1987, DOE/RL/87-06.

Table E.19 Contaminant concentration in pasture forage

Concentration in irrigated soil [1]:

$$CS_{irrigated} = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_B t_b})}{P \lambda_B}$$

Concentration in pasture forage [2]:

$$CP = (CW)(I_r)\left[\frac{f_R}{Y_p}\frac{(1 - e^{-\lambda_B t_p})}{\lambda_B}\right] + (CS)(B_{v_{dry}}) + (CS)(r_c)(\rho)(d)\left[\frac{f_R\,(1 - e^{-\lambda_B t_p})}{Y_p \quad \lambda_B}\right]$$

where

Parameter Explanation

	Parameter	Value used	Explanation/Source
CS =	Concentration in soil	Chemical-specific (pCi/g or mg/kg)	Measured value for dredging scenario Calculated value for irrigation (see above)
CW =	Concentration in water	Chemical-specific (pCi/L or mg/L)	Measured values listed in Table E.1 or E.2.
I_r =	irrigation rate	1321.3 L/m^2-year or 3.62 L/m^2-day	Personal communication with the Roane County Agricultural Extension Agent
F =	fraction of the year crops are irrigated	0.25 (unitless)	Based on 3 months per year
λ_B =	Loss rate from decay and harvesting/leaching	Calculated (1/year)	$\lambda_B = \lambda_i + \lambda_{HL}$ (NCRP 1984)
λ_i =	radioactive decay	Calculated (1/year or 1/day)	$\lambda_i = 0.693/TR$ (NCRP 1984)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03/year	(2.7E-05/day)(365 days/year) NCRP 1984
TR =	Radioactive half-life	Radionuclide-specific	BEIAS (IRIS/HEAST databases)
t_b =	time of long-term build up in the soil	30 years	NCRP 1984
P =	areal density for the effective root zone (15 cm depth)	240 kg/m^2	Till & Meyer 1983
CP =	Concentration in pasture forage	pCi/kg or mg/kg	Calculated as above

Table E.19. Contaminant concentration in pasture forage (continued)

Parameter Explanation

	Parameter	Value used	Explanation/Source
f_R	= Interception fraction	0.25 (unitless)	fraction of deposited contaminant intercepted and retained by edible portion of crop (RAPS 1987)
Y_p	= Standing crop biomass (edible portion of vegetation)	0.47 kg/m^2	Till and Meyer 1983
λ_E	= Effective decay constant for removal of contaminant deposited on vegetation	Calculated (1/day)	$\lambda_E = \lambda_i + (0.693/t_w)$
t_w	= Weathering half-life	14 days	the time required for one-half of the originally deposited contaminant to be lost from vegetation (RAPS 1987)
t_p	= Time period pasture is exposed to above-ground contamination	30 days	NCRP Commentary No. 3 1989
$B_{v\text{-}dry}$	= Pasture forage to soil concentration ratio for radionuclides and inorganic contaminants (wet weight)	Unitless	See Table E.35.
$B_{v\text{-}organics}$	= Vegetable to soil concentration ratio for organic contaminants (dry weight)	Unitless	See Table E.35.
r_c	= soil resuspension constant	2.0E-10	NCRP 1984
ρ	= soil density	1600 kg/m^3	NCRP 1984
d	= deposition velocity	1000 m/day	RAPS 1987

[1] Based on IAEA, *Generic Models and Parameters for Assessing the Environmental Transfer of Radionuclides from Routine Releases*, Safety Series No. 57, International Atomic Energy Agency, Vienna, 1982.

[2] Based on *Remedial Actions Priority Systems (RAPS) Mathematical Formulations*, August 1987, DOE/RL/87-06.

Table E.20. Contaminant concentration in beef

Concentration in beef[1]:

$$CB = F_b[(CP \times Q_p) + (CS_1 \times Q_s) + (CW \times Q_w)]$$

where

CB	=	concentration in beef	mg/kg, pCi/g	Calculated as above.
F_b	=	transfer coefficient of contaminant in vegetation to contaminant in beef	day/kg	$\log F_b = -7.6 + \log K_{ow}$ (for organics) Elemental F_b = NCRP 1989 (Table E.x)
CP	=	contaminant concentration in pasture forage	mg/kg, pCi/g	Calculated as in Table E.20.
Q_p	=	quantity of dry forage ingested per day by beef cattle	7.2 kg/day	IAEA, 1993
CS_1	=	contaminant concentration in dry soil	mg/kg, pCi/g	Measured
CS_2	=	contaminant concentration in dry soil as the result of irrigation	mg/kg, pCi/g	Calculated
Q_s	=	quantity of dry soil ingested per day by beef cattle	0.72 kg/day	IAEA, 1993
CW	=	contaminant concentration in water	mg/L, pCi/L	Measured; see Table E.1 or E.2.
Q_w	=	quantity of water ingested per day by beef cattle	20 L/day	IAEA, 1993

[1] Based on NCRP, *Screening Techniques for Determining Compliance with Environmental Standards*, National Council on Radiation Protection and Measurements, NCRP Commentary No. 3, Revision of January 1989.

Table E.21. Contaminant concentration in milk

Concentration in milk [1]:

$$CM = F_m[(CP \times Q_p) + (CS_1 \times Q_s) + (CW \times Q_w)]$$

where

CM	=	concentration in milk	mg/L or pCi/L	Calculated as above.
F_m	=	transfer coefficient of contaminant in vegetation to contaminant in milk	day/L	$\log F_m = -8.1 + \log K_{ow}$, (for organics) Elemental = NCRP, 1989
CP	=	contaminant concentration in pasture forage	mg/kg or pCi/g	Calculated; see Table E.20.
Q_p	=	quantity of dry forage ingested per day by dairy cattle	16.1 kg/day	IAEA, 1993
CS_1	=	contaminant concentration in dry soil	mg/kg, pCi/g	Measured
CS_2	=	contaminant concentration in dry soil as the result of irrigation	mg/kg, pCi/g	Calculated
Q_s	=	quantity of dry soil ingested per day by dairy cattle	1.61 kg/day	IAEA, 1993
CW	=	contaminant concentration in water	mg/L, pCi/L	Measured
Q_w	=	quantity of water ingested per day by dairy cattle	50 L/day	IAEA, 1993

[1] Based on NCRP, *Screening Techniques for Determining Compliance with Environmental Standards*, National Council on Radiation Protection and Measurements, NCRP Commentary No. 3, Revision of January 1989.

Table E.22. Inadvertent ingestion of sediment in the dredging pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times IR \times FI \times ET \times CF \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}(pCi) = CS \times IR \times FI \times ET \times CF \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in dredged sediments	Chemical-specific (mg/kg, pCi/g, dry wt)	95% UCL on the mean
IR =	Ingestion rate	0.0002 kg/day or 0.2 g/day	Child (OSWER Directive, EPA 1991a)
		0.0001 kg/day or 0.1 g/day	Adult (OSWER Directive, EPA 1991a)
FI =	Fraction ingested	1 (unitless)	Maximum value; equivalent to 100%
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to dredged sediment
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years	Child exposure (RAGS, EPA 1989b)
		30 years	Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg	Child (OSWER Directive, EPA 1991a)
		70 kg	Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED	Averaging time for non-carcinogens
		365 days/year × 70 years	Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.23. Dermal contact with sediment in the dredging pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times AF \times ABS \times SA \times ET \times CF \times EF \times ED}{BW \times AT}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in dredged sediment	Chemical-specific (mg/kg, dry wt)	Concentration listed in Appendix E
AF =	Adherence factor	0.01 kg/m^2	Unit-adjusted adherence factor for soil 1.0 mg/cm^2 (10^{-6} kg/mg x 10^4 cm^2/m^2) (EPA 1992b)
ABS =	Absorption factor	0.001 (unitless) 0.01 (unitless)	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
SA =	Available surface area		25% of the 95th percentile total body surface area (DEA, EPA 1992a)
	Children Adults	0.2295 m^2/day 0.57 m^2/day	(0.918 m^2/day)(0.25), children (2.28 m^2/day)(0.25), adults
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to dredged sediment
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.24. Inhalation of resuspended sediment in the dredging pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CA \times IR \times ET \times EF \times ED$$

Where,

$$CA\left(\frac{mg}{m^3}, \frac{pCi}{m^3}\right) = CS \times r_c \times \rho$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CA =	Concentration in air	Chemical-specific (mg/m^3, pCi/m^3)	Concentration calculated as above
CS =	Concentration in dredged sediment	Chemical specific (mg/kg, pCi/g, dry wt)	Measured values listed in Appendix E
r_c =	Soil resuspension constant	2.0E-10 (unitless)	Till & Meyer 1983
ρ =	Soil density	1600 (kg/m^3)	Till & Meyer 1983
IR =	Air inhalation rate	2.0 m^3/hour 2.1 m^3/hour	Moderate child rate (EFH, EPA 1989a) Moderate adult rate (EFH, EPA 1989a)
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to dredged sediment
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens

Table E.25. External exposure to radionuclides in sediment in the dredging pathway

$$Dose_{dredging}\left(\frac{pCi \cdot yr}{g}\right) = CS \times \left(\frac{1 - e^{-\lambda_b ED}}{\lambda_b}\right) \times EF \times CF_1 \times ET \times CF_2$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in dredged sediment	Radionuclide-specific (pCi/g, dry wt)	95% UCL on the mean
λ_b =	Loss rate from decay and harvesting/leaching	Calculated value (1/years)	$\lambda_b = \lambda_i + \lambda_{HL}$ (NCRP 1989)
λ_i =	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03 (1/year)	(2.7E-05/day)(365 days/year) NCRP 1989
TR =	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
ED =	Exposure duration	30 years	Adult exposure (RAGS, EPA 1989b)
ET =	Exposure frequency	8 hours/day	Estimated; hours per day an individual is exposed to dredged sediment
CF_1 =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
CF_2 =	Conversion factor	1 year/365 days	Necessary to convert to appropriate units

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
1	Inorganic	Arsenic	1.1E-03	1.7E-02	1.3E-02
1	Inorganic	Beryllium	2.7E-06	4.8E-04	7.1E-04
1	Inorganic	Cadmium	1.6E-03	2.9E-04	7.4E-03
1	Inorganic	Chromium	3.6E-04	1.4E-01	6.4E-02
1	Inorganic	Mercury	3.8E-04	3.6E-03	9.4E-03
1	Inorganic	Nickel	9.2E-01	1.3E-01	3.1E-01
1	Inorganic	Selenium	2.3E-02	1.0E-01	1.8E-02
1	Inorganic	Zinc	9.9E+00	4.4E+01	1.2E+01
1	Organic	4,4'-DDD	3.7E-03	5.3E-03	2.0E-03
1	Organic	4,4'-DDT	1.2E-02	1.8E-02	1.1E-03
1	Organic	Benzo(a)anthracene	5.7E-03	8.1E-03	4.7E-03
1	Organic	Benzo(k)fluoranthene	7.5E-02	1.1E-01	1.5E-03
1	Radionuclide	Cesium-137	1.8E+01	4.9E-02	1.0E-02
1	Radionuclide	Cobalt-60	8.7E-01	5.5E-04	4.8E-02
7	Inorganic	Arsenic	2.7E-03	4.0E-02	3.0E-02
7	Inorganic	Barium	1.4E-01	3.0E-02	5.2E-01
7	Inorganic	Beryllium	4.0E-06	7.2E-04	1.1E-03
7	Inorganic	Chromium	6.7E-04	2.7E-01	1.2E-01
7	Inorganic	Manganese	3.8E-01	2.9E+00	1.6E+02
7	Inorganic	Mercury	4.3E-04	4.1E-03	1.1E-02
7	Inorganic	Nickel	1.2E+00	1.7E-01	3.9E-01
7	Inorganic	Selenium	1.2E-01	5.4E-01	9.5E-02
7	Inorganic	Vanadium	7.1E-02	7.3E-02	4.7E-02
7	Inorganic	Zinc	7.1E+00	3.2E+01	8.9E+00
7	Organic	Benzo(a)anthracene	1.6E-03	2.3E-03	1.3E-03
7	Organic	Benzo(a)pyrene	1.2E-02	1.6E-02	2.3E-03
7	Organic	Benzo(b)fluoranthene	9.6E-04	1.4E-03	1.8E-04
7	Organic	Indeno(1,2,3-cd)pyrene	2.1E-03	3.0E-03	9.3E-05
7	Radionuclide	Cesium-137	8.4E+00	2.3E-02	4.7E-03

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
7	Radionuclide	Strontium-90	3.9E+01	5.6E-02	1.6E-01
2.04	Inorganic	Arsenic	9.8E-04	1.5E-02	1.1E-02
2.04	Inorganic	Barium	1.1E-01	2.5E-02	4.3E-01
2.04	Inorganic	Beryllium	2.6E-06	4.6E-04	6.9E-04
2.04	Inorganic	Chromium	2.9E-04	1.2E-01	5.2E-02
2.04	Inorganic	Manganese	1.1E+00	8.1E+00	4.5E+02
2.04	Inorganic	Mercury	6.9E-04	6.5E-03	1.7E-02
2.04	Inorganic	Nickel	6.1E-01	8.8E-02	2.0E-01
2.04	Inorganic	Selenium	7.9E-02	3.6E-01	6.3E-02
2.04	Inorganic	Vanadium	3.4E-02	3.4E-02	2.2E-02
2.04	Inorganic	Zinc	5.5E+00	2.4E+01	6.8E+00
2.04	Organic	Benzo(a)anthracene	3.6E-03	5.1E-03	3.0E-03
2.04	Organic	Benzo(a)pyrene	9.0E-03	1.3E-02	1.8E-03
2.04	Organic	Benzo(b)fluoranthene	3.1E-03	4.3E-03	5.6E-04
2.04	Organic	Benzo(k)fluoranthene	4.8E-02	6.7E-02	9.3E-04
2.04	Organic	Indeno(1,2,3-cd)pyrene	9.4E-03	1.3E-02	4.1E-04
2.04	Organic	Pentachlorophenol	2.7E-02	3.8E-02	1.2E-02
2.04	Radionuclide	Cesium-137	4.1E+02	1.1E+00	2.3E-01
2.04	Radionuclide	Cobalt-60	2.8E-02	1.8E-05	1.5E-03
2.04	Radionuclide	Strontium-90	6.1E+01	8.7E-02	2.5E-01
2.04	Radionuclide	Uranium-234	9.1E-01	3.5E-04	1.7E-03
2.04	Radionuclide	Uranium-238	8.5E-01	4.2E-04	1.7E-03
3.01	Inorganic	Arsenic	1.3E-04	2.0E-03	1.5E-03
3.01	Inorganic	Barium	5.2E-02	1.1E-02	1.9E-01
3.01	Inorganic	Beryllium	1.7E-06	3.1E-04	4.6E-04
3.01	Inorganic	Chromium	1.9E-04	7.5E-02	3.4E-02
3.01	Inorganic	Manganese	7.7E-02	5.8E-01	3.2E+01
3.01	Inorganic	Nickel	4.1E-01	5.9E-02	1.4E-01
3.01	Inorganic	Vanadium	1.8E-02	1.8E-02	1.2E-02

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
3.01	Inorganic	Zinc	2.3E+00	1.0E+01	2.8E+00
3.01	Organic	Benzo(b)fluoranthene	3.1E-03	4.4E-03	5.8E-04
3.02	Inorganic	Arsenic	5.1E-04	7.6E-03	5.8E-03
3.02	Inorganic	Barium	9.7E-02	2.1E-02	3.6E-01
3.02	Inorganic	Beryllium	2.6E-06	4.6E-04	6.8E-04
3.02	Inorganic	Cadmium	2.1E-03	3.7E-04	9.3E-03
3.02	Inorganic	Chromium	4.4E-04	1.8E-01	7.9E-02
3.02	Inorganic	Manganese	2.6E-01	1.9E+00	1.1E+02
3.02	Inorganic	Mercury	1.2E-02	1.2E-01	3.1E-01
3.02	Inorganic	Nickel	2.1E+00	3.0E-01	7.0E-01
3.02	Inorganic	Selenium	1.1E-02	4.9E-02	8.6E-03
3.02	Inorganic	Vanadium	3.7E-02	3.8E-02	2.4E-02
3.02	Inorganic	Zinc	9.5E+00	4.2E+01	1.2E+01
3.02	Organic	Benzo(a)anthracene	6.7E-03	9.4E-03	5.5E-03
3.02	Organic	Benzo(a)pyrene	9.6E-03	1.4E-02	1.9E-03
3.02	Organic	Benzo(b)fluoranthene	1.7E-02	2.4E-02	3.1E-03
3.02	Organic	Benzo(k)fluoranthene	3.9E-02	5.5E-02	7.5E-04
3.02	Organic	Dibenz(a,h)anthracene	3.9E-02	5.5E-02	7.6E-04
3.02	Organic	Indeno(1,2,3-cd)pyrene	1.8E-02	2.6E-02	8.0E-04
3.02	Organic	PCB-1248	3.4E-03	4.9E-03	2.1E-03
3.02	Organic	PCB-1254	1.2E-02	1.6E-02	2.9E-03
3.02	Organic	PCB-1260	1.5E-01	2.1E-01	1.2E-03
3.02	Radionuclide	Cesium-137	4.8E+00	1.3E-02	2.7E-03
3.02	Radionuclide	Cobalt-60	2.2E-02	1.4E-05	1.2E-03
3.02	Radionuclide	Strontium-90	4.8E+01	6.9E-02	2.0E-01
3.02	Radionuclide	Technetium-99	6.0E+02	1.9E-01	6.5E+01
3.02	Radionuclide	Uranium-234	7.5E+00	2.9E-03	1.4E-02
3.02	Radionuclide	Uranium-235	3.6E-01	1.8E-04	7.3E-04
3.02	Radionuclide	Uranium-238	4.8E+00	2.4E-03	9.7E-03

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
3.03	Inorganic	Arsenic	5.3E-04	7.9E-03	6.0E-03
3.03	Inorganic	Barium	1.1E-01	2.3E-02	3.9E-01
3.03	Inorganic	Beryllium	3.1E-06	5.5E-04	8.2E-04
3.03	Inorganic	Cadmium	7.5E-03	1.3E-03	3.4E-02
3.03	Inorganic	Chromium	8.0E-04	3.2E-01	1.4E-01
3.03	Inorganic	Manganese	1.7E-01	1.3E+00	7.0E+01
3.03	Inorganic	Mercury	2.0E-02	1.9E-01	5.0E-01
3.03	Inorganic	Nickel	2.5E+00	3.6E-01	8.3E-01
3.03	Inorganic	Silver	8.1E-04	2.2E-02	1.7E-01
3.03	Inorganic	Vanadium	3.6E-02	3.7E-02	2.3E-02
3.03	Inorganic	Zinc	1.3E+01	5.8E+01	1.6E+01
3.03	Organic	Benzo(a)anthracene	1.7E-03	2.4E-03	1.4E-03
3.03	Organic	Benzo(a)pyrene	2.9E-03	4.1E-03	5.8E-04
3.03	Organic	Benzo(b)fluoranthene	5.5E-03	7.8E-03	1.0E-03
3.03	Organic	Benzo(k)fluoranthene	6.4E-03	9.0E-03	1.2E-04
3.03	Organic	Dibenz(a,h)anthracene	3.4E-03	4.8E-03	6.6E-05
3.03	Organic	Indeno(1,2,3-cd)pyrene	8.6E-03	1.2E-02	3.7E-04
3.03	Radionuclide	Cesium-137	2.3E+01	6.2E-02	1.3E-02
3.03	Radionuclide	Uranium-234	2.4E+00	9.0E-04	4.4E-03
3.03	Radionuclide	Uranium-238	1.4E+00	6.9E-04	2.9E-03
3.04	Inorganic	Arsenic	9.4E-03	1.4E-01	1.1E-01
3.04	Inorganic	Barium	2.5E-01	5.4E-02	9.5E-01
3.04	Inorganic	Beryllium	5.6E-06	1.0E-03	1.5E-03
3.04	Inorganic	Boron	4.2E-01	5.6E-02	1.3E+00
3.04	Inorganic	Cadmium	1.3E-02	2.3E-03	5.7E-02
3.04	Inorganic	Chromium	7.1E-04	2.9E-01	1.3E-01
3.04	Inorganic	Manganese	1.8E-01	1.3E+00	7.4E+01
3.04	Inorganic	Mercury	7.8E-02	7.4E-01	1.9E+00
3.04	Inorganic	Nickel	2.0E+00	2.9E-01	6.7E-01

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
3.04	Inorganic	Selenium	5.1E-02	2.3E-01	4.1E-02
3.04	Inorganic	Vanadium	9.9E-02	1.0E-01	6.5E-02
3.04	Inorganic	Zinc	9.4E+00	4.2E+01	1.2E+01
3.04	Organic	4-Methylphenol	9.6E-06	1.4E-05	2.1E-01
3.04	Organic	Benzo(a)anthracene	1.2E-03	1.7E-03	9.9E-04
3.04	Organic	Benzo(a)pyrene	4.1E-03	5.7E-03	8.1E-04
3.04	Organic	Benzo(b)fluoranthene	4.6E-03	6.4E-03	8.4E-04
3.04	Organic	Benzo(k)fluoranthene	2.4E-02	3.4E-02	4.7E-04
3.04	Organic	Dibenz(a,h)anthracene	2.4E-02	3.4E-02	4.7E-04
3.04	Organic	Indeno(1,2,3-cd)pyrene	1.3E-02	1.8E-02	5.7E-04
3.04	Organic	PCB-1248	5.8E-04	8.2E-04	3.4E-04
3.04	Organic	PCB-1254	2.8E-03	4.0E-03	7.1E-04
3.04	Organic	PCB-1260	2.4E-02	3.4E-02	1.9E-04
3.04	Radionuclide	Cesium-137	1.5E+02	4.2E-01	8.5E-02
3.04	Radionuclide	Cobalt-60	2.8E-02	1.8E-05	1.5E-03
3.04	Radionuclide	Technetium-99	4.3E+01	1.4E-02	4.7E+00
3.04	Radionuclide	Uranium-234	4.1E+00	1.6E-03	7.7E-03
3.04	Radionuclide	Uranium-235	2.5E-01	1.2E-04	5.1E-04
3.04	Radionuclide	Uranium-238	3.5E+00	1.7E-03	7.0E-03
4.01	Inorganic	Arsenic	1.0E-03	1.5E-02	1.1E-02
4.01	Inorganic	Barium	6.9E-02	1.5E-02	2.6E-01
4.01	Inorganic	Beryllium	2.6E-06	4.6E-04	6.8E-04
4.01	Inorganic	Cadmium	1.5E-03	2.6E-04	6.5E-03
4.01	Inorganic	Chromium	3.3E-04	1.3E-01	6.0E-02
4.01	Inorganic	Manganese	2.0E-01	1.5E+00	8.5E+01
4.01	Inorganic	Mercury	3.7E-02	3.5E-01	9.2E-01
4.01	Inorganic	Nickel	7.7E-01	1.1E-01	2.6E-01
4.01	Inorganic	Selenium	1.2E-02	5.6E-02	9.8E-03
4.01	Inorganic	Silver	4.4E-04	1.2E-02	9.1E-02

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
4.01	Inorganic	Vanadium	2.7E-02	2.7E-02	1.7E-02
4.01	Inorganic	Zinc	5.3E+00	2.4E+01	6.6E+00
4.01	Organic	Benzo(a)anthracene	3.6E-03	5.1E-03	3.0E-03
4.01	Organic	Benzo(a)pyrene	9.2E-03	1.3E-02	1.8E-03
4.01	Organic	Benzo(b)fluoranthene	9.7E-03	1.4E-02	1.8E-03
4.01	Organic	Benzo(k)fluoranthene	4.7E-02	6.7E-02	9.2E-04
4.01	Organic	Dibenz(a,h)anthracene	4.7E-02	6.7E-02	9.2E-04
4.01	Organic	Indeno(1,2,3-cd)pyrene	2.6E-02	3.7E-02	1.1E-03
4.01	Organic	N-Nitroso-di-n-propylamine	9.4E-06	1.3E-05	7.9E-01
4.01	Organic	PCB-1254	6.3E-03	8.9E-03	1.6E-03
4.01	Organic	PCB-1260	3.9E-01	5.6E-01	3.1E-03
4.01	Organic	Pentachlorophenol	2.7E-02	3.8E-02	1.1E-02
4.01	Radionuclide	Cesium-137	4.4E+02	1.2E+00	2.5E-01
4.01	Radionuclide	Cobalt-60	1.9E-02	1.2E-05	1.0E-03
4.02	Inorganic	Arsenic	1.1E-03	1.7E-02	1.3E-02
4.02	Inorganic	Barium	9.3E-02	2.0E-02	3.5E-01
4.02	Inorganic	Beryllium	2.2E-06	4.0E-04	5.9E-04
4.02	Inorganic	Chromium	2.6E-04	1.0E-01	4.7E-02
4.02	Inorganic	Manganese	1.6E-01	1.2E+00	6.7E+01
4.02	Inorganic	Mercury	1.0E-03	9.9E-03	2.6E-02
4.02	Inorganic	Nickel	5.2E-01	7.6E-02	1.8E-01
4.02	Inorganic	Vanadium	2.0E-02	2.1E-02	1.3E-02
4.02	Inorganic	Zinc	3.8E+00	1.7E+01	4.7E+00
4.02	Radionuclide	Cesium-137	7.7E+00	2.1E-02	4.3E-03
4.03	Inorganic	Arsenic	7.9E-04	1.2E-02	9.0E-03
4.03	Inorganic	Barium	1.1E-01	2.4E-02	4.2E-01
4.03	Inorganic	Beryllium	3.6E-06	6.4E-04	9.6E-04
4.03	Inorganic	Cadmium	1.3E-03	2.4E-04	6.1E-03
4.03	Inorganic	Chromium	6.7E-04	2.7E-01	1.2E-01

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
4.03	Inorganic	Manganese	3.8E-01	2.8E+00	1.6E+02
4.03	Inorganic	Mercury	1.1E-02	1.0E-01	2.7E-01
4.03	Inorganic	Nickel	1.6E+00	2.3E-01	5.3E-01
4.03	Inorganic	Selenium	3.1E-02	1.4E-01	2.4E-02
4.03	Inorganic	Vanadium	4.5E-02	4.7E-02	3.0E-02
4.03	Inorganic	Zinc	9.3E+00	4.1E+01	1.2E+01
4.03	Organic	Benzo(a)anthracene	8.0E-04	1.1E-03	6.6E-04
4.03	Organic	Benzo(a)pyrene	8.9E-03	1.3E-02	1.8E-03
4.03	Organic	Benzo(b)fluoranthene	3.4E-03	4.8E-03	6.3E-04
4.03	Organic	Dibenz(a,h)anthracene	2.5E-02	3.6E-02	4.9E-04
4.03	Organic	Indeno(1,2,3-cd)pyrene	4.7E-03	6.7E-03	2.0E-04
4.03	Organic	PCB-1254	1.0E-03	1.4E-03	2.5E-04
4.03	Organic	PCB-1260	6.5E-03	9.2E-03	5.1E-05
4.03	Radionuclide	Cesium-137	3.5E+02	9.5E-01	1.9E-01
4.03	Radionuclide	Cobalt-60	5.9E-02	3.8E-05	3.3E-03
4.04	Inorganic	Arsenic	1.0E-03	1.5E-02	1.2E-02
4.04	Inorganic	Barium	1.2E-01	2.6E-02	4.5E-01
4.04	Inorganic	Beryllium	4.1E-06	7.3E-04	1.1E-03
4.04	Inorganic	Cadmium	1.6E-03	2.9E-04	7.4E-03
4.04	Inorganic	Chromium	4.7E-04	1.9E-01	8.5E-02
4.04	Inorganic	Manganese	4.0E-01	3.0E+00	1.7E+02
4.04	Inorganic	Mercury	9.3E-03	8.9E-02	2.3E-01
4.04	Inorganic	Nickel	1.4E+00	2.0E-01	4.7E-01
4.04	Inorganic	Selenium	2.7E-02	1.2E-01	2.2E-02
4.04	Inorganic	Vanadium	4.8E-02	4.9E-02	3.1E-02
4.04	Inorganic	Zinc	1.1E+01	5.1E+01	1.4E+01
4.04	Organic	Benzo(a)anthracene	2.2E-03	3.1E-03	1.8E-03
4.04	Organic	Benzo(a)pyrene	1.9E-02	2.7E-02	3.7E-03
4.04	Organic	Benzo(b)fluoranthene	3.0E-03	4.3E-03	5.5E-04

Table E.26. Modelled concentrations in milk, meat, and vegetables for the dredging pathways for the Clinch River and Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
4.04	Organic	Dibenz(a,h)anthracene	3.3E-01	4.7E-01	6.5E-03
4.04	Organic	Indeno(1,2,3-cd)pyrene	5.1E-02	7.2E-02	2.2E-03
4.04	Organic	PCB-1254	1.5E-02	2.2E-02	3.8E-03
4.04	Radionuclide	Cesium-137	2.4E+02	6.5E-01	1.3E-01
4.04	Radionuclide	Cobalt-60	3.4E-02	2.2E-05	1.9E-03
4.04	Radionuclide	Strontium-90	1.6E+01	2.2E-02	6.5E-02
4.04	Radionuclide	Uranium-234	1.5E+00	5.7E-04	2.8E-03
4.04	Radionuclide	Uranium-238	1.3E+00	6.4E-04	2.6E-03

Table E.27. Ingestion of produce, meat, and milk in the dredging pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CP \times IR \times FI \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}(pCi) = CP \times IR \times FI \times EF \times ED$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CP =	Concentration in produce (vegetables and meat) (milk)	Calculated value (mg/kg, pCi/g, wet wt) (mg/L, pCi/L)	Modeled values based on equation outlined in Table E.19.
IR =	Produce ingestion rate	0.2 kg/day	Vegetables, children and adults (Exposure Factors Handbook, EPA 1989)
		0.1 kg/day	Meat, children and adults (Exposure Factors Handbook, EPA 1989)
		1.0 L/day	Milk, children (based on water ingestion, OSWER Directive, EPA 1991a)
		0.5 L/day	Milk, adults (ICRP 23, 1975)
FI =	Fraction ingested	0.4 (unitless)	Vegetables, reasonable worst case
		0.75 (unitless)	Beef and Milk, reasonable worst case (OSWER Directive, EPA 1991a)
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years	Child exposure (RAGS, EPA 1989b)
		30 years	Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg	Child (OSWER Directive, EPA 1991a)
		70 kg	Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED	Averaging time for non-carcinogens
		365 days/year × 70 years	Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.28. Inadvertent ingestion of irrigated soil

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times IR \times FI \times ET \times CF \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}(pCi) = CS \times IR \times FI \times ET \times CF \times EF \times ED$$

Where,

$$CS_{irrigated}\left(\frac{mg}{kg}, \frac{pCi}{g}\right) = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_B t_b})}{P\,\lambda_B}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in irrigated soil	Calculated value (mg/kg, pCi/g, dry wt)	Modeled value, as above
CW =	Concentration in water	Contaminant-specific (mg/L, pCi/L)	95% UCL on the mean
I_r =	Rate of irrigation	1321.3 L/m^2-year	(3.62 L/m^2/day) (365 days/year) Roane County Extension Agent
F =	Fraction of the year irrigation occurs	0.25 (unitless)	Based on 3 months/year
λ_B =	Loss rate from decay and harvesting/leaching	Calculated value (1/years)	$\lambda_B = \lambda_i + \lambda_{HL}$ (NCRP 1989)
λ_i =	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
TR =	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03 (1/year)	(2.7E-05/day)(365 days/year) NCRP 1989
t_b =	Time of long-term build up in irrigated soil	30 years	NCRP 1989
P =	Areal density for effective root zone (15-cm depth)	240 kg/m^2	Till & Meyer 1983

Table E.28. Inadvertent ingestion of irrigated soil (continued)

Parameter Explanation (continued)

	Parameter	Value used	Explanation/source
IR =	Soil ingestion rate	0.0002 kg/day, or 0.2 g/day 0.0001 kg/day, or 0.1 g/day	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
FI =	Fraction ingested	1 (unitless)	Maximum value; equivalent to 100%
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to irrigated soil
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.29. Dermal contact with soil in the irrigation pathway

$$CS_{irrigated}\left(\frac{mg}{kg}\right) = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_b t_b})}{P\,\lambda_B}$$

$$Intake_{nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CS \times AF \times ABS \times SA \times ET \times CF \times EF \times ED}{BW \times AT}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CS =	Concentration in irrigated soil	Contaminant-specific (mg/kg, dry wt)	Calculated as specified above
CW =	Concentration in surface water	Contaminant-specific (mg/L)	95% UCL on the mean
I_r =	Rate of irrigation	1321.3 L/m^2-year	(3.62 L/m^2-day)(365 days/year) Roane County Extension Agent
F =	Fraction of the year irrigation occurs	0.25 (unitless)	Based on 3 months/year
λ_b =	Loss rate from decay and harvesting/leaching	Calculated value (1/years)	$\lambda_b = \lambda_i + \lambda_{HL}$ (NCRP 1989)
λ_i =	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03 (1/year)	(2.7E-05/day)(365 days/year) NCRP 1989
TR =	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
t_b =	time of long-term build up in irrigated soil	30 years	NCRP 1989
P =	areal density for effective root zone (15 cm depth)	240 kg/m^2	Till & Meyer, 1983
AF =	Adherence factor	0.01 kg/m^2	Unit-adjusted adherence factor for soil 1.0 mg/cm^2 (10^{-6} kg/mg x 10^4 cm^2/m^2) (EPA 1992b)

Table E.29. Dermal contact with soil in the irrigation pathway (continued)

Parameter Explanation

	Parameter	Value used	Explanation/source
ABS =	Absorption factor	0.001 (unitless) 0.01 (unitless)	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
SA =	Available surface area	0.2295 m^2/day 0.57 m^2/day	(0.918 m^2/day)(0.25), children (2.28 m^2/day)(0.25), adults 25% of the 95th percentile total body surface area (DEA, EPA 1992a)
ET =	Exposure time	8 hours/day	Estimated; fraction of a day an individual is exposed to irrigated soil
CF =	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.30. Inhalation of resuspended soil in the irrigation pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}\,(pCi) = CA \times IR \times ET \times EF \times ED$$

$$Where, \qquad CA\left(\frac{mg}{m^3}, \frac{pCi}{m^3}\right) = CS \times r_c \times \rho$$

$$Where, \qquad CS_{\ irrigated} = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_b t_b})}{P\,\lambda_B}$$

Parameter Explanation

	Parameter	Value used	Explanation/source
CA =	Concentration in air	Chemical-specific (mg/m^3, pCi/m^3)	Concentration calculated as above
CS =	Concentration in irrigated soil	Chemical specific (mg/kg, pCi/g, dry wt)	Measured values listed in Appendix E
r_c =	Soil resuspension	2.0E-10 (unitless)	Till & Meyer 1983
ρ =	Soil density	1600 (kg/m^3)	Till & Meyer 1983
CW =	Concentration in surface water	Contaminant-specific (mg/L, pCi/L)	95% UCL on the mean
I_r =	Rate of irrigation	1321.3 L/m^2-year	(3.62 L/m^2-day)(365 days/year) Roane County Extension Agent
F =	Fraction of the year irrigation occurs	0.25 (unitless)	Based on 3 months/year
λ_b =	Loss rate from decay and harvesting/leaching	Calculated value (1/years)	$\lambda_b = \lambda_i + \lambda_{HL}$ (NCRP 1989)
λ_i =	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
λ_{HL} =	Removal rate for harvesting/leaching	9.9E-03 (1/year)	(2.7E-05/day)(365 days/year) NCRP 1989

Table E.30. Inhalation of resuspended soil in the irrigation pathway (continued)

Parameter Explanation

	Parameter	Value used	Explanation/source
TR =	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
t_b =	time of long-term build in the soil	30 years	NCRP 1989
P =	areal density for effective root zone (15 cm depth)	240 kg/m^2 or 240,000 g/m^2	Till & Meyer 1983
IR =	Air inhalation rate	2.0 m^3/hour 2.1 m^3/hour	Moderate child rate (EFH, EPA 1989a) Moderate adult rate (EFH, EPA 1989a)
ET =	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to irrigated soil
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years 30 years	Child exposure (RAGS, EPA 1989b) Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg 70 kg	Child (OSWER Directive, EPA 1991a) Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED 365 days/year × 70 years	Averaging time for non-carcinogens Averaging time for carcinogens

Table E.31. External exposure to radionuclides in soil in the irrigation pathway

$$CS_{irrigated} = \frac{(CW)(I_r)(F)(1 - e^{-\lambda_B t_b})}{P \lambda_B}$$

$$Dose_{irrigated}\left(\frac{pCi \cdot yr}{g}\right) = CS \times ET \times CF_1 \times EF \times CF_2 \times ED$$

Parameter Explanation

Parameter			Value used	Explanation/source
CS	=	Concentration in irrigated soil	Radionuclide-specific (pCi/g, dry wt)	Calculated as specified above
CW	=	Concentration in surface water	Contaminant-specific (pCi/L)	95% UCL on the mean
I_r	=	Rate of irrigation	1321.3 L/m^2-year	(3.62 L/m^2-day)(365 days/year) Roane County Extension Agent
F	=	Fraction of the year irrigation occurs	0.25 (unitless)	Based on 3 months/year
λ_b	=	Loss rate from decay and harvesting/leaching	Calculated value (1/years)	$\lambda_b = \lambda_i + \lambda_{HL}$ (NCRP 1989)
λ_i	=	Radioactive decay constant	Calculated value (1/years)	$\lambda_i = 0.693/TR$ (NCRP 1989)
λ_{HL}	=	Removal rate for harvesting/leaching	9.9E-03 (1/year)	(2.7E-05/day)(365 days/year) NCRP 1989
TR	=	Radioactive half-life	Radionuclide-specific (years)	BEIAS (IRIS/HEAST databases)
t_b	=	time of long-term build up in irrigated soil	30 years	NCRP 1989
P	=	areal density for effective root zone (15 cm)	240 kg/m^2 or	Till & Meyer 1983
ED	=	Exposure duration	30 years	Adult exposure (RAGS, EPA 1989b)
ET	=	Exposure time	8 hours/day	Estimated; hours per day an individual is exposed to irrigated soil
CF_1	=	Conversion factor	1 day/24 hours	Necessary to convert to appropriate units
EF	=	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
CF_2	=	Conversion factor	1 year/365 days	Necessary to convert to appropriate units

Table E.32. Modelled concentrations in soil, milk, meat, and vegetables for the irrigation pathways for surface water collected in the Clinch River

Reach	Chemical type	Chemical	Concentration in Soil (pCi/g, mg/kg)	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
1	Inorganic	Arsenic	4.3E-02	4.3E-05	6.3E-04	1.0E-02
1	Inorganic	Nitrate	1.8E+02	6.1E+02	8.2E+02	3.8E+02
1	Radionuclide	Cobalt-60	3.7E+01	1.5E-01	9.5E-05	3.4E-02
1	Radionuclide	Strontium-90	2.8E+01	2.1E+00	3.0E-03	1.2E-02
2	Inorganic	Nickel	1.5E-01	4.2E-02	6.0E-03	3.8E-02
2	Inorganic	Nitrate	1.2E+02	4.1E+02	5.5E+02	2.5E+02
2	Organic	Acetone	5.0E-01	2.0E-06	2.8E-06	6.8E+00
2	Radionuclide	Cesium-137	3.2E+01	6.0E+00	1.6E-02	1.1E-02
2	Radionuclide	Strontium-90	2.2E+02	1.7E+01	2.4E-02	9.2E-02
2	Radionuclide	Tritium	1.5E+05	4.3E+03	4.3E+00	4.3E+00
4	Inorganic	Antimony	5.9E-02	2.5E-05	1.7E-05	1.4E-02
4	Inorganic	Arsenic	4.4E-02	4.4E-05	6.5E-04	1.1E-02
4	Inorganic	Nitrate	1.6E+02	5.4E+02	7.2E+02	3.3E+02
4	Radionuclide	Cesium-137	4.7E+01	8.9E+00	2.4E-02	1.6E-02
4	Radionuclide	Cobalt-60	4.8E+01	2.0E-01	1.2E-04	4.4E-02
4	Radionuclide	Strontium-90	5.0E+01	3.8E+00	5.4E-03	2.1E-02
4	Radionuclide	Uranium - radioactive	7.6E+01	5.2E-01	2.5E-04	1.8E-02
7	Inorganic	Arsenic	8.4E-02	8.3E-05	1.2E-03	2.0E-02
7	Inorganic	Nickel	1.4E-01	3.9E-02	5.6E-03	3.6E-02
7	Radionuclide	Strontium-90	5.5E+01	4.2E+00	6.0E-03	2.3E-02

Table E.33. Modelled concentrations in soil, milk, and vegetables for the irrigation pathways for surface water collected in Poplar Creek

Reach	Chemical type	Chemical	Concentration in Soil (pCi/g, mg/kg)	Concentration in Milk (pCi/L, mg/L)i	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
3.01	Inorganic	Antimony	5.1E-02	2.1E-05	1.5E-05	1.2E-02
3.01	Inorganic	Manganese	3.2E+00	2.2E-03	1.7E-02	1.1E+00
3.01	Inorganic	Nickel	1.7E-01	4.7E-02	6.7E-03	4.3E-02
3.01	Organic	PCB-1254	1.0E-02	1.5E-03	2.1E-03	2.6E-03
3.01	Radionuclide	Strontium-90	5.7E+01	4.4E+00	6.2E-03	2.3E-02
3.02	Inorganic	Antimony	6.8E-02	2.8E-05	2.0E-05	1.7E-02
3.02	Inorganic	Arsenic	1.1E-01	1.1E-04	1.6E-03	2.6E-02
3.02	Inorganic	Boron	2.4E+00	1.2E-01	1.6E-02	6.6E-01
3.02	Inorganic	Manganese	3.2E+00	2.2E-03	1.6E-02	1.1E+00
3.02	Inorganic	Nickel	1.5E-01	4.2E-02	6.0E-03	3.8E-02
3.02	Organic	Di-n-octylphthlate	3.6E-01	7.5E+01	1.0E+02	8.7E-02
3.02	Radionuclide	Strontium-90	3.9E+01	3.0E+00	4.2E-03	1.6E-02
3.03	Inorganic	Arsenic	5.2E-02	5.2E-05	7.7E-04	1.3E-02
3.03	Inorganic	Manganese	3.2E+00	2.2E-03	1.6E-02	1.1E+00
3.03	Inorganic	Nickel	1.5E-01	4.2E-02	6.0E-03	3.9E-02
3.03	Inorganic	Nitrate	1.8E+02	6.2E+02	8.3E+02	3.8E+02
3.03	Organic	Acetone	4.6E-01	1.9E-06	2.6E-06	6.3E+00
3.03	Radionuclide	Cesium-137	3.9E+01	7.4E+00	2.0E-02	1.3E-02
3.03	Radionuclide	Strontium-90	6.3E+01	4.9E+00	6.9E-03	2.6E-02

Table E.33. Modelled concentrations in soil, milk, and vegetables for the irrigation pathways for surface water collected in Poplar Creek (continued)

Reach	Chemical type	Chemical	Concentration in Soil (pCi/g, mg/kg)	Concentration in Milk (pCi/L, mg/L)	Concentration in Meat (pCi/g, mg/kg)	Concentration in Vegetables (pCi/g, mg/kg)
3.04	Inorganic	Antimony	6.2E-02	2.6E-05	1.9E-05	1.5E-02
3.04	Inorganic	Arsenic	4.3E-02	4.3E-05	6.3E-04	1.0E-02
3.04	Inorganic	Manganese	3.2E+00	2.2E-03	1.6E-02	1.1E+00
3.04	Inorganic	Molybdenum	1.8E-01	5.5E-03	1.4E-03	4.8E-02
3.04	Inorganic	Nickel	1.5E-01	4.2E-02	6.1E-03	3.9E-02
3.04	Organic	PCB-1254	7.5E-03	1.1E-03	1.5E-03	1.9E-03
3.04	Radionuclide	Strontium-90	4.3E+02	3.3E+01	4.7E-02	1.8E-01

Table E.34. Ingestion of produce, meat, and milk in the irrigation pathway

$$Intake_{\ nonradionuclides}\left(\frac{mg}{kg \cdot day}\right) = \frac{CP \times IR \times FI \times EF \times ED}{BW \times AT}$$

$$Intake_{\ radionuclides}(pCi) = CP \times IR \times FI \times EF \times ED$$

Parameter Explanation

Parameter		Value used	Explanation/source
CP =	Concentration in produce (vegetables and meat) (milk)	Calculated value (mg/kg, pCi/kg, wet wt) (mg/L, pCi/L)	Modeled values based on the equations outlined in Tables E.19. to E.22.
IR =	Produce ingestion rate	0.2 kg/day	Vegetables, children and adults (Exposure Factors Handbook, EPA 1989)
		0.1 kg/day	Meat, children and adults (Exposure Factors Handbook, EPA 1989)
		1.0 L/day	Milk, children (based on water ingestion, OSWER Directive, EPA 1991a)
		0.5 L/day	Milk, adults (ICRP 23, 1975)
FI =	Fraction ingested	0.4 (unitless)	Vegetables, reasonable worst case
		0.75 (unitless)	Beef and Milk, reasonable worst case (OSWER Directive, EPA 1991a)
EF =	Exposure frequency	350 days/year	OSWER Directive, EPA 1991a
ED =	Exposure duration	6 years	Child exposure (RAGS, EPA 1989b)
		30 years	Adult exposure (RAGS, EPA 1989b)
BW =	Body weight	15 kg	Child (OSWER Directive, EPA 1991a)
		70 kg	Adult (OSWER Directive, EPA 1991a)
AT =	Averaging time	365 days/year × ED	Averaging time for non-carcinogens
		365 days/year × 70 years	Averaging time for carcinogens (RAGS, EPA 1989b; EPA 1991a)

Table E.35. Log K_{ow} and transfer coefficients used in food chain models

Chemical	Log Kow	Meat Transfer Coefficient	Milk Transfer Coefficient	Pasture Transfer Coefficient	Vegetable Transfer Coefficient
Acenaphthene	4.33E+00	2.51E-04	7.94E-05	1.89E-01	4.72E-02
Acenaphthylene					
Acetone	-2.40E-01	1.46E-08	4.61E-09	5.31E+01	1.33E+01
Aldrin	3.01E+00	8.51E-02	2.40E-02	3.34E-02	8.36E-03
Aluminum					
Am-241		4.00E-05	1.50E-06	4.00E-03	1.00E-03
Anthracene	4.45E+00	7.08E-04	2.24E-04	1.04E-01	2.59E-02
Antimony (metallic)		4.00E-05	2.50E-05	5.00E-02	1.00E-02
Aroclor 1254	6.03E+00	5.25E-02	1.12E-02	1.25E-02	3.12E-03
Aroclor-1248	5.76E+00	1.44E-02	4.57E-03	1.82E-02	4.54E-03
Aroclor-1260	7.15E+00	3.54E-01	1.12E-01	2.86E-03	7.14E-04
Arsenic, Inorganic		2.00E-03	6.00E-05	6.00E-03	1.50E-03
Barium		2.30E-04	4.80E-04	1.00E-01	1.00E-02
Be-7		1.00E-03	9.00E-07	1.50E-03	3.75E-04
Benz[a]anthracene	5.66E+00	1.00E-02	3.16E-03	2.25E-02	5.61E-03
Benzo[a]pyrene	6.10E+00	2.89E-02	9.13E-03	1.22E-02	3.04E-03
Benzo[b]fluoranthene	6.12E+00	2.89E-02	9.13E-03	1.22E-02	3.04E-03
Benzo[g,h,i]perylene	6.58E+00				
Benzo[k]fluoranthene	6.84E+00	2.89E-02	9.13E-03	1.22E-02	3.04E-03
Benzoic Acid	1.87E+00	1.86E-06	5.89E-07	3.22E+00	8.04E-01
Beryllium		8.00E-04	2.00E-06	1.88E-03	4.70E-04
Bis(2-ethylhexyl)phthalate	4.89E+00	1.03E-07	3.26E-08	1.71E+01	4.28E+00
Boron And Borates Only		8.00E-04	2.70E-03	4.80E-01	1.20E-01
Butyl Benzyl Phthlate	4.91E+00				
Cadmium (Diet)		4.00E-04	1.00E-03	1.50E-01	3.75E-02
Carbazole	3.76E+00	1.45E-04	4.57E-05	2.60E-01	6.50E-02
Carbon Disulfide	2.24E+00	2.51E-06	7.94E-07	2.70E+00	6.76E-01
Chlordane, Total	5.54E+00	7.41E-03	3.72E-04	6.68E-02	1.67E-02
Chloroform	1.97E+00	2.34E-06	7.41E-07	2.81E+00	7.04E-01
Chromium		9.00E-03	1.00E-05	4.00E-02	1.00E-02
Chrysene	5.66E+00	1.02E-02	3.23E-03	2.22E-02	5.54E-03

Table E.35. Log K_{ow} and transfer coefficients used in food chain models (continued)

Chemical	Log Kow	Meat Transfer Coefficient	Milk Transfer Coefficient	Pasture Transfer Coefficient	Vegetable Transfer Coefficient
Cm-248		4.00E-05	1.50E-06	4.00E-03	1.00E-03
Co-60		1.00E-04	7.00E-05	4.00E-01	3.00E-02
Cobalt					
Copper		9.00E-03	1.50E-03	2.50E-01	6.25E-02
Cresol, p-	1.94E+00	2.14E-06	6.76E-07	2.97E+00	7.42E-01
Cs-137+D		5.12E-02	8.38E-03	2.00E-01	4.00E-02
Curium 243/244		4.00E-05	1.50E-06	4.00E-03	1.00E-03
Curium 245/246		4.00E-05	1.50E-06	4.00E-03	1.00E-03
DDD	5.80E+00	1.26E-02	3.02E-03	1.01E-02	2.53E-03
DDE	5.69E+00	4.90E-02	9.55E-03	3.48E-03	8.71E-04
DDT	6.36E+00	2.82E-02	1.07E-02	1.02E-02	2.56E-03
Dibenz[a,h]anthracene	6.84E+00	1.02E-02	3.23E-03	2.22E-02	5.54E-03
Dibutyl Phthalate	4.90E+00	1.00E-02	3.18E-03	2.24E-02	5.60E-03
Diethyl Phthalate	2.47E+00	7.23E-06	2.29E-06	1.47E+00	3.67E-01
Fluoranthene	4.95E+00	1.99E-03	6.31E-04	5.70E-02	1.43E-02
Fluorene	4.38E+00	3.97E-04	1.26E-04	1.45E-01	3.62E-02
H-3		0.00	1.50E-02	0.00	0.00
Heptachlor	4.27E+00	1.55E-02	3.24E-03	1.11E-01	2.77E-02
Indeno[1,2,3-cd]pyrene	6.58E+00	7.94E-02	2.51E-02	6.78E-03	1.70E-03
Iron					
K-40		1.80E-02	7.20E-03	3.00E+00	3.00E-01
Lead And Compounds		4.00E-04	2.50E-04	3.20E-03	8.00E-04
Magnesium					
Manganese (Diet)		5.00E-04	3.00E-05	3.00E+00	4.00E-01
Mercury, Inorganic		1.00E-02	4.70E-04	1.00E+00	3.00E-01
Methoxychlor	4.40E+00	5.02E-04	1.48E-04	1.26E-01	3.16E-02
Methyl Ethyl Ketone	2.75E-01	4.72E-08	1.49E-08	2.69E+01	6.72E+00
Methyl Mercury					
Molybdenum		1.00E-03	1.70E-03	4.00E-01	1.00E-01
Naphthalene	3.30E+00	4.27E-05	2.00E-04	5.26E-01	1.31E-01

Table E.35. Log K_{ow} and transfer coefficients used in food chain models (continued)

Chemical	Log Kow	Meat Transfer Coefficient	Milk Transfer Coefficient	Pasture Transfer Coefficient	Vegetable Transfer Coefficient
Naphthalene, 2-Methyl					
Nickel Soluble Salts		5.20E-03	1.60E-02	2.00E-01	5.00E-02
Nitrate		7.50E-02	2.50E-02	3.00E+01	7.50E+00
Nitrophenol, 4-					
Octyl Phthalate, di-N-	9.20E+00	1.86E+02	5.89E+01	7.64E-05	1.91E-05
Pentachlorophenol	5.86E+00	2.51E-03	7.94E-04	4.99E-02	1.25E-02
Phenanthrene	4.57E+00	7.23E-04	2.29E-04	1.02E-01	2.56E-02
Phenol	1.46E+00	7.23E-07	2.29E-07	5.55E+00	1.39E+00
Plutonium-239/240		1.80E-05	1.10E-06	1.00E-03	5.00E-04
Pu-238		1.80E-05	1.10E-06	1.00E-03	5.00E-04
Pyrene	4.88E+00	5.25E-03	1.66E-03	3.26E-02	8.15E-03
Selenium		1.00E-01	1.00E-02	5.00E-01	1.00E-01
Silver		3.00E-03	5.00E-05	1.00E+00	2.00E-01
Sr-90+D		9.00E-03	2.82E-03	4.01E+00	3.02E-01
Sulfate					
Tc-99		1.00E-04	1.40E-04	4.00E-01	5.00E+00
Thallium					
Toluene	2.73E+00	1.35E-05	4.27E-06	1.02E+00	2.56E-01
Trichloroethylene	2.42E+00	6.03E-06	1.91E-06	1.63E+00	4.08E-01
U-234		3.40E-04	4.00E-04	1.00E-02	2.00E-03
U-235+D		4.40E-04	4.05E-04	1.10E-02	2.50E-03
Uranium					
Uranium-238		4.50E-04	4.10E-04	1.13E-02	2.56E-03
Vanadium, Metallic		2.30E-03	1.00E-03	5.20E-03	1.30E-03
Zinc (Metallic)		1.00E-01	1.00E-02	1.00E+00	4.00E-01

Table E.36. Chemicals with an excess cancer risk (ECR) of >10^{-6} and pathway totals for the drinking water ingestion pathway for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Ingestion ECR
1	Inorganic	Arsenic	1.2E-03	2.1E-05
1	Radionuclide	Cobalt-60	3.9E+00	1.5E-06
1	Radionuclide	Uranium - radioactive	1.2E+00	1.5E-06
1	Radionuclide	Strontium-90	1.1E+00	1.3E-06
1	Radionuclide	Tritium	6.7E+02	1.0E-06
1			Pathway Total	2.6E-05
2	Radionuclide	Tritium	8.5E+03	1.3E-05
2	Radionuclide	Strontium-90	8.6E+00	1.0E-05
2			Pathway Total	2.3E-05
4	Inorganic	Arsenic	1.2E-03	2.2E-05
4	Radionuclide	Uranium - radioactive	2.1E+00	2.8E-06
4	Radionuclide	Strontium-90	1.9E+00	2.3E-06
4	Radionuclide	Cobalt-60	5.0E+00	2.0E-06
4	Radionuclide	Cesium-137	1.8E+00	1.2E-06
4			Pathway Total	3.0E-05
7	Inorganic	Arsenic	2.3E-03	4.1E-05
7	Radionuclide	Strontium-90	2.1E+00	2.5E-06
7			Pathway Total	4.4E-05

Table E.37. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult drinking water ingestion pathway for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Adult Ingestion HQ
1	Inorganic	Manganese	6.3E-02	3.4E-01
1	Inorganic	Arsenic	1.2E-03	1.1E-01
1			Hazard Index	4.5E-01
2	Inorganic	Manganese	7.0E-02	3.8E-01
2			Hazard Index	3.8E-01
4	Inorganic	Manganese	5.9E-02	3.2E-01
4	Inorganic	Arsenic	1.2E-03	1.1E-01
4	Inorganic	Antimony	1.6E-03	1.1E-01
4			Hazard Index	5.5E-01
7	Inorganic	Manganese	7.1E-02	3.9E-01
7	Inorganic	Arsenic	2.3E-03	2.1E-01
7			Hazard Index	6.0E-01

Table E.38. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child drinking water ingestion pathway for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Child Ingestion HQ
1	Inorganic	Manganese	6.3E-02	8.0E-01
1	Inorganic	Arsenic	1.2E-03	2.6E-01
1	Inorganic	Nitrate	5.0E+00	2.0E-01
1			Hazard Index	1.3E+00
2	Inorganic	Manganese	7.0E-02	9.0E-01
2	Inorganic	Nitrate	3.4E+00	1.3E-01
2			Hazard Index	1.0E+00
4	Inorganic	Manganese	5.9E-02	7.5E-01
4	Inorganic	Arsenic	1.2E-03	2.6E-01
4	Inorganic	Antimony	1.6E-03	2.6E-01
4	Inorganic	Nitrate	4.4E+00	1.7E-01
4			Hazard Index	1.5E+00
7	Inorganic	Manganese	7.1E-02	9.0E-01
7	Inorganic	Arsenic	2.3E-03	5.0E-01
7			Hazard Index	1.4E+00

Table E.39. Chemicals with an excess cancer risk (ECR) of $>10^{-6}$ and pathway totals for the drinking water ingestion pathway for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Ingestion ECR
3.01	Radionuclide	Tritium	1.9E+03	2.8E-06
3.01	Radionuclide	Strontium-90	2.2E+00	2.6E-06
3.01			Pathway Total	5.4E-06
3.02	Inorganic	Arsenic	3.0E-03	5.3E-05
3.02	Radionuclide	Strontium-90	1.5E+00	1.8E-06
3.02	Radionuclide	Tritium	8.2E+02	1.2E-06
3.02			Pathway Total	5.6E-05
3.03	Inorganic	Arsenic	1.5E-03	2.6E-05
3.03	Organic	Bis(2-ethylhexyl)phthalate	1.0E-02	1.6E-06
3.03	Radionuclide	Strontium-90	2.4E+00	2.9E-06
3.03	Radionuclide	Uranium - radioactive	1.7E+00	2.3E-06
3.03	Radionuclide	Uranium-234	1.9E+00	1.7E-06
3.03	Radionuclide	Tritium	8.8E+02	1.3E-06
3.03			Pathway Total	3.5E-05
3.04	Inorganic	Arsenic	1.2E-03	2.1E-05
3.04	Radionuclide	Strontium-90	1.7E+01	1.9E-05
3.04			Pathway Total	4.1E-05

Table E.40. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the adult drinking water ingestion pathway for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration	Adult Ingestion HQ
3.01	Inorganic	Manganese	9.1E-02	5.0E-01
3.01	Organic	PCB-1254	2.9E-04	4.0E-01
3.01			Hazard Index	9.0E-01
3.02	Inorganic	Manganese	8.9E-02	4.9E-01
3.02	Inorganic	Arsenic	3.E-03	2.7E-01
3.02	Inorganic	Antimony	1.9E-03	1.3E-01
3.02			Hazard Index	8.9E-01
3.03	Inorganic	Manganese	8.9E-02	4.9E-01
3.03	Inorganic	Arsenic	1.5E-03	1.3E-01
3.03			Hazard Index	6.2E-01
3.04	Inorganic	Manganese	8.9E-02	4.9E-01
3.04	Inorganic	Antimony	1.7E-03	1.2E-01
3.04	Inorganic	Arsenic	1.2E-03	1.1E-01
3.04	Organic	PCB-1254	2.1E-04	2.9E-01
3.04			Hazard Index	1.0E+00

Table E.41. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child drinking water ingestion pathway for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration	Child Ingestion HQ
3.01	Inorganic	Manganese	9.1E-02	1.2E+00
3.01	Inorganic	Antimony	1.4E-03	2.3E-01
3.01	Organic	PCB-1254	2.9E-04	9.3E-01
3.01			Hazard Index	2.3E+00
3.02	Inorganic	Manganese	8.9E-02	1.1E+00
3.02	Inorganic	Arsenic	3.E-03	6.4E-01
3.02	Inorganic	Antimony	1.9E-03	3.0E-01
3.02			Hazard Index	2.1E+00
3.03	Inorganic	Manganese	8.9E-02	1.1E+00
3.03	Inorganic	Arsenic	1.5E-03	3.1E-01
3.03	Inorganic	Nitrate	5.1E+00	2.0E-01
3.03			Hazard Index	1.7E+00
3.04	Inorganic	Manganese	8.9E-02	1.1E+00
3.04	Inorganic	Antimony	1.7E-03	2.8E-01
3.04	Inorganic	Arsenic	1.2E-03	2.6E-01
3.04	Organic	PCB-1254	2.1E-04	6.7E-01
3.04			Hazard Index	2.3E+00

Table E.42. Chemicals with an excess cancer risk (ECR) of >10^{-6} and pathway totals for the near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Ingestion ECR	Inhalation ECR	External Exposure ECR	Dermal Contact ECR	Total ECR Across Pathways
2.04	Inorganic	Chromium	2.1E+01		1.3E-05			1.3E-05
2.04	Inorganic	Arsenic	6.2E+00	9.1E-07	4.9E-06			5.8E-06
2.04	Inorganic	Beryllium	1.3E+00	5.4E-07	1.7E-07		3.1E-06	3.8E-06
2.04	Radionuclide	Potassium-40	1.4E+01	3.0E-08	2.9E-09	4.1E-05		4.1E-05
2.04	Radionuclide	Cesium-137	3.5E+00	1.9E-08	1.9E-09	2.5E-05		2.5E-05
2.04			Pathway Total	1.5E-06	1.8E-05	6.6E-05	3.1E-06	8.9E-05
3.01	Inorganic	Chromium	2.1E+01		1.3E-05			1.3E-05
3.01	Inorganic	Arsenic	4.1E+00	6.0E-07	3.2E-06			3.8E-06
3.01	Inorganic	Beryllium	7.0E-01	2.9E-07	9.3E-08		1.7E-06	2.1E-06
3.01			Pathway Total	9.0E-07	1.7E-05		1.7E-06	1.9E-05
3.02	Inorganic	Chromium	1.6E+02		1.0E-04			1.0E-04
3.02	Inorganic	Arsenic	1.3E+01	1.9E-06	1.0E-05			1.2E-05
3.02	Inorganic	Beryllium	9.2E-01	3.9E-07	1.2E-07		2.2E-06	2.7E-06
3.02	Radionuclide	Uranium-238	4.1E+01	4.4E-07	1.4E-05	1.0E-05		2.5E-05
3.02	Radionuclide	Uranium-234	5.9E+01	4.6E-07	2.3E-05	6.0E-09		2.4E-05
3.02	Radionuclide	Cesium-137	1.2E+00	6.7E-09	6.6E-10	8.8E-06		8.8E-06
3.02	Radionuclide	Uranium-235	3.1E+00	2.5E-08	1.1E-06	3.9E-06		5.0E-06
3.02	Radionuclide	Cobalt-60	1.6E-01	5.4E-10	3.2E-10	1.9E-06		1.9E-06

Table E.42. Chemicals with an excess cancer risk (ECR) of $>10^{-6}$ and pathway totals for the near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Ingestion ECR	Inhalation ECR	External Exposure ECR	Dermal Contact ECR	Total ECR Across Pathways
3.02			Pathway Total	3.2E-06	1.5E-04	2.5E-05	2.2E-06	1.8E-04
3.03	Inorganic	Chromium	6.7E+01		4.3E-05			4.3E-05
3.03	Inorganic	Arsenic	6.2E+00	9.2E-07	4.9E-06			5.8E-06
3.03	Inorganic	Beryllium	7.3E-01	3.1E-07	9.7E-08		1.7E-06	2.2E-06
3.03	Radionuclide	Cesium-137	1.7E+00	9.3E-09	9.1E-10	1.2E-05		1.2E-05
3.03	Radionuclide	Uranium-238	6.0E+00	6.5E-08	2.1E-06	1.5E-06		3.7E-06
3.03	Radionuclide	Uranium-234	7.9E+00	6.1E-08	3.1E-06	8.1E-10		3.2E-06
3.03			Pathway Total	1.4E-06	5.4E-05	1.4E-05	1.7E-06	7.0E-05
3.04	Inorganic	Arsenic	4.6E+01	6.8E-06	3.7E-05			4.3E-05
3.04	Inorganic	Chromium	5.1E+01		3.3E-05			3.3E-05
3.04	Inorganic	Beryllium	1.3E+00	5.4E-07	1.7E-07		3.1E-06	3.8E-06
3.04	Radionuclide	Cesium-137	4.9E+00	2.7E-08	2.6E-09	3.5E-05		3.5E-05
3.04	Radionuclide	Uranium-238	4.4E+00	4.8E-08	1.5E-06	1.1E-06		2.7E-06
3.04	Radionuclide	Uranium-234	4.6E+00	3.6E-08	1.8E-06	4.7E-10		1.8E-06
3.04			Pathway Total	7.4E-06	7.3E-05	3.6E-05	3.1E-06	1.2E-04
4.01	Inorganic	Chromium	1.9E+01		1.3E-05			1.3E-05
4.01	Inorganic	Arsenic	4.9E+00	7.1E-07	3.8E-06			4.5E-06
4.01	Inorganic	Beryllium	7.0E-01	2.9E-07	9.3E-08		1.7E-06	2.1E-06

Table E.42. Chemicals with an excess cancer risk (ECR) of $>10^{-6}$ and pathway totals for the near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Ingestion ECR	Inhalation ECR	External Exposure ECR	Dermal Contact ECR	Total ECR Across Pathways
4.01	Radionuclide	Cesium-137	5.9E+00	3.3E-08	3.2E-09	4.3E-05		4.3E-05
4.01	Radionuclide	Potassium-40	1.1E+01	2.4E-08	2.3E-09	3.2E-05		3.2E-05
4.01			Pathway Total	1.1E-06	1.6E-05	7.4E-05	1.7E-06	9.3E-05
4.02	Inorganic	Chromium	1.9E+01		1.2E-05			1.2E-05
4.02	Inorganic	Arsenic	4.9E+00	7.2E-07	3.8E-06			4.6E-06
4.02	Inorganic	Beryllium	7.0E-01	3.0E-07	9.3E-08		1.7E-06	2.1E-06
4.02	Radionuclide	Potassium-40	1.7E+01	3.6E-08	3.5E-09	4.9E-05		4.9E-05
4.02	Radionuclide	Cesium-137	5.0E+00	2.7E-08	2.7E-09	3.6E-05		3.6E-05
4.02	Radionuclide	Cobalt-60	1.4E-01	4.6E-10	2.7E-10	1.6E-06		1.6E-06
4.02			Pathway Total	1.1E-06	1.6E-05	8.6E-05	1.7E-06	1.1E-04
4.03	Inorganic	Chromium	3.5E+01		2.3E-05			2.3E-05
4.03	Inorganic	Arsenic	1.1E+01	1.6E-06	8.8E-06			1.0E-05
4.03	Inorganic	Beryllium	7.1E-01	3.0E-07	9.4E-08		1.7E-06	2.1E-06
4.03	Radionuclide	Cesium-137	4.0E+00	2.2E-08	2.2E-09	2.9E-05		2.9E-05
4.03			Pathway Total	2.0E-06	3.2E-05	2.9E-05	1.7E-06	6.5E-05
4.04	Radionuclide	Cesium-137	2.7E+00	1.5E-08	1.4E-09	1.9E-05		1.9E-05
4.04			Pathway Total	1.5E-08	1.4E-09	1.9E-05		1.9E-05

Table E.43. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Ingestion HQ	Inhalation HQ	Dermal Contact HQ	Total HQ Across Pathways
2.04	Inorganic	Manganese	1.9E+03	3.1E-03	5.0E+00	4.5E-03	5.0E+00
2.04			Hazard Index	3.1E-03	5.0E+00	4.5E-03	5.0E+00
3.01	Inorganic	Manganese	3.8E+02	6.3E-04	9.9E-01	8.9E-04	9.9E-01
3.01			Hazard Index	6.3E-04	9.9E-01	8.9E-04	9.9E-01
3.02	Inorganic	Manganese	7.2E+02	1.2E-03	1.9E+00	1.7E-03	1.9E+00
3.02			Hazard Index	1.2E-03	1.9E+00	1.7E-03	1.9E+00
3.03	Inorganic	Manganese	9.2E+02	1.5E-03	2.4E+00	2.1E-03	2.4E+00
3.03			Hazard Index	1.5E-03	2.4E+00	2.1E-03	2.4E+00
3.04	Inorganic	Manganese	6.6E+02	1.1E-03	1.7E+00	1.5E-03	1.7E+00
3.04			Hazard Index	1.1E-03	1.7E+00	1.5E-03	1.7E+00
4.01	Inorganic	Manganese	6.9E+02	1.1E-03	1.8E+00	1.6E-03	1.8E+00
4.01			Hazard Index	1.1E-03	1.8E+00	1.6E-03	1.8E+00
4.02	Inorganic	Manganese	9.2E+02	1.5E-03	2.4E+00	2.1E-03	2.4E+00
4.02			Hazard Index	1.5E-03	2.4E+00	2.1E-03	2.4E+00
4.03	Inorganic	Manganese	1.5E+03	2.4E-03	3.9E+00	3.5E-03	3.9E+00
4.03			Hazard Index	2.4E-03	3.9E+00	3.5E-03	3.9E+00

Table E.44. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Ingestion HQ	Inhalation HQ	Dermal Contact HQ	Total HQ Across Pathways
2.04	Inorganic	Manganese	1.9E+03	2.9E-02	2.2E+01	8.4E-03	2.2E+01
2.04	Inorganic	Barium	1.9E+02	5.8E-03	2.2E-01	9.6E-04	2.3E-01
2.04			Hazard Index	3.5E-02	2.2E+01	9.4E-03	2.2E+01
3.01	Inorganic	Manganese	3.8E+02	5.8E-03	4.4E+00	1.7E-03	4.4E+00
3.01	Inorganic	Barium	8.6E+01	2.6E-03	9.9E-02	4.3E-04	1.0E-01
3.01			Hazard Index	8.5E-03	4.5E+00	2.1E-03	4.5E+00
3.02	Inorganic	Manganese	7.2E+02	1.1E-02	8.3E+00	3.2E-03	8.3E+00
3.02	Inorganic	Mercury	3.2E+01	2.3E-01	6.2E-02	3.8E-07	2.9E-01
3.02	Inorganic	Barium	1.6E+02	4.8E-03	1.8E-01	7.8E-04	1.8E-01
3.02	Inorganic	Chromium	1.6E+02	6.9E-02		4.0E-02	1.1E-01
3.02			Hazard Index	3.1E-01	8.5E+00	4.3E-02	8.9E+00
3.03	Inorganic	Manganese	9.2E+02	1.4E-02	1.1E+01	4.0E-03	1.1E+01
3.03	Inorganic	Barium	9.7E+01	3.0E-03	1.1E-01	4.9E-04	1.1E-01
3.03			Hazard Index	1.7E-02	1.1E+01	4.5E-03	1.1E+01
3.04	Inorganic	Manganese	6.6E+02	1.0E-02	7.5E+00	2.9E-03	7.5E+00
3.04	Inorganic	Mercury	4.5E+01	3.2E-01	8.5E-02	5.2E-07	4.0E-01
3.04	Inorganic	Arsenic	4.6E+01	3.3E-01		9.2E-03	3.4E-01
3.04	Inorganic	Barium	1.1E+02	3.4E-03	1.3E-01	5.6E-04	1.3E-01

Table E.44. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child near-shore sediment pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Ingestion HQ	Inhalation HQ	Dermal Contact HQ	Total HQ Across Pathways
3.04			Hazard Index	6.6E-01	7.7E+00	1.3E-02	8.4E+00
4.01	Inorganic	Manganese	6.9E+02	1.1E-02	7.9E+00	3.0E-03	7.9E+00
4.01			Hazard Index	1.1E-02	7.9E+00	3.0E-03	7.9E+00
4.02	Inorganic	Manganese	9.2E+02	1.4E-02	1.1E+01	4.0E-03	1.1E+01
4.02			Hazard Index	1.4E-02	1.1E+01	4.0E-03	1.1E+01
4.03	Inorganic	Manganese	1.5E+03	2.3E-02	1.7E+01	6.6E-03	1.7E+01
4.03	Inorganic	Barium	8.7E+01	2.6E-03	9.9E-02	4.3E-04	1.0E-01
4.03			Hazard Index	2.6E-02	1.7E+01	7.0E-03	1.7E+01

Table E.45. Chemicals with a hazard quotient (HQ) of >0.1 andhazard indices for the adult swimming pathways for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/L)	Incidental Ingestion HQ	Dermal Contact HQ	Total HQ Across Pathways
3.01	Organic	PCB-1254	2.9E-04	3.3E-03	6.1E-01	
3.01			Pathway Total	3.3E-03	6.1E-01	6.1E-01
3.02	Organic	Di-n-octylphthlate	1.0E-02	1.1E-04	1.6E+00	
3.02			Pathway Total	1.1E-04	1.6E+00	1.6E+00
3.04	Organic	PCB-1254	2.1E-04	2.4E-03	4.4E-01	
3.04			Pathway Total	2.4E-03	4.4E-01	4.5E-01

Table E.46. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child swimming pathways for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/L)	Incidental Ingestion HQ	Dermal Contact HQ	Total HQ Across Pathways
3.01	Inorganic	Manganese	9.1E-02	1.9E-02	8.9E-02	
3.01	Organic	PCB-1254	2.9E-04	1.5E-02	1.1E+00	
3.01			Hazard Index	3.5E-02	1.2E+00	1.3E+00
3.02	Inorganic	Manganese	8.9E-02	1.9E-02	8.7E-02	
3.02	Organic	Di-n-octylphthlate	1.0E-02	5.3E-04	2.9E+00	
3.02			Hazard Index	1.9E-02	3.0E+00	3.0E+00
3.03	Inorganic	Manganese	8.9E-02	1.9E-02	8.8E-02	
3.03			Hazard Index	1.9E-02	8.8E-02	1.1E-01
3.04	Inorganic	Manganese	8.9E-02	1.9E-02	8.7E-02	
3.04	Organic	PCB-1254	2.1E-04	1.1E-02	8.3E-01	
3.04			Hazard Index	3.0E-02	9.2E-01	9.5E-01

Table E.47. Chemicals with an excess cancer risk (ECR) of >10-6 and pathway totals for the fish ingestion pathway for the Clinch Rvier and Poplar Creek

Reach	Species	Chemical Type	Chemical	Representative concentration (mg/kg, pCi/g)	Ingestion ECR
1	Bluegill	Inorganic	Arsenic	7.2E-02	3.4E-05
1	Bluegill	Inorganic	Beryllium	6.0E-03	8.2E-06
1	Bluegill			Pathway Total	4.2E-05
1	Catfish	Organic	PCB-1260	3.7E-01	9.0E-04
1	Catfish	Organic	Chlordane, total	3.4E-01	1.4E-04
1	Catfish	Organic	4,4'-DDE	8.5E-02	9.1E-06
1	Catfish	Radionuclide	Cesium-137	8.1E-02	1.5E-06
1	Catfish			Pathway Total	1.0E-03
1	LargeMouth Bass	Inorganic	Arsenic	1.8E-01	8.6E-05
1	LargeMouth Bass			Pathway Total	8.6E-05
2	Bluegill	Inorganic	Arsenic	3.0E-02	1.4E-05
2	Bluegill	Inorganic	Beryllium	2.3E-03	3.2E-06
2	Bluegill	Radionuclide	Cesium-137	2.9E+00	5.3E-05
2	Bluegill			Pathway Total	7.0E-05
2	Catfish	Organic	PCB-1260	1.1E+00	2.8E-03
2	Catfish	Organic	Chlordane, total	2.1E-01	8.6E-05
2	Catfish	Organic	4,4'-DDE	1.3E-02	1.4E-06
2	Catfish	Radionuclide	Cesium-137	1.1E+00	1.9E-05
2	Catfish	Radionuclide	Strontium-90	5.4E-01	1.7E-05
2	Catfish			Pathway Total	2.9E-03
2	LargeMouth Bass	Inorganic	Arsenic	2.9E-01	1.4E-04
2	LargeMouth Bass	Inorganic	Beryllium	2.2E-03	3.0E-06
2	LargeMouth Bass	Organic	PCB-1260	1.9E-01	4.7E-04
2	LargeMouth Bass	Organic	Chlordane, total	7.2E-02	3.0E-05
2	LargeMouth Bass	Radionuclide	Cesium-137	8.2E+00	1.5E-04
2	LargeMouth Bass			Pathway Total	7.8E-04
2	Striped/hybrid Bass	Organic	PCB-1260	4.3E-01	1.1E-03

Table E.47. Chemicals with an excess cancer risk (ECR) of >10-6 and pathway totals for the fish ingestion pathway for the Clinch Rvier and Poplar Creek (continued)

Reach	Species	Chemical Type	Chemical	Representative concentration (mg/kg, pCi/g)	Ingestion ECR
2	Striped/hybrid Bass	Organic	Chlordane, total	1.5E-01	6.0E-05
2	Striped/hybrid Bass			Pathway Total	1.1E-03
3	Bluegill	Inorganic	Arsenic	7.4E-02	3.5E-05
3	Bluegill	Inorganic	Beryllium	4.3E-03	5.9E-06
3	Bluegill	Radionuclide	Cesium-137	7.6E-02	1.4E-06
3	Bluegill			Pathway Total	4.2E-05
3	Catfish	Organic	PCB-1260	7.9E-01	1.9E-03
3	Catfish	Organic	Chlordane, total	9.4E-02	3.9E-05
3	Catfish	Radionuclide	Strontium-90	3.2E-01	1.0E-05
3	Catfish	Radionuclide	Cesium-137	6.8E-02	1.2E-06
3	Catfish			Pathway Total	2.0E-03
3	LargeMouth Bass	Inorganic	Arsenic	2.0E-01	9.6E-05
3	LargeMouth Bass	Inorganic	Beryllium	3.6E-03	4.9E-06
3	LargeMouth Bass	Organic	PCB-1260	3.8E-01	9.2E-04
3	LargeMouth Bass	Organic	Chlordane, total	7.9E-02	3.2E-05
3	LargeMouth Bass	Radionuclide	Cesium-137	1.0E-01	1.9E-06
3	LargeMouth Bass			Pathway Total	1.1E-03
4	Bluegill	Inorganic	Arsenic	5.5E-02	2.6E-05
4	Bluegill	Inorganic	Beryllium	2.4E-03	3.2E-06
4	Bluegill	Organic	PCB-1260	4.0E-01	9.8E-04
4	Bluegill	Organic	Chlordane, total	5.7E-02	2.3E-05
4	Bluegill	Radionuclide	Cesium-137	1.6E-01	2.8E-06
4	Bluegill			Pathway Total	1.0E-03
4	Catfish	Inorganic	Arsenic	3.7E-02	1.8E-05
4	Catfish	Inorganic	Beryllium	2.7E-03	3.7E-06
4	Catfish	Organic	PCB-1260	8.7E-01	2.1E-03
4	Catfish	Organic	Chlordane, total	1.3E-01	5.4E-05

Table E.47. Chemicals with an excess cancer risk (ECR) of >10-6 and pathway totals for the fish ingestion pathway for the Clinch Rvier and Poplar Creek (continued)

Reach	Species	Chemical Type	Chemical	Representative concentration (mg/kg, pCi/g)	Ingestion ECR
4	Catfish	Organic	4,4'-DDT	2.0E-01	2.2E-05
4	Catfish	Organic	Aldrin	1.3E-03	6.9E-06
4	Catfish	Organic	4,4'-DDE	2.6E-02	2.8E-06
4	Catfish	Radionuclide	Strontium-90	3.0E-01	9.4E-06
4	Catfish	Radionuclide	Cesium-137	6.8E-02	1.2E-06
4	Catfish			Pathway Total	2.3E-03
4	LargeMouth Bass	Inorganic	Arsenic	2.4E-01	1.1E-04
4	LargeMouth Bass	Organic	PCB-1260	2.4E-01	5.9E-04
4	LargeMouth Bass	Organic	Chlordane, total	7.3E-02	3.0E-05
4	LargeMouth Bass	Radionuclide	Cesium-137	1.2E-01	2.1E-06
4	LargeMouth Bass			Pathway Total	7.3E-04
4	Striped/hybrid Bass	Organic	PCB-1260	7.6E-01	1.9E-03
4	Striped/hybrid Bass	Organic	Chlordane, total	1.1E-01	4.5E-05
4	Striped/hybrid Bass			Pathway Total	1.9E-03

Table E.48. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult fish ingestion pathway for the Clinch Rvier and Poplar Creek

Reach	Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Adult Ingestion HQ
1	Bluegill	Inorganic	Arsenic	7.2E-02	1.8E-01
1	Bluegill	Inorganic	Selenium	9.2E-01	1.4E-01
1	Bluegill	Inorganic	Mercury	4.4E-02	1.1E-01
1	Bluegill			Hazard Index	4.2E-01
1	Catfish	Organic	Chlordane, total	3.4E-01	4.2E+00
1	Catfish	Organic	PCB-1254	1.1E-01	4.2E+00
1	Catfish			Hazard Index	8.4E+00
1	LargeMouth Bass	Inorganic	Arsenic	1.8E-01	4.4E-01
1	LargeMouth Bass	Inorganic	Mercury	7.4E-02	1.8E-01
1	LargeMouth Bass	Inorganic	Selenium	1.1E+00	1.6E-01
1	LargeMouth Bass			Hazard Index	7.9E-01
2	Bluegill	Inorganic	Mercury	8.9E-02	2.2E-01
2	Bluegill			Hazard Index	2.2E-01
2	Catfish	Organic	PCB-1254	6.4E-01	2.4E+01
2	Catfish	Organic	Chlordane, total	2.1E-01	2.6E+00
2	Catfish			Hazard Index	2.6E+01
2	LargeMouth Bass	Inorganic	Arsenic	2.9E-01	7.2E-01
2	LargeMouth Bass	Inorganic	Mercury	2.9E-01	7.1E-01
2	LargeMouth Bass	Organic	PCB-1254	1.8E-01	6.8E+00
2	LargeMouth Bass	Organic	Chlordane, total	7.2E-02	8.8E-01
2	LargeMouth Bass			Hazard Index	9.1E+00
2	Striped/hybrid Bass	Organic	PCB-1254	6.1E-01	2.3E+01
2	Striped/hybrid Bass	Organic	Chlordane, total	1.5E-01	1.8E+00
2	Striped/hybrid Bass			Hazard Index	2.4E+01
3	Bluegill	Inorganic	Mercury	4.4E-01	1.1E+00
3	Bluegill	Inorganic	Arsenic	7.4E-02	1.8E-01
3	Bluegill			Hazard Index	1.3E+00

Table E.48. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult fish ingestion pathway for the Clinch Rvier and Poplar Creek (continued)

Reach	Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Adult Ingestion HQ
3	Catfish	Organic	PCB-1254	3.7E-01	1.4E+01
3	Catfish	Organic	Chlordane, total	9.4E-02	1.2E+00
3	Catfish			Hazard Index	1.5E+01
3	LargeMouth Bass	Inorganic	Mercury	7.3E-01	1.8E+00
3	LargeMouth Bass	Inorganic	Arsenic	2.0E-01	5.0E-01
3	LargeMouth Bass	Organic	PCB-1254	3.7E-01	1.4E+01
3	LargeMouth Bass	Organic	Chlordane, total	7.9E-02	9.7E-01
3	LargeMouth Bass			Hazard Index	1.7E+01
4	Bluegill	Inorganic	Mercury	1.9E-01	4.7E-01
4	Bluegill	Inorganic	Arsenic	5.5E-02	1.4E-01
4	Bluegill	Organic	PCB-1254	2.0E-01	7.4E+00
4	Bluegill	Organic	Chlordane, total	5.7E-02	7.0E-01
4	Bluegill			Hazard Index	8.7E+00
4	Catfish	Inorganic	Mercury	2.9E-01	7.3E-01
4	Catfish	Organic	PCB-1254	5.4E-01	2.0E+01
4	Catfish	Organic	Chlordane, total	1.3E-01	1.6E+00
4	Catfish	Organic	4,4'-DDT	2.0E-01	3.0E-01
4	Catfish			Hazard Index	2.3E+01
4	LargeMouth Bass	Inorganic	Mercury	3.3E-01	8.1E-01
4	LargeMouth Bass	Inorganic	Arsenic	2.4E-01	5.9E-01
4	LargeMouth Bass	Organic	PCB-1254	2.2E-01	8.1E+00
4	LargeMouth Bass	Organic	Chlordane, total	7.3E-02	9.0E-01
4	LargeMouth Bass			Hazard Index	1.0E+01
4	Striped/hybrid Bass	Organic	PCB-1254	4.9E-01	1.8E+01
4	Striped/hybrid Bass	Organic	Chlordane, total	1.1E-01	1.3E+00
4	Striped/hybrid Bass			Hazard Index	2.0E+01

Table E.49. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child fish ingestion pathway for the Clinch Rvier and Poplar Creek

Reach	Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Child Ingestion HQ
1	Bluegill	Inorganic	Arsenic	7.2E-02	4.6E-01
1	Bluegill	Inorganic	Selenium	9.2E-01	3.5E-01
1	Bluegill	Inorganic	Mercury	4.4E-02	2.8E-01
1	Bluegill			Hazard Index	1.1E+00
1	Catfish	Organic	Chlordane, total	3.4E-01	1.1E+01
1	Catfish	Organic	PCB-1254	1.1E-01	1.1E+01
1	Catfish			Hazard Index	2.2E+01
1	LargeMouth Bass	Inorganic	Arsenic	1.8E-01	1.2E+00
1	LargeMouth Bass	Inorganic	Mercury	7.4E-02	4.7E-01
1	LargeMouth Bass	Inorganic	Selenium	1.1E+00	4.2E-01
1	LargeMouth Bass			Hazard Index	2.0E+00
2	Bluegill	Inorganic	Mercury	8.9E-02	5.7E-01
2	Bluegill	Inorganic	Selenium	5.1E-01	2.0E-01
2	Bluegill	Inorganic	Arsenic	3.0E-02	1.9E-01
2	Bluegill			Hazard Index	9.6E-01
2	Catfish	Organic	PCB-1254	6.4E-01	6.1E+01
2	Catfish	Organic	Chlordane, total	2.1E-01	6.7E+00
2	Catfish			Hazard Index	6.8E+01
2	LargeMouth Bass	Inorganic	Arsenic	2.9E-01	1.9E+00
2	LargeMouth Bass	Inorganic	Mercury	2.9E-01	1.8E+00
2	LargeMouth Bass	Inorganic	Selenium	4.3E-01	1.7E-01
2	LargeMouth Bass	Organic	PCB-1254	1.8E-01	1.8E+01
2	LargeMouth Bass	Organic	Chlordane, total	7.2E-02	2.3E+00
2	LargeMouth Bass			Hazard Index	2.4E+01
2	Striped/hybrid Bass	Organic	PCB-1254	6.1E-01	5.9E+01
2	Striped/hybrid Bass	Organic	Chlordane, total	1.5E-01	4.7E+00
2	Striped/hybrid Bass			Hazard Index	6.3E+01

Table E.49. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child fish ingestion pathway for the Clinch Rvier and Poplar Creek (continued)

Reach	Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Child Ingestion HQ
3	Bluegill	Inorganic	Mercury	4.4E-01	2.8E+00
3	Bluegill	Inorganic	Arsenic	7.4E-02	4.7E-01
3	Bluegill	Inorganic	Selenium	3.5E-01	1.3E-01
3	Bluegill			Hazard Index	3.4E+00
3	Catfish	Organic	PCB-1254	3.7E-01	3.5E+01
3	Catfish	Organic	Chlordane, total	9.4E-02	3.0E+00
3	Catfish			Hazard Index	3.8E+01
3	LargeMouth Bass	Inorganic	Mercury	7.3E-01	4.7E+00
3	LargeMouth Bass	Inorganic	Arsenic	2.0E-01	1.3E+00
3	LargeMouth Bass	Inorganic	Selenium	3.0E-01	1.2E-01
3	LargeMouth Bass	Organic	PCB-1254	3.7E-01	3.5E+01
3	LargeMouth Bass	Organic	Chlordane, total	7.9E-02	2.5E+00
3	LargeMouth Bass			Hazard Index	4.4E+01
4	Bluegill	Inorganic	Mercury	1.9E-01	1.2E+00
4	Bluegill	Inorganic	Arsenic	5.5E-02	3.5E-01
4	Bluegill	Inorganic	Selenium	5.1E-01	2.0E-01
4	Bluegill	Organic	PCB-1254	2.0E-01	1.9E+01
4	Bluegill	Organic	Chlordane, total	5.7E-02	1.8E+00
4	Bluegill			Hazard Index	2.3E+01
4	Catfish	Inorganic	Mercury	2.9E-01	1.9E+00
4	Catfish	Inorganic	Arsenic	3.7E-02	2.4E-01
4	Catfish	Organic	PCB-1254	5.4E-01	5.2E+01
4	Catfish	Organic	Chlordane, total	1.3E-01	4.2E+00
4	Catfish	Organic	4,4'-DDT	2.0E-01	7.7E-01
4	Catfish			Hazard Index	5.9E+01
4	LargeMouth Bass	Inorganic	Mercury	3.3E-01	2.1E+00
4	LargeMouth Bass	Inorganic	Arsenic	2.4E-01	1.5E+00

Table E.49. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child fish ingestion pathway for the Clinch Rvier and Poplar Creek (continued)

Reach	Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Child Ingestion HQ
4	LargeMouth Bass	Inorganic	Selenium	4.2E-01	1.6E-01
4	LargeMouth Bass	Organic	PCB-1254	2.2E-01	2.1E+01
4	LargeMouth Bass	Organic	Chlordane, total	7.3E-02	2.3E+00
4	LargeMouth Bass			Hazard Index	2.7E+01
4	Striped/hybrid Bass	Organic	PCB-1254	4.9E-01	4.7E+01
4	Striped/hybrid Bass	Organic	Chlordane, total	1.1E-01	3.5E+00
4	Striped/hybrid Bass			Hazard Index	5.1E+01

Table E.50. Chemicals with an excess cancer risk (ECR) of >10^{-6} for the waterfowl ingestion pathway

Species	Chemical Type	Chemical	Representative Concentration (pCi/g)	Ingestion ECR
Canadian Goose	Radionuclide	Plutonium-238	1.5E-01	2.4E-06
Canadian Goose			Pathway Total	2.4E-06

Table E.51. Chemicals with a hazard quotient (HQ) of >0.1 for the adult waterfowl ingestion pathway

Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Ingestion HQ
Canadian Goose	Inorganic	Selenium	1.7E+01	2.4E-01
Canadian Goose			Hazard Index	2.4E-01

Table E.52. Chemicals with a hazard quotient (HQ) of >0.1 for the child waterfowl ingestion pathway

Species	Chemical Type	Chemical	Representative Concentration (mg/kg)	Ingestion HQ
Canadian Goose	Inorganic	Selenium	1.7E+01	5.7E-01
Canadian Goose			Hazard Index	5.7E-01

Table E.53. Chemicals with an excess cancer risk (ECR) of $>10^{-6}$ and pathway totals for the irrigation pathways for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Soil Ingestion ECR	Inhalation of Resuspended Soil ECR	External Exposure ECR	Ingestion of Milk ECR	Ingestion of Meat ECR	Ingestion of Leafy Vegetables ECR	Total ECR Across Pathways
1	Inorganic	Arsenic	4.3E-02	1.3E-08	6.8E-08		1.4E-07	4.2E-07	7.4E-06	
1	Radionuclide	Cobalt-60	3.7E-02	2.5E-10	1.4E-10	3.5E-06	1.1E-08	1.4E-09	5.4E-07	
1	Radionuclide	Strontium-90	2.8E-02	5.5E-10	1.1E-10		4.7E-07	1.3E-07	5.4E-07	
1			Pathway Total	1.3E-08	6.8E-08	3.5E-06	6.3E-07	5.5E-07	8.4E-06	1.3E-05
2	Radionuclide	Strontium-90	2.2E-01	4.4E-09	8.7E-10		3.8E-06	1.1E-06	4.3E-06	
2	Radionuclide	Cesium-137	3.2E-02	3.5E-10	3.4E-11	6.4E-07	7.5E-07	4.1E-07	2.9E-07	
2	Radionuclide	Tritium	1.5E+02	3.8E-09	8.3E-10		1.2E-06	2.4E-07	2.6E-07	
2			Pathway Total	8.5E-09	1.7E-09	6.4E-07	5.7E-06	1.7E-06	4.9E-06	1.3E-05
4	Inorganic	Arsenic	4.4E-02	1.3E-08	7.0E-08		1.5E-07	4.3E-07	7.6E-06	
4	Radionuclide	Cobalt-60	4.8E-02	3.2E-10	1.9E-10	4.5E-06	1.5E-08	1.8E-09	7.0E-07	
4	Radionuclide	Cesium-137	4.7E-02	5.2E-10	5.1E-11	9.4E-07	1.1E-06	6.0E-07	4.2E-07	
4	Radionuclide	Strontium-90	5.0E-02	9.8E-10	2.0E-10		8.4E-07	2.4E-07	9.7E-07	
4	Radionuclide	Uranium - radioactive	7.6E-02	1.6E-09	5.3E-08	3.8E-08	1.3E-07	1.2E-08	9.6E-07	
4			Pathway Total	1.6E-08	1.2E-07	5.5E-06	2.2E-06	1.3E-06	1.1E-05	2.0E-05
7	Inorganic	Arsenic	8.4E-02	2.5E-08	1.3E-07		2.8E-07	8.1E-07	1.4E-05	
7	Radionuclide	Strontium-90	5.5E-02	1.1E-09	2.2E-10		9.3E-07	2.6E-07	1.1E-06	
7			Pathway Total	2.6E-08	1.3E-07		1.2E-06	1.1E-06	1.5E-05	1.8E-05

Table E.54. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult irrigation pathways for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Soil Ingestion HQ	Inhalation of Resuspended Soil HQ	Dermal Contact HQ	Ingestion of Milk HQ	Ingestion of Meat HQ	Ingestion of Leafy Vegetables HQ	Total HI Across Pathways
1	Inorganic	Nitrate	1.8E+02	5.1E-05		2.9E-06	2.0E+00	5.3E-01	2.6E-01	
1			Hazard Index	5.1E-05		2.9E-06	2.0E+00	5.3E-01	2.6E-01	2.8E+00
2	Inorganic	Nitrate	1.2E+02	3.4E-05		1.9E-06	1.3E+00	3.5E-01	1.7E-01	
2			Hazard Index	3.4E-05		1.9E-06	1.3E+00	3.5E-01	1.7E-01	1.8E+00
4	Inorganic	Nitrate	1.6E+02	4.5E-05		2.5E-06	1.7E+00	4.6E-01	2.3E-01	
4			Hazard Index	4.5E-05		2.5E-06	1.7E+00	4.6E-01	2.3E-01	2.4E+00

Table E.55. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child irrigation pathways for the Clinch River

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Soil Ingestion HQ	Inhalation of Resuspended Soil HQ	Dermal Contact HQ	Ingestion of Milk HQ	Ingestion of Meat HQ	Ingestion of Leafy Vegetables HQ	Total HI Across Pathways
1	Inorganic	Nitrate	1.8E+02	4.8E-04		5.5E-06	1.8E+01	2.5E+00	1.2E+00	
1	Inorganic	Arsenic	4.3E-02	6.1E-04		1.7E-05	6.8E-03	1.0E-02	1.8E-01	
1			Hazard Index	1.1E-03		2.3E-05	1.8E+01	2.5E+00	1.4E+00	2.2E+01
2	Inorganic	Nitrate	1.2E+02	3.2E-04		3.7E-06	1.2E+01	1.7E+00	8.1E-01	
2	Inorganic	Nickel	1.5E-01	3.2E-05		1.4E-06	1.0E-01	1.4E-03	9.8E-03	
2	Organic	Acetone	5.0E-01	2.1E-05		2.9E-06	9.6E-07	1.4E-07	3.5E-01	
2			Hazard Index	3.7E-04		8.0E-06	1.2E+01	1.7E+00	1.2E+00	1.5E+01
4	Inorganic	Nitrate	1.6E+02	4.2E-04		4.8E-06	1.6E+01	2.2E+00	1.1E+00	
4	Inorganic	Arsenic	4.4E-02	6.3E-04		1.8E-05	7.1E-03	1.0E-02	1.8E-01	
4	Inorganic	Antimony	5.9E-02	6.3E-04		3.6E-04	3.0E-03	2.1E-04	1.8E-01	
4			Hazard Index	1.7E-03		3.8E-04	1.6E+01	2.2E+00	1.4E+00	2.0E+01
7	Inorganic	Arsenic	8.4E-02	1.2E-03		3.3E-05	1.3E-02	2.0E-02	3.5E-01	
7	Inorganic	Nickel	1.4E-01	3.0E-05		1.3E-06	9.4E-02	1.3E-03	9.2E-03	
7			Hazard Index	1.2E-03		3.5E-05	1.1E-01	2.1E-02	3.6E-01	4.9E-01

Table E.56. Chemicals with an excess cancer risk (ECR) of >10^{-6} and pathway totals for the irrigation pathways for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (pCi/g, mg/kg)	Soil Ingestion ECR	Inhalation of Resuspended Soil ECR	External Exposure ECR	Ingestion of Milk ECR	Ingestion of Meat ECR	Ingestion of Leafy Vegetables	Total ECR Across Pathways
3.01	Radionuclide	Strontium-90	5.7E-02	1.1E-09	2.2E-10		9.6E-07	2.7E-07	1.1E-06	
3.01			Pathway Total	1.1E-09	2.2E-10	0.00	9.6E-07	2.7E-07	1.1E-06	2.3E-06
3.02	Inorganic	Arsenic	1.1E-01	3.1E-08	1.7E-07		3.5E-07	1.0E-06	1.8E-05	
3.02	Radionuclide	Strontium-90	3.9E-02	7.6E-10	1.5E-10		6.5E-07	1.8E-07	7.5E-07	
3.02			Pathway Total	3.2E-08	1.7E-07	0.00	1.0E-06	1.2E-06	1.9E-05	2.2E-05
3.03	Inorganic	Arsenic	5.2E-02	1.5E-08	8.2E-08		1.7E-07	5.1E-07	8.9E-06	
3.03	Radionuclide	Strontium-90	6.3E-02	1.2E-09	2.5E-10		1.1E-06	3.0E-07	1.2E-06	
3.03	Radionuclide	Cesium-137	3.9E-02	4.3E-10	4.2E-11	7.8E-07	9.2E-07	5.0E-07	3.5E-07	
3.03			Pathway Total	1.7E-08	8.2E-08	7.8E-07	2.2E-06	1.3E-06	1.1E-05	1.5E-05
3.04	Inorganic	Arsenic	4.3E-02	1.3E-08	6.8E-08		1.4E-07	4.2E-07	7.4E-06	
3.04	Radionuclide	Strontium-90	4.3E-01	8.4E-09	1.7E-09		7.2E-06	2.0E-06	8.3E-06	
3.04			Pathway Total	2.1E-08	6.9E-08	0.00	7.4E-06	2.5E-06	1.6E-05	2.6E-05

Table E.57. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the adult irrigation pathways for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Soil Ingestion HQ	Inhalation of Resuspended Soil HQ	Dermal Contact HQ	Ingestion of Milk HQ	Ingestion of Meat HQ	Ingestion of Leafy Vegetables HQ	Total HI Across Pathways
3.01	Organic	PCB-1254	1.0E-02	2.4E-04		1.5E-04	3.8E-01	1.1E-01	1.4E-01	
3.01			Hazard Index	2.4E-04	0.00	1.5E-04	3.8E-01	1.1E-01	1.4E-01	6.3E-01
3.02	Inorganic	Arsenic	1.1E-01	1.6E-04		2.3E-05	1.8E-03	5.4E-03	9.5E-02	
3.02	Organic	Di-n-octylphthlate	3.6E-01	8.2E-06		5.2E-06	1.9E+01	5.4E+00	4.8E-03	
3.02			Hazard Index	1.7E-04	0.00	2.8E-05	1.9E+01	5.4E+00	1.0E-01	2.5E+01
3.03	Inorganic	Nitrate	1.8E+02	5.2E-05		3.0E-06	2.0E+00	5.4E-01	2.6E-01	
3.03			Hazard Index	5.2E-05	0.00	3.0E-06	2.0E+00	5.4E-01	2.6E-01	2.8E+00
3.04	Organic	PCB-1254	7.5E-03	1.7E-04		1.1E-04	2.8E-01	7.7E-02	1.0E-01	
3.04			Hazard Index	1.7E-04	0.00	1.1E-04	2.8E-01	7.7E-02	1.0E-01	4.5E-01

Table E.58. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child irrigation pathways for Poplar Creek

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Soil Ingestion HQ	Inhalation of Resuspended Soil HQ	Dermal Contact HQ	Ingestion of Milk HQ	Ingestion of Meat HQ	Ingestion of Leafy Vegetables HQ	Total HI Across Pathways
3.01	Inorganic	Antimony	5.1E-02	5.4E-04		3.1E-04	2.6E-03	1.8E-04	1.6E-01	
3.01	Inorganic	Nickel	1.7E-01	3.6E-05		1.5E-06	1.1E-01	1.6E-03	1.1E-02	
3.01	Inorganic	Manganese	3.2E+00	9.9E-05	7.4E-02	2.8E-05	7.7E-04	5.7E-04	4.1E-02	
3.01	Organic	PCB-1254	1.0E-02	2.2E-03		2.8E-04	3.6E+00	5.0E-01	6.5E-01	
3.01			Hazard Index	2.9E-03	7.4E-02	6.2E-04	3.7E+00	5.0E-01	8.6E-01	5.1E+00
3.02	Inorganic	Arsenic	1.1E-01	1.5E-03		4.3E-05	1.7E-02	2.5E-02	4.5E-01	
3.02	Inorganic	Antimony	6.8E-02	7.2E-04		4.2E-04	3.4E-03	2.4E-04	2.1E-01	
3.02	Inorganic	Manganese	3.2E+00	9.6E-05	7.3E-02	2.8E-05	7.5E-04	5.6E-04	4.0E-02	
3.02	Inorganic	Nickel	1.5E-01	3.2E-05		1.4E-06	1.0E-01	1.4E-03	9.8E-03	
3.02	Inorganic	Boron	2.4E+00	1.1E-04	1.4E-04	1.5E-06	6.5E-02	8.5E-04	3.8E-02	
3.02	Organic	Di-n-octylphthlate	3.6E-01	7.6E-05		9.7E-06	1.8E+02	2.5E+01	2.2E-02	
3.02			Hazard Index	2.6E-03	7.3E-02	5.0E-04	1.8E+02	2.5E+01	7.7E-01	2.1E+02
3.03	Inorganic	Nitrate	1.8E+02	4.8E-04		5.5E-06	1.9E+01	2.5E+00	1.2E+00	
3.03	Inorganic	Arsenic	5.2E-02	7.4E-04		2.1E-05	8.3E-03	1.2E-02	2.2E-01	
3.03	Inorganic	Manganese	3.2E+00	9.7E-05	7.3E-02	2.8E-05	7.6E-04	5.6E-04	4.0E-02	
3.03	Inorganic	Nickel	1.5E-01	3.2E-05		1.4E-06	1.0E-01	1.4E-03	9.8E-03	
3.03	Organic	Acetone	4.6E-01	2.0E-05		2.7E-06	8.9E-07	1.3E-07	3.2E-01	
3.03			Hazard Index	1.4E-03	7.3E-02	5.8E-05	1.9E+01	2.5E+00	1.8E+00	2.3E+01
3.04	Inorganic	Antimony	6.2E-02	6.7E-04		3.8E-04	3.1E-03	2.2E-04	2.0E-01	
3.04	Inorganic	Arsenic	4.3E-02	6.1E-04		1.7E-05	6.8E-03	1.0E-02	1.8E-01	

Table E.58. Chemicals with a hazard quotient (HQ) of >0.1 and hazard indices for the child irrigation pathways for Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg)	Soil Ingestion HQ	Inhalation of Resuspended Soil HQ	Dermal Contact HQ	Ingestion of Milk HQ	Ingestion of Meat HQ	Ingestion of Leafy Vegetables HQ	Total HI Across Pathways
3.04	Inorganic	Manganese	3.2E+00	9.7E-05	7.3E-02	2.8E-05	7.5E-04	5.6E-04	4.0E-02	
3.04	Inorganic	Nickel	1.5E-01	3.2E-05		1.4E-06	1.0E-01	1.5E-03	9.9E-03	
3.04	Inorganic	Molybdenum	1.8E-01	1.5E-04		4.6E-06	5.3E-02	1.4E-03	4.9E-02	
3.04	Organic	PCB-1254	7.5E-03	1.6E-03		2.0E-04	2.6E+00	3.6E-01	4.7E-01	
3.04			Hazard Index	3.2E-03	7.3E-02	6.4E-04	2.7E+00	3.7E-01	9.5E-01	4.1E+00

Table E.59. Chemicals with excess cancer risks (ECR) of 10-6 and pathway totals for the dredging pathways for reach 1 and 7 of the Clinch River

Reach	Chemical Type	Chemical	Representative concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External Exposure ECR	Dermal ECR	Ingestion of Milk ECR	Ingestion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
1	Inorganic	Arsenic	1.1E+01	3.2E-06	1.7E-05			3.7E-06	1.1E-05	8.9E-06	4.4E-05
1	Inorganic	Chromium	2.0E+01		2.5E-05						2.5E-05
1	Inorganic	Beryllium	8.1E-01	6.8E-07	2.1E-07		3.9E-06	2.5E-08	9.1E-07	1.4E-06	7.1E-06
1	Organic	Benzo(k)fluoranthene	7.9E-01	1.1E-08			2.1E-08	1.2E-05	3.4E-06	5.0E-08	1.6E-05
1	Organic	Benzo(a)anthracene	7.9E-01	1.1E-07			2.1E-07	9.1E-06	2.6E-06	1.6E-06	1.4E-05
1	Organic	4,4'-DDT	3.8E-01	2.6E-08	4.1E-09		2.1E-08	9.4E-06	2.6E-06	1.7E-07	1.2E-05
1	Organic	4,4'-DDD	3.8E-01	1.8E-08			1.5E-08	2.0E-06	5.6E-07	2.2E-07	2.8E-06
1	Radionuclide	Cobalt-60	5.8E+00	3.8E-08	2.2E-08	1.3E-04		6.4E-08	8.2E-09	7.6E-07	1.3E-04
1	Radionuclide	Cesium-137	9.3E-01	1.0E-08	1.0E-09	1.2E-05		2.2E-06	1.2E-06	2.7E-07	1.6E-05
1			Pathway Total	4.1E-06	4.3E-05	1.4E-04	4.1E-06	3.8E-05	2.2E-05	1.3E-05	2.6E-04
7	Inorganic	Arsenic	2.7E+01	7.8E-06	4.2E-05			8.8E-06	2.6E-05	2.1E-05	1.1E-04
7	Inorganic	Chromium	3.7E+01		4.8E-05						4.8E-05
7	Inorganic	Beryllium	1.2E+00	1.0E-06	3.2E-07		5.8E-06	3.8E-08	1.4E-06	2.2E-06	1.1E-05
7	Organic	Benzo(a)pyrene	6.3E-01	9.0E-07			1.6E-06	1.9E-04	5.2E-05	7.8E-06	2.5E-04
7	Organic	Indeno(1,2,3-cd)pyrene	4.1E-02	5.8E-09			1.1E-08	3.4E-06	9.8E-07	3.2E-08	4.5E-06
7	Organic	Benzo(a)anthracene	2.2E-01	3.2E-08			5.9E-08	2.6E-06	7.4E-07	4.6E-07	3.9E-06
7	Organic	Benzo(b)fluoranthene	4.9E-02	7.0E-09			1.3E-08	1.5E-06	4.3E-07	6.0E-08	2.0E-06

Table E.59. Chemicals with excess cancer risks (ECR) of 10-6 and pathway totals for the dredging pathways for reach 1 and 7 of the Clinch River (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External Exposure ECR	Dermal ECR	Ingestion of Milk ECR	Ingestion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
7	Radionuclide	Strontium-90	2.1E+00	4.2E-08	8.4E-09			8.6E-06	2.5E-06	7.6E-06	1.9E-05
7	Radionuclide	Cesium-137	4.4E-01	4.8E-09	4.7E-10	5.6E-06		1.0E-06	5.7E-07	1.3E-07	7.3E-06
7			Pathway Total	9.8E-06	9.0E-05	5.6E-06	7.5E-06	2.1E-04	8.5E-05	4.0E-05	4.5E-04

Table E.60. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices (HIs) for the adult dredging pathways for reach 1 and 7 of the Clinch River

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Ingestion of Milk HQ	Adult Ingestion of Meat HQ	Adult Ingestion of Vegetables HQ	Total HIs Across Pathways
1	Inorganic	Zinc	1.2E+02	1.9E-04		5.3E-05	1.7E-01	1.5E-01	4.5E-02	3.7E-01
1	Inorganic	Nickel	2.3E+01	5.3E-04		1.1E-04	2.4E-01	6.8E-03	1.7E-02	2.6E-01
1	Inorganic	Arsenic	1.1E+01	1.7E-02		2.3E-03	1.9E-02	5.7E-02	4.6E-02	1.4E-01
1	Organic	4,4'-DDT	3.8E-01	3.5E-04		2.9E-04	1.3E-01	3.6E-02	2.4E-03	1.7E-01
1			Hazard Index	1.8E-02		2.8E-03	5.5E-01	2.5E-01	1.1E-01	9.3E-01
7	Inorganic	Manganese	1.6E+03	5.1E-03	8.1E+00	7.3E-03	1.4E-02	2.1E-02	1.2E+00	9.4E+00
7	Inorganic	Arsenic	2.7E+01	4.0E-02		5.6E-03	4.6E-02	1.4E-01	1.1E-01	3.4E-01
7	Inorganic	Nickel	3.0E+01	6.8E-04		1.4E-04	3.0E-01	8.7E-03	2.2E-02	3.3E-01
7	Inorganic	Zinc	8.8E+01	1.3E-04		3.8E-05	1.2E-01	1.1E-01	3.2E-02	2.6E-01
7	Inorganic	Selenium	3.7E+00	3.4E-04		4.4E-05	1.2E-01	1.1E-01	2.1E-02	2.5E-01
7	Inorganic	Barium	1.6E+02	1.0E-03	8.2E-02	8.4E-04	1.0E-02	4.4E-04	8.1E-03	1.0E-01
7			Hazard Index	4.8E-02	8.2E+00	1.4E-02	6.2E-01	3.9E-01	1.4E+00	1.1E+01

Table E.61. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices (HIs) for the child dredging pathways for reach 1 and 7 of the Clinch River

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
1	Inorganic	Zinc	1.2E+02	1.7E-03		1.0E-04	1.6E+00	7.1E-01	2.1E-01	2.5E+00
1	Inorganic	Nickel	2.3E+01	5.0E-03		2.1E-04	2.2E+00	3.2E-02	7.9E-02	2.3E+00
1	Inorganic	Arsenic	1.1E+01	1.6E-01		4.4E-03	1.8E-01	2.6E-01	2.1E-01	8.2E-01
1	Inorganic	Selenium	6.9E-01	5.9E-04		1.5E-05	2.2E-01	9.7E-02	1.8E-02	3.3E-01
1	Inorganic	Mercury	1.2E-01	1.8E-03	4.7E-04	2.9E-09	6.0E-02	5.7E-02	1.6E-01	2.8E-01
1	Inorganic	Chromium	2.0E+01	1.7E-02		9.6E-03	3.4E-03	1.4E-01	6.6E-02	2.3E-01
1	Inorganic	Cadmium	7.3E-01	3.1E-03		3.6E-03	7.9E-02	1.4E-03	3.8E-02	1.2E-01
1	Organic	4,4'-DDT	3.8E-01	3.3E-03		5.4E-04	1.2E+00	1.7E-01	1.1E-02	1.4E+00
1			Hazard Index	1.9E-01	4.7E-04	1.8E-02	5.5E+00	1.5E+00	8.0E-01	8.0E+00
7	Inorganic	Manganese	1.6E+03	4.8E-02	3.6E+01	1.4E-02	1.3E-01	9.8E-02	5.8E+00	4.2E+01
7	Inorganic	Nickel	3.0E+01	6.3E-03		2.7E-04	2.8E+00	4.1E-02	1.0E-01	3.0E+00
7	Inorganic	Arsenic	2.7E+01	3.8E-01		1.1E-02	4.3E-01	6.4E-01	5.2E-01	2.0E+00
7	Inorganic	Zinc	8.8E+01	1.3E-03		7.2E-05	1.1E+00	5.1E-01	1.5E-01	1.8E+00
7	Inorganic	Selenium	3.7E+00	3.1E-03		8.2E-05	1.2E+00	5.2E-01	9.7E-02	1.8E+00
7	Inorganic	Vanadium	4.3E+01	2.6E-02		3.0E-02	4.9E-01	5.0E-02	3.4E-02	6.3E-01
7	Inorganic	Barium	1.6E+02	9.7E-03	3.6E-01	1.6E-03	9.5E-02	2.0E-03	3.8E-02	5.1E-01
7	Inorganic	Chromium	3.7E+01	3.1E-02		1.8E-02	6.4E-03	2.6E-01	1.2E-01	4.4E-01
7	Inorganic	Mercury	1.4E-01	2.0E-03	5.4E-04	3.3E-09	6.9E-02	6.6E-02	1.8E-01	3.2E-01
7			Hazard Index	5.0E-01	3.7E+01	7.4E-02	6.3E+00	2.2E+00	7.1E+00	5.3E+01

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
2.04	Inorganic	Arsenic	9.7E+00	2.9E-06	1.5E-05			3.2E-06	9.6E-06	7.8E-06	3.9E-05
2.04	Inorganic	Chromium	1.6E+01		2.1E-05						2.1E-05
2.04	Inorganic	Beryllium	7.8E-01	6.6E-07	2.1E-07		3.7E-06	2.5E-08	8.8E-07	1.4E-06	6.9E-06
2.04	Organic	Benzo(a)pyrene	4.9E-01	7.0E-07			1.3E-06	1.4E-04	4.1E-05	6.1E-06	1.9E-04
2.04	Organic	Indeno(1,2,3-cd)pyrene	1.8E-01	2.5E-08			4.7E-08	1.5E-05	4.3E-06	1.4E-07	2.0E-05
2.04	Organic	Benzo(k)fluoranthene	5.0E-01	7.2E-09			1.3E-08	7.7E-06	2.2E-06	3.2E-08	9.9E-06
2.04	Organic	Pentachlorophenol	2.4E+00	5.7E-08			3.3E-08	7.1E-06	2.0E-06	6.5E-07	9.8E-06
2.04	Organic	Benzo(a)anthracene	5.0E-01	7.2E-08			1.3E-07	5.8E-06	1.6E-06	1.0E-06	8.7E-06
2.04	Organic	Benzo(b)fluoranthene	1.6E-01	2.3E-08			4.2E-08	4.9E-06	1.4E-06	1.9E-07	6.6E-06
2.04	Radionuclide	Cesium-137	2.1E+01	2.4E-07	2.3E-08	2.7E-04		5.1E-05	2.8E-05	6.1E-06	3.6E-04
2.04	Radionuclide	Strontium-90	3.3E+00	6.5E-08	1.3E-08			1.3E-05	3.8E-06	1.2E-05	2.9E-05
2.04	Radionuclide	Cobalt-60	1.8E-01	1.2E-09	7.2E-10	4.0E-06		2.1E-09	2.6E-10	2.4E-08	4.0E-06
2.04	Radionuclide	Uranium-238	1.2E+00	2.7E-08	8.6E-07	5.3E-07		2.1E-07	2.0E-08	9.0E-08	1.7E-06
2.04	Radionuclide	Uranium-234	1.4E+00	2.1E-08	1.1E-06	2.4E-10		1.6E-07	1.2E-08	6.4E-08	1.3E-06
2.04			Pathway Total	4.7E-06	3.8E-05	2.8E-04	5.3E-06	2.5E-04	9.5E-05	3.6E-05	7.1E-04
3.01	Inorganic	Chromium	1.0E+01		1.3E-05						1.3E-05

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
3.01	Inorganic	Arsenic	1.3E+00	3.8E-07	2.1E-06			4.4E-07	1.3E-06	1.1E-06	5.2E-06
3.01	Inorganic	Beryllium	5.3E-01	4.4E-07	1.4E-07		2.5E-06	1.7E-08	5.9E-07	9.4E-07	4.6E-06
3.01	Organic	Benzo(b)fluoranthene	1.6E-01	2.3E-08			4.3E-08	5.0E-06	1.4E-06	2.0E-07	6.7E-06
3.01		Pathway Total		8.5E-07	1.5E-05	0.0E+00	2.6E-06	5.5E-06	3.3E-06	2.2E-06	3.0E-05
3.02	Inorganic	Chromium	2.4E+01		3.1E-05						3.1E-05
3.02	Inorganic	Arsenic	5.0E+00	1.5E-06	8.0E-06			1.7E-06	5.0E-06	4.1E-06	2.0E-05
3.02	Inorganic	Beryllium	7.7E-01	6.5E-07	2.1E-07		3.7E-06	2.4E-08	8.7E-07	1.4E-06	6.8E-06
3.02	Organic	PCB-1260	7.9E-01	1.2E-06			7.5E-07	2.5E-03	7.2E-04	4.2E-06	3.3E-03
3.02	Organic	Dibenz(a,h)anthracene	4.1E-01	5.9E-07			1.1E-06	6.3E-04	1.8E-04	2.6E-06	8.1E-04
3.02	Organic	Benzo(a)pyrene	5.2E-01	7.5E-07			1.4E-06	1.5E-04	4.4E-05	6.6E-06	2.1E-04
3.02	Organic	PCB-1248	3.9E-01	5.9E-07			3.7E-07	5.8E-05	1.7E-05	7.4E-06	8.3E-05
3.02	Organic	Indeno(1,2,3-cd)pyrene	3.5E-01	5.0E-08			9.2E-08	3.0E-05	8.4E-06	2.7E-07	3.8E-05
3.02	Organic	Benzo(b)fluoranthene	8.7E-01	1.2E-07			2.3E-07	2.7E-05	7.7E-06	1.1E-06	3.6E-05
3.02	Organic	Benzo(a)anthracene	9.2E-01	1.3E-07			2.4E-07	1.1E-05	3.0E-06	1.9E-06	1.6E-05
3.02	Organic	Benzo(k)fluoranthene	4.1E-01	5.8E-09			1.1E-08	6.2E-06	1.8E-06	2.6E-08	8.0E-06
3.02	Radionuclide	Technetium-99	5.2E+01	2.6E-08	8.5E-09	2.7E-10		3.3E-06	2.1E-07	7.7E-05	8.1E-05

Table E.62. Chemicals with excess cancer risks (ECR) of $>10^{-6}$ and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
3.02	Radionuclide	Strontium-90	2.6E+00	5.2E-08	1.0E-08			1.1E-05	3.0E-06	9.4E-06	2.3E-05
3.02	Radionuclide	Uranium-234	1.1E+01	1.7E-07	8.9E-06	2.0E-09		1.3E-06	1.0E-07	5.3E-07	1.1E-05
3.02	Radionuclide	Uranium-238	6.9E+00	1.5E-07	4.8E-06	3.0E-06		1.2E-06	1.2E-07	5.1E-07	9.8E-06
3.02	Radionuclide	Cesium-137	2.5E-01	2.8E-09	2.7E-10	3.2E-06		6.0E-07	3.3E-07	7.1E-08	4.2E-06
3.02	Radionuclide	Cobalt-60	1.5E-01	9.9E-10	5.8E-10	3.2E-06		1.7E-09	2.1E-10	2.0E-08	3.3E-06
3.02	Radionuclide	Uranium-235	5.3E-01	8.7E-09	3.9E-07	1.2E-06		6.7E-08	6.5E-09	2.9E-08	1.7E-06
3.02			Pathway Total	6.0E-06	5.4E-05	1.1E-05	7.9E-06	3.5E-03	9.9E-04	1.2E-04	4.7E-03
3.03	Inorganic	Chromium	4.4E+01		5.7E-05						5.7E-05
3.03	Inorganic	Arsenic	5.3E+00	1.5E-06	8.3E-06			1.8E-06	5.2E-06	4.2E-06	2.1E-05
3.03	Inorganic	Beryllium	9.2E-01	7.8E-07	2.5E-07		4.4E-06	2.9E-08	1.0E-06	1.7E-06	8.2E-06
3.03	Organic	Dibenz(a,h)anthracene	3.6E-02	5.1E-08			9.4E-08	5.4E-05	1.5E-05	2.3E-07	7.0E-05
3.03	Organic	Benzo(a)pyrene	1.6E-01	2.3E-07			4.2E-07	4.7E-05	1.3E-05	2.0E-06	6.3E-05
3.03	Organic	Indeno(1,2,3-cd)pyrene	1.6E-01	2.3E-08			4.3E-08	1.4E-05	3.9E-06	1.3E-07	1.8E-05
3.03	Organic	Benzo(b)fluoranthene	2.8E-01	4.1E-08			7.5E-08	8.9E-06	2.5E-06	3.5E-07	1.2E-05
3.03	Organic	Benzo(a)anthracene	2.3E-01	3.3E-08			6.1E-08	2.7E-06	7.6E-07	4.7E-07	4.0E-06
3.03	Organic	Benzo(k)fluoranthene	6.7E-02	9.6E-10			1.8E-09	1.0E-06	2.9E-07	4.2E-09	1.3E-06

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
3.03	Radionuclide	Cesium-137	1.2E+00	1.3E-08	1.3E-09	1.5E-05		2.8E-06	1.5E-06	3.4E-07	2.0E-05
3.03	Radionuclide	Uranium-234	3.5E+00	5.4E-08	2.8E-06	6.2E-10		4.1E-07	3.1E-08	1.7E-07	3.4E-06
3.03	Radionuclide	Uranium-238	2.0E+00	4.4E-08	1.4E-06	8.9E-07		3.4E-07	3.4E-08	1.5E-07	2.9E-06
3.03			Pathway Total	2.8E-06	7.0E-05	1.6E-05	5.1E-06	1.3E-04	4.4E-05	9.7E-06	2.8E-04
3.04	Inorganic	Arsenic	9.4E+01	2.8E-05	1.5E-04			3.1E-05	9.3E-05	7.5E-05	3.8E-04
3.04	Inorganic	Chromium	3.9E+01		5.1E-05						5.1E-05
3.04	Inorganic	Beryllium	1.7E+00	1.4E-06	4.5E-07		8.1E-06	5.3E-08	1.9E-06	3.0E-06	1.5E-05
3.04	Inorganic	Cadmium	5.6E+00		1.1E-06						1.1E-06
3.04	Organic	PCB-1260	1.3E-01	1.9E-07			1.2E-07	4.1E-04	1.1E-04	6.7E-07	5.2E-04
3.04	Organic	Dibenz(a,h)anthracene	2.5E-01	3.6E-07			6.6E-07	3.8E-04	1.1E-04	1.6E-06	5.0E-04
3.04	Organic	Benzo(a)pyrene	2.2E-01	3.2E-07			5.8E-07	6.5E-05	1.8E-05	2.8E-06	8.7E-05
3.04	Organic	Indeno(1,2,3-cd)pyrene	2.5E-01	3.5E-08			6.5E-08	2.1E-05	5.9E-06	1.9E-07	2.7E-05
3.04	Organic	PCB-1248	6.5E-02	9.8E-08			6.2E-08	9.8E-06	2.8E-06	1.2E-06	1.4E-05
3.04	Organic	Benzo(b)fluoranthene	2.3E-01	3.4E-08			6.2E-08	7.3E-06	2.1E-06	2.9E-07	9.8E-06
3.04	Organic	Benzo(k)fluoranthene	2.5E-01	3.6E-09			6.6E-09	3.8E-06	1.1E-06	1.6E-08	5.0E-06
3.04	Organic	Benzo(a)anthracene	1.7E-01	2.4E-08			4.4E-08	1.9E-06	5.5E-07	3.4E-07	2.9E-06

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
3.04	Radionuclide	Cesium-137	7.9E+00	8.8E-08	8.5E-09	1.0E-04		1.9E-05	1.0E-05	2.3E-06	1.3E-04
3.04	Radionuclide	Uranium-238	5.0E+00	1.1E-07	3.5E-06	2.2E-06		8.4E-07	8.3E-08	3.6E-07	7.0E-06
3.04	Radionuclide	Uranium-234	6.1E+00	9.5E-08	4.8E-06	1.1E-09		7.2E-07	5.4E-08	2.9E-07	6.0E-06
3.04	Radionuclide	Technetium-99	3.8E+00	1.8E-09	6.2E-10	1.9E-11		2.4E-07	1.5E-08	5.5E-06	5.8E-06
3.04	Radionuclide	Cobalt-60	1.9E-01	1.2E-09	7.3E-10	4.1E-06		2.1E-09	2.7E-10	2.4E-08	4.1E-06
3.04	Radionuclide	Uranium-235	3.7E-01	6.0E-09	2.7E-07	8.0E-07		4.6E-08	4.5E-09	2.0E-08	1.1E-06
3.04			Pathway Total	3.0E-05	2.1E-04	1.1E-04	9.7E-06	9.5E-04	3.6E-04	9.4E-05	1.8E-03
4.01	Inorganic	Arsenic	1.0E+01	2.9E-06	1.6E-05			3.3E-06	9.9E-06	8.0E-06	4.0E-05
4.01	Inorganic	Chromium	1.8E+01		2.4E-05						2.4E-05
4.01	Inorganic	Beryllium	7.7E-01	6.5E-07	2.1E-07		3.7E-06	2.4E-08	8.7E-07	1.4E-06	6.9E-06
4.01	Organic	PCB-1260	2.1E+00	3.1E-06			2.0E-06	6.7E-03	1.9E-03	1.1E-05	8.6E-03
4.01	Organic	N-Nitroso-di-n-propylamine	5.0E-01	6.8E-07			1.6E-06	1.5E-07	4.1E-08	2.6E-03	2.6E-03
4.01	Organic	Dibenz(a,h)anthracene	5.0E-01	7.1E-07			1.3E-06	7.6E-04	2.1E-04	3.2E-06	9.8E-04
4.01	Organic	Benzo(a)pyrene	5.0E-01	7.1E-07			1.3E-06	1.5E-04	4.2E-05	6.2E-06	2.0E-04
4.01	Organic	Indeno(1,2,3-cd)pyrene	5.0E-01	7.1E-08			1.3E-07	4.2E-05	1.2E-05	3.9E-07	5.5E-05

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
4.01	Organic	Benzo(b)fluoranthene	5.0E-01	7.1E-08			1.3E-07	1.6E-05	4.4E-06	6.1E-07	2.1E-05
4.01	Organic	Benzo(k)fluoranthene	5.0E-01	7.1E-09			1.3E-08	7.6E-06	2.1E-06	3.2E-08	9.8E-06
4.01	Organic	Pentachlorophenol	2.4E+00	5.7E-08			3.2E-08	7.0E-06	2.0E-06	6.5E-07	9.7E-06
4.01	Organic	Benzo(a)anthracene	5.0E-01	7.1E-08			1.3E-07	5.8E-06	1.6E-06	1.0E-06	8.6E-06
4.01	Radionuclide	Cesium-137	2.3E+01	2.5E-07	2.5E-08	2.9E-04		5.5E-05	3.0E-05	6.5E-06	3.8E-04
4.01	Radionuclide	Cobalt-60	1.3E-01	8.4E-10	4.9E-10	2.8E-06		1.4E-09	1.8E-10	1.7E-08	2.8E-06
4.01		Pathway Total		9.3E-06	4.0E-05	2.9E-04	1.0E-05	7.7E-03	2.2E-03	2.6E-03	1.3E-02
4.02	Inorganic	Arsenic	1.1E+01	3.3E-06	1.8E-05			3.7E-06	1.1E-05	9.0E-06	4.5E-05
4.02	Inorganic	Chromium	1.4E+01		1.9E-05						1.9E-05
4.02	Inorganic	Beryllium	6.7E-01	5.6E-07	1.8E-07		3.2E-06	2.1E-08	7.5E-07	1.2E-06	5.9E-06
4.02	Radionuclide	Cesium-137	4.0E-01	4.4E-09	4.3E-10	5.1E-06		9.6E-07	5.3E-07	1.1E-07	6.7E-06
4.02		Pathway Total		3.9E-06	3.6E-05	5.1E-06	3.2E-06	4.7E-06	1.2E-05	1.0E-05	7.6E-05
4.03	Inorganic	Chromium	3.7E+01		4.8E-05						4.8E-05
4.03	Inorganic	Arsenic	7.8E+00	2.3E-06	1.2E-05			2.6E-06	7.8E-06	6.3E-06	3.1E-05
4.03	Inorganic	Beryllium	1.1E+00	9.1E-07	2.9E-07		5.2E-06	3.4E-08	1.2E-06	1.9E-06	9.6E-06
4.03	Organic	Dibenz(a,h)anthracene	2.7E-01	3.8E-07			7.0E-07	4.1E-04	1.1E-04	1.7E-06	5.2E-04

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
4.03	Organic	Benzo(a)pyrene	4.8E-01	6.9E-07			1.3E-06	1.4E-04	4.0E-05	6.0E-06	1.9E-04
4.03	Organic	PCB-1260	3.4E-02	5.2E-08			3.3E-08	1.1E-04	3.1E-05	1.8E-07	1.4E-04
4.03	Organic	Indeno(1,2,3-cd)pyrene	8.9E-02	1.3E-08			2.3E-08	7.6E-06	2.1E-06	7.0E-08	9.9E-06
4.03	Organic	Benzo(b)fluoranthene	1.8E-01	2.5E-08			4.6E-08	5.5E-06	1.6E-06	2.2E-07	7.4E-06
4.03	Organic	Benzo(a)anthracene	1.1E-01	1.6E-08			2.9E-08	1.3E-06	3.6E-07	2.3E-07	1.9E-06
4.03	Radionuclide	Cesium-137	1.8E+01	2.0E-07	1.9E-08	2.3E-04		4.3E-05	2.4E-05	5.2E-06	3.0E-04
4.03	Radionuclide	Cobalt-60	3.9E-01	2.6E-09	1.5E-09	8.6E-06		4.4E-09	5.6E-10	5.2E-08	8.6E-06
4.03		Pathway Total		4.6E-06	6.0E-05	2.4E-04	7.3E-06	7.2E-04	2.2E-04	2.2E-05	1.3E-03
4.04	Inorganic	Arsenic	1.0E+01	3.0E-06	1.6E-05			3.4E-06	1.0E-05	8.3E-06	4.1E-05
4.04	Inorganic	Chromium	2.6E+01		3.4E-05						3.4E-05
4.04	Inorganic	Beryllium	1.2E+00	1.0E-06	3.3E-07		5.9E-06	3.9E-08	1.4E-06	2.2E-06	1.1E-05
4.04	Organic	Dibenz(a,h)anthracene	3.5E+00	5.1E-06			9.3E-06	5.4E-03	1.5E-03	2.2E-05	6.9E-03
4.04	Organic	Benzo(a)pyrene	1.0E+00	1.5E-06			2.7E-06	3.0E-04	8.5E-05	1.3E-05	4.0E-04
4.04	Organic	Indeno(1,2,3-cd)pyrene	9.6E-01	1.4E-07			2.5E-07	8.1E-05	2.3E-05	7.5E-07	1.1E-04
4.04	Organic	Benzo(b)fluoranthene	1.6E-01	2.2E-08			4.1E-08	4.9E-06	1.4E-06	1.9E-07	6.5E-06
4.04	Organic	Benzo(a)anthracene	3.0E-01	4.3E-08			8.0E-08	3.5E-06	9.9E-07	6.2E-07	5.2E-06

Table E.62. Chemicals with excess cancer risks (ECR) of >10^{-6} and pathway totals for the dredging pathways for selected Clinch River and Poplar Creek subreaches (continued)

Reach	Chemical Type	Chemical	Representative Concentration (mg/kg, pCi/g)	Ingestion ECR	Inhalation ECR	External ECR	Dermal ECR	Ingestion of Milk ECR	Ingesion of Meat ECR	Ingestion of Vegetables ECR	Total ECR Across Pathways
4.04	Radionuclide	Cesium-137	1.2E+01	1.4E-07	1.3E-08	1.6E-04		2.9E-05	1.6E-05	3.5E-06	2.1E-04
4.04	Radionuclide	Strontium-90	8.6E-01	1.7E-08	3.4E-09	3.5E-06			9.9E-07	3.1E-07	.5E-06
4.04	Radionuclide	Cobalt-60	2.3E-01	1.5E-09	9.0E-10	5.0E-06		2.6E-09	3.3E-10	3.0E-08	5.1E-06
4.04	Radionuclide	Uranium-238	1.9E+00	4.1E-08	1.3E-06	8.2E-07		3.2E-07	3.1E-08	1.4E-07	2.7E-06
4.04	Radionuclide	Uranium-234	2.2E+00	3.5E-08	1.8E-06	3.9E-10		2.6E-07	2.0E-08	1.1E-07	2.2E-06
4.04			Pathway Total	1.1E-05	5.4E-05	1.6E-04	1.8E-05	5.8E-03	1.7E-03	5.4E-05	7.8E-03

Table E.63. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the adult dredging pathways for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Ingestion of Milk HQ	Adult Ingestion of Meat HQ	Adult Ingestion of Vegetables HQ	Total HIs Across Pathways
2.04	Inorganic	Manganese	4.5E+03	1.5E-02	2.3E+01	2.1E-02	4.0E-02	6.0E-02	3.5E+00	2.7E+01
2.04	Inorganic	Zinc	6.8E+01	1.0E-04		2.9E-05	9.4E-02	8.4E-02	2.5E-02	2.0E-01
2.04	Inorganic	Nickel	1.5E+01	3.5E-04		7.4E-05	1.6E-01	4.5E-03	1.1E-02	1.7E-01
2.04	Inorganic	Selenium	2.4E+00	2.2E-04		2.9E-05	8.2E-02	7.3E-02	1.4E-02	1.7E-01
2.04	Inorganic	Arsenic	9.7E+00	1.5E-02		2.1E-03	1.7E-02	5.0E-02	4.1E-02	1.2E-01
2.04			Hazard Index	3.0E-02	2.3E+01	2.3E-02	3.9E-01	2.7E-01	3.6E+00	2.7E+01
3.01	Inorganic	Manganese	3.2E+02	1.0E-03	1.6E+00	1.5E-03	2.8E-03	4.2E-03	2.5E-01	1.9E+00
3.01	Inorganic	Nickel	1.0E+01	2.4E-04		5.0E-05	1.0E-01	3.0E-03	7.5E-03	1.2E-01
3.01			Hazard Index	1.3E-03	1.6E+00	1.5E-03	1.1E-01	7.3E-03	2.6E-01	2.0E+00
3.02	Inorganic	Manganese	1.1E+03	3.4E-03	5.4E+00	4.9E-03	9.4E-03	1.4E-02	8.3E-01	6.3E+00
3.02	Inorganic	Mercury	4.1E+00	6.2E-03	3.5E-03	5.0E-08	2.1E-01	4.0E-01	1.1E+00	1.8E+00
3.02	Inorganic	Nickel	5.2E+01	1.2E-03		2.5E-04	5.3E-01	1.5E-02	3.8E-02	5.8E-01
3.02	Inorganic	Zinc	1.2E+02	1.8E-04		5.1E-05	1.6E-01	1.4E-01	4.3E-02	3.5E-01
3.02	Organic	PCB-1254	7.3E-01	1.7E-02		1.1E-02	3.0E+00	8.4E-01	1.6E-01	4.0E+00
3.02			Hazard Index	2.8E-02	5.4E+00	1.6E-02	3.9E+00	1.4E+00	2.2E+00	1.3E+01
3.03	Inorganic	Manganese	6.9E+02	2.3E-03	3.6E+00	3.2E-03	6.2E-03	9.2E-03	5.5E-01	4.1E+00
3.03	Inorganic	Mercury	6.7E+00	1.0E-02	5.7E-03	8.3E-08	3.5E-01	6.6E-01	1.8E+00	2.9E+00

Table E.63. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the adult dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Ingestion of Milk HQ	Adult Ingestion of Meat HQ	Adult Ingestion of Vegetables HQ	Total HIs Across Pathways
3.03	Inorganic	Nickel	6.2E+01	1.4E-03		3.0E-04	6.3E-01	1.8E-02	4.5E-02	7.0E-01
3.03	Inorganic	Zinc	1.6E+02	2.4E-04		7.0E-05	2.2E-01	2.0E-01	5.9E-02	4.8E-01
3.03	Inorganic	Chromium	4.4E+01	4.1E-03		1.2E-02	8.3E-04	6.7E-02	3.2E-02	1.1E-01
3.03			Hazard Index	1.8E-02	3.6E+00	1.5E-02	1.2E+00	9.6E-01	2.5E+00	8.3E+00
3.04	Inorganic	Mercury	2.6E+01	3.9E-02	2.2E-02	3.2E-07	1.3E+00	2.6E+00	7.1E+00	1.1E+01
3.04	Inorganic	Manganese	7.4E+02	2.4E-03	3.8E+00	3.4E-03	6.6E-03	9.8E-03	5.8E-01	4.4E+00
3.04	Inorganic	Arsenic	9.4E+01	1.4E-01		2.0E-02	1.6E-01	4.8E-01	3.9E-01	1.2E+00
3.04	Inorganic	Nickel	5.1E+01	1.2E-03		2.4E-04	5.1E-01	1.5E-02	3.7E-02	5.6E-01
3.04	Inorganic	Zinc	1.2E+02	1.8E-04		5.0E-05	1.6E-01	1.4E-01	4.3E-02	3.5E-01
3.04	Inorganic	Barium	2.9E+02	1.9E-03	1.5E-01	1.5E-03	1.9E-02	7.9E-04	1.5E-02	1.9E-01
3.04	Inorganic	Cadmium	5.6E+00	2.6E-03		1.5E-02	6.5E-02	2.3E-03	6.2E-02	1.5E-01
3.04	Inorganic	Vanadium	5.9E+01	3.9E-03		2.2E-02	7.3E-02	1.5E-02	1.0E-02	1.2E-01
3.04	Inorganic	Selenium	1.6E+00	1.4E-04		1.9E-05	5.3E-02	4.7E-02	8.9E-03	1.1E-01
3.04	Inorganic	Chromium	3.9E+01	3.6E-03		1.0E-02	7.3E-04	5.9E-02	2.8E-02	1.0E-01
3.04	Organic	PCB-1254	1.8E-01	4.1E-03		2.6E-03	7.3E-01	2.1E-01	3.9E-02	9.8E-01
3.04			Hazard Index	2.0E-01	4.0E+00	7.4E-02	3.1E+00	3.5E+00	8.3E+00	1.9E+01
4.01	Inorganic	Mercury	1.2E+01	1.9E-02	1.0E-02	1.5E-07	6.3E-01	1.2E+00	3.4E+00	5.2E+00

Table E.63. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the adult dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Ingestion of Milk HQ	Adult Ingestion of Meat HQ	Adult Ingestion of Vegetables HQ	Total HIs Across Pathways
4.01	Inorganic	Manganese	8.4E+02	2.7E-03	4.3E+00	3.9E-03	7.5E-03	1.1E-02	6.6E-01	5.0E+00
4.01	Inorganic	Nickel	2.0E+01	4.5E-04		9.4E-05	2.0E-01	5.7E-03	1.4E-02	2.2E-01
4.01	Inorganic	Zinc	6.5E+01	1.0E-04		2.8E-05	9.1E-02	8.1E-02	2.4E-02	2.0E-01
4.01	Inorganic	Arsenic	1.0E+01	1.5E-02		2.1E-03	1.7E-02	5.1E-02	4.2E-02	1.3E-01
4.01	Organic	PCB-1254	4.0E-01	9.1E-03		5.8E-03	1.6E+00	4.6E-01	8.6E-02	2.2E+00
4.01			Hazard Index	4.6E-02	4.3E+00	1.2E-02	2.6E+00	1.8E+00	4.2E+00	1.3E+01
4.02	Inorganic	Manganese	6.7E+02	2.2E-03	3.4E+00	3.1E-03	5.9E-03	8.8E-03	5.2E-01	4.0E+00
4.02	Inorganic	Nickel	1.3E+01	3.0E-04		6.4E-05	1.3E-01	3.9E-03	9.7E-03	1.5E-01
4.02	Inorganic	Mercury	3.4E-01	5.2E-04	2.9E-04	4.2E-09	1.8E-02	3.4E-02	9.4E-02	1.5E-01
4.02	Inorganic	Arsenic	1.1E+01	1.7E-02		2.4E-03	1.9E-02	5.8E-02	4.7E-02	1.4E-01
4.02	Inorganic	Zinc	4.7E+01	7.1E-05		2.0E-05	6.5E-02	5.8E-02	1.7E-02	1.4E-01
4.02			Hazard Index	2.0E-02	3.4E+00	5.5E-03	2.4E-01	1.6E-01	6.9E-01	4.6E+00
4.03	Inorganic	Manganese	1.6E+03	5.1E-03	8.1E+00	7.3E-03	1.4E-02	2.1E-02	1.2E+00	9.4E+00
4.03	Inorganic	Mercury	3.5E+00	5.4E-03	3.0E-03	4.4E-08	1.8E-01	3.5E-01	9.7E-01	1.5E+00
4.03	Inorganic	Nickel	4.0E+01	9.2E-04		1.9E-04	4.1E-01	1.2E-02	2.9E-02	4.5E-01
4.03	Inorganic	Zinc	1.1E+02	1.7E-04		5.0E-05	1.6E-01	1.4E-01	4.2E-02	3.4E-01
4.03	Inorganic	Arsenic	7.8E+00	1.2E-02		1.7E-03	1.4E-02	4.0E-02	3.3E-02	1.0E-01

Table E.63. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the adult dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Ingestion of Milk HQ	Adult Ingestion of Meat HQ	Adult Ingestion of Vegetables HQ	Total HIs Across Pathways
4.03	Organic	PCB-1254	6.4E-02	1.5E-03		9.2E-04	2.6E-01	7.3E-02	1.4E-02	3.5E-01
4.03			Hazard Index	2.5E-02	8.1E+00	1.0E-02	1.0E+00	6.4E-01	2.3E+00	1.2E+01
4.04	Inorganic	Manganese	1.7E+03	5.4E-03	8.6E+00	7.7E-03	1.5E-02	2.2E-02	1.3E+00	9.9E+00
4.04	Inorganic	Mercury	3.1E+00	4.6E-03	2.6E-03	3.8E-08	1.6E-01	3.0E-01	8.5E-01	1.3E+00
4.04	Inorganic	Zinc	1.4E+02	2.2E-04		6.1E-05	2.0E-01	1.8E-01	5.2E-02	4.2E-01
4.04	Inorganic	Nickel	3.6E+01	8.1E-04		1.7E-04	3.6E-01	1.0E-02	2.6E-02	4.0E-01
4.04	Inorganic	Arsenic	1.0E+01	1.6E-02		2.2E-03	1.8E-02	5.3E-02	4.3E-02	1.3E-01
4.04	Organic	PCB-1254	9.8E-01	2.2E-02		1.4E-02	4.0E+00	1.1E+00	2.1E-01	5.3E+00
4.04			Hazard Index	4.9E-02	8.6E+00	2.4E-02	4.7E+00	1.7E+00	2.5E+00	1.8E+01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
2.04	Inorganic	Manganese	4.5E+03	1.4E-01	1.0E+02	3.9E-02	3.7E-01	2.8E-01	1.7E+01	1.2E+02
2.04	Inorganic	Nickel	1.5E+01	3.3E-03		1.4E-04	1.5E+00	2.1E-02	5.2E-02	1.5E+00
2.04	Inorganic	Zinc	6.8E+01	9.6E-04		5.5E-05	8.7E-01	3.9E-01	1.2E-01	1.4E+00
2.04	Inorganic	Selenium	2.4E+00	2.1E-03		5.4E-05	7.6E-01	3.4E-01	6.4E-02	1.2E+00
2.04	Inorganic	Arsenic	9.7E+00	1.4E-01		3.9E-03	1.6E-01	2.3E-01	1.9E-01	7.2E-01
2.04	Inorganic	Mercury	2.3E-01	3.2E-03	8.6E-04	5.2E-09	1.1E-01	1.0E-01	2.9E-01	5.1E-01
2.04	Inorganic	Barium	1.3E+02	8.0E-03	3.0E-01	1.3E-03	7.9E-02	1.7E-03	3.2E-02	4.2E-01
2.04	Inorganic	Vanadium	2.0E+01	1.2E-02		1.4E-02	2.3E-01	2.4E-02	1.6E-02	3.0E-01
2.04	Inorganic	Chromium	1.6E+01	1.4E-02		7.8E-03	2.8E-03	1.1E-01	5.4E-02	1.9E-01
2.04			Hazard Index	3.2E-01	1.0E+02	6.6E-02	4.0E+00	1.5E+00	1.7E+01	1.3E+02
3.01	Inorganic	Manganese	3.2E+02	9.7E-03	7.3E+00	2.8E-03	2.7E-02	2.0E-02	1.2E+00	8.5E+00
3.01	Inorganic	Nickel	1.0E+01	2.2E-03		9.4E-05	9.7E-01	1.4E-02	3.5E-02	1.0E+00
3.01	Inorganic	Zinc	2.8E+01	4.0E-04		2.3E-05	3.6E-01	1.6E-01	4.8E-02	5.8E-01
3.01	Inorganic	Barium	6.0E+01	3.6E-03	1.4E-01	5.9E-04	3.6E-02	7.6E-04	1.4E-02	1.9E-01
3.01	Inorganic	Vanadium	1.1E+01	6.4E-03		7.4E-03	1.2E-01	1.2E-02	8.4E-03	1.6E-01
3.01	Inorganic	Chromium	1.0E+01	8.7E-03		5.0E-03	1.8E-03	7.2E-02	3.4E-02	1.2E-01
3.01			Hazard Index	3.1E-02	7.4E+00	1.6E-02	1.5E+00	2.8E-01	1.3E+00	1.1E+01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
3.02	Inorganic	Manganese	1.1E+03	3.2E-02	2.4E+01	9.2E-03	8.8E-02	6.5E-02	3.9E+00	2.8E+01
3.02	Inorganic	Mercury	4.1E+00	5.8E-02	1.6E-02	9.5E-08	2.0E+00	1.9E+00	5.3E+00	9.2E+00
3.02	Inorganic	Nickel	5.2E+01	1.1E-02		4.7E-04	4.9E+00	7.2E-02	1.8E-01	5.2E+00
3.02	Inorganic	Zinc	1.2E+02	1.7E-03		9.5E-05	1.5E+00	6.8E-01	2.0E-01	2.4E+00
3.02	Inorganic	Arsenic	5.0E+00	7.2E-02		2.0E-03	8.1E-02	1.2E-01	9.8E-02	3.7E-01
3.02	Inorganic	Barium	1.1E+02	6.8E-03	2.6E-01	1.1E-03	6.7E-02	1.4E-03	2.7E-02	3.6E-01
3.02	Inorganic	Vanadium	2.2E+01	1.3E-02		1.5E-02	2.5E-01	2.6E-02	1.8E-02	3.3E-01
3.02	Inorganic	Chromium	2.4E+01	2.1E-02		1.2E-02	4.2E-03	1.7E-01	8.1E-02	2.9E-01
3.02	Inorganic	Selenium	3.3E-01	2.8E-04		7.4E-06	1.0E-01	4.7E-02	8.8E-03	1.6E-01
3.02	Inorganic	Cadmium	9.1E-01	3.9E-03		4.5E-03	9.9E-02	1.8E-03	4.7E-02	1.6E-01
3.02	Organic	PCB-1254	7.3E-01	1.6E-01		2.0E-02	2.8E+01	3.9E+00	7.3E-01	3.2E+01
3.02			Hazard Index	3.8E-01	2.4E+01	6.5E-02	3.7E+01	7.0E+00	1.1E+01	7.9E+01
3.03	Inorganic	Manganese	6.9E+02	2.1E-02	1.6E+01	6.0E-03	5.8E-02	4.3E-02	2.5E+00	1.9E+01
3.03	Inorganic	Mercury	6.7E+00	9.5E-02	2.5E-02	1.6E-07	3.2E+00	3.1E+00	8.6E+00	1.5E+01
3.03	Inorganic	Nickel	6.2E+01	1.3E-02		5.7E-04	5.9E+00	8.6E-02	2.1E-01	6.2E+00
3.03	Inorganic	Zinc	1.6E+02	2.3E-03		1.3E-04	2.1E+00	9.3E-01	2.8E-01	3.3E+00
3.03	Inorganic	Cadmium	3.3E+00	1.4E-02		1.6E-02	3.6E-01	6.4E-03	1.7E-01	5.7E-01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
3.03	Inorganic	Chromium	4.4E+01	3.8E-02		2.2E-02	7.7E-03	3.1E-01	1.5E-01	5.3E-01
3.03	Inorganic	Arsenic	5.3E+00	7.5E-02		2.1E-03	8.5E-02	1.3E-01	1.0E-01	3.9E-01
3.03	Inorganic	Barium	1.2E+02	7.3E-03	2.8E-01	1.2E-03	7.2E-02	1.5E-03	2.9E-02	3.9E-01
3.03	Inorganic	Vanadium	2.2E+01	1.3E-02		1.5E-02	2.5E-01	2.5E-02	1.7E-02	3.2E-01
3.03	Inorganic	Silver	3.3E+00	2.8E-03		1.8E-04	7.8E-03	2.1E-02	1.7E-01	2.0E-01
3.03			Hazard Index	2.8E-01	1.6E+01	6.3E-02	1.2E+01	4.6E+00	1.2E+01	4.5E+01
3.04	Inorganic	Mercury	2.6E+01	3.6E-01	9.8E-02	6.0E-07	1.3E+01	1.2E+01	3.3E+01	5.8E+01
3.04	Inorganic	Manganese	7.4E+02	2.2E-02	1.7E+01	6.4E-03	6.1E-02	4.6E-02	2.7E+00	2.0E+01
3.04	Inorganic	Arsenic	9.4E+01	1.3E+00		3.7E-02	1.5E+00	2.2E+00	1.8E+00	7.0E+00
3.04	Inorganic	Nickel	5.1E+01	1.1E-02		4.6E-04	4.8E+00	6.9E-02	1.7E-01	5.0E+00
3.04	Inorganic	Zinc	1.2E+02	1.6E-03		9.4E-05	1.5E+00	6.7E-01	2.0E-01	2.4E+00
3.04	Inorganic	Cadmium	5.6E+00	2.4E-02		2.7E-02	6.1E-01	1.1E-02	2.9E-01	9.6E-01
3.04	Inorganic	Barium	2.9E+02	1.8E-02	6.7E-01	2.9E-03	1.7E-01	3.7E-03	6.9E-02	9.3E-01
3.04	Inorganic	Vanadium	5.9E+01	3.6E-02		4.1E-02	6.8E-01	7.0E-02	4.7E-02	8.7E-01
3.04	Inorganic	Selenium	1.6E+00	1.3E-03		3.5E-05	4.9E-01	2.2E-01	4.1E-02	7.5E-01
3.04	Inorganic	Chromium	3.9E+01	3.3E-02		1.9E-02	6.8E-03	2.7E-01	1.3E-01	4.6E-01
3.04	Inorganic	Boron	4.4E+01	2.1E-03	2.5E-03	2.6E-05	2.3E-01	3.0E-03	7.7E-02	3.1E-01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
3.04	Organic	PCB-1254	1.8E-01	3.8E-02		4.9E-03	6.8E+00	9.6E-01	1.8E-01	8.0E+00
3.04	Organic	4-Methylphenol	2.8E-01	2.4E-04		4.3E-05	9.2E-05	1.3E-05	2.1E-01	2.1E-01
3.04			Hazard Index	1.9E+00	1.8E+01	1.4E-01	2.9E+01	1.6E+01	3.9E+01	1.0E+02
4.01	Inorganic	Mercury	1.2E+01	1.7E-01	4.6E-02	2.8E-07	5.9E+00	5.6E+00	1.6E+01	2.7E+01
4.01	Inorganic	Manganese	8.4E+02	2.6E-02	1.9E+01	7.3E-03	7.0E-02	5.2E-02	3.1E+00	2.3E+01
4.01	Inorganic	Nickel	2.0E+01	4.2E-03		1.8E-04	1.8E+00	2.7E-02	6.6E-02	1.9E+00
4.01	Inorganic	Zinc	6.5E+01	9.3E-04		5.3E-05	8.5E-01	3.8E-01	1.1E-01	1.3E+00
4.01	Inorganic	Arsenic	1.0E+01	1.4E-01		4.0E-03	1.6E-01	2.4E-01	1.9E-01	7.4E-01
4.01	Inorganic	Barium	7.9E+01	4.8E-03	1.8E-01	7.9E-04	4.7E-02	1.0E-03	1.9E-02	2.5E-01
4.01	Inorganic	Vanadium	1.6E+01	9.7E-03		1.1E-02	1.8E-01	1.9E-02	1.3E-02	2.3E-01
4.01	Inorganic	Chromium	1.8E+01	1.6E-02		9.0E-03	3.2E-03	1.3E-01	6.1E-02	2.2E-01
4.01	Inorganic	Selenium	3.8E-01	3.2E-04		8.5E-06	1.2E-01	5.3E-02	1.0E-02	1.8E-01
4.01	Inorganic	Silver	1.8E+00	1.5E-03		9.8E-05	4.2E-03	1.1E-02	9.3E-02	1.1E-01
4.01	Inorganic	Cadmium	6.5E-01	2.7E-03		3.2E-03	7.0E-02	1.2E-03	3.3E-02	1.1E-01
4.01	Organic	PCB-1254	4.0E-01	8.5E-02		1.1E-02	1.5E+01	2.1E+00	4.0E-01	1.8E+01
4.01			Hazard Index	4.6E-01	2.0E+01	4.7E-02	2.4E+01	8.7E+00	2.0E+01	7.3E+01
4.02	Inorganic	Manganese	6.7E+02	2.0E-02	1.5E+01	5.8E-03	5.5E-02	4.1E-02	2.4E+00	1.8E+01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
4.02	Inorganic	Nickel	1.3E+01	2.8E-03		1.2E-04	1.3E+00	1.8E-02	4.5E-02	1.3E+00
4.02	Inorganic	Zinc	4.7E+01	6.6E-04		3.8E-05	6.1E-01	2.7E-01	8.0E-02	9.6E-01
4.02	Inorganic	Arsenic	1.1E+01	1.6E-01		4.5E-03	1.8E-01	2.7E-01	2.2E-01	8.3E-01
4.02	Inorganic	Mercury	3.4E-01	4.8E-03	1.3E-03	7.9E-09	1.7E-01	1.6E-01	4.4E-01	7.7E-01
4.02	Inorganic	Barium	1.1E+02	6.5E-03	2.5E-01	1.1E-03	6.4E-02	1.4E-03	2.6E-02	3.4E-01
4.02	Inorganic	Vanadium	1.2E+01	7.4E-03		8.5E-03	1.4E-01	1.4E-02	9.7E-03	1.8E-01
4.02	Inorganic	Chromium	1.4E+01	1.2E-02		7.0E-03	2.5E-03	1.0E-01	4.8E-02	1.7E-01
4.02			Hazard Index	2.1E-01	1.5E+01	2.7E-02	2.5E+00	8.7E-01	3.3E+00	2.2E+01
4.03	Inorganic	Manganese	1.6E+03	4.8E-02	3.6E+01	1.4E-02	1.3E-01	9.7E-02	5.8E+00	4.2E+01
4.03	Inorganic	Mercury	3.5E+00	5.0E-02	1.3E-02	8.2E-08	1.7E+00	1.6E+00	4.5E+00	8.0E+00
4.03	Inorganic	Nickel	4.0E+01	8.6E-03		3.6E-04	3.8E+00	5.5E-02	1.4E-01	4.0E+00
4.03	Inorganic	Zinc	1.1E+02	1.6E-03		9.3E-05	1.5E+00	6.6E-01	2.0E-01	2.3E+00
4.03	Inorganic	Arsenic	7.8E+00	1.1E-01		3.1E-03	1.3E-01	1.9E-01	1.5E-01	5.8E-01
4.03	Inorganic	Selenium	9.4E-01	8.0E-04		2.1E-05	2.9E-01	1.3E-01	2.5E-02	4.5E-01
4.03	Inorganic	Chromium	3.7E+01	3.1E-02		1.8E-02	6.4E-03	2.6E-01	1.2E-01	4.4E-01
4.03	Inorganic	Barium	1.3E+02	7.9E-03	3.0E-01	1.3E-03	7.7E-02	1.7E-03	3.1E-02	4.2E-01
4.03	Inorganic	Vanadium	2.7E+01	1.7E-02		1.9E-02	3.1E-01	3.2E-02	2.2E-02	4.0E-01

Table E.64. Chemicals with a hazard quotient (HQ) >0.1 and hazard indices for the child dredging pathways for selected subreaches of the Clinch River and Poplar Creek (continued)

Reach	Chemical Type	Chemical	Representative concentration (mg/kg)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Ingestion of Milk HQ	Child Ingestion of Meat HQ	Child Ingestion of Vegetables HQ	Total HIs Across Pathways
4.03	Inorganic	Cadmium	6.0E-01	2.5E-03		2.9E-03	6.5E-02	1.2E-03	3.1E-02	1.0E-01
4.03	Organic	PCB-1254	6.4E-02	1.4E-02		1.7E-03	2.4E+00	3.4E-01	6.4E-02	2.8E+00
4.03			Hazard Index	2.9E-01	3.6E+01	6.0E-02	1.0E+01	3.4E+00	1.1E+01	6.2E+01
4.04	Inorganic	Manganese	1.7E+03	5.1E-02	3.8E+01	1.5E-02	1.4E-01	1.0E-01	6.1E+00	4.5E+01
4.04	Inorganic	Mercury	3.1E+00	4.3E-02	1.2E-02	7.1E-08	1.5E+00	1.4E+00	3.9E+00	6.9E+00
4.04	Inorganic	Nickel	3.6E+01	7.6E-03		3.2E-04	3.3E+00	4.9E-02	1.2E-01	3.5E+00
4.04	Inorganic	Zinc	1.4E+02	2.0E-03		1.2E-04	1.8E+00	8.2E-01	2.4E-01	2.9E+00
4.04	Inorganic	Arsenic	1.0E+01	1.5E-01		4.1E-03	1.7E-01	2.5E-01	2.0E-01	7.7E-01
4.04	Inorganic	Barium	1.4E+02	8.4E-03	3.2E-01	1.4E-03	8.2E-02	1.8E-03	3.3E-02	4.4E-01
4.04	Inorganic	Vanadium	2.9E+01	1.7E-02		2.0E-02	3.3E-01	3.4E-02	2.3E-02	4.2E-01
4.04	Inorganic	Selenium	8.4E-01	7.1E-04		1.9E-05	2.6E-01	1.2E-01	2.2E-02	4.0E-01
4.04	Inorganic	Chromium	2.6E+01	2.2E-02		1.3E-02	4.6E-03	1.8E-01	8.7E-02	3.1E-01
4.04	Inorganic	Cadmium	7.3E-01	3.1E-03		3.5E-03	7.8E-02	1.4E-03	3.8E-02	1.2E-01
4.04	Organic	PCB-1254	9.8E-01	2.1E-01		2.6E-02	3.7E+01	5.2E+00	9.8E-01	4.3E+01
4.04			Hazard Index	5.1E-01	3.8E+01	8.3E-02	4.5E+01	8.2E+00	1.2E+01	1.0E+02

TOXICITY INFORMATION

Inorganics

Antimony (BEIAS 1994)

Antimony (Sb) is a naturally occurring metal that is used in various manufacturing processes. It exists in valence states of 3 and 5. Antimony is a common urban air pollutant. Exposure to antimony may be via inhalation, oral, and dermal routes.

Antimony is sparingly absorbed following ingestion or inhalation. Both gastrointestinal and pulmonary absorption are a function of compound solubility. Antimony is transported in the blood, its distribution varying among species and dependent on its valence state. Antimony is not metabolized but may bind to macromolecules and react covalently with sulfhydryl and phosphate groups. Excretion of antimony is primarily via the urine and feces, and is also dependent upon valence state.

Acute oral exposure of humans and animals to high doses of antimony or antimony-containing compounds (antimonials) may cause gastrointestinal disorders (vomiting, diarrhea), respiratory difficulties, and death at extremely high doses. Subchronic and chronic oral exposure may affect hematologic parameters. Long-term exposure to high doses of antimony or antimonials has been shown to adversely affect longevity in animals. Limited data suggest that prenatal and postnatal exposure of rats to antimony interferes with vasomotor responses.

Acute inhalation exposure of humans may cause gastrointestinal disorders (probably due to ingestion of airborne antimony). Exposure of animals to high concentrations of antimony and antimonials (especially stibine gas) may result in pulmonary edema and death. Long-term occupational exposure of humans has resulted in electrocardiac disorders, respiratory disorders, and possibly increased mortality. Antimony levels for these occupational exposure evaluations ranged from 2.2 to 11.98 mg Sb/m^3. Based on limited data, occupational exposure of women to metallic antimony and several antimonials has reportedly caused alterations in the menstrual cycle and an increased incidence of spontaneous abortions. Reproductive dysfunction has been demonstrated in rats exposed to antimony trioxide.

No data were available indicating that dermal exposure of humans to antimony or its compounds results in adverse effects. However, dermal application of high doses of antimony oxide (1584 mg Sb/kg) resulted in the death of rabbits within one day. Eye irritation due to exposure to stibine gas and several antimony oxides has been reported for humans.

The EPA has calculated subchronic and chronic oral reference doses (RfDs) of 4.0E-4 mg/kg/day based on decreased longevity and alteration of blood chemistry in rats chronically exposed to potassium antimony tartrate in the drinking water (5 ppm equivalent to 0.35 mg Sb/kg/day). An uncertainty factor of 1000 was applied: 10 for extrapolation from a LOAEL to a NOAEL, 10 for extrapolation from animal data, and 10 for protection of sensitive populations.

The primary target organ for acute oral exposure to antimony appears to be the gastrointestinal tract (irritation, diarrhea, vomiting) and targets for long-term exposure are the blood (hematological disorders) and liver (mild hepatotoxicity). Inhalation exposure to antimony affects the respiratory tract (pneumoconiosis, restrictive airway disorders), with secondary targets being the cardiovascular system

(altered blood pressure and electrocardiograms) and kidneys (histological changes). Only limited evidence exists for reproductive disorders due to antimony exposure.

Although some data indicate that long-term exposure of rats to antimony trioxide and trisulfide increased the incidence of lung tumors, the EPA has not evaluated antimony or antimonials for carcinogenicity, and a weight-of-evidence classification is currently unavailable.

Arsenic (BEIAS 1994)

The toxicity of inorganic arsenic depends on its valence state (–3, +3, or +5), and on the physical and chemical properties of the compound in which it occurs. Trivalent (As^{+3}) compounds are generally more toxic than pentavalent (As^{+5}) compounds. The more water–soluble compounds are usually more toxic and more likely to have systemic effects than the less soluble compounds, which are more likely to cause chronic pulmonary effects. One of the most toxic inorganic arsenic compounds is arsine gas (AsH_3). Laboratory animals are generally less sensitive than humans to the toxic effects of inorganic arsenic. In addition, in rodents the critical effects appear to be immunosuppression and hepato–renal dysfunction, whereas in humans the skin, vascular system, and peripheral nervous system are the primary target organs.

Water–soluble inorganic arsenic compounds are absorbed through the gastrointestinal (GI) tract (>90%) and lungs; distributed primarily to the liver, kidney, lung, spleen, aorta, and skin; and excreted mainly in the urine, at rates as high as 80% in 61 hours following oral dosing. Pentavalent arsenic is reduced to the trivalent form and then methylated in the liver to less toxic methylarsinic acids.

Symptoms of acute inorganic arsenic poisoning in humans are nausea, anorexia, vomiting, epigastric and abdominal pain, and diarrhea. Dermatitis (exfoliative erythroderma), muscle cramps, cardiac abnormalities, hepatotoxicity, bone marrow suppression and hematological abnormalities (anemia), vascular lesions, and peripheral neuropathy (motor dysfunction and paresthesia) have also been reported. Oral doses as low as 20-60 μg/kg/d have been reported to cause toxic effects in some individuals. Severe exposures can result in acute encephalopathy, congestive heart failure, stupor, convulsions, paralysis, coma, and death. The acute lethal dose to humans has been estimated at ~0.6 mg/kg/d. General symptoms of chronic arsenic poisoning in humans are weakness, general debility and lassitude, loss of appetite and energy, loss of hair, hoarseness of voice, loss of weight, and mental disorders. Primary target organs are the skin (hyperpigmentation and hyperkeratosis), nervous system (peripheral neuropathy), and vascular system. Anemia, leukopenia, hepatomegaly, and portal hypertension have also been reported. In addition, possible reproductive effects include a high male–to–female birth ratio.

The RfD for chronic oral exposures, 0.0003 mg/kg/d, is based on a no–observable–adverse–effect level (NOAEL) of 0.0008 mg/kg/d and a lowest–observed–adverse–effect level (LOAEL) of 0.014 mg/kg/d for hyperpigmentation, keratosis, and possible vascular complications in a human population consuming arsenic–contaminated drinking water. Because of uncertainties in the data, EPA states that "strong scientific arguments can be made for various values within a factor of 2 or 3 of the currently recommended RfD value." The subchronic RfD is the same as the chronic RfD, 0.0003 mg/kg/d.

Acute inhalation exposures to inorganic arsenic can damage mucous membranes; cause rhinitis, pharyngitis, and laryngitis; and result in nasal septum perforation. Chronic inhalation exposures, as occurring in the work place, can lead to rhino–pharyno–laryngitis, tracheobronchitis, dermatitis, hyperpigmentation, and hyperkeratosis; leukopenia; peripheral nerve dysfunction as indicated by

abnormal nerve conduction velocities; and peripheral vascular disorders as indicated by Raynaud's syndrome and increased vasospastic reactivity in fingers exposed to low temperatures. Higher rates of cardiovascular disease have also been reported in some workers exposed to arsenic. Possible reproductive effects include a high frequency of spontaneous abortions and reduced birth weights. Arsine gas (AsH_3) at concentrations as low as 3-10 ppm for several hours can cause toxic effects. Hemolysis, hemoglobinuria, jaundice, hemolytic anemia, and necrosis of the renal tubules have been reported in exposed workers.

Subchronic and chronic reference concentrations (RfCs) for inorganic arsenic have not been derived.

Epidemiological studies have revealed an association between arsenic concentrations in drinking water and increased incidence of skin cancers (including squamous cell carcinomas and multiple basal cell carcinomas), as well as cancers of the liver and bladder and respiratory and GI tracts. Occupational exposure studies have shown a clear correlation between exposure to arsenic and lung cancer mortality. EPA has placed inorganic arsenic in weight–of–evidence group A, human carcinogen. A drinking–water unit risk of $5 \times 10^{-5} (\mu g/L)^{-1}$ has been proposed, derived from drinking–water unit risks for females and males that are equivalent to slope factors of 1.0×10^{-3} $(\mu g/kg/d)^{-1}$ (females) and 2.0×10^{-3} $(\mu g/kg/d)^{-1}$ (males). For inhalation exposures, a unit risk of 4.3×10^{-3} $(\mu g/m^3)^{-1}$ and a slope factor of 50 $(mg/kg/d)^{-1}$ have been derived.

Beryllium (BEIAS 1994)

Pure beryllium is a hard, grayish metal present in the earth's crust. It can be found in emissions from coal combustion; in surface water and soil; and in house dust, food, drinking water, and cigarette smoke. Industry employs beryllium in several ways, including in brake systems for airplanes, for neutron monochromatization, as window material for x-ray tubes, and in radiation detectors. Additionally, beryllium compounds are used in manufacturing ceramics and refractories, chemical reagents, and gas mantle hardeners. The highest risk for exposure to beryllium occurs among workers employed in beryllium manufacturing, fabricating, or reclaiming industries. However, people who live near these industries and are sensitive to extremely low concentrations of beryllium in the air are also at risk. In addition, smokers inhale unusually high concentrations of beryllium, depending on the source of tobacco.

A limited amount of data indicates that the oral toxicity of beryllium is low; however, the inhaled toxicity of beryllium is well documented. Humans inhaling massive doses of beryllium compounds may develop acute berylliosis. Additionally, beryllium and its compounds are presumed to have cancer-causing potential in the human lung when inhaled. The cancer-causing ability has been investigated in workers exposed to beryllium. The degree of harm depends on the amount and duration of exposure. Short-term exposure to beryllium may cause noncarcinogenic health effects, such as acute pneumonitis berylliosis, while long-term exposure may cause lung cancer.

Boron

Boron is a solid substance that widely occurs in nature and is present in air, water, and soil. Typically it is found in the environment combined with other substances to form compounds called borates. Borates are primarily used to produce glass; however, they are also used in the production of fire retardants, leather tanning, cosmetics, metals, pesticides, and high-energy fuel. Background levels of boron have been reported up to 5 parts of boron in 1 million parts (ppm) of surface water and as high as 360 ppm in boron-rich deposit areas. Average daily intake of boron has been estimated at 10-25 mg. (ATSDR 1992)

Animal studies suggest boron readily enters the body when contacted with damaged skin and primarily leaves the body through urine. Small amounts of boron (4.1 mg/m^3) can irritate the nose, throat, and eyes when inhaled. Large amounts of boron (4,161 ppm) consumed by humans over a short period of time can affect the stomach, intestines, liver, kidney, and brain and can eventually lead to death. Animal studies also indicate that boron will affect in particular the male reproductive organs if large amounts are eaten or drunk for long or short periods of time. No information is available on whether boron causes cancer in humans; however, in animals no evidence of cancer has been found even when exposed over long periods of time. (ATDSR 1992)

Cadmium (BEIAS 1994)

Cadmium is a naturally occurring metal that is used in various chemical forms in metallurgical and other industrial processes and in the production of pigments. Environmental exposure can occur via the diet and drinking water.

Cadmium is absorbed more efficiently by the lungs (30 to 60%) than by the GI tract, the latter being a saturable process. Cadmium is transported in the blood and widely distributed in the body but accumulates primarily in the liver and kidneys. Cadmium burden (especially in the kidneys and liver) tends to increase in a linear fashion up to ~50 or 60 years of age, after which the body burden remains relatively constant. Metabolic transformations of cadmium are limited to its binding to protein and nonprotein sulfhydryl groups and to various macromolecules, such as metallothionein, which is especially important in the kidneys and liver. Cadmium is excreted primarily in the urine.

Acute oral exposure to 20-30 g has caused fatalities in humans. Exposure to lower amounts may cause GI irritation, vomiting, abdominal pain, and diarrhea. An asymptomatic period of one–half to one hour may precede the onset of clinical signs. Longer–term exposure to cadmium primarily affects the kidneys, resulting in tubular proteinosis, although other conditions such as "itai–itai" disease may involve the skeletal system. Cadmium involvement in hypertension is not fully understood.

Inhalation exposure to cadmium and cadmium compounds may result in effects including headache, chest pains, muscular weakness, pulmonary edema, and death. The 1–minute and 10–minute lethal concentration of cadmium for humans has been estimated to be ~2500 and 250 mg/m^3, respectively. An 8–hour time–weighted–average exposure level of 5 mg/m^3 has been estimated for lethal effects of inhalation exposure to cadmium, and exposure to 1 mg/m^3 is considered to be immediately dangerous to human health. Renal toxicity (tubular proteinosis) may also result from inhalation exposure to cadmium.

Chronic oral RfDs of 5×10^{-4} and 1×10^{-3} mg/kg/d have been established for cadmium exposure via drinking water and food, respectively. Both values reflect incorporation of an uncertainty factor of 10. The RfDs are based on an extensive data base regarding toxicokinetics and toxicity in both human and animals, the critical effect being renal tubular proteinuria. Confidence in the RfD and data base is high. Inhalation RfC values are currently not available.

The target organ for cadmium toxicity via oral exposure is the kidney. For inhalation exposure, both the lungs and kidneys are target organs for cadmium–induced toxicity.

There is limited evidence from epidemiologic studies for cadmium–related respiratory–tract cancer. An inhalation unit risk of 1.8×10^{-3} (μg/m^3)$^{-1}$ and an inhalation slope factor of 6.1 (mg/kg/d)$^{-1}$ are based on respiratory tract cancer associated with occupational exposure. Based on limited evidence from

multiple occupational exposure studies and adequate animal data, cadmium is placed in weight–of–evidence group B1, probable human carcinogens.

Chromium, Chromium III, and Chromium VI (BEIAS 1994)

Elemental chromium does not occur in nature but is present in ores—primarily chromite. Chromium exhibits several oxidation states, but the most prominent of these is chromium VI and chromium III. Chromium VI in the environment is manmade as a result of industrial emissions; in solution, chromium VI exists as hydrochromate, chromate, and dichromate ionic species and reacts over time to form chromium III. Chromium VI is much more mobile and toxic than is chromium III. Chromium is useful in glucose and cholesterol metabolism and therefore is an essential element to humans and animals. Nonoccupational exposure to the metal occurs via the ingestion of chromium-containing food and water, whereas occupational exposure occurs via inhalation. Workers are exposed to chromium during its use in the production of dichromate; the chemical, stainless steel, refractory, and chromium-plating industries; and the production and use of alloys.

Chromium enters the body through the lungs, gastrointestinal tract, and, to a lesser extent, the skin. Inhalation is the most important route for occupational exposure. Workers exposed to chromium have developed nasal irritation, nasal ulcers, perforation of the nasal septum, and hypersensitivity reactions and "chrome holes" of the skin. Among the general population, contact dermatitis has been associated with the use of bleaches and detergents. Inhalation of chromium compounds has been associated with the development of cancer in workers in the chromate industry. Evidence also suggests an increased risk in developing nasal, pharyngeal, and gastrointestinal carcinomas. Based on sufficient evidence reporting that humans and animals are at risk of developing cancer, chromium VI has been assigned an EPA weight-of-evidence classification of A, human carcinogen.

Manganese (BEIAS 1994)

Manganese makes up about 0.10% of the earth's crust and is the 12th most abundant element. It can exist in oxidation states from -3 to +7, the most common being +4 in the chemical form of manganese dioxide. The oxides and peroxides are used in industry as oxidizers, and the metal is used for manufacturing metal alloys to increase hardness and corrosion resistance. Manganese is an essential trace element in humans, which can elicit a variety of serious toxic responses upon prolonged exposure to elevated concentrations either orally or by inhalation. The central nervous system is the primary target.

Initial symptoms of manganese exposure are insomnia, disorientation, anxiety, lethargy, and memory loss. These symptoms will progress with prolonged exposure and will eventually include motor disturbances, tremors, and walking difficulties similar to Parkinsonism. Effects on reproduction (decreased fertility, impotence) have been observed in humans with inhalation exposure and in animals with oral exposure at the same or similar doses that initiate the central nervous system effects. Data on possible carcinogenesis following injections in mice are inconclusive; however, the EPA weight-of-evidence classification is D, not classifiable as to human carcinogenicity based on no evidence in humans and inconclusive evidence in animals.

Mercury and Mercury Salts (BEIAS 1994)

Mercury is a naturally occurring element that may exist in elemental, inorganic, or organic forms and in various oxidation states. Mercury is used in a wide variety of products and processes, including pressure sensitive devices (thermometers, barometers), electrical apparatus (wiring, switches, batteries),

paints, pharmaceuticals, and various chemicals. The oxidation state and chemical form of mercury are important in determining its toxicity, with mercurous salts being less toxic than mercuric salts. Organic materials such as methyl mercury are highly toxic. In the environment, mercury may undergo transformations among the various oxidation states and chemical forms. Both environmental and occupational exposure are relevant to mercury and its compounds, although environmental exposure is unimportant for mercury vapor. Mercury intake from occupational exposure is of greater significance than that from environmental exposure. Environmental exposure to mercury may involve dietary intake (i.e., from fish) and possibly from dental amalgams, the latter being controversial and under dispute.

Ingestion of mercury metal is usually without effect, while ingestion of inorganic salts may cause severe gastrointestinal irritation, renal failure, and death. Mercury is also known to induce hypersensitivity reactions such as contact dermatitis and acrodynia (pink disease). Inhalation of mercury vapor may cause irritation of the respiratory tract, central nervous system effects characterized by neurobehavioral changes, peripheral nervous system toxicity, renal toxicity, and death. Toxicity resulting from subchronic and chronic exposure to mercury and mercury salts usually involves the kidneys and/or the nervous system. No data are available regarding the carcinogenicity of mercury in humans or animals. The EPA has placed inorganic mercury in weight-of-evidence classification D, not classifiable as to human carcinogenicity.

Nickel and Nickel Salts (BEIAS 1994)

Nickel is a naturally occurring metal existing in various mineral forms. Nickel may be found throughout the environment including rivers, lakes, oceans, soil, air, drinking water, plants, and animals. Soil and sediment are the primary receptacles for nickel, but mobilization may occur depending on physico-chemical characteristics of the soil. Nickel is used in a wide variety of metallurgical processes such as electroplating and alloy production, as well as in nickel-cadmium batteries. Some evidence suggests that nickel may be an essential trace element for mammals. As for most metals, the toxicity of nickel is dependent on the route of exposure and the solubility of the nickel compound.

Pulmonary absorption is the major route of concern for nickel-induced toxicity. Toxic effects of oral exposure to nickel usually involve the kidneys with some evidence from animal studies showing a possible development/reproductive toxicity effect. Inhalation exposure to some nickel compounds will cause toxic effects in the respiratory tract and immune system. Asthmatic conditions have also been documented for inhalation exposure to nickel. In addition, sensitivity reactions to nickel are well documented and usually involve contact dermatitis reactions resulting from contact with items such as cooking utensils, jewelry, coins, etc., containing nickel. Epidemiologic studies have shown that occupational inhalation exposure to nickel dust (primarily nickel subsulfide) at refineries has resulted in increased incidence of pulmonary and nasal cancer.

Selenium (BEIAS 1994)

Selenium is an essential trace element important in many biochemical and physiological processes including the biosynthesis of coenzyme Q (a component of mitochondrial electron transport systems), regulation of ion fluxes across membranes, maintenance of the integrity of keratins, stimulation of antibody synthesis, and activation of glutathione peroxidase (an enzyme involved in preventing oxidative damage to cells). Recommended human dietary allowances (average daily intake) for selenium are as follows: infants up to 1 year, 10–15 μg; children 1–10 years, 20–30 μg; adult males 11–51+ years, 40–70 μg; adult females 11–51+ years, 45–55 μg; pregnant or lactating women, 65–75 μg. There appears to be a relatively narrow range between levels of selenium intake resulting in deficiency and those causing toxicity.

Selenium occurs in several valence states: -2 (hydrogen selenide, sodium selenide, dimethyl selenium, trimethyl selenium, and selenoamino acids such as selenomethionine; 0 (elemental selenium); +4 (selenium dioxide, selenious acid, and sodium selenite); and +6 (selenic acid and sodium selenate). Toxicity of selenium varies with valence state and water solubility of the compound in which it occurs. The latter can affect gastrointestinal absorption rates.

Gastrointestinal absorption in animals and humans for various selenium compounds ranges from about 44% to 95% of the ingested dose. Respiratory tract absorption rates of 97% and 94% for aerosols of selenious acid have been reported for dogs and rats, respectively. Selenium is found in all tissues of the body; highest concentrations occur in the kidney, liver, spleen, and pancreas. Excretion is primarily via the urine (0–15 μg/L); however, excretory products can also be found in the feces, sweat, and expired air.

In humans, acute oral exposures can result in excessive salivation, garlic odor to the breath, shallow breathing, diarrhea, pulmonary edema, and death. Other reported signs and symptoms of acute selenosis include tachycardia, nausea, vomiting, abdominal pain, abnormal liver function, muscle aches and pains, irritability, chills, and tremors. Acute toxic effects observed in animals include pulmonary congestion, hemorrhages and edema, convulsions, altered blood chemistry (increased hemoglobin and hematocrit), liver congestion, and congestion and hemorrhage of the kidneys.

General signs and symptoms of chronic selenosis in humans include loss of hair and nails, acropachia (clubbing of the fingers), skin lesions (redness, swelling, blistering, and ulcerations), tooth decay (mottling, erosion and pitting), and nervous system abnormalities attributed to polyneuritis (peripheral anesthesia, acroparaethesia, pain in the extremities, hyperreflexia of the tendon, numbness, convulsions, paralysis, motor disturbances, and hemiplegia). In domesticated animals, subchronic and chronic oral exposures can result in loss of hair, malformed hooves, rough hair coat, and nervous system abnormalities (impaired vision and paralysis). Damage to the liver and kidneys and impaired immune responses have been reported to occur in rodents following subchronic and/or chronic oral exposures.

In humans, inhalation of selenium or selenium compounds primarily affects the respiratory system. Dusts of elemental selenium and selenium dioxide can cause irritation of the skin and mucous membranes of the nose and throat, coughing, nosebleed, loss of sense of smell, dyspnea, bronchial spasms, bronchitis, and chemical pneumonia. Other signs and symptoms following acute inhalation exposures include lacrimation, irritation and redness of the eyes, gastrointestinal distress (nausea and vomiting), depressed blood pressure, elevated pulse rate, headaches, dizziness, and malaise. In animals, acute inhalation exposures also result in severe respiratory effects including edema, hemorrhage, and interstitial pneumonitis as well as in splenic damage (congestion, fissuring red pulp, and increased polymorphonuclear leukocytes) and liver congestion and mild central atrophy. Information on toxicity of selenium in humans and animals following chronic inhalation exposures is not available, and subchronic and chronic inhalation RfCs have not been derived.

Epidemiologic studies in humans have failed to show a positive association between chronic oral exposures to selenium and an increased incidence of death due to neoplasms. Some studies have indicated that selenium may have anti-neoplastic properties. In studies on laboratory animals, selenites or selenates have not been found to be carcinogenic; however, selenium sulfide produced a significant increase in the incidence of hepatocellular carcinomas in male and female rats and in female mice and a significant increase in alveolar/bronchiolar carcinomas and adenomas in female mice following chronic oral exposures. EPA has placed selenium and selenious acid in Group D, not classifiable as to carcinogenicity in humans, while selenium sulfide is placed in Group B2, probable human carcinogen. Quantitative data are, however, insufficient to derive a SF for selenium sulfide. Pertinent data regarding

the potential carcinogenicity of selenium by the inhalation route in humans or animals were not located in the available literature.

Silver (BEIAS 1994)

Silver is a relatively rare metal that occurs naturally in the earth's crust and is released to the environment from various industrial sources. Human exposure to silver and silver compounds can occur orally, dermally, or by inhalation. Silver is found in most tissues, but has no known physiologic function.

In humans, accidental or intentional ingestion of large doses of silver nitrate has produced corrosive damage of the gastrointestinal tract, abdominal pain, diarrhea, vomiting, shock, convulsions, and death. Respiratory irritation was noted following acute inhalation exposure to silver or silver compounds. Silver nitrate solutions are highly irritating to the skin, mucous membranes, and eyes.

Ingestion, inhalation, or dermal absorption of silver may cause argyria, the most common indicator of long-term exposure to silver or silver compounds in humans. Argyria is a gray or blue-gray, permanent discoloration of the skin and mucous membranes that is not a toxic effect per se, but is considered cosmetically disfiguring. Chronic inhalation exposure of workers to silver oxide and silver nitrate dusts resulted in upper and lower respiratory irritation, deposition of granular silver-containing deposits in the eyes, impaired night vision, and abdominal pain. Mild allergic responses have been attributed to dermal contact with silver.

In long-term oral studies with experimental animals, silver compounds have produced slight thickening of the basement membranes of the renal glomeruli, growth depression, shortened lifespan, and granular silver-containing deposits in skin, eyes, and internal organs. Hypoactivity was seen in rats subchronically exposed to silver nitrate in drinking water.

A Reference Dose (RfD) of 0.005 mg/kg/day for subchronic and chronic exposure was calculated from a lowest-observed-adverse-effect level (LOAEL) of 0.014 mg/kg/day for argyria observed in patients receiving i.v. injections of silver arsphenamine. Data are presently insufficient to derive a Reference Concentration (RfC) for silver.

Data adequate for evaluating the carcinogenicity of silver to humans or animals by ingestion, inhalation, or other routes of exposure were not found. Based on EPA guidelines, silver is placed in weight-of-evidence group D, not classifiable as to human carcinogenicity.

Vanadium (BEIAS 1994)

Vanadium is a metallic element that occurs in six oxidation states and numerous inorganic compounds. Some of the more important compounds are vanadium pentoxide (V_2O_5), sodium metavanadate ($NaVO_3$), sodium orthovanadate (Na_3VO_4), vanadyl sulfate ($VOSO_4$), and ammonium vanadate (NH_4VO_3). Vanadium is used primarily as an alloying agent in steels and non-ferrous metals. Vanadium compounds are also used as catalysts and in chemical, ceramic or specialty applications.

Vanadium compounds are poorly absorbed through the gastrointestinal system (0.5-2% of dietary amount), but slightly more readily absorbed through the lungs (20-25%). Absorbed vanadium is widely distributed in the body, but short-term localization occurs primarily in bone, kidneys, and liver. In the body, vanadium can undergo changes in oxidation state (interconversion of vanadyl (+4) and vanadate (+5) forms) and it can also bind with blood protein (transferin). Vanadium is excreted primarily in the feces following oral exposures and primarily in the urine following inhalation exposures.

The toxicity of vanadium depends on its physico-chemical state; particularly on its valence state and solubility. Based on acute toxicity, pentavalent NH_4VO_3 has been reported to be more than twice as toxic as trivalent VCl_3 and more than 6 times as toxic as divalent VI_2. Pentavalent V_2O_5 has been reported to be more than 5 times as toxic as trivalent V_2O_3. In animals, acutely toxic oral doses cause vasoconstriction, diffuse desquamative enteritis, congestion and fatty degeneration of the liver, congestion and focal hemorrhages in the lungs and adrenal cortex. Minimal effects seen after subchronic oral exposures to animals include diarrhea, altered renal function, and decreases in erythrocyte counts, hemoglobin, and hematocrit. In humans, intestinal cramps and diarrhea may occur following subchronic oral exposures. These studies indicate that for subchronic and chronic oral exposures the primary targets are the digestive system, kidneys, and blood.

Reference Doses (RfD) for chronic oral exposures are: 0.007 mg/kg/day for vanadium; 0.009 mg/kg/day for vanadium pentoxide; 0.02 mg/kg/day for vanadyl sulfate; and 0.001 mg/kg/day for sodium metavanadate. The subchronic RfDs for these compounds are the same as the chronic RfDs, except for sodium metavanadate, which is 0.01 mg/kg/day.

Inhalation exposures to vanadium and vanadium compounds result primarily in adverse effects to the respiratory system. In laboratory studies, minimal effects (throat irritation and coughing) occurred after an 8-hr exposure to 0.1 mg V/m^3. In studies on workers occupationally exposed to vanadium, the most common reported symptoms were: irritation of the respiratory tract, conjunctivitis, dermatitis, cough, bronchospasm, pulmonary congestion, and bronchitis. Quantitative data are; however, insufficient to derive a subchronic or chronic inhalation Reference Concentration (RfC) for vanadium or vanadium compounds.

There is little evidence that vanadium or vanadium compounds are reproductive toxins or teratogens. There is also no evidence that any vanadium compound is carcinogenic; however, very few adequate studies are available for evaluation. Vanadium has not been classified as to carcinogenicity by the EPA.

Zinc (BEIAS 1994)

Zinc is an essential element and is used primarily in galvanized metals and metal alloys. In addition, various inorganic zinc salts have numerous commercial uses. Zinc oxide is used in the rubber industry as a vulcanization activator and accelerator and to slow down oxidation and also as a reinforcing agent, heat conductor, pigment, UV stabilizer, supplement in animal feeds and fertilizers, catalyst, chemical intermediate, and mildew inhibitor. Zinc sulfate is used in rayon manufacture, agriculture, zinc plating, and as a chemical intermediate and mordant. Zinc chloride is used in smoke bombs, in cements for metals, in wood preservatives, in flux for soldering; in manufacture of parchment paper, artificial silk, and glues; as a mordant in printing and dye textiles; and as a deodorant, antiseptic, and astringent. Zinc chromate is used as a pigment in paints, varnishes, and oil colors. In addition, zinc phosphide is used as a rodenticide, and zinc cyanide is used in electroplating. The toxicity of the latter two compounds is caused primarily by their anion component.

Gastrointestinal absorption of zinc is variable (20–80%) and depends on the chemical compound as well as on zinc levels in the body and dietary concentrations of other nutrients. Zinc is present in all tissues with the highest concentrations in the prostate, kidney, liver, heart, and pancreas. In humans, acutely toxic oral doses of zinc cause nausea, vomiting, diarrhea, and abdominal cramps and in some cases gastric bleeding. Gastrointestinal upset has also been reported in individuals taking dietary zinc supplements for up to 6 weeks. Limited evidence suggests that the human immune system may be impaired by subchronic exposures. Chronic oral exposures to zinc have resulted in hypochromic

microcytic anemia associated with hypoceruloplasminemia, hypocupremia, and neutropenia in some individuals. Under occupational exposure conditions, inhalation of zinc compounds (mainly zinc oxide fumes) can result in a condition identified as "metal fume fever," which is characterized by nasal passage irritation, cough, rales, headache, altered taste, fever, weakness, hyperpnea, sweating, pains in the legs and chest, leukocytosis, reduced lung volume, and decreased diffusing capacity of carbon monoxide. "Metal fume fever" is an acute and reversible effect that is unlikely to occur under chronic exposure conditions when zinc air concentrations are less that 8–12 mg/m^3. No case studies or epidemiologic evidence have been presented to suggest that zinc is carcinogenic in humans by the oral or inhalation route.

Organics

Aldrin

Aldrin is a common name for a compound used as an insecticide. Aldrin is a chemical made in the laboratory and does not occur naturally in the environment. The trade names used for aldrin include Aldrec, Aldrex, Drinox, Octalene, Seedrin, and Compound 118. Pure aldrin is a white powder, and technical–grade aldrin is a tan–colored powder. Aldrin evaporates slowly in the air and has a mild chemical odor. Aldrin can be found in the soil, in water, or in the air near hazardous waste sites. Aldrin can also be found in plants and animals near hazardous waste sites. (ATSDR 1993)

From the 1950s until 1970, aldrin was used extensively as an insecticide on crops such as corn and cotton. The USDA prohibited all uses of aldrin in 1970. In 1972, however, EPA approved aldrin for killing termites, and it was used for this purpose until 1987. In 1987, the manufacturer voluntarily canceled the registration for use in controlling termites. (ATSDR 1993)

Aldrin can enter the environment from accidental spills or leaks from storage containers at waste sites. In the past, aldrin entered the environment when farmers used it to kill pests on crops and exterminators used it to kill termites. Aldrin is still present in the environment from these past uses. Sunlight and bacteria can change aldrin to dieldrin; therefore, dieldrin will be found in places where aldrin was originally released. Dieldrin in soil or water breaks down slowly; it sticks to soil and sediments on the bottom of lakes very strongly and may stay there unchanged for many years. Dieldrin does not dissolve in water very easily; however, it can attach to dust particles and become airborne, and dieldrin can also be taken up in the roots of plants. Fish and animals that eat dieldrin–contaminated materials store a large amount of dieldrin in their fat. Animals or fish that eat other animals can concentrate dieldrin in their tissue. (ATSDR 1993)

Most human exposure to aldrin and dieldrin occurs when people eat foods such as fish from contaminated lakes or streams, root crops, dairy products, and meats. Exposure to aldrin and dieldrin occurs via drinking water, breathing, or contacting contaminated soil. Exposure to aldrin is limited because aldrin is changed very quickly to dieldrin in the environment. Dieldrin stays in the environment for a long time, usually in soil or in animal fat. Background levels of aldrin and dieldrin in air and water are ~0.000001 parts of aldrin or dieldrin in 1 million parts of air or water (i.e., ~0.000001 ppm). Background levels of dieldrin in soil are ~0.001 ppm, and background levels in water are very, very small. Contaminated soils average ~0.057 ppm for dieldrin and 0.019 ppm for aldrin; contaminated groundwater averages ~0.0004 ppm for dieldrin. Contaminated fish contained ~0.030-0.050 ppm of dieldrin. (ATSDR 1993)

Studies in animals show that both aldrin and dieldrin enter the body quickly after exposure. Once aldrin is inside the body, it quickly breaks down to dieldrin. Dieldrin stays in fat for a long time, but most dieldrin and its breakdown products leave the body in feces and urine. It can take many weeks or even years for all of the compound to leave the body. (ATSDR 1993)

Aldrin and dieldrin cause similar health effects. Exposure to very high levels of aldrin or dieldrin for a short time causes convulsions or kidney damage. Long–term exposure to lower levels can also cause convulsions because of the buildup of the contaminants in the body. Exposure to moderate levels of aldrin or dieldrin also causes headaches, dizziness, irritability, vomiting, or uncontrollable muscle movements. It is not known whether either contaminant causes birth defects or cancer in people. The International Agency for Research on Cancer has determined that the carcinogenicity of aldrin and dieldrin to humans is not classifiable. EPA has determined that aldrin and dieldrin are toxic contaminants and are probable human carcinogens (i.e., an EPA Class B2 carcinogen). The oral and inhalation slope factor for aldrin is 17 $(mg/kg/d)^{-1}$. The RfD for chronic oral exposures to aldrin is 0.00003 mg/kg/d and is used to evaluate potential noncancerous effects from exposure to aldrin. (ATSDR 1993)

Benzo[*a*]anthracene (BEIAS 1994)

Benz[*a*]anthracene, along with a number of other polycyclic aromatic hydrocarbons, are natural products produced by the incomplete combustion of organic material. The arrangement of the aromatic rings in the benz[*a*]anthracene molecule gives it a "bay region" often correlated with carcinogenic properties. In general, the bay-region polycyclic aromatic hydrocarbons and some of their metabolites are known to react with cellular macromolecules, including DNA, which may account for both their toxicity and carcinogenicity. The inducible mixed-function oxidase enzymes oxidize benz[*a*]anthracene to form metabolites with increased water solubility that can be efficiently excreted in the urine. A minor product of this oxidation, a bay-region diol epoxide, reacts readily with DNA and has been shown to be highly carcinogenic.

The toxic effects of benz[*a*]anthracene and similar polycyclic aromatic hydrocarbons are primarily directed toward tissues that contain proliferating cells. Animal studies indicate that exposure to bay-region polycyclic aromatic hydrocarbons can damage the hematopoietic system leading to progressive anemia as well as agranulocytosis. The lymphoid system can also be affected resulting in lymphopenia. Toxic effects have been observed in the rapidly dividing cells of the intestinal epithelium, spermatogonia and resting spermatocytes in the testis and primary oocytes of the ovary. Most of these effects have occurred following both oral and parenteral exposure. Epithelial proliferation and cell hyperplasia in the respiratory tract have been reported following subchronic inhalation exposure. However, because of the lack of quantitative data, neither a reference dose nor a reference concentration have been derived.

The primary concern with benz[*a*]anthracene exposure is its potential carcinogenicity. There is no unequivocal, direct evidence of the carcinogenicity of the compound to humans, however, benz[*a*]anthracene and other known carcinogenic polycyclic aromatic hydrocarbons are components of coal tar, soot, coke oven emissions and tobacco smoke. There is adequate evidence of its carcinogenic properties in animals. Oral exposures of mice to benz[*a*]anthracene have resulted in hepatomas, pulmonary adenomas and forestomach papillomas. The EPA weight-of-evidence classification is: B2, probable human carcinogen, for both oral and inhalation exposure based on adequate animal evidence and no human evidence. A slope factor has not been derived specifically for benz[*a*]anthracene by the EPA. However, an oral slope factor of 7.3 $(mg/kg/day)^{-1}$ has been calculated for benzo[*a*]pyrene based on the incidence of stomach tumors in mice treated with benzo[*a*]pyrene. A drinking water unit risk of 2.1E-4 $(\mu g/L)^{-1}$ has also been calculated for benzo[*a*]pyrene. An inhalation slope factor of 6.1 $(mg/kg/day)^{-1}$ (U.S. EPA, 1992b) was calculated for benzo[*a*]pyrene based on the incidence of

respiratory tumors in golden hamsters treated with benzo[*a*]pyrene. An inhalation unit risk of 1.7E-3 $(\mu g/m^3)^{-1}$ has also been calculated for benzo[*a*]pyrene.

Benzo[*a*]pyrene (BEIAS 1994)

Benzo(a)pyrene is a polycyclic aromatic hydrocarbon (PAH) characterized by two or more fuzed benzene rings. Despite their high lipid solubility, most PAHs show little tendency to biomagnify in food chains, probably because they are rapidly metabolized in most biota. PAHs are ubiquitous in nature, produced by forest fires, microbial synthesis, and anthropogenic activities. PAHs are teratogenic, mutagenic, and carcinogenic, with the higher molecular weight compounds being less toxic than higher compounds.

The effects of benzo(a)pyrene on reproduction are shown in mice exposed to 10, 40, and 160 mg of benzo(a)pyrene/kg body weight/day during days 7–16 of gestation. Benzo(a)pyrene exposure of 160 mg/kg/day significantly reduced pregnancy rates and percentage of viable litters. Pup weights were significantly reduced by all three dose levels. Total sterility was observed in 97% of offspring in the 40 and 160 mg/kg/day groups, and fertility was impaired among offspring in the 10 mg/kg/day group.

An oral SF of 7.3 $(mg/kg/day)^{-1}$ has been calculated for benzo[*a*]pyrene based on the incidence of stomach tumors in mice treated with benzo[*a*]pyrene. A drinking water unit risk of 2.1E-4 $(\mu g/L)^{-1}$ has also been calculated for benzo[*a*]pyrene. An inhalation SF of 6.1 $(mg/kg/day)^{-1}$ was calculated for benzo[*a*]pyrene based on the incidence of respiratory tumors in golden hamsters treated with benzo[*a*]pyrene. An inhalation unit risk of 1.7E-3 $(\mu g/m^3)^{-1}$ has also been calculated for benzo[*a*]pyrene.

Benzo[*b*]flouranthene (BEIAS 1994)

Benzo[*b*]fluoranthene, a crystalline solid with a chemical formula of $C_{20}H_{12}$ and a molecular weight of 252.32, is a polycyclic aromatic hydrocarbon (PAH) with one five-membered ring and four six-membered rings. There is no commercial production or known use of this compound. Benzo[*b*]fluoranthene is found in fossil fuels and occurs ubiquitously in products of incomplete combustion. It has been detected in mainstream cigarette smoke; urban air; gasoline engine exhaust; emissions from burning coal and from oil-fired heating; broiled and smoked food; oils and margarine; and in soils, groundwater, and surface waters at hazardous waste sites.

No absorption data were available for benzo[*b*]fluoranthene; however, by analogy to structurally-related PAHs, primarily benzo[*a*]pyrene, it would be expected to be absorbed from the gastrointestinal tract, lungs, and skin. Major metabolites of benzo[*b*]fluoranthene formed in vitro in rat liver include dihydrodiols and monohydroxy derivatives and monohydroxy derivatives in mouse epidermis.

No data were found concerning the acute, subchronic, chronic, developmental, or reproductive toxicity of benzo[*b*]fluoranthene. No data were available for the derivation of an oral reference dose (RfD) or inhalation reference concentration (RfC).

No long-term oral or inhalation bioassays were available to assess the carcinogenicity of benzo[*b*]fluoranthene. Benzo[*b*]fluoranthene was tested for carcinogenicity in dermal application, lung implantation, subcutaneous (s.c.) injection, and intraperitoneal (i.p.) injection studies. Dermal applications of 0.01–0.5% solutions of benzo[*b*]fluoranthene for life produced a high incidence of skin papillomas and carcinomas in mice. In initiation-promotion assays, the compound was active as an initiator of skin carcinogenesis in mice. Sarcomas and carcinomas of the lungs and thorax were seen in rats receiving single lung implants of 0.1–1 mg benzo[*b*]fluoranthene. Newborn mice receiving 0.5 μmol

benzo[*b*]fluoranthene via i.p. injection developed liver and lung tumors, and mice administered three s.c. injections of 0.6 mg benzo[*b*]fluoranthene developed injection site sarcomas.

Based on no human data and sufficient evidence for carcinogenicity in animals, EPA has assigned a weight-of-evidence classification of B2, probable human carcinogen, to benzo[*b*]fluoranthene.

***Bis*(2-ethylhexyl)phthalate** (BEIAS 1994)

Bis(2-ethylhexyl)phthalate is a colorless oily liquid that is extensively used as a plasticizer in a wide variety of industrial, domestic and medical products. It is an environmental contaminant and has been detected in ground water, surface water, drinking water, air, soil, plants, fish and animals. It is rapidly absorbed from the gastrointestinal tract primarily as mono(2-ethylhexyl)phthalate. The diester can be absorbed through the skin and from the lungs. It is rapidly metabolized in the blood and tissues to the monoester, which can be excreted as a glucuronide conjugate or further hydrolyzed to phthalic acid and excreted.

Animal studies have indicated that the primary target organs are the liver and kidneys; however, higher doses are reported to result in testicular effects and decreased hemoglobin and packed cell volume. The primary intracellular effects of *bis*(2-ethylhexyl)phthalate in the liver and kidneys are an increase in the smooth endoplasmic reticulum and a proliferation in the number and size of peroxisomes. An epidemiological study reported no toxic effects from occupational exposure to air concentrations of *bis*(2-ethylhexyl)phthalate up to 0.16 mg/m^3. Other studies on occupational exposures to mixtures of phthalate esters containing *bis*(2-ethylhexyl)phthalate have reported polyneuritis and sensory-motor polyneuropathy with decreased thrombocytes, leukocytes and hemoglobin in some exposed workers. Developmental toxicity studies with rats and mice have shown that *bis*(2-ethylhexyl)phthalate is fetotoxic and teratogenic when given orally during gestation. Oral exposure has also been shown to result in decreased sperm count in rats.

A Reference Dose (RfD) of 0.02 mg/kg/day for both subchronic and chronic oral exposure was calculated from a lowest-observed-adverse-effect level (LOAEL) of 19 mg/kg/day based on increased relative liver weight in guinea pigs given 0, 19, or 64 mg *bis*(2-ethylhexyl) phthalate/kg/day for 12 months in their diet. A Reference Concentration (RfC) for inhalation exposure is not available.

Bis(2-ethylhexyl)phthalate is known to induce the proliferation of peroxisomes, which has been associated with carcinogenesis. Dose-dependent, statistically-significant increases in the incidences of hepatocellular carcinomas and combined carcinomas and adenomas were seen in mice and rats exposed to *bis*(2-ethylhexyl)phthalate in their diet for 103 weeks. An increased incidence of neoplastic nodules and hepatocellular carcinomas was also reported in rats.

Based on EPA guidelines, *bis*(2-ethylhexyl)phthalate was assigned to weight-of-evidence Group B2, probable human carcinogen, on the basis of an increased incidence of liver tumors in rats and mice. A carcinogenicity slope factor (q_1^*) of 0.014 (mg/kg/day)$^{-1}$ for oral exposure was based on the combined incidence of hepatocellular carcinomas and adenomas in male mice. A drinking water unit risk of 4.0E-7 (μg/L)$^{-1}$ was calculated based on the q_1^*. A quantitative estimation of carcinogenic risk from inhalation exposure is not available.

Chlordane (BEAIS 1994)

Technical grade chlordane is a mixture of structurally related compounds including *trans*-chlordane, *cis*-chlordane, β-chlordene, heptachlor, and *trans*-nonachlor. Chlordane was used extensively as a

pesticide in the United States from 1948 to 1988. Because the chemical is persistent in the environment, exposure can still occur from breathing the air of treated homes, consuming shellfish caught in contaminated waters, or eating food produced on contaminated farmlands. Chlordane is readily absorbed after oral, inhalation, or dermal exposure and is stored in adipose tissue. The chemical is excreted in the feces from the bile, but metabolite residues have been detected in 46% of human milk samples from Arkansas/Mississippi, in 68% of samples from Mississippi, and in 100% of samples from Hawaii.

Death in humans from ingestion of chlordane was accompanied by vomiting, dry cough, agitation and restlessness, hemorrhagic gastritis, bronchopneumonia, muscle twitching, and convulsions. Nonlethal, accidental poisoning of children has resulted in convulsions, excitability, loss of coordination, dyspnea, and tachycardia; however, recovery was complete. When a municipal water supply was contaminated with chlordane in concentrations of up to 1.2 g/L, 13 persons had symptoms of gastrointestinal and neurological disorders. Signs of toxicity from chronic inhalation exposure in chlordane treated homes include sinusitis, bronchitis, dermatitis, neuritis, migraine, gastrointestinal distress, fatigue, memory deficits, personality changes, decreased attention span, numbness or paresthesias, disorientation, loss of coordination, dry eyes, and seizures. Blood dyscrasias, including production defects and thrombocytopenic purpura, have been described for both professional applicators and for home owners and their families following home termite treatment. An inhalation reference concentration (RfC) for chlordane is under review by EPA.

Liver enlargement occurred in mice exposed to 10 mg/m^3 8 hours/day, 5 days/week for 90 days. Increased liver weights were found in female rats (5.8 mg/m^3), increased liver and kidney weights occurred in male rats (28.2 mg/m^3), serum chemistry changes indicative of liver damage and hypersensitivity occurred in females (28.2 mg/m^3), and centrilobular hepatocyte enlargement occurred in males and females (28.2 mg/m^3) exposed to chlordane by inhalation 8 hours/day, 5 days/week, for 28 days.

Long-term feeding studies with chlordane in laboratory animals resulted in significantly reduced weight gains in male (203.5 or 407.0 ppm; 80 weeks) and female (120.8 or 241.5 ppm; 80 weeks) rats, a dose-related trend in mortality of female rats and male mice (29.9 or 56.2 ppm; 80 weeks), and liver hypertrophy of female rats (≥5 ppm; 130 weeks). In a 24-month feeding study with mice, hepatocellular swelling and necrosis occurred in males and increased liver weights occurred in males and females fed 5 ppm. A chronic oral reference dose (RfD) of 6E-05 mg/kg/day for chlordane was calculated from a no-observed-adverse-effect level (NOAEL) of 0.055 mg/kg/day derived from a chronic feeding study with rats. The subchronic oral RfD is also 6E-05 mg/kg/day.

Altered endocrine and immune functions have been observed in rat pups exposed to chlordane in utero.

Exposure of humans from chlordane treated homes has been associated with leukemia, skin neoplasms, and neuroblastoma in children. An increased risk of non-Hodgkin's lymphoma has been found among farmers exposed to chlordane 20 or more days per year. Hepatic carcinomas and hepatocellular adenomas have been described for several strains of male and female mice and male rats given chlordane in the diet. EPA has classified chlordane as group B2, probable human carcinogen. The carcinogenicity slope factor (q_1^*) for oral exposure is 1.3E+0 $(mg/kg/day)^{-1}$ based on an increase of hepatocellular carcinomas in mice and hepatocellular adenomas in rats. A drinking water unit risk of 3.7E-5 $(\mu g/L)^{-1}$ was calculated based on the q_1^*. The q_1^* for inhalation exposure is 1.3E+0 $(mg/kg/day)^{-1}$, and the inhalation unit risk value is 3.7E-4 $(\mu g/m^3)^{-1}$. The inhalation risk estimates were calculated from the oral data.

4,4'-DDT, 4,4'-DDD, 4,4'-DDE

DDT is a white odorless powder that was widely used as a pesticide until banned in the United States but continues to be used world-wide. DDT does not occur naturally in the environment and but is made from chloral hydrate, chlorobenzene, and sulfuric acid. In the United States, DDT mostly occurs in the environment from past use as an insecticide. DDD was also used as a pesticide on a more limited extent; however, DDE is found in the environment only as a result of contamination or breakdown of DDT. (ATSDR 1994)

Typically, individuals are exposed to a mixture of DDT, DDD, and DDE by eating foods containing small amounts of these compounds. Even though these compounds are no longer used, small amounts remain in the soil and in some imported foods that have been directly exposed. Nonetheless, the amount of DDT in the U.S. has decreased and is expected to continue in this decline. (ATSDR 1994)

4,4'-DDT and its metabolites may be absorbed via the respiratory tract and the gastrointestinal tract. Acute 4,4'-DDT poisoning may cause rashes; irritation of the eyes, nose, and throat; nervous system effects; muscle weakness; and death due to respiratory failure or ventricular fibrillation. Tremors are the most noticeable indication of chronic 4,4'-DDT exposure among humans. In animals, chronic exposure to high levels may result in symptoms of central nervous system and liver toxicity. 4,4'-DDT is well known for its ability to reduce the thickness of egg shells in birds, but no major reproductive or teratogenic effects have been reported in mammals. Although tests indicate that 4,4'-DDT is not mutagenic, an increase in the number of chromatic breaks was observed in insecticide workers during a peak spraying season. Liver tumors have been reported in animals orally exposed to 4,4'-DDT and it metabolites. Carcinogenicity has not been associated with human exposure to 4,4'-DDT, 4,4'-DDD, or 4,4'-DDE. (ATSDR 1994)

Dibenz[*a,h*]anthracene

Dibenz(a,h)anthracene is a chemical substance formed during the incomplete burning of fossil fuel, garbage, or any organic matter and is found in smoke in general; it condenses on dust particles and is distributed into water and soil and on crops. Dibenz(a,h)anthracene is a PAH and is also a component of coal tar pitch, which is used in industry as a binder for electrodes, and in creosote used to preserve wood. PAHs are also found in limited amounts in bitumens and asphalt used in industry and for paving. As a pure chemical, dibenz(a,h)anthracene resembles colorless plates or leaflets.(ATSDR 1990)

Humans may be exposed to dibenz(a,h)anthracene in the environment in tobacco smoke; food products such as cereals, vegetables, fruits, meats, and beverages; in the air if the home is heated with wood or coal; in some drinking water supplies; in the soils and air in the work place; and by contact with creosote–treated wood, asphalt roads, or coal tar. (ATSDR 1990)

Dibenz(a,h)anthracene enters the body primarily through breathing polluted air or inhaling tobacco smoke. Drinking contaminated water or accidentally swallowing soil or dust particles can also result in dibenz(a,h)anthracene entering the body. Dibenz(a,h)anthracene can be formed in food that is smoked or charcoal–broiled and can then enter the body through the digestive system. It does not normally enter the body through the skin; however, small amounts could enter the body through contact with soil containing high levels of dibenz(a,h)anthracene or through contact with heavy oils.(ATSDR 1990)

Dibenz(a,h)anthracene is a toxic chemical and has caused cancer in laboratory animals when it is ingested or applied to their skin. Because dibenz(a,h)anthracene causes cancer in animals, it is possible that humans exposed in the same manner could develop cancer as well. Dibenz(a,h)anthracene has not

been well studied, and, consequently, it is not known whether breathing it could cause cancer or other harmful effects.(ATSDR 1990)

No information is available concerning the harmful effects of dibenz(a,h)anthracene in humans after breathing, eating, or skin application of this substance. The levels that caused tumors in animals that ingested dibenz(a,h)anthracene are unclear. Skin cancer has been found in mice that had 1.2×10^{-2} mg/kg/d applied to their skin throughout their lives. It is not known whether similar levels could cause cancer in humans. (ATSDR 1990)

Indeno[1,2,3-*cd*]pyrene (BEAIS 1994)

Indeno[1,2,3-*cd*]pyrene, a crystalline solid with a chemical formula of $C_{22}H_{12}$ and a molecular weight of 276.3, is a polycyclic aromatic hydrocarbon (PAH). There is no commercial production or known use of this compound. Indeno[1,2,3-*cd*]pyrene is found in fossil fuels and occurs ubiquitously in products of incomplete combustion and has been identified in soils, groundwater, and surface waters at hazardous waste sites.

No absorption data were available for indeno[1,2,3-*cd*]pyrene; however, by analogy to structurally-related PAHs, primarily benzo[*a*]pyrene, it would be expected to be absorbed from the gastrointestinal tract, lungs, and skin. In vivo metabolites identified in mouse skin include the *trans*-1,2-dihydrodiol and 8- and 9-hydroxy forms of indeno[1,2,3-*cd*]pyrene. Similar metabolites were formed in vitro in rat liver microsomes.

No data were found concerning the acute, subchronic, chronic, developmental, or reproductive toxicity of indeno[1,2,3-*cd*]pyrene. Because of a lack of toxicity data, an oral reference dose (RfD) or inhalation reference concentration (RfC) has not been derived.

No long-term oral or inhalation bioassays were available to assess the carcinogenicity of indeno[1,2,3-*cd*]pyrene. The compound was tested for carcinogenicity in dermal application, lung implant, subcutaneous (s.c.) injection, and intraperitoneal (i.p.) injection studies. Dermal application of 0.1–0.5% solutions of indeno[1,2,3-*cd*]pyrene in acetone produced skin papillomas and carcinomas in mice. In initiation-promotion assays, indeno[1,2,3-*cd*]pyrene was active as an initiator of skin carcinogenesis. Dose-related increases of epidermoid carcinomas of the lungs were reported in rats receiving single lung implants of 0.16–4.15 mg indeno[1,2,3-*cd*]pyrene. Injection site sarcomas developed in mice given three s.c. injections of 0.6 mg indeno[1,2,3-*cd*]pyrene. The compound was not tumorigenic when newborn mice received 2.1 μmol indeno[1,2,3-*cd*]pyrene via i.p. injection.

Based on no human data and sufficient evidence for carcinogenicity in animals, the EPA has assigned a weight-of-evidence classification of B2, probable human carcinogen, to indeno[1,2,3-*cd*]pyrene.

Methylphenols (4-Methylphenol)

Methylphenols (cresols) occur as several closely related compounds, including 2-methylphenol (ortho-cresol), 3-methyl phenol (meta-cresol), 4-methylphenol (para-cresol) and 2,4-dimethylphenol. These compounds occur naturally and are found in many foods, human and animal urine, wood and tobacco smoke, crude oil, and coal tar. Man-made methylphenols are used as disinfectants and deodorizers, to dissolve substances, and in the manufacture of other chemicals. (ATSDR, 1990b)

Methylphenols are highly irritating and corrosive to tissue. Systemically, methylphenols can affect the central nervous system, liver, lungs, kidneys, gastrointestinal tract, eyes, and heart. Effects in the blood-forming system, respiratory irritation, and sclerosis of the lungs have been reported in rats exposed for intermediate durations. No studies are available on the potential chronic, reproductive, or teratogenic effects of methylphenols. One mutagenicity study on onion root tips reports negative results for 2-methylphenol, but 4-methylphenol produced cytological abnormalities and chromosome fragmentation. In an initiation-promotion study, methylphenols have promoted the tumorigenic action of a carcinogen when applied to mouse skin (ATSDR, 1990b).

Polychlorinated Biphenyls (Aroclor 1254 and Aroclor 1260)

Polychlorinated biphenyls (PCBs) are a group of man-made chemicals that contain 209 individual compounds (known as congeners); they are either oily liquids or solids and are colorless to light yellow without any known smell or taste. Seven types of PCBs mixtures include 35% of all the different PCBs commercially produced and 98% of PCBs sold in the United States since 1970. Some commercial PCB mixtures are known in the United States by their industrial trade name, Aroclor (i.e., Aroclor 1254, Aroclor 1260). The name Aroclor 1254 signifies that the molecule contains 12 carbon atoms (the first two digits) and approximately 54% chlorine by weight (the second two digits). Polychlorinated biphenyls don't burn easily and are a good insulating material; therefore, they have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. However, in 1977, manufacture of PCBs stopped in the United States because evidence showed that PCBs tend to build up in the environment and cause harmful effects. (ATSDR 1993)

In the past, PCBs entered the environment through their manufacture and use. Today, they can enter the environment from poorly maintained hazardous waste sites; illegal or improper dumping of PCB wastes; leaks or releases from electrical transformers containing PCBs; and disposal of PCB-containing consumer products into municipal landfills rather than into landfills designed for hazardous waste. Polychlorinated biphenyls can exist in air as both solid and liquid aerosols and as vapor that eventually returns to the land and water by settling or washout by snow or rainwater. Even extremely small amounts of PCBs can remain in water for several years, and they will bind strongly with soil and remain bonded for several years. (ATSDR 1993)

PCBs can be ingested or inhaled and can cause skin and nose irritations. Although several health effects as a result of exposure to PCBs have been seen in rats (i.e., liver damage and sometimes death after ingesting large amounts of PCBs for a short period and liver, stomach, and thyroid gland injuries; anemia; acne; and damaged reproduction organs after ingesting smaller amounts of PCBs but for a longer period), little conclusive evidence concerning the effects of PCBs on humans is available. In addition, rats that ate certain PCB mixtures throughout their lives developed liver cancers; however, it is not known if the same effects would occur in people. After inhalation exposure, workers have exhibited respiratory tract and eye irritation, coughs, and tightness of the chest, as well as gastrointestinal symptoms (anorexia, weight loss, nausea, vomiting, and abdominal pain); none of these symptoms were reported in a great quantity and therefore results are inconclusive. (ATSDR 1993)

Studies of PCB-exposed workers provide inconclusive evidence for exposure-related cancer; however, an excess risk of cancer of the liver, biliary tract, and gall bladder has been reported in workers in two capacitor plants where PCB mixtures are commonly used. The International Agency for Research on Cancer has determined that PCBs are *probably* carcinogenic to humans, and the EPA has determined that PCBs are probable human carcinogens. (ATSDR 1993)

Radionuclides

Radionuclides are unstable atoms of chemical elements that will emit charged particles to achieve a more stable state. These charged particles are termed "alpha and beta radiation" and "neutral gamma rays." Interaction of these charged particles (and gamma rays) with matter will produce ionization events, or radiation, which may cause living cell tissue damage. Because the deposition of energy by ionizing radiation is a random process, sufficient energy may be deposited (in a critical volume) within a cell and result in cell modification or death (ICRP 1991). In addition, ionizing radiation has sufficient energy that interactions with matter will produce an ejected electron and a positively charged ion (known as free radicals) that are highly reactive and may combine with other elements, or compounds within a cell, to produce toxins or otherwise disrupt the overall chemical balance of the cell (EPA 1991d). These free radicals can also react with deoxyribonucleic acid, causing genetic damage, cancer induction, or even cell death.

Radionuclides are characterized by the type and energy level of the radiation emitted. Radiation emissions fall into two major categories: particulate (electrons, alpha particles, beta particles, and protons) or electromagnetic radiation (gamma and x rays) (ATSDR 1989b). Therefore, all radionuclides are classified by the EPA as Group A carcinogens based on their property of emitting ionizing radiation and on the extensive weight of evidence provided by epidemiological studies of humans with cancers induced by high doses of radiation. Alpha particles are emitted at a characteristic energy level for differing radionuclides. The alpha particle has a charge of +2 and a comparably large size. Alpha particles have the ability to react (and/or ionize) with other molecules, but they have very little penetrating power and lack the ability to pass through a piece of paper or human skin. However, alpha-emitting radionuclides are of concern when there is a potential for inhalation or ingestion of the radionuclide. Alpha particles are directly ionizing and deposit their energy in dense concentrations [termed high linear energy transfer (high LET)], resulting in short paths of highly localized ionization reactions. The probability of cell damage increases as a result of the increase in ionization events occurring in smaller areas; this may also be the reason for increased cancer incidence caused by inhalation of decay products of radon gas. In addition, the cancer incidence in smokers may be directly attributed to the naturally occurring alpha emitter, polonium-210, in common tobacco products (Hammonds and Hoffman 1992).

Beta emissions generally refer to beta negative particle emissions. Radionuclides with an excess of neutrons achieve stability by beta decay. Beta radiation, like alpha radiation, is directly ionizing but, unlike alpha activity, beta particles deposit their energy along a longer track length (low-LET), resulting in more space between ionization events (Hammonds and Hoffman 1992). Beta-emitting radionuclides can cause injury to the skin and superficial body tissue but are most destructive when inhaled or ingested. Many beta emitters are similar chemically to naturally occurring essential nutrients and will therefore tend to accumulate in certain specific tissues. For example, strontium-90 is chemically similar to calcium and, as a result, accumulates in the bones, where it causes continuous exposure. The health effects of beta particle emissions depend upon the target organ. Those seeking the bones would cause a prolonged exposure to the bone marrow and affect blood cell formation, possibly resulting in leukemia, other blood disorders, or bone cancers. Those seeking the liver would result in liver diseases or cancer, while those seeking the thyroid would cause thyroid and metabolic disorders. In addition, beta radiation may lead to damage of genetic material, causing hereditary defects.

Gamma emissions are the energy that has been released from transformations of the atomic nucleus. Gamma emitters and x-rays behave similarly but differ in their origin: gamma emissions originate in nuclear transformations, and x-rays result from changes in the orbiting electron structure. Radionuclides that emit gamma radiation can induce internal and external effects. Gamma rays have high penetrating

ability in living tissue and are capable of reaching all internal body organs. Without such sufficient shielding as lead, concrete, or steel, gamma radiation can penetrate the body from the outside and does not require ingestion or inhalation to penetrate sensitive organs. Gamma rays are characterized as low-LET radiation, as is beta radiation; however, the behavior of beta radiation differs from that of gamma radiation in that beta particles deposit most of their energy in the medium through which they pass, while gamma rays often escape the medium because of higher energies, thereby creating difficulties in determining actual internal exposure. For this reason, direct whole-body measurements are necessary to detect gamma radiation, while urine/fecal analyses are usually effective in detecting beta radiation (Hammonds and Hoffman 1992).

People receive gamma radiation continuously from naturally occurring radioactive decay processes going on in the earth's surface, from radiation naturally occurring inside their bodies, from the atmosphere as fallout from nuclear testing or explosions, and from space or cosmic sources. Cesium-137 (from nuclear fallout) decays to barium-137, the highest contributor to fallout-induced gamma radiation (NCRP 1977). Beta radiation from the soil is a less penetrating form of radiation but has many contributing sources. Potassium-40, cesium-137, lead-214, and bismuth-214 are among the most common environmental beta emitters. Tritium is also a beta emitter but contributes little to the soil beta radiation because of the low energy of its emission and its low concentration in the atmosphere (NCRP 1977). Alpha radiation is also emitted by the soil but is not measurable more than a few centimeters from the ground surface. The majority of alpha emissions are attributable to radon-222 and radon-220 and their decay products (NCRP 1977). This contributes to what is called background exposure to radiation (ATSDR 1989b).

The general health effects of radiation can be divided into stochastic (related to dose) and nonstochastic (not related to dose) effects. The risk of development of cancer from exposure to radiation is a stochastic effect. Examples of nonstochastic effects include acute radiation syndrome and cataract formation, which occur only at high levels of exposures (Killough and Eckerman 1983).

Radiation can damage cells in different ways. It can cause damage to genetic material within the cell, and the cell either may not be able to recover from this type of damage or may survive but function abnormally. If an abnormally functioning cell divides and reproduces, a tumor or mutation in the tissue may develop. The rapidly dividing cells that line the intestines and stomach and the blood cells in bone marrow are extremely sensitive to this damage. Organ damage results from the damage caused to the individual cells. This type of damage has been reported with doses of 10 to 500 rads (0.1 to 5.0 gray, in SI units). Acute radiation sickness is seen only after doses of >50 rads (0.5 gray) which is a dose rate usually achieved only in a nuclear accident (ATSDR 1989b).

When the radiation-damaged cells are reproductive cells, genetic damage can occur in the offspring of the person exposed. The developing fetus is especially sensitive to radiation. The type of malformation that may occur is related to the stage of fetal development and the cells that are differentiating at the time of exposure. Radiation damage to children exposed in the womb is related to the dose the pregnant mother receives. Mental retardation is a possible effect of fetal radiation exposure (ATSDR 1989b).

The most widely studied population that has had known exposure to radiation is the atomic bomb survivors of Hiroshima and Nagasaki, Japan. Data indicate an increase in the rate of leukemia and cancers in this population. However, the rate at which cancer incidence is significantly affected by low radiation exposures, such as results of exposure to natural background and industrially contaminated sites, is still undergoing study and is uncertain (Hammonds and Hoffman 1992). In studies conducted to determine the rate of cancer and leukemia increase, as well as genetic defects, several radionuclides must be considered.

^{137}Cesium

^{137}Cesium, a product of nuclear fission reactions, has a radioactive half–life of 30.2 years (Kocher 1981). In ~95% of the radioactive decay, ^{137}Cs emits a beta particle with a maximum energy of 0.514MeV (Turner 1986) and is transformed to the metastable state of ^{137m}Ba. ^{137m}Barium then decays 90% of the time by emitting a 0.662 MeV gamma–ray.

The primary sources of contamination from ^{137}Cs at ORR are the effluent streams from research reactors and seepage from burial grounds used to store radioactive wastes. In aquatic media, ^{137}Cs tends to accumulate in the sediment. However, uptake may also occur in fish and other biota. In the Clinch/Tennessee River environment, the primary routes of human exposure are external exposure to gamma rays from the decay of ^{137m}Ba in near–shore sediment and ingestion of ^{137}Cs in fish.

^{137}Cesium entering the human body via ingestion behaves similarly to potassium. It is rapidly and almost completely absorbed from the GI tract and is distributed uniformly throughout the body (ICRP 1990). Because of its relatively short metabolic half–life (110 d), an acute dose of ^{137}Cs is almost completely excreted in the urine within a year of the initial exposure. However, when considering a potentially long–term (chronic) exposure, ^{137}Cs would always be present in the body.

The slope factor for ingestion of ^{137}Cs and its daughter products is 7.6×10^{-10} (Risk/Bq), the slope factor for the inhalation of airborne ^{137}Cs and its daughters is 5.1×10^{-10} (Risk/Bq), and the slope factor for the external exposure to ^{137}Cs and its daughters is 5.4×10^{-5} (Risk/year per Bq/g soil).

^{60}Cobalt

^{60}Cobalt is produced in nuclear reactors from neutron activation of stable cobalt atoms. These cobalt atoms are present as a corrosion impurity in the water used as the primary reactor coolant of the reactor (Eichholz 1983). Cobalt–60 has a radioactive half–life of 5.27 years and decays by emitting a 0.314 MeV beta particle and two gamma rays exhibiting energies of 1.33 and 1.17 MeV (Kocher 1981). ^{60}Cobalt enters the environment surrounding the ORR from the effluent streams from research reactors and seepage from burial grounds used to store radioactive wastes. Important routes of human exposure for ^{60}Cobalt include external exposure resulting from high–energy gamma rays emitted from near–shore sediment and ingestion of contaminated fish, produce, and water. Internally absorbed ^{60}Cobalt is assumed to be uniformly distributed throughout the body. The slope factors for ^{60}Cobalt are found in Table 5.8

^{90}Strontium (BEIAS 1994)

^{90}Strontium is a radioactive isotope of strontium that is produced in nuclear fission. It is a low energy β emitter with a physical half-life of approximately 28 years. In the environment, it is accompanied by its decay product, ^{90}yttrium, also a β emitter.

Metabolically, strontium is an analog of calcium. ^{90}Strontium is rapidly absorbed from the gastrointestinal tract or the lung into the bloodstream and is subsequently deposited in bone. Retention in the bone is long-term, with yearly loss of the existing burden in adults of 7.5% from cortical bone and 30% from trabecular bone.

Oral intake at high levels of activity results in β irradiation of target organs and nearby tissues. At high exposures, death results from radiation-induced hemorrhagic syndrome; at lower exposures, death results from destruction of the bone marrow. As survival times increase at lower administered activities, these effects are accompanied by neoplasms. Oral administration to miniature swine at 115 x 10^6 Bq/day

resulted in radiation-induced hemorrhagic syndrome and death within 4 months. Lower intakes, 4.62 x 10^6 to 0.037 x 10^6 Bq/day induced effects on the hematopoietic system ranging from pancytopenia to neutropenia. Mean survival times were decreased in all exposure groups. Subchronic exposures (5.6 x 10^4 to 133 x 10^4 Bq/day) also resulted in cytopenias in beagle dogs. Median survival times were reduced, particularly at the two highest exposures. Doses in the latter study were estimated at 22.5 to 107 Gy. In a three-generation study of miniature swine, no effects were noted on litter size, the percentage of stillborn, or birth weight when dams received life-shortening exposures. The EPA has not calculated subchronic or chronic oral reference doses (RfD) for radionuclides.

Inhalation of soluble forms of ^{90}strontium at high activity levels resulted in early death of beagle dogs from bone marrow hypoplasia, panleukocytopenia, terminal hemorrhage, and bacterial infection. Long-term bone burdens of 17 x 10^6 to 41 x 10^6 Bq were calculated. Acute pulmonary effects observed in mice exposed to high activity levels of insoluble ^{90}strontium were radiation pneumonitis and pulmonary fibrosis. The dose lethal to 50% of animals was 370 Gy. The EPA has not calculated subchronic or chronic inhalation reference concentrations (RfC) for radionuclides.

The primary effect in animals surviving acute effects of ^{90}strontium exposure is neoplasia of bone and bone-related tissues. Soft tissue carcinomas in tissues near the bone were also observed above control levels. Chronic ingestion in beagle dogs and miniature swine also produced a high incidence of myeloproliferative disease, including frank leukemia. Orally administered activity levels of 0.1 x 10^4 to 133 x 10^4 Bq/day to beagle dogs, beginning in utero and continuing to 540 days of age induced primary bone sarcomas and myeloproliferative disorders at activity levels of $\geq$5.6 x 10^4 Bq/day. Bone sarcomas and hematopoietic neoplasms were induced in F_1 and F_2 generations of miniature swine that chronically ingested 4.62 x 10^6 Bq/day or 23.1 x 10^6 Bq/day. These generations were exposed in utero and gradually raised to the treatment level by 6 months of age. At higher exposure activities, mean survival time was drastically reduced (to less than tumor induction time); at lower exposure activities, 0.037 x 10^6 to 0.925 x 10^6 Bq/day, no bone sarcomas were observed, and survival times were increased to approximately that of controls.

The primary effect in adult beagle dogs administered ^{90}strontium in a single inhalation exposure and surviving more than 2 years was an excess of bone tumors. This effect was induced in dogs with long-term retained bone burdens of $\geq$1.0 x 10^6 Bq/kg.

Bone tumors were induced in 2 of 7 adult monkeys administered ^{90}strontium by gavage (NCRP, 1991), in adult beagle dogs administered ^{90}strontium by intravenous injection, and in mice administered ^{90}strontium by intraperitoneal injection. Soft tissue sarcomas in tissues near the bone were observed in the beagle dogs. No tumors were observed over a 20-year period in young and adult Rhesus monkeys administered a single injection at activity levels of 0.13 x 10^6 to 6.21 x 10^6 Bq.

The EPA has classified all radionuclides as Group A carcinogens based on their property of emitting ionizing radiation and on the weight of evidence provided by epidemiological studies of radiation-induced tumors in humans. A slope factor of 8.9E-10 (risk/Bq) was calculated for oral ingestion. The combined oral slope factor for strontium-90 and yttrium-90 is 9.7E-10 (risk/Bq). For inhalation exposure, the slope factor for ^{90}strontium is 1.5E-09 (risk/Bq); the combined inhalation slope factor for ^{90}strontium plus ^{90}yttrium is 1.7E-09 (risk/Bq). Because of their low penetration ability, external exposures (risk/yr per Bq/g soil) for s^{90}trontium and ^{90}strontium plus ^{90}yttrium are both 0.0E+00.

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UNCERTAINTY ANALYSIS: DESCRIPTION OF METHODS

E.1 Introduction

This appendix focuses on a quantitative uncertainty analysis of 1) the potential detriment associated with the ingestion of selected radionuclides and chemicals as a result of human consumption of contaminated fish, and 2) the potential detriment associated with the dredging of deep sediment from the Clinch River and Poplar Creek. Parameter uncertainties are estimated and incorporated into the quantitative uncertainty analyses of human health risks. The equations used for assessing the risk of the fish ingestion pathway and the dredging scenario are presented in the following sections of this introduction. The uncertainties involved with the fish ingestion pathway are presented in Section E.2, and the uncertainties involved with the dredging scenario are discussed in Section E.3.

E.1.1 Background on USEPA Methods for Risk Assessment for Ingestion of Fish

For a baseline risk assessment, the USEPA (1989) uses the following equation for determining the lifetime risk of excess cancer from ingesting radionuclides:

$$LR_{rad} = C \cdot I \cdot ED \cdot EF \cdot DCF \cdot RCF \qquad \text{(E.1)}$$

where,

LR_{rad} = excess lifetime cancer risk from radionuclides (unitless),
C = concentration in the contaminated medium (Bq/kg),
I = estimated intake of the contaminated medium (kg/day),
ED = exposure duration (30 yrs),
EF = exposure frequency (350 days/yr),
DCF = dose conversion factor for the radionuclide of interest (Sv/Bq),
and RCF = risk conversion factor (0.073/Sv) (ICRP, 1991; NCRP, 1993a).

The generic equations used in USEPA methods for determining the risk from chemicals are different for non-carcinogens and carcinogens. For non-carcinogens a quantity called the Hazard Quotient (HQ) is calculated for each chemical using the following formula.

$$HQ = \frac{C \cdot I \cdot ED \cdot EF}{BM \cdot AT \cdot RfD} \qquad \text{(E.2)}$$

where,

HQ = hazard quotient (unitless),
C = concentration in the contaminated medium (mg/kg),
I = estimated intake rate of the contaminant (kg/day),
ED = exposure duration (years),
EF = exposure frequency (350 days/year),
BM = body mass (70 kg),
AT = averaging time (days),
and RfD = reference dose for the chemical of interest (mg/kg-day).

If the HQ is below 1, then it is highly unlikely that chronic exposure to the chemical would lead to a health effect. If the HQ is greater than unity, remediation of the area may be warranted. The HQs for various chemicals are summed for each exposure pathway to obtain a Hazard Index (HI) for a given area (USEPA, 1989).

For carcinogenic chemicals, a lifetime cancer risk is calculated from the following formula.

$$LR_{chem} = \frac{C \cdot I \cdot ED \cdot EF \cdot SF}{BM \cdot AT} \qquad \text{(E.3)}$$

where,

LR_{chem} = excess lifetime cancer risk from chemicals (unitless),
C = concentration in the contaminated medium (mg/kg),
I = estimated intake of the contaminated medium (kg/day),
ED = exposure duration (30 yrs),
EF = exposure frequency (350 days/yr),
SF = slope factor (or cancer potency factor) for the chemical of interest [(mg/kg-day)$^{-1}$],
BM = body mass (70 kg),
and AT = averaging time (25,550 days = 70 yrs).

A primary difference in evaluating risk between non-carcinogens and carcinogens is the threshold and no threshold assumption, respectively. For non-carcinogens, toxic effects occur after an exposure above a certain threshold value has occurred. It is assumed that any exposure below this threshold has no detrimental effect to the organism. For carcinogens, however, it is assumed that there is no threshold below which a risk is assumed to be zero. A carcinogen is defined as a substance for which any exposure results in a potential excess cancer risk.

These equations yield point estimates of the risks which obscure the inherent uncertainty in the calculations. If decisions concerning remediation of the contaminated area are based on point estimates, and if the true risk is either grossly overestimated or is associated with high uncertainty, the result may be inappropriate remedial efforts and/or misallocation of limited resources. Therefore, quantitative uncertainty analysis should be performed to quantify the degree of confidence in the estimate of risk. This requires analysis of the uncertainty associated with each parameter in the USEPA risk equations; the bounds of uncertainty, expressed as subjective probability distributions, must be estimated for each parameter. The term subjective probability distribution is used because of the application of judgment in the absence of relevant site specific data.

E.1.2 Background for the Risk Assessment of the Dredging Scenario

The following equations were used in the analysis of the potential detriment resulting from contamination in the deep sediment of the Clinch River and Poplar Creek.

Ingestion of leafy vegetables:

$$HQ_{l,veg} = \frac{C_{sed} \cdot B_{v,leafy} \cdot D_l \cdot I_{veg,leafy} \cdot FI_{veg} \cdot EF_{ing} \cdot ED}{BW \cdot AT \cdot RfD} \qquad \text{(E.4)}$$

where,

$HQ_{l,veg}$ = hazard quotient from leafy-vegetable ingestion (unitless),
C_{sed} = concentration of the contaminant in the dredged sediment (mg/kg),
$B_{v,leafy}$ = soil-plant uptake factor (unitless, fresh weight),
D_l = sediment dilution factor (unitless),

$I_{veg,leafy}$ = ingestion of leafy-vegetables (kg/yr, fresh weight)
FI_{veg} = fraction of vegetable ingestion that is from the contaminated site (unitless),
EF_{ing} = exposure frequency (unitless),
ED = exposure duration (yrs),
BW = body weight (kg),
AT = averaging time (days),
and RfD = oral reference dose (mg/kg-day).

Ingestion of non-leafy vegetables:

$$HQ_{nl,veg} = \frac{C_{sed} \cdot B_{v,non-leafy} \cdot D_l \cdot I_{veg,nleafy} \cdot FI_{veg} \cdot EF_{ing} \cdot ED}{BW \cdot AT \cdot RfD} \quad \text{(E.5)}$$

where,

$HQ_{nl,veg}$ = hazard quotient from non-leafy vegetable ingestion (unitless),
C_{sed} = concentration of the contaminant in the dredged sediment (mg/kg),
$B_{v,non-leafy}$ = soil-plant uptake factor (unitless, fresh weight),
D_l = sediment dilution factor (unitless),
$I_{veg,nleafy}$ = ingestion of non-leafy vegetables (kg/yr, fresh weight)
FI_{veg} = fraction of vegetable ingestion that is from the contaminated site (unitless),
EF_{ing} = exposure frequency (unitless),
ED = exposure duration (yrs),
BW = body weight (kg),
AT = averaging time (days),
and RfD = oral reference dose (mg/kg-day).

Ingestion of milk:

$$HQ_{milk} = \frac{C_{sed} \cdot B_{v,past} \cdot D_l \cdot Q_m \cdot FI_Q \cdot F_m \cdot I_{milk} \cdot FI_{milk} \cdot EF_{ing} \cdot ED}{BW \cdot AT \cdot RfD} \quad \text{(E.6)}$$

where,

HQ_{milk} = hazard quotient from milk ingestion (unitless),
C_{sed} = concentration of the contaminant in the dredged sediment (mg/kg),
$B_{v,past}$ = soil-plant uptake factor (unitless, dry weight),
Q_m = ingestion of pasture by dairy cow (kg/day),
FI_Q = fraction of the pasture ingestion that is from the contaminated source (unitless),
F_m = milk transfer coefficient (d/L),
D_l = sediment dilution factor (unitless),
I_{milk} = ingestion of milk (L/yr)
FI_{milk} = fraction of the milk ingestion that is from the contaminated source (unitless),
EF_{ing} = exposure frequency (unitless),
ED = exposure duration (yrs),
BW = body weight (kg),
AT = averaging time (days),

and RfD = oral reference dose (mg/kg-day).

Ingestion of meat:

$$HQ_{meat} = \frac{C_{sed} \cdot B_{v,past} \cdot Q_f \cdot FI_Q \cdot F_f \cdot D_l \cdot I_{meat} \cdot FI_{beef} \cdot EF_{ing} \cdot ED}{BW \cdot AT \cdot RfD} \quad \text{(E.7)}$$

where,

HQ_{meat} = hazard quotient from meat ingestion (unitless),
C_{sed} = concentration of the contaminant in the dredged sediment (mg/kg),
$B_{v,past}$ = soil-plant uptake factor (unitless, dry weight),
Q_f = ingestion of pasture by beef cow (kg/day),
FI_Q = fraction of the pasture ingestion that is from the contaminated source (unitless),
F_f = meat transfer coefficient (d/kg),
D_l = sediment dilution factor (unitless),
I_{meat} = ingestion of meat (kg/yr)
FI_{beef} = fraction of the beef ingestion that is from the contaminated source (unitless),
ED = exposure duration (yrs),
EF_{ing} = exposure frequency (unitless),
BW = body weight (kg),
AT = averaging time (days),
and RfD = oral reference dose (mg/kg-day).

External Exposure from Radionuclides:

$$LR_{ext(out)} = C_{sed} \cdot D_l \cdot \left(\frac{1 - e^{-\lambda_{eff} ED}}{\lambda_{eff}} \right) \cdot \rho_{soil} \cdot P_{out} \cdot EF_{ext} \cdot DCF_{ext} \cdot RCF \quad \text{(E.8)}$$

where,

$LR_{ext(out)}$ = excess lifetime cancer risk from radionuclide exposure (unitless),
C_{sed} = concentration of the contaminant in the dredged sediment (Bq/kg),
D_l = sediment dilution factor (unitless),
λ_{eff} = loss rate from radioactive decay and from harvesting/leaching (yr^{-1}),
ED = exposure duration (yrs),
EF_{ext} = exposure frequency (unitless),
ρ_{soil} = soil density (kg/m^3),
P_{out} = percent of time spent outdoors (unitless),
DCF_{ext} = external dose rate conversion factor for a contaminated soil depth of 15 cm (Sv/yr per Bq/m^3),
and RCF = risk conversion factor (Sv^{-1}).

E.2 Description of Parameter Uncertainty in the Fish Ingestion Pathway

The subjective probability distributions used for each of the uncertain parameters in the risk assessment equations reflect the degree of belief that the true, but unknown, value for each parameter does not exceed a specified value for that parameter. Where data are limited, but uncertainty is relatively low (less than a factor of 10), a range is used to specify a uniform

distribution. If there is knowledge about a most likely value or midpoint, in addition to a range, a triangular distribution is assigned. When the range of uncertainty exceeds a factor of 10, a log-uniform or log-triangular distribution is often used. The use of normal, log-normal, or empirical distributions is usually based on fits to available data. Piece-wise uniform or log-uniform distributions can also be used and are especially common when eliciting subjective judgment from a group of experts (IAEA, 1989). Other distribution types suitable for Monte Carlo analysis include the gamma, beta, Poisson, Weibull, and a variety of discrete distributions (Decisioneering, Inc., 1994; Palisade Corp., 1991).

In this section, the uncertainty associated with the contaminant concentration in fish is discussed first, followed by discussion of exposure factors that are independent within a class (radionuclides, non-carcinogenic chemicals, and carcinogenic chemicals) of contaminants which include the daily intake, the exposure frequency, the exposure duration, the body mass, and the averaging time. Additional topics discussed in this section are the uncertainties involved with radionuclide specific parameters, the dose conversion factors and the risk conversion factor, and with chemical specific parameters, the slope factors and the reference doses. The subjective probability distributions and uncertainty ranges for all of the parameters used in the fish ingestion pathway except the concentrations of the contaminants in fish are summarized in Table E.65.

Table E.65. List of assumptions for the parameters used in the uncertainty analysis of the fish ingestion pathway.

Parameter	Distribution	Minimum	Central Value	Maximum	Units
ED, carcinogens	Constant	—	30	—	yrs
ED, non-carc.	Constant	—	1	—	yr
EF	Constant	—	350	—	days/yr
I_m, adult	Triangular	0.113	0.230[a]	0.454	kg/fish-meal
I_m, child	Uniform	0.025	—	0.1	kg/fish-meal
I_f, non-carc.	Log-Uniform	0.033	—	0.571	fish-meal/day
I_f, carc.	Log-Uniform	0.033		0.286	fish-meal/day
AT, carcinogens	Constant	—	25,550	—	days
AT, non-carc.	Constant	—	365	—	days
Body Mass, adult	Constant	—	70	—	kg
Body Mass, child	Constant	—	20	—	kg
RfD, chlordane	Log-Triangular	6.0E-06	6.0E-05[a]	1.9E-03	mg/kg-day
RfD, MeHg	Log-Uniform	3.0E-05	—	9.5E-04	mg/kg-day
RfD, Aroclor-1254	Log-Uniform	2.0E-05	—	3.5E-04	mg/kg-day
SF, chlordane	Triangular	0	1.3[a]	5	$(mg/kg\text{-}day)^{-1}$
SF, Aroclor-1260	Triangular	0	7.7[a]	10	$(mg/kg\text{-}day)^{-1}$
DCF_{ing}, Cs-137	Log-Triangular	7.0E-09	1.4E-08[a]	2.8E-08	Sv/Bq
RCF	Log-Triangular	0.018	0.073[a]	0.292	risk/Sv

[a] mode.

E.2.1 Concentration in fish (*C*)

For this uncertainty analysis, only those concentrations where at least one measurement per reach (a section of the river or reservoir) was above detection limits are considered. The uncertainty bounds on the estimated arithmetic mean concentration were quantified for each selected contaminant in each reach. A distribution was obtained that represents the subjective uncertainty of the estimated arithmetic mean concentration. The

following equation was used to estimate the uncertainty factor for the arithmetic mean concentrations.

$$UF_{mean} = \frac{UCL_{mean}}{\overline{X}_{est.}} \qquad (E.9)$$

where,

UF_{mean} = the uncertainty factor for the arithmetic mean,
UCL_{mean} = the 95% upper confidence limit on the mean,
and $\overline{X}_{est.}$ = the arithmetic mean.

E.2.1.1 Radionuclide Concentrations

The selected radionuclide for this uncertainty analysis is Cs-137. The values for the arithmetic mean concentration of Cs-137 and the UCL on the mean were obtained for Clinch River and Poplar Creek and are summarized by species in Table E.66. A uniform distribution was used to represent the uncertainty of the estimated arithmetic mean concentration for the radionuclide presented in Table E.66. The maximum value for the uniform distribution was set at the 95% UCL on the arithmetic mean, and the minimum value for the distribution was obtained by dividing the estimated arithmetic mean by the uncertainty factor. These values are also presented in Table E.66. By using this method to obtain the uncertainty range on the mean concentration, there is high confidence that the true mean will be between the LCL and the UCL.

Table E.66. Summary statistics and estimates of uncertainty for radionuclide contaminant concentrations in largemouth bass of Reach 2.

Species	Radionuclide	Units	Ratio of detects to total samples	Estimated Mean	UCL mean	LCL est.
Largemouth bass	Cs-137	Bq/kg	8/8	2.4E+02	7.1E+02	8.3E+01

E.2.1.2 Chemical Concentrations

The selected chemical contaminants for this uncertainty analysis are mercury, chlordane, Aroclor-1254, and Aroclor-1260. Of these chemicals, mercury and Aroclor-1254 are non-carcinogens, chlordane is both a non-carcinogen and a carcinogen, and Aroclor-1260 is a carcinogen. A non-carcinogen is defined as a substance for which a toxic reaction results from exceeding a threshold level of exposure. A carcinogen is a substance that may cause cancer at any level of exposure. Carcinogens are classified according to the evidence of their carcinogenicity. Radionuclides are classified as "A" which denotes there is ample evidence derived from human epidemiological data. PCBs and chlordane are classified as "B2" carcinogens which implies no information from humans and all data comes from animals (USEPA, 1988a).

E.2.1.2.1 Non-Carcinogens

The values for the estimated arithmetic mean concentration and the UCL on the mean were obtained for the Clinch River and Poplar Creek and are summarized for chlordane, mercury, and Aroclor-1254 in Table E.67. The UCL concentrations and LCL concentrations were calculated as described in the previous section and are also presented in Table E.67. As with the radionuclide contaminants, a uniform distribution, for the interval

between the lower and upper confidence limits, was used to represent the uncertainty of the arithmetic mean concentrations except for chlordane (Reach 1, catfish and Reach 4, S/H Bass) and PCB-1254 (Reach 1, catfish) which has an uncertainty range greater than one order of magnitude. Due to the large degree of uncertainty in the estimate of the mean concentration, a log-uniform distribution was used.

Table E.67. Summary statistics and estimates of uncertainty for select non-carcinogenic contaminant concentrations (mg/kg) in fish where at least one measurement was above the detection limits.

Fish	Contaminant	Reach	Ratio of detects to total samples	Estimated Mean	LCLest.	UCLmean
Bluegill	Mercury	3	64/67	4.1E-01	3.6E-01	4.6E-01
		4	40/59	1.5E-01	1.2E-01	1.9E-01
LMB[a]	Mercury	2	26/34	2.7E-01	1.8E-01	3.9E-01
		3	36/36	6.2E-01	5.1E-01	7.5E-01
		4	40/48	3.1E-01	2.0E-01	3.4E-01
	Chlordane	2	21/26	2.7E-01	1.8E-01	3.9E-01
		3	27/29	7.2E-02	6.7E-02	7.8E-02
		4	49/50	7.0E-02	6.6E-02	7.3E-02
	PCB-1254	2	16/26	1.6E-01	1.0E-01	2.5E-01
		3	27/29	3.3E-01	2.5E-01	4.3E-01
		4	49/50	2.0E-01	1.7E-01	2.3E-01
Catfish	Mercury	4	19/25	2.6E-01	1.7E-01	3.9E-01
	Chlordane	1	7/11	2.4E-01	9.2E-02	6.2E-01
		2	37/42	2.0E-01	1.5E-01	2.5E-01
		3	67/67	8.6E-02	7.9E-02	9.4E-02
		4	91/92	1.2E-01	1.1E-01	1.3E-01
	PCB-1254	1	11/11	9.8E-02	5.8E-02	1.6E-01
		2	37/38	6.7E-01	4.6E-01	9.6E-01
		3	64/64	3.2E-01	2.5E-01	4.1E-01
		4	88/92	6.0E-01	4.6E-01	7.9E-01
S/H Bass[b]	Chlordane	2	15/15	1.4E-01	1.3E-01	1.5E-01
		4	15/15	1.0E-01	9.3E-02	1.1E-01
	PCB-1254	2	15/15	5.6E-01	5.1E-01	6.1E-01
		4	15/15	4.5E-01	4.1E-01	5.0E-01

[a] LMB = largemouth bass.

[b] S/H Bass = Includes Striped bass, white bass, and hybrid of the two species.

E.2.1.2.2 Carcinogens

The estimated arithmetic mean concentrations and the UCLs on the mean for Aroclor-1260 and chlordane were also obtained for the Clinch River and Poplar Creek. These concentrations are summarized in Table E.68. The UCL concentrations and LCL concentrations were calculated as described in section E.2.1 and are also presented in Table E.68.

Table E.68. Summary statistics and estimates of uncertainty for select carcinogenic chemical contaminant concentrations (mg/kg) in fish where at least one measurement was above the detection limits.

Reach	Species	Contaminant	Ratio of detects to total samples	Estimated Mean	UCLmean	LCLest.
1	Catfish	Aroclor-1260	11/11	2.9E-01	4.1E-01	2.1E-01
	Catfish	Chlordane	7/11	2.4E-01	6.2E-01	9.2E-02
2	LMB	Aroclor-1260	16/26	1.6E-01	2.5E-01	1.1E-01
	Catfish	Aroclor-1260	42/42	1.0E+00	1.3E+00	8.3E-01
	S/H Bass	Aroclor-1260	15/15	3.9E-01	4.4E-01	3.4E-01
3	LMB	Aroclor-1260	27/29	3.4E-01	5.0E-01	2.2E-01
	Catfish	Aroclor-1260	69/69	7.0E-01	8.4E-01	5.9E-01
4	LMB	Aroclor-1260	48/50	2.0E-01	2.4E-01	1.7E-01
	Catfish	Aroclor-1260	91/92	8.5E-01	1.0E+00	7.0E-01
	S/H Bass	Aroclor-1260	15/15	7.0E-01	7.8E-01	6.2E-01

[a]A log-uniform distribution was used for this concentration.

As with the previously discussed contaminants, a uniform distribution was used to represent the uncertainty in the estimate of the arithmetic mean concentrations except for the chlordane concentration in catfish for Reach 1 which has an uncertainty range greater than one order of magnitude. Due to the large degree of uncertainty in the estimate of the mean concentration, a log-uniform distribution was used.

E.2.2 Exposure Factors Independent of the Contaminant Type

Five exposure factors are used in the risk assessment models which are independent of specific radionuclides and chemicals: fish ingestion (daily intake) (*I*), exposure frequency (*EF*), exposure duration (*ED*), body mass (*BM*), and averaging time (*AT*). The subjective uncertainty bounds and probability distributions for these parameters were chosen such that the true but unknown value pertaining to the maximally exposed individual lies within the interval. Meetings were held with individuals having knowledge of these factors to discuss the uncertainty ranges for the parameters presented in this section. A literature review and moderate knowledge of the local behavior were used to determine the best estimate of uncertainty for each of these parameters.

E.2.2.1 Fish Ingestion (I), kg/day

The fish ingestion rate was defined in the following manner:

$$I = I_m \cdot I_f \tag{E.10}$$

where,

I_m = the mass of fish consumed per meal (kg/fish-meal)

and I_f = the frequency of meals consisting of fish caught in the Clinch River/Poplar Creek system (fish-meal/day).

A subjective probability distribution was formulated to represent the uncertainty in each individual parameter, i.e., distributions for I_m (same for both carcinogens and non-carcinogens) and I_f (different for carcinogens and non-carcinogens) were determined.

E.2.2.1.1 Fish Ingestion (Adult), kg/fish-meal

The amount of fish eaten per meal was estimated to be 0.230 kg/fish-meal for the Clinch River/Poplar Creek system. The 95th percentile value given for fin fish by the USEPA (1989) is 0.284 kg/fish-meal, obtained from a study by Pao et al. (1982). In addition, Rupp et al. (1980) analyzed fish consumption from several surveys performed in the late 1960s to early 1970s. Perhaps the most relevant of these was a survey done in 1966-67 on the Columbia River. This survey was restricted to households with at least one fisherman, and memory recall was used to estimate the fish consumption rate over a period of one year. The average fish meal was determined to be 0.200 kg, and the maximum fish meal was estimated at 0.313 kg.

After consideration of these surveys, a triangular distribution was used to represent the subjective uncertainty for I_m. For the avid fisherman, the most likely value (the mode) was estimated at 0.230 kg/fish-meal (this corresponds to approximately one-half of a pound). The Columbia River study was used as a starting point in the consideration of a range of uncertainty because of its direct applicability to the present assessment's target individual (the avid fisherman). A meeting was held for the purpose of determining the range of uncertainty. Risk assessors felt that it was unlikely that an avid fisherman would eat more than 0.454 kg/fish-meal (approximately one pound of fish per meal) or less than 0.113 kg/fish-meal (approximately one-quarter of a pound of fish per meal). Therefore, a maximum value of 0.454 kg/fish-meal and a minimum value of 0.113 kg/fish-meal were used for the triangular distribution.

E.2.2.1.2 Fish Ingestion (Child), kg/fish-meal

A review of several publications was performed (Rupp, 1979; Müller and Pröhl, 1993; Yang and Nelson, 1986; SAIC, 1993) in order to obtain the intake of various food products by children. The subjective probability distributions derived for each of the child's intake parameters are consistent with the values reported in the reviewed literature. The uncertainty was based primarily on subjective judgment of various risk assessors. Since each value is equally likely to be the true but unknown rate of intake, a uniform distribution was used to represent the uncertainty. The lower and upper limits used for the uniform distributions are values that target the reasonably maximally exposed child. Because it is highly unlikely that the upper bounds for each rate of intake will be sampled simultaneously and since the RME should provide a conservative estimate of exposure, no correction was made for the caloric intake of a child.

The lower bound for the ingestion of fish for children was determined by assuming that a maximally exposed child would consume no less than 5 kg/yr (approximately 1/2 ounce of fish every day of the year). Assuming a child will consume a fish meal each time their parents do, the value of 200 fish meals per year can be assumed. A child will therefore consume no less than 0.025 kg/meal. The upper bound for the ingestion of fish for a child who was an avid fish lover would not consume more than 20 kg/yr (approximately 2 ounces of fish every day of the year). This would be approximately 0.1 kg/meal. These values are consistent with values reported in Rupp et al. (1980) and IAEA (in press).

E.2.2.1.3 Frequency of Fish-meals Used for Carcinogens

For the frequency of meals (I_f), the uncertainty was based primarily on subjective judgment of various risk assessors. Because each value was equally likely to be the true but unknown number of meals per day, a log-uniform distribution was used to represent the uncertainty. An upper bound value was determined by assuming that an avid fisherman would not consume more than two meals per week of fish caught from the Clinch River and Poplar Creek system over a thirty year period. This results in a maximum frequency of 0.286 fish-meals/day. A lower bound was formulated by assuming that a fisherman would not consume less than one meal per month of fish caught from the Clinch River and Poplar Creek system. This value translates to 12 meals/yr, which closely matches the average frequency of 14 meals/yr obtained in the Columbia River survey (Rupp et al., 1980). This value results in a minimum frequency value of 0.033 fish-meals/day.

Note, these estimates exclude values for subsistence fishermen who may be obtaining a major portion of their dietary requirements from fish caught in the Clinch River and Poplar Creek. At the present time, the actual number of individuals in this category is not likely to be large and will not be considered in this uncertainty analysis. The target individual in this assessment is an avid fisherman, not a subsistence fisherman.

E.2.2.1.4 Frequency of Fish-meals Used for Non-Carcinogens

For non-carcinogens, where toxic effects are believed to occur above a threshold exposure, the uncertainty bounds for I_f must take into account the possibility of an avid fisherman consuming a substantial amount of fish during a one-year period. An upper-bound value was determined by assuming that an avid fisherman would not consume more than four meals per week of fish caught from the Clinch River and Poplar Creek over a one year period. A lower bound was determined by assuming that a fisherman would not consume less than one meal per month. Because of the lack of site specific data, a log-uniform distribution was chosen to represent the subjective uncertainty in I_f.

The uncertainty values for the I_m and the I_f parameters for carcinogens and non-carcinogens are summarized in Table E.69.

Table E.69. Summary information for the uncertainty in the parameters used to calculate daily intake.

Class	Parameter	Distribution	Minimum	Maximum	Mode
Both[a], Adult	I_m *(kg/meal)*	Triangular	0.113	0.454	0.230
Both[a], Child	I_m *(kg/meal)*	Uniform	0.025	0.1	---
Carcinogens	I_f *(meal/day)*	Log-Uniform	0.033	0.286	---
Non-Carcinogens	I_f *(meal/day)*	Log-Uniform	0.033	0.571	---

[a] Both = Carcinogens and Noncarcinogens.

E.2.2.2 Exposure Frequency (*EF*), 350 days/yr

The *EF* represents the average number of days out of a year that a person is exposed to the daily intake rate. The USEPA (1991) currently recommends the use of 350 days/yr. This value takes into account 2 weeks of vacation per year during which the individual will not be exposed to the contaminant/pathway being studied. For this uncertainty analysis, the reasonable maximally exposed individual (RME) is defined as an avid fisherman who is exposed at a frequency of 350 days per year.

E.2.2.3 Exposure Duration (*ED*), yrs

The exposure duration *(ED)* represents the number of years that an individual will be exposed to the given exposure conditions, i.e., an estimate of the projected length of time that a person will live in the area under consideration.

For all carcinogens, USEPA (1989) recommends a value of 30 years for the *ED*. For this uncertainty analysis, the RME is defined as an avid fisherman who is exposed to carcinogens for thirty years.

For non-carcinogens, immediate toxic effects from over-exposure are of primary concern. These effects typically occur when a person has ingested too much of a contaminated medium. For this uncertainty analysis, the RME is defined as an avid fisherman who is exposed to non-carcinogens for one year.

E.2.2.4 Body Mass (*BM*), kg

The "average" value for the body mass of Reference Man is 70 kg (ICRP, 1975). The child body weight is defined to be 15 kg. For this uncertainty analysis, the RME is defined as the reference individual. Therefore, the body mass will not be assigned any uncertainty.

E.2.2.5 Averaging Time (*AT*), days

The averaging time is defined as the period of time over which an exposure is averaged. Because it serves as a prorating parameter (USEPA, 1989), the values for the averaging time were fixed for this uncertainty analysis. For non-carcinogens, the averaging time is equal to the exposure duration. Therefore, *AT* for non-carcinogens is set at 365 days. For carcinogenic substances, where the effect from a single exposure could occur several years after the received dose, the exposure is averaged over a lifetime (70 years). Therefore, *AT* for carcinogens equals 25,550 days (70 years).

E.2.3 Radionuclide Specific Factors

E.2.3.1 Dose Conversion Factor (*DCF*), Sv/Bq

The committed effective dose per unit intake is defined as the *DCF* for this report. The committed effective dose (hereafter referred to as "dose") is defined by the International Commission on Radiological Protection (ICRP, 1989) as the time integral of the dose-equivalent rate in a particular tissue that is received by an individual following an intake of radioactive material into the body. A 70-year lifetime was assumed in this calculation. For an adult, a body weight corresponding to Reference Man [70 kg (ICRP, 1975)] and an averaging time of 50 years (ICRP, 1989; ICRP, 1991; NCRP, 1993a) were assumed.

Dosimetric models and the parameters that are used to determine the "dose" vary with the intake pathway, the radionuclide, age at the time of exposure, gender, etc. Recent studies have used various biokinetic data, and in some cases (such as Pu) radionuclide-specific models have been used to obtain age-dependent doses to members of the public (ICRP, 1989; ICRP, in press).

Recently, members of the National Council on Radiation Protection and Measurements (NCRP) scientific committee 57-16 were asked to estimate the uncertainty factors associated with the ingestion and inhalation "dose" factors for a variety of radionuclides (NCRP, in press). These uncertainty factors were estimated for the application of ICRP-30 "dose" factors and might not apply to the more recent projected factors listed in ICRP-56 (ICRP, 1989) or to current revisions of the ICRP-56 values (ICRP, in press). An uncertainty factor pertaining to Cs-137 was obtained by expert judgment (Eckerman, 1993). The "dose" factor for Cs-137 and its associated uncertainty factor from both sources are summarized in Table E.70.

Table E.70. Dose conversion factors for the ingestion pathway and corresponding uncertainty factors for Cs-137.

Contaminant	*DCF* for Ingestion[a] (Sv/Bq)	Uncertainty Factor[b] A[c]	B[d]
Cs-137	1.4E-08	2	2

a ICRP (in press).

b These uncertainty factors apply to the adult male.

c NCRP (in press).

d Eckerman (1993).

The uncertainty factor values from both sources are the same for Cs-137. The primary source of uncertainty for Cs-137 is inaccuracy in the biokinetic data used to estimate the *DCF*.

A log-triangular distribution was used to represent the subjective uncertainty in the DCF value. The *DCF* value itself was used as the mode of the triangle. The maximum value was obtained by multiplying the *DCF* by the UF, and the minimum value by dividing the *DCF* by the UF. The mode, maximum, and minimum for Cs-137 are summarized below.

Mode	=	1.4E-08
Maximum	=	2.8E-08
Minimum	=	7.0E-09

E.2.3.2 Risk Conversion Factor (*RCF*)

The risk conversion factor (*RCF*) as determined by the ICRP (1991) and the NCRP (1993a) is 0.073/Sv; this value is based primarily on extensive analyses of the atomic bomb survivors in Nagasaki and Hiroshima, Japan, by such scientific bodies as the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the National Research Council of the National Academy of Sciences (NRC/NAS). The *RCF* serves as a method of predicting the excess lifetime risk for genetic defects (1.3%/Sv), dying of cancer (5%/Sv), and a weighted risk for occurrences of non-fatal cancer (1%/Sv) (ICRP, 1991; NCRP, 1993a). The *RCF* is defined by the ICRP's definition of "detriment" where the risk of genetic defects and occurrences of cancer incidence are weighted against the number of fatalities (ICRP, 1991).

There are several sources of uncertainty in the *RCF*, but two sources tend to dominate the overall estimate of uncertainty (NCRP, 1993a). These are (1) the uncertainty in the *RCF* evaluated at high dose and high dose rate exposures, and (2) the uncertainty in extrapolating the *RCF* to low dose and low dose rate exposures. Of these, the uncertainty in extrapolating to low dose and low dose rate exposures appears to be the predominant uncertainty in the *RCF* at low doses (NCRP, 1993a).

An uncertainty factor of approximately 2 is recommended for the uncertainty in the *RCF* at high dose and high dose rate exposures, and a UF of greater than or equal to 2 is recommended for the uncertainty involved in the extrapolation to low doses (NCRP, 1993a). The possibility of the minimum value for the *RCF* being **zero** cannot be excluded, due to the absence of sufficient data to allow a significant analysis of the risk for exposure at low doses (NRC/NAS, 1990; NCRP, 1993a). However, for this uncertainty analysis, a minimum value of zero will not be used, on the assumption that the underlying model for the risk associated with radiation exposure is correct and that a threshold dose does not exist.

Based on the above information, an uncertainty factor of 4 was used for this analysis. *A log-triangular distribution was used to represent this subjective uncertainty.* The recommended *RCF* value of 0.073/Sv was used as the mode, the maximum was determined by multiplying the *RCF* by 4, and the minimum was obtained by dividing the *RCF* by 4. These values are summarized below.

Mode	=	0.073
Maximum	=	0.292
Minimum	=	0.018

E.2.4 Chemical Specific Factors

E.2.4.1 Non-Carcinogens - Reference Doses

The risk from exposure to non-carcinogens is evaluated by calculating a quantity referred to as the Hazard Quotient. The potential exposure to an individual is divided by a value called the reference dose (*RfD*) to obtain this quotient. "A *RfD* is defined as an estimate of a daily exposure level (chronic) for the human population that is likely to be without an appreciable risk of deleterious effects" (USEPA, 1989). Therefore, when the *HQ* is greater than 1, further study and perhaps remediation is recommended.

The *RfD* is obtained by dividing a "No Observed Adverse Effect Level" (NOAEL), which is obtained from the analysis of a human or more often an animal data set, by an uncertainty factor and a modifying factor (USEPA, 1989). An uncertainty factor of 10 is

applied to protect the most sensitive population, a value of 10 is used when extrapolating from animals to humans, a value of 10 is used when a NOAEL is obtained from a subchronic study, and a factor of 10 is applied when a "Lowest Observed Adverse Effect Level" (LOAEL) is obtained instead of a NOAEL (USEPA, 1989). Finally, a modifying factor is applied based on best professional judgment. The following sections will discuss the uncertainties for the methyl-mercury, chlordane, and Aroclor-1254 *RfD*s.

E.2.4.1.1 Methyl-mercury

The *RfD* for methyl-mercury (MeHg) is 3.0E-04 mg/kg-day, and a safety factor of 10 is reported (USEPA, 1992). This value was based on an animal study that was performed in the 1950s (Canady, 1993).

There have been three major outbreaks of MeHg poisoning. The first two occurred in Minamata and Niigata, Japan during the late 1950s to early 1960s and were caused by industrial release of MeHg and other mercury compounds into Minamata Bay and the Agano River (WHO, 1976). Although there were numerous people affected, this study has proven ineffective in obtaining a better *RfD* because of the inability to relate an exposure level to the observed effect (Canady, 1993). The third and largest recorded outbreak occurred in Iraq during the winter of 1971-1972 (WHO, 1976). The people of Iraq used wheat and other grain seed which was treated with MeHg to make bread. Excessive ingestion of this bread due to their bad economic conditions resulted in a major poisoning epidemic. Studies have been performed to relate the concentration in hair and blood to the actual exposure (USEPA, 1984; WHO, 1976).

The USEPA is currently reevaluating the *RfD* for MeHg based on this Iraqi data (Canady, 1993). A LOAEL value from the Iraq data set which approximates the NOAEL obtained in the rat study is under review. However, this LOAEL (which would be divided by 10 to obtain a value close to the current *RfD*) occurs with severe neurological effects. Less obvious effects to the central nervous system could be occurring that are being overlooked (Canady, 1993). Therefore, a lower *RfD* value may be derived by the USEPA.

In the draft update on the "Toxicological Profile for Mercury" published by the Agency for Toxic Substances and Disease Registry (ATSDR, 1992), an acute Minimum Risk Level (MRL) of 4.0E-05 mg/kg-day is recommended for methyl-mercury. This is an order of magnitude lower than the currently recommended chronic *RfD*.

A log-uniform distribution is used to represent the uncertainty in the RfD. To protect against more subtle neurological effects and to incorporate the latest recommendation by the ATSDR, a minimum value was obtained by dividing the *RfD* by the safety factor of 10 (3.0E-05 mg/kg-day), and a maximum value was determined by multiplying the *RfD* by the square root of the safety factor (9.5E-04 mg/kg-day). The uncertainty range determined for the methyl-mercury *RfD* was said to be a rational way to proceed by Dr. Kenneth Reuhl (1994).

E.2.4.1.2 Chlordane

The *RfD* for chlordane is 6.0E-05 mg/kg-day, and a safety factor of 1000 is given (USEPA, 1988b). There is only one study that is reported with significant information to derive an *RfD* for chlordane (USEPA, 1988b). The *RfD* was based on an unpublished report by the Velsicol Chemical Corporation (1983) describing the results obtained from a rat study. A LOAEL of 0.055 mg/kg-day which caused a significant increase in hepatocellular necrosis (liver tumors) in males was used to derive the *RfD* (USEPA, 1988b; Velsicol Chemical Corp., 1983).

The Integrated Research Information System (IRIS) which is maintained by the USEPA was consulted to obtain names of experts on the *RfD* for chlordane. Two contacts were listed: Dr. William Burnam and Dr. Eric Clegg of the USEPA. Dr. Burnam and Dr. Clegg were contacted to obtain a range of uncertainty for the chlordane *RfD*. When Dr. Burnam was asked his opinion on the bounds of uncertainty for the chlordane *RfD*, he stated that he would have no problem setting the lower limit at the *RfD* and setting the upper limit at the NOEL obtained in the rat study. He said that no effect was seen until an exposure 5 times that of the NOEL was exceeded and that the effect which was observed is a very sensitive indicator (Burnam, 1994). However, Dr. Clegg suggested bounding the *RfD* by an order of magnitude on either side (Clegg, 1994).

Using the limited information pertaining to the chlordane *RfD* and the statements made by two experts listed in IRIS (Burnam, 1994; Clegg, 1994), the following uncertainties were determined. The *RfD* was multiplied by the square root of 1000 (the safety factor) to obtain a maximum value of 1.9E-03 which is an order of magnitude lower than the NOEL. The *RfD* was divided by a factor of ten (Clegg, 1994) to obtain a minimum value of 6.0E-06. The reported *RfD* was used as the most likely value to occur (mode). *Therefore, a log-triangular distribution was used to represent the uncertainty in the RfD for chlordane with a mode of 6.0E-05 mg/kg-day, a minimum of 6.0E-06 mg/kg-day, and a maximum of 1.9E-03 mg/kg-day.*

E.2.4.1.3 Aroclor-1254

The RfD for Aroclor-1254 is 2.0E-05 mg/kg-day, and a safety factor of 300 is given (IRIS, 1994). This RfD value was based on studies of Aroclor-1254 ingestion by female Rhesus (*Macaca mulatta*) monkeys reported by Arnold et al. (1993a); (1993b); Tryphonas et al. (1989); (1991a); and (1991b). The safety factor consists of a 10-fold factor to account for sensitive individuals, a factor of 10 to account for the use of a LOAEL instead of a NOAEL, and a factor of three to extrapolate from Rhesus monkeys to humans. A full 10-fold factor for interspecies extrapolation is not assumed to be necessary due to similarities between monkeys and humans of toxic responses and metabolism of PCBs.

Based on a study of groups of 16 adult female Rhesus monkeys ingesting gelatin capsules containing Aroclor-1254 in 1:1 glycerol: cove oil vehicle daily at doses of 0, 5, 20, 40 or 80 mg/kg-day for over five years, the following results were reported. Monkeys that ingested 0.005-0.08 mg/kg-day doses of Aroclor-1254 showed ocular exudate, prominence and inflammation of the Meibomian glands and a distortion in their nail bed formation. Accidental oral ingestion of PCBs by humans have produced similar effects. From these studies a LOAEL of 0.005 mg/kg-day was established. This information is supported by Tryphonas et al. (1989); (1991a); (1991b); Arnold (1992); Arnold et al. (1993a); (1993b); Loo et al. (1989); and Luster et al. (1992).

In another study Aroclor-1254 was fed to groups of eight female and four male adult Rhesus monkeys once daily in dosages of 0, 5, 25, or 100 mg/kg for 14 months in order to conduct a reproduction study. No treatment related effects were observed in the low-dose adults or their infants, thus indicating a NOAEL of 0.005 mg/kg-day. A 15% reduction in birth weight of infants was observed for the mid-dose infants. At two months of age, these infants had a reduced body weight of 22% below controls. Some adults receiving 25 and 100 mg/kg-day, as well as their infants, had ocular and dermal signs characteristic of PCB intoxication. Based on these effects the 0.025 mg/kg-day dosage is a LOAEL. These results are supported by Levinskas et al. (1984).

A log-uniform distribution is used to represent the uncertainty in the RfD. The RfD, 2.0E-05 mg/kg-day, was used as the minimum value of the log-uniform distribution. It is believed to be conservative enough due to its safety factor of 300 and because another study conducted on monkeys exhibited no adverse effects at dosages of 0.005 mg/kg-day. A maximum value of 3.5E-04 mg/kg-day was determined by multiplying the RfD by the square root of the safety factor. A personal conference with Jeff Swartout (1995) confirmed that the RfD was conservative enough to be used as the minimum value.

E.2.4.2 Carcinogens - Slope Factors

As is assumed for radionuclides, the risk from exposure to a chemical carcinogenic substance is believed to exist no matter how small the level of exposure. This implies the absence of a threshold below which there would be no risk. The potential excess lifetime risk of cancer from exposure to carcinogens is evaluated by relating a potential dose to risk. This "conversion" is determined by applying a quantity called the Slope Factor (*SF*).

There are several sources of uncertainty associated with the derivation of these *SF*s. Some of these include accuracy of the data in "sensitive" species at high doses, the extrapolation of a response at high doses to low doses, and extrapolation from animals to humans.

The following sections describe the subjective probability distributions chosen to represent the uncertainty in the *SF*s for PCBs and chlordane.

E.2.4.2.1 Poly-chlorinated Biphenyls

The *SF* for PCBs is reported as 7.7 $(mg/kg\text{-}day)^{-1}$ (USEPA, 1992). This value is the highest determined *SF* from three studies of Aroclor-1260 (USEPA, 1988a) tested on rats. One large area of uncertainty in the *SF* for PCBs is that a rat population is exposed to a known concentration of a specific Aroclor with a certain outcome. In reality, no one knows what form the human population is exposed to because of the transformation of PCBs in the environment (Cogliano, 1993). In addition, Aroclor-1260 was chosen to be representative of all of the Aroclors (USEPA, 1988a). However, recent studies suggest that this assumption may not be correct (Silberhorn et al., 1990).

Aroclor-1260 has been evaluated in three separate rat studies. From these studies, *SF*s of 3.9, 5.7, and 7.7 $(mg/kg\text{-}day)^{-1}$ have been determined (USEPA, 1988a). These values differ by about a factor of 1.3-1.5. A UF of 1.3 was multiplied by the reported *SF* to obtain a maximum value. Because the only significant evidence of carcinogenicity exists in rats, the possibility of Aroclor-1260 not being a carcinogen in humans can not be ignored. Therefore, *a triangular distribution with a mode of 7.7 $(mg/kg\text{-}day)^{-1}$, a minimum of 0 $(mg/kg\text{-}day)^{-1}$, and a maximum of 10 $(mg/kg\text{-}day)^{-1}$ was used to represent the uncertainty in the SF for Aroclor-1260.*

The uncertainty distribution obtained using the "boot strap" method for PCBs (Evers et al., 1994) fell within the subjective probability distributions used in this analysis.

E.2.4.2.2 Chlordane

The reported *SF* for chlordane is 1.3 $(mg/kg\text{-}day)^{-1}$ (USEPA, 1992). As with PCBs, there is considerable uncertainty due to the transformation of chlordane in the environment.

Slope factors have been evaluated for 4 mice studies and 1 rat study (USEPA, 1986). The largest *SF* obtained from the 4 mice studies was 4.7 $(mg/kg\text{-}day)^{-1}$, and the smallest *SF*

was 0.3 (mg/kg-day)$^{-1}$ (USEPA, 1986). The USEPA *SF* of 1.3 (mg/kg-day)$^{-1}$ was derived by taking the geometric mean of these 4 mice studies. This value compares to the *SF* of 1.1 (mg/kg-day)$^{-1}$ which was derived from the rat study (USEPA, 1986).

Because the studies were done for mice and rats exposed to technical chlordane, as with PCBs, the possibility of no carcinogenic effect in humans can not be ignored. A maximum uncertainty estimate of 5 for the SF was obtained by rounding the largest *SF* derived from the mice studies. Therefore, *a triangular distribution with a mode of 1.3 (mg/kg-day)$^{-1}$, a minimum of 0 (mg/kg-day)$^{-1}$, and a maximum of 5 (mg/kg-day)$^{-1}$ was used to describe the uncertainty in the SF for chlordane.*

The uncertainty distribution obtained using the "boot strap" method for chlordane (Evers et al., 1994) fell within the subjective probability distributions used in this analysis.

E.3 Description of Parameter Uncertainty in the Dredging Scenario

In this section, the uncertainty associated with the dredging scenario is discussed. This scenario includes the possibility that at some time in the future deep sediments the Clinch River and Poplar Creek which are contaminated with inorganic mercury and Cs-137 could be dredged and used on a farm. Several pathways are included in this scenario: 1) ingestion of leafy vegetables grown on contaminated soil, 2) ingestion of non-leafy vegetables grown on contaminated soil, 3) ingestion of milk from a dairy cow which has eaten contaminated pasture grass, 4) ingestion of meat from a beef cow which has eaten contaminated pasture grass, and 5) for Cs-137 only, external exposure from the dredged sediment.

The subjective probability distributions used for each of the uncertain parameters in the risk assessment equations reflect the degree of belief that the true but unknown value for each parameter does not exceed a specified value for that parameter. Uncertainties for many parameters presented in Equations E.4 through E.8 have been previously researched (Hoffman and Baes, 1979; Hoffman et al., 1982). The distributions that have been recommended in the past have been adopted for this analysis if they were consistent with the findings obtained from an independent review of various reported and/or default values provided in various publications.

The uncertainty associated with the concentration in the deep sediment is discussed first, followed by discussion of exposure factors that are independent of contaminant type which include intake rate, exposure frequency, exposure duration, percent of time outdoors/indoors, shielding factor, dilution factor, fraction ingested, and soil density. The final topics discussed in this section are the uncertainties involved with radionuclide and chemical specific parameters which include the soil/plant transfer factors, the milk/meat transfer factors, loss rate from harvesting/leaching, and the reference doses. The subjective probability distributions and uncertainty ranges for all of the parameters used in the dredging scenario are summarized in Table E.71.

Table E.71. List of assumptions for the parameters used in the uncertainty analysis of the dredging scenario.

Parameter	Distribution	Minimum	Mean	Maximum	Units
C_{sed}	Uniform	240	—	500	Bq/kg
λ_{HL}	Log-Triangular	2.3E-02	2.4E-02[a]	3.2E-01	yr^{-1}
ρ_{soil}	Triangular	1100	1300[a]	1600	kg/m^3
ED	Constant	—	30	—	yr
EF_{ext}	Uniform	0.23	—	0.96	unitless
EF_{ing}	Constant	—	0.96	—	unitless
P_{out}	Uniform	0.25	—	0.60	unitless
P_{in}	Uniform	$1-P_{out}$	—	$1-P_{out}$	unitless
S_f	Uniform	0.2	—	0.8	unitless
D_I	Uniform	0.30	—	1.00	unitless
Q_m	Uniform	11	—	21	kg/day
Q_f	Uniform	8	—	16	kg/day
FI_Q	Uniform	0.5	—	0.9	unitless
$I_{veg,\ leafy}$	Uniform	10	—	85	kg/yr
$I_{veg,\ non\text{-}leafy}$	Uniform	40	—	165	kg/yr
I_{milk}	Uniform	80	—	400	L/yr
I_{meat}	Uniform	40	—	125	kg/yr
FI_{veg}	Uniform	0.3	—	1.0	unitless
FI_{milk}	Uniform	0.5	—	1.0	unitless
FI_{meat}	Uniform	0.5	—	1.0	unitless
DCF_{ing} Cs-137	Log-Triangular	7.0E-09	1.4E-08[a]	2.8E-08	Sv/Bq
RCF	Log-Triangular	0.018	0.073[a]	0.292	risk/Sv
RfD, Mercury	Log-Uniform	3.0E-05	—	3.0E-03	mg/kg-d

[a] mode.

E.3.1 Concentration of Select Contaminants in Deep Sediment

The selected radionuclide for this uncertainty analysis is Cs-137. Using lognormal statistics, an arithmetic mean was estimated for the sediment concentration for each subreach. The estimated mean and 95% UCL on the mean obtained from this analysis for each subreach to be studied are presented in Table E.72.

Table E.72. Summary statistics and estimates of uncertainty for Cs-137 concentrations in deep sediment.

Pathway	Reach	Units	Ratio of detects to total samples	Estimated Mean	UCL mean	LCL est.
External	2.04	Bq/kg	4/4	3.7E+02	2.7E+03	4.8E+01
	3.04	Bq/kg	3/3	2.6E+02	1.9E+03	3.4E+01
	4.03	Bq/kg	3/3	5.2E+02	7.8E+02	3.4E+02

A uniform distribution was used to represent the uncertainty of the estimated arithmetic mean concentration for Reach 4.03. The upper bound of the uniform distribution was set at the 95% UCL on the arithmetic mean, and the lower bound of the distribution was obtained by dividing the estimated arithmetic mean by the uncertainty factor obtained from Equation E.10. Log-uniform distributions were used to represent the uncertainty of the estimated arithmetic mean concentration for Reaches 2.04 and 3.04 due to the large uncertainty in the data.

The selected chemical contaminant for the uncertainty analysis of the dredging scenario is mercury. The values for the estimated arithmetic mean concentration and the UCL on the mean were obtained for the Clinch River and Poplar Creek and are summarized in Table E.73. The UCL concentrations and LCL concentrations were calculated as described in Section E.2.1 and are also presented in Table E.73.

Table E.73. Summary statistics and estimates of uncertainty for inorganic mercury concentrations in deep sediment.

Pathway	Reach	Units	Ratio of detects to total samples	Estimated Mean	UCL mean	LCL est.
Milk	3.04	mg/kg	3/3	1.4E+01	8.0E+01	2.5E+00
Meat	3.04	mg/kg	3/3	1.4E+01	8.0E+01	2.5E+00
Vegetables	3.04	mg/kg	3/3	1.4E+01	8.0E+01	2.5E+00

A log-uniform distribution was used to represent the uncertainty of the estimated arithmetic mean concentration for all inorganic mercury analyses.

E.3.2 Exposure Factors Independent of the Contaminant Type

Several exposure factors are used in the risk assessment models which are element independent: intake rate, exposure frequency, exposure duration, dilution factor, and fraction ingested which is contaminated. The subjective uncertainty bounds and probability distributions for these parameters were chosen such that the true but unknown value pertaining to the maximally exposed individual lies within the interval. Meetings were held to discuss the uncertainty ranges for several parameters presented in this section. A literature review and moderate knowledge of the local behavior were used to determine the best estimate of uncertainty for each of these parameters.

E.3.2.1 Intake Rates

Various ingestion rates must be considered for the agricultural pathways of the dredging scenario. The rate of pasture ingestion by dairy and beef cows must be considered

for the grass-cow-milk-human and grass-cow-meat-human pathways. In addition, the amount of leafy vegetables, non-leafy vegetables, milk, and meat that a RME will eat or drink must be evaluated. These parameters are discussed below.

Intake of pasture by dairy (Q_m) and beef cows (Q_f)

When determining the amount of pasture that a cow will eat, a dry weight basis is used. Several studies have discussed the uncertainties with the pasture ingestion of dairy and beef cows (Hoffman and Baes, 1979; Hoffman et al., 1982; Shor and Fields, 1980). A uniform distribution was used to represent the uncertainty in the ingestion rate of dairy cows and beef cows. The upper limit and lower limit of the uniform distributions were obtained by using 16 kg/day and 12 kg/day as a midpoint for the dairy cow and the beef cow, respectively (IAEA, 1982), and adding and subtracting two times the standard deviation, 2.6 kg/day (dairy) and 2.0 kg/day (beef) (Hoffman et al., 1982). The uncertainty ranges are summarized in Table E.71.

Intake of various food products by adults ($I_{veg,leafy}$, $I_{veg,non-leafy}$, I_{milk}, and I_{meat})

For the intake of various food products by humans, the uncertainty was based primarily on subjective judgment of various risk assessors. A review of several publications was conducted (Hoffman and Baes, 1979; Hoffman et al., 1982; ICRP, 1975; NCRP, 1984; 1989; Rupp, 1979; USEPA, 1991), and the subjective probability distributions derived for each of the human intake parameters are consistent with the values reported in the reviewed literature. Because each value is equally likely to be the true but unknown rate of intake, a uniform distribution was used to represent the uncertainty. The lower and upper limits used for the uniform distributions are values that target the RME individual. Because it is highly unlikely that the upper bounds for each rate of intake will be sampled simultaneously and because the RME individual should provide a conservative estimate of exposure, no correction was made for the caloric intake of an individual.

The lower bound for the ingestion of leafy vegetables was determined by assuming that an individual would not consume less than 10 kg/yr (approximately 1 ounce of leafy vegetables every day of the year). The upper bound for the ingestion of leafy vegetables was determined by assuming that an individual who loves vegetables would not consume more than 85 kg/yr (approximately 8 ounces of leafy vegetables every day of the year). These values are consistent with survey ranges reported in Rupp (1979).

The lower bound for the ingestion of non-leafy vegetables was determined by assuming that an individual would not consume less than 40 kg/yr (approximately 4 ounces of non-leafy vegetables every day of the year). The upper bound for the ingestion of non-leafy vegetables was determined by assuming that an individual who loves vegetables would not consume more than 165 kg/yr (approximately 16 ounces of leafy vegetables every day of the year). These values are consistent with survey ranges reported in Rupp (1979).

The lower bound for the ingestion of milk was determined by assuming that an avid milk drinker would not consume less than 80 L/yr (approximately 1 cup of milk every day of the year). The upper bound for the ingestion of milk was determined by assuming that an avid milk drinker would not consume more than 400 L/yr (more than 1 liter of milk every day of the year). These values are consistent with survey ranges reported in Rupp (1979).

The lower bound for the ingestion of beef was determined by assuming that an avid meat lover would not consume less than 40 kg/yr (approximately 4 ounces of beef every day of the year). The upper bound for the ingestion of beef was determined by assuming that an

avid meat lover would not consume more than 125 kg/yr (approximately 12 ounces of beef every day of the year). These values are consistent with survey ranges reported in Rupp (1979).

Intake of various food products by children ($I_{veg,leafy}$, $I_{veg,non-leafy}$, I_{milk}, and I_{meat})

A review of several publications was performed (Rupp, 1979; Müller and Pröhl, 1993; Yang and Nelson, 1986; and SAIC, 1993) in order to obtain the intake of various food products by children. The subjective probability distributions derived for each of the child's intake parameters are consistent with the values reported in the reviewed literature. The uncertainty was based primarily on subjective judgment of various risk assessors. Since each value is equally likely to be the true but unknown rate of intake, a uniform distribution was used to represent the uncertainty. The lower and upper limits used for the uniform distributions are values that target the reasonably maximally exposed child. Because it is highly unlikely that the upper bounds for each rate of intake will be sampled simultaneously, and since the RME individual should provide a conservative estimate of exposure, no correction was made for the caloric intake of a child.

The lower bound for the ingestion of leafy vegetables was determined by assuming that a child, ages three to six, would consume no less than 5.5 kg/yr (approximately 0.5 ounces of leafy vegetables every day of the year). The upper bound for the ingestion of leafy vegetables by children was determined by assuming a child who loves vegetables would not consume more than 36.5 kg/yr (approximately 3.5 ounces of leafy vegetables every day of the year). The minimum value is based upon an average daily value of 15 g/day reported in (IAEA, 1994). The maximum value is based upon data reported by Müller and Pröhl (1993) in which an average daily value of leafy vegetables consumed by a child would be 74 g/day. These values are also consistent with values reported in Rupp (1979).

The lower bound for the ingestion of non-leafy vegetables was determined by assuming that a child, ages three to six, would consume no less than 26 kg/yr (approximately 2.6 ounces of non-leafy vegetables every day of the year). The upper bound for the ingestion of non-leafy vegetables by a child was determined by assuming a child who loves vegetables would not consume more than 44 kg/yr (approximately 4.3 ounces of non-leafy vegetables every day of the year). The lower bound was based on the study reported by Rupp (1979) in which an average value of 80 g/day of non-leafy vegetables was reported to be consumed by a child. The upper bound was based on data reported by Müller and Pröhl (1993), in which an average daily intake of 95 g/day was reported to be consumed of non-leafy vegetables by a child. This value (95 g/day) was divided by our lower assumed value of 75 g/day and then multiplied by the average value of 95 g/day in order to produce an upper bound of 120 g/day.

The lower bound for the ingestion of milk was determined by assuming that a child between the ages of three to six years who was an avid milk drinker would consume no less than 130 L/yr (approximately 1.5 cups of milk every day of the year). The upper bound for the ingestion of milk was determined by assuming that a child between the ages of three and six years who was an avid milk drinker would consume no more than 525 L/yr (approximately 1.5 quarts of milk every day of the year). These values are consistent with survey ranges reported in Rupp (1979); ICRP (1975); IAEA (1994); (1995); and (in press).

The lower bound for the ingestion of beef for a child who is an avid meat lover would consume no less than 11 kg/yr (approximately 1 ounce of beef every day of the year). The upper bound for the ingestion of meat for a child was determined by assuming that a child who is an avid beef lover would consume no more than 44 kg/yr (approximately 4.2 ounces

of beef every day of the year). A value of 30 g/day was assumed as a lower bound based on the average value of 38 g/day reported in Rupp (1979). An upper bound of 120 g/day was assumed based on the average value of 53 g/day reported by Müller and Pröhl (1993) and the value of 64.6 g/day maximum likely exposure reported by Yang and Nelson (1986) and SAIC (1993).

E.3.2.2 Exposure Frequency (*EF*)

The *EF* represents the frequency at which the RME is exposed to the given situation. The exposure frequency is different for the external pathways and the agricultural pathways.

For the agricultural pathways, the USEPA (1991) currently recommends the use of 350 days/yr. This value takes into account 2 weeks of vacation per year during which the individual will not be exposed to the contaminant/pathway being studied. For this uncertainty analysis, the reasonable maximally exposed individual (RME) is defined as an individual who is exposed at a frequency of 0.96 (EF_{ing}, 350 days/yr).

For the external pathways, the number of hours that the RME may be on his/her property must be considered. To determine the lower and upper limits of the exposure frequency (EF_{ext}), a meeting was held with various risk assessors. From this meeting, a uniform distribution ranging between 0.23 and 0.96 was determined to represent the external exposure frequency. The lower limit was determined by rationalizing that an individual would spend at least 6 hours per day for 350 days each year on his property. The most time that an individual would conceivable stay on his property was determined to be 8400 hours (24 hours a day for 350 days of the year). Therefore, there is high confidence that the true exposure frequency for the RME is bounded by this uncertainty range.

E.3.2.3 Exposure Duration (*ED*)

The exposure duration *(ED)* represents the number of years that an individual will be exposed to the given exposure conditions, i.e., an estimate of the projected length of time that a person will live in the area under consideration. For all carcinogens, USEPA (1989) recommends a value of 30 years for the *ED*. For this uncertainty analysis, the RME is defined as an individual who is exposed to the contamination for thirty years. For all noncarcinogens, the *ED* is set at a value of one year.

E.3.2.4 Sediment Dilution Factor (D_l)

Because it is unlikely that an individual would be able to dredge enough sediment such that mixing with topsoil would not occur, a sediment dilution factor was incorporated into each risk assessment equation. A meeting with various risk assessors was held to discuss the potential uncertainty in the sediment dilution factor. Soil mixing is most likely to occur in the top six inches. If two inches of dredged sediment were put on the farm and mixed with top soil, the concentration in the sediment would be diluted to one-third its original concentration. Therefore, a dilution factor of 0.3 was determined as the most dilution of the sediment concentration that would occur. To account for the most conservative scenario, it was assumed that the possibility existed that no dilution of the sediment concentration would occur. Therefore, a uniform distribution with a value greater than 0.3 and lower than 1.0 was used to represent the uncertainty in the dilution factor.

E.3.2.5 Fraction Ingested (FI)

Because it is unlikely that a cow will not be fed supplements, a fraction of contaminated pasture actually ingested (FI_Q) is incorporated into the grass-cow-milk-human and grass-cow-meat-human pathways. It is unlikely that FI_Q will exceed 90% or will be below 50%. Because this is based primarily on subjective judgment and the true value is equally likely between 50 and 90%, a uniform distribution with a minimum value of 0.5 and a maximum value of 0.9 was used to represent the uncertainty associated with FI_Q.

In addition, it is unlikely that someone living on the farm will eat or drink all of his/her vegetables, milk, and meat from vegetables, milk, and meat produced on the farm. The uncertainties associated with the fraction of contaminated vegetables eaten, with the fraction of contaminated milk consumed, and with the fraction of contaminated meat eaten by an individual living on the farm were discussed in a meeting of risk assessors. From this meeting, it was determined that a person could possibly obtain all of his produce from his own contaminated farm (FI = 1) and would not obtain less than 50% of his milk and meat from the contaminated cows raised on his farm or less than 30% of his vegetables from his own garden. Because each value is equally likely to be the true fraction ingested, a uniform distribution was used to represent the uncertainty in the FIs. These uncertainties are summarized in Table E.71.

E.3.2.6 Soil Density (ρ_{soil})

The density of soil ranges from 1100 to 1600 kg/m^3 (Hillel, 1980). Soils consisting of clay are around 1100 kg/m^3, and sandy soils have a density around 1600 kg/m^3. Because we are assuming that deep sediments will be mixed with topsoil, a density of 1300 kg/m^3 was chosen as a most likely value. A triangular distribution with a minimum value of 1100, a mode of 1300, and a maximum value of 1600 kg/m^3 was used to describe the uncertainty in the soil density.

E.3.3 Factors Dependent on Contaminant

Uncertainties involved with radionuclide specific parameters such as the parameter specific to external exposure to Cs-137 and the reference dose for inorganic mercury are presented in this section. In addition, uncertainties pertaining to element specific parameters such as the soil/plant transfer factors and the milk/meat transfer factors are discussed in this section.

Cs-137 specific parameters

The dose conversion factor for external exposure (DCF_{ext}) to Cs-137 was obtained from Eckerman and Ryman (1993). A contaminated soil depth of 15cm was assumed for this analysis. Because Ba-137m is a short-lived daughter of Cs-137, the DCF_{ext} for Ba-137m must be added to the DCF_{ext} for Cs-137. Cs-137 decays to Ba-137m 95% of the time; therefore, the DCF_{ext} for Ba-137m is multiplied by 95% before it is added to the Cs-137 DCF_{ext}. The value obtained for the DCF_{ext} is 5.1E-10 Sv/yr per Bq/m^3. The uncertainties with the scatter cross-sections for reference man and with the application of reference man to the RME are the two major contributions to the overall uncertainty in the DCF_{ext} (Leggett, 1994). Because it is unlikely that the uncertainty in the DCF_{ext} is greater than the uncertainty in the internal DCF, an uncertainty factor of 2 is used to bound the range of

uncertainty in DCF_{ext}. A log-triangular distribution with a mode of 5.1E-10, a lower limit of 2.6E-10 and an upper limit of 1.0E-09 was used to represent the uncertainty associated with the external DCF.

The uncertainties associated with the loss rate from decay and from harvesting/leaching (λ_{eff}) result from the uncertainty in the loss rate from harvesting/leaching. The loss rate from radiological decay is determined by dividing the natural log of 2 by the half-life of the radionuclide (Cs-137: 0.693/30 yrs = 2.3E-02 yr^{-1}). The uncertainty estimates for λ_{eff} were determined by adding the radiological decay rate to the minimum, mean, and maximum value reported for the loss rate from harvesting and leaching in Hoffman et al. (1982). These values are summarized in Table E.71.

Reference Dose for Inorganic Mercury

The RfD for inorganic mercury (3.0E-04 mg/kg-day) is based on three studies. Currently, the EPA is reviewing this reference dose and the studies from which it is derived Rick Canady (1995).

Death from oral exposure to inorganic mercury is usually caused by shock, cardiovascular collapse, acute renal failure, and severe gastrointestinal damage (Gleason et al., 1957; Troen et al., 1951). In a study by Troen et al. (1951), eighteen cases of human poisoning were reported. Nine of the patients died following oral ingestion of single doses of mercuric chloride. The lethal doses varied from 29 to less than 50 mg mercury/kg. Gastrointestinal lesions and renal involvement were the most common findings (Toxicological Profile for Mercury).

A chronic exposure (350 days) of rates that were given 7 mg of mercury per kg/day as mercuric chloride in drinking water resulted in a positive inotropic response, increased blood pressure and cardiac contractility, and decreased baroreflex sensitivity (Carmignani et al., 1989). A case study reported by Pesce et al. (1977) involved a human patient who ingested a single dose of 15.8 mg mercury per kg as mercuric chlorides and exhibited a dramatic increase in urinary protein secretion. In a study with Fischer-344 male rats a significant increase in the absolute and relative kidney weights began at 1.9 mg/kg/day (NTP, 1991).

Using the information pertaining to inorganic mercury from several studies and an interview with Rick Canady (1995), the following uncertainties were determined. Since the RfD is assumed to be a safe value, the minimum value was obtained by dividing the RfD by ten (3.0E-05) to protect against more subtle effects than those observed in several studies. The maximum value was obtained by multiplying the RfD by a factor of ten (3.0E-03). *A log-uniform distribution was used to represent the uncertainty in the RfD for inorganic mercury.*

Element dependent transfer factors

Several transfer factors are required for the agricultural pathways considered in the dredging scenario, including 1) the soil/plant concentration factors (B_v) for three different food crops (leafy vegetables and non-leafy vegetables for human consumption and pasture forage for cow consumption) and 2) the animal product transfer factors for cow's milk (F_m) and meat (F_f). For this analysis, all vegetable transfer factors are defined in terms of the wet weight of plants, while the pasture forage is given as dry weight.

The primary reference for the uncertainties in the soil-to-plant transfer factors and the animal product transfer factors for Cs-137 is a document that was prepared for the U. S. Nuclear Regulatory Commission (Hoffman et al., 1982). The selection of values for the soil/plant transfer factor and animal product transfer factor for Cs-137 was further supported by an intensive search of numerous publications (Kennedy and Strenge, 1993; NCRP, 1989; Ng, 1982; Ng et al., 1979a; Ng et al., 1979b). From the reported values, an average of the reported values, the minimum reported value, and the maximum reported value were compared to the uncertainty estimates documented in Hoffman et al. (1982). Because these values were similar, the uncertainty estimates presented in Hoffman et al. (1982) were used in this uncertainty analysis. These values are summarized in Table E.74.

The soil-to-plant transfer factors and the animal product transfer factors are less studied for inorganic mercury. The largest source of uncertainty occurs due to the lack of knowledge about the solubility of the inorganic mercury. An in depth review of the available literature was performed, and the uncertainty ranges and distributions for the factors pertaining to inorganic mercury are presented in Table E.74. Wide uncertainty bands were used for these factors due to the large lack of knowledge.

Table E.74 Ranges of plant-to-soil concentration ratios and transfer coefficients to cow's milk and beef. *

	Units	Minimum	Estimated mean	Maximum	Assigned Distribution
Cesium-137					
Bv (leafy veg.)	unitless	1.0 E-04	5.5 E-03	8.0 E-02	Log-Triangular
Bv (non-leafy veg.)	unitless	1.0 E-05	5.0 E-03	1.0 E-01	Log-Triangular
Bv (pasture, dry wt.)	unitless	7.0 E-04	4.4 E-02	1.2 E+00	Log-Triangular
Ff (meat)	d/kg	3.0 E-03	2.1 E-02	2.0 E-01	Log-Triangular
Fm (milk)	d/L	3.7 E-03	6.7 E-03	5.0 E-02	Log-Triangular
Inorganic Mercury					
Bv (leafy veg.)	unitless	5.0 E-01	—	5.0 E-03	Log-Uniform
Bv (non-leafy veg.)	unitless	1.0 E-02	—	1.0 E-01	Log-Uniform
Bv (pasture, dry wt.)	unitless	1.0 E-02	—	2.0 E+00	Log-Uniform
Ff (meat)	d/kg	1.0 E-05	1.0 E-02	2.5 E-01	Log-Triangular
Fm (milk)	d/L	1.0 E-05	—	1.0 E-03	Log-Uniform

* Ranges taken from Hoffman et al. (1982) and subjective judgment.

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