

US EPA ARCHIVE DOCUMENT

SECTION 4

Wells G+H
3.10
214591



SECTION 4

SDMS DocID 000214591



**TABLE 4-1
CONTAMINANT SCREENING FOR SURFACE WATER - UPPER MYSTIC LAKE**

WELLS G&H SUPERFUND SITE OU3

Chemical	Frequency of Detection	Maximum Detected Concentration (u g/L) ¹	Location of Maximum Detected Conc.	Screening Criterion ²			COPC? ⁵
				Adjusted Criterion ³ (u g/L)	Unadjusted Criterion ⁴ (u g/L)	Type	
Inorganics							
Aluminum	4/4	426	SW-01-01		87	Freshwater Chronic NAWQC ⁶	Yes
Arsenic	3/4	5.2	SW-03-01		150	Freshwater Chronic NAWQC ⁷	No
Barium	4/4	41.9	SW-03-01		4	Tier II ⁹	Yes
Beryllium	1/4	0.11	SW-04-01		5.3	Freshwater Chronic LOEL	No
Chromium	4/4	3.7	SW-03-01	88	74	Freshwater Chronic NAWQC ⁸	No
Cobalt	1/4	0.4	SW-01-01		23	Tier II ⁹	No
Copper	4/4	6.8	SW-01-01	9.6	9	Freshwater Chronic NAWQC	No
Iron	4/4	1,080	SW-03-01		1,000	Freshwater Chronic NAWQC	Yes
Lead	3/4	7.5	SW-03-01	3.3	2.5	Freshwater Chronic NAWQC	Yes
Manganese	4/4	317	SW-04-01		120	Tier II ⁹	Yes
Nickel	4/4	2.0	SW-02-01	53	52	Freshwater Chronic NAWQC	No
Vanadium	3/4	1.3	SW-01-01/ SW-03-01		20	Tier II ⁹	No
Zinc	3/4	45.5	SW-01-01	123	120	Freshwater Chronic NAWQC	No

Notes:

- ¹ Unfiltered samples.
 - ² Unless otherwise noted, taken from USEPA (1986 a,b; 1987, 1992 a, 1998, 2002).
 - ³ Metals criterion adjusted for hardness (103 mg/L as CaCO₃) and converted to unfiltered criterion (see equations provided in USEPA 2002).
 - ⁴ Criterion as presented in USEPA 2002; metals not corrected for hardness or conversion to unfiltered criterion.
 - ⁵ Analytes with maximum detected concentrations exceeding screening criteria were included in the BERA.
 - ⁶ Criterion reported as total recoverable metal and is not hardness dependant.
 - ⁷ Value reported for arsenic³⁺.
 - ⁸ Value reported for chromium³⁺, it is assumed that chromium in surface water is present in reduced form.
 - ⁹ As presented in Suter and Tsao (1996), Great Lakes Water Quality Initiative Tier II Methodology.
- NAWQC - National Ambient Water Quality Criterion
 BERA - Baseline Ecological Risk Assessment
 COPC - Chemical of Potential Concern

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**TABLE 4-2
CONTAMINANT SCREENING FOR SURFACE WATER - MAIN CHANNEL OF THE ABERJONA RIVER**

WELLS G&H SUPERFUND SITE OU3

Chemical	Frequency of Detection	Maximum Detected Concentration (u g/L) ¹	Location of Maximum Detected Conc.	Screening Criterion ²			COPC? ⁵
				Adjusted Criterion ³ (u g/L)	Unadjusted Criterion ⁴ (u g/L)	Type	
Volatile Organics							
Chloroform	1/10	1.0	SW-05-01		1,240	Freshwater Chronic LOEL	No
cis -1,2-Dichloroethene	3/10	4.0	SW-16-01		11,600	Freshwater Acute LOEL ⁶	No
Trichloroethene	2/10	2.0	SW-16-01		21,900	Freshwater Chronic LOEL	No
Tetrachloroethene	1/10	2.0	SW-05-01		840	Freshwater Chronic LOEL	No
Pesticides							
alpha -Chlordane	1/10	0.0021	SW-12-01		0.0043	Freshwater Chronic NAWQC ⁷	No
gamma -Chlordane	1/10	0.0014	SW-11-01		0.0043	Freshwater Chronic NAWQC ⁷	No
Heptachlor epoxide	2/10	0.0019	SW-12-01		0.0038	Freshwater Chronic NAWQC	No
Methoxychlor	1/10	0.015	SW-11-01		0.03	Freshwater Chronic NAWQC	No
Inorganics							
Aluminum	9/10	2,180	SW-10-01		87	Freshwater Chronic NAWQC ⁸	Yes
Antimony	2/10	1.5	SW-10-01		30	Freshwater Chronic NAWQC	No
Arsenic	7/10	77.1	SW-10-01		150	Freshwater Chronic NAWQC ⁹	No
Barium	10/10	54.4	SW-10-01		4	Tier II ¹¹	Yes
Beryllium	2/10	0.18	SW-10-01		5.3	Freshwater Chronic LOEL	No
Cadmium	2/10	2.5	SW-10-01	0.44	0.25	Freshwater Chronic NAWQC	Yes
Chromium	10/10	146	SW-10-01	147	74	Freshwater Chronic NAWQC ¹⁰	No
Cobalt	4/10	4.8	SW-10-01		23	Tier II ¹¹	No
Copper	10/10	111	SW-10-01	16	9.0	Freshwater Chronic NAWQC	Yes
Iron	10/10	8,470	SW-10-01		1,000	Freshwater Chronic NAWQC	Yes
Lead	6/10	75.9	SW-10-01	7.3	2.5	Freshwater Chronic NAWQC	Yes
Manganese	10/10	777	SW-16-01		120	Tier II ¹¹	Yes
Mercury	3/10	0.88	SW-10-01		0.77	Freshwater Chronic NAWQC	Yes
Nickel	10/10	6.2	SW-10-01	91	52	Freshwater Chronic NAWQC	No
Vanadium	8/10	7.4	SW-10-01		20	Tier II ¹¹	No
Zinc	10/10	626	SW-10-01	208	120	Freshwater Chronic NAWQC	Yes

Notes:

- ¹ Unfiltered samples.
- ² Unless otherwise noted, taken from USEPA (1986a,b; 1987; 1992a, 1998, 2002).
- ³ Metals criterion adjusted for hardness (192 mg/L as CaCO₃) and converted to unfiltered criterion (see equations provided in USEPA 2002).
- ⁴ Criterion as presented in USEPA 2002; metals not corrected for hardness or conversion to unfiltered criterion.
- ⁵ Analytes with maximum detected concentrations exceeding screening criteria were included in the BERA.
- ⁶ Value is the summation of cis and trans isomers.
- ⁷ No distinction made for isomers.
- ⁸ Criterion reported as total recoverable metal and is not hardness dependant.
- ⁹ Value reported for arsenic³⁺.
- ¹⁰ Value reported for chromium³⁺, it is assumed that chromium in surface water is present in reduced form.
- ¹¹ As presented in Suter and Tsao (1996), Great Lakes Water Quality Initiative Tier II Methodology.

NAWQC - National Ambient Water Quality Criterion
 LOEL - Lowest Observable Effect Level
 BERA - Baseline Ecological Risk Assessment
 COPC - Chemical of Potential Concern

**TABLE 4-3
CONTAMINANT SCREENING FOR SURFACE WATER - ABERJONA RIVER WETLAND**

WELLS G&H SUPERFUND SITE OU3

Chemical	Frequency of Detection	Maximum Detected Concentration (u g/L) ¹	Location of Maximum Detected Conc.	Screening Criterion ²		Type	COPC? ⁵
				Adjusted Criterion ³ (u g/L)	Unadjusted Criterion ⁴ (u g/L)		
Pesticides							
Endosulfan II	1/3	0.0015	SW-13-01		0.056	Freshwater Chronic NAWQC ⁶	No
Heptachlor epoxide	1/3	0.0011	SW-13-01		0.0038	Freshwater Chronic NAWQC	No
Inorganics							
Aluminum	2/3	279	SW-13-01		87	Freshwater Chronic NAWQC ⁷	Yes
Arsenic	3/3	21.5	SW-13-01		150	Freshwater Chronic NAWQC ⁸	No
Barium	3/3	37.9	SW-13-01		4	Tier II ¹⁰	Yes
Cadmium	1/3	0.16	SW-18-01	0.52	0.25	Freshwater Chronic NAWQC	No
Chromium	3/3	10.9	SW-13-01	179	74	Freshwater Chronic NAWQC ⁹	No
Cobalt	3/3	1.1	SW-18-01		23	Tier II ¹⁰	No
Copper	3/3	14.1	SW-13-01	20	9.0	Freshwater Chronic NAWQC	No
Iron	3/3	1,980	SW-13-01		1,000	Freshwater Chronic NAWQC	Yes
Lead	2/3	9.5	SW-13-01	9.9	2.5	Freshwater Chronic NAWQC	No
Manganese	3/3	493	SW-13-01		120	Tier II ¹⁰	Yes
Mercury	2/3	0.26	SW-13-01		0.77	Freshwater Chronic NAWQC	No
Nickel	3/3	2.4	SW-13-01	111	52	Freshwater Chronic NAWQC	No
Vanadium	3/3	1.5	SW-18-01		20	Tier II ¹⁰	No
Zinc	3/3	64.3	SW-13-01	255	120	Freshwater Chronic NAWQC	No

Notes:

- ¹ Unfiltered samples.
- ² Unless otherwise indicated, taken from USEPA (1986a,b; 1987; 1992a, 1998, 2002).
- ³ Metals criterion adjusted for hardness (244 mg/L as CaCO₃) and converted to unfiltered criterion (see equations provided in USEPA 2002).
- ⁴ Criterion as presented in USEPA 2002; metals not corrected for hardness or conversion to unfiltered criterion.
- ⁵ Analytes with maximum detected concentrations exceeding screening criteria were included in the BERA.
- ⁶ Value reported for endosulfan.
- ⁷ Criterion reported as total recoverable metal and is not hardness dependant.
- ⁸ Value reported for arsenic³⁺.
- ⁹ Value reported for chromium³⁺, it is assumed that chromium in surface water is present in reduced form.
- ¹⁰ As presented in Suter and Tsao (1996), Great Lakes Water Quality Initiative Tier II Methodology.

NAWQC - National Ambient Water Quality Criterion

BERA - Baseline Ecological Risk Assessment

COPC - Chemical of Potential Concern

TABLE 4-4
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - NON-REFERENCE LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹
<u>Metals - ug/L</u>								
Aluminum	27.3		2180		SW-10-01	15 / 17	31.1 - 36.9	253
Barium	29.2		54.4		SW-10-01	17 / 17	N/A	37
Cadmium	0.16		2.5		SW-10-01	3 / 17	0.099 - 0.15	0.30
Copper	1.7		111		SW-10-01	17 / 17	N/A	12
Iron	304		8470		SW-10-01	17 / 17	N/A	1561
Lead	0.93999		75.9	J	SW-10-01	11 / 17	0.74 - 0.85	7.4
Manganese	70.9		777.5		SW-16-01	17 / 17	N/A	422
Mercury	0.04	J	0.88		SW-10-01	8 / 17	0.08 - 0.2	0.15
Zinc	10.8		626	J	SW-10-01	16 / 17	4	72

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

**TABLE 4-5
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - REFERENCE LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration ¹	Detection Frequency	Range of Detection Limits	Average Concentration ¹
<u>Metals - ug/L</u>								
Aluminum	21.3		2500		SW-MC-01	9 / 11	23.5 - 29.2	315
Barium	15.4		64		SW-MC-01	11 / 11	N/A	31
Cadmium						0 / 11	0.15 - 0.78	0.25
Copper	0.45		13.8		SW-MC-01	8 / 11	0.35 - 1.4	2.6
Iron	118		15800		SW-MC-01	11 / 11	N/A	2671
Lead	0.665	J	51.4		SW-MC-01	8 / 11	0.75	6.9
Manganese	46.4		1960		SW-MC-01	11 / 11	N/A	451
Mercury	0.097		0.13		SW-24-01	4 / 11	0.04 - 0.087	0.058
Zinc	1.375	J	71.7		SW-MC-01	7 / 11	1.6 - 9	13

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

**TABLE 4-6
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION 23
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (µg/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum						0 / 1	23.5	12	87	Freshwater Chronic NAWQC
Barium	20.3		20.3		SW-23-01	1 / 1	N/A	20	4.0	Tier II
Cadmium						0 / 1	0.15	0.08	0.23	Freshwater Chronic NAWQC
Copper						0 / 1	0.35	0.18	7.9	Freshwater Chronic NAWQC
Iron	1470		1470		SW-23-01	1 / 1	N/A	1470	1,000	Freshwater Chronic NAWQC
Lead						0 / 1	0.75	0.38	2.5	Freshwater Chronic NAWQC
Manganese	780		780		SW-23-01	1 / 1	N/A	780	120	Tier II
Mercury	0.11		0.11		SW-23-01	1 / 1	N/A	0.11	0.77	Freshwater Chronic NAWQC
Zinc	2.2	J	2.2	J	SW-23-01	1 / 1	N/A	2.2	101	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 82 mg/L as CaCO₃

**TABLE 4-7
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION 24
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (u g/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum	142		142		SW-24-01	1 / 1	N/A	142	87	Freshwater Chronic NAWQC
Barium	45.1		45.1		SW-24-01	1 / 1	N/A	45	4.0	Tier II
Cadmium						0 / 1	0.15	0.08	0.30	Freshwater Chronic NAWQC
Copper	3.9		3.9		SW-24-01	1 / 1	N/A	3.9	10.7	Freshwater Chronic NAWQC
Iron	2780		2780		SW-24-01	1 / 1	N/A	2780	1,000	Freshwater Chronic NAWQC
Lead	6.3		6.3		SW-24-01	1 / 1	N/A	6.3	3.9	Freshwater Chronic NAWQC
Manganese	520		520		SW-24-01	1 / 1	N/A	520	120	Tier II
Mercury	0.13		0.13		SW-24-01	1 / 1	N/A	0.13	0.77	Freshwater Chronic NAWQC
Zinc	16.1	J	16.1	J	SW-24-01	1 / 1	N/A	16	137	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 117 mg/L as CaCO₃

**TABLE 4-8
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION 25
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (µg/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum	47.15		47.15		SW-25-01	1 / 1	N/A	47	87	Freshwater Chronic NAWQC
Barium	24.55		24.55		SW-25-01	1 / 1	N/A	25	4.0	Tier II
Cadmium						0 / 1	0.15	0.08	0.22	Freshwater Chronic NAWQC
Copper	1		1		SW-25-01	1 / 1	N/A	1.0	7.2	Freshwater Chronic NAWQC
Iron	118		118		SW-25-01	1 / 1	N/A	118	1,000	Freshwater Chronic NAWQC
Lead	0.665	J	0.665	J	SW-25-01	1 / 1	N/A	0.67	2.2	Freshwater Chronic NAWQC
Manganese	46.4		46.4		SW-25-01	1 / 1	N/A	46	120	Tier II
Mercury	0.115		0.115		SW-25-01	1 / 1	N/A	0.12	0.77	Freshwater Chronic NAWQC
Zinc	1.375	J	1.375	J	SW-25-01	1 / 1	N/A	1.4	92.8	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 74 mg/L as CaCO₃

**TABLE 4-9
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION 26
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (u g/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum						0 / 1	29.2	15	87	Freshwater Chronic NAWQC
Barium	40.5		40.5		SW-26-01	1 / 1	N/A	41	4.0	Tier II
Cadmium						0 / 1	0.15	0.08	0.17	Freshwater Chronic NAWQC
Copper	1.4		1.4		SW-26-01	1 / 1	N/A	1.4	5.4	Freshwater Chronic NAWQC
Iron	221		221		SW-26-01	1 / 1	N/A	221	1,000	Freshwater Chronic NAWQC
Lead						0 / 1	0.75	0.38	1.4	Freshwater Chronic NAWQC
Manganese	285		285		SW-26-01	1 / 1	N/A	285	120	Tier II
Mercury						0 / 1	0.08	0.040	0.77	Freshwater Chronic NAWQC
Zinc	2.7	J	2.7	J	SW-26-01	1 / 1	N/A	2.7	70.0	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 53 mg/L as CaCO₃

**TABLE 4-10
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION 27
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (u g/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum	21.3		21.3		SW-27-01	1 / 1	N/A	21	87	Freshwater Chronic NAWQC
Barium	15.4		15.4		SW-27-01	1 / 1	N/A	15	4.0	Tier II
Cadmium						0 / 1	0.15	0.08	0.20	Freshwater Chronic NAWQC
Copper	0.45		0.45		SW-27-01	1 / 1	N/A	0.45	6.6	Freshwater Chronic NAWQC
Iron	251		251		SW-27-01	1 / 1	N/A	251	1,000	Freshwater Chronic NAWQC
Lead						0 / 1	0.75	0.38	1.9	Freshwater Chronic NAWQC
Manganese	47.5		47.5		SW-27-01	1 / 1	N/A	48	120	Tier II
Mercury	0.097		0.097		SW-27-01	1 / 1	N/A	0.097	0.77	Freshwater Chronic NAWQC
Zinc						0 / 1	1.6	0.80	85.3	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 67 mg/L as CaCO₃

**TABLE 4-11
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION SW-01-IP
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (u g/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum	2500		2500		SW-MC-01	1 / 1	N/A	2500	87	Freshwater Chronic NAWQC
Barium	64		64		SW-MC-01	1 / 1	N/A	64	4.0	Tier II
Cadmium						0 / 1	0.78	0.4	0.28	Freshwater Chronic NAWQC
Copper	13.8		13.8		SW-MC-01	1 / 1	N/A	14	9.8	Freshwater Chronic NAWQC
Iron	15800		15800		SW-MC-01	1 / 1	N/A	15800	1,000	Freshwater Chronic NAWQC
Lead	51.4		51.4		SW-MC-01	1 / 1	N/A	51	3.4	Freshwater Chronic NAWQC
Manganese	1960		1960		SW-MC-01	1 / 1	N/A	1960	120	Tier II
Mercury						0 / 1	0.087	0.044	0.77	Freshwater Chronic NAWQC
Zinc	71.7		71.7		SW-MC-01	1 / 1	N/A	72	125.9	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 106 mg/L as CaCO₃

TABLE 4-12
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION SW-02-IP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (µg/L) ¹	Type
<u>Metals - µg/L</u>										
Aluminum	121		121		SW-MC-02	1 / 1	N/A	121	87	Freshwater Chronic NAWQC
Barium	22.55		22.55		SW-MC-02	1 / 1	N/A	23	4.0	Tier II
Cadmium						0 / 1	0.78	0.4	0.27	Freshwater Chronic NAWQC
Copper						0 / 1	1.4	0.70	9.5	Freshwater Chronic NAWQC
Iron	3085		3085		SW-MC-02	1 / 1	N/A	3085	1,000	Freshwater Chronic NAWQC
Lead	1.15	J	1.15	J	SW-MC-02	1 / 1	N/A	1.2	3.3	Freshwater Chronic NAWQC
Manganese	277.5		277.5		SW-MC-02	1 / 1	N/A	278	120	Tier II
Mercury						0 / 1	0.04	0.020	0.77	Freshwater Chronic NAWQC
Zinc						0 / 1	3.9	2.0	121.8	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 102 mg/L as CaCO₃

TABLE 4-13
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION SW-03-IP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (ug/L) ³	Type
<u>Metals - ug/L</u>										
Aluminum	115		184		SW-MC-03-01	2 / 2	N/A	150	87	Freshwater Chronic NAWQC
Barium	22.5		28.5		SW-MC-03-01	2 / 2	N/A	26	4.0	Tier II
Cadmium						0 / 2	0.78	0.4	0.22	Freshwater Chronic NAWQC
Copper	2.4	J	2.4	J	SW-MC-03-01	1 / 2	1.4	1.6	7.2	Freshwater Chronic NAWQC
Iron	1270		2210		SW-MC-03-01	2 / 2	N/A	1740	1,000	Freshwater Chronic NAWQC
Lead	2.7	J	3.2	J	SW-MC-03	2 / 2	N/A	3.0	2.2	Freshwater Chronic NAWQC
Manganese	159		425		SW-MC-03-01	2 / 2	N/A	292	120	Tier II
Mercury						0 / 2	0.04	0.020	0.77	Freshwater Chronic NAWQC
Zinc	14.7	J	14.7	J	SW-MC-03-01	1 / 2	8.2	9.4	92.8	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 74 mg/L as CaCO₃

**TABLE 4-14
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION SW-04-IP
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (ug/L) ¹	Type
<u>Metals - ug/L</u>										
Aluminum	102		102		SW-MC-04	1 / 1	N/A	102	87	Freshwater Chronic NAWQC
Barium	28		28		SW-MC-04	1 / 1	N/A	28	4.0	Tier II
Cadmium						0 / 1	0.78	0.4	0.24	Freshwater Chronic NAWQC
Copper	2.6	J	2.6	J	SW-MC-04	1 / 1	N/A	2.6	8.2	Freshwater Chronic NAWQC
Iron	1070		1070		SW-MC-04	1 / 1	N/A	1070	1,000	Freshwater Chronic NAWQC
Lead	4	J	4	J	SW-MC-04	1 / 1	N/A	4.0	2.6	Freshwater Chronic NAWQC
Manganese	250		250		SW-MC-04	1 / 1	N/A	250	120	Tier II
Mercury						0 / 1	0.04	0.020	0.77	Freshwater Chronic NAWQC
Zinc						0 / 1	9	4.5	105.4	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 86 mg/L as CaCO₃

TABLE 4-15
SUMMARY OF SURFACE WATER COPCs DETECTED IN SURFACE WATER - STATION SW-12-IP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration ¹	Minimum Qualifier	Maximum Detected Concentration ¹	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration ¹	Screening Criterion ²	
									Conc. (µg/L) ³	Type
<u>Metals - µg/L</u>										
Aluminum	202		202		SW-MC-12	1 / 1	N/A	202	87	Freshwater Chronic NAWQC
Barium	29.8		29.8		SW-MC-12	1 / 1	N/A	30	4.0	Tier II
Cadmium						0 / 1	0.78	0.4	0.24	Freshwater Chronic NAWQC
Copper	1.7	J	1.7	J	SW-MC-12	1 / 1	N/A	1.7	8.0	Freshwater Chronic NAWQC
Iron	1110		1110		SW-MC-12	1 / 1	N/A	1110	1,000	Freshwater Chronic NAWQC
Lead	5.6		5.6		SW-MC-12	1 / 1	N/A	5.6	2.5	Freshwater Chronic NAWQC
Manganese	210		210		SW-MC-12	1 / 1	N/A	210	120	Tier II
Mercury						0 / 1	0.04	0.020	0.77	Freshwater Chronic NAWQC
Zinc	21.1	J	21.1	J	SW-MC-12	1 / 1	N/A	21	103.4	Freshwater Chronic NAWQC

NAWQC = National Ambient Water Quality Criterion

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Unfiltered samples

² NAWQC taken from USEPA (1986a,b; 1987; 1992a, 1998).

Tier II Values from Suter and Tsao (1996), Great Lakes Water Quality Initiative

³ Unfiltered criteria based on hardness of 84 mg/L as CaCO₃

**TABLE 4-16
CONTAMINANT SCREENING FOR SEDIMENT - ABERJONA RIVER STUDY AREA**

WELLS G&H SUPERFUND SITE OU3

Chemical	Frequency of Detection	Maximum Detected Level	Location of Maximum Detected Level	Screening Criterion		COPC? ²	Reason for Exclusion ³
				Level	Type ¹		
VOCs (mg/kg)							
1,1,1-Trichloroethane	3 / 100	110	SD-TT-30-01-TR	na	na	No	DF
1,1,2-Trichloro-1,2,2-trifluoroethane	1 / 5	37.5	SD-UF-02-TR	na	na	No	LC
1,1-Dichloroethane	1 / 87	3	SD-18-01-FW	27	SCV	No	BSV/DF
1,2-Dichloroethene(total)	8 / 65	59	SD-18-01-FW	400	SCV	No	BSV
2-Butanone	22 / 71	290	SD-19-01-FW	270	SCV	Yes	
Acetone	22 / 81	7300	SD-TT-30-01-TR	8.7	SCV	Yes	
Benzene	8 / 87	22	SD-21-01-ME	57	SQB	No	BSV
Carbon Disulfide	3 / 63	29	SD-10-02-TR	0.85	SCV	No	DF
cis-1,2-Dichloroethene	18 / 28	562	SD-20-01-ME	400	SCV	Yes	
Ethylbenzene	4 / 87	9	SD-06-03-ME	3600	SQB	No	BSV/DF
Methyl Acetate	4 / 6	530	SD-TT-30-01-TR	na	na	No	LC
Methylene chloride	2 / 101	100	SD-22-03-FW	370	SCV	No	BSV/DF
Naphthalene	3 / 26	208	SD-21-01-ME	480	ERL	No	BSV
Tetrachloroethene	5 / 90	3164	SD-22-02-ME	530	SQB	Yes	
Toluene	3 / 63	22	SD-TT-30-01-TR	670	SQB	No	BSV/DF
trans-1,2-Dichloroethene	1 / 28	387	SD-11-01-ME	400	SCV	No	BSV/DF
Trichloroethene	18 / 91	2025	SD-20-01-ME	1600	SQB	Yes	
Vinyl chloride	2 / 87	255	SD-11-01-ME	na	na	No	DF
Xylene, m/p-	2 / 28	25	SD-06-03-ME	25	SQB	No	BSV
SVOCs (mg/kg)							
2-Methylnaphthalene	28 / 98	220	SD-09-06-FW	70	ERL	Yes	
Acenaphthene	39 / 99	520	SD-09-06-FW	620	SQC	No	BSV
Acenaphthylene	38 / 98	480	SD-07-10-FW	44	ERL	Yes	
Anthracene	55 / 99	1300	SD-06-03-FW	220	LEL	Yes	
Benzo(a)anthracene	85 / 109	9600	SD-07-10-ME	320	LEL	Yes	
Benzo(a)pyrene	84 / 106	10000	SD-07-10-ME	430	ERL	Yes	
Benzo(b)fluoranthene	95 / 116	16000	SD-07-10-ME	240	LEL ⁴	Yes	
Benzo(g,h,i)perylene	62 / 103	5300	SD-07-10-ME	170	LEL	Yes	
Benzo(k)fluoranthene	84 / 109	14000	SD-07-05-FW	240	LEL	Yes	
bis(2-ethylhexyl)phthalate	49 / 89	13000	SD-07-05-FW	890000	SCV	No	BSV
Butylbenzylphthalate	9 / 74	620	SD-07-05-FW	11000	SQB	No	BSV
Carbazole	19 / 74	680	SD-07-09-FW	na	na	Yes	
Chrysene	88 / 110	10000	SD-07-10-ME	340	LEL	Yes	
Di-n-octylphthalate	3 / 73	430	SD-07-05-FW	na	na	No	DF
Dibenz(a,h)anthracene	42 / 100	2000	SD-07-10-ME	60	LEL	Yes	
Dibenzofuran	8 / 72	500	SD-09-06-FW	2000	SQB ⁵	Yes	
Diethylphthalate	1 / 72	240	SD-07-04-FW	567	SQB ⁶	No	BSV/DF
Fluoranthene	102 / 116	23000	SD-07-10-ME	2900	SQC	Yes	
Fluorene	46 / 99	810	SD-09-06-FW	540	SQB	Yes	
Indeno(1,2,3-cd)pyrene	69 / 106	6900	SD-07-10-ME	200	LEL	Yes	
N-nitrosodiphenylamine	7 / 75	560	SD-10-01-FW	na	na	Yes	
Naphthalene	36 / 99	2500	SD-21-02-FW	480	SQB	Yes	
Phenanthrene	81 / 106	12000	SD-07-10-ME	850	SQC	Yes	
Pyrene	100 / 114	15000	SD-07-10-ME	660	ERL	Yes	

US EPA ARCHIVE DOCUMENT

TABLE 4-16 (Continued)
CONTAMINANT SCREENING FOR SEDIMENT - ABERJONA RIVER STUDY AREA

Chemical	Frequency of Detection	Maximum Detected Level	Location of Maximum Detected Level	Screening Criterion		COPC? ²	Reason for Exclusion ³
				Level	Type ¹		
Pesticides/PCBs (mg/kg)							
4,4'-DDD	74 / 111	310	SD-13-03-ME	8	LEL	Yes	
4,4'-DDE	91 / 115	160	SD-10-01-ME	5	LEL	Yes	
4,4'-DDT	62 / 104	47	SD-07-10-FW	1.6	ERL	Yes	
Aldrin	23 / 96	18	SD-10-01-ME	2	LEL	Yes	
alpha -BHC	14 / 98	2.7	SD-07-02-FW	6	LEL	No	BSV
alpha -Chlordane	71 / 111	93	SD-13-03-ME	7	LEL	Yes	
Aroclor-1248	26 / 103	560	SD-10-01-ME	30	LEL	Yes	
Aroclor 1254	10 / 103	2600	SD-JY-07	60	LEL	Yes	
Aroclor-1260	38 / 105	2400	SD-JY-07	5	LEL	Yes	
beta -BHC	19 / 101	6.6	SD-07-07-FW	5	LEL	Yes	
delta -BHC	21 / 95	25	SD-06-03-FW	3	LEL ⁷	Yes	
Dieldrin	54 / 103	20	SD-14-03-FW	52	SQC	No	BSV
Endosulfan I	23 / 105	68	SD-21-01-FW	2.9	SQB	Yes	
Endosulfan II	23 / 96	8.4	SD-07-09-FW	14	SQB	No	BSV
Endosulfan Sulfate	9 / 94	3.9	SD-07-04-FW	na	na	Yes	
Endrin	43 / 101	17	SD-06-03-ME	20	SQC	No	BSV
Endrin Aldehyde	34 / 97	27	SD-07-02-ME	na	na	Yes	
Endrin Ketone	4 / 93	2.9	SD-08-02-FW	na	na	No	DF
gamma -BHC (Lindane)	4 / 93	1.4	SD-07-02-FW	3.7	SQB	No	BSV/DF
gamma -Chlordane	66 / 108	650	SD-13-03-ME	0.5	ERL	Yes	
Heptachlor	12 / 93	1.6	SD-07-06-FW	68	SCV	No	BSV
Heptachlor Epoxide	21 / 96	4.9	SD-22-01-FW	5	LEL	No	BSV
Methoxychlor	3 / 93	12	SD-07-10-FW	19	SQB	No	BSV/DF
Inorganics (mg/kg)							
Aluminum	341 / 355	34400	SD-13-02-FW	25500	TEL	Yes	
Antimony	196 / 317	329	SD-TT-22-01	2	ERL	Yes	
Arsenic	338 / 353	4550	SD-12-03-ME	8.2	ERL	Yes	
Barium	339 / 355	3420	SD-WW-11	na	na	Yes	
Beryllium	280 / 351	2.9	SD-19-01-ME	na	na	Yes	
Cadmium	302 / 354	37.7	SD-01-06-FW	1.2	ERL	Yes	
Chromium	351 / 355	24600	SD-WW-08	81	ERL	Yes	
Cobalt	351 / 355	130	SD-CB-03-06	50	LEL*	Yes	
Copper	351 / 355	3760	SD-TT-30-03	34	ERL	Yes	
Cyanide	57 / 122	12.1	SD-WS-08	0.1	LEL*	Yes	
Iron	351 / 355	258000	SD-19-01-TR	20000	LEL	Yes	
Lead	351 / 355	41000	SD-TT-22-01	47	ERL	Yes	
Manganese	351 / 355	3060	SD-UM-02	460	LEL	Yes	
Mercury	300 / 344	89.2	SD-TT-30-03	0.15	ERL	Yes	
Nickel	338 / 355	177	SD-CB-04-03	21	ERL	Yes	
Selenium	223 / 351	30.3	SD-12-03-ME	na	na	Yes	
Silver	104 / 320	11.5	SD-CB-04-02	0.5	LEL*	Yes	
Thallium	148 / 331	18.1	SD-BW-03	na	na	Yes	
Vanadium	341 / 355	180	SD-UM-02	na	na	Yes	
Zinc	350 / 355	8750	SD-CB-04-03	120	LEL	Yes	

TABLE 4-16 (Continued)
CONTAMINANT SCREENING FOR SEDIMENT - ABERJONA RIVER STUDY AREA

Notes:

- ¹ SCV, SQB, and SQCs based on 1% sediment organic carbon content; where SCV, SQBs and SQCs are used, sediment organic carbon content was greater than 1%, unless indicated otherwise
- ² Analytes with maximum detected concentrations exceeding screening criteria were included in the BERA.
- ³ Reasons for exclusion were that the maximum level was below the screening value (BSV) and/or the frequency of detection was less than or equal to 5% (DF).
- ⁴ Screening value for benzo(k)fluoranthene
- ⁵ Organic carbon content at SD-09-06-FW was 0.1%; if the SQB were adjusted based on 0.1% organic carbon content, the maximum level of dibenzofuran would be greater than the screening criterion.
- ⁶ SQB was adjusted downward for organic carbon content at SD-01-07-FW (0.9%)
- ⁷ Value for BHC in Persaud *et al.* (1993)

DF - detection frequency

BSV - below screening value

LC - laboratory contaminant

ERL - NOAA Effects Range-Low (Long *et al.*, 1995; Long and Morgan, 1990)

SCV - Secondary Chronic Value (Jones *et al.*, 1997)

SQC - USEPA Sediment Quality Criterion (USEPA, 1993 b,c) - used for endrin and dieldrin only

SQB - USEPA Office of Solid Waste and Emergency Response Sediment Quality Benchmark (USEPA, 1996)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (Persaud *et al.*, 1993)

LEL*- Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996)

TEL - Threshold Effects Level (Buchman, 1999)

na - not available

TABLE 4-17
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT NON-REFERENCE STATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	9	J	290	J	SD-19-01-FW	22 / 71	11 - 50	34
Acetone	58	J	7300	J	SD-TT-30-01-TR	22 / 81	10 - 430	317
cis-1,2-Dichloroethene	7	J	562	J	SD-20-01-ME	18 / 28	9 - 225	77.5
Tetrachloroethene	41	J	3164	J	SD-22-02-ME	5 / 90	11 - 790	82.4
Trichloroethene	6	J	2025	J	SD-20-01-ME	18 / 91	9 - 114	50.7
SVOCs - ug/Kg								
2-Methylnaphthalene	10	J	220	J	SD-09-06-FW	28 / 98	1 - 2900	254
Acenaphthylene	1	J	480	J	SD-07-10-FW	38 / 98	1 - 2900	245
Anthracene	18	J	1300	J	SD-06-03-FW	55 / 99	67 - 2300	309
Benzo(a)anthracene	40	J	9600	J	SD-07-10-ME	85 / 109	67 - 890	1033
Benzo(a)pyrene	33	J	10000	J	SD-07-10-ME	84 / 106	67 - 2100	1093
Benzo(b)fluoranthene	45	J	16000	J	SD-07-10-ME	95 / 116	67 - 870	1642
Benzo(g,h,i)perylene	44	J	5300	J	SD-07-10-ME	62 / 103	10 - 2300	636
Benzo(k)fluoranthene	45	J	14000	J	SD-07-05-FW	84 / 109	67 - 2300	1200
Carbazole	63	J	680	J	SD-07-09-FW	19 / 74	130 - 2900	304
Chrysene	40	J	10000	J	SD-07-10-ME	88 / 110	67 - 890	1307
Dibenz(a,h)anthracene	44	J	2000	J	SD-07-10-ME	42 / 100	2 - 2900	331
Dibenzofuran	56	J	500	J	SD-09-06-FW	8 / 72	130 - 2900	319
Fluoranthene	42	J	23000	J	SD-07-10-ME	102 / 116	67 - 890	2258
Fluorene	14	J	810	J	SD-09-06-FW	46 / 99	1 - 2300	265
Indeno(1,2,3-cd)pyrene	21	J	6900	J	SD-07-10-ME	69 / 106	67 - 2300	678
Naphthalene	12	J	2500	J	SD-21-02-FW	36 / 99	1 - 2900	282
N-nitrosodiphenylamine	58	J	560	J	SD-10-01-FW	7 / 75	130 - 2900	345
Phenanthrene	62	J	12000	J	SD-07-10-ME	81 / 106	67 - 890	1155
Pyrene	52	J	15000	J	SD-07-10-ME	100 / 114	67 - 870	1837
PCBs/Pesticides - ug/Kg								
4,4'-DDD	0.46	J	310	J	SD-13-03-ME	74 / 111	0.31 - 43	27
4,4'-DDE	0.089	J	160	J	SD-10-01-ME	91 / 115	0.31 - 43	20
4,4'-DDT	0.29	J	47	J	SD-07-10-FW	62 / 104	0.31 - 49	7
Aldrin	0.12	J	18	J	SD-10-01-ME	23 / 96	0.15 - 25	1.9
alpha-Chlordane	0.28	J	93	J	SD-13-03-ME	71 / 111	0.15 - 22	12.5
Aroclor 1248	8.1	J	560	J	SD-10-01-ME	26 / 103	2.6 - 490	68
Aroclor 1254	45	J	2600	J	SD-JY-07	10 / 103	2.6 - 490	118
Aroclor 1260	11	J	2400	J	SD-JY-07	38 / 105	2.6 - 490	155
beta-BHC	0.1	J	6.6	J	SD-07-07-FW	19 / 101	0.15 - 25	1.9
delta-BHC	0.08	J	25	J	SD-06-03-ME	21 / 95	0.15 - 25	2.5
Endosulfan I	0.11	J	68	J	SD-21-01-FW	23 / 105	0.15 - 25	4.2
Endosulfan Sulfate	0.33	J	3.9	J	SD-07-04-FW	9 / 94	0.31 - 49	3.4
Endrin Aldehyde	0.47	J	27	J	SD-07-02-ME	34 / 97	0.31 - 49	4.3
gamma-Chlordane	0.12	J	650	J	SD-13-03-ME	66 / 108	0.15 - 25	13.6
Metals - mg/Kg								
Aluminum	1865	J	34400	J	SD-13-02-FW	352 / 352	3.1012 - 370	10109
Antimony	0.325	J	329	J	SD-TT-22-01	196 / 314	0.067 - 103	6.35
Arsenic	2.4	J	4550	J	SD-12-03-ME	349 / 350	0.22 - 406	229
Barium	6	J	3420	J	SD-WW-11	350 / 352	0.018 - 35.9	84
Beryllium	0.12	J	2.9	J	SD-19-01-ME	288 / 348	0.016 - 4.75	0.64
Cadmium	0.045	J	37.7	J	SD-01-06-FW	307 / 351	0.0048 - 22.7	5.79
Chromium	3.3	J	24600	J	SD-WW-08	352 / 352	0.055 - 63.7	945
Cobalt	0.79	J	130	J	SD-CB-03-06	352 / 352	0.3101 - 100	14.5
Copper	4.2	J	3760	J	SD-TT-30-03	352 / 352	0.082 - 45	340
Cyanide	0.26	J	12.1	J	SD-WS-08	57 / 122	0.0942 - 2	1.02
Iron	2310	J	258000	J	SD-19-01-TR	352 / 352	0.57 - 2406	25435
Lead	1.9	J	41000	J	SD-TT-22-01	352 / 352	0.1861 - 75	478
Manganese	34.4	J	3060	J	SD-UM-02	352 / 352	0.018 - 12.7	468
Mercury	0.05	J	89.2	J	SD-TT-30-03	310 / 341	0.0037 - 100	2.02
Nickel	0.59	J	177	J	SD-CB-04-03	347 / 352	0.15 - 63	21
Selenium	0.53	J	30.3	J	SD-12-03-ME	223 / 348	0.052 - 498	2.76
Silver	0.18	J	11.5	J	SD-CB-04-02	109 / 317	0.0094 - 41.7	0.53
Thallium	0.2225	J	18.1	J	SD-BW-03	148 / 328	0.038 - 400	1.20
Vanadium	4.2	J	180	J	SD-UM-02	352 / 352	0.073 - 87	43
Zinc	15.2	J	8750	J	SD-CB-04-03	347 / 352	0.16 - 634	1165
Total Combustible Organics (mg/Kg)	1390	J	912000	J	SD-12-01-ME	77 / 80	117 - 2000	195505
Total Organic Carbon (mg/Kg)	602	J	815000	J	SD-WH-07-TR	133 / 139	114 - 18500	105378

N/A = Not Applicable or Not Available
 J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-18
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT REFERENCE LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	17.5	J	680		SD-MC-02	4 / 22	10 - 46	52
Acetone	23	J	2200	J	SD-MC-02	12 / 24	10 - 220	185
cis-1,2-Dichloroethene						0 / 10	7 - 46	9.3
Tetrachloroethene						0 / 24	7 - 69	9.7
Trichloroethene						0 / 24	7 - 46	8.2
SVOCs - ug/Kg								
2-Methylnaphthalene	22	J	360	J	SD-24-02-FW	6 / 26	67 - 3100	257
Acenaphthylene	22	J	800	J	SD-24-02-FW	10 / 26	67 - 3100	304
Anthracene	48	J	1900	J	SD-24-02-FW	13 / 26	67 - 3100	406
Benzo(a)anthracene	110	J	5900		SD-24-02-FW	18 / 26	67 - 1000	1151
Benzo(a)pyrene	130	J	5500		SD-24-02-FW	18 / 26	67 - 1000	1117
Benzo(b)fluoranthene	150	J	10000		SD-24-02-FW	23 / 26	67 - 1000	1534
Benzo(g,h,i)perylene	190	J	2200	J	SD-25-02-FW	11 / 26	67 - 1000	511
Benzo(k)fluoranthene	400	J	9600		SD-24-02-FW	16 / 26	67 - 1000	1420
Carbazole	48	J	990	J	SD-24-02-FW	8 / 24	230 - 3100	327
Chrysene	140	J	7300		SD-24-02-FW	18 / 26	67 - 1000	1389
Dibenz(a,h)anthracene	110	J	1100	J	SD-25-02-FW	11 / 26	67 - 1000	289
Dibenzofuran	120	J	1000	J	SD-24-02-FW	5 / 24	230 - 3100	309
Fluoranthene	71	J	15000		SD-24-02-FW	24 / 26	67 - 1000	2547
Fluorene	44	J	2800		SD-24-02-FW	11 / 26	67 - 3100	378
Indeno(1,2,3-cd)pyrene	160	J	3700	J	SD-25-02-FW	14 / 26	67 - 1000	685
Naphthalene	23	J	520	J	SD-24-02-FW	6 / 26	67 - 3100	272
N-nitrosodiphenylamine						0 / 24	230 - 3100	319
Phenanthrene	170	J	12000		SD-24-02-FW	18 / 26	67 - 1000	1534
Pyrene	81	J	11000		SD-24-02-FW	19 / 26	67 - 1000	2067
PCBs/Pesticides - ug/Kg								
4,4'-DDD	1.1	J	390		SD-24-03-ME	20 / 26	0.32 - 31	48
4,4'-DDE	1.6	J	470	J	SD-MC-01	19 / 26	0.32 - 31	30
4,4'-DDT	2.1	J	180	J	SD-MC-01	16 / 26	0.32 - 30	22
Aldrin	0.29	J	1.6	J	SD-24-02-FW	3 / 26	0.16 - 16	2.7
alpha-Chlordane	1.3	J	69	J	SD-MC-03	6 / 26	0.16 - 15	6.6
Aroclor 1248	56	J	290	J	SD-24-03-ME	2 / 26	3 - 310	65
Aroclor 1254						0 / 26	3 - 310	52
Aroclor 1260	47		200		SD-24-03-ME	2 / 26	3 - 310	61
beta-BHC	0.4	J	0.75	J	SD-23-01-FW	2 / 26	0.16 - 16	2.7
delta-BHC						0 / 26	0.16 - 16	2.8
Endosulfan I	0.22	J	66	J	SD-25-02-FW	8 / 26	0.16 - 14	6.3
Endosulfan Sulfate	6.6		11	J	SD-25-02-FW	3 / 26	0.32 - 30	5.2
Endrin Aldehyde	1.1	J	5.9	J	SD-24-03-ME	3 / 21	0.32 - 31	6.8
gamma-Chlordane	0.31	J	4.6		SD-24-03-FW	6 / 26	0.16 - 16	2.9
Metals - mg/Kg								
Aluminum	1100		20200		SD-MC-03-TR	27 / 27	3.4 - 9.14	8581
Antimony	0.5	J	5.6		SD-MC-04-TR	20 / 27	0.062 - 1.4	1.01
Arsenic	2.5		44.5		SD-MC-04-TR	27 / 27	0.21 - 1	17
Barium	5.7		173		SD-MC-04-TR	27 / 27	0.018 - 0.4	57
Beryllium	0.15		1.3	J	SD-MC-03-TR	24 / 27	0.027 - 0.22	0.56
Cadmium	0.08699		6.1		SD-MC-04	20 / 27	0.0044 - 0.6	1.34
Chromium	8.9		512		SD-MC-04-TR	27 / 27	0.053 - 1	89
Cobalt	0.76		21.8	J	SD-MC-04-TR	27 / 27	0.36 - 0.37	8.5
Copper	1.9		344		SD-MC-04-TR	27 / 27	0.08 - 0.44	63
Cyanide						0 / 14	0.52 - 1.4	0.39
Iron	2040		51600		SD-MC-04-TR	27 / 27	0.55 - 1.4	16345
Lead	5.6	J	755	J	SD-25-02-FW	27 / 27	0.26 - 0.6	194
Manganese	12.6	J	1980		SD-MC-04-TR	27 / 27	0.018 - 0.24	368
Mercury	0.021	J	0.71		SD-24-03-ME	19 / 26	0.005 - 0.08	0.19
Nickel	1.1		32.1		SD-MC-03-TR	27 / 27	0.14 - 0.8	15
Selenium	0.88	J	3.2	J	SD-25-02-FW	9 / 27	0.049 - 1.1	0.81
Silver	0.085	J	2.9		SD-24-03-FW	8 / 26	0.0088 - 1	0.50
Thallium	1		2.2		SD-25-02-FW	2 / 26	0.038 - 2	0.50
Vanadium	2.5		148		SD-24-03-FW	27 / 27	0.071 - 0.64	35
Zinc	10.4	J	645	J	SD-MC-03-TR	27 / 27	0.16 - 1.7	195
Total Combustible Organics (mg/Kg)	2810		427000		SD-23-03-FW	8 / 8	2000	109001
Total Organic Carbon (mg/Kg)	7650		370000	J	SD-MC-02	19 / 19	250	129647

N/A = Not Applicable or Not Available
 J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-19
AQUATIC PHYSICAL AND CHEMICAL PARAMETERS-ABERJONA RIVER STUDY AREA
WELLS G&H SUPERFUND SITE OU3

Reach	Station ¹	Date	pH	Temp (°C)	Specific Conductivity (umhos/cm)	DO ² (mg/L)	Hardness ³ (mg/L)
1	10	8/23/95	7.4	22.3	850	7.85	208
1	11	8/24/95	6.8	19.6	820	6.30	231
1	12	8/31/95	7.6	16.9	930	6.20	270
1	13	9/1/95	7.0	22.7	990	6.00	248
1	14	9/5/95	7.4	19.6	1000	9.40	266
1	15	9/5/95	7.0	21.9	1000	5.96	240
1	18	9/7/95	7.1	18.5	900	7.88	247
2	8	8/21/95	6.8	18.4	620	4.75	163
2	9	8/22/95	6.9	19.3	695	5.21	175
2	16	8/23/95	6.9	16.3	650	5.16	181
3	7	8/18/95	6.8	25.3	465	4.44	152
4	6	8/18/95	6.6	24.1	640	6.95	142
5	5	8/17/95	6.4	25.0	560	5.12	136
6	1	8/15/95	8.1	26.0	520	4.88	94
6	2	8/16/95	7.8	30.0	475	4.60	106
6	3	8/16/95	7.8	26.5	460	5.43	100
6	4	8/17/95	6.6	27.1	550	1.03	112

Notes:

¹ Data collected at the -01 sampling location within each station.

² DO - dissolved oxygen

³ Hardness was measured as mg/L calcium carbonate

TABLE 4-20
INVERTEBRATES OBSERVED WITHIN THE ABERJONA RIVER STUDY AREA

WELLS G&H SUPERFUND SITE OU3

Common Name	Scientific Name/Taxon
Aquatic earthworms	Oligochaeta
Aquatic sowbug	<i>Caedotea</i> sp.
Aquatic mite	<i>Limnochares</i> sp.
Backswimmer	<i>Notonecta undulata</i>
Bryozoan	<i>Pectinatella magnifica</i>
Caddisfly	Trichoptera
Cladoceran	<i>Chydorus</i> sp.
Cladoceran	<i>Hyocryptus sordidus</i>
Crayfish	<i>Orconectes</i> sp.
Cyclopoid copepod	Cyclopoidae
Cyclopoid copepod	<i>Mesocyclops</i> sp.
Damselfly nymph	<i>Argia</i> sp.
Daphnia	<i>Daphnia</i> sp.
Dragonfly (skimmer)	<i>Libellula</i> sp.
Dragonfly nymph	Anisoptera nymph
Fingernail clam	Sphaeriidae
Flatworm	Planariidae
Freshwater scud	<i>Gammarus</i> sp.
Kirby's backswimmer	<i>Notonecta kirbyi</i>
Leech	Hirudinea
Long-legged water strider	<i>Gerris</i> sp.
Midge larvae	Chironomidae
Mosquito larvae	Culicidae
Nematodes	Nematoda
Pond snail	<i>Gyraulus</i> sp.
Pond snail	<i>Physa</i> sp.
Predaceous diving beetle	<i>Thermonectus</i> sp.
Stonefly larvae	Plecoptera
Water boatman	<i>Corixa</i> sp.

TABLE 4-21
PLANTS OBSERVED WITHIN THE ABERJONA RIVER STUDY AREA
WELLS G&H SUPERFUND SITE OU3

Common Name	Scientific Name/Taxon
Trees	
American Elm	<i>Ulmus americanus</i>
Alder Buckthorn	<i>Rhamnus frangula</i>
Black cherry	<i>Prunus serotina</i>
Black willow	<i>Salix nigra</i>
Boxelder	<i>Acer negundo</i>
Elm	<i>Ulmus</i> sp.
Gray birch	<i>Betula lutea</i>
Northern red oak	<i>Quercus rubra</i>
Red maple	<i>Acer rubrum</i>
Shadbush	<i>Amelanchier canadensis</i>
Silver maple	<i>Acer saccharinum</i>
Sugar maple	<i>Acer saccharum</i>
Shrubs	
Alder	<i>Alnus</i> sp.
Alder buckthorn	<i>Rhamnus frangula</i>
Arrowwood	<i>Viburnum dentatum</i>
Bramble	<i>Rubus</i> sp.
Buttonbush	<i>Cephalanthus occidentalis</i>
Elderberry	<i>Sambucus canadensis</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Hobble bush	<i>Viburnum alnifolium</i>
Poison sumac	<i>Rhus vernix</i>
Silky dogwood	<i>Cornus amomum</i>
Spicebush	<i>Lindera benzoin</i>
Staghorn sumac	<i>Rhus typhina</i>
Steeplebush	<i>Spiraea tomentosa</i>
Swamp azalea	<i>Rhododendron viscosum</i>
Swamp rose	<i>Rosa palustris</i>
Willow	<i>Salix</i> sp.
Herbaceous Plants	
Arrow arum	<i>Peltandra virginica</i>
Arrowhead	<i>Sagittaria</i> sp.
Broad-leaved arrowhead	<i>Sagittaria latifolia</i>
Burreed	<i>Sparganium</i> sp.
Broad-leaved cattail	<i>Typha latifolia</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Clearweed	<i>Pilea pumila</i>
Common nightshade	<i>Solanum nigrum</i>
Common reed	<i>Phragmites</i> sp.

TABLE 4-21 (continued)
PLANTS OBSERVED WITHIN THE ABERJONA RIVER STUDY AREA

WELLS G&H SUPERFUND SITE OU3

Common Name	Scientific Name/Taxon
Herbaceous Plants (continued)	
Common rush	<i>Amorpha fruticosa</i>
Curly leaf pondweed	<i>Potamogeton crispus</i>
Dodder	<i>Cuscuta gronovii</i>
Duckweed	<i>Lemna minor</i>
False indigo	<i>Amorpha fruticosa</i>
Field horsetail	<i>Equisetum arvense</i>
Grasses	<i>Graminae</i>
Hayscented fern	<i>Dennstaedtia punctilobula</i>
Marsh cress	<i>Rorippa islandica</i>
Meadow-rue	<i>Thalictrum polygamum</i>
Morning-glory	<i>Ipomoea</i> sp.
Mosses	<i>Musci</i>
Pickerelweed	<i>Pontederia</i> sp.
Poison ivy	<i>Rhus radicans</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Richardson Common Name	<i>Potamogeton richardsonii</i>
Royal fern	<i>Osmunda regalis</i>
Rushes	<i>Scirpus</i> spp.
Sedges	<i>Carex</i> spp.
Sensitive fern	<i>Onoclea sensibilis</i>
Skunk cabbage	<i>Symplocarpus foetidus</i>
Smartweed	<i>Polygonum</i> sp.
Soft-stemmed bulrush	<i>Scirpus validus</i>
Sphagnum moss	<i>Sphagnum</i> sp.
Spikerush	<i>Eleocharis</i> sp.
Spotted jewelweed	<i>Impatiens capensis</i>
Swamp milkweed	<i>Asclepias incarnata</i>
Tussock sedge	<i>Carex stricta</i>
Waterweed	<i>Elodea canadensis</i>
White water-lilly	<i>Nymphaea odorata</i>
Winterberry	<i>Ilex verticillata</i>
Wood horsetail	<i>Equisetum sylvaticum</i>
Vines	
Grape	<i>Vitis</i> sp.
Virginia Creeper	<i>Parthenocissus quinquefolia</i>

TABLE 4-22
VERTEBRATES OBSERVED WITHIN THE ABERJONA RIVER STUDY AREA
WELLS G&H SUPERFUND SITE OU3

Common Name	Scientific Name/Taxon
Amphibians	
American toad	<i>Bufo americanus</i>
Bullfrog	<i>Rana catesbeiana</i>
Green frog	<i>Rana clamitans melanota</i>
Reptiles	
Eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>
Eastern painted turtle	<i>Chrysemys picta picta</i>
Snapping turtle	<i>Chelydra serpentina</i>
Birds	
American goldfinch	<i>Spinus tristis</i>
Barn swallow	<i>Hirundo rustica</i>
Black-capped chickadee	<i>Parus atricapillus</i>
Blue jay	<i>Cyanocitta cristata</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Canada goose	<i>Branta canadensis</i>
Common crow	<i>Corvus brachyrhynchos</i>
Common grackle	<i>Quiscalus quiscula</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great blue heron	<i>Ardea herodias</i>
Green heron	<i>Butorides striatus</i>
Herring gull	<i>Larus argentatus</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning dove	<i>Zenaida macroura</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Ring-neck pheasant	<i>Phasianus colchicus</i>
Song sparrow	<i>Melospiza melodia</i>
Starling	<i>Sturnus vulgaris</i>
Tufted titmouse	<i>Parus bicolor</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
Yellow-shafted flicker	<i>Colaptes auratus</i>
Yellow warbler	<i>Dendroica petechia</i>
Mammals	
Eastern chipmunk	<i>Tamias striatus</i>
Gray squirrel	<i>Sciurus carolinensis</i>
Muskrat	<i>Castor canadensis</i>
Beaver	<i>Ondatra zibethicus</i>
Raccoon	<i>Procyon lotor</i>
Woodchuck	<i>Marmota monax</i>

TABLE 4-23
SUMMARY OF THE EXPOSURE CHARACTERIZATION FOR THE ABERJONA RIVER STUDY AREA AND REFERENCE LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Receptor Group of Concern	Target Species/Endpoint	Aberjona River Study Area			Reference Locations		
		Exposure area	Data sets	Exposure scenarios	Exposure area	Data sets	Exposure scenarios
wildlife	green heron	-site-wide	- site-wide crayfish tissue - site-wide fish tissue - site-wide surface water - site-wide sediment ³	- average case - 95% UCLs	- all reference combined	- all reference crayfish tissue - all reference fish tissue - all reference surface water - all reference sediment ³	- average case - 95% UCLs
	mallard duck	- 38-acre wetland ¹	- reach 1 crayfish tissue - reach 1 plant tissue ² - reach 1 surface water - reach 1 sediment	- average case - 95% UCLs	- all reference combined	- all reference crayfish tissue - all reference surface water - all reference plant tissue ² - all reference sediment ³	- average case - 95% UCLs
		- site-wide	- site-wide crayfish tissue - site-wide plant tissue ² - site-wide surface water - site-wide sediment	- average case - 95% UCLs			
muskrat	exposure based on individual sampling stations across all the reaches	- sediment data by station - plant tissue by station ² - crayfish tissue for the reach - surface water for the reach	- average case	reference areas by habitat - lake - river - wetland	- sediment data by habitat - plant tissue by habitat ² - all reference crayfish data - all reference surface water	- average case	
terrestrial/riparian mammal	shrew	exposure based on individual sampling stations across all the reaches	- sediment data by station - invertebrate tissue by station ⁴ - surface water for the reach	- average case - 95% UCLs	- all wetland reference stations	- single wetland reference stations (station 24)	- average case - 95% UCLs
piscivorous fish	largemouth bass	- by reach	- whole body, fillet and offal tissue concentrations	- average case	- all reference	- all reference fish (Horn pond and Wright's pond)	- average case
bottom-feeding fish	white sucker	- by reach	- whole body, fillet and offal tissue concentrations	- average case	- all reference	- all reference fish (Horn pond and Wright's pond)	- average case

TABLE 4-23
SUMMARY OF THE EXPOSURE CHARACTERIZATION FOR THE ABERJONA RIVER STUDY AREA AND REFERENCE LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

forage fish	pumpkinseed sunfish	- by reach	- whole body tissue concentrations	- average case	- all reference	- all reference fish (Horn pond and Wright's pond)	- average case
benthic invertebrate community	sediment benchmarks	- by reach	- sediment data by reach	- average case - 95% UCLs - maximum detected	reference areas by habitat - lake - river - wetland	- sediment data by habitat	- average case - 95% UCLs - maximum detected
	crayfish tissue	- by reach	- crayfish tissue samples by reach	- average case	- all reference	- all reference crayfish (Lubbar Brook)	- average case
	<i>H. azteca</i> & <i>C. tentans</i>	- 15 triad stations	- chronic and acute laboratory toxicity tests	- 10 day acute/42 day chronic - 10-day acute/chronic life cycle	- 5 reference triad stations	- chronic and acute laboratory toxicity tests	n/a
	benthic community composition	- 15 triad stations	- species/abundance data	n/a	- 5 reference triad stations	- species/abundance data	n/a

¹ The 38-acre wetland corresponds to the area of Reach 1

² Plant tissue concentrations calculated by multiplying sediment concentration by site-specific uptake factor

³ Sediment data was used to calculate incidental sediment ingestion, only

⁴ Invertebrate tissue concentrations estimated from sediment concentrations and concentration factors

TABLE 4-24
COPCs DETECTED IN PLANT TISSUE
WELLS G&H SUPERFUND SITE OU3

Detected COPCs	Frequency of Detection Site-wide	Average Concentration Site-wide	Maximum Detected Concentration Site-wide	Frequency of Detection Reference	Average Concentration Reference	Maximum Detected Concentration Reference
Semivolatile Organics (u g/kg-wet weight)						
Benzo(a)pyrene	1/6	150	77	0/2	ND	ND
Benzo(b)fluoranthene	4/6	103	100	0/2	ND	ND
Benzo(k)fluoranthene	3/6	123	120	0/2	ND	ND
Chrysene	3/6	119	98	0/2	ND	ND
Fluoranthene	6/6	54	120	0/2	ND	ND
Indeno(1,2,3-cd)pyrene	1/6	148	63	0/2	ND	ND
Phenanthrene	2/6	121	38	0/2	ND	ND
Pyrene	5/6	87	110	0/2	ND	ND
Pesticides/PCBs (u g/kg-wet weight)						
4,4'-DDD	3/6	0.4	1.1	2/2	0.0050	0.0052
4,4'-DDE	6/6	0.7	1.2	2/2	0.0009	0.0009
4,4'-DDT	1/6	0.5	0.6	1/2	0.0006	0.0006
<i>alpha</i> -Chlordane	6/6	1.4	2.3	2/2	0.0004	0.0005
Aroclor-1260	6/6	7.0	8.9	0/2	ND	ND
Endosulfan I	1/6	0.3	0.4	0/2	ND	ND
Endrin aldehyde	4/6	1.0	2.9	0/2	ND	ND
<i>gamma</i> -Chlordane	6/6	0.5	0.6	0/2	ND	ND
Inorganics (mg/kg-wet weight)						
Aluminum	6/6	256	348	2/2	77	84
Arsenic	6/6	10.2	15.9	2/2	1.5	1.5
Barium	6/6	3.4	4.1	2/2	5.0	5.2
Cadmium	6/6	0.5	0.8	2/2	0.1	0.1
Chromium	6/6	31.4	71.2	2/2	0.5	0.6
Cobalt	6/6	1.0	2.2	2/2	0.5	0.5
Copper	6/6	16.1	27.1	2/2	1.0	1.0
Iron	6/6	1448	2270	2/2	974	1010
Lead	6/6	11.5	13.9	2/2	3.2	3.3
Manganese	6/6	61.8	109	2/2	151	158
Mercury	6/6	0.1	0.3	0/2	ND	ND
Nickel	6/6	0.7	1.5	1/2	0.1	0.1
Selenium	1/6	0.3	0.6	0/2	ND	ND
Vanadium	6/6	1.4	2.1	2/2	0.7	0.8
Zinc	6/6	107	149	2/2	21	22

ND - Not detected

TABLE 4-25
COPCs IN CRAYFISH TISSUE
WELLS G&H SUPERFUND SITE OU3

Detected COPCs	Frequency of Detection	Average Concentration	Maximum Detected Concentration ¹	95% UCL / Max Detected Concentration ²	95% UCL Ref ³	Frequency of Detection at Reference Locations	Average Concentration at Reference Locations	Max Detected Concentration at Reference Locations ¹	95% UCL Concentration at Reference Locations	95% UCL Ref
Pesticides/PCBs (µg/kg-wet weight)										
4,4'-DDD	6 / 8	2.4	4.1	3.3	2	2 / 2	0.79	0.94	0.94	*1
4,4'-DDE	6 / 8	5.0	8.2	6.9	2	2 / 2	4.7	5.3	5.3	*1
4,4'-DDT	8 / 8	1.2	2.2	1.5	3	0 / 2	0.49	0.0	0.0	*1
Aldrin	4 / 8	0.28	0.31	0.31	*2	0 / 2	0.25	0.0	0.0	*1
alpha-Chlordane	6 / 8	0.93	1.8	1.2	2	0 / 2	0.25	0.0	0.0	*1
Aroclor-1248	0 / 8	2.6	0.0	2.9	2	0 / 2	2.5	0.0	0.0	*1
Aroclor-1254	7 / 8	16	24	20	2	0 / 2	2.5	0.0	0.0	*1
Aroclor-1260	8 / 8	26	41	34	2	2 / 2	5.2	5.2	5.2	*1
beta-BHC	0 / 8	0.28	0.0	0.31	2	0 / 2	0.25	0.0	0.0	*1
delta-BHC	0 / 8	0.27	0.0	0.29	2	0 / 2	0.25	0.0	0.0	*1
Endosulfan I	1 / 8	0.38	0.54	0.50	2	0 / 2	0.25	0.0	0.0	*1
Endosulfan sulfate	4 / 8	0.76	1.4	0.99	2	0 / 2	0.49	0.0	0.0	*1
Endrin aldehyde	8 / 8	2.0	3.1	2.7	2	0 / 2	0.49	0.0	0.0	*1
gamma-Chlordane	5 / 8	0.40	0.83	0.56	3	0 / 2	0.25	0.0	0.0	*1
Inorganics (mg/kg-wet weight)										
Aluminum	8 / 8	50	73	59	2	2 / 2	9.8	10	10	*1
Antimony	0 / 7	0.048	0.0	0.052	2	0 / 1	0.048	0.0	0.0	*1
Arsenic	7 / 8	2.2	4.4	3.1	2	0 / 2	0.19	0.0	0.0	*1
Barium	2 / 8	10	18	13	2	2 / 2	15	18	18	*1
Beryllium	0 / 8	0.0054	0.0	0.0062	2	0 / 2	0.0044	0.0	0.0	*1
Cadmium	7 / 7	0.070	0.16	0.10	2	2 / 2	0.080	0.090	0.090	*1
Chromium	8 / 8	1.1	2.5	1.6	2	1 / 1	0.18	0.18	0.18	*1
Cobalt	8 / 8	0.44	0.65	0.54	2	2 / 2	0.42	0.44	0.44	*1
Copper	8 / 8	50	65	57	2	2 / 2	20	21	21	*1
Cyanide	0 / 8	0.24	0.0	0.26	2	0 / 2	0.22	0.0	0.0	*1
Iron	8 / 8	345	645	463	2	2 / 2	66	78	78	*1
Lead	8 / 8	0.78	1.5	1.1	2	0 / 2	0.033	0.0	0.0	*1
Manganese	8 / 8	99	146	122	2	2 / 2	106	108	108	*1
Mercury	1 / 8	0.0092	0.020	0.012	2	0 / 2	0.0055	0.0	0.0	*1
Nickel	0 / 8	0.085	0.0	0.10	2	0 / 1	0.16	0.0	0.0	*1
Selenium	8 / 8	0.41	0.56	0.48	2	1 / 2	0.16	0.24	0.24	*1
Silver	2 / 8	0.032	0.064	0.047	3	1 / 2	0.16	0.21	0.21	*1
Thallium	1 / 8	0.083	0.19	0.11	2	0 / 2	0.065	0.0	0.0	*1
Vanadium	0 / 7	0.15	0.0	0.19	2	N/A	N/A	N/A	N/A	N/A
Zinc	8 / 8	25	29	28	2	2 / 2	18	18	18	*1

N/A = Not Applicable or Not Available

UCL = Upper Confidence Limit

¹ Zero values represent compounds that were not detected

² The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

³ 95% UCL References * Maximum detected value is shown

- | | | | |
|----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small to calculate 95% UCL (<4) | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-26
COPCs DETECTED IN SMALL FISH TISSUE
WELLS G&H SUPERFUND SITE OU3**

Detected COPCs	Frequency of Detection	Average Concentration	Maximum Detected Concentration	Frequency of Detection at Reference Locations	Average Concentration at Reference Locations	Maximum Detected Concentration at Reference Locations
Pesticides/PCBs (u g/kg-wet weight)						
4,4'-DDD	29/30	24.3	45.0	5/6	2.1	3.2 J
4,4'-DDE	27/30	30.9	59.0	6/6	13.3	24
4,4'-DDT	26/30	5.6	12.0	3/6	2.1	2.5 J
Aldrin	9/30	2.5	3.1	0/6	ND	ND
<i>alpha</i> -Chlordane	28/30	18.2	42.0	4/6	1.1	1.3 J
Aroclor-1248	6/30	30.0	47.0	0/6	ND	ND
Aroclor-1260	30/30	67.5	110.0	6/6	19.3	33
<i>beta</i> -BHC	1/30	2.7	1.4	0/6	ND	ND
<i>delta</i> -BHC	2/30	2.5	1.4	0/6	ND	ND
Endosulfan I	6/30	2.6	2.5	2/6	1.3	0.88 J
Endosulfan sulfate	4/30	5.1	2.6	0/6	ND	ND
Endrin aldehyde	7/30	5.0	4.9	0/6	ND	ND
<i>gamma</i> -Chlordane	29/30	8.3	20.0	0/6	ND	ND
Inorganics (mg/kg-wet weight)						
Aluminum	19/33	10.2	66.7	0/6	ND	ND
Antimony	1/29	0.1	0.1	0/6	ND	ND
Arsenic	3/33	0.3	1.4	0/6	ND	ND
Barium	5/33	1.1	1.8	0/6	ND	ND
Cadmium	31/32	0.03	0.1	3/6	0.016	0.018 J
Chromium	32/33	0.4	0.7	4/6	0.302	0.35 J
Cobalt	17/33	0.1	0.1	3/6	0.046	0.05 J
Copper	29/33	1.0	1.7	1/6	0.565	0.71 J
Iron	30/33	54.3	236	4/6	42.8	50.4 J
Lead	10/33	0.2	0.7	0/6	ND	ND
Manganese	1/33	12.6	35.6	1/6	19.1	37 J
Mercury	17/33	0.03	0.054	4/6	0.064	0.098 J
Selenium	33/33	0.7	1.0	6/6	0.62	0.68 J
Silver	0/33	ND	ND	1/6	0.038	0.035 J
Zinc	33/33	26.5	42.0	6/6	27.9	38.3 J

**TABLE 4-27
PLANT UPTAKE FACTORS**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Uptake Factor¹ Station 18	Uptake Factor Station 20	Uptake Factor Station 21	Uptake Factor Station 23	Average Uptake Factor	Reference Uptake Factor²	Reference Uptake Factor³
Semivolatile Organics							
Benzo(a)pyrene	0.947	1.441	1.310	1.269	1.242		
Benzo(b)fluoranthene	0.303	0.318	0.726	0.976	0.581		
Benzo(k)fluoranthene	0.583	3.393	NA	1.058	1.678		
Chrysene	0.573	0.657	1.241	1.104	0.893		
Fluoranthene	0.126	0.439	0.135	0.801	0.375		
Indeno(1,2,3-cd)pyrene	1.213	1.932	4.859	4.790	3.198		
Phenanthrene	1.339	4.678	1.943	0.769	2.182		
Pyrene	0.496	0.607	0.164	0.690	0.489		
Pesticides/PCBs							
4,4'-DDD	0.731	0.250	0.115	0.529	0.406		
4,4'-DDE	0.390	0.346	0.164	0.473	0.343		
4,4'-DDT	2.096	1.877	0.787	0.391	1.288		
alpha-Chlordane	0.814	0.276	0.323	1.758	0.793		
Aroclor-1260	0.487	0.636	0.150	0.726	0.500		
Endosulfan I	3.567	0.112	0.050	1.413	1.285		
Endrin aldehyde	2.158	5.015	1.413	1.422	2.502		
gamma-Chlordane	0.394	0.415	0.107	2.089	0.751		
Metals							
Aluminum	0.169	0.126	0.083	0.146	0.131		
Arsenic	0.183	0.457	0.145	0.885	0.418	0.04	0.037
Barium	0.377	0.300	0.188	2.163	0.757		
Cadmium	0.421	0.274	0.184	2.444	0.831	0.55	0.514
Chromium	0.227	0.141	0.053	0.171	0.148		
Cobalt	0.411	0.199	0.193	1.947	0.687		
Copper	0.193	0.170	0.110	1.102	0.393	0.40	0.123
Iron	0.370	0.401	0.286	1.523	0.645		
Lead	0.242	0.136	0.150	2.286	0.704	0.045	0.038
Manganese	0.530	1.221	1.004	14.673	4.357		
Mercury	0.074	0.301	0.170	0.557	0.276	0.90	0.344
Nickel	0.351	0.124	0.110	0.222	0.202	0.06	0.034
Selenium	0.297	0.249	0.765	1.303	0.653	0.025	0.567
Vanadium	0.314	0.165	0.125	0.482	0.272		
Zinc	0.391	0.299	0.228	9.231	2.537	1.50	0.358

¹ Plant uptake factors calculated from the ratio of average COPC concentration in plant tissue to average COPC concentration in sediment (dry wt:dry wt)

² Baes et al. (1984)

³ Bechtel Jacobs, Co. (1998)

TABLE 4-28
EXPOSURE FACTORS FOR MUSKRAT
WELLS G&H SUPERFUND SITE OU3

CHARACTER	VALUE	SOURCE	COMMENT
BODY WEIGHT	0.837 kg	Reeves and Williams (1956) <i>cited in</i> USEPA (1993d)	Adult female
FOOD CONSUMPTION RATE	0.071 kg food (dry) / kg body weight (wet) - day	Nagy (1987) <i>in</i> Sample <i>et al.</i> (1997)	Assuming 0.837 kg body weight
WATER CONSUMPTION RATE	0.101 L / kg body weight (wet) - day	Calder and Braun (1983) <i>cited in</i> Sample <i>et al.</i> (1997)	Assuming 0.837 kg body weight
SEDIMENT INGESTION	equivalent to 3.3% of diet	Beyer <i>et al.</i> (1994)	Value for mallard
COMPOSITION OF DIET	90% plant, 10% animal	Martin <i>et al.</i> (1951) and USEPA (1993d)	A portion of the muskrat diet may be animal matter. Ten percent was selected as a conservative value for the Aberjona River Study area. Site-specific crayfish tissue data were used to represent COPC concentrations in the animal portion of the diet.
% MOISTURE IN DIET	crayfish = 76.7%, plants = 87.3%	site-specific	Average % moistures
AREAL SITE USE FACTOR	1	USEPA (1993d)	Home range smaller than study area
TEMPORAL SITE USE FACTOR	1		No migration

TABLE 4-29
EXPOSURE FACTORS FOR HERON
WELLS G&H SUPERFUND SITE OU3

CHARACTER	VALUE	SOURCE	COMMENT
BODY WEIGHT	0.212 kg (wet)	Dunning (1993) <i>cited in Sample et al. (1997)</i>	Adult, sex not given
FOOD CONSUMPTION RATE	0.19 kg food (wet) / kg body weight (wet) - day	Kushlan (1978) <i>cited in Sample et al. (1997)</i>	Assuming 0.212 kg body weight
WATER CONSUMPTION RATE	0.098 L / kg body weight (wet) - day	Calder and Braun (1983) <i>cited in Sample et al. (1997)</i>	Assuming 0.212 kg body weight
SEDIMENT INGESTION	equivalent to 1% of diet	Sample <i>et al.</i> (1997) indicate that sediment ingestion likely to be negligible for heron.	One percent conservatively assumed for Aberjona River Study Area.
COMPOSITION OF DIET	45% fish, 55% invertebrates	Meyerriecks (1962) <i>cited in Sample et al. (1997)</i>	Site-specific crayfish tissue used to represent COPC concentrations in the invertebrate portion of diet.
% MOISTURE IN DIET	fish = 75.3%, crayfish = 76.7%	site-specific	Average % moistures
AREAL SITE USE FACTOR	1	(USEPA, 1993d)	Home range assumed to be equivalent to or smaller than study area.
TEMPORAL SITE USE FACTOR	0.5	(USEPA, 1993d)	Migrates, present on-site approximately six months per year.

TABLE 4-30
EXPOSURE FACTORS FOR MALLARD
WELLS G&H SUPERFUND SITE OU3

CHARACTER	VALUE	SOURCE	COMMENT
BODY WEIGHT	1.043 kg (wet)	Nelson and Martin (1953) <i>cited in</i> USEPA (1993d)	Adult female
FOOD CONSUMPTION RATE	0.057 kg (dry) / kg body weight (wet) - day	Nagy (1987) <i>cited in</i> Sample <i>et al.</i> (1997)	Assuming 1.043 kg body weight
WATER CONSUMPTION RATE	0.058 L / kg body weight (wet)	Calder and Braun (1983) <i>cited in</i> Sample <i>et al.</i> (1997)	Assuming 1.043 kg body weight
SEDIMENT INGESTION	equivalent to 3.3% of diet	Beyer <i>et al.</i> (1994)	
COMPOSITION OF DIET	67% invertebrates, 33% plants	Swanson <i>et al.</i> (1985) <i>cited in</i> USEPA (1993d)	Site-specific crayfish tissue data used to represent COPC concentration in invertebrate portion of diet.
% MOISTURE IN DIET	crayfish = 76.7%, plants = 87.3%	site-specific	Average % moistures
AREAL SITE USE FACTOR	1	USEPA (1993d)	Home range assumed to be equivalent to or smaller than study area.
TEMPORAL SITE USE FACTOR	0.5	USEPA (1993d)	Migrates, present on-site approximately six months per year.

TABLE 4-31
EXPOSURE FACTORS FOR SHREW
WELLS G&H SUPERFUND SITE OU3

CHARACTER	VALUE	SOURCE	COMMENT
BODY WEIGHT	0.015 kg (wet)	Schlessinger and Potter (1994) <i>cited in</i> Sample and Suter (1994)	Adult
FOOD CONSUMPTION RATE	0.6 kg food (wet) / kg body weight (wet) - day	Sample and Suter (1994)	Assuming 0.015 kg body weight
WATER CONSUMPTION RATE	0.22 L / kg body weight (wet) - day	Chew (1951) <i>cited in</i> Sample and Suter (1994)	Assuming 0.015 kg body weight
SEDIMENT INGESTION	equivalent to 13% of diet	Talmage and Walton (1993) <i>cited in</i> Sample and Suter (1994)	
COMPOSITION OF DIET	31.4% earthworms	Whitaker and Ferraro (1963) <i>cited in</i> Sample and Suter (1994)	Remainder of diet assumed to contain significantly lower COPC burdens
% MOISTURE IN DIET	84% (water content of earthworms)	Sample and Suter (1994)	
AREAL SITE USE FACTOR	1	USEPA (1993d)	Home range smaller than study area
TEMPORAL SITE USE FACTOR	1		No migration

**TABLE 4-32
APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES**

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
01	6	lake	SD-01-01-FW	8/15/1995	1.0	x	x	x		x	
			SD-01-02-FW	8/15/1995	4.0	x				x	
			SD-01-03-FW	8/15/1995	1.0	x	x	x		x	
			SD-01-04-FW	8/15/1995	4.0	x				x	
			SD-01-05-FW	8/15/1995	1.0	x	x	x		x	
			SD-01-06-FW	8/15/1995	5.0	x				x	
			SD-01-06-ME	11/12/1997	7.0					x	
			SD-01-07-FW	8/15/1995	6.0					x	
			SD-01-07-ME	11/12/1997	8.0					x	
			SD-01-08-FW	8/15/1995	1.0	x	x	x		x	
			SD-01-09-FW	8/15/1995	5.0	x				x	
SD-01-10-FW	8/15/1995	6.0					x				
02	6	lake	SD-02-01-FW	8/16/1995	1.5	x		x		x	
			SD-02-01-ME	11/13/1997	5.0	x				x	
			SD-02-02-FW	8/16/1995	4.9	x				x	
			SD-02-02-ME	11/13/1997	7.0					x	
			SD-02-03-FW	8/16/1995	1.0 or 3.3	x	x	x		x	
03	6	lake	SD-03-01-FW	8/16/1995	1.6	x	x	x		x	
			SD-03-02-FW	8/16/1995	2.5	x	x	x		x	
			SD-03-02-ME	11/13/1997	1.5	x	x	x		x	
			SD-03-03-FW	8/16/1995	0.3	x	x	x		x	
04	6	lake	SD-04-01-FW	8/17/1995	4.9	x				x	
			SD-04-02-FW	8/17/1995	4.9	x				x	
			SD-04-02-ME	11/14/1997	7.0					x	
			SD-04-03-FW	8/17/1995	3.3	x				x	
			SD-04-03-ME	11/14/1997	7.0					x	
			SD-AO-01	7/18/2000	4.7	x				x	
			SD-AO-02	7/18/2000	4.4	x				x	
			SD-AO-03	7/18/2000	4.5	x				x	
			SD-AO-03-TR	6/27/2001	5.0	x				x	
			SD-AO-04	7/18/2000	6.3					x	
SD-AO-05	7/18/2000	5.5					x				
05	5	river	SD-05-01-FW	8/17/1995	1.0	x	x	x		x	
			SD-05-02-FW	8/17/1995	N/A	x	x	x		x	
			SD-05-03-FW	8/17/1995	2.0	x	x	x		x	
			SD-05-03-ME	11/13/1997	3.0	x	x	x		x	
06	4	lake	SD-06-01-FW	8/18/1995	3.3	x				x	
			SD-06-02-FW	8/18/1995	3.3	x				x	
			SD-06-03-FW	8/18/1995	3.3	x				x	
			SD-06-03-ME	11/18/1997	4.0	x				x	
			SD-06-03-TR	6/26/2001	3.8	x				x	
			SD-JP-01	7/10/2000	4.0	x				x	
07	3	lake	SD-07-01-FW	8/18/1995	NA	x				x	
			SD-07-02-FW	8/21/1995	5.0	x				x	
			SD-07-02-ME	11/20/1997	3.4	x				x	
			SD-07-03-FW	8/21/1995	NA	x				x	
			SD-07-04-FW	8/29/1995	NA	x				x	
			SD-07-05-FW	8/21/1995	2.0	x	x	x		x	
			SD-07-05-ME	11/20/1997	1.2	x	x	x		x	
			SD-07-06-FW	8/21/1995	4.0	x				x	
			SD-07-07-FW	8/21/1995	1.5	x	x	x		x	
			SD-07-08-FW	8/21/1995	1.5	x	x	x		x	
			SD-07-09-FW	8/21/1995	1.0	x	x	x		x	
SD-07-10-FW	8/21/1995	1.0	x	x	x		x				
SD-07-10-ME	11/19/1997	2.0	x	x	x		x				

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**TABLE 4-32
 APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES**

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
08	2	river	SD-08-01-FW	8/21/1995	1.0	x	x	x		x	
			SD-08-02-FW	8/21/1995	1.5	x	x	x		x	
			SD-08-03-FW	8/21/1995	1.5	x	x	x		x	
09	2	river	SD-09-01-FW	8/22/1995	1.0	x	x	x		x	
			SD-09-02-FW	8/22/1995	NA	x	x	x		x	
			SD-09-03-FW	8/22/1995	0.5	x	x	x		x	
			SD-09-04-FW	8/22/1995	1.0	x	x	x		x	
			SD-09-05-FW	8/22/1995	1.0	x	x	x		x	
			SD-09-06-FW	8/22/1995	1.5	x	x	x		x	
			SD-09-07-FW	8/22/1995	2.0	x	x	x		x	
			SD-09-08-FW	8/22/1995	2.0	x	x	x		x	
			SD-09-09-FW	8/22/1995	0.5	x	x	x		x	
			SD-09-10-FW	8/22/1995	0.5	x	x	x		x	
10	1	river	SD-10-01-FW	8/23/1995	2.0	x	x	x		x	
			SD-10-01-ME	11/19/1997	2.0	x	x	x		x	
			SD-10-02-FW	8/23/1995	NA	x	x	x		x	
			SD-10-02-ME	11/19/1997	2.0	x	x	x		x	
			SD-10-02-TR	6/22/2001	1.4	x	x	x		x	
			SD-10-03-FW	8/23/1995	1.5	x	x	x		x	
11	1	river	SD-11-01-ME	11/14/1997	0.5	x	x	x		x	
			SD-11-02-FW	8/24/1995	2.0 or 2.5	x	x	x		x	
			SD-11-03-FW	8/24/1995	2.0 or 2.5	x	x	x		x	
12	1	river	SD-12-01-FW	8/31/1995	1.0	x	x	x		x	
			SD-12-02-FW	8/31/1995	NA	x	x	x		x	
			SD-12-03-FW	8/31/1995	0.5	x	x	x		x	
			SD-12-03-ME	11/20/1997	5.0	x	x	x		x	
			SD-12-03-TR	6/19/2001	4.5	x	x	x		x	
13	1	wetland	SD-13-01-FW	9/1/1995	0.3	x	x	x		x	
			SD-13-01-ME	11/17/1997	2.0	x	x	x		x	
			SD-13-01-TR	6/22/2001	0.3	x	x	x		x	
			SD-13-02-FW	9/1/1995	0.3	x	x	x		x	
			SD-13-03-FW	9/1/1995	0.0	x	x	x		x	
			SD-13-03-ME	11/17/1997	2.0	x	x	x		x	
14	1	river	SD-14-01-FW	9/5/1995	1.0	x				x	
			SD-14-02-FW	9/5/1995	1.0	x				x	
			SD-14-03-FW	9/5/1995	1.5	x				x	
15	1	wetland	SD-15-01-FW	9/5/1995	0.5	x	x	x		x	
			SD-15-01-ME	11/17/1997	2.5	x	x	x		x	
			SD-15-02-FW	9/5/1995	0.5	x	x	x		x	
			SD-15-03-FW	9/5/1995	0.5	x	x	x		x	
16	2	river	SD-16-01-FW	8/29/1995	NA	x	x	x		x	
			SD-16-02-FW	8/23/1995	1.0	x	x	x		x	
			SD-16-03-FW	8/23/1995	1.5	x	x	x		x	
18	1	river	SD-18-01-FW	8/29/1995	NA	x	x	x		x	
			SD-18-02-FW	9/7/1995	0.2	x	x	x		x	
			SD-18-02-ME	11/18/1997	0.5	x	x	x		x	
			SD-18-02-TR	6/21/2001	1.1	x	x	x		x	
			SD-18-03-FW	9/7/1995	0.4	x	x	x		x	
			SD-18-03-ME	11/18/1997	0.3	x	x	x		x	
			SD-11-01-FW	8/24/1995	2.0	x	x	x		x	
19	1	wetland	SD-19-01-FW	8/31/1995	0.0	x	x	x		x	
			SD-19-01-TR	6/19/2001	0.8	x	x	x		x	
			SD-19-02-FW	8/31/1995	0.0	x	x	x		x	
			SD-19-03-FW	8/31/1995	0.0	x	x	x		x	
20	1	wetland	SD-20-01-FW	9/7/1995	0.0	x	x	x	x	x	
			SD-20-01-ME	11/17/1997	2.0	x	x	x		x	
			SD-20-02-FW	9/7/1995	0.0	x	x	x	x	x	
			SD-20-03-FW	9/7/1995	0.0	x	x	x	x	x	

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TABLE 4-32
 APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
21	1	wetland	SD-21-01-FW	9/8/1995	0.0	x	x	x	x	x	
			SD-21-01-ME	11/14/1997	1.0	x	x	x	x	x	
			SD-21-02-FW	9/8/1995	0.0	x	x	x	x	x	
			SD-21-03-FW	9/8/1995	0.0	x	x	x	x	x	
22/TT-22	1	wetland	SD-22-01-FW	9/8/1995	0.0				x	x	
			SD-22-01-TR	6/18/2001	0.2				x	x	
			SD-22-02-FW	9/8/1995	0.0				x	x	
			SD-22-02-ME	11/12/1997	0.0				x	x	
			SD-22-03-FW	9/8/1995	0.0				x	x	
			SD-TT-22-01	2/7/2001	0.5				x	x	
			SD-TT-22-02	2/7/2001	0.5				x	x	
			SD-TT-22-03	2/7/2001	1.0				x	x	
AM	2	river	SD-AM-01	7/10/2000	1.0	x	x	x		x	(a)
AS	3	river	SD-AS-01	7/10/2000	1.0	x	x	x		x	(a)
			SD-AS-02	7/10/2000	1.5	x	x	x		x	(a)
BW	1	wetland	SD-BW-01	7/17/2002	0.0	x	x	x	x	x	
			SD-BW-02	7/17/2002	0.0	x	x	x	x	x	
			SD-BW-03	7/17/2002	0.0	x	x	x	x	x	
			SD-BW-04	7/17/2002	0.0	x	x	x	x	x	
			SD-BW-05	7/17/2002	0.0	x	x	x	x	x	
			SD-12-01-ME	11/20/1997	1.0	x	x	x	x	x	
CB-01	2	wetland	SD-CB-01-01	2/9/2001	0.5	x	x	x	x	x	(a)
			SD-CB-01-02	2/9/2001	0.5	x	x	x	x	x	(a)
			SD-CB-01-03	2/9/2001	0.3	x	x	x	x	x	(a)
			SD-CB-01-04	2/9/2001	0.3	x	x	x	x	x	(a)
			SD-CB-01-05	2/9/2001	0.7	x	x	x	x	x	(a)
			SD-CB-01-06	2/9/2001	0.2	x	x	x	x	x	(a)
			SD-CB-01-07	2/9/2001	0.5	x	x	x	x	x	(a)
			SD-CB-01-08	2/9/2001	0.7	x	x	x	x	x	(a)
			SD-CB-01-09	2/9/2001	0.5	x	x	x	x	x	(a)
			SD-CB-01-10	2/9/2001	0.3	x	x	x	x	x	(a)
CB-02	2	wetland	SD-CB-02-01	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-02-02	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-02-03	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-02-04	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-02-05	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-02-06	2/8/2001	0.7	x	x	x	x	x	(a)
			SD-CB-02-07	2/8/2001	0.8	x	x	x	x	x	(a)
			SD-CB-02-08	2/8/2001	0.9	x	x	x	x	x	(a)
			SD-CB-02-09	2/8/2001	0.9	x	x	x	x	x	(a)
			SD-CB-02-10	2/8/2001	1.2	x	x	x	x	x	(a)
CB-03	2	wetland	SD-CB-03-01	2/9/2001	0.7	x	x	x	x	x	(a)
			SD-CB-03-02	2/9/2001	1.0	x	x	x	x	x	(a)
			SD-CB-03-03	2/9/2001	1.2	x	x	x	x	x	(a)
			SD-CB-03-04	2/8/2001	1.0	x	x	x	x	x	(a)
			SD-CB-03-05	2/8/2001	0.7	x	x	x	x	x	(a)
			SD-CB-03-06	2/8/2001	0.3	x	x	x	x	x	(a)
			SD-CB-03-07	2/8/2001	0.7	x	x	x	x	x	(a)
			SD-CB-03-08	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-03-09	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-03-10	2/8/2001	0.5	x	x	x	x	x	(a)
			SD-CB-03-11	2/8/2001	0.3	x	x	x	x	x	(a)
			SD-CB-03-12	2/8/2001	0.7	x	x	x	x	x	(a)

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TABLE 4-32
 APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
CB-04	2	wetland	SD-CB-04-01	7/11/2002	< 1.0	x	x	x	x	x	(a)
			SD-CB-04-02	7/11/2002	0.0	x	x	x	x	x	(a)
			SD-CB-04-03	7/11/2002	0.0	x	x	x	x	x	(a)
			SD-CB-04-04	7/11/2002	0.0	x	x	x	x	x	(a)
			SD-CB-04-05	7/11/2002	< 1.0	x	x	x	x	x	(a)
			SD-CB-04-06	7/11/2002	0.0	x	x	x	x	x	(a)
			SD-CB-04-07	7/11/2002	0.0	x	x	x	x	x	(a)
			SD-CB-04-08	7/11/2002	< 1.0	x	x	x	x	x	(a)
			SD-CB-04-09	7/11/2002	< 1.0	x	x	x	x	x	(a)
			SD-CB-04-10	7/11/2002	< 1.0	x	x	x	x	x	(a)
CB-05	2	riparian	SO-CB-05-01	7/11/2002	0.0				x		(a)
			SO-CB-05-02	7/11/2002	0.0				x		(a)
			SO-CB-05-03	7/11/2002	0.0				x		(a)
			SO-CB-05-04	7/11/2002	0.0				x		(a)
			SO-CB-05-05	7/11/2002	0.0				x		(a)
			SO-CB-05-06	7/11/2002	0.0				x		(a)
			SO-CB-05-07	7/11/2002	0.0				x		(a)
			SO-CB-05-08	7/11/2002	0.0				x		(a)
			SO-CB-05-09	7/11/2002	0.0				x		(a)
			SO-CB-05-10	7/11/2002	0.0				x		(a)
CB-06	2	wetland	SD-CB-06-01	7/11/2002	< 0.5	x		x	x	x	(a)
			SD-CB-06-02	7/11/2002	< 1.0	x		x	x	x	(a)
			SD-CB-06-03	7/11/2002	< 1.0	x		x	x	x	(a)
			SD-CB-06-04	7/11/2002	< 1.0	x		x	x	x	(a)
			SD-CB-06-05	7/11/2002	0.0	x		x	x	x	(a)
			SD-CB-06-06	7/11/2002	< 1.0	x		x	x	x	(a)
			SD-CB-06-07	7/11/2002	< 0.5	x		x	x	x	(a)
			SD-CB-06-08	7/11/2002	< 1.0	x		x	x	x	(a)
			SD-CB-06-09	7/11/2002	< 0.5	x		x	x	x	(a)
			SD-CB-06-10	7/11/2002	0.0	x		x	x	x	(a)
DA	2	riparian	SO-DA-01	7/11/2002	0.0				x		(a)
			SO-DA-02	7/11/2002	0.0				x		(a)
			SO-DA-03	7/11/2002	0.0				x		(a)
			SO-DA-04	7/11/2002	0.0				x		(a)
			SO-DA-05	7/11/2002	0.0				x		(a)
NRSE	1	wetland	SD-NR-01	9/4/2002	0.1	x		x	x	x	(a)
			SD-NR-02	9/4/2002	0.1	x		x	x	x	(a)
			SD-NR-03	9/4/2002	0.0	x		x	x	x	(a)
			SD-NR-04	9/4/2002	0.0	x		x	x	x	(a)
			SD-NR-05	9/4/2002	0.1	x		x	x	x	(a)
JY	1	wetland	SD-JY-06	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-07	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-08	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-09	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-10	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-11	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-12	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-13	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-14	7/18/2002	0.0	x		x	x	x	(a)
			SD-JY-15	7/18/2002	0.0	x		x	x	x	(a)
NRSO	1	riparian	SO-NR-16	9/4/2002	0.0				x		(a)
			SO-NR-17	9/4/2002	0.0				x		(a)
			SO-NR-18	9/4/2002	0.0				x		(a)
			SO-NR-19	9/4/2002	0.0				x		(a)
			SO-NR-20	9/4/2002	0.0				x		(a)

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**TABLE 4-32
APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES**

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes	
						Muskrat	Heron	Mallard	Shrew	Invertebrates		
KFSE	2	river	SD-KF-01	9/4/2002	0.3	x	x	x		x	(a)	
			SD-KF-02	9/4/2002	0.3	x	x	x		x	(a)	
			SD-KF-03	9/4/2002	0.3	x	x	x		x	(a)	
			SD-KF-04	9/4/2002	0.2	x	x	x		x	(a)	
			SD-KF-05	9/4/2002	0.3	x	x	x		x	(a)	
			SD-KF-06	9/4/2002	0.5	x	x	x		x	(a)	
			SD-KF-07	9/4/2002	0.0	x	x	x		x	(a)	
			SD-KF-08	9/4/2002	0.2	x	x	x		x	(a)	
			SD-KF-09	9/4/2002	0.8	x	x	x		x	(a)	
			SD-KF-10	9/4/2002	0.3	x	x	x		x	(a)	
KFSO	2	riparian	SO-KF-01	9/4/2002	0.0				x		(a)	
			SO-KF-02	9/4/2002	0.0				x		(a)	
			SO-KF-03	9/4/2002	0.0				x		(a)	
			SO-KF-04	9/4/2002	0.0				x		(a)	
			SO-KF-05	9/4/2002	0.0				x		(a)	
			SO-KF-06	9/4/2002	0.0				x		(a)	
			SO-KF-07	9/4/2002	0.0				x		(a)	
			SO-KF-08	9/4/2002	0.0				x		(a)	
			SO-KF-09	9/4/2002	0.0				x		(a)	
			SO-KF-10	9/4/2002	0.0				x		(a)	
LF	6	lake	SD-LF-01	7/17/2000	5.2					x	(a)	
			SD-LF-02	7/17/2000	6.8						x	(a)
LM	6	lake	SD-LM-01	7/17/2000	75.0					x	(a)	
			SD-LM-02	7/17/2000	37.0						x	(a)
			SD-LM-03	7/17/2000	52.0						x	(a)
LP	3	river	SD-LP-01	7/12/2002	1.5	x	x	x		x	(a)	
			SD-LP-02	7/12/2002	1.0	x	x	x		x	(a)	
			SD-LP-03	7/12/2002	1.5	x	x	x		x	(a)	
			SD-LP-04	7/12/2002	1.0	x	x	x		x	(a)	
			SD-LP-05	7/12/2002	2.0	x	x	x		x	(a)	
			SD-LP-06	7/12/2002	1.0	x	x	x		x	(a)	
			SD-LP-07	7/12/2002	1.5	x	x	x		x	(a)	
			SD-LP-08	7/12/2002	2.0	x	x	x		x	(a)	
			SD-LP-09	7/12/2002	0.0	x	x	x		x	(a)	
			SD-LP-10	7/12/2002	0.3	x	x	x		x	(a)	
			SD-LP-11	9/13/2002	0.1	x	x	x		x	(a)	
			SD-LP-12	9/13/2002	0.0	x	x	x		x	(a)	
			SD-LP-13	9/13/2002	0.0	x	x	x		x	(a)	
			SD-LP-14	9/13/2002	0.0	x	x	x		x	(a)	
			SD-LP-15	9/13/2002	0.0	x	x	x		x	(a)	
MP	4	lake	SD-MP-01	7/10/2000	2.2			x		x	(a)	
			SD-MP-02	7/10/2000	2.0			x		x	(a)	
WSS	1	riparian	SO-SS-01	7/12/2002	0.0				x		(a)	
			SO-SS-02	7/12/2002	0.0				x		(a)	
			SO-SS-03	7/12/2002	0.0				x		(a)	
			SO-SS-04	7/12/2002	0.0				x		(a)	
			SO-SS-05	7/12/2002	0.0				x		(a)	
TT-28	1	river	SD-TT-28-01	2/7/2001	1.0	x	x	x		x	(a)	
			SD-TT-28-02	2/7/2001	1.0	x	x	x		x	(a)	
			SD-TT-28-03	2/7/2001	1.0	x	x	x		x	(a)	
TT-29	1	river	SD-TT-29-01	2/12/2001	2.0	x	x	x		x	(b)	
			SD-TT-29-02	2/12/2001	1.5	x	x	x		x	(b)	
			SD-TT-29-03	2/12/2001	1.5	x	x	x		x	(b)	
			SD-TT-29-03-TR	6/19/2001	1.0	x	x	x		x	(b)	
TT-30	2	river	SD-TT-30-01	2/12/2001	0.5	x	x	x		x		
			SD-TT-30-01-TR	6/22/2001	0.6	x	x	x		x		
			SD-TT-30-02	2/12/2001	0.5	x	x	x		x		
			SD-TT-30-03	2/12/2001	0.5	x	x	x		x		

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**TABLE 4-32
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Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
TT-31	2	wetland	SD-TT-31-01	2/12/2001	0.3	x		x		x	(a)
			SD-TT-31-02	2/12/2001	0.8	x		x		x	(a)
			SD-TT-31-03	2/12/2001	0.5	x		x		x	(a)
TT-32	2	river	SD-TT-32-01	2/9/2001	0.8	x	x	x		x	(a)
			SD-TT-32-02	2/9/2001	0.5	x	x	x		x	(a)
			SD-TT-32-02-TR	6/20/2001	0.6	x	x	x		x	(a)
			SD-TT-32-03	2/9/2001	0.3	x	x	x		x	(a)
TT-33	2	river	SD-TT-33-01	2/8/2001	0.3	x	x	x		x	
			SD-TT-33-02	2/8/2001	0.5	x	x	x		x	
			SD-TT-33-02-TR	6/20/2001	0.5	x	x	x		x	
			SD-TT-33-03	2/8/2001	0.3	x	x	x		x	
UF	6	lake	SD-UF-01	7/18/2000	4.5	x				x	
			SD-UF-02	7/18/2000	5.6					x	
			SD-UF-02-TR	6/27/2001	7.1					x	
			SD-UF-03	7/18/2000	3.7	x				x	
UM	6	lake	SD-UM-01	7/17/2000	85.0					x	(a)
			SD-UM-02	7/17/2000	78.0					x	(a)
			SD-UM-03	7/17/2000	52.0					x	(a)
WG	1	wetland	SD-WG-01	7/13/2000	0.3	x		x	x	x	
			SD-WG-02	7/13/2000	0.2	x		x	x	x	
			SD-WG-03	7/13/2000	0.0	x		x	x	x	
			SD-WG-04	7/13/2000	0.0	x		x	x	x	
			SD-WG-05	7/13/2000	0.3	x		x	x	x	
			SD-WG-06	7/13/2000	0.3	x		x	x	x	
			SD-WG-07	7/13/2000	0.2	x		x	x	x	
			SD-WG-08	7/13/2000	0.2	x		x	x	x	
			SD-WG-09	7/13/2000	0.0	x		x	x	x	
			SD-WG-10	7/13/2000	0.2	x		x	x	x	
			SD-WG-11	7/13/2000	0.0	x		x	x	x	
			SD-WG-12	7/13/2000	0.2	x		x	x	x	
			SD-WG-13	7/13/2000	0.0	x		x	x	x	
			SD-WG-14	7/13/2000	0.0	x		x	x	x	
			SD-WG-15	7/13/2000	0.2	x		x	x	x	
			SD-WG-16	7/13/2000	0.0	x		x	x	x	
			SD-WG-17	7/13/2000	0.0	x		x	x	x	
			SD-WG-18	7/13/2000	0.0	x		x	x	x	
			SD-WG-19	7/13/2000	0.0	x		x	x	x	
			SD-WG-20	7/13/2000	0.0	x		x	x	x	
			SD-19-01-ME	11/19/1997	0.3	x		x	x	x	
WH	1	wetland	SD-WH-01	7/12/2000	0.2	x		x	x	x	
			SD-WH-02	7/12/2000	0.3	x		x	x	x	
			SD-WH-03	7/12/2000	0.2	x		x	x	x	
			SD-WH-04	7/12/2000	0.3	x		x	x	x	
			SD-WH-05	7/12/2000	0.2	x		x	x	x	
			SD-WH-06	7/12/2000	0.2	x		x	x	x	
			SD-WH-07	7/12/2000	0.1	x		x	x	x	
			SD-WH-07-TR	6/18/2001	1.2	x		x	x	x	
			SD-WH-08	7/12/2000	0.2	x		x	x	x	
			SD-WH-09	7/12/2000	0.3	x		x	x	x	
SD-WH-10	7/12/2000	0.3	x		x	x	x				

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APPLICABILITY OF SEDIMENT SAMPLES TO EXPOSURE SCENARIOS FOR INDICATOR SPECIES**

WELLS G&H SUPERFUND SITE OU3

Station	Reach	Habitat	Sample ID	Date Sampled	Standing Water Depth (ft)	Applicability of Samples/Stations to Ecological Exposures ¹					Notes
						Muskrat	Heron	Mallard	Shrew	Invertebrates	
WS	1	river	SD-WS-01	7/11/2000	0.3	x	x	x	x	x	(a)
			SD-WS-02	7/11/2000	0.2	x	x	x	x	x	(a)
			SD-WS-03	7/11/2000	0.1	x	x	x	x	x	(a)
			SD-WS-04	7/11/2000	0.2	x	x	x	x	x	(a)
			SD-WS-05	7/11/2000	0.2	x	x	x	x	x	(a)
			SD-WS-06	7/11/2000	0.2	x	x	x	x	x	(a)
			SD-WS-07	7/11/2000	0.3	x	x	x	x	x	(a)
			SD-WS-08	7/11/2000	0.2	x	x	x	x	x	(a)
			SD-WS-09	7/11/2000	0.1	x	x	x	x	x	(a)
			SD-WS-10	7/11/2000	0.2	x	x	x	x	x	(a)
WW	1	wetland	SD-WW-01	11/28/2000		x		x		x	(c)
			SD-WW-02	11/28/2000		x		x		x	(c)
			SD-WW-03	11/28/2000		x		x		x	(c)
			SD-WW-04	11/28/2000		x		x		x	(c)
			SD-WW-05	11/28/2000		x		x		x	(c)
			SD-WW-06	11/28/2000		x		x		x	(c)
			SD-WW-06-TR	6/21/2001	0.8	x		x		x	(c)
			SD-WW-07	11/28/2000		x		x		x	(c)
			SD-WW-08	11/28/2000		x		x		x	(c)
			SD-WW-08	2/6/2001		x		x		x	(c)
			SD-WW-09	11/28/2000		x		x		x	(c)
			SD-WW-10	11/28/2000		x		x		x	(c)
			SD-WW-11	11/28/2000		x		x		x	(c)
SD-WW-12	11/28/2000		x		x		x	(c)			
REFERENCE											
01-IP		river	SD-MC-01	6/21/1999	0.3	x	x	x		x	
			SD-MC-01-TR	6/25/2001	0.3	x	x	x		x	
02-IP		pond	SD-MC-02	6/21/1999	2.0	x	x	x		x	
03-IP		pond	SD-MC-03	6/18/1999	9.2					x	
			SD-MC-03-TR	6/25/2001	13.0						x
04-IP		river	SD-MC-04	6/17/1999	NA	x	x	x		x	
			SD-MC-04-TR	6/26/2001	0.4	x	x	x		x	
12-IP		river	SD-MC-12	6/17/1999	0.3	x	x	x		x	
23		river	SD-23-01-FW	8/30/1995	NA	x	x	x		x	
			SD-23-02-FW	8/30/1995	1.5	x	x	x		x	
			SD-23-03-FW	8/30/1995	1.0	x	x	x		x	
24		wetland	SD-24-01-FW	8/30/1995	0.7	x	x	x	x	x	
			SD-24-02-FW	8/30/1995	1.0	x	x	x	x	x	
			SD-24-03-FW	8/30/1995	NA	x	x	x	x	x	
			SD-24-03-ME	11/12/1997	1.0	x	x	x	x	x	
25		lake	SD-25-01-FW	9/11/1995	3.5	x	x	x		x	
			SD-25-02-FW	9/11/1995	4.0	x	x	x		x	
			SD-25-02-ME	11/18/1997	NA	x	x	x		x	
			SD-25-03-FW	9/11/1995	3.0	x	x	x		x	
26		lake	SD-26-01-FW	9/11/1995	3.0	x	x	x		x	
			SD-26-02-FW	9/11/1995	2.5	x	x	x		x	
			SD-26-03-FW	9/11/1995	2.5	x	x	x		x	
27		river	SD-27-01-FW	9/12/1995	2.5	x	x	x		x	
			SD-27-02-FW	9/12/1995	1.5	x	x	x		x	
			SD-27-03-FW	9/12/1995	1.5	x	x	x		x	
HB		wetland	SD-HB-00-TR	6/26/2001	0.8	x	x	x	x	x	
SA		wetland	SD-SA-01-TR	6/25/2001	0.7	x	x	x	x	x	

(a) Data includes Inorganics only
 (b) Data includes Acetone and Inorganics only
 (c) <1 ft water (most WW <6" water)

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**TABLE 4-33
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT REACH 1
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 6	5	2.5	0.0	*1
Acetone						0 / 6	5	2.5	0.0	*1
cis-1,2-Dichloroethene	1		1.0		SW-11-01	1 / 6	1	0.58	0.75	2
Tetrachloroethene						0 / 6	1	0.5	0.0	*1
Trichloroethene						0 / 6	1	0.5	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 7	5	2.5	0.0	*1
Acenaphthylene						0 / 7	5	2.5	0.0	*1
Anthracene						0 / 7	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 7	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 7	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 7	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 7	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 7	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	NA	N/A
Chrysene						0 / 7	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 7	5	2.5	0.0	*1
Dibenzofuran						0 / 7	5	2.5	0.0	*1
Fluoranthene						0 / 7	5	2.5	0.0	*1
Fluorene						0 / 7	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 7	5	2.5	0.0	*1
Naphthalene						0 / 7	5	2.5	3.1	13
N-nitrosodiphenylamine						0 / 7	5	2.5	0.0	*1
Phenanthrene						0 / 7	5	2.5	0.0	*1
Pyrene						0 / 7	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 7	0.1	0.05	0.0	*1
4,4'-DDE						0 / 7	0.1	0.05	0.0	*1
4,4'-DDT						0 / 7	0.1	0.05	0.0	*1
Aldrin						0 / 7	0.05	0.025	0.0	*1
alpha-Chlordane	0.0021	J	0.0021	J	SW-12-01	1 / 7	0.05	0.022	0.0021	*13
Aroclor 1248						0 / 7	1.0	0.5	0.0	*1
Aroclor 1254						0 / 7	1.0	0.5	0.0	*1
Aroclor 1260						0 / 7	1.0	0.5	0.0	*1
beta-BHC						0 / 7	0.05	0.025	0.0	*1
delta-BHC						0 / 7	0.05	0.025	0.0	*1
Endosulfan I						0 / 7	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 7	0.1	0.05	0.0	*1
Endrin Aldehyde						0 / 7	0.1	0.05	0.0	*1
gamma-Chlordane	0.0014	J	0.0014	J	SW-11-01	1 / 7	0.05	0.022	0.0014	*15
Metals - ug/L										
Aluminum	37.9		2180		SW-10-01	5 / 7	31.1 - 36.9	386	2180	*4
Antimony	1.5		1.5		SW-10-01	1 / 7	1.1 - 1.2	0.7	0.95	2
Arsenic	11.6		77.1		SW-10-01	7 / 7	N/A	25	46	3
Barium	31.2		54.4		SW-10-01	7 / 7	N/A	37	43	3
Beryllium	0.18		0.18		SW-10-01	1 / 7	0.035 - 0.1	0.06	0.15	13
Cadmium	0.16		2.5		SW-10-01	2 / 7	0.1 - 0.15	0.4	2.5	*15
Chromium	2.2		146		SW-10-01	7 / 7	N/A	26	59	6
Cobalt	0.68999		4.8		SW-10-01	6 / 7	1.5	1.5	3.9	13
Copper	3.6		111		SW-10-01	7 / 7	N/A	22	71	3
Cyanide						0 / 7	5	2.5	0.0	*1
Iron	972		8470		SW-10-01	7 / 7	N/A	2401	6849	13
Lead	0.93999		75.9	J	SW-10-01	4 / 7	0.74 - 0.85	13	76	*4
Manganese	316		691		SW-10-01	7 / 7	N/A	470	579	2
Mercury	0.12		0.88		SW-10-01	3 / 7	0.08 - 0.095	0.20	0.61	3
Nickel	2		6.2		SW-10-01	7 / 7	N/A	2.8	3.9	2
Selenium						0 / 7	1.5 - 1.8	0.9	0.91	2
Silver						0 / 7	0.4 - 0.75	0.25	0.31	2
Thallium						0 / 7	1.5 - 1.7	0.78	0.81	2
Vanadium	0.4925	J	7.4		SW-10-01	7 / 7	N/A	1.9	6.1	5
Zinc	27.4	J	626	J	SW-10-01	7 / 7	N/A	128	626	*15

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-34
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT REACH 2
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 3	5	2.5	0.0	*1
Acetone						0 / 3	5	2.5	0.0	*1
cis-1,2-Dichloroethene	3		4.0		SW-16-01	2 / 3	1	2.50	4.0	*1
Tetrachloroethene						0 / 3	1	0.5	0.0	*1
Trichloroethene	2		2.0		SW-09-01	2 / 3	1	1.5	2.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 3	5	2.5	0.0	*1
Acenaphthylene						0 / 3	5	2.5	0.0	*1
Anthracene						0 / 3	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 3	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 3	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 3	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 3	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 3	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene						0 / 3	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 3	5	2.5	0.0	*1
Dibenzofuran						0 / 3	5	2.5	0.0	*1
Fluoranthene						0 / 3	5	2.5	0.0	*1
Fluorene						0 / 3	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 3	5	2.5	0.0	*1
Naphthalene						0 / 3	5	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 3	5	2.5	0.0	*1
Phenanthrene						0 / 3	5	2.5	0.0	*1
Pyrene						0 / 3	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 3	0.1	0.05	0.0	*1
4,4'-DDE						0 / 3	0.1	0.05	0.0	*1
4,4'-DDT						0 / 3	0.1	0.05	0.0	*1
Aldrin						0 / 3	0.05	0.025	0.0	*1
alpha-Chlordane						0 / 3	0.05	0.025	0.0	*1
Aroclor 1248						0 / 3	1.0	0.5	0.0	*1
Aroclor 1254						0 / 3	1.0	0.5	0.0	*1
Aroclor 1260						0 / 3	1.0	0.5	0.0	*1
beta-BHC						0 / 3	0.05	0.025	0.0	*1
delta-BHC						0 / 3	0.05	0.025	0.0	*1
Endosulfan I						0 / 3	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 3	0.1	0.05	0.0	*1
Endrin Aldehyde						0 / 3	0.1	0.05	0.0	*1
gamma-Chlordane						0 / 3	0.05	0.025	0.0	*1
Metals - ug/L										
Aluminum	40.2		325.5		SW-16-01	3 / 3	N/A	140	326	*1
Antimony						0 / 3	1.2	0.6	0.0	*1
Arsenic	6.8		19.75		SW-16-01	3 / 3	N/A	13	20	*1
Barium	29.2		35.75		SW-16-01	3 / 3	N/A	32	36	*1
Beryllium	0.043		0.043		SW-16-01	1 / 3	0.093 - 0.095	0.05	0.04	*1
Cadmium	0.23		0.23		SW-16-01	1 / 3	1.4 - 1.5	0.6	0.2	*1
Chromium	2.2		12.1		SW-16-01	3 / 3	N/A	6	12	*1
Cobalt	1.9		1.9		SW-16-01	1 / 3	0.61 - 1.5	1.0	1.9	*1
Copper	3.3		13.75		SW-16-01	3 / 3	N/A	7	14	*1
Cyanide						0 / 3	5	2.5	0.0	*1
Iron	693		1935		SW-16-01	3 / 3	N/A	1209	1935	*1
Lead	1.8		7.7	J	SW-16-01	2 / 3	0.85	3.3	7.7	*1
Manganese	356	J	777.5		SW-16-01	3 / 3	N/A	593	778	*1
Mercury	0.1475	J	0.1475	J	SW-16-01	1 / 3	0.2	0.12	0.15	*1
Nickel	1.3		2.2		SW-16-01	3 / 3	N/A	1.6	2.2	*1
Selenium						0 / 3	1.5	0.8	0.0	*1
Silver						0 / 3	0.75	0.38	0.0	*1
Thallium						0 / 3	1.7	0.85	0.0	*1
Vanadium	1.65		1.65		SW-16-01	1 / 3	1.1 - 1.2	0.9	1.7	*1
Zinc	37.7		91.75	J	SW-16-01	3 / 3	N/A	59	92	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-35
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT REACH 3
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 1	5	2.5	0.0	*1
Acetone						0 / 1	5	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 1	1	0.50	0.0	*1
Tetrachloroethene						0 / 1	1	0.5	0.0	*1
Trichloroethene						0 / 1	1	0.5	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 1	5	2.5	0.0	*1
Acenaphthylene						0 / 1	5	2.5	0.0	*1
Anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 1	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 1	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 1	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 1	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene						0 / 1	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 1	5	2.5	0.0	*1
Dibenzofuran						0 / 1	5	2.5	0.0	*1
Fluoranthene						0 / 1	5	2.5	0.0	*1
Fluorene						0 / 1	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 1	5	2.5	0.0	*1
Naphthalene						0 / 1	5	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 1	5	2.5	0.0	*1
Phenanthrene						0 / 1	5	2.5	0.0	*1
Pyrene						0 / 1	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 1	0.1	0.050	0.0	*1
4,4'-DDE						0 / 1	0.1	0.050	0.0	*1
4,4'-DDT						0 / 1	0.1	0.050	0.0	*1
Aldrin						0 / 1	0.05	0.025	0.0	*1
alpha-Chlordane						0 / 1	0.05	0.025	0.0	*1
Aroclor 1248						0 / 1	1.0	0.50	0.0	*1
Aroclor 1254						0 / 1	1.0	0.50	0.0	*1
Aroclor 1260						0 / 1	1.0	0.50	0.0	*1
beta-BHC						0 / 1	0.05	0.025	0.0	*1
delta-BHC						0 / 1	0.05	0.025	0.0	*1
Endosulfan I						0 / 1	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 1	0.1	0.050	0.0	*1
Endrin Aldehyde						0 / 1	0.1	0.050	0.0	*1
gamma-Chlordane						0 / 1	0.05	0.025	0.0	*1
Metals - ug/L										
Aluminum	129		129		SW-07-01	1 / 1	N/A	129	129	*1
Antimony	1.3		1.3		SW-07-01	1 / 1	N/A	1.3	1.3	*1
Arsenic						0 / 1	13.9	7.0	0.0	*1
Barium	33.9		33.9		SW-07-01	1 / 1	N/A	34	34	*1
Beryllium						0 / 1	0.1	0.050	0.0	*1
Cadmium						0 / 1	0.1	0.050	0.0	*1
Chromium	3.1		3.1		SW-07-01	1 / 1	N/A	3.1	3.1	*1
Cobalt						0 / 1	0.96	0.48	0.0	*1
Copper	3.6		3.6		SW-07-01	1 / 1	N/A	3.6	3.6	*1
Cyanide						0 / 1	5	2.5	0.0	*1
Iron	1920		1920		SW-07-01	1 / 1	N/A	1920	1920	*1
Lead	4.3		4.3		SW-07-01	1 / 1	N/A	4.3	4.3	*1
Manganese	585		585		SW-07-01	1 / 1	N/A	585	585	*1
Mercury	0.22	J	0.22	J	SW-07-01	1 / 1	N/A	0.22	0.22	*1
Nickel	1.7		1.7		SW-07-01	1 / 1	N/A	1.7	1.7	*1
Selenium						0 / 1	1.5	0.75	0.0	*1
Silver						0 / 1	0.74	0.37	0.0	*1
Thallium						0 / 1	1.7	0.85	0.0	*1
Vanadium	1.9		1.9		SW-07-01	1 / 1	N/A	1.9	1.9	*1
Zinc	18.9		18.9		SW-07-01	1 / 1	N/A	19	19	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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**TABLE 4-36
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SURFACE WATER AT REACH 4
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 1	5	2.5	0.0	*1
Acetone						0 / 1	5	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 1	1	0.50	0.0	*1
Tetrachloroethene						0 / 1	1	0.50	0.0	*1
Trichloroethene						0 / 1	1	0.50	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 1	5	2.5	0.0	*1
Acenaphthylene						0 / 1	5	2.5	0.0	*1
Anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 1	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 1	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 1	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 1	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene						0 / 1	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 1	5	2.5	0.0	*1
Dibenzofuran						0 / 1	5	2.5	0.0	*1
Fluoranthene						0 / 1	5	2.5	0.0	*1
Fluorene						0 / 1	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 1	5	2.5	0.0	*1
Naphthalene						0 / 1	5	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 1	5	2.5	0.0	*1
Phenanthrene						0 / 1	5	2.5	0.0	*1
Pyrene						0 / 1	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 1	0.1	0.050	0.0	*1
4,4'-DDE						0 / 1	0.1	0.050	0.0	*1
4,4'-DDT						0 / 1	0.1	0.050	0.0	*1
Aldrin						0 / 1	0.05	0.025	0.0	*1
alpha-Chlordane						0 / 1	0.05	0.025	0.0	*1
Aroclor 1248						0 / 1	1.0	0.50	0.0	*1
Aroclor 1254						0 / 1	1.0	0.50	0.0	*1
Aroclor 1260						0 / 1	1.0	0.50	0.0	*1
beta-BHC						0 / 1	0.05	0.025	0.0	*1
delta-BHC						0 / 1	0.05	0.025	0.0	*1
Endosulfan I						0 / 1	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 1	0.1	0.050	0.0	*1
Endrin Aldehyde						0 / 1	0.1	0.050	0.0	*1
gamma-Chlordane						0 / 1	0.05	0.025	0.0	*1
Metals - ug/L										
Aluminum	199		199		SW-06-01	1 / 1	N/A	199	199	*1
Antimony						0 / 1	1.2	0.60	0.0	*1
Arsenic						0 / 1	6.5	3.3	0.0	*1
Barium	32		32		SW-06-01	1 / 1	N/A	32	32	*1
Beryllium						0 / 1	0.097	0.049	0.0	*1
Cadmium						0 / 1	0.1	0.050	0.0	*1
Chromium	4.3		4.3		SW-06-01	1 / 1	N/A	4.3	4.3	*1
Cobalt						0 / 1	0.88	0.44	0.0	*1
Copper	5.2		5.2		SW-06-01	1 / 1	N/A	5.2	5.2	*1
Cyanide						0 / 1	5	2.5	0.0	*1
Iron	1180		1180		SW-06-01	1 / 1	N/A	1180	1180	*1
Lead	5.7		5.7		SW-06-01	1 / 1	N/A	5.7	5.7	*1
Manganese	504		504		SW-06-01	1 / 1	N/A	504	504	*1
Mercury						0 / 1	0.2	0.10	0.0	*1
Nickel	1.9		1.9		SW-06-01	1 / 1	N/A	1.9	1.9	*1
Selenium						0 / 1	1.5	0.75	0.0	*1
Silver						0 / 1	0.75	0.38	0.0	*1
Thallium						0 / 1	1.7	0.85	0.0	*1
Vanadium	1.5		1.5		SW-06-01	1 / 1	N/A	1.5	1.5	*1
Zinc	29.8		29.8		SW-06-01	1 / 1	N/A	30	30	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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**TABLE 4-37
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT REACH 5
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 1	5	2.5	0.0	*1
Acetone						0 / 1	5	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 1	1	0.50	0.0	*1
Tetrachloroethene	2		2		SW-05-01	1 / 1	N/A	2.0	2.0	*1
Trichloroethene						0 / 1	1	0.50	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 1	5	2.5	0.0	*1
Acenaphthylene						0 / 1	5	2.5	0.0	*1
Anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 1	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 1	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 1	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 1	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 1	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene						0 / 1	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 1	5	2.5	0.0	*1
Dibenzofuran						0 / 1	5	2.5	0.0	*1
Fluoranthene						0 / 1	5	2.5	0.0	*1
Fluorene						0 / 1	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 1	5	2.5	0.0	*1
Naphthalene						0 / 1	5	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 1	5	2.5	0.0	*1
Phenanthrene						0 / 1	5	2.5	0.0	*1
Pyrene						0 / 1	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 1	0.1	0.050	0.0	*1
4,4'-DDE						0 / 1	0.1	0.050	0.0	*1
4,4'-DDT						0 / 1	0.1	0.050	0.0	*1
Aldrin						0 / 1	0.05	0.025	0.0	*1
alpha-Chlordane						0 / 1	0.05	0.025	0.0	*1
Aroclor 1248						0 / 1	1.0	0.50	0.0	*1
Aroclor 1254						0 / 1	1.0	0.50	0.0	*1
Aroclor 1260						0 / 1	1.0	0.50	0.0	*1
beta-BHC						0 / 1	0.05	0.025	0.0	*1
delta-BHC						0 / 1	0.05	0.025	0.0	*1
Endosulfan I						0 / 1	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 1	0.1	0.050	0.0	*1
Endrin Aldehyde						0 / 1	0.1	0.050	0.0	*1
gamma-Chlordane						0 / 1	0.05	0.025	0.0	*1
Metals - ug/L										
Aluminum	27.3		27.3		SW-05-01	1 / 1	N/A	27	27	*1
Antimony						0 / 1	1.2	0.60	0.0	*1
Arsenic						0 / 1	3.4	1.7	0.0	*1
Barium	50.3		50.3		SW-05-01	1 / 1	N/A	50	50	*1
Beryllium						0 / 1	0.059	0.030	0.0	*1
Cadmium						0 / 1	0.1	0.050	0.0	*1
Chromium	0.85		0.85		SW-05-01	1 / 1	N/A	0.85	0.85	*1
Cobalt						0 / 1	0.4	0.20	0.0	*1
Copper	1.7		1.7		SW-05-01	1 / 1	N/A	1.7	1.7	*1
Cyanide						0 / 1	5	2.5	0.0	*1
Iron	376		376		SW-05-01	1 / 1	N/A	376	376	*1
Lead						0 / 1	0.84	0.42	0.0	*1
Manganese	320		320		SW-05-01	1 / 1	N/A	320	320	*1
Mercury						0 / 1	0.2	0.10	0.0	*1
Nickel	1.3		1.3		SW-05-01	1 / 1	N/A	1.3	1.3	*1
Selenium						0 / 1	1.5	0.75	0.0	*1
Silver						0 / 1	0.74	0.37	0.0	*1
Thallium						0 / 1	1.7	0.85	0.0	*1
Vanadium	0.68		0.68		SW-05-01	1 / 1	N/A	0.68	0.68	*1
Zinc	10.8		10.8		SW-05-01	1 / 1	N/A	11	11	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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**TABLE 4-38
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT REACH 6
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0/4	5	2.5	0.0	*1
Acetone						0/4	5	2.5	0.0	*1
cis-1,2-Dichloroethene						0/4	1	0.50	0.0	*1
Tetrachloroethene						0/4	1	0.5	0.0	*1
Trichloroethene						0/4	1	0.5	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0/4	5	2.5	0.0	*1
Acenaphthylene						0/4	5	2.5	0.0	*1
Anthracene						0/4	5	2.5	0.0	*1
Benzo(a)anthracene						0/4	5	2.5	0.0	*1
Benzo(a)pyrene						0/4	5	2.5	0.0	*1
Benzo(b)fluoranthene						0/4	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0/4	5	2.5	0.0	*1
Benzo(k)fluoranthene						0/4	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Chrysene						0/4	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0/4	5	2.5	0.0	*1
Dibenzofuran						0/4	5	2.5	0.0	*1
Fluoranthene						0/4	5	2.5	0.0	*1
Fluorene						0/4	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0/4	5	2.5	0.0	*1
Naphthalene						0/4	5	2.5	4.2	13
N-nitrosodiphenylamine						0/4	5	2.5	0.0	*1
Phenanthrene						0/4	5	2.5	0.0	*1
Pyrene						0/4	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0/4	0.1	0.050	0.0	*1
4,4'-DDE						0/4	0.1	0.050	0.0	*1
4,4'-DDT						0/4	0.1	0.050	0.0	*1
Aldrin						0/4	0.05	0.025	0.0	*1
alpha-Chlordane						0/4	0.05	0.025	0.0	*1
Aroclor 1248						0/4	1.0	0.50	0.0	*1
Aroclor 1254						0/4	1.0	0.50	0.0	*1
Aroclor 1260						0/4	1.0	0.50	0.0	*1
beta-BHC						0/4	0.05	0.025	0.0	*1
delta-BHC						0/4	0.05	0.025	0.0	*1
Endosulfan I						0/4	0.05	0.025	0.0	*1
Endosulfan Sulfate						0/4	0.1	0.050	0.0	*1
Endrin Aldehyde						0/4	0.1	0.050	0.0	*1
gamma-Chlordane						0/4	0.05	0.025	0.0	*1
Metals - ug/L										
Aluminum	47.7		426		SW-01-01	4/4	N/A	206	426	*2
Antimony						0/4	1.2	0.60	0.0	*1
Arsenic	2.8		5.2		SW-03-01	3/4	6.5	3.6	4.9	2
Barium	29.6		44.4		SW-04-01	4/4	N/A	38	44	*2
Beryllium	0.11		0.11		SW-04-01	1/4	0.035	0.041	0.11	*13
Cadmium						0/4	0.099 - 0.1	0.050	0.0	2
Chromium	0.72		3.7		SW-03-01	4/4	N/A	1.7	3.3	2
Cobalt	0.43		0.43		SW-01-01	1/4	0.4	0.26	0.39	2
Copper	2.2		6.8		SW-01-01	4/4	N/A	4.4	6.8	*2
Cyanide						0/4	5	2.5	0.0	*1
Iron	304		1080		SW-03-01	4/4	N/A	658	1041	2
Lead	1.7		7.5	J	SW-03-01	3/4	0.85	3.4	7.1	2
Manganese	70.9		317		SW-04-01	4/4	N/A	177	311	2
Mercury	0.04	J	0.069	J	SW-03-01	3/4	0.2	0.068	0.069	*2
Nickel	0.89		2		SW-01-01	4/4	N/A	1.4	1.9	2
Selenium						0/4	1.5	0.75	0.0	*1
Silver						0/4	0.74 - 0.75	0.37	0.38	3
Thallium						0/4	1.7	0.85	0.0	*1
Vanadium	0.58		1.3		SW-01-01	3/4	0.55	0.86	1.3	*2
Zinc	12.4		45.5		SW-01-01	3/4	4	22	45	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

TABLE 4-39
COPCs IN CRAYFISH TISSUE BY REACH
WELLS G&H SUPERFUND SITE OU3

COPCs	REACH 1		REACH 2 ¹	REACH 3 ¹	REACH 5 ¹
	Average Concentration	Maximum Detected Concentration ²	Average Concentration	Average Concentration	Average Concentration
Pesticides/PCBs (u g/kg-wet weight)					
4,4'-DDD	0.6	0.0	3.3	3.3	1.6
4,4'-DDE	1.0	0.0	8.0	5.8	4.6
4,4'-DDT	1.1	1.3	1.1	1.4	0.7
Aldrin	0.3	0.3	0.3	0.3	0.4
<i>alpha</i> -Chlordane	0.6	0.0	0.6	1.4	0.6
Aroclor-1248	2.5	0.0	2.5	2.5	3.6
Aroclor-1254	19.5	24.0	22.0	9.5	14.0
Aroclor-1260	21.5	28.0	41.0	23.7	10.6
<i>beta</i> -BHC	0.3	0.0	0.3	0.3	0.4
<i>delta</i> -BHC	0.3	0.0	0.3	0.3	0.4
Endosulfan I	0.6	0.0	0.3	0.3	0.5
Endosulfan sulfate	0.9	1.4	0.7	0.7	0.7
Endrin aldehyde	2.2	2.9	3.0	1.4	1.8
<i>gamma</i> -Chlordane	0.3	0.0	0.3	0.6	0.4
Inorganics (mg/kg-wet weight)					
Aluminum	47.9	49.1	52.7	58.3	23.9
Antimony	0.05	0.0	0.1	0.05	0.0
Arsenic	3.8	4.4	2.7	1.5	0.2
Barium	8.8	0.0	10.0	14.0	2.0
Beryllium	0.0	0.0	0.0	0.0	0.0
Cadmium	0.1	0.1	0.1	0.0	0.1
Chromium	0.9	1.0	2.2	0.9	0.2
Cobalt	0.5	0.6	0.5	0.4	0.3
Copper	54.4	59.6	62.3	41.2	40.6
Cyanide	0.3	0.0	0.2	0.2	0.2
Iron	578	645	343	277	88.3
Lead	0.5	0.6	1.0	1.0	0.2
Manganese	88.7	112.0	120.0	98.3	79.1
Mercury	0.01	0.00	0.01	0.01	0.01
Nickel	0.07	0.00	0.10	0.10	0.04
Selenium	0.3	0.4	0.4	0.4	0.5
Silver	0.04	0.1	0.02	0.03	0.06
Thallium	0.1	0.0	0.1	0.1	0.1
Vanadium	0.1	0.0	0.2	0.2	0.0
Zinc	28.8	29.1	27.8	23.9	18.4

¹ For Reaches 2, 3, and 5, maximums were used for select metals only (Appendix E.1-143)

² Maximum detected concentrations were used since there were too few samples available to calculate 95% UCLs. Zero values represent compounds that were not detected.

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TABLE 4-40
SUMMARY OF ECOLOGICAL COPC_s DETECTED IN SEDIMENT FOR SITE-WIDE HERON LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	39	J	290	J	SD-19-01-FW	12 / 47	11 - 35	39	132	15
Acetone	94	J	7300	J	SD-TT-30-01-TR	15 / 52	12 - 430	344	1348	14
cis-1,2-Dichloroethene	7	J	562	J	SD-20-01-ME	12 / 18	9 - 225	96	199	6
Tetrachloroethene	41	J	41	J	SD-15-03-FW	1 / 55	11 - 790	36	41	*14
Trichloroethene	6	J	2025	J	SD-20-01-ME	11 / 56	9 - 114	55	280	14
SVOCs - ug/Kg										
2-Methylnaphthalene	10	J	220	J	SD-09-06-FW	17 / 59	1 - 2700	204	220	*14
Acenaphthylene	6	J	480	J	SD-07-10-FW	22 / 59	1 - 2700	199	361	14
Anthracene	26	J	1100	J	SD-07-09-FW	29 / 60	67 - 910	263	397	13
Benzo(a)anthracene	40	J	9600	J	SD-07-10-ME	54 / 70	67 - 890	883	2122	14
Benzo(a)pyrene	33	J	10000	J	SD-07-10-ME	55 / 70	67 - 910	917	1198	5
Benzo(b)fluoranthene	45	J	16000	J	SD-07-10-ME	62 / 76	67 - 840	1525	2110	5
Benzo(g,h,i)perylene	44	J	5300	J	SD-07-10-ME	37 / 64	67 - 910	549	999	13
Benzo(k)fluoranthene	45	J	14000	J	SD-07-05-FW	54 / 70	67 - 840	1096	2812	14
Carbazole	63	J	680	J	SD-07-09-FW	11 / 45	130 - 910	245	329	13
Chrysene	40	J	10000	J	SD-07-10-ME	56 / 71	67 - 890	1106	1419	5
Dibenz(a,h)anthracene	60	J	2000	J	SD-07-10-ME	26 / 61	2 - 910	270	433	13
Dibenzofuran	56	J	500	J	SD-09-06-FW	4 / 43	130 - 2700	263	395	13
Fluoranthene	42	J	23000	J	SD-07-10-ME	66 / 76	67 - 890	1900	4654	14
Fluorene	36	J	810	J	SD-09-06-FW	28 / 60	1 - 910	222	309	13
Indeno(1,2,3-cd)pyrene	21	J	6900	J	SD-07-10-ME	44 / 67	67 - 910	592	1364	14
Naphthalene	14	J	2500	J	SD-21-02-FW	23 / 60	1 - 2700	256	561	14
N-nitrosodiphenylamine	58	J	560	J	SD-10-01-FW	7 / 46	130 - 2700	281	409	13
Phenanthrene	62	J	12000	J	SD-07-10-ME	49 / 67	67 - 890	924	2290	14
Pyrene	52	J	15000	J	SD-07-10-ME	66 / 75	67 - 600	1536	3522	14
PCBs/Pesticides - ug/Kg										
4,4'-DDD	0.46	J	310	J	SD-13-03-ME	53 / 72	0.31 - 21	27	64	14
4,4'-DDE	0.089	J	160	J	SD-10-01-ME	64 / 75	0.31 - 21	17	34	5
4,4'-DDT	0.29	J	47	J	SD-07-10-FW	48 / 67	0.31 - 21	5.5	13	14
Aldrin	0.12	J	18	J	SD-10-01-ME	18 / 59	0.16 - 11	1.4	3.4	14
alpha-Chlordane	0.28	J	93	J	SD-13-03-ME	50 / 73	0.16 - 11	12	26	14
Aroclor 1248	15	J	560	J	SD-10-01-ME	16 / 56	3.1 - 210	55	104	13
Aroclor 1254	45	J	45	J	SD-13-01-TR	1 / 56	3.1 - 210	22	39	14
Aroclor 1260	17	J	420	J	SD-21-01-ME	19 / 58	3.1 - 210	63	111	13
beta-BHC	0.1	J	6.6	J	SD-07-07-FW	17 / 64	0.16 - 11	1.4	2.5	14
delta-BHC	0.08	J	24	J	SD-07-05-ME	13 / 58	0.16 - 11	1.9	5.0	14
Endosulfan I	0.11	J	68	J	SD-21-01-FW	15 / 66	0.16 - 11	4.8	15	14
Endosulfan Sulfate	0.38	J	2.1	J	SD-07-05-FW	4 / 57	0.31 - 21	2.3	2.1	*13
Endrin Aldehyde	0.47	J	11.7	J	SD-10-01-ME	23 / 60	0.31 - 21	3.0	4.4	13
gamma-Chlordane	0.12	J	650	J	SD-13-03-ME	52 / 71	0.16 - 11	16	73	14
Metals - mg/Kg										
Aluminum	1865	J	34400	J	SD-13-02-FW	183 / 183	3.3362 - 9.14	10223	11277	5
Antimony	0.41	J	117	J	SD-12-03-ME	124 / 177	0.26 - 3.5	5.6	11	14
Arsenic	3.1	J	4550	J	SD-12-03-ME	183 / 183	0.22 - 1	351	522	5
Barium	6	J	389	J	SD-CB-02-07	181 / 183	0.018 - 16.3	63	69	3
Beryllium	0.12	J	2.3	J	SD-18-03-ME	157 / 179	0.016 - 0.49	0.68	0.75	3
Cadmium	0.089	J	37.4	J	SD-15-01-FW	155 / 183	0.0048 - 5.7	6.4	7.4	3
Chromium	3.3	J	5590	J	SD-21-01-ME	183 / 183	0.055 - 1	617	1081	14
Cobalt	0.79	J	130	J	SD-CB-03-06	183 / 183	0.3336 - 0.88	16	18	5
Copper	4.2	J	3760	J	SD-TT-30-03	183 / 183	0.082 - 0.4716	415	673	14
Cyanide	0.85	J	12.1	J	SD-WS-08	14 / 50	0.1443 - 2	1.2	2.4	13
Iron	3960	J	258000	J	SD-19-01-TR	183 / 183	0.57 - 3.4992	29403	40710	13
Lead	1.9	J	1270	J	SD-13-01-FW	183 / 183	0.2002 - 0.62	272	310	3
Manganese	34.5	J	2640	J	SD-09-10-FW	183 / 183	0.018 - 0.4716	485	603	5
Mercury	0.058	J	89.2	J	SD-TT-30-03	164 / 180	0.0037 - 0.3418	3.0	5.0	5
Nickel	0.59	J	177	J	SD-CB-04-03	179 / 183	0.15 - 5.3	19	23	5
Selenium	0.53	J	30.3	J	SD-12-03-ME	113 / 179	0.053 - 2.9	3.3	5.4	14
Silver	0.21	J	11.5	J	SD-CB-04-02	50 / 152	0.0094 - 2	0.61	1.2	14
Thallium	0.425	J	18.1	J	SD-BW-03	63 / 165	0.038 - 2.2	1.4	2.5	14
Vanadium	4.2	J	127	J	SD-12-03-ME	183 / 183	0.073 - 0.64	39	48	13
Zinc	15.2	J	8750	J	SD-CB-04-03	183 / 183	0.16 - 1.7	1236	1412	3
Total Combustible Organics (mg/Kg)	1390	J	912000	J	SD-12-01-ME	53 / 56	117 - 2000	216509	474382	15
Total Organic Carbon (mg/Kg)	602	J	680000	J	SD-10-02-TR	56 / 62	114 - 18500	103203	148509	4

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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**TABLE 4-41
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER SITE-WIDE
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 16	5	2.5	0.0	*1
Acetone						0 / 16	5	2.5	0.0	*1
cis-1,2-Dichloroethene	1.0		4.0		SW-16-01	3 / 16	1	0.91	2.0	13
Tetrachloroethene	2.0		2.0		SW-05-01	1 / 16	1	0.6	0.76	2
Trichloroethene	2.0		2.0		SW-09-01	2 / 16	1	0.7	0.91	2
SVOCs - ug/L										
2-Methylnaphthalene						0 / 17	5	2.5	0.0	*1
Acenaphthylene						0 / 17	5	2.5	0.0	*1
Anthracene						0 / 17	5	2.5	0.0	*1
Benzo(a)anthracene						0 / 17	5	2.5	0.0	*1
Benzo(a)pyrene						0 / 17	5	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 17	5	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 17	5	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 17	5	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	NA	N/A
Chrysene						0 / 17	5	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 17	5	2.5	0.0	*1
Dibenzofuran						0 / 17	5	2.5	0.0	*1
Fluoranthene						0 / 17	5	2.5	0.0	*1
Fluorene						0 / 17	5	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 17	5	2.5	0.0	*1
Naphthalene						0 / 17	5	2.5	2.6	13
N-nitrosodiphenylamine						0 / 17	5	2.5	0.0	*1
Phenanthrene						0 / 17	5	2.5	0.0	*1
Pyrene						0 / 17	5	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 17	0.10	0.05	0.0	*1
4,4'-DDE						0 / 17	0.10	0.05	0.0	*1
4,4'-DDT						0 / 17	0.10	0.05	0.0	*1
Aldrin						0 / 17	0.05	0.025	0.0	*1
alpha-Chlordane	0.0021	J	0.0021	J	SW-12-01	1 / 17	0.05	0.024	0.0021	*13
Aroclor 1248						0 / 17	1.0	0.5	0.0	*1
Aroclor 1254						0 / 17	1.0	0.5	0.0	*1
Aroclor 1260						0 / 17	1.0	0.5	0.0	*1
beta-BHC						0 / 17	0.05	0.025	0.0	*1
delta-BHC						0 / 17	0.05	0.025	0.0	*1
Endosulfan I						0 / 17	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 17	0.1	0.05	0.0	*1
Endrin Aldehyde						0 / 17	0.1	0.05	0.0	*1
gamma-Chlordane	0.0014	J	0.0014	J	SW-11-01	1 / 17	0.05	0.024	0.0014	*13
Metals - ug/L										
Aluminum	27.3		2180		SW-10-01	15 / 17	31.1 - 36.9	253	471	3
Antimony	1.3		1.5		SW-10-01	2 / 17	1.1 - 1.2	0.7	0.80	2
Arsenic	2.8		77.1		SW-10-01	13 / 17	3.4 - 13.9	14	22	3
Barium	29.2		54.4		SW-10-01	17 / 17	N/A	37	40	2
Beryllium	0.043		0.18		SW-10-01	3 / 17	0.035 - 0.1	0.05	0.093	13
Cadmium	0.16		2.5		SW-10-01	3 / 17	0.099 - 1.5	0.3	1.8	15
Chromium	0.72		146		SW-10-01	17 / 17	N/A	13	20	6
Cobalt	0.43		4.8		SW-10-01	8 / 17	0.4 - 1.5	0.9	1.4	3
Copper	1.7		111		SW-10-01	17 / 17	N/A	12	39	13
Cyanide						0 / 17	5	2.5	0.0	*1
Iron	304		8470		SW-10-01	17 / 17	N/A	1561	2326	5
Lead	0.93999		75.9	J	SW-10-01	11 / 17	0.74 - 0.85	7.4	16	4
Manganese	70.9		777.5		SW-16-01	17 / 17	N/A	422	508	2
Mercury	0.04	J	0.88		SW-10-01	8 / 17	0.08 - 0.2	0.15	0.36	13
Nickel	0.89		6.2		SW-10-01	17 / 17	N/A	2.1	2.6	2
Selenium						0 / 17	1.5 - 1.8	0.79	0.82	2
Silver						0 / 17	0.4 - 0.75	0.32	0.36	2
Thallium						0 / 17	1.5 - 1.7	0.82	0.84	2
Vanadium	0.4925	J	7.4		SW-10-01	14 / 17	0.55 - 1.2	1.4	2.0	3
Zinc	10.8		626	J	SW-10-01	16 / 17	4	72	420	15

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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TABLE 4-42
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT ALL REFERENCE LOCATIONS EXCEPT STATION SD-03-IP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	17.5	J	680		SD-MC-02	3 / 21	10 - 46	51	381	15
Acetone	23	J	2200	J	SD-MC-02	10 / 22	10 - 220	174	331	6
cis-1,2-Dichloroethene						0 / 9	10 - 46	9.9	12	2
Tetrachloroethene						0 / 23	10 - 69	10	12	2
Trichloroethene						0 / 23	10 - 46	8.4	9.5	2
SVOCs - ug/Kg										
2-Methylnaphthalene	22	J	360	J	SD-24-02-FW	5 / 24	67 - 3100	267	360	*13
Acenaphthylene	22	J	800	J	SD-24-02-FW	9 / 24	67 - 3100	305	582	13
Anthracene	48	J	1900	J	SD-24-02-FW	12 / 24	67 - 3100	414	590	5
Benzo(a)anthracene	110	J	5900		SD-24-02-FW	17 / 24	67 - 1000	1152	2264	6
Benzo(a)pyrene	130	J	5500		SD-24-02-FW	17 / 24	67 - 1000	1065	1975	6
Benzo(b)fluoranthene	150	J	10000		SD-24-02-FW	21 / 24	67 - 1000	1450	2232	3
Benzo(g,h,i)perylene	190	J	2200	J	SD-25-02-FW	10 / 24	67 - 1000	475	910	13
Benzo(k)fluoranthene	400		9600		SD-24-02-FW	15 / 24	67 - 1000	1397	2685	6
Carbazole	48	J	990	J	SD-24-02-FW	7 / 22	230 - 3100	332	455	5
Chrysene	140	J	7300		SD-24-02-FW	17 / 24	67 - 1000	1314	2610	6
Dibenz(a,h)anthracene	110	J	1100	J	SD-25-02-FW	10 / 24	67 - 1000	283	462	13
Dibenzofuran	120	J	1000	J	SD-24-02-FW	4 / 22	230 - 3100	323	629	13
Fluoranthene	71	J	15000		SD-24-02-FW	22 / 24	67 - 1000	2484	4003	3
Fluorene	44	J	2800		SD-24-02-FW	10 / 24	67 - 3100	394	920	13
Indeno(1,2,3-cd)pyrene	160	J	3700	J	SD-25-02-FW	13 / 24	67 - 1000	634	1348	13
Naphthalene	23	J	520	J	SD-24-02-FW	5 / 24	67 - 3100	280	520	*13
N-nitrosodiphenylamine						0 / 22	230 - 3100	332	640	13
Phenanthrene	170	J	12000		SD-24-02-FW	17 / 24	67 - 1000	1517	2347	3
Pyrene	81	J	11000		SD-24-02-FW	17 / 24	67 - 1000	1976	3098	3
PCBs/Pesticides - ug/Kg										
4,4'-DDD	4.5		390		SD-24-03-ME	18 / 24	0.32 - 31	48	109	6
4,4'-DDE	3.5	J	470	J	SD-MC-01	17 / 24	0.32 - 31	31	55	6
4,4'-DDT	2.1	J	180	J	SD-MC-01	15 / 24	0.32 - 30	23	39	3
Aldrin	0.29	J	1.6	J	SD-24-02-FW	3 / 24	0.16 - 16	2.9	1.6	*15
alpha-Chlordane	1.3	J	23	J	SD-MC-01	5 / 24	0.16 - 15	4.2	6.2	3
Aroclor 1248	56	J	290	J	SD-24-03-ME	2 / 24	3 - 310	70	110	3
Aroclor 1254						0 / 24	3 - 310	55	174	15
Aroclor 1260	47		200		SD-24-03-ME	2 / 24	3 - 310	66	193	15
beta-BHC	0.4	J	0.75	J	SD-23-01-FW	2 / 24	0.16 - 16	2.9	0.75	*15
delta-BHC						0 / 24	0.16 - 16	2.9	8.7	15
Endosulfan I	0.22	J	66	J	SD-25-02-FW	8 / 24	0.16 - 14	6.8	17	6
Endosulfan Sulfate	6.6		11	J	SD-25-02-FW	3 / 24	0.32 - 30	5.6	8.5	3
Endrin Aldehyde	1.1	J	5.9	J	SD-24-03-ME	3 / 20	0.32 - 31	7.1	5.9	*13
gamma-Chlordane	0.31	J	4.6		SD-24-03-FW	6 / 24	0.16 - 16	3.1	4.6	*15
Metals - mg/Kg										
Aluminum	1100		14300		SD-SA-01-TR	25 / 25	3.4 - 9.14	7852	9111	2
Antimony	0.5	J	5.6		SD-MC-04-TR	18 / 25	0.062 - 1.4	1.0	1.3	3
Arsenic	2.5		44.5		SD-MC-04-TR	25 / 25	0.21 - 1	16	25	5
Barium	5.7		173		SD-MC-04-TR	25 / 25	0.018 - 0.4	52	67	3
Beryllium	0.15		1.2		SD-24-03-FW	22 / 25	0.027 - 0.22	0.51	0.63	2
Cadmium	0.08699		6.1		SD-MC-04	18 / 25	0.0044 - 0.6	1.2	2.0	3
Chromium	8.9		512		SD-MC-04-TR	25 / 25	0.053 - 1	91	370	15
Cobalt	0.76		21.8	J	SD-MC-04-TR	25 / 25	0.36 - 0.37	7.9	10	3
Copper	1.9		344		SD-MC-04-TR	25 / 25	0.08 - 0.44	60	91	3
Cyanide						0 / 14	0.52 - 1.4	0.39	0.45	2
Iron	2040		51600		SD-MC-04-TR	25 / 25	0.55 - 1.4	15733	20054	3
Lead	5.6	J	755	J	SD-25-02-FW	25 / 25	0.26 - 0.6	193	297	3
Manganese	12.6	J	1980		SD-MC-04-TR	25 / 25	0.018 - 0.24	366	679	5
Mercury	0.021	J	0.71		SD-24-03-ME	17 / 24	0.005 - 0.08	0.19	0.32	3
Nickel	1.1		27.3		SD-HB-00-TR	25 / 25	0.14 - 0.8	14	17	2
Selenium	0.91	J	3.2	J	SD-25-02-FW	8 / 25	0.049 - 1.1	0.82	1.5	13
Silver	0.085	J	2.9		SD-24-03-FW	7 / 24	0.0088 - 1	0.48	1.1	13
Thallium	1		2.2		SD-25-02-FW	2 / 24	0.038 - 2	0.51	0.66	3
Vanadium	2.5		148		SD-24-03-FW	25 / 25	0.071 - 0.64	33	45	3
Zinc	10.4	J	611	J	SD-MC-04-TR	25 / 25	0.16 - 1.7	167	240	3
Total Combustible Organics (mg/Kg)	2810		427000		SD-23-03-FW	8 / 8	2000	109001	344650	3
Total Organic Carbon (mg/Kg)	7650		370000	J	SD-MC-02	17 / 17	250	119018	200173	3

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided

² 95% UCL References

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Half's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected

US EPA ARCHIVE DOCUMENT

TABLE 4-43
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER -REFERENCE EXCEPT STATION SW-03-IP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
<u>VOCs - ug/L</u>										
2-Butanone						0/9	2 - 5	1.8	2.1	2
Acetone						0/9	5	2.5	0.0	*1
cis-1,2-Dichloroethene						0/9	1 - 2	0.72	0.92	2
Tetrachloroethene						0/9	1 - 2	0.72	0.92	2
Trichloroethene						0/9	1 - 2	0.72	0.92	2
<u>SVOCs - ug/L</u>										
2-Methylnaphthalene						0/9	4 - 5	2.4	2.5	2
Acenaphthylene						0/9	4 - 5	2.4	2.5	2
Anthracene						0/9	4 - 5	2.4	2.5	2
Benzo(a)anthracene						0/9	4 - 5	2.4	2.5	2
Benzo(a)pyrene						0/9	4 - 5	2.4	2.5	2
Benzo(b)fluoranthene						0/9	4 - 5	2.4	2.5	2
Benzo(g,h,i)perylene						0/9	4 - 5	2.4	2.5	2
Benzo(k)fluoranthene						0/9	4 - 5	2.4	2.5	2
Carbazole						0/4	4 - 5	2.3	2.4	2
Chrysene						0/9	4 - 5	2.4	2.5	2
Dibenz(a,h)anthracene						0/9	4 - 5	2.4	2.5	2
Dibenzofuran						0/9	4 - 5	2.4	2.5	2
Fluoranthene						0/9	4 - 5	2.4	2.5	2
Fluorene						0/9	4 - 5	2.4	2.5	2
Indeno(1,2,3-cd)pyrene						0/9	4 - 5	2.4	2.5	2
Naphthalene						0/9	4 - 5	2.4	2.9	13
N-nitrosodiphenylamine						0/9	4 - 5	2.4	2.5	2
Phenanthrene						0/9	4 - 5	2.4	2.5	2
Pyrene						0/9	4 - 5	2.4	2.5	2
<u>PCBs/Pesticides - ug/L</u>										
4,4'-DDD						0/9	0.0083 - 0.1	0.030	0.096	15
4,4'-DDE						0/9	0.0083 - 0.1	0.030	0.096	15
4,4'-DDT						0/9	0.0083 - 0.1	0.030	0.096	15
Aldrin						0/9	0.0083 - 0.05	0.016	0.028	13
alpha-Chlordane						0/9	0.0083 - 0.05	0.016	0.028	13
Aroclor 1248						0/9	0.042 - 1	0.29	0.99	15
Aroclor 1254						0/9	0.042 - 1	0.29	0.99	15
Aroclor 1260						0/9	0.042 - 1	0.29	0.99	15
beta-BHC						0/9	0.0083 - 0.05	0.016	0.028	13
delta-BHC						0/9	0.0083 - 0.05	0.016	0.028	13
Endosulfan I						0/9	0.0083 - 0.05	0.016	0.028	13
Endosulfan Sulfate						0/9	0.0083 - 0.1	0.030	0.096	15
Endrin Aldehyde						0/9	0.0083 - 0.1	0.030	0.096	15
gamma-Chlordane	0.0017	J	0.0017	J	SW-24-01	1/9	0.0083 - 0.05	0.013	0.0017	*13
<u>Metals - ug/L</u>										
Aluminum	21.3		2500		SW-MC-01	7/9	23.5 - 29.2	351	1365	8
Antimony						0/9	1.1 - 18.3	4.4	19	15
Arsenic	1.1	J	15.7	J	SW-MC-01	6/9	1 - 1.7	3.1	7.1	5
Barium	15.4		64		SW-MC-01	9/9	N/A	32	39	2
Beryllium						0/9	0.099 - 0.22	0.077	0.10	2
Cadmium						0/9	0.15 - 0.78	0.22	0.46	13
Chromium	0.34		0.88		SW-24-01	3/9	0.25 - 9	2.2	0.88	*15
Cobalt	7.1	J	7.1	J	SW-MC-01	1/9	0.5 - 3	1.4	7.1	*15
Copper	0.45		13.8		SW-MC-01	7/9	0.35 - 1.4	2.9	5.3	3
Cyanide						0/5	5	2.5	0.0	*1
Iron	118		15800		SW-MC-01	9/9	N/A	2878	5962	3
Lead	0.665	J	51.4		SW-MC-01	6/9	0.75	7.8	18	3
Manganese	46.4		1960		SW-MC-01	9/9	N/A	486	851	3
Mercury	0.097		0.13		SW-24-01	4/9	0.04 - 0.087	0.066	0.12	13
Nickel	0.66		6.5	J	SW-MC-01	7/9	0.5 - 1.2	1.5	2.7	3
Selenium	1.6	J	1.6	J	SW-MC-04	1/9	1.1 - 1.9	0.87	0.98	2
Silver						0/9	0.4 - 0.78	0.28	0.36	2
Thallium						0/9	1.2 - 1.5	0.68	0.71	2
Vanadium	0.85		12	J	SW-MC-01	4/9	0.55 - 2.6	2.2	5.0	3
Zinc	1.375	J	71.7		SW-MC-01	6/9	1.6 - 9	14	29	3

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

TABLE 4-44
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT FOR SITE-WIDE MALLARD LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	39	J	290	J	SD-19-01-FW	12 / 47	11 - 35	39	130	15
Acetone	94	J	7300	J	SD-TT-30-01-TR	17 / 54	10 - 430	389	1369	14
cis-1,2-Dichloroethene	7	J	562	J	SD-20-01-ME	13 / 19	9 - 225	95	196	6
Tetrachloroethene	41	J	41	J	SD-15-03-FW	1 / 56	11 - 790	37	41	*14
Trichloroethene	6	J	2025	J	SD-20-01-ME	12 / 57	9 - 114	55	271	14
SVOCs - ug/Kg										
2-Methylnaphthalene	10	J	220	J	SD-09-06-FW	17 / 62	1 - 2700	204	220	*14
Acenaphthylene	1	J	480	J	SD-07-10-FW	23 / 62	1 - 2700	200	353	14
Anthracene	18	J	1100	J	SD-07-09-FW	30 / 63	67 - 910	261	385	13
Benzo(a)anthracene	40	J	9600	J	SD-07-10-ME	55 / 73	67 - 890	857	2024	14
Benzo(a)pyrene	33	J	10000	J	SD-07-10-ME	56 / 71	67 - 910	906	2097	14
Benzo(b)fluoranthene	45	J	16000	J	SD-07-10-ME	64 / 79	67 - 840	1479	3335	14
Benzo(g,h,i)perylene	44	J	5300	J	SD-07-10-ME	38 / 67	67 - 910	535	955	13
Benzo(k)fluoranthene	45	J	14000	J	SD-07-05-FW	57 / 73	67 - 840	1071	1259	5
Carbazole	63	J	680	J	SD-07-09-FW	11 / 47	130 - 910	248	326	13
Chrysene	40	J	10000	J	SD-07-10-ME	58 / 74	67 - 890	1073	2490	14
Dibenz(a,h)anthracene	46	J	2000	J	SD-07-10-ME	27 / 64	2 - 910	268	421	13
Dibenzofuran	56	J	500	J	SD-09-06-FW	4 / 45	130 - 2700	265	387	13
Fluoranthene	42	J	23000	J	SD-07-10-ME	68 / 79	67 - 890	1844	4450	14
Fluorene	14	J	810	J	SD-09-06-FW	29 / 63	1 - 910	221	305	13
Indeno(1,2,3-cd)pyrene	21	J	6900	J	SD-07-10-ME	45 / 70	67 - 910	577	678	5
Naphthalene	12	J	2500	J	SD-21-02-FW	24 / 63	1 - 2700	254	540	14
N-nitrosodiphenylamine	58	J	560	J	SD-10-01-FW	7 / 48	130 - 2700	282	401	13
Phenanthrene	62	J	12000	J	SD-07-10-ME	50 / 70	67 - 890	895	2180	14
Pyrene	52	J	15000	J	SD-07-10-ME	68 / 78	67 - 720	1491	1975	5
PCBs/Pesticides - ug/Kg										
4,4'-DDD	0.46	J	310	J	SD-13-03-ME	54 / 75	0.31 - 21	26	61	14
4,4'-DDE	0.089	J	160	J	SD-10-01-ME	66 / 78	0.31 - 21	17	36	14
4,4'-DDT	0.29	J	47	J	SD-07-10-FW	48 / 70	0.31 - 21	5.3	6.9	5
Aldrin	0.12	J	18	J	SD-10-01-ME	18 / 62	0.16 - 11	1.3	3.3	14
alpha-Chlordane	0.28	J	93	J	SD-13-03-ME	51 / 76	0.16 - 11	11	25	14
Aroclor 1248	15	J	560	J	SD-10-01-ME	17 / 69	3.1 - 440	64	105	13
Aroclor 1254	45	J	2600	J	SD-JY-07	10 / 69	3.1 - 440	150	464	14
Aroclor 1260	11	J	2400	J	SD-JY-07	29 / 71	3.1 - 440	192	517	14
beta-BHC	0.1	J	6.6	J	SD-07-07-FW	17 / 67	0.16 - 11	1.4	2.4	14
delta-BHC	0.08	J	24	J	SD-07-05-ME	13 / 61	0.16 - 11	1.9	4.8	14
Endosulfan I	0.11	J	68	J	SD-21-01-FW	16 / 69	0.16 - 11	4.6	14	14
Endosulfan Sulfate	0.38	J	2.1	J	SD-07-05-FW	4 / 60	0.31 - 21	2.3	2.1	*14
Endrin Aldehyde	0.47	J	11.7	J	SD-10-01-ME	23 / 63	0.31 - 21	2.9	4.3	13
gamma-Chlordane	0.12	J	650	J	SD-13-03-ME	53 / 74	0.16 - 11	15	69	14
Metals - mg/Kg										
Aluminum	1865	J	34400	J	SD-13-02-FW	259 / 259	3.3362 - 9.14	10336	11152	5
Antimony	0.41	J	117	J	SD-12-03-ME	156 / 239	0.26 - 6.6	6.2	11	14
Arsenic	3.1	J	4550	J	SD-12-03-ME	259 / 259	0.22 - 1	279	524	14
Barium	6	J	3420	J	SD-WW-11	257 / 259	0.018 - 16.3	87	89	5
Beryllium	0.12	J	2.9	J	SD-19-01-ME	214 / 255	0.016 - 0.65	0.68	0.74	3
Cadmium	0.089	J	37.4	J	SD-15-01-FW	229 / 259	0.0048 - 5.7	6.3	7.0	3
Chromium	3.3	J	24600	J	SD-WW-08	259 / 259	0.055 - 1	1215	1675	5
Cobalt	0.79	J	130	J	SD-CB-03-06	259 / 259	0.3336 - 0.88	15	16	5
Copper	4.2	J	3760	J	SD-TT-30-03	259 / 259	0.082 - 0.4799	390	579	14
Cyanide	0.26	J	12.1	J	SD-WS-08	40 / 82	0.0942 - 2	1.0	1.8	13
Iron	3960	J	258000	J	SD-19-01-TR	259 / 259	0.57 - 6.9495	26526	34923	13
Lead	1.9	J	2540	J	SD-WH-06	259 / 259	0.2002 - 0.62	342	381	3
Manganese	34.5	J	2640	J	SD-09-10-FW	259 / 259	0.018 - 0.4799	455	532	5
Mercury	0.05	J	89.2	J	SD-TT-30-03	232 / 255	0.0037 - 0.39	2.4	3.3	5
Nickel	0.59	J	177	J	SD-CB-04-03	255 / 259	0.15 - 5.3	22	23	3
Selenium	0.53	J	30.3	J	SD-12-03-ME	178 / 255	0.053 - 5	3.2	4.7	14
Silver	0.21	J	11.5	J	SD-CB-04-02	69 / 228	0.0094 - 2	0.55	0.84	13
Thallium	0.2225	J	18.1	J	SD-BW-03	113 / 237	0.038 - 3	1.4	2.2	14
Vanadium	4.2	J	163	J	SD-WH-04	259 / 259	0.073 - 0.64	44	52	13
Zinc	15.2	J	8750	J	SD-CB-04-03	254 / 259	0.16 - 634	1195	1322	3
Total Combustible Organics (mg/Kg)	1390		912000	J	SD-12-01-ME	54 / 57	117 - 2000	224746	490982	15
Total Organic Carbon (mg/Kg)	602		815000	J	SD-WH-07-TR	83 / 89	114 - 18500	122872	282357	15

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUB) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUB) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUB) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-45
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT FOR 38-ACRE MALLARD LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	65	J	290	J	SD-19-01-FW	9 / 15	18 - 35	97	137	2
Acetone	94	J	4300	J	SD-13-01-TR	14 / 20	10 - 430	628	1364	6
cis-1,2-Dichloroethene	23	J	562	J	SD-20-01-ME	9 / 15	22 - 225	116	209	3
Tetrachloroethene	41	J	41	J	SD-15-03-FW	1 / 21	18 - 790	80	41	*3
Trichloroethene	19	J	2025	J	SD-20-01-ME	9 / 22	18 - 114	128	1031	15
SVOCs - ug/Kg										
2-Methylnaphthalene	10	J	140	J	SD-21-01-ME	11 / 25	1 - 910	156	140	*3
Acenaphthylene	1	J	38	J	SD-21-01-ME	13 / 25	1 - 910	150	38	*15
Anthracene	18	J	420	J	SD-21-01-ME	13 / 25	67 - 910	202	249	2
Benzo(a)anthracene	110	J	1700	J	SD-13-01-ME	27 / 35	67 - 890	487	634	5
Benzo(a)pyrene	150	J	1900	J	SD-18-02-ME	27 / 32	67 - 910	608	821	5
Benzo(b)fluoranthene	120	J	3700	J	SD-20-02-FW	36 / 40	67 - 720	1047	1446	5
Benzo(g,h,i)perylene	120	J	1600	J	SD-18-03-ME	18 / 29	67 - 910	420	518	5
Benzo(k)fluoranthene	110	J	3400	J	SD-13-03-FW	30 / 35	67 - 720	630	794	3
Carbazole	170	J	170	J	SD-13-03-FW	1 / 13	280 - 910	283	170	*2
Chrysene	150	J	2200	J	SD-18-02-ME	29 / 35	67 - 890	665	877	5
Dibenz(a,h)anthracene	46	J	430	J	SD-18-02-ME	14 / 26	2 - 910	242	283	2
Dibenzofuran						0 / 12	280 - 910	293	343	2
Fluoranthene	85	J	5200	J	SD-13-01-ME	36 / 40	67 - 890	1163	1502	3
Fluorene	14	J	240	J	SD-21-01-ME	13 / 25	1 - 910	189	234	2
Indeno(1,2,3-cd)pyrene	79	J	1500	J	SD-18-03-ME	22 / 32	67 - 910	454	565	3
Naphthalene	12	J	2500	J	SD-21-02-FW	14 / 26	1 - 910	300	480	3
N-nitrosodiphenylamine	100	J	560	J	SD-10-01-FW	6 / 15	280 - 910	322	387	2
Phenanthrene	120	J	2700	J	SD-13-01-ME	22 / 32	67 - 890	529	669	3
Pyrene	99	J	4000	J	SD-13-01-ME	36 / 39	67 - 720	943	1211	3
PCBs/Praticides - ug/Kg										
4,4'-DDD	1.9		310		SD-13-03-ME	29 / 39	0.31 - 9.2	29	124	15
4,4'-DDE	0.52	J	160	J	SD-10-01-ME	39 / 42	0.31 - 5.5	19	74	15
4,4'-DDT	0.45	J	12	J	SD-13-03-ME	24 / 35	0.31 - 7.3	2.2	2.8	3
Aldrin	0.47	J	18	J	SD-10-01-ME	7 / 28	0.16 - 4.6	1.3	7.6	15
alpha-Chlordane	0.62	J	93	J	SD-13-03-ME	31 / 40	0.16 - 6.1	14	46	15
Aroclor 1248	15	J	560	J	SD-10-01-ME	13 / 35	3.1 - 440	90	133	5
Aroclor 1254	45		2600		SD-JY-07	10 / 35	3.1 - 440	270	1241	15
Aroclor 1260	11		2400		SD-JY-07	25 / 37	3.1 - 440	336	1296	15
beta-BHC	0.71	J	3.1	J	SD-13-03-FW	7 / 32	0.16 - 4.7	1.0	2.6	15
delta-BHC	0.14	J	15	J	SD-13-03-ME	3 / 25	0.16 - 4.7	1.3	7.2	15
Endosulfan I	0.44	J	68	J	SD-21-01-FW	14 / 35	0.16 - 4.7	7.8	36	15
Endosulfan Sulfate	0.38	J	0.72	J	SD-11-01-ME	3 / 25	0.31 - 9.2	1.6	0.72	*15
Endrin Aldehyde	0.87	J	11.7	J	SD-10-01-ME	17 / 29	0.31 - 9.2	3.2	4.7	5
gamma-Chlordane	0.17	J	650	J	SD-13-03-ME	31 / 38	0.16 - 2.7	23	28	6
Metals - mg/Kg										
Aluminum	3140		34400	J	SD-13-02-FW	126 / 126	3.3362 - 9.14	13148	14245	3
Antimony	0.75	J	117	J	SD-12-03-ME	84 / 106	0.26 - 6.6	12	14	3
Arsenic	4.4	J	4550	J	SD-12-03-ME	126 / 126	0.22 - 1	468	771	5
Barium	12.3		3420		SD-WW-11	126 / 126	0.018 - 0.4799	130	130	5
Beryllium	0.2	J	2.9	J	SD-19-01-ME	105 / 122	0.02 - 0.65	0.94	1.0	2
Cadmium	0.46		37.4	J	SD-15-01-FW	124 / 126	0.037 - 0.81	9.0	13	14
Chromium	14.3		24600	J	SD-WW-08	126 / 126	0.055 - 1	2214	3872	5
Cobalt	2.4	J	57.5	J	SD-BW-05	126 / 126	0.3336 - 0.88	19	22	3
Copper	18.8		2340	J	SD-13-01-FW	126 / 126	0.082 - 0.4799	579	663	3
Cyanide	0.26	J	12.1	J	SD-WS-08	34 / 47	0.0942 - 2	1.4	1.7	3
Iron	4020		258000	J	SD-19-01-TR	126 / 126	0.57 - 6.9495	36919	42769	5
Lead	16.8		2540	J	SD-WH-06	126 / 126	0.2002 - 0.62	524	594	3
Manganese	51.9		2020	J	SD-19-01-TR	126 / 126	0.018 - 0.4799	616	696	3
Mercury	0.1	J	44.8	J	SD-12-03-ME	114 / 122	0.0037 - 0.39	3.3	5.3	5
Nickel	4.6		150	J	SD-JY-07	125 / 126	0.15 - 0.8	28	30	3
Selenium	0.53	J	30.3	J	SD-12-03-ME	112 / 123	0.053 - 5	4.9	5.5	3
Silver	0.21	J	5.3	J	SD-TT-28-03	43 / 110	0.0094 - 2	0.69	1.0	13
Thallium	0.2225	J	18.1	J	SD-BW-03	60 / 108	0.039 - 3	1.6	3.2	14
Vanadium	8.9		163	J	SD-WH-04	126 / 126	0.073 - 0.64	55	60	3
Zinc	80.1		4940	J	SD-21-01-ME	121 / 126	0.16 - 634	1673	1832	2
Total Combustible Organics (mg/Kg)	36700		912000	J	SD-12-01-ME	37 / 37	2000	315789	452493	13
Total Organic Carbon (mg/Kg)	15400		815000	J	SD-WH-07-TR	30 / 30	250 - 12000	223667	302532	3

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

TABLE 4-46
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 01¹
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	12	J	20	J	SD-01-04-FW	2 / 8	11 - 26	9
Acetone						0 / 8	12 - 120	33
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene						0 / 8	11 - 26	6.9
Trichloroethene						0 / 8	11 - 26	6.9
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 8	370 - 870	227
Acenaphthylene						0 / 8	370 - 870	227
Anthracene	27	J	150	J	SD-01-06-FW	4 / 8	380 - 420	142
Benzo(a)anthracene	90	J	650	J	SD-01-06-FW	4 / 8	380 - 420	238
Benzo(a)pyrene	89	J	850	J	SD-01-06-FW	4 / 8	380 - 420	255
Benzo(b)fluoranthene	90	J	1100	J	SD-01-06-FW	4 / 8	380 - 420	282
Benzo(g,h,i)perylene	120	J	1000	J	SD-01-06-FW	2 / 8	370 - 420	289
Benzo(k)fluoranthene	94	J	840	J	SD-01-06-FW	4 / 8	380 - 420	255
Carbazole	74	J	74	J	SD-01-03-FW	1 / 8	370 - 870	212
Chrysene	130	J	1100	J	SD-01-06-FW	4 / 8	380 - 420	309
Dibenz(a,h)anthracene						0 / 8	370 - 870	227
Dibenzofuran						0 / 8	370 - 870	227
Fluoranthene	110	J	1500	J	SD-01-06-FW	5 / 8	390 - 420	413
Fluorene	54	J	54	J	SD-01-03-FW	1 / 8	370 - 870	210
Indeno(1,2,3-cd)pyrene	120	J	880	J	SD-01-06-FW	2 / 8	370 - 420	274
Naphthalene						0 / 8	370 - 870	227
N-nitrosodiphenylamine						0 / 8	370 - 870	227
Phenanthrene	100	J	590	J	SD-01-06-FW	5 / 8	390 - 420	286
Pyrene	130	J	1400	J	SD-01-06-FW	5 / 8	390 - 420	407
PCBs/Pesticides - ug/Kg								
4,4'-DDD						0 / 8	3.8 - 43	5
4,4'-DDE						0 / 8	3.8 - 43	5
4,4'-DDT						0 / 8	3.8 - 43	5
Aldrin						0 / 8	2 - 22	2.8
alpha-Chlordane						0 / 8	2 - 22	2.8
Aroclor 1248						0 / 8	38 - 430	54
Aroclor 1254						0 / 8	38 - 430	54
Aroclor 1260						0 / 8	38 - 430	54
beta-BHC						0 / 8	2 - 22	2.8
delta-BHC						0 / 8	2 - 22	2.8
Endosulfan I						0 / 8	2 - 22	2.8
Endosulfan Sulfate						0 / 8	3.8 - 43	5.4
Endrin Aldehyde						0 / 8	3.8 - 43	5.4
gamma-Chlordane						0 / 8	2 - 22	2.8
Metals - mg/Kg								
Aluminum	2970		19000		SD-01-06-FW	8 / 8	N/A	5329
Antimony	0.55	J	2.2	J	SD-01-06-FW	3 / 8	0.44 - 0.5	0.61
Arsenic	2.4		171		SD-01-06-FW	8 / 8	N/A	25
Barium	8.1		53.1		SD-01-06-FW	8 / 8	N/A	15
Beryllium	1		1		SD-01-06-FW	1 / 8	0.059 - 0.21	0.17
Cadmium	0.045		37.7		SD-01-06-FW	6 / 8	0.041 - 0.046	4.80
Chromium	6.9		95.9		SD-01-06-FW	8 / 8	N/A	19
Cobalt	2.6		38.9		SD-01-06-FW	8 / 8	N/A	7.7
Copper	5.8		1250		SD-01-06-FW	8 / 8	N/A	167
Cyanide						0 / 8	0.41 - 1.4	0.32
Iron	3830		20000		SD-01-06-FW	8 / 8	N/A	7328
Lead	7.9	J	384	J	SD-01-06-FW	8 / 8	N/A	62
Manganese	48.5		327		SD-01-06-FW	8 / 8	N/A	106
Mercury	0.63		0.63		SD-01-06-FW	1 / 8	0.015 - 0.028	0.09
Nickel	4.8		24.7		SD-01-06-FW	8 / 8	N/A	8
Selenium						0 / 8	0.43 - 2.2	0.39
Silver	0.51		0.51		SD-01-03-FW	1 / 8	0.28 - 0.7	0.22
Thallium	0.54		2.9		SD-01-06-FW	2 / 8	0.64 - 0.8	0.70
Vanadium	6.5		34.6		SD-01-06-FW	8 / 8	N/A	12
Zinc	46.1		7380		SD-01-06-FW	8 / 8	N/A	1010
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A
Total Organic Carbon (mg/Kg)	830		65700		SD-01-06-FW	5 / 8	114 - 116	11027

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Includes samples applicable to the muskrat model

TABLE 4-47
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 02¹
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	9	J	9	J	SD-02-01-FW	1 / 3	12	7
Acetone						0 / 3	16 - 52	17
cis-1,2-Dichloroethene						0 / 1	26	13.0
Tetrachloroethene						0 / 4	12 - 77	14.1
Trichloroethene						0 / 4	12 - 26	7.8
SVOCs - ug/Kg								
2-Methylnaphthalene	12	J	12	J	SD-02-01-ME	1 / 4	1 - 410	157
Acenaphthylene	22	J	22	J	SD-02-01-ME	1 / 4	1 - 410	159
Anthracene	62	J	75	J	SD-02-01-FW	2 / 4	67 - 410	137
Benzo(a)anthracene	168	J	590		SD-02-01-ME	2 / 4	67 - 410	292
Benzo(a)pyrene	190	J	620		SD-02-01-ME	2 / 4	67 - 410	305
Benzo(b)fluoranthene	180	J	720		SD-02-01-ME	2 / 4	67 - 410	328
Benzo(g,h,i)perylene	155	J	330		SD-02-01-ME	2 / 4	67 - 410	224
Benzo(k)fluoranthene	160	J	340		SD-02-01-ME	2 / 4	67 - 410	228
Carbazole						0 / 3	410	205
Chrysene	275	J	660		SD-02-01-ME	2 / 4	67 - 410	336
Dibenz(a,h)anthracene	69	J	69	J	SD-02-01-ME	1 / 4	2 - 410	171
Dibenzofuran						0 / 3	410	205
Fluoranthene	315	J	1200		SD-02-01-ME	2 / 4	67 - 410	481
Fluorene	44	J	44	J	SD-02-01-ME	1 / 4	67 - 410	165
Indeno(1,2,3-cd)pyrene	130.5	J	420		SD-02-01-ME	2 / 4	67 - 410	240
Naphthalene	13	J	13	J	SD-02-01-ME	1 / 4	67 - 410	157
N-nitrosodiphenylamine						0 / 3	410	205
Phenanthrene	210	J	390		SD-02-01-ME	2 / 4	67 - 410	253
Pyrene	420	J	1100		SD-02-01-ME	2 / 4	67 - 410	483
PCBs/Pesticides - ug/Kg								
4,4'-DDD	3.875	J	20	J	SD-02-01-ME	2 / 4	0.32 - 4.1	7
4,4'-DDE	10.35	J	26	J	SD-02-01-ME	2 / 4	0.32 - 4.1	10
4,4'-DDT	1.8	J	1.8	J	SD-02-01-ME	1 / 4	0.32 - 4.1	2
Aldrin						0 / 4	0.16 - 2.1	0.8
alpha-Chlordane	11	J	11	J	SD-02-01-ME	1 / 4	0.16 - 2.1	3.5
Aroclor 1248	160	J	160	J	SD-02-01-ME	1 / 4	3.2 - 41	55
Aroclor 1254						0 / 4	3.2 - 41	16
Aroclor 1260	140		140		SD-02-01-ME	1 / 4	3.2 - 41	50
beta-BHC						0 / 4	0.16 - 2.1	0.8
delta-BHC	1.3	J	1.3	J	SD-02-01-ME	1 / 4	0.16 - 2.1	1.1
Endosulfan I						0 / 4	0.16 - 2.1	0.8
Endosulfan Sulfate	0.47	J	0.47	J	SD-02-01-ME	1 / 4	0.32 - 4.1	1.7
Endrin Aldehyde	1.6	J	1.6	J	SD-02-01-ME	1 / 4	0.32 - 4.1	1.9
gamma-Chlordane	8	J	8	J	SD-02-01-ME	1 / 4	0.16 - 2.1	2.8
Metals - mg/Kg								
Aluminum	3220		6570	J	SD-02-01-ME	4 / 4	3.5	5178
Antimony	0.325	J	1.9	J	SD-02-01-ME	3 / 4	0.26 - 0.42	0.78
Arsenic	3.6		56.4		SD-02-01-ME	4 / 4	0.22	19
Barium	14		50.6		SD-02-01-ME	4 / 4	0.018	31
Beryllium	0.47	J	0.47	J	SD-02-01-ME	1 / 4	0.027 - 0.14	0.16
Cadmium	0.23		3.8		SD-02-01-ME	3 / 4	0.035 - 0.35	1.14
Chromium	7.5		103	J	SD-02-01-ME	4 / 4	0.055	37
Cobalt	4		17	J	SD-02-01-ME	4 / 4	0.37	8.4
Copper	10.3		128		SD-02-01-ME	4 / 4	0.082	45
Cyanide						0 / 3	0.59 - 0.68	0.31
Iron	5200		16900	J	SD-02-01-ME	4 / 4	0.57	9841
Lead	5.7	J	365.5	J	SD-02-01-FW	4 / 4	0.26	153
Manganese	70.4		206		SD-02-01-ME	4 / 4	0.018	121
Mercury	0.063		0.37		SD-02-01-ME	2 / 4	0.005 - 0.031	0.11
Nickel	6.2		21.5	J	SD-02-01-ME	4 / 4	0.15	11
Selenium	1.6	J	1.6	J	SD-02-01-ME	1 / 4	0.053 - 0.67	0.60
Silver	0.4	J	0.4	J	SD-02-01-ME	1 / 4	0.01 - 0.33	0.20
Thallium	0.469995	J	0.82		SD-02-02-FW	2 / 4	0.038 - 0.78	0.49
Vanadium	9.7		32.2		SD-02-01-ME	4 / 4	0.073	18
Zinc	34.8		992	J	SD-02-01-ME	4 / 4	0.16	342
Total Combustible Organics (mg/Kg)	125000	J	125000	J	SD-02-01-ME	1 / 1	2000	125000
Total Organic Carbon (mg/Kg)	2690		9420		SD-02-02-FW	3 / 3	N/A	6212

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Includes samples applicable to the muskrat model

US EPA ARCHIVE DOCUMENT

TABLE 4-48
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 03
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	70		70		SD-03-02-FW	1 / 3	12	27
Acetone						0 / 3	12 - 310	59
cis-1,2-Dichloroethene	28	J	28	J	SD-03-02-ME	1 / 1	44	28.0
Tetrachloroethene						0 / 4	12 - 132	22.5
Trichloroethene						0 / 4	12 - 44	11.5
SVOCs - ug/Kg								
2-Methylnaphthalene	16	J	16	J	SD-03-02-ME	1 / 4	67 - 800	203
Acenaphthylene	39	J	39	J	SD-03-02-ME	1 / 4	67 - 800	209
Anthracene	81	J	120		SD-03-02-ME	2 / 4	67 - 400	149
Benzo(a)anthracene	320	J	1300		SD-03-02-ME	2 / 4	67 - 400	504
Benzo(a)pyrene	420	J	1000		SD-03-02-ME	2 / 4	67 - 400	454
Benzo(b)fluoranthene	1400		1400		SD-03-02-ME	1 / 4	67 - 800	549
Benzo(g,h,i)perylene	350	J	570		SD-03-02-ME	2 / 4	67 - 400	329
Benzo(k)fluoranthene	640		640		SD-03-02-ME	1 / 4	67 - 800	359
Carbazole						0 / 3	390 - 800	265
Chrysene	590	J	1300		SD-03-02-ME	2 / 4	67 - 400	571
Dibenz(a,h)anthracene	110		110		SD-03-02-ME	1 / 4	67 - 800	226
Dibenzofuran						0 / 3	390 - 800	265
Fluoranthene	740	J	2600		SD-03-02-ME	2 / 4	67 - 400	934
Fluorene	150		150		SD-03-02-ME	1 / 4	67 - 800	236
Indeno(1,2,3-cd)pyrene	330	J	620		SD-03-02-ME	2 / 4	67 - 400	336
Naphthalene	18	J	18	J	SD-03-02-ME	1 / 4	67 - 800	203
N-nitrosodiphenylamine						0 / 3	390 - 800	265
Phenanthrene	370	J	1000		SD-03-02-ME	2 / 4	67 - 400	441
Pyrene	880	J	2600		SD-03-02-ME	2 / 4	67 - 400	969
PCBs/Pesticides - ug/Kg								
4,4'-DDD	21		94		SD-03-02-ME	2 / 4	3.2 - 4	30
4,4'-DDE	18	J	29		SD-03-02-ME	2 / 4	3.2 - 4	13
4,4'-DDT	5.8	J	5.8	J	SD-03-02-ME	1 / 4	3.2 - 8	3
Aldrin						0 / 4	1.6 - 4.1	1.2
alpha-Chlordane	5.2	J	11	J	SD-03-02-ME	2 / 4	1.6 - 2.1	4.6
Aroclor 1248	160	J	160	J	SD-03-02-ME	1 / 4	3.2 - 80	60
Aroclor 1254						0 / 4	3.2 - 80	20
Aroclor 1260	110		110		SD-03-02-ME	1 / 4	3.2 - 80	47
beta-BHC						0 / 4	1.6 - 4.1	1.2
delta-BHC	2.3	J	2.3	J	SD-03-02-ME	1 / 4	1.6 - 4.1	1.6
Endosulfan I						0 / 4	1.6 - 4.1	1.2
Endosulfan Sulfate						0 / 4	3.2 - 8	2.4
Endrin Aldehyde	8.7	J	8.7	J	SD-03-02-FW	1 / 4	3.2 - 4	3.6
gamma-Chlordane	9.3	J	9.3	J	SD-03-02-ME	1 / 4	1.6 - 4.1	3.4
Metals - mg/Kg								
Aluminum	2730		6720	J	SD-03-02-ME	4 / 4	3.5	4760
Antimony	0.41	J	1.7	J	SD-03-02-ME	3 / 4	0.27 - 0.55	0.92
Arsenic	5.4		86.5		SD-03-02-ME	4 / 4	0.22	35
Barium	9		84.6		SD-03-02-ME	4 / 4	0.018	34
Beryllium	0.42		0.59	J	SD-03-02-ME	2 / 4	0.028 - 0.15	0.29
Cadmium	3.3		5.2		SD-03-02-ME	2 / 4	0.028 - 0.35	2.13
Chromium	9.6		200	J	SD-03-02-ME	4 / 4	0.055	75
Cobalt	4		21.4	J	SD-03-02-ME	4 / 4	0.38	11.4
Copper	6.4		171		SD-03-02-ME	4 / 4	0.083	75
Cyanide						0 / 3	0.63 - 1.5	0.46
Iron	4450		21900	J	SD-03-02-ME	4 / 4	0.57	11005
Lead	10.1		345	J	SD-03-02-ME	4 / 4	0.27	125
Manganese	69.1		503		SD-03-02-ME	4 / 4	0.018	234
Mercury	0.06	J	0.71		SD-03-02-ME	3 / 4	0.0051 - 0.04	0.26
Nickel	4.9		26.7	J	SD-03-02-ME	4 / 4	0.15	12
Selenium	4.2	J	4.2	J	SD-03-02-ME	1 / 4	0.053 - 2	1.44
Silver	0.69	J	0.69	J	SD-03-02-ME	1 / 4	0.01 - 0.54	0.31
Thallium						0 / 4	0.039 - 1.3	0.38
Vanadium	7.9		49.2		SD-03-02-ME	4 / 4	0.074	22
Zinc	60.4		1420	J	SD-03-02-ME	4 / 4	0.17	725
Total Combustible Organics (mg/Kg)	195000	J	195000	J	SD-03-02-ME	1 / 1	2000	195000
Total Organic Carbon (mg/Kg)	602		55000		SD-03-02-FW	3 / 3	N/A	18924

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-49
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 04¹
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	82	J	99	J	SD-AO-03-TR	2 / 4	15 - 50	50
Acetone	340	J	340	J	SD-AO-03-TR	1 / 4	48 - 340	142
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene						0 / 3	15 - 26	10.7
Trichloroethene						0 / 3	15 - 26	10.7
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 4	350 - 870	310
Acenaphthylene	350	J	350	J	SD-04-03-FW	1 / 4	350 - 750	289
Anthracene	180	J	960	J	SD-04-03-FW	3 / 4	350	469
Benzo(a)anthracene	240	J	3900	J	SD-04-03-FW	4 / 4	350	1688
Benzo(a)pyrene	290	J	4200	J	SD-04-03-FW	4 / 4	350	1773
Benzo(b)fluoranthene	520		4800	J	SD-04-03-FW	4 / 4	350	1930
Benzo(g,h,i)perylene	460	J	2300	J	SD-04-03-FW	3 / 4	350	1034
Benzo(k)fluoranthene	490	J	3500	J	SD-04-03-FW	3 / 4	350	1516
Carbazole	130	J	400	J	SD-04-03-FW	2 / 4	350 - 510	240
Chrysene	290	J	5900	J	SD-04-03-FW	4 / 4	350	2410
Dibenz(a,h)anthracene	150	J	1100	J	SD-04-03-FW	3 / 4	350	479
Dibenzofuran	170	J	170	J	SD-04-03-FW	1 / 4	350 - 750	244
Fluoranthene	540		7100	J	SD-04-03-FW	4 / 4	350	3310
Fluorene	180	J	470	J	SD-04-03-FW	2 / 4	350 - 510	270
Indeno(1,2,3-cd)pyrene	380	J	2100	J	SD-04-03-FW	3 / 4	350	939
Naphthalene	160	J	160	J	SD-04-03-FW	1 / 4	350 - 750	241
N-nitrosodiphenylamine						0 / 4	350 - 870	310
Phenanthrene	200	J	4600	J	SD-04-03-FW	4 / 4	350	1900
Pyrene	500		7000	J	SD-04-03-FW	4 / 4	350	3175
PCBs/Pesticides - ug/Kg								
4,4'-DDD	140	J	140	J	SD-04-03-FW	1 / 4	2.8 - 37	43
4,4'-DDE	2.4	J	56	J	SD-04-03-FW	2 / 4	2.8 - 37	22
4,4'-DDT						0 / 3	2.8 - 37	11
Aldrin						0 / 3	1.4 - 19	5.6
alpha-Chlordane						0 / 3	1.4 - 19	5.6
Aroclor 1248						0 / 3	28 - 370	108
Aroclor 1254						0 / 3	28 - 370	108
Aroclor 1260						0 / 3	28 - 370	108
beta-BHC						0 / 3	1.4 - 19	5.6
delta-BHC						0 / 3	1.4 - 19	5.6
Endosulfan I						0 / 3	1.4 - 19	5.6
Endosulfan Sulfate						0 / 3	2.8 - 37	10.8
Endrin Aldehyde						0 / 3	2.8 - 37	10.8
gamma-Chlordane						0 / 3	1.4 - 19	5.6
Metals - mg/Kg								
Aluminum	3190		20550		SD-AO-02	7 / 7	3.4632 - 370	14389
Antimony	1	J	5.1		SD-AO-03-TR	3 / 4	0.93 - 103	2.29
Arsenic	16.5		132		SD-AO-03	7 / 7	0.3463 - 406	86
Barium	11.6		189		SD-AO-03-TR	7 / 7	0.3463 - 35.9	123
Beryllium	0.4		1.1	J	SD-AO-03-TR	6 / 7	0.1385 - 4.75	0.79
Cadmium	0.8		11.45		SD-AO-02	7 / 7	0.1385 - 22.7	7.58
Chromium	27		364.5		SD-AO-02	7 / 7	0.3463 - 63.7	230
Cobalt	6.8		28.8		SD-AO-03	7 / 7	0.3463 - 100	21.0
Copper	54.8		469		SD-AO-02	7 / 7	0.3463 - 45	316
Cyanide	1.4		1.8		SD-AO-03	3 / 6	0.2296 - 1.6	1.07
Iron	6650		46200	J	SD-AO-03	7 / 7	2.7706 - 2406	30044
Lead	75.7		662		SD-AO-03	7 / 7	0.2078 - 75	443
Manganese	51.9		1280		SD-AO-03	7 / 7	0.3463 - 12.7	673
Mercury	0.06	J	1.5	J	SD-AO-03	7 / 7	0.1805 - 100	0.90
Nickel	5.8		45.8		SD-AO-03	7 / 7	0.3463 - 63	28
Selenium	1.6	J	2.7	J	SD-AO-02	3 / 7	0.7921 - 498	1.42
Silver	0.38	J	0.565	J	SD-AO-02	3 / 7	0.3463 - 41.7	0.39
Thallium	0.6	J	1.6		SD-04-03-FW	4 / 7	0.2376 - 400	0.75
Vanadium	12.3		80.8	J	SD-AO-03	7 / 7	0.3463 - 87	52
Zinc	415		2285		SD-AO-02	7 / 7	0.3463 - 75.9	1703
Total Combustible Organics (mg/Kg)	21500		93400		SD-04-03-FW	3 / 3	N/A	56433
Total Organic Carbon (mg/Kg)	210000		210000		SD-AO-03-TR	1 / 1	250	210000

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Includes samples applicable to the muskrat model

TABLE 4-50
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 05
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	39	J	39	J	SD-05-03-FW	1 / 3	12	17
Acetone						0 / 3	12 - 180	34
cis-1,2-Dichloroethene	7	J	7	J	SD-05-03-ME	1 / 1	9	7.0
Tetrachloroethene						0 / 4	12 - 28	9.0
Trichloroethene	6	J	6	J	SD-05-03-ME	1 / 4	9 - 20	7.0
SVOCs - ug/Kg								
2-Methylnaphthalene	55.5	J	55.5	J	SD-05-03-ME	1 / 4	67 - 650	195
Acenaphthylene	36	J	250	J	SD-05-03-FW	2 / 4	67 - 410	172
Anthracene	245	J	520	J	SD-05-03-FW	2 / 4	67 - 410	291
Benzo(a)anthracene	130	J	2300	J	SD-05-03-FW	4 / 4	67	899
Benzo(a)pyrene	130	J	2500	J	SD-05-03-FW	4 / 4	67	884
Benzo(b)fluoranthene	130	J	3000	J	SD-05-03-FW	3 / 4	67 - 390	1015
Benzo(g,h,i)perylene	120	J	1200	J	SD-05-03-FW	3 / 4	67 - 410	458
Benzo(k)fluoranthene	120	J	1900	J	SD-05-03-FW	3 / 4	67 - 390	665
Carbazole	220	J	220	J	SD-05-03-FW	1 / 3	390 - 410	207
Chrysene	160	J	2900	J	SD-05-03-FW	4 / 4	67	1054
Dibenz(a,h)anthracene	112.5	J	112.5	J	SD-05-03-ME	1 / 4	67 - 650	209
Dibenzofuran	87	J	87	J	SD-05-03-FW	1 / 3	390 - 410	162
Fluoranthene	260	J	4400	J	SD-05-03-FW	4 / 4	67	1813
Fluorene	225	J	230	J	SD-05-03-FW	2 / 4	67 - 410	214
Indeno(1,2,3-cd)pyrene	64	J	1200	J	SD-05-03-FW	4 / 4	67	430
Naphthalene	34.5	J	83	J	SD-05-03-FW	2 / 4	67 - 410	129
N-nitrosodiphenylamine						0 / 3	390 - 650	242
Phenanthrene	110	J	2200	J	SD-05-03-FW	4 / 4	67	1063
Pyrene	250	J	4100	J	SD-05-03-FW	4 / 4	67	1690
PCBs/Pesticides - ug/Kg								
4,4'-DDD	180		180		SD-05-03-ME	1 / 2	3.3 - 21	95
4,4'-DDE	35.5		35.5		SD-05-03-ME	1 / 2	3.3 - 21	23
4,4'-DDT	9.25	J	9.25	J	SD-05-03-ME	1 / 2	3.3 - 21	10
Aldrin						0 / 2	1.7 - 11	3.2
alpha-Chlordane	13.05	J	13.05	J	SD-05-03-ME	1 / 2	1.7 - 11	9.3
Aroclor 1248	120	J	120	J	SD-05-03-ME	1 / 2	3.3 - 210	113
Aroclor 1254						0 / 2	3.3 - 210	53
Aroclor 1260	74.5		74.5		SD-05-03-ME	1 / 2	3.3 - 210	90
beta-BHC						0 / 2	1.7 - 11	3.2
delta-BHC	3.65	J	3.65	J	SD-05-03-ME	1 / 2	1.7 - 11	4.6
Endosulfan I						0 / 2	1.7 - 11	3.2
Endosulfan Sulfate						0 / 2	3.3 - 21	6.1
Endrin Aldehyde						0 / 2	3.3 - 21	6.1
gamma-Chlordane	11.65	J	11.65	J	SD-05-03-ME	1 / 2	1.7 - 11	8.6
Metals - mg/Kg								
Aluminum	4470		6470		SD-05-02-FW	4 / 4	3.7	5073
Antimony	0.44	J	1.8	J	SD-05-03-FW	4 / 4	0.28	1.15
Arsenic	5.1		24.8		SD-05-03-FW	4 / 4	0.23	12
Barium	21.3		43.2		SD-05-02-FW	4 / 4	0.019	32
Beryllium	0.18		0.3		SD-05-03-FW	4 / 4	0.029	0.26
Cadmium	0.62		1.6		SD-05-03-FW	2 / 4	0.0048 - 0.043	0.56
Chromium	15		149		SD-05-03-FW	4 / 4	0.058	62
Cobalt	5	J	16		SD-05-03-FW	4 / 4	0.39	8.5
Copper	10.9		80.3		SD-05-03-FW	4 / 4	0.086	39
Cyanide						0 / 3	0.6 - 0.98	0.37
Iron	7990		14200		SD-05-01-FW	4 / 4	0.59	11163
Lead	39.3		655	J	SD-05-03-ME	4 / 4	0.28	236
Manganese	97.45		952		SD-05-02-FW	4 / 4	0.019	349
Mercury	0.225		1.2	J	SD-05-03-FW	2 / 4	0.005 - 0.05	0.37
Nickel	6.8		11	J	SD-05-03-ME	4 / 4	0.15	9
Selenium						0 / 4	0.053 - 2.1	0.47
Silver	0.455	J	0.455	J	SD-05-03-ME	1 / 4	0.01 - 0.54	0.25
Thallium	0.85		0.97		SD-05-02-FW	2 / 4	0.038 - 1.3	0.62
Vanadium	12.5		23.55		SD-05-03-ME	4 / 4	0.077	17
Zinc	111		571		SD-05-03-FW	4 / 4	0.17	234
Total Combustible Organics (mg/Kg)	1840		59100	J	SD-05-03-ME	4 / 4	2000	30195
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-51
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 06
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	45		62		SD-06-01-FW	3 / 3	N/A	51
Acetone						0 / 4	26 - 280	105
cis-1,2-Dichloroethene	38	J	38	J	SD-06-03-ME	1 / 1	32	38.0
Tetrachloroethene						0 / 4	20 - 96	20.9
Trichloroethene	52	J	52	J	SD-06-03-ME	1 / 4	20 - 32	21.9
SVOCs - ug/Kg								
2-Methylnaphthalene	40	J	40	J	SD-06-03-ME	1 / 5	67 - 2900	499
Acenaphthylene	110	J	130	J	SD-06-01-FW	3 / 5	67 - 2900	425
Anthracene	64	J	1300	J	SD-06-03-FW	5 / 5	67 - 630	477
Benzo(a)anthracene	310	J	4200	J	SD-06-03-ME	5 / 5	67 - 630	1788
Benzo(a)pyrene	370	J	5100	J	SD-06-03-ME	5 / 5	67 - 630	1910
Benzo(b)fluoranthene	610	J	6100	J	SD-06-03-ME	4 / 5	67 - 730	2087
Benzo(g,h,i)perylene	150	J	1900	J	SD-06-03-ME	5 / 5	10 - 67	954
Benzo(k)fluoranthene	160	J	2400	J	SD-06-03-FW	4 / 5	67 - 730	983
Carbazole	98	J	98	J	SD-06-01-FW	1 / 4	630 - 2900	547
Chrysene	450	J	6900	J	SD-06-03-ME	5 / 5	67 - 630	2690
Dibenz(a,h)anthracene	720	J	720	J	SD-06-03-ME	1 / 5	67 - 2900	635
Dibenzofuran						0 / 4	630 - 2900	614
Fluoranthene	780		11000		SD-06-03-FW	5 / 5	67 - 630	5016
Fluorene	110	J	430	J	SD-06-03-FW	3 / 5	67 - 650	316
Indeno(1,2,3-cd)pyrene	150	J	2400	J	SD-06-03-ME	5 / 5	67 - 630	968
Naphthalene	53	J	53	J	SD-06-03-ME	1 / 5	67 - 2900	502
N-nitrosodiphenylamine						0 / 4	630 - 2900	614
Phenanthrene	340	J	6300		SD-06-03-FW	5 / 5	67 - 630	2666
Pyrene	600	J	7500		SD-06-03-ME	5 / 5	67 - 630	3380
PCBs/Pesticides - ug/Kg								
4,4'-DDD	2.2		94	J	SD-06-01-FW	5 / 5	1.3 - 3.2	71
4,4'-DDE	2.6		100	J	SD-06-03-FW	5 / 5	1.3 - 3.2	71
4,4'-DDT	15	J	32	J	SD-06-01-FW	2 / 4	1.3 - 49	18
Aldrin						0 / 4	0.63 - 25	5.8
alpha-Chlordane	27	J	80		SD-06-03-ME	4 / 5	0.63 - 1.6	34.1
Aroclor 1248	120	J	120	J	SD-06-03-ME	1 / 4	3.2 - 490	139
Aroclor 1254						0 / 4	3.2 - 490	110
Aroclor 1260	82		82		SD-06-03-ME	1 / 4	3.2 - 490	130
beta-BHC						0 / 4	0.63 - 25	5.8
delta-BHC	25	J	25	J	SD-06-03-ME	1 / 4	0.63 - 25	11.8
Endosulfan I						0 / 4	0.63 - 25	5.8
Endosulfan Sulfate						0 / 4	1.3 - 49	11.3
Endrin Aldehyde						0 / 4	1.3 - 49	11.3
gamma-Chlordane	48	J	48	J	SD-06-03-ME	1 / 4	0.63 - 25	17.6
Metals - mg/Kg								
Aluminum	4780		15700		SD-JP-01	6 / 6	3.5 - 9.14	9907
Antimony	1.2	J	2.8	J	SD-06-03-FW	6 / 6	0.26 - 0.74	2.28
Arsenic	21.8		135		SD-JP-01	6 / 6	0.22 - 1	74
Barium	28.9		130		SD-06-03-ME	6 / 6	0.018 - 0.4439	77
Beryllium	0.28		1		SD-06-03-ME	6 / 6	0.027 - 0.2	0.61
Cadmium	1.5		9.8		SD-JP-01	6 / 6	0.037 - 0.6	5.03
Chromium	172		442		SD-06-03-FW	6 / 6	0.055 - 1	306
Cobalt	6		20.9		SD-06-03-ME	6 / 6	0.36 - 0.4439	14.1
Copper	83.9		435		SD-JP-01	6 / 6	0.082 - 0.4439	238
Cyanide	2.2		3	J	SD-JP-01	2 / 4	0.4085 - 1.5	1.61
Iron	9930		40600		SD-06-03-ME	6 / 6	0.57 - 1.7754	22738
Lead	193		455		SD-06-03-ME	6 / 6	0.26 - 0.6	366
Manganese	296		1630		SD-06-03-ME	6 / 6	0.018 - 0.4439	679
Mercury	0.4	J	3.2		SD-JP-01	6 / 6	0.005 - 0.1235	1.36
Nickel	10.7		35.5	J	SD-JP-01	6 / 6	0.15 - 0.8	22
Selenium	1.6	J	3.4	J	SD-06-03-ME	2 / 6	0.4 - 2.1	1.28
Silver	0.18	J	0.18	J	SD-06-03-ME	1 / 6	0.01 - 1	0.27
Thallium	0.92	J	1.2		SD-06-03-FW	2 / 6	0.043 - 1.2	0.68
Vanadium	24.5		60.2		SD-06-03-ME	6 / 6	0.073 - 0.64	41
Zinc	384		1920		SD-JP-01	6 / 6	0.16 - 1.7	1068
Total Combustible Organics (mg/Kg)	41600		197000	J	SD-06-03-ME	4 / 4	2000	88800
Total Organic Carbon (mg/Kg)	100000		100000		SD-06-03-TR	1 / 1	250	100000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-52
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 07
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	10.25	J	89		SD-07-04-FW	3 / 10	13 - 28	23
Acetone						0 / 9	21 - 280	46
cis-1,2-Dichloroethene	18	J	24	J	SD-07-10-ME	3 / 3	25 - 34	20.7
Tetrachloroethene						0 / 12	13 - 101	19.0
Trichloroethene	16	J	35	J	SD-07-10-ME	3 / 12	13 - 34	14.6
SVOCs - ug/Kg								
2-Methylnaphthalene	44	J	130	J	SD-07-10-FW	6 / 12	67 - 2700	371
Acenaphthylene	67	J	480	J	SD-07-10-FW	8 / 12	67 - 2700	367
Anthracene	131	J	1100	J	SD-07-09-FW	13 / 13	67	605
Benzo(a)anthracene	415	J	9600		SD-07-10-ME	13 / 13	67	3993
Benzo(a)pyrene	490	J	10000		SD-07-10-ME	13 / 13	67	3891
Benzo(b)fluoranthene	555		16000	J	SD-07-10-ME	13 / 13	67	6812
Benzo(g,h,i)perylene	270	J	5300		SD-07-10-ME	12 / 13	67 - 890	1778
Benzo(k)fluoranthene	480	J	14000	J	SD-07-05-FW	13 / 13	67	5291
Carbazole	83	J	680	J	SD-07-09-FW	10 / 10	N/A	338
Chrysene	670	J	10000		SD-07-10-ME	13 / 13	67	4996
Dibenz(a,h)anthracene	82	J	2000		SD-07-10-ME	11 / 13	67 - 890	573
Dibenzofuran	96	J	190	J	SD-07-06-FW	4 / 9	430 - 2700	407
Fluoranthene	1000		23000		SD-07-10-ME	13 / 13	67	9142
Fluorene	100	J	640		SD-07-02-ME	12 / 13	67 - 430	391
Indeno(1,2,3-cd)pyrene	220	J	6900		SD-07-10-ME	12 / 13	67 - 890	2028
Naphthalene	52	J	130	J	SD-07-10-FW	6 / 12	67 - 2700	367
N-nitrosodiphenylamine						0 / 9	420 - 2700	559
Phenanthrene	400	J	12000		SD-07-10-ME	13 / 13	67	4138
Pyrene	840	J	15000		SD-07-10-ME	13 / 13	67	7080
PCBs/Pesticides - ug/Kg								
4,4'-DDD	18		76		SD-07-10-FW	12 / 13	3.2 - 21	39
4,4'-DDE	12	J	69		SD-07-10-FW	12 / 13	3.2 - 21	32
4,4'-DDT	3.8	J	47		SD-07-10-FW	12 / 13	3.2 - 21	22
Aldrin	0.24	J	5.7		SD-07-09-FW	6 / 12	1.6 - 11	2.6
alpha-Chlordane	9.25	J	80		SD-07-10-ME	13 / 13	1.6	35.5
Aroclor 1248	29	J	67	J	SD-07-10-ME	3 / 12	3.2 - 210	46
Aroclor 1254						0 / 12	3.2 - 210	35
Aroclor 1260	50		95		SD-07-02-ME	3 / 12	3.2 - 210	53
beta-BHC	1.5	J	6.6		SD-07-07-FW	7 / 13	1.6 - 11	3.2
delta-BHC	0.33	J	24	J	SD-07-05-ME	7 / 13	1.6 - 11	4.5
Endosulfan I						0 / 12	1.6 - 11	2.0
Endosulfan Sulfate	2.1	J	3.9	J	SD-07-04-FW	2 / 13	3.2 - 21	3.7
Endrin Aldehyde	0.94	J	27	J	SD-07-02-ME	7 / 12	3.2 - 21	5.5
gamma-Chlordane	8.8		53	J	SD-07-04-FW	12 / 13	1.6 - 11	26.1
Metals - mg/Kg								
Aluminum	4890	J	22600	J	SD-07-10-FW	13 / 13	3.5 - 3.6	10171
Antimony	0.72		3.1		SD-07-10-FW	13 / 13	0.26 - 0.27	2.00
Arsenic	10.3	J	129	J	SD-07-10-FW	13 / 13	0.22	62
Barium	21.35		118		SD-07-05-ME	13 / 13	0.018 - 0.019	67
Beryllium	0.23		1.3		SD-07-10-FW	10 / 13	0.027 - 0.32	0.56
Cadmium	0.645		10.3		SD-07-10-FW	7 / 13	0.037 - 6.1	3.37
Chromium	31.9	J	442	J	SD-07-10-FW	13 / 13	0.055 - 0.056	184
Cobalt	6.1		32.6		SD-07-10-FW	13 / 13	0.37 - 0.38	14.4
Copper	23.4	J	380	J	SD-07-10-FW	13 / 13	0.082 - 0.084	175
Cyanide	1.4		1.8		SD-07-05-FW	2 / 10	0.54 - 1.4	0.72
Iron	9490	J	35400		SD-07-05-ME	13 / 13	0.57 - 0.58	20693
Lead	41.2		480		SD-07-04-FW	13 / 13	0.26 - 0.27	267
Manganese	108.55		595	J	SD-07-04-FW	13 / 13	0.018 - 0.019	337
Mercury	0.28	J	5.7	J	SD-07-10-FW	12 / 13	0.005 - 0.11	1.44
Nickel	8.2		37.5		SD-07-05-ME	13 / 13	0.15	23
Selenium	1.9		2.4	J	SD-07-10-ME	4 / 13	0.052 - 3.2	1.19
Silver	0.78	J	1.1		SD-07-04-FW	4 / 13	0.0095 - 0.79	0.46
Thallium	0.815		3.8		SD-07-10-FW	9 / 13	0.043 - 1.6	1.57
Vanadium	17.2		79.2		SD-07-10-FW	13 / 13	0.073 - 0.075	40
Zinc	106	J	2490	J	SD-07-10-FW	13 / 13	0.16 - 0.17	974
Total Combustible Organics (mg/Kg)	13800		218000	J	SD-07-10-ME	13 / 13	2000	95865
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-53
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 08
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone						0 / 3	12 - 15	7
Acetone						0 / 3	12 - 24	9
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene						0 / 3	12 - 15	6.7
Trichloroethene						0 / 3	12 - 15	6.7
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 3	400 - 490	218
Acenaphthylene	81	J	120	J	SD-08-02-FW	2 / 3	400	134
Anthracene	56	J	120	J	SD-08-02-FW	3 / 3	N/A	99
Benzo(a)anthracene	290	J	680		SD-08-02-FW	3 / 3	N/A	483
Benzo(a)pyrene	450		940		SD-08-02-FW	3 / 3	N/A	627
Benzo(b)fluoranthene	950		1900		SD-08-02-FW	3 / 3	N/A	1283
Benzo(g,h,i)perylene	260	J	700		SD-08-02-FW	3 / 3	N/A	413
Benzo(k)fluoranthene	960		2000		SD-08-02-FW	3 / 3	N/A	1353
Carbazole	63	J	110	J	SD-08-02-FW	2 / 3	420	128
Chrysene	450		1000		SD-08-02-FW	3 / 3	N/A	677
Dibenz(a,h)anthracene	60	J	160	J	SD-08-02-FW	3 / 3	N/A	93
Dibenzofuran	56	J	56	J	SD-08-02-FW	1 / 3	400 - 420	155
Fluoranthene	520		1400		SD-08-02-FW	3 / 3	N/A	897
Fluorene	50	J	100	J	SD-08-02-FW	3 / 3	N/A	73
Indeno(1,2,3-cd)pyrene	240	J	680		SD-08-02-FW	3 / 3	N/A	400
Naphthalene	41	J	200	J	SD-08-02-FW	3 / 3	N/A	98
N-nitrosodiphenylamine	58	J	58	J	SD-08-01-FW	1 / 3	400 - 490	168
Phenanthrene	280	J	610		SD-08-02-FW	3 / 3	N/A	477
Pyrene	640	J	2000		SD-08-02-FW	3 / 3	N/A	1150
PCBs/Pesticides - ug/Kg								
4,4'-DDD	3.3	J	9.8		SD-08-01-FW	3 / 3	N/A	7
4,4'-DDE	3.5	J	4.2	J	SD-08-03-FW	3 / 3	N/A	4
4,4'-DDT	0.87	J	3	J	SD-08-01-FW	2 / 2	N/A	2
Aldrin						0 / 2	2.1 - 2.5	1.2
alpha-Chlordane	1.5	J	1.5	J	SD-08-03-FW	1 / 3	2.1 - 2.5	1.3
Aroclor 1248						0 / 2	41 - 49	23
Aroclor 1254						0 / 2	41 - 49	23
Aroclor 1260						0 / 2	41 - 49	23
beta-BHC						0 / 2	2.1 - 2.5	1.2
delta-BHC	0.32	J	0.32	J	SD-08-03-FW	1 / 3	2.1 - 2.5	0.9
Endosulfan I						0 / 2	2.1 - 2.5	1.2
Endosulfan sulfate						0 / 2	4.1 - 4.9	2.3
Endrin aldehyde	0.47	J	0.47	J	SD-08-02-FW	1 / 2	4.1	1.3
gamma-Chlordane	0.25	J	1.4	J	SD-08-03-FW	3 / 3	N/A	0.8
Metals - mg/Kg								
Aluminum	4590	J	5950	J	SD-08-02-FW	3 / 3	N/A	5457
Antimony	0.74		1.6		SD-08-02-FW	3 / 3	N/A	1.03
Arsenic	10.8	J	28.9	J	SD-08-02-FW	3 / 3	N/A	19
Barium	15.7		21.2		SD-08-02-FW	3 / 3	N/A	19
Beryllium	0.25		0.32		SD-08-02-FW	2 / 3	0.19	0.22
Cadmium						0 / 3	0.6 - 1.8	0.62
Chromium	17.8	J	119	J	SD-08-02-FW	3 / 3	N/A	54
Cobalt	5.2		10.6		SD-08-02-FW	3 / 3	N/A	7.3
Copper	28.3	J	133	J	SD-08-02-FW	3 / 3	N/A	74
Cyanide						0 / 3	0.6 - 0.61	0.30
Iron	7110	J	23200	J	SD-08-02-FW	3 / 3	N/A	13237
Lead	20		70.7		SD-08-02-FW	3 / 3	N/A	43
Manganese	99.5	J	228	J	SD-08-02-FW	3 / 3	N/A	161
Mercury	0.11	J	1	J	SD-08-02-FW	3 / 3	N/A	0.46
Nickel	7		20.2		SD-08-02-FW	3 / 3	N/A	12
Selenium						0 / 3	0.67 - 0.9	0.39
Silver						0 / 3	0.27 - 0.32	0.15
Thallium	1.1		1.7		SD-08-02-FW	3 / 3	N/A	1.43
Vanadium	11.6		17.5		SD-08-02-FW	3 / 3	N/A	15
Zinc	171	J	539	J	SD-08-02-FW	3 / 3	N/A	350
Total Combustible Organics (mg/Kg)	7560		17900		SD-08-02-FW	2 / 3	117	8506
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-54
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 09
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone						0 / 10	12 - 16	7
Acetone						0 / 10	12 - 21	8
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene						0 / 10	12 - 16	6.6
Trichloroethene						0 / 10	12 - 16	6.6
SVOCs - ug/Kg								
2-Methylnaphthalene	220	J	220	J	SD-09-06-FW	1 / 10	390 - 520	219
Acenaphthylene	82	J	82	J	SD-09-06-FW	1 / 10	390 - 520	205
Anthracene	930		930		SD-09-06-FW	1 / 10	390 - 520	290
Benzo(a)anthracene	40	J	1000		SD-09-06-FW	8 / 10	410 - 520	212
Benzo(a)pyrene	45	J	1100		SD-09-06-FW	8 / 10	410 - 520	209
Benzo(b)fluoranthene	76	J	2300		SD-09-06-FW	8 / 10	410 - 520	396
Benzo(g,h,i)perylene	44	J	290	J	SD-09-06-FW	2 / 10	390 - 520	210
Benzo(k)fluoranthene	69	J	2100		SD-09-06-FW	8 / 10	410 - 520	361
Carbazole	480		480		SD-09-06-FW	1 / 10	390 - 520	245
Chrysene	48	J	1400		SD-09-06-FW	8 / 10	410 - 520	252
Dibenz(a,h)anthracene	80	J	80	J	SD-09-06-FW	1 / 10	390 - 520	205
Dibenzofuran	500		500		SD-09-06-FW	1 / 10	390 - 520	247
Fluoranthene	42	J	1800		SD-09-06-FW	9 / 10	410	338
Fluorene	45	J	810		SD-09-06-FW	2 / 10	390 - 520	262
Indeno(1,2,3-cd)pyrene	21	J	370	J	SD-09-06-FW	4 / 10	390 - 520	188
Naphthalene	250	J	250	J	SD-09-06-FW	1 / 10	390 - 520	222
N-nitrosodiphenylamine						0 / 10	390 - 520	217
Phenanthrene	62	J	1900		SD-09-06-FW	8 / 10	410 - 520	306
Pyrene	52	J	2200		SD-09-06-FW	9 / 10	410	371
PCBs/Pesticides - ug/Kg								
4,4'-DDD	0.46	J	83		SD-09-07-FW	9 / 10	4.4	16
4,4'-DDE	0.089	J	27		SD-09-02-FW	9 / 10	3.9	8
4,4'-DDT	0.29	J	19		SD-09-07-FW	10 / 10	N/A	4
Aldrin	0.12	J	2	J	SD-09-02-FW	8 / 10	2.1 - 2.3	0.6
alpha-Chlordane	0.28	J	1.9	J	SD-09-07-FW	7 / 10	2 - 2.7	0.8
Aroclor 1248						0 / 10	39 - 52	22
Aroclor 1254						0 / 10	39 - 52	22
Aroclor 1260						0 / 10	39 - 52	22
beta-BHC	0.1	J	0.92	J	SD-09-07-FW	5 / 10	2 - 2.7	0.7
delta-BHC	0.08	J	0.85	J	SD-09-10-FW	2 / 10	2 - 2.7	1.0
Endosulfan I	0.11	J	0.51	J	SD-09-07-FW	2 / 10	2 - 2.7	0.9
Endosulfan sulfate						0 / 10	3.9 - 5.2	2.2
Endrin aldehyde	0.9	J	0.9	J	SD-09-02-FW	1 / 10	3.9 - 5.2	2.0
gamma-Chlordane	0.15	J	2.4		SD-09-07-FW	7 / 10	2 - 2.1	0.8
Metals - mg/Kg								
Aluminum	2330	J	7270	J	SD-09-08-FW	10 / 10	N/A	4247
Antimony	0.64		1.3		SD-09-08-FW	8 / 10	0.51 - 0.57	0.81
Arsenic	18.1	J	48.5	J	SD-09-02-FW	10 / 10	N/A	29
Barium	6		73.9		SD-09-10-FW	10 / 10	N/A	21
Beryllium	0.14		0.24		SD-09-03-FW	7 / 10	0.081 - 0.26	0.16
Cadmium	0.19		1.2	J	SD-09-10-FW	2 / 10	0.5 - 1.5	0.49
Chromium	9.3	J	91.8	J	SD-09-01-FW	10 / 10	N/A	45
Cobalt	2.7		13.3		SD-09-10-FW	10 / 10	N/A	5.9
Copper	4.2	J	102	J	SD-09-01-FW	10 / 10	N/A	47
Cyanide						0 / 8	0.49 - 0.78	0.29
Iron	4910	J	30600		SD-09-10-FW	10 / 10	N/A	10919
Lead	2.4		86.8		SD-09-01-FW	10 / 10	N/A	30
Manganese	43.2	J	2640	J	SD-09-10-FW	10 / 10	N/A	365
Mercury	0.19	J	0.68	J	SD-09-07-FW	7 / 10	0.049 - 0.06	0.26
Nickel	5.7		12.5		SD-09-09-FW	10 / 10	N/A	8
Selenium	0.62		0.62		SD-09-10-FW	1 / 10	0.45 - 2.6	0.43
Silver						0 / 10	0.22 - 0.43	0.15
Thallium	0.68		2.4		SD-09-10-FW	6 / 10	0.52 - 1	0.92
Vanadium	6.5		19.3		SD-09-08-FW	10 / 10	N/A	11
Zinc	57.1	J	479	J	SD-09-10-FW	10 / 10	N/A	156
Total Combustible Organics (mg/Kg)	3860		3860		SD-09-10-FW	1 / 2	117	1959
Total Organic Carbon (mg/Kg)	1050		46200		SD-09-02-FW	5 / 8	114 - 121	8735

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-55
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 10
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone						0 / 2	20 - 35	13.8
Acetone						0 / 2	35 - 250	87
cis-1,2-Dichloroethene	64	J	64	J	SD-10-01-ME	1 / 3	35 - 110	43
Tetrachloroethene						0 / 4	20 - 330	81
Trichloroethene	60	J	60	J	SD-10-02-ME	1 / 4	20 - 110	35
SVOCs - ug/Kg								
2-Methylnaphthalene	33	J	33	J	SD-10-01-ME	1 / 4	10 - 660	160
Acenaphthylene	13	J	20	J	SD-10-01-ME	2 / 4	10 - 660	158
Anthracene	49	J	96.5	J	SD-10-01-ME	2 / 4	67 - 660	186
Benzo(a)anthracene	210		580		SD-10-01-ME	2 / 4	67 - 660	348
Benzo(a)pyrene	250		620		SD-10-01-ME	2 / 4	67 - 660	368
Benzo(b)fluoranthene	290	J	965	J	SD-10-01-ME	4 / 6	67 - 660	459
Benzo(g,h,i)perylene	200		365		SD-10-01-ME	2 / 4	67 - 660	291
Benzo(k)fluoranthene	220	J	550	J	SD-10-02-FW	4 / 6	67 - 660	362
Carbazole						0 / 2	540 - 660	300
Chrysene	380		650		SD-10-01-ME	2 / 4	67 - 660	408
Dibenz(a,h)anthracene	69		125		SD-10-01-ME	2 / 4	67 - 660	199
Dibenzofuran						0 / 2	540 - 660	300
Fluoranthene	85	J	1950	J	SD-10-01-ME	5 / 6	67 - 540	586
Fluorene	72	J	115	J	SD-10-01-ME	2 / 4	10 - 660	197
Indeno(1,2,3-cd)pyrene	190		405		SD-10-01-ME	2 / 4	67 - 660	299
Naphthalene	400	J	560	J	SD-10-01-FW	3 / 4	540	174
N-nitrosodiphenylamine	26	J	71	J	SD-10-01-ME	2 / 4	67 - 660	420
Phenanthrene	210		690		SD-10-01-ME	2 / 4	67 - 660	375
Pyrene	99	J	1650	J	SD-10-01-ME	5 / 6	67 - 540	569
PCBs/Pesticides - ug/Kg								
4,4'-DDD	17		179	J	SD-10-01-ME	4 / 6	0.35 - 6.6	74
4,4'-DDE	0.85	J	160	J	SD-10-01-ME	5 / 6	0.35 - 4.2	54
4,4'-DDT	0.93	J	3.5	J	SD-10-01-ME	4 / 6	0.35 - 4.2	1.9
Aldrin	18	J	18	J	SD-10-01-ME	1 / 4	0.17 - 3.4	5.2
alpha-Chlordane	0.92	J	29.5	J	SD-10-01-ME	5 / 6	0.17 - 2.1	8.9
Aroclor 1248	47	J	560	J	SD-10-01-ME	2 / 4	3.4 - 66	165
Aroclor 1254						0 / 4	3.3 - 66	14
Aroclor 1260	44		320	J	SD-10-01-ME	2 / 4	3.4 - 66	105
beta-BHC						0 / 4	0.17 - 3.4	0.9
delta-BHC	0.14	J	0.14	J	SD-10-03-FW	1 / 4	0.17 - 2.1	0.5
Endosulfan I						0 / 4	0.17 - 3.4	0.9
Endosulfan Sulfate						0 / 4	0.35 - 6.6	1.8
Endrin Aldehyde	1.7	J	11.7	J	SD-10-01-ME	2 / 4	0.35 - 6.6	4.7
gamma-Chlordane	0.25	J	20.5	J	SD-10-01-ME	5 / 6	0.17 - 2.1	8.0
Metals - mg/Kg								
Aluminum	7690		29300	J	SD-10-02-FW	6 / 6	3.5 - 9.14	23990
Antimony	3.1		39.7		SD-10-02-TR	6 / 6	0.26 - 0.74	14.6
Arsenic	187	J	2180		SD-10-02-TR	6 / 6	0.22 - 1	863
Barium	32.4		112.6		SD-10-01-ME	6 / 6	0.018 - 0.4	69
Beryllium	0.48		2.05		SD-10-01-ME	6 / 6	0.027 - 0.2	1.54
Cadmium	5.9		21.15	J	SD-10-01-FW	6 / 6	0.037 - 0.6	13.44
Chromium	114	J	3435		SD-10-01-ME	6 / 6	0.055 - 1	1376
Cobalt	11.2		40.3		SD-10-01-ME	6 / 6	0.36 - 0.48	22.0
Copper	298		2315		SD-10-01-ME	6 / 6	0.082 - 0.44	1707
Cyanide						0 / 1	0.91	0.46
Iron	10800		51650		SD-10-01-ME	6 / 6	0.57 - 1.4	33225
Lead	130	J	881		SD-10-01-ME	6 / 6	0.26 - 0.6	590
Manganese	388	J	727		SD-10-02-TR	6 / 6	0.018 - 0.24	532
Mercury	0.19	J	24.2		SD-10-02-ME	6 / 6	0.0049 - 0.02	10.55
Nickel	13.3		45.75		SD-10-01-ME	6 / 6	0.15 - 0.8	27
Selenium	1.9	J	11.5		SD-10-02-ME	6 / 6	0.4 - 1	6.81
Silver	0.395	J	0.57	J	SD-10-02-ME	2 / 4	0.0094 - 1	0.44
Thallium						0 / 4	0.042 - 1.7	0.68
Vanadium	21.4		76.95		SD-10-01-ME	6 / 6	0.073 - 0.64	53
Zinc	1410	J	4020		SD-10-01-ME	6 / 6	0.16 - 1.7	2191
Total Combustible Organics (mg/Kg)	97300		465000	J	SD-10-01-ME	5 / 5	2000	303360
Total Organic Carbon (mg/Kg)	680000		680000		SD-10-02-TR	1 / 1	250	680000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-56
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 11
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	200	J	200	J	SD-11-02-FW	1 / 2	28	107
Acetone						0 / 1	260	130
cis-1,2-Dichloroethene	170	J	170	J	SD-11-01-ME	1 / 1	57	170.0
Tetrachloroethene						0 / 2	28 - 171	49.8
Trichloroethene						0 / 2	28 - 103	32.8
SVOCs - ug/Kg								
2-Methylnaphthalene	16	J	16	J	SD-11-01-ME	1 / 2	1 - 910	236
Acenaphthylene	9	J	9	J	SD-11-01-ME	1 / 2	67 - 910	232
Anthracene	54	J	54	J	SD-11-01-ME	1 / 2	67 - 910	255
Benzo(a)anthracene	120	J	410		SD-11-01-ME	3 / 3	67	280
Benzo(a)pyrene	220	J	520		SD-11-01-ME	2 / 3	67 - 910	398
Benzo(b)fluoranthene	350	J	870	J	SD-11-02-FW	3 / 3	67	667
Benzo(g,h,i)perylene	260	J	300		SD-11-01-ME	2 / 3	67 - 910	338
Benzo(k)fluoranthene	330	J	840	J	SD-11-02-FW	3 / 3	67	630
Carbazole						0 / 1	910	455
Chrysene	180	J	670		SD-11-01-ME	3 / 3	67	417
Dibenz(a,h)anthracene	99		99		SD-11-01-ME	1 / 2	67 - 910	277
Dibenzofuran						0 / 1	910	455
Fluoranthene	300	J	1000		SD-11-01-ME	3 / 3	67	670
Fluorene	57	J	57	J	SD-11-01-ME	1 / 2	1 - 910	256
Indeno(1,2,3-cd)pyrene	270	J	360		SD-11-01-ME	2 / 3	67 - 910	362
Naphthalene	32	J	32	J	SD-11-01-ME	1 / 2	1 - 910	244
N-nitrosodiphenylamine	540	J	540	J	SD-11-02-FW	1 / 2	910	498
Phenanthrene	120	J	260		SD-11-01-ME	3 / 3	67	203
Pyrene	230	J	950		SD-11-01-ME	3 / 3	67	607
PCBs/Pesticides - ug/Kg								
4,4'-DDD	45	J	45	J	SD-11-01-ME	1 / 2	0.33 - 9.2	25
4,4'-DDE	0.76	J	15	J	SD-11-01-ME	3 / 3	0.33	8
4,4'-DDT	0.5	J	1.9	J	SD-11-01-ME	3 / 3	0.33	1
Aldrin	0.59	J	0.59	J	SD-11-03-FW	1 / 2	0.16	0.3
alpha-Chlordane	0.62	J	8.1	J	SD-11-01-ME	3 / 3	0.16	3.8
Aroclor 1248	180	J	180	J	SD-11-01-ME	1 / 2	3.3 - 92	113
Aroclor 1254						0 / 2	3.3 - 92	24
Aroclor 1260	61	J	230		SD-11-01-ME	2 / 3	3.3 - 92	112
beta-BHC						0 / 2	0.16 - 4.7	1.2
delta-BHC						0 / 2	0.16 - 4.7	1.2
Endosulfan I	0.44	J	0.44	J	SD-11-01-ME	1 / 2	0.16 - 4.7	1.4
Endosulfan Sulfate	0.72	J	0.72	J	SD-11-01-ME	1 / 2	0.33 - 9.2	2.7
Endrin Aldehyde	1.7	J	1.7	J	SD-11-01-ME	1 / 2	0.33 - 9.2	3.2
gamma-Chlordane	0.51	J	5.6	J	SD-11-01-ME	3 / 3	0.16	2.9
Metals - mg/Kg								
Aluminum	5090		12600	J	SD-11-01-ME	3 / 3	3.5	9297
Antimony	1.2		2.7		SD-11-03-FW	2 / 3	0.27 - 1.5	1.55
Arsenic	121		473	J	SD-11-03-FW	3 / 3	0.22	287
Barium	24.6		149		SD-11-01-ME	3 / 3	0.018	79
Beryllium	0.38		0.97	J	SD-11-01-ME	3 / 3	0.028	0.62
Cadmium	3.3		9.5		SD-11-01-ME	3 / 3	0.35	5.40
Chromium	303	J	900	J	SD-11-02-FW	3 / 3	0.055	507
Cobalt	8.1		25.3	J	SD-11-01-ME	3 / 3	0.38	17.7
Copper	172		402		SD-11-01-ME	3 / 3	0.083	286
Cyanide						0 / 2	0.97 - 2	0.74
Iron	23800		35800		SD-11-03-FW	3 / 3	0.57	30433
Lead	100	J	606	J	SD-11-01-ME	3 / 3	0.27	275
Manganese	221	J	1630	J	SD-11-03-FW	3 / 3	0.018	860
Mercury	1.1		3.7		SD-11-02-FW	3 / 3	0.0051	2.23
Nickel	9.3		32.8	J	SD-11-01-ME	3 / 3	0.15	19
Selenium	2.4		3.1		SD-11-02-FW	3 / 3	0.053	2.67
Silver	0.92	J	0.92	J	SD-11-01-ME	1 / 3	0.01 - 0.85	0.55
Thallium						0 / 3	0.039 - 2	0.66
Vanadium	16.3		58.8		SD-11-01-ME	3 / 3	0.074	33
Zinc	830	J	2260	J	SD-11-01-ME	3 / 3	0.17	1480
Total Combustible Organics (mg/Kg)	49900		387000	J	SD-11-01-ME	3 / 3	2000	185967
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-57
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 12
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	87	J	87	J	SD-12-02-FW	1 / 2	22	49
Acetone	370	J	370	J	SD-12-03-TR	1 / 2	56 - 89	199
cis-1,2-Dichloroethene	25	J	25	J	SD-12-03-ME	1 / 1	41	25.0
Tetrachloroethene						0 / 2	22 - 124	36.5
Trichloroethene						0 / 2	22 - 41	15.8
SVOCs - ug/Kg								
2-Methylnaphthalene	25	J	25	J	SD-12-03-ME	1 / 3	1 - 730	195
Acenaphthylene	23	J	23	J	SD-12-03-ME	1 / 3	1 - 730	194
Anthracene	79	J	79	J	SD-12-03-ME	1 / 3	67 - 730	213
Benzo(a)anthracene	140	J	420	J	SD-12-03-ME	5 / 5	67 - 390	256
Benzo(a)pyrene	160	J	520	J	SD-12-03-TR	5 / 5	67 - 390	316
Benzo(b)fluoranthene	350	J	960	J	SD-12-03-TR	5 / 5	67 - 390	658
Benzo(g,h,i)perylene	280	J	290	J	SD-12-03-ME	2 / 3	67 - 730	312
Benzo(k)fluoranthene	350	J	800	J	SD-12-01-FW	5 / 5	67 - 390	468
Carbazole						0 / 2	390 - 730	280
Chrysene	180	J	610	J	SD-12-03-ME	5 / 5	67 - 390	390
Dibenz(a,h)anthracene	150	J	150	J	SD-12-03-ME	1 / 3	2 - 730	237
Dibenzofuran						0 / 2	390 - 730	280
Fluoranthene	260	J	800	J	SD-12-01-FW	5 / 5	67 - 390	586
Fluorene	78	J	78	J	SD-12-03-ME	1 / 3	1 - 730	213
Indeno(1,2,3-cd)pyrene	79	J	330	J	SD-12-03-ME	4 / 4	67 - 390	207
Naphthalene	120	J	120	J	SD-12-03-ME	1 / 3	1 - 730	227
N-nitrosodiphenylamine	100	J	100	J	SD-12-03-FW	1 / 2	390	148
Phenanthrene	230	J	460	J	SD-12-03-ME	3 / 4	67 - 730	324
Pyrene	220	J	770	J	SD-12-01-FW	5 / 5	67 - 390	546
PCBs/Pesticides - ug/Kg								
4,4'-DDD	1.9	J	2.4	J	SD-12-03-FW	2 / 3	0.32 - 3.1	2
4,4'-DDE	0.52	J	4.4	J	SD-12-03-FW	5 / 5	0.32 - 3.1	2
4,4'-DDT	0.53	J	1.1	J	SD-12-03-ME	2 / 4	0.32 - 7.3	2
Aldrin	0.51	J	0.51	J	SD-12-03-FW	1 / 3	0.16 - 1.6	0.5
alpha-Chlordane	1.1	J	1.8	J	SD-12-03-FW	3 / 4	0.16 - 1.6	1.3
Aroclor 1248	15	J	15	J	SD-12-03-ME	1 / 3	3.2 - 73	22
Aroclor 1254						0 / 3	3.2 - 73	18
Aroclor 1260	18	J	18	J	SD-12-03-ME	1 / 3	3.2 - 73	23
beta-BHC	0.71	J	1.7	J	SD-12-01-FW	2 / 5	0.16 - 3.8	1.0
delta-BHC						0 / 3	0.16 - 3.8	0.9
Endosulfan I	0.62	J	0.62	J	SD-12-03-FW	1 / 3	0.16 - 1.6	0.5
Endosulfan Sulfate						0 / 3	0.32 - 7.3	1.8
Endrin Aldehyde	0.87	J	1	J	SD-12-03-FW	2 / 3	0.32 - 3.1	1.1
gamma-Chlordane	0.34	J	1.7	J	SD-12-03-FW	4 / 5	0.16 - 1.6	1.0
Metals - mg/Kg								
Aluminum	4560		27500		SD-12-03-ME	5 / 5	3.7 - 9.14	13136
Antimony	19.2		117	J	SD-12-03-ME	3 / 4	0.28 - 0.95	39.77
Arsenic	38.4		4550		SD-12-03-ME	5 / 5	0.23 - 1	1437
Barium	19.6		121		SD-12-03-TR	5 / 5	0.019 - 0.4	52
Beryllium	0.55		1.7		SD-12-03-ME	3 / 4	0.029 - 0.49	0.95
Cadmium	1.3		13.5		SD-12-03-TR	5 / 5	0.039 - 0.6	6.44
Chromium	42.1	J	1310		SD-12-03-TR	5 / 5	0.058 - 1	550
Cobalt	11		38.1		SD-12-03-ME	5 / 5	0.36 - 0.4	25.8
Copper	40.5		1980		SD-12-03-ME	5 / 5	0.088 - 0.44	643
Cyanide						0 / 2	1.1 - 1.2	0.58
Iron	7530		107000		SD-12-03-ME	5 / 5	0.6 - 1.4	56406
Lead	16.8		1220		SD-12-03-ME	5 / 5	0.28 - 0.6	387
Manganese	195	J	1180		SD-12-03-TR	5 / 5	0.019 - 0.24	519
Mercury	0.15	J	44.8		SD-12-03-ME	4 / 5	0.0037 - 0.17	10.08
Nickel	5.4		28.1		SD-12-03-TR	5 / 5	0.16 - 0.8	16
Selenium	1.3		30.3		SD-12-03-ME	4 / 5	0.43 - 1	8.72
Silver	1.2	J	1.8		SD-12-03-TR	2 / 4	0.01 - 1	0.88
Thallium	1.4		1.4		SD-12-03-FW	1 / 4	0.046 - 1.5	0.85
Vanadium	10.8		127		SD-12-03-ME	5 / 5	0.078 - 0.64	51
Zinc	1370		4760		SD-12-03-ME	5 / 5	0.18 - 1.7	2488
Total Combustible Organics (mg/Kg)	42200		431000	J	SD-12-03-ME	4 / 4	2000	187800
Total Organic Carbon (mg/Kg)	150000	J	150000	J	SD-12-03-TR	1 / 1	250	150000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-58
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 13
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	160	J	190	J	SD-13-01-FW	2 / 3	22	120
Acetone	630	J	4300	J	SD-13-01-TR	2 / 2	22	2465
cis-1,2-Dichloroethene	23	J	23	J	SD-13-03-ME	1 / 3	22 - 35	17.2
Tetrachloroethene						0 / 3	22 - 108	37.8
Trichloroethene	37	J	37	J	SD-13-03-ME	1 / 3	22 - 35	21.8
SVOCs - ug/Kg								
2-Methylnaphthalene	23	J	73		SD-13-01-ME	2 / 3	67 - 280	79
Acenaphthylene	26	J	31	J	SD-13-01-ME	2 / 3	67 - 280	66
Anthracene	99		300		SD-13-01-ME	2 / 3	67 - 280	180
Benzo(a)anthracene	110	J	1700		SD-13-01-ME	6 / 6	67 - 280	825
Benzo(a)pyrene	150	J	1700		SD-13-01-ME	6 / 6	67 - 280	908
Benzo(b)fluoranthene	270	J	3600	J	SD-13-03-FW	6 / 6	67 - 280	1662
Benzo(g,h,i)perylene	260	J	820		SD-13-01-ME	5 / 6	67 - 280	412
Benzo(k)fluoranthene	570	J	3400	J	SD-13-03-FW	5 / 6	67 - 280	1310
Carbazole	170	J	170	J	SD-13-03-FW	1 / 2	280	155
Chrysene	150	J	1700		SD-13-01-ME	6 / 6	67 - 280	1017
Dibenz(a,h)anthracene	180		330	J	SD-13-01-FW	3 / 4	67 - 280	218
Dibenzofuran						0 / 1	280	140
Fluoranthene	230	J	5200		SD-13-01-ME	6 / 6	67 - 280	2188
Fluorene	67	J	220		SD-13-01-ME	2 / 3	67 - 280	142
Indeno(1,2,3-cd)pyrene	590	J	1000		SD-13-01-ME	5 / 6	67 - 280	643
Naphthalene	40	J	67	J	SD-13-01-ME	2 / 3	67 - 280	82
N-nitrosodiphenylamine						0 / 1	280	140
Phenanthrene	450	J	2700		SD-13-01-ME	5 / 6	67 - 280	945
Pyrene	230	J	4000		SD-13-01-ME	6 / 6	67 - 280	1672
PCBs/Pesticides - ug/Kg								
4,4'-DDD	2.3	J	310		SD-13-03-ME	6 / 6	0.31 - 3.3	59
4,4'-DDE	1.6	J	130		SD-13-03-ME	6 / 6	0.31 - 3.3	28
4,4'-DDT	0.45	J	12	J	SD-13-03-ME	5 / 6	0.31 - 3.3	4
Aldrin	0.47	J	1.6	J	SD-13-03-FW	3 / 6	0.16 - 1.6	0.8
alpha-Chlordane	3.2	J	93		SD-13-03-ME	5 / 6	0.16 - 1.6	24.9
Aroclor 1248	25	J	170	J	SD-13-03-ME	2 / 3	3.1 - 22	69
Aroclor 1254	45		45		SD-13-01-TR	1 / 3	3.1 - 22	16
Aroclor 1260	79		310	J	SD-13-03-FW	3 / 4	3.1 - 22	163
beta-BHC	1.5	J	3.1	J	SD-13-03-FW	3 / 6	0.16 - 1.6	1.4
delta-BHC	15	J	15	J	SD-13-03-ME	1 / 3	0.16 - 1.6	5.2
Endosulfan I						0 / 3	0.16 - 1.6	0.5
Endosulfan Sulfate	0.38	J	0.38	J	SD-13-01-ME	1 / 3	0.31 - 3.3	1.0
Endrin Aldehyde	2.2	J	10	J	SD-13-03-FW	4 / 5	0.31 - 3.3	4.7
gamma-Chlordane	1	J	650	J	SD-13-03-ME	5 / 6	0.16 - 1.6	114.8
Metals - mg/Kg								
Aluminum	6430	J	34400	J	SD-13-02-FW	6 / 6	3.5 - 9.14	21638
Antimony	1.7	J	61	J	SD-13-01-FW	5 / 5	0.27 - 0.74	23.40
Arsenic	15.9		4210	J	SD-13-01-FW	6 / 6	0.22 - 1	1267
Barium	63.8		155	J	SD-13-03-FW	6 / 6	0.018 - 0.4	103
Beryllium	0.45	J	2	J	SD-13-02-FW	6 / 6	0.027 - 0.2	1.31
Cadmium	3.1		13.8	J	SD-13-01-FW	6 / 6	0.35 - 0.6	8.27
Chromium	61.2	J	725	J	SD-13-02-FW	6 / 6	0.055 - 1	513
Cobalt	7.2	J	40.7	J	SD-13-03-FW	6 / 6	0.36 - 0.38	18.9
Copper	113		2340	J	SD-13-01-FW	6 / 6	0.082 - 0.44	1015
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	12800	J	54700	J	SD-13-01-FW	6 / 6	0.57 - 1.4	41217
Lead	340	J	1270	J	SD-13-01-FW	6 / 6	0.27 - 0.6	871
Manganese	123		1050	J	SD-13-02-FW	6 / 6	0.018 - 0.24	664
Mercury	0.25	J	19.5	J	SD-13-01-FW	6 / 6	0.005 - 0.02	7.47
Nickel	15.9	J	53.4	J	SD-13-03-FW	6 / 6	0.15 - 0.8	26
Selenium	0.53	J	26.3	J	SD-13-01-FW	5 / 6	0.053 - 1	9.89
Silver	0.21	J	2	J	SD-13-01-FW	4 / 6	0.01 - 2	0.91
Thallium	3.2	J	3.7	J	SD-13-01-FW	2 / 5	0.039 - 1.14	1.58
Vanadium	27.4		120	J	SD-13-03-FW	6 / 6	0.073 - 0.64	75
Zinc	445	J	2670	J	SD-13-03-FW	6 / 6	0.16 - 1.7	1681
Total Combustible Organics (mg/Kg)	118000	J	385000		SD-13-02-FW	5 / 5	2000	239600
Total Organic Carbon (mg/Kg)	300000		300000		SD-13-01-TR	1 / 1	250	300000

N/A = Not Applicable or Not Available

J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-59
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 14
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone						0 / 3	12 - 14	6
Acetone	58	J	140	J	SD-14-01-FW	2 / 3	12	68
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene						0 / 3	12 - 14	6.3
Trichloroethene						0 / 3	12 - 14	6.3
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 3	2100 - 2300	1083
Acenaphthylene						0 / 3	2100 - 2300	1083
Anthracene	660	J	660	J	SD-14-01-FW	1 / 3	2100 - 2300	953
Benzo(a)anthracene	700	J	1100	J	SD-14-01-FW	3 / 3	N/A	967
Benzo(a)pyrene	890	J	890	J	SD-14-03-FW	1 / 3	2100	997
Benzo(b)fluoranthene	920	J	2100	J	SD-14-03-FW	3 / 3	N/A	1440
Benzo(g,h,i)perylene						0 / 3	2100 - 2300	1083
Benzo(k)fluoranthene	1100	J	1100	J	SD-14-01-FW	1 / 3	2100 - 2300	1100
Carbazole						0 / 3	2100 - 2300	1083
Chrysene	910	J	1400	J	SD-14-03-FW	3 / 3	N/A	1170
Dibenz(a,h)anthracene						0 / 3	2100 - 2300	1083
Dibenzofuran						0 / 3	2100 - 2300	1083
Fluoranthene	2200	J	2800	J	SD-14-03-FW	3 / 3	N/A	2467
Fluorene						0 / 3	2100 - 2300	1083
Indeno(1,2,3-cd)pyrene						0 / 3	2100 - 2300	1083
Naphthalene						0 / 3	2100 - 2300	1083
N-nitrosodiphenylamine						0 / 3	2100 - 2300	1083
Phenanthrene	810	J	2600	J	SD-14-01-FW	3 / 3	N/A	1503
Pyrene	1200	J	2000	J	SD-14-03-FW	3 / 3	N/A	1667
PCBs/Pesticides - ug/Kg								
4,4'-DDD	9.7	J	9.7	J	SD-14-01-FW	1 / 3	21 - 23	11
4,4'-DDE	8.2	J	8.2	J	SD-14-01-FW	1 / 3	21 - 23	10
4,4'-DDT						0 / 3	21 - 23	11
Aldrin						0 / 3	11 - 12	5.7
alpha-Chlordane	3.3	J	5	J	SD-14-03-FW	3 / 3	N/A	4.1
Aroclor 1248						0 / 3	210 - 230	108
Aroclor 1254						0 / 3	210 - 230	108
Aroclor 1260						0 / 3	210 - 230	108
beta-BHC						0 / 3	11 - 12	5.7
delta-BHC						0 / 3	11 - 12	5.7
Endosulfan I	8	J	18	J	SD-14-03-FW	3 / 3	N/A	11.4
Endosulfan Sulfate						0 / 3	21 - 23	10.8
Endrin Aldehyde						0 / 3	21 - 23	10.8
gamma-Chlordane						0 / 3	11 - 12	5.7
Metals - mg/Kg								
Aluminum	3200		4030		SD-14-01-FW	3 / 3	N/A	3687
Antimony	0.85	J	0.99	J	SD-14-01-FW	3 / 3	N/A	0.91
Arsenic	49.1		73.4		SD-14-03-FW	3 / 3	N/A	61
Barium	13.4		18.4		SD-14-03-FW	3 / 3	N/A	16
Beryllium	0.21		0.21		SD-14-01-FW	1 / 3	0.19 - 0.2	0.14
Cadmium	0.4		1		SD-14-03-FW	3 / 3	N/A	0.64
Chromium	43	J	216		SD-14-01-FW	3 / 3	N/A	104
Cobalt	2.9		5		SD-14-01-FW	3 / 3	N/A	4.1
Copper	46		64.9		SD-14-02-FW	3 / 3	N/A	57
Cyanide						0 / 3	0.51 - 0.62	0.29
Iron	9030		19400	J	SD-14-01-FW	3 / 3	N/A	14010
Lead	34.5		130	J	SD-14-01-FW	3 / 3	N/A	68
Manganese	84.9	J	172	J	SD-14-03-FW	3 / 3	N/A	133
Mercury	0.16	J	1.4	J	SD-14-02-FW	3 / 3	N/A	0.59
Nickel	5.4		10.4		SD-14-01-FW	3 / 3	N/A	7
Selenium	0.61		0.73	J	SD-14-01-FW	2 / 3	0.61	0.55
Silver						0 / 3	0.26 - 0.3	0.14
Thallium	0.81		0.81		SD-14-01-FW	1 / 3	0.61 - 0.71	0.49
Vanadium	8.9		13.3		SD-14-01-FW	3 / 3	N/A	11
Zinc	170		273		SD-14-03-FW	3 / 3	N/A	221
Total Combustible Organics (mg/Kg)	4480		12300		SD-14-03-FW	3 / 3	N/A	9260
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-60
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 15
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	210	J	290	J	SD-15-02-FW	2/2	N/A	250
cis-1,2-Dichloroethene	187	J	187	J	SD-15-01-ME	1/1	63	187.0
Tetrachloroethene	41	J	41	J	SD-15-03-FW	1/2	190	68.0
Trichloroethene	26	J	206	J	SD-15-01-ME	3/3	63	93.3
SVOCs - ug/Kg								
2-Methylnaphthalene	10	J	10	J	SD-15-01-ME	1/1	1	10
Acenaphthylene	7	J	7	J	SD-15-01-ME	1/1	1	7
Anthracene	50	J	50	J	SD-15-01-ME	1/1	67	50
Benzo(a)anthracene	200	J	200	J	SD-15-01-ME	1/1	67	200
Benzo(a)pyrene	180	J	180	J	SD-15-01-ME	1/1	67	180
Benzo(b)fluoranthene	440	J	440	J	SD-15-01-ME	1/1	67	440
Benzo(g,h,i)perylene	150	J	150	J	SD-15-01-ME	1/1	67	150
Benzo(k)fluoranthene	270	J	270	J	SD-15-01-ME	1/1	67	270
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	410	J	410	J	SD-15-01-ME	1/1	67	410
Dibenz(a,h)anthracene	60	J	60	J	SD-15-01-ME	1/1	67	60
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	990	J	990	J	SD-15-01-ME	1/1	67	990
Fluorene	69	J	69	J	SD-15-01-ME	1/1	1	69
Indeno(1,2,3-cd)pyrene	170	J	170	J	SD-15-01-ME	1/1	67	170
Naphthalene	15	J	15	J	SD-15-01-ME	1/1	67	15
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	400	J	400	J	SD-15-01-ME	1/1	67	400
Pyrene	590	J	590	J	SD-15-01-ME	1/1	67	590
PCBs/Pesticides - ug/Kg								
4,4'-DDD	6.9	J	6.9	J	SD-15-01-ME	1/1	0.33	7
4,4'-DDE	3.8	J	3.8	J	SD-15-01-ME	1/1	0.33	4
4,4'-DDT	1.8	J	1.8	J	SD-15-01-ME	1/1	0.33	2
Aldrin						0/1	0.17	0.1
alpha-Chlordane	6	J	6	J	SD-15-01-ME	1/1	0.17	6.0
Aroclor 1248	43	J	43	J	SD-15-01-ME	1/1	3.3	43
Aroclor 1254						0/1	3.3	2
Aroclor 1260	83	J	83	J	SD-15-01-ME	1/1	3.3	83
beta-BHC						0/1	0.17	0.1
delta-BHC						0/1	0.17	0.1
Endosulfan I	0.45	J	15	J	SD-15-03-FW	4/4	0.17	7.6
Endosulfan Sulfate						0/1	0.33	0.2
Endrin Aldehyde	2	J	2	J	SD-15-01-ME	1/1	0.33	2.0
gamma-Chlordane	0.98	J	0.98	J	SD-15-01-ME	1/1	0.17	1.0
Metals - mg/Kg								
Aluminum	4810	J	6670	J	SD-15-02-FW	4/4	8.2	5960
Antimony	3.9	J	6	J	SD-15-02-FW	3/3	0.3	4.63
Arsenic	104	J	193	J	SD-15-01-FW	4/4	0.51	167
Barium	48.9	J	65.6	J	SD-15-01-ME	4/4	0.043	57
Beryllium	0.76	J	1.1	J	SD-15-03-FW	2/2	0.064	0.93
Cadmium	17.7	J	37.4	J	SD-15-01-FW	4/4	0.81	28.13
Chromium	147	J	537	J	SD-15-01-ME	4/4	0.13	268
Cobalt	14.1	J	23.1	J	SD-15-01-ME	4/4	0.88	17.8
Copper	181	J	469	J	SD-15-03-FW	4/4	0.19	352
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	11800	J	22200	J	SD-15-01-FW	4/4	1.3	17125
Lead	55.4	J	157	J	SD-15-01-ME	4/4	0.62	100
Manganese	956	J	1400	J	SD-15-01-FW	4/4	0.043	1111
Mercury	0.68	J	1.3	J	SD-15-01-ME	3/3	0.0059	0.90
Nickel	9.6	J	20.5	J	SD-15-03-FW	4/4	0.34	17
Selenium	6.5	J	8.6	J	SD-15-02-FW	2/3	0.24 - 1.2	5.23
Silver	0.29	J	0.29	J	SD-15-01-ME	1/1	0.043	0.29
Thallium	2.4	J	2.4	J	SD-15-01-ME	1/1	0.17	2.40
Vanadium	14.2	J	22.9	J	SD-15-02-FW	4/4	0.17	20
Zinc	1990	J	3350	J	SD-15-01-FW	4/4	0.39	2623
Total Combustible Organics (mg/Kg)	381000		702000	J	SD-15-01-ME	4/4	2000	491250
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-61
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 16
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone						0/3	13 - 26	9
Acetone						0/3	24 - 26	13
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene						0/3	13 - 26	8.7
Trichloroethene						0/3	13 - 26	8.7
SVOCs - ug/Kg								
2-Methylnaphthalene						0/3	420 - 840	280
Acenaphthylene						0/3	420 - 840	280
Anthracene						0/3	420 - 840	280
Benzo(a)anthracene						0/3	420 - 840	280
Benzo(a)pyrene						0/3	420 - 840	280
Benzo(b)fluoranthene	45	J	45	J	SD-16-03-FW	1/3	420 - 840	225
Benzo(g,h,i)perylene						0/3	420 - 840	280
Benzo(k)fluoranthene	45	J	45	J	SD-16-03-FW	1/3	420 - 840	225
Carbazole						0/3	420 - 840	280
Chrysene						0/3	420 - 840	280
Dibenz(a,h)anthracene						0/3	420 - 840	280
Dibenzofuran						0/3	420 - 840	280
Fluoranthene	50	J	88	J	SD-16-01-FW	2/3	420	116
Fluorene						0/3	420 - 840	280
Indeno(1,2,3-cd)pyrene						0/3	420 - 840	280
Naphthalene						0/3	420 - 840	280
N-nitrosodiphenylamine						0/3	420 - 840	280
Phenanthrene						0/3	420 - 840	280
Pyrene	61	J	110	J	SD-16-01-FW	2/3	420	127
PCBs/Pesticides - ug/Kg								
4,4'-DDD	11		13		SD-16-02-FW	2/3	4.2	9
4,4'-DDE	0.32	J	3.6	J	SD-16-02-FW	3/3	N/A	2
4,4'-DDT	0.32	J	6.8		SD-16-02-FW	3/3	N/A	3
Aldrin						0/3	2.1 - 4.3	1.4
alpha-Chlordane	0.45	J	0.67	J	SD-16-01-FW	2/3	4.2	1.1
Aroclor 1248						0/3	42 - 84	28
Aroclor 1254						0/3	42 - 84	28
Aroclor 1260						0/3	42 - 84	28
beta-BHC						0/3	2.1 - 4.3	1.4
delta-BHC	0.29	J	0.29	J	SD-16-02-FW	1/3	2.2 - 4.3	1.2
Endosulfan I						0/3	2.1 - 4.3	1.4
Endosulfan Sulfate						0/3	4.2 - 8.4	2.8
Endrin Aldehyde						0/3	4.2 - 8.4	2.8
gamma-Chlordane	0.12	J	0.72	J	SD-16-01-FW	3/3	N/A	0.4
Metals - mg/Kg								
Aluminum	2480		3690		SD-16-02-FW	3/3	N/A	2990
Antimony	0.56	J	0.56	J	SD-16-01-FW	1/3	0.34 - 0.56	0.34
Arsenic	6.4	J	13.6		SD-16-01-FW	3/3	N/A	11
Barium	10.6		21.2		SD-16-03-FW	3/3	N/A	15
Beryllium	0.12		0.12		SD-16-02-FW	1/3	0.016 - 0.12	0.06
Cadmium	0.1		0.34		SD-16-02-FW	3/3	N/A	0.21
Chromium	3.3	J	38.4	J	SD-16-02-FW	3/3	N/A	21
Cobalt	2.9		5.2		SD-16-03-FW	3/3	N/A	4.0
Copper	7.1		32.5		SD-16-02-FW	3/3	N/A	21
Cyanide						0/3	0.41 - 0.6	0.25
Iron	4860		6850		SD-16-02-FW	3/3	N/A	5607
Lead	1.9	J	15.4	J	SD-16-02-FW	3/3	N/A	9
Manganese	84	J	158	J	SD-16-02-FW	3/3	N/A	112
Mercury	0.13		0.37	J	SD-16-01-FW	2/3	0.046	0.17
Nickel	1.6		5.7		SD-16-02-FW	3/3	N/A	4
Selenium						0/3	0.43 - 0.7	0.28
Silver						0/3	0.21 - 0.35	0.14
Thallium						0/3	0.5 - 0.82	0.33
Vanadium	4.2		10.3		SD-16-02-FW	3/3	N/A	7
Zinc	36.4	J	155	J	SD-16-02-FW	3/3	N/A	90
Total Combustible Organics (mg/Kg)	1390		3040		SD-16-03-FW	2/3	125	1498
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-62
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 18
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	65	J	120	J	SD-11-01-FW	2 / 3	18	65
Acetone	230	J	385	J	SD-18-02-TR	3 / 5	47 - 430	243
cis-1,2-Dichloroethene	37	J	37	J	SD-18-02-ME	1 / 2	59 - 76	37.5
Tetrachloroethene						0 / 4	18 - 229	56.5
Trichloroethene						0 / 4	18 - 76	22.5
SVOCs - ug/Kg								
2-Methylnaphthalene	15	J	21	J	SD-18-03-ME	2 / 5	67 - 890	197
Acenaphthylene	16	J	23	J	SD-18-03-ME	2 / 5	67 - 890	198
Anthracene	130		150		SD-18-02-ME	2 / 5	67 - 890	246
Benzo(a)anthracene	1400		1400		SD-18-03-ME	2 / 5	67 - 890	750
Benzo(a)pyrene	1900	J	1900	J	SD-18-03-ME	2 / 4	67 - 890	1136
Benzo(b)fluoranthene	120	J	2500	J	SD-18-02-ME	4 / 5	67 - 600	1100
Benzo(g,h,i)perylene	1400		1600	J	SD-18-03-ME	2 / 5	67 - 890	790
Benzo(k)fluoranthene	110	J	1200	J	SD-18-02-ME	4 / 5	67 - 600	588
Carbazole						0 / 3	410 - 890	317
Chrysene	2000		2200		SD-18-02-ME	2 / 5	67 - 890	1030
Dibenz(a,h)anthracene	410	J	430		SD-18-02-ME	2 / 5	67 - 890	358
Dibenzo furan						0 / 3	410 - 890	317
Fluoranthene	220	J	4000		SD-18-02-ME	3 / 5	67 - 890	1613
Fluorene	94		110		SD-18-02-ME	2 / 5	67 - 890	231
Indeno(1,2,3-cd)pyrene	1400		1500	J	SD-18-03-ME	2 / 5	67 - 890	770
Naphthalene	29	J	34	J	SD-18-03-ME	2 / 5	67 - 890	203
N-nitrosodiphenylamine	410	J	410	J	SD-11-01-FW	1 / 3	410 - 600	305
Phenanthrene	1200		1400		SD-18-02-ME	2 / 5	67 - 890	710
Pyrene	100	J	3100		SD-18-02-ME	4 / 5	67 - 600	1260
PCBs/Pesticides - ug/Kg								
4,4'-DDD	4.9	J	23	J	SD-18-02-ME	3 / 6	0.33 - 8.9	7
4,4'-DDE	0.83	J	30		SD-18-03-ME	5 / 6	0.33 - 3.2	11
4,4'-DDT	0.66	J	1.7	J	SD-18-03-ME	3 / 5	0.33 - 6.1	2
Aldrin						0 / 5	0.16 - 4.6	1.0
alpha-Chlordane	7.7	J	17	J	SD-18-03-ME	2 / 5	0.16 - 6.1	6.2
Aroclor 1248	60	J	170	J	SD-18-03-ME	2 / 5	3.3 - 89	64
Aroclor 1254						0 / 5	3.3 - 89	19
Aroclor 1260	17	J	190		SD-18-03-ME	3 / 5	3.3 - 61	69
beta-BHC						0 / 5	0.16 - 4.6	1.0
delta-BHC						0 / 5	0.16 - 4.6	1.0
Endosulfan I						0 / 5	0.16 - 4.6	1.0
Endosulfan Sulfate	0.41	J	0.41	J	SD-18-03-ME	1 / 5	0.33 - 8.9	1.9
Endrin Aldehyde	2.4	J	3.6	J	SD-18-03-ME	2 / 5	0.33 - 8.9	3.0
gamma-Chlordane	0.17	J	26	J	SD-18-03-ME	4 / 5	0.16 - 1.6	5.8
Metals - mg/Kg								
Aluminum	3970		24100		SD-18-03-ME	7 / 7	3.5 - 9.14	14317
Antimony	1.1	J	26.9		SD-18-02-TR	7 / 7	0.27 - 0.74	10.54
Arsenic	34.9		1490		SD-18-02-TR	7 / 7	0.22 - 1	721
Barium	12.3		169		SD-18-03-ME	7 / 7	0.018 - 0.4	82
Beryllium	0.67	J	2.3		SD-18-03-ME	6 / 7	0.02 - 0.44	1.26
Cadmium	1.9		16		SD-18-03-ME	7 / 7	0.037 - 0.6	11.09
Chromium	109	J	4340		SD-18-03-ME	7 / 7	0.055 - 1	1719
Cobalt	3.5		54.9		SD-18-03-ME	7 / 7	0.36 - 0.38	26.6
Copper	158		1310		SD-18-03-ME	7 / 7	0.082 - 0.44	838
Cyanide						0 / 2	1.1 - 1.3	0.60
Iron	4460		120000		SD-18-02-TR	7 / 7	0.57 - 1.4	55680
Lead	55.4		678		SD-18-03-ME	7 / 7	0.27 - 0.6	354
Manganese	93	J	1740		SD-18-02-TR	7 / 7	0.018 - 0.24	846
Mercury	0.35		7.5		SD-18-02-ME	7 / 7	0.005 - 0.24	3.73
Nickel	4.6		46.7		SD-18-03-ME	7 / 7	0.15 - 0.8	23
Selenium	1.8		9	J	SD-18-03-ME	5 / 6	0.4 - 1	5.40
Silver	0.62	J	0.74	J	SD-18-02-ME	2 / 5	0.01 - 1	0.50
Thallium						0 / 5	0.043 - 1.9	0.70
Vanadium	8.9		95.9		SD-18-03-ME	7 / 7	0.073 - 0.64	46
Zinc	420		4020		SD-18-02-ME	7 / 7	0.16 - 1.7	2367
Total Combustible Organics (mg/Kg)	36700		423000	J	SD-18-03-ME	6 / 6	2000	233800
Total Organic Carbon (mg/Kg)	300000	J	300000	J	SD-18-02-TR	1 / 1	250	300000

N/A = Not Applicable or Not Available
J = Estimated Value

TABLE 4-63
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 19
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	160	J	290	J	SD-19-01-FW	2 / 2	N/A	225
Acetone	310	J	310	J	SD-19-01-TR	1 / 1	51	310
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 1	400	200
Acenaphthylene						0 / 1	400	200
Anthracene						0 / 1	400	200
Benzo(a)anthracene	200	J	245	J	SD-19-01-FW	2 / 3	400	215
Benzo(a)pyrene	210	J	295	J	SD-19-01-FW	3 / 3	400	258
Benzo(b)fluoranthene	410		935	J	SD-19-01-FW	3 / 3	400	682
Benzo(g,h,i)perylene						0 / 1	400	200
Benzo(k)fluoranthene	400	J	910	J	SD-19-01-FW	3 / 3	400	663
Carbazole						0 / 1	400	200
Chrysene	210	J	365	J	SD-19-01-FW	3 / 3	400	292
Dibenz(a,h)anthracene						0 / 1	400	200
Dibenzofuran						0 / 1	400	200
Fluoranthene	280	J	510	J	SD-19-01-FW	3 / 3	400	403
Fluorene						0 / 1	400	200
Indeno(1,2,3-cd)pyrene	180	J	180	J	SD-19-01-FW	1 / 2	400	190
Naphthalene						0 / 1	400	200
N-nitrosodiphenylamine						0 / 1	400	200
Phenanthrene						0 / 1	400	200
Pyrene	270	J	415	J	SD-19-01-FW	3 / 3	400	342
PCBs/Pesticides - ug/Kg								
4,4'-DDD	2.5	J	11	J	SD-19-03-FW	3 / 4	3.1	6
4,4'-DDE	1.6	J	20	J	SD-19-03-FW	4 / 4	3.1	9
4,4'-DDT	1.95	J	3.4	J	SD-19-02-FW	3 / 4	3.1	2
Aldrin	0.67	J	0.67	J	SD-19-01-FW	1 / 2	1.6	0.7
alpha-Chlordane	2.1	J	4.65	J	SD-19-01-FW	3 / 4	1.6	3.0
Aroclor 1248						0 / 1	31	16
Aroclor 1254						0 / 1	31	16
Aroclor 1260						0 / 1	31	16
beta-BHC	2.2	J	2.35	J	SD-19-01-FW	2 / 3	1.6	1.8
delta-BHC						0 / 1	1.6	0.8
Endosulfan I	0.72	J	1.065	J	SD-19-01-FW	2 / 3	1.6	0.9
Endosulfan Sulfate						0 / 1	3.1	1.6
Endrin Aldehyde	1.6	J	2.4	J	SD-19-03-FW	2 / 3	3.1	1.9
gamma-Chlordane	2.7	J	4.8	J	SD-19-01-FW	3 / 4	1.6	3.2
Metals - mg/Kg								
Aluminum	6240	J	19750	J	SD-19-01-FW	4 / 4	9.14	11463
Antimony	3.9	J	23.15	J	SD-19-01-FW	4 / 4	0.74	13.16
Arsenic	180	J	4250		SD-19-01-TR	4 / 4	1	2518
Barium	40.1	J	205		SD-19-01-TR	4 / 4	0.4	106
Beryllium	0.68	J	1.7	J	SD-19-01-FW	3 / 3	0.2	1.23
Cadmium	8.3		18.9	J	SD-19-03-FW	4 / 4	0.6	12.84
Chromium	93.7	J	2335	J	SD-19-01-FW	4 / 4	1	1209
Cobalt	12.8	J	45.05	J	SD-19-01-FW	4 / 4	0.36	27.9
Copper	98.6	J	1330	J	SD-19-01-FW	4 / 4	0.44	656
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	14400	J	258000		SD-19-01-TR	4 / 4	1.4	131325
Lead	35.8	J	639	J	SD-19-01-FW	4 / 4	0.6	302
Manganese	412	J	2020		SD-19-01-TR	4 / 4	0.24	1068
Mercury	0.48	J	7.1	J	SD-19-01-FW	3 / 4	0.02 - 0.11	2.31
Nickel	11.1	J	33.55	J	SD-19-01-FW	3 / 4	0.8	16
Selenium	2.5	J	13.05	J	SD-19-01-FW	3 / 4	1	6.29
Silver						0 / 1	1	0.50
Thallium						0 / 1	1.1	0.55
Vanadium	10.5	J	92.65	J	SD-19-01-FW	4 / 4	0.64	47
Zinc	1600	J	2960	J	SD-19-01-FW	4 / 4	1.7	2128
Total Combustible Organics (mg/Kg)	323500		380000		SD-19-02-FW	3 / 3	N/A	355500
Total Organic Carbon (mg/Kg)	290000	J	290000	J	SD-19-01-TR	1 / 1	250	290000

N/A = Not Applicable or Not Available
J = Estimated Value

TABLE 4-64
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 20¹
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	107.5	J	107.5	J	SD-20-01-FW	1 / 1	N/A	108
Acetone	94	J	590	J	SD-20-01-FW	2 / 2	N/A	342
cis-1,2-Dichloroethene	562	J	562	J	SD-20-01-ME	1 / 1	114	562.0
Tetrachloroethene						0 / 1	790	395.0
Trichloroethene	2025	J	2025	J	SD-20-01-ME	1 / 1	114	2025.0
SVOCs - ug/Kg								
2-Methylnaphthalene	13	J	13	J	SD-20-01-ME	1 / 1	1	13
Acenaphthylene	6	J	6	J	SD-20-01-ME	1 / 1	1	6
Anthracene	26	J	26	J	SD-20-01-ME	1 / 1	67	26
Benzo(a)anthracene	210		1100	J	SD-20-02-FW	3 / 3	67	770
Benzo(a)pyrene	290	J	1200	J	SD-20-02-FW	3 / 3	67	740
Benzo(b)fluoranthene	330		3700	J	SD-20-02-FW	4 / 4	67	2161
Benzo(g,h,i)perylene	210	J	210	J	SD-20-01-ME	1 / 1	67	210
Benzo(k)fluoranthene	370		370		SD-20-01-ME	1 / 1	67	370
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A
Chrysene	400		1500	J	SD-20-03-FW	3 / 3	67	1100
Dibenz(a,h)anthracene	97	J	97	J	SD-20-01-ME	1 / 1	67	97
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluoranthene	720		3000	J	SD-20-02-FW	4 / 4	67	1848
Fluorene	36	J	36	J	SD-20-01-ME	1 / 1	1	36
Indeno(1,2,3-cd)pyrene	210	J	830	J	SD-20-02-FW	2 / 2	67	520
Naphthalene	14	J	14	J	SD-20-01-ME	1 / 1	67	14
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A
Phenanthrene	240		890	J	SD-20-02-FW	3 / 3	67	593
Pyrene	540	J	2500	J	SD-20-02-FW	3 / 3	67	1480
PCBs/Pesticides - ug/Kg								
4,4'-DDD	8.4	J	32	J	SD-20-02-FW	4 / 4	0.31	20
4,4'-DDE	4.4		32	J	SD-20-02-FW	4 / 4	0.31	20
4,4'-DDT	4.6	J	4.6	J	SD-20-01-ME	1 / 1	0.31	5
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A
alpha-Chlordane	12	J	49	J	SD-20-03-FW	4 / 4	0.16	29.4
Aroclor 1248	28	J	28	J	SD-20-01-ME	1 / 1	3.1	28
Aroclor 1254						0 / 1	3.1	2
Aroclor 1260	79		79		SD-20-01-ME	1 / 1	3.1	79
beta-BHC						0 / 1	0.16	0.1
delta-BHC						0 / 1	0.16	0.1
Endosulfan I	38	J	42	J	SD-20-03-FW	2 / 3	0.16	26.7
Endosulfan Sulfate						0 / 1	0.31	0.2
Endrin Aldehyde	1.3	J	1.3	J	SD-20-01-ME	1 / 1	0.31	1.3
gamma-Chlordane	6.8	J	11.9	J	SD-20-01-FW	2 / 2	0.16	9.4
Metals - mg/Kg								
Aluminum	13500	J	29700	J	SD-20-03-FW	4 / 4	3.6	22113
Antimony	3.8	J	5.4	J	SD-20-03-FW	4 / 4	0.27	4.36
Arsenic	236		321	J	SD-20-02-FW	4 / 4	0.22	283
Barium	44.2		151	J	SD-20-02-FW	4 / 4	0.019	91
Beryllium	1.2	J	2	J	SD-20-03-FW	4 / 4	0.028	1.64
Cadmium	13.15	J	18.5	J	SD-20-03-FW	4 / 4	0.35	16.06
Chromium	1090	J	1860	J	SD-20-02-FW	4 / 4	0.056	1463
Cobalt	25.9	J	46.3	J	SD-20-03-FW	4 / 4	0.38	35.5
Copper	888	J	1075	J	SD-20-01-FW	4 / 4	0.084	1013
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	18500	J	43800	J	SD-20-02-FW	4 / 4	0.58	30325
Lead	449.5	J	1200	J	SD-20-03-FW	4 / 4	0.27	770
Manganese	511	J	901.5	J	SD-20-01-FW	4 / 4	0.019	729
Mercury	1	J	3.3	J	SD-20-03-FW	4 / 4	0.0051	2.05
Nickel	27.5	J	57.7	J	SD-20-03-FW	4 / 4	0.15	43
Selenium	3.3	J	11.1	J	SD-20-01-FW	4 / 4	0.054	7.08
Silver	0.29	J	1.6	J	SD-20-02-FW	2 / 2	0.01	0.95
Thallium	4.4	J	4.4	J	SD-20-03-FW	1 / 2	0.039 - 0.44	2.31
Vanadium	38.2		115	J	SD-20-03-FW	4 / 4	0.075	77
Zinc	1670	J	3470	J	SD-20-02-FW	4 / 4	0.17	2725
Total Combustible Organics (mg/Kg)	234000		441000	J	SD-20-01-ME	4 / 4	2000	321000
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Includes samples applicable to the muskrat model

US EPA ARCHIVE DOCUMENT

**TABLE 4-65
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION AM
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	7500		7500		SD-AM-01	1/1	4.2327	7500
Antimony	2	J	2	J	SD-AM-01	1/1	0.4233	2.0
Arsenic	121		121		SD-AM-01	1/1	0.4233	121
Barium	58.4		58.4		SD-AM-01	1/1	0.4233	58
Beryllium	0.64		0.64		SD-AM-01	1/1	0.1693	0.64
Cadmium	3.9		3.9		SD-AM-01	1/1	0.1693	3.9
Chromium	322		322		SD-AM-01	1/1	0.4233	322
Cobalt	20.3		20.3		SD-AM-01	1/1	0.4233	20
Copper	197		197		SD-AM-01	1/1	0.4233	197
Cyanide	0.85	J	0.85	J	SD-AM-01	1/1	0.2822	0.9
Iron	23400	J	23400	J	SD-AM-01	1/1	1.6931	23400
Lead	150		150		SD-AM-01	1/1	0.254	150
Manganese	1140	J	1140	J	SD-AM-01	1/1	0.4233	1140
Mercury	1.9		1.9		SD-AM-01	1/1	0.0899	1.90
Nickel	18	J	18	J	SD-AM-01	1/1	0.4233	18
Selenium	1.1	J	1.1	J	SD-AM-01	1/1	0.8558	1.1
Silver						0/1	0.42	0.21
Thallium	0.44	J	0.44	J	SD-AM-01	1/1	0.2568	0.44
Vanadium	26.9		26.9		SD-AM-01	1/1	0.4233	27
Zinc	941		941		SD-AM-01	1/1	0.4233	941
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-66
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION AS
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	15700		18800		SD-AS-02	2/2	3.9828 - 4.4604	17250
Antimony	2.15	J	2.9	J	SD-AS-02	2/2	0.3983 - 0.446	2.5
Arsenic	111		121		SD-AS-02	2/2	0.3983 - 0.446	116
Barium	95.85		109		SD-AS-02	2/2	0.3983 - 0.446	102
Beryllium	0.895		1.1		SD-AS-02	2/2	0.1593 - 0.1784	1.00
Cadmium	10.6		13.3		SD-AS-02	2/2	0.1593 - 0.1784	12.0
Chromium	576.5		918		SD-AS-02	2/2	0.3983 - 0.446	747
Cobalt	19.7		21		SD-AS-01	2/2	0.3983 - 0.446	20
Copper	444.5		576		SD-AS-02	2/2	0.3983 - 0.446	510
Cyanide	1.5	J	3.8	J	SD-AS-01	2/2	0.3754 - 0.3951	2.7
Iron	27850	J	29200	J	SD-AS-02	2/2	1.5931 - 1.7842	28525
Lead	484		661		SD-AS-02	2/2	0.239 - 0.2676	573
Manganese	378.5	J	384	J	SD-AS-02	2/2	0.3983 - 0.446	381
Mercury	3.05		3.1		SD-AS-02	2/2	0.1225 - 0.1251	3.08
Nickel	35	J	39.4	J	SD-AS-02	2/2	0.3983 - 0.446	37
Selenium	1.8	J	1.95	J	SD-AS-01	2/2	0.7593 - 0.906	1.9
Silver	0.605	J	0.76	J	SD-AS-02	2/2	0.3983 - 0.446	0.68
Thallium	0.95	J	1.2	J	SD-AS-02	2/2	0.2278 - 0.2718	1.08
Vanadium	59		72.6		SD-AS-02	2/2	0.3983 - 0.446	66
Zinc	2085		2290		SD-AS-02	2/2	0.3983 - 0.446	2188
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-67
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION KFSE
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Metals - mg/Kg								
Aluminum	2550		9080		SD-KF-03	10 / 10	N/A	4890
Antimony						0 / 10	1.7 - 1.8	0.9
Arsenic	11.7		90.4		SD-KF-03	10 / 10	N/A	38
Barium	15.9		54.7		SD-KF-03	10 / 10	N/A	33
Beryllium	0.24		0.6		SD-KF-03	7 / 10	0.11 - 0.18	0.29
Cadmium	0.81		1.1		SD-KF-03	5 / 10	0.12 - 0.48	0.5
Chromium	20.8		113		SD-KF-03	10 / 10	N/A	68
Cobalt	3.1		10		SD-KF-03	10 / 10	N/A	7
Copper	21.9		185		SD-KF-03	10 / 10	N/A	79
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	6580		18700		SD-KF-03	10 / 10	N/A	11959
Lead	31.6		188		SD-KF-05	10 / 10	N/A	98
Manganese	83.5		503		SD-KF-03	10 / 10	N/A	291
Mercury	0.1	J	1.6	J	SD-KF-03	10 / 10	N/A	0.51
Nickel	5.8		12.6		SD-KF-10	7 / 10	2.5 - 5.3	7
Selenium	0.61	J	0.61	J	SD-KF-09	1 / 10	0.58 - 0.61	0.3
Silver	0.44	J	0.69	J	SD-KF-05	5 / 10	0.39 - 0.4	0.37
Thallium						0 / 10	1.7 - 1.8	0.88
Vanadium	9.1		29.6		SD-KF-03	10 / 10	N/A	19
Zinc	115	J	461		SD-KF-03	10 / 10	N/A	284
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A
Total Organic Carbon (mg/Kg)	2600	J	46650		SD-KF-05	10 / 10	6410 - 9260	21195

N/A = Not Applicable or Not Available

J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-68
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION LP
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Metals - mg/Kg								
Aluminum	2270		20400		SD-LP-04	15 / 15	N/A	6889
Antimony	5.1	J	5.1	J	SD-LP-04	1 / 15	1.7 - 2.6	1
Arsenic	5.4		485	J	SD-LP-04	15 / 15	N/A	69.9
Barium	11.2		68.9		SD-LP-11	15 / 15	N/A	30
Beryllium	0.14		0.92		SD-LP-04	13 / 15	0.2 - 0.29	0.36
Cadmium	0.14	J	5.6	J	SD-LP-04	13 / 15	0.12	1.90
Chromium	8.2		134		SD-LP-11	15 / 15	N/A	52.5
Cobalt	2.4		15.4		SD-LP-03	15 / 15	N/A	7
Copper	6.6		1560	J	SD-LP-04	15 / 15	N/A	187
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	4420		23800		SD-LP-11	15 / 15	N/A	10464
Lead	6.4		400	J	SD-LP-04	15 / 15	N/A	83
Manganese	47.5		333		SD-LP-03	15 / 15	N/A	172
Mercury	0.16	J	1.4		SD-LP-04	13 / 15	0.09 - 0.1	0.46
Nickel	0.59	J	30.6		SD-LP-04	15 / 15	N/A	9.71
Selenium	0.92	J	3.1		SD-LP-04	4 / 15	0.59 - 2.9	1
Silver	0.76	J	0.76	J	SD-LP-11	1 / 15	0.19 - 0.42	0.2
Thallium	1.325	J	2.9	J	SD-LP-04	9 / 15	1.7 - 2.2	1.59
Vanadium	6.5		39.8		SD-LP-11	15 / 15	N/A	16.45
Zinc	15.2		2800		SD-LP-03	15 / 15	N/A	699
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A
Total Organic Carbon (mg/Kg)	4800	J	68200		SD-LP-03	10 / 10	6020 - 8130	33930

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-69
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION TT-28
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	11400		21600		SD-TT-28-03	3/3	N/A	16567
Antimony	11.9	J	26.3	J	SD-TT-28-03	3/3	N/A	19.0
Arsenic	459	J	987	J	SD-TT-28-03	3/3	N/A	752
Barium	81.8		104		SD-TT-28-03	3/3	N/A	95
Beryllium	0.87		1.5		SD-TT-28-03	3/3	N/A	1.12
Cadmium	12.7	J	17.1	J	SD-TT-28-03	3/3	N/A	14.7
Chromium	1390	J	4240	J	SD-TT-28-02	3/3	N/A	2817
Cobalt	23.8	J	32.5	J	SD-TT-28-01	3/3	N/A	30
Copper	592	J	1330	J	SD-TT-28-03	3/3	N/A	962
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	50600		88300		SD-TT-28-03	3/3	N/A	66733
Lead	269	J	657	J	SD-TT-28-03	3/3	N/A	421
Manganese	599	J	789	J	SD-TT-28-01	3/3	N/A	684
Mercury	3		5		SD-TT-28-02	3/3	N/A	4.07
Nickel	23.4		29.7	J	SD-TT-28-03	3/3	N/A	27
Selenium	7.5	J	10.2	J	SD-TT-28-03	3/3	N/A	8.6
Silver	3.1	J	5.3	J	SD-TT-28-03	3/3	N/A	4.13
Thallium						0/3	0.7 - 0.8	0.37
Vanadium	44		69.6	J	SD-TT-28-03	3/3	N/A	58
Zinc	2160	J	3160	J	SD-TT-28-03	3/3	N/A	2517
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-70
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION TT-29
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	1100	J	1100	J	SD-TT-29-03-TR	1/1	57	1100
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	13500	J	17900	J	SD-TT-29-03	3/3	N/A	16233
Antimony	1.1	J	10.1	J	SD-TT-29-03	2/3	1.1	3.9
Arsenic	561	J	1050	J	SD-TT-29-03	3/3	N/A	747
Barium	60.3	J	79.3	J	SD-TT-29-02	3/3	N/A	71
Beryllium	0.88		1.1		SD-TT-29-03	3/3	N/A	0.99
Cadmium	11.15	J	15.2	J	SD-TT-29-03	3/3	N/A	13.3
Chromium	1460	J	5500	J	SD-TT-29-02	3/3	N/A	3127
Cobalt	31.8	J	36.4	J	SD-TT-29-01	3/3	N/A	35
Copper	704	J	1340	J	SD-TT-29-03	3/3	N/A	979
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	45200		115000		SD-TT-29-03	3/3	N/A	73533
Lead	316	J	649	J	SD-TT-29-02	3/3	N/A	501
Manganese	470	J	1190	J	SD-TT-29-03	3/3	N/A	787
Mercury	5.6	J	13.3	J	SD-TT-29-03	3/3	N/A	8.60
Nickel	26.3		34.8		SD-TT-29-02	3/3	N/A	30
Selenium	6.3	J	8.6	J	SD-TT-29-03	3/3	N/A	7.7
Silver	1.15		1.6		SD-TT-29-02	3/3	N/A	1.35
Thallium	5	J	14.3	J	SD-TT-29-03	3/3	N/A	8.97
Vanadium	45.9	J	96.9	J	SD-TT-29-02	3/3	N/A	67
Zinc	2250		3770		SD-TT-29-03	3/3	N/A	2848
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
 J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-71
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION TT-30
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	7300	J	7300	J	SD-TT-30-01-TR	1/1	47	7300
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	33	J	33	J	SD-TT-30-01-TR	1/1	310	33
Benzo(b)fluoranthene	47	J	47	J	SD-TT-30-01-TR	1/1	310	47
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	40	J	40	J	SD-TT-30-01-TR	1/1	310	40
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	71	J	71	J	SD-TT-30-01-TR	1/1	310	71
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	55	J	55	J	SD-TT-30-01-TR	1/1	310	55
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	5780	J	17900		SD-TT-30-01-TR	4/4	9.14	14295
Antimony	0.9	J	23.6	J	SD-TT-30-01-TR	3/4	0.53 - 0.74	6.5
Arsenic	113	J	1080	J	SD-TT-30-03	4/4	1	587
Barium	32.7	J	124	J	SD-TT-30-01	4/4	0.4	70
Beryllium	0.4		1.3	J	SD-TT-30-01-TR	4/4	0.2	0.93
Cadmium	4	J	9.8	J	SD-TT-30-01	4/4	0.6	6.5
Chromium	623	J	5310	J	SD-TT-30-03	4/4	1	2368
Cobalt	9.8		30.4	J	SD-TT-30-01	4/4	0.36	19
Copper	253	J	3760	J	SD-TT-30-03	4/4	0.44	1381
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	12300		71600		SD-TT-30-01	4/4	1.4	38325
Lead	248	J	664		SD-TT-30-01-TR	4/4	0.6	439
Manganese	205	J	1910	J	SD-TT-30-01	4/4	0.24	825
Mercury	1.7	J	89.2	J	SD-TT-30-03	4/4	0.02	24.93
Nickel	8		35.1		SD-TT-30-01	4/4	0.8	21
Selenium	2.7	J	9.3	J	SD-TT-30-01	3/4	1	4.1
Silver	2.2		2.2		SD-TT-30-01	1/4	0.36 - 1	0.77
Thallium	1.5		9.7	J	SD-TT-30-01	3/4	1.1 - 1.14	3.56
Vanadium	21		66.2		SD-TT-30-01-TR	4/4	0.64	43
Zinc	644		1560		SD-TT-30-01	4/4	1.7	1186
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	240000		240000		SD-TT-30-01-TR	1/1	250	240000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-72
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION TT-31
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A
Metals - mg/Kg								
Aluminum	9130	J	14100	J	SD-TT-31-03	3/3	N/A	10927
Antimony						0/3	0.44 - 0.61	0.3
Arsenic	8.5	J	30.3	J	SD-TT-31-03	3/3	N/A	17
Barium	51.6	J	159	J	SD-TT-31-03	3/3	N/A	91
Beryllium	0.46		0.7		SD-TT-31-03	3/3	N/A	0.54
Cadmium	2.3	J	5.5	J	SD-TT-31-03	3/3	N/A	4.2
Chromium	123	J	295	J	SD-TT-31-03	3/3	N/A	185
Cobalt	8.7	J	19.2	J	SD-TT-31-03	3/3	N/A	12
Copper	56.7	J	181	J	SD-TT-31-03	3/3	N/A	113
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	15600		40700		SD-TT-31-03	3/3	N/A	24000
Lead	190	J	332	J	SD-TT-31-01	3/3	N/A	277
Manganese	213	J	1210	J	SD-TT-31-03	3/3	N/A	595
Mercury	0.94	J	1.8	J	SD-TT-31-01	3/3	N/A	1.41
Nickel	19.7		35.6		SD-TT-31-03	3/3	N/A	26
Selenium	1.8	J	4.1	J	SD-TT-31-03	3/3	N/A	2.7
Silver	0.6	J	0.6	J	SD-TT-31-03	1/3	0.3 - 0.38	0.31
Thallium	N/A		N/A		N/A	0/0	N/A	N/A
Vanadium	38.1	J	56.5	J	SD-TT-31-03	3/3	N/A	46
Zinc	280		678		SD-TT-31-03	3/3	N/A	464
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-73
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION TT-32
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	260	J	260	J	SD-TT-32-02-TR	1/1	47	260
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene						0/1	240	120
Acenaphthylene						0/1	240	120
Anthracene						0/1	240	120
Benzo(a)anthracene	400		400		SD-TT-32-02-TR	1/1	240	400
Benzo(a)pyrene	470	J	470	J	SD-TT-32-02-TR	1/1	240	470
Benzo(b)fluoranthene	810		810		SD-TT-32-02-TR	1/1	240	810
Benzo(g,h,i)perylene	230	J	230	J	SD-TT-32-02-TR	1/1	240	230
Benzo(k)fluoranthene	180	J	180	J	SD-TT-32-02-TR	1/1	240	180
Carbazole						0/1	240	120
Chrysene	460		460		SD-TT-32-02-TR	1/1	240	460
Dibenz(a,h)anthracene						0/1	240	120
Dibenzofuran						0/1	240	120
Fluoranthene	1000		1000		SD-TT-32-02-TR	1/1	240	1000
Fluorene						0/1	240	120
Indeno(1,2,3-cd)pyrene	210	J	210	J	SD-TT-32-02-TR	1/1	240	210
Naphthalene						0/1	240	120
N-nitrosodiphenylamine						0/1	240	120
Phenanthrene	450		450		SD-TT-32-02-TR	1/1	240	450
Pyrene	860		860		SD-TT-32-02-TR	1/1	240	860
PCBs/Pesticides - ug/Kg								
4,4'-DDD						0/1	0.94	0.47
4,4'-DDE	0.78	J	0.78	J	SD-TT-32-02-TR	1/1	0.94	1
4,4'-DDT						0/1	0.94	0.47
Aldrin						0/1	0.47	0.2
alpha-Chlordane						0/1	0.47	0.2
Aroclor 1248						0/1	9.4	5
Aroclor 1254						0/1	9.4	5
Aroclor 1260						0/1	9.4	5
beta-BHC						0/1	0.47	0.2
delta-BHC						0/1	0.47	0.2
Endosulfan I						0/1	0.47	0.2
Endosulfan Sulfate						0/1	0.94	0.5
Endrin Aldehyde						0/1	0.94	0.5
gamma-Chlordane						0/1	0.47	0.2
Metals - mg/Kg								
Aluminum	5080		11500		SD-TT-32-02-TR	4/4	9.14	7975
Antimony	9.1	J	9.1	J	SD-TT-32-02-TR	1/4	0.71 - 2.3	2.8
Arsenic	94.2		403		SD-TT-32-03	4/4	1	252
Barium	35.1		112		SD-TT-32-03	4/4	0.4	70
Beryllium	0.29		0.82	J	SD-TT-32-02-TR	4/4	0.2	0.54
Cadmium	3.2	J	6.5	J	SD-TT-32-02	4/4	0.6	5.0
Chromium	368		699		SD-TT-32-02-TR	4/4	1	530
Cobalt	8.9	J	27	J	SD-TT-32-03	4/4	0.36	22
Copper	183	J	403		SD-TT-32-02-TR	4/4	0.44	304
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	14800		57200		SD-TT-32-03	4/4	1.4	31425
Lead	152	J	288		SD-TT-32-02-TR	4/4	0.6	216
Manganese	133		2040		SD-TT-32-03	4/4	0.24	767
Mercury	0.44		4.3		SD-TT-32-03	4/4	0.2	2.71
Nickel	10.1	J	21.6	J	SD-TT-32-02	4/4	0.8	18
Selenium	2.2	J	5.4		SD-TT-32-03	3/4	1	2.7
Silver						0/3	0.12 - 1	0.22
Thallium						0/4	0.5 - 1.1	0.36
Vanadium	21.7	J	38.1	J	SD-TT-32-02-TR	4/4	0.64	31
Zinc	518		1960		SD-TT-32-02	4/4	1.7	1195
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	150000	J	150000	J	SD-TT-32-02-TR	1/1	250	150000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-74
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION TT-33
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A
Acetone	200	J	200	J	SD-TT-33-02-TR	1/1	23	200
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene						0/1	130	65
Acenaphthylene						0/1	130	65
Anthracene						0/1	130	65
Benzo(a)anthracene	110	J	110	J	SD-TT-33-02-TR	1/1	130	110
Benzo(a)pyrene	140	J	140	J	SD-TT-33-02-TR	1/1	130	140
Benzo(b)fluoranthene	260		260		SD-TT-33-02-TR	1/1	130	260
Benzo(g,h,i)perylene	60	J	60	J	SD-TT-33-02-TR	1/1	130	60
Benzo(k)fluoranthene	99	J	99	J	SD-TT-33-02-TR	1/1	130	99
Carbazole						0/1	130	65
Chrysene	160		160		SD-TT-33-02-TR	1/1	130	160
Dibenz(a,h)anthracene						0/1	130	65
Dibenzofuran						0/1	130	65
Fluoranthene	290		290		SD-TT-33-02-TR	1/1	130	290
Fluorene						0/1	130	65
Indeno(1,2,3-cd)pyrene	60	J	60	J	SD-TT-33-02-TR	1/1	130	60
Naphthalene						0/1	130	65
N-nitrosodiphenylamine						0/1	130	65
Phenanthrene	130	J	130	J	SD-TT-33-02-TR	1/1	130	130
Pyrene	270		270		SD-TT-33-02-TR	1/1	130	270
PCBs/Pesticides - ug/Kg								
4,4'-DDD	1.2		1.2		SD-TT-33-02-TR	1/1	1.1	1.2
4,4'-DDE	1.7		1.7		SD-TT-33-02-TR	1/1	1.1	1.7
4,4'-DDT						0/1	1.1	0.6
Aldrin						0/1	0.53	0.3
alpha-Chlordane						0/1	0.53	0.3
Aroclor 1248						0/1	11	6
Aroclor 1254						0/1	11	6
Aroclor 1260						0/1	11	6
beta-BHC						0/1	0.53	0.3
delta-BHC						0/1	0.53	0.3
Endosulfan I						0/1	0.53	0.3
Endosulfan Sulfate						0/1	1.1	0.6
Endrin Aldehyde						0/1	1.1	0.6
gamma-Chlordane						0/1	0.53	0.3
Metals - mg/Kg								
Aluminum	6640		11700		SD-TT-33-01	4/4	9.14	9603
Antimony	3.5	J	9.1	J	SD-TT-33-02	4/4	0.74	5.7
Arsenic	180	J	288	J	SD-TT-33-03	4/4	1	241
Barium	41.2		78.4		SD-TT-33-03	4/4	0.4	62
Beryllium	0.39		0.72		SD-TT-33-03	4/4	0.2	0.57
Cadmium	2.8		7.4	J	SD-TT-33-01	4/4	0.6	5.6
Chromium	420		2200	J	SD-TT-33-02	4/4	1	987
Cobalt	14.1	J	27.4		SD-TT-33-03	4/4	0.36	20
Copper	270		489	J	SD-TT-33-01	4/4	0.44	407
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A
Iron	16800		37800		SD-TT-33-03	4/4	1.4	30475
Lead	141		285	J	SD-TT-33-03	4/4	0.6	198
Manganese	154	J	776		SD-TT-33-02-TR	4/4	0.24	594
Mercury	1.2		5.6	J	SD-TT-33-03	4/4	0.2	3.15
Nickel	9.2		22		SD-TT-33-03	4/4	0.8	15
Selenium	2.7	J	4.6	J	SD-TT-33-03	3/4	0.99	3.0
Silver	1.1	J	2.3	J	SD-TT-33-03	3/4	0.99	1.47
Thallium						0/4	0.31 - 1.1	0.39
Vanadium	19.3		42.2		SD-TT-33-03	4/4	0.64	30
Zinc	581	J	1090	J	SD-TT-33-02	4/4	1.7	940
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A
Total Organic Carbon (mg/Kg)	86000	J	86000	J	SD-TT-33-02-TR	1/1	250	86000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-75
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION UF¹
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
PCBs/Pesticides - ug/Kg								
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A
Metals - mg/Kg								
Aluminum	21700		22700		SD-UF-03	2 / 2	3.1012 - 3.6977	22200
Antimony	N/A		N/A		N/A	0 / 0	N/A	N/A
Arsenic	121		127		SD-UF-01	2 / 2	0.3101 - 0.3698	124
Barium	164		198		SD-UF-03	2 / 2	0.3101 - 0.3698	181
Beryllium	1.2		1.2		SD-UF-03	2 / 2	0.124 - 0.1479	1.20
Cadmium	10.6		12.8		SD-UF-01	2 / 2	0.124 - 0.1479	11.7
Chromium	389		545		SD-UF-01	2 / 2	0.3101 - 0.3698	467
Cobalt	26		28.3		SD-UF-01	2 / 2	0.3101 - 0.3698	27
Copper	493		553		SD-UF-01	2 / 2	0.3101 - 0.3698	523
Cyanide	1		1.8		SD-UF-03	2 / 2	0.2227 - 0.2601	1.4
Iron	44300	J	46900	J	SD-UF-03	2 / 2	2.4809 - 2.9582	45600
Lead	607		860		SD-UF-01	2 / 2	0.1861 - 0.2219	734
Manganese	878		923		SD-UF-03	2 / 2	0.3101 - 0.3698	901
Mercury	1.7	J	2	J	SD-UF-01	2 / 2	0.207 - 0.2241	1.85
Nickel	46.4		47.5		SD-UF-01	2 / 2	0.3101 - 0.3698	47
Selenium	2.2		2.3		SD-UF-03	2 / 2	0.8023 - 0.8377	2.3
Silver	0.42	J	1.2	J	SD-UF-01	2 / 2	0.3101 - 0.3698	0.81
Thallium	0.68	J	0.86	J	SD-UF-01	2 / 2	0.2407 - 0.2513	0.77
Vanadium	78.6	J	85.6	J	SD-UF-01	2 / 2	0.3101 - 0.3698	82
Zinc	2060		2600		SD-UF-01	2 / 2	0.3101 - 0.3698	2330
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

¹ Includes samples applicable to the muskrat model

US EPA ARCHIVE DOCUMENT

**TABLE 4-76
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION WW
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A
Acetone	410	J	410	J	SD-WW-06-TR	1 / 1	10	410
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A
SVOCs - ug/Kg								
2-Methylnaphthalene						0 / 1	610	305
Acenaphthylene						0 / 1	610	305
Anthracene						0 / 1	610	305
Benzo(a)anthracene						0 / 1	610	305
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A
Benzo(b)fluoranthene	330	J	330	J	SD-WW-06-TR	1 / 1	610	330
Benzo(g,h,i)perylene						0 / 1	610	305
Benzo(k)fluoranthene	610	J	610	J	SD-WW-06-TR	1 / 1	610	610
Carbazole						0 / 1	610	305
Chrysene	300	J	300	J	SD-WW-06-TR	1 / 1	610	300
Dibenz(a,h)anthracene						0 / 1	610	305
Dibenzofuran						0 / 1	610	305
Fluoranthene	500	J	500	J	SD-WW-06-TR	1 / 1	610	500
Fluorene						0 / 1	610	305
Indeno(1,2,3-cd)pyrene						0 / 1	610	305
Naphthalene						0 / 1	610	305
N-nitrosodiphenylamine						0 / 1	610	305
Phenanthrene						0 / 1	610	305
Pyrene	480	J	480	J	SD-WW-06-TR	1 / 1	610	480
PCBs/Pesticides - ug/Kg								
4,4'-DDD						0 / 1	5	3
4,4'-DDE	2.1	J	2.1	J	SD-WW-06-TR	1 / 1	5	2
4,4'-DDT						0 / 1	5	3
Aldrin						0 / 1	2.5	1.3
alpha-Chlordane						0 / 1	2.5	1.3
Aroclor 1248						0 / 1	50	25
Aroclor 1254						0 / 1	50	25
Aroclor 1260						0 / 1	50	25
beta-BHC						0 / 1	2.5	1.3
delta-BHC						0 / 1	2.5	1.3
Endosulfan I						0 / 1	2.5	1.3
Endosulfan Sulfate						0 / 1	5	2.5
Endrin Aldehyde						0 / 1	5	2.5
gamma-Chlordane						0 / 1	2.5	1.3
Metals - mg/Kg								
Aluminum	6160		13800		SD-WW-12	14 / 14	9.14	10426.43
Antimony	57.3	J	57.3	J	SD-WW-06-TR	1 / 2	0.74 - 2	29
Arsenic	4.4	J	54.6	J	SD-WW-09	14 / 14	1	41
Barium	124		3420		SD-WW-11	14 / 14	0.4	444.11
Beryllium	0.77	J	0.885		SD-WW-01	3 / 14	0.02 - 0.65	0.31
Cadmium	2.8	J	9.6	J	SD-WW-02	13 / 14	0.048 - 0.6	4
Chromium	3670	J	24600	J	SD-WW-08	14 / 14	1	12364.6
Cobalt	6.4		21		SD-WW-09	14 / 14	0.36	12
Copper	178		598		SD-WW-02	14 / 14	0.44	349.21
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A
Iron	6740		20000		SD-WW-03	14 / 14	1.4	11956
Lead	147	J	495	J	SD-WW-07	14 / 14	0.6	301
Manganese	95.4		803		SD-WW-03	14 / 14	0.24	329.21
Mercury	0.46		1.8		SD-WW-01	13 / 14	0.09 - 0.24	1
Nickel	18.9		28.9		SD-WW-08	14 / 14	0.8	23.45
Selenium	3.2	J	5.95	J	SD-WW-01	12 / 14	1 - 5	4.32
Silver						0 / 14	0.35 - 1.2	0.36
Thallium	0.86	J	2.7	J	SD-WW-08	10 / 14	0.65 - 3	1
Vanadium	39.8		103		SD-WW-04	14 / 14	0.64	68
Zinc	888	J	1890		SD-WW-08	14 / 14	1.7	1209.535714
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A
Total Organic Carbon (mg/Kg)	760000	J	760000	J	SD-WW-06-TR	1 / 1	250	760000

N/A = Not Applicable or Not Available
J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-77
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 21
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene						0/1	76 - 225	38	0.0	*1
Tetrachloroethene						0/1	75	38	0.0	*1
Trichloroethene	19	J	19	J	SD-21-01-ME	1/1	30	19	19	*1
SVOCs - ug/Kg										
2-Methylnaphthalene	140		140		SD-21-01-ME	1/1	67	140	140	*1
Acenaphthylene	38	J	38	J	SD-21-01-ME	1/1	67	38	38	*1
Anthracene	420		420		SD-21-01-ME	1/1	67	420	420	*1
Benzo(a)anthracene	390		390		SD-21-01-ME	1/1	67	390	390	*1
Benzo(a)pyrene	890	J	890	J	SD-21-01-ME	1/1	67	890	890	*1
Benzo(b)fluoranthene	740	J	3100	J	SD-21-01-FW	3/3	67	1607	3100	*1
Benzo(g,h,i)perylene	710	J	710	J	SD-21-01-ME	1/1	67	710	710	*1
Benzo(k)fluoranthene						0/1	67	34	0.0	*1
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Chrysene	940		940		SD-21-01-ME	1/1	67	940	940	*1
Dibenz(a,h)anthracene	240	J	240	J	SD-21-01-ME	1/1	67	240	240	*1
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluoranthene	970	J	2500	J	SD-21-01-FW	3/3	67	1623	2500	*1
Fluorene	240		240		SD-21-01-ME	1/1	67	240	240	*1
Indeno(1,2,3-cd)pyrene	620	J	620	J	SD-21-01-ME	1/1	67	620	620	*1
Naphthalene	1300	J	2500	J	SD-21-02-FW	2/2	67	1900	2500	*1
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Phenanthrene	600		600		SD-21-01-ME	1/1	67	600	600	*1
Pyrene	620	J	2400	J	SD-21-01-FW	3/3	67	1440	2400	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD	27	J	35	J	SD-21-01-ME	3/3	3.2	30	35	*1
4,4'-DDE	22		36		SD-21-01-FW	3/3	3.2	31	36	*1
4,4'-DDT	4.4	J	4.4	J	SD-21-01-ME	1/1	3.2	4.4	4.4	*1
Aldrin						0/1	1.6	0.80	0.0	*1
alpha-Chlordane	29		62		SD-21-03-FW	3/3	1.6	50	62	*1
Aroclor 1248	240	J	240	J	SD-21-01-ME	1/1	3.2	240	240	*1
Aroclor 1254						0/1	3.2	1.6	0.0	*1
Aroclor 1260	420		420		SD-21-01-ME	1/1	3.2	420	420	*1
beta-BHC						0/1	1.6	0.80	0.0	*1
delta-BHC	1.8	J	1.8	J	SD-21-01-ME	1/1	1.6	1.8	1.8	*1
Endosulfan I	14	J	68	J	SD-21-01-FW	3/4	1.6	35	68	*2
Endosulfan Sulfate						0/1	3.2	1.6	0.0	*1
Endrin Aldehyde	9	J	9	J	SD-21-01-ME	1/1	3.2	9.0	9.0	*1
gamma-Chlordane	19	J	47	J	SD-21-03-FW	2/2	1.6	33	47	*1
Metals - mg/Kg										
Aluminum	8890	J	18400	J	SD-21-01-FW	4/4	3.6	13648	18400	*2
Antimony	2	J	2	J	SD-21-01-ME	1/1	0.27	2.0	2.0	*1
Arsenic	121	J	258	J	SD-21-01-ME	4/4	0.22	175	248	2
Barium	55.3	J	181	J	SD-21-01-ME	4/4	0.019	128	181	*2
Beryllium	0.68	J	1.1	J	SD-21-01-FW	4/4	0.028	0.90	1.1	*2
Cadmium	14.1		20.5		SD-21-02-FW	4/4	0.36	18	21	*2
Chromium	489	J	5590	J	SD-21-01-ME	4/4	0.056	2400	5034	2
Cobalt	12.8	J	29.9	J	SD-21-01-FW	4/4	0.38	23	30	*2
Copper	324	J	613	J	SD-21-01-ME	4/4	0.084	457	601	2
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Iron	11300	J	28000	J	SD-21-01-FW	4/4	0.58	21950	28000	*2
Lead	187	J	722	J	SD-21-01-FW	4/4	0.27	527	722	*2
Manganese	101	J	268	J	SD-21-01-ME	4/4	0.019	208	268	*2
Mercury	0.15		18.2		SD-21-03-FW	4/4	0.0051	9.5	18	*2
Nickel	17.9	J	46.8	J	SD-21-01-FW	4/4	0.15	33	47	*2
Selenium	3	J	3.5	J	SD-21-01-FW	3/3	0.054	3.2	3.5	*1
Silver	0.3	J	0.3	J	SD-21-01-ME	1/1	0.01	0.30	0.30	*1
Thallium						0/1	0.44	0.22	0.0	*1
Vanadium	26.6	J	77.3	J	SD-21-01-FW	4/4	0.075	54	77	*2
Zinc	2350	J	4940	J	SD-21-01-ME	4/4	0.17	3563	4856	2
Total Combustible Organics (m	344000	J	344000	J	SD-21-01-ME	1/1	2000	344000	344000	*1
Total Organic Carbon (mg/Kg)	244000		441000		SD-21-02-FW	3/3	N/A	324333	441000	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

TABLE 4-78
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION BW
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	417	J	417	J	SD-12-01-ME	1/1	103	417	417	*1
Tetrachloroethene						0/1	309	155	0.0	*1
Trichloroethene	53	J	53	J	SD-12-01-ME	1/1	103	53	53	*1
SVOCs - ug/Kg										
2-Methylnaphthalene	13	J	13	J	SD-12-01-ME	1/1	1	13	13	*1
Acenaphthylene	19	J	19	J	SD-12-01-ME	1/1	1	19	19	*1
Anthracene	69	J	69	J	SD-12-01-ME	1/1	67	69	69	*1
Benzo(a)anthracene	560	J	560	J	SD-12-01-ME	1/1	67	560	560	*1
Benzo(a)pyrene	1000	J	1000	J	SD-12-01-ME	1/1	67	1000	1000	*1
Benzo(b)fluoranthene	1500	J	1500	J	SD-12-01-ME	1/1	67	1500	1500	*1
Benzo(g,h,i)perylene	640	J	640	J	SD-12-01-ME	1/1	67	640	640	*1
Benzo(k)fluoranthene	720	J	720	J	SD-12-01-ME	1/1	67	720	720	*1
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Chrysene	850	J	850	J	SD-12-01-ME	1/1	67	850	850	*1
Dibenz(a,h)anthracene	320	J	320	J	SD-12-01-ME	1/1	2	320	320	*1
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluoranthene	1200	J	1200	J	SD-12-01-ME	1/1	67	1200	1200	*1
Fluorene	47	J	47	J	SD-12-01-ME	1/1	67	47	47	*1
Indeno(1,2,3-cd)pyrene	740	J	740	J	SD-12-01-ME	1/1	67	740	740	*1
Naphthalene	26	J	26	J	SD-12-01-ME	1/1	67	26	26	*1
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Phenanthrene	570	J	570	J	SD-12-01-ME	1/1	67	570	570	*1
Pyrene	1000	J	1000	J	SD-12-01-ME	1/1	67	1000	1000	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD	17		17		SD-12-01-ME	1/1	0.33	17	17	*1
4,4'-DDE	4		4		SD-12-01-ME	1/1	0.33	4.0	4.0	*1
4,4'-DDT	1.3	J	1.3	J	SD-12-01-ME	1/1	0.33	1.3	1.3	*1
Aldrin						0/1	0.17	0.085	0.0	*1
alpha-Chlordane	2.4	J	2.4	J	SD-12-01-ME	1/1	0.17	2.4	2.4	*1
Aroclor 1248	28	J	28	J	SD-12-01-ME	1/1	3.3	28	28	*1
Aroclor 1254						0/1	3.3	1.7	0.0	*1
Aroclor 1260	58		58		SD-12-01-ME	1/1	3.3	58	58	*1
beta-BHC						0/1	0.17	0.085	0.0	*1
delta-BHC						0/1	0.17	0.085	0.0	*1
Endosulfan I						0/1	0.17	0.085	0.0	*1
Endosulfan Sulfate						0/1	0.33	0.17	0.0	*1
Endrin Aldehyde	1.8	J	1.8	J	SD-12-01-ME	1/1	0.33	1.8	1.8	*1
gamma-Chlordane	1.7	J	1.7	J	SD-12-01-ME	1/1	0.17	1.7	1.7	*1
Metals - mg/Kg										
Aluminum	15500		26000		SD-12-01-ME	6/6	3.5	18558	21850	2
Antimony	11.1	J	68	J	SD-12-01-ME	6/6	0.27	22	63	13
Arsenic	656	J	3230		SD-12-01-ME	6/6	0.22	1239	3036	13
Barium	78.8		181		SD-BW-02	6/6	0.019	129	166	2
Beryllium	1.1		2		SD-12-01-ME	6/6	0.028	1.4	1.7	2
Cadmium	6		12.2	J	SD-BW-02	6/6	0.037	11	12	*2
Chromium	720		2305		SD-BW-01	6/6	0.056	1518	2035	2
Cobalt	23.6		57.5		SD-BW-05	6/6	0.38	40	51	2
Copper	535		2080		SD-12-01-ME	6/6	0.083	899	1520	3
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Iron	54850		189000		SD-BW-03	6/6	0.57	111725	149491	2
Lead	405		1240		SD-12-01-ME	6/6	0.27	607	866	2
Manganese	521		1530	J	SD-BW-03	6/6	0.019	1036	1392	2
Mercury	1.4		27.5		SD-12-01-ME	6/6	0.0051	6.6	16	6
Nickel	28.3		46.9		SD-BW-05	6/6	0.15	36	41	2
Selenium	5.3	J	18.3		SD-12-01-ME	6/6	0.41	9.9	14	2
Silver	0.54	J	2.5		SD-BW-02	6/6	0.01	1.5	2.1	2
Thallium	3.85	J	18.1	J	SD-BW-03	5/6	0.044 - 1.2	8.2	13	2
Vanadium	65.2		107		SD-12-01-ME	6/6	0.074	81	92	2
Zinc	1620		3050		SD-BW-05	6/6	0.17	2102	2590	2
Total Combustible Organics (m)	912000	J	912000	J	SD-12-01-ME	1/1	2000	912000	912000	*1
Total Organic Carbon (mg/Kg)	138000		177000		SD-BW-02	5/5	8130 - 12000	161600	176131	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-79
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION CB-01
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4230		21100	J	SD-CB-01-04	10 / 10	N/A	11886	14742	2
Antimony	0.77	J	4	J	SD-CB-01-07	4 / 10	0.57 - 2	1.2	2.0	3
Arsenic	8.2	J	98.7	J	SD-CB-01-04	10 / 10	N/A	41	58	2
Barium	19.35		105		SD-CB-01-10	8 / 10	13.9 - 16.3	40	59	2
Beryllium	0.33		2		SD-CB-01-04	10 / 10	N/A	1.0	1.4	2
Cadmium	1.1	J	16.1	J	SD-CB-01-02	10 / 10	N/A	5.2	9.3	3
Chromium	27.5	J	584	J	SD-CB-01-02	10 / 10	N/A	217	332	2
Cobalt	0.79		33.4		SD-CB-01-02	10 / 10	N/A	6.0	14	5
Copper	58.1	J	1090	J	SD-CB-01-04	10 / 10	N/A	389	749	3
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	4250		27200		SD-CB-01-02	10 / 10	N/A	11059	18702	5
Lead	75	J	648	J	SD-CB-01-02	10 / 10	N/A	317	443	2
Manganese	51.5		1260	J	SD-CB-01-10	10 / 10	N/A	338	688	3
Mercury	0.28	J	4.8	J	SD-CB-01-04	10 / 10	N/A	1.5	2.9	3
Nickel	4		31.8	J	SD-CB-01-02	10 / 10	N/A	9.2	20	13
Selenium	1.2	J	8.3	J	SD-CB-01-04	10 / 10	N/A	3.7	5.0	2
Silver						0 / 10	0.12 - 1	0.33	0.43	2
Thallium	0.425	J	3.1		SD-CB-01-04	5 / 10	0.58 - 1	1.0	2.5	5
Vanadium	21.9		114		SD-CB-01-07	10 / 10	N/A	54	79	3
Zinc	58.4		1190		SD-CB-01-02	10 / 10	N/A	422	638	2
Total Combustible Organics (TCO)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (TOC)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-80
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION CB-02
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	1865		8170		SD-CB-02-01	10 / 10	N/A	4439	5409	2
Antimony	0.89	J	2	J	SD-CB-02-03	10 / 10	N/A	1.5	1.8	2
Arsenic	7.55	J	56.2	J	SD-CB-02-06	10 / 10	N/A	27	41	3
Barium	13.6		389		SD-CB-02-07	10 / 10	N/A	79	171	6
Beryllium	0.16		0.49		SD-CB-02-01	10 / 10	N/A	0.29	0.34	2
Cadmium	0.91	J	5.8	J	SD-CB-02-01	10 / 10	N/A	3.1	3.8	2
Chromium	17.9	J	248	J	SD-CB-02-01	10 / 10	N/A	106	144	2
Cobalt	1.2		7.45		SD-CB-02-09	10 / 10	N/A	4.2	5.3	2
Copper	38.3	J	168	J	SD-CB-02-01	10 / 10	N/A	75	98	3
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	3960		9640		SD-CB-02-05	10 / 10	N/A	5914	6898	2
Lead	67	J	342	J	SD-CB-02-07	10 / 10	N/A	119	238	13
Manganese	34.5	J	108	J	SD-CB-02-05	10 / 10	N/A	56	72	3
Mercury	0.12		0.58		SD-CB-02-01	10 / 10	N/A	0.24	0.33	3
Nickel	2.1		12.8	J	SD-CB-02-04	10 / 10	N/A	8.3	10	2
Selenium	1.1	J	3.1	J	SD-CB-02-01	5 / 10	0.97 - 2.8	1.4	1.9	2
Silver	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Thallium						0 / 10	0.54 - 1.7	0.43	0.54	3
Vanadium	18.5		45.6		SD-CB-02-04	10 / 10	N/A	27	32	2
Zinc	132	J	450	J	SD-CB-02-09	10 / 10	N/A	250	314	2
Total Combustible Organics (m	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

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**TABLE 4-81
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION CB-03
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4050	J	16100	J	SD-CB-03-01	12 / 12	N/A	9264	11284	2
Antimony	4.2	J	4.8	J	SD-CB-03-08	3 / 12	0.43 - 3.5	1.5	4.8	*15
Arsenic	9.1	J	1410		SD-CB-03-11	12 / 12	N/A	272	595	3
Barium	20.7		95.5		SD-CB-03-08	12 / 12	N/A	52	67	2
Beryllium	0.2		0.91		SD-CB-03-06	12 / 12	N/A	0.54	0.66	2
Cadmium	0.77	J	23.1	J	SD-CB-03-06	12 / 12	N/A	7.4	13	3
Chromium	38.7	J	768		SD-CB-03-06	12 / 12	N/A	457	768	*15
Cobalt	4.35		130	J	SD-CB-03-06	12 / 12	N/A	19	63	13
Copper	29.2	J	670	J	SD-CB-03-06	12 / 12	N/A	269	376	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	8230		86500		SD-CB-03-11	12 / 12	N/A	30996	50627	3
Lead	24.4	J	443	J	SD-CB-03-06	12 / 12	N/A	196	274	2
Manganese	43.6	J	986		SD-CB-03-12	12 / 12	N/A	283	464	3
Mercury	0.058	J	3.6		SD-CB-03-12	12 / 12	N/A	1.2	2.5	3
Nickel	8.7		78.3	J	SD-CB-03-06	12 / 12	N/A	26	37	3
Selenium	0.69	J	8.8		SD-CB-03-06	11 / 11	N/A	3.8	5.3	2
Silver	3.2	J	3.2	J	SD-CB-03-06	1 / 8	0.11 - 0.43	0.51	3.2	*15
Thallium	1.2		1.5	J	SD-CB-03-01	3 / 11	0.48 - 1.7	0.71	0.97	2
Vanadium	13.5		97.4	J	SD-CB-03-08	12 / 12	N/A	47	62	2
Zinc	135		5270		SD-CB-03-06	12 / 12	N/A	1148	2099	3
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-82
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION CB-04
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4670		13800		SD-CB-04-03	10 / 10	N/A	9437	11027	2
Antimony	0.67	J	7.2		SD-CB-04-02	10 / 10	N/A	3.6	4.8	2
Arsenic	16.5		325.5		SD-CB-04-06	10 / 10	N/A	112	182	3
Barium	20.9		109		SD-CB-04-05	10 / 10	N/A	61	77	2
Beryllium	0.25	J	1		SD-CB-04-01	10 / 10	N/A	0.62	0.77	2
Cadmium	0.41		8.9		SD-CB-04-05	10 / 10	N/A	4.0	5.7	2
Chromium	35.2		568		SD-CB-04-03	10 / 10	N/A	167	272	3
Cobalt	5.3		18.9		SD-CB-04-05	10 / 10	N/A	8.8	11	3
Copper	47.7		358		SD-CB-04-02	10 / 10	N/A	185	244	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	7950		86200		SD-CB-04-02	10 / 10	N/A	23967	39923	3
Lead	59.6		409		SD-CB-04-03	10 / 10	N/A	208	276	2
Manganese	72.5		2410		SD-CB-04-05	10 / 10	N/A	404	1380	13
Mercury	0.18		2.2		SD-CB-04-02	10 / 10	N/A	0.73	1.2	3
Nickel	10.1		177		SD-CB-04-03	10 / 10	N/A	41	77	3
Selenium	0.95	J	5.1	J	SD-CB-04-10	9 / 10	0.58	3.0	3.9	2
Silver	0.23	J	11.5		SD-CB-04-02	5 / 10	0.19 - 0.53	1.3	12	*15
Thallium	3.1		5.3		SD-CB-04-02	2 / 10	0.58 - 1.6	1.1	5.3	*15
Vanadium	18.5		85.4		SD-CB-04-03	10 / 10	N/A	55	68	2
Zinc	112		8750		SD-CB-04-03	10 / 10	N/A	1397	3066	6
Total Combustible Organics (n)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	44300		298000		SD-CB-04-01	10 / 10	8470 - 18500	174000	222466	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-83
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION CB-06
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4130		10800		SD-CB-06-08	10 / 10	N/A	7195	8561	2
Antimony	2.2	J	7.8		SD-CB-06-03	2 / 10	1.7 - 1.9	1.7	4.7	13
Arsenic	22.4	J	257	J	SD-CB-06-03	10 / 10	N/A	98	140	2
Barium	8.4		59.5		SD-CB-06-07	10 / 10	N/A	40	51	2
Beryllium	0.22	J	0.66		SD-CB-06-01	6 / 10	0.2 - 0.22	0.27	0.38	2
Cadmium	0.88		34.6		SD-CB-06-01	10 / 10	N/A	8.6	17	3
Chromium	31.8		969		SD-CB-06-01	10 / 10	N/A	280	497	3
Cobalt	3.2		25		SD-CB-06-07	10 / 10	N/A	9.2	14	3
Copper	39.9		386		SD-CB-06-01	10 / 10	N/A	180	236	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	5580		26800		SD-CB-06-08	10 / 10	N/A	12693	16258	2
Lead	19.9		328		SD-CB-06-01	10 / 10	N/A	137	189	2
Manganese	50	J	133	J	SD-CB-06-05	10 / 10	N/A	79	94	2
Mercury	0.05	J	0.56		SD-CB-06-10	9 / 10	0.04	0.23	0.34	2
Nickel	6.2		49.4		SD-CB-06-01	10 / 10	N/A	19	28	3
Selenium	0.975	J	3	J	SD-CB-06-01	6 / 10	0.77 - 0.86	1.4	2.0	2
Silver	0.22	J	0.27	J	SD-CB-06-03	2 / 10	0.19 - 0.22	0.13	0.17	2
Thallium	1.8	J	6.1		SD-CB-06-03	9 / 10	1.5	3.2	4.1	2
Vanadium	10.4		103		SD-CB-06-01	10 / 10	N/A	53	72	2
Zinc	250	J	3840	J	SD-CB-06-07	10 / 10	N/A	1421	2076	2
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	10500		214000		SD-CB-06-03	10 / 10	8060 - 11100	132800	169839	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-84
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION NRSE
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4880		9220		SD-NR-02	5/5	N/A	6652	8498	2
Antimony						0/5	1.7 - 2.2	0.92	1.0	2
Arsenic	106		221		SD-NR-02	5/5	N/A	166	214	2
Barium	25.4		65.5		SD-NR-01	5/5	N/A	41	56	2
Beryllium	0.3		0.94		SD-NR-02	5/5	N/A	0.50	0.75	2
Cadmium	0.95		2.7		SD-NR-01	4/5	0.49	1.3	2.2	2
Chromium	104		258		SD-NR-02	5/5	N/A	186	251	2
Cobalt	5.2		9.3		SD-NR-01	5/5	N/A	6.4	8.0	2
Copper	99.3		365		SD-NR-02	5/5	N/A	202	304	2
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Iron	11500		25600		SD-NR-01	5/5	N/A	19420	24291	2
Lead	80.8		249		SD-NR-02	5/5	N/A	161	224	2
Manganese	95.4		317		SD-NR-01	5/5	N/A	164	248	2
Mercury	0.77		5.9		SD-NR-03	5/5	N/A	2.6	4.5	2
Nickel	7.8		16.1		SD-NR-01	5/5	N/A	11	14	2
Selenium	0.86	J	2.4	J	SD-NR-01	5/5	N/A	1.8	2.4	2
Silver	0.93		2.4		SD-NR-02	5/5	N/A	1.5	2.2	2
Thallium						0/5	1.7 - 2.2	0.93	1.0	2
Vanadium	16.4		32.6		SD-NR-02	5/5	N/A	24	31	2
Zinc	226	J	595	J	SD-NR-01	5/5	N/A	343	485	2
Total Combustible Organics (m)	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	15900		59400		SD-NR-02	5/5	7250 - 8470	33460	52036	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-85
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION JY
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248						0 / 10	190 - 440	122	144	2
Aroclor 1254	230	J	2600		SD-JY-07	9 / 10	190 - 440	906	1366	2
Aroclor 1260	260		2400		SD-JY-07	9 / 10	190 - 440	990	1472	2
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	3950		17300		SD-JY-12	10 / 10	N/A	9592	12295	2
Antimony	3.1		19.5		SD-JY-08	5 / 10	1.8 - 2.1	5.4	20	*15
Arsenic	13.7	J	482		SD-JY-13	10 / 10	N/A	145	282	3
Barium	20		353	J	SD-JY-07	10 / 10	N/A	127	182	2
Beryllium	0.245	J	0.98	J	SD-JY-12	7 / 10	0.19 - 0.23	0.46	0.66	2
Cadmium	1.4		21		SD-JY-07	10 / 10	N/A	11	15	2
Chromium	69.6		1710	J	SD-JY-08	10 / 10	N/A	839	1170	2
Cobalt	5.9		24.5		SD-JY-10	10 / 10	N/A	13	17	2
Copper	122	J	741	J	SD-JY-08	10 / 10	N/A	378	502	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	8240	J	58700		SD-JY-07	10 / 10	N/A	28394	38229	2
Lead	47.6		1210		SD-JY-08	10 / 10	N/A	523	729	2
Manganese	103		555		SD-JY-13	10 / 10	N/A	293	365	2
Mercury	0.1	J	2.3		SD-JY-12	7 / 10	0.05 - 0.39	0.77	1.8	3
Nickel	8.7		150		SD-JY-07	10 / 10	N/A	52	75	2
Selenium	1.3	J	5.1	J	SD-JY-13	7 / 10	0.8 - 1.9	3.0	5.1	*15
Silver	0.385	J	1.8		SD-JY-12	7 / 10	0.19 - 0.21	0.70	1.0	2
Thallium	1.7	J	6.9	J	SD-JY-07	7 / 9	1.5 - 1.6	2.5	4.0	3
Vanadium	10.2		90.6		SD-JY-07	10 / 10	N/A	49	64	2
Zinc	308		2850		SD-JY-08	10 / 10	N/A	1820	2351	2
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	15400		218500		SD-JY-06	10 / 10	6800 - 9430	146670	218500	*13

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-86
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION WG
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	82	J	82	J	SD-19-01-ME	1 / 1	79	82	82	*1
Tetrachloroethene						0 / 1	237	119	0.0	*1
Trichloroethene	42	J	42	J	SD-19-01-ME	1 / 1	79	42	42	*1
SVOCs - ug/Kg										
2-Methylnaphthalene						0 / 1	6	3.0	0.0	*1
Acenaphthylene	1	J	1	J	SD-19-01-ME	1 / 1	1	1.0	1.0	*1
Anthracene	18	J	18	J	SD-19-01-ME	1 / 1	67	18	18	*1
Benzo(a)anthracene	130	J	130	J	SD-19-01-ME	1 / 1	67	130	130	*1
Benzo(a)pyrene	160	J	160	J	SD-19-01-ME	1 / 1	67	160	160	*1
Benzo(b)fluoranthene	290	J	290	J	SD-19-01-ME	1 / 1	67	290	290	*1
Benzo(g,h,i)perylene	120	J	120	J	SD-19-01-ME	1 / 1	67	120	120	*1
Benzo(k)fluoranthene	200	J	200	J	SD-19-01-ME	1 / 1	67	200	200	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	230	J	230	J	SD-19-01-ME	1 / 1	67	230	230	*1
Dibenz(a,h)anthracene	46	J	46	J	SD-19-01-ME	1 / 1	67	46	46	*1
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	410	J	410	J	SD-19-01-ME	1 / 1	67	410	410	*1
Fluorene	14	J	14	J	SD-19-01-ME	1 / 1	67	14	14	*1
Indeno(1,2,3-cd)pyrene	140	J	140	J	SD-19-01-ME	1 / 1	67	140	140	*1
Naphthalene	12	J	12	J	SD-19-01-ME	1 / 1	67	12	12	*1
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	160	J	160	J	SD-19-01-ME	1 / 1	67	160	160	*1
Pyrene	340	J	340	J	SD-19-01-ME	1 / 1	67	340	340	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD	9		9		SD-19-01-ME	1 / 1	0.33	9.0	9.0	*1
4,4'-DDE	3.2		3.2		SD-19-01-ME	1 / 1	0.33	3.2	3.2	*1
4,4'-DDT						0 / 1	0.33	0.17	0.0	*1
Aldrin						0 / 1	0.16	0.080	0.0	*1
alpha-Chlordane	0.98	J	0.98	J	SD-19-01-ME	1 / 1	0.16	0.98	0.98	*1
Aroclor 1248	35	J	35	J	SD-19-01-ME	1 / 1	3.3	35	35	*1
Aroclor 1254						0 / 1	3.3	1.7	0.0	1
Aroclor 1260	11		11		SD-19-01-ME	1 / 1	3.3	11	11	*1
beta-BHC						0 / 1	0.16	0.080	0.0	*1
delta-BHC						0 / 1	0.16	0.080	0.0	*1
Endosulfan I	0.44	J	0.44	J	SD-19-01-ME	1 / 1	0.16	0.44	0.44	*1
Endosulfan Sulfate						0 / 1	0.33	0.17	0.0	*1
Endrin Aldehyde						0 / 1	0.33	0.17	0.0	*1
gamma-Chlordane	0.59	J	0.59	J	SD-19-01-ME	1 / 1	0.16	0.59	0.59	*1
Metals - mg/Kg										
Aluminum	3140		25700		SD-WG-13	21 / 21	3.6284 - 6	13755	16081	2
Antimony	0.75	J	24.5	J	SD-WG-07	11 / 19	0.3628 - 6.6	6.0	9.2	3
Arsenic	6.6		1450		SD-WG-07	21 / 21	0.3628 - 0.4747	136	263	6
Barium	14.1		177		SD-WG-01	21 / 21	0.031 - 0.4747	79	94	2
Beryllium	0.27	J	2.9	J	SD-19-01-ME	20 / 21	0.047 - 0.1899	1.2	1.5	2
Cadmium	0.46		12.3		SD-WG-10	21 / 21	0.063 - 0.1899	5.2	6.4	2
Chromium	14.3		2570		SD-WG-10	21 / 21	0.094 - 0.4747	561	930	3
Cobalt	2.7	J	44.1	J	SD-WG-07	21 / 21	0.3628 - 0.64	16	21	3
Copper	18.8		1330		SD-WG-07	21 / 21	0.14 - 0.4747	483	627	2
Cyanide	0.32	J	2.5	J	SD-WG-19	15 / 20	0.0942 - 0.4748	0.87	1.3	3
Iron	4920		119000		SD-WG-07	21 / 21	0.98 - 6.9495	20480	28490	3
Lead	23.9		810		SD-WG-07	21 / 21	0.2177 - 0.46	429	521	2
Manganese	89.5		1910		SD-WG-01	21 / 21	0.031 - 0.4747	702	1015	3
Mercury	0.1	J	11.6	J	SD-WG-07	20 / 21	0.0048 - 0.3289	1.4	3.0	6
Nickel	4.8		79.2		SD-WG-20	21 / 21	0.25 - 0.4747	28	35	2
Selenium	0.66	J	8.6	J	SD-WG-02	20 / 21	0.1522 - 1.6	3.7	4.5	2
Silver	0.64	J	2.95	J	SD-WG-20	3 / 21	0.016 - 0.4747	0.38	0.96	13
Thallium	0.24	J	0.7	J	SD-WG-01	13 / 21	0.074 - 1.5	0.36	0.44	2
Vanadium	10.3		104.35		SD-WG-09	21 / 21	0.13 - 0.4747	54	65	2
Zinc	80.1		2080		SD-WG-10	21 / 21	0.28 - 0.4747	866	1086	2
Total Combustible Organics (n)	686000	J	686000	J	SD-19-01-ME	1 / 1	2000	686000	686000	*1
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "*" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-87
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION WH
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acetone	2700	J	2700	J	SD-WH-07-TR	1/1	190	2700	2700	*1
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene						0/1	600	300	0.0	*1
Acenaphthylene						0/1	600	300	0.0	*1
Anthracene						0/1	600	300	0.0	*1
Benzo(a)anthracene						0/1	600	300	0.0	*1
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene						0/1	600	300	0.0	*1
Benzo(g,h,i)perylene						0/1	600	300	0.0	*1
Benzo(k)fluoranthene	660	J	660	J	SD-WH-07-TR	1/1	720	660	660	*1
Carbazole						0/1	600	300	0.0	*1
Chrysene						0/1	600	300	0.0	*1
Dibenz(a,h)anthracene						0/1	600	300	0.0	*1
Dibenzofuran						0/1	600	300	0.0	*1
Fluoranthene						0/1	600	300	0.0	*1
Fluorene						0/1	600	300	0.0	*1
Indeno(1,2,3-cd)pyrene						0/1	600	300	0.0	*1
Naphthalene						0/1	600	300	0.0	*1
N-nitrosodiphenylamine						0/1	600	300	0.0	*1
Phenanthrene						0/1	600	300	0.0	*1
Pyrene						0/1	600	300	0.0	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD						0/1	4.9	2	0.0	*1
4,4'-DDE						0/1	4.9	2	0.0	*1
4,4'-DDT						0/1	4.9	2	0.0	*1
Aldrin						0/1	2.5	1.3	0.0	*1
alpha-Chlordane						0/1	2.5	1.3	0.0	*1
Aroclor 1248						0/1	4.9	25	0.0	*1
Aroclor 1254						0/1	4.9	25	0.0	*1
Aroclor 1260						0/1	4.9	25	0.0	*1
beta-BHC						0/1	2.5	1.3	0.0	*1
delta-BHC						0/1	2.5	1.3	0.0	*1
Endosulfan I						0/1	2.5	1.3	0.0	*1
Endosulfan Sulfate						0/1	4.9	2.5	0.0	*1
Endrin Aldehyde						0/1	4.9	2.5	0.0	*1
gamma-Chlordane						0/1	2.5	1.3	0.0	*1
Metals - mg/Kg										
Aluminum	4720		17500		SD-WH-02	11/11	4.1266 - 9.14	10695	13414	2
Antimony	9.9		35.4	J	SD-WH-09	11/11	0.4127 - 0.74	22	27	2
Arsenic	4.7		424		SD-WH-02	11/11	0.4127 - 1	114	424	*8
Barium	53.9		132		SD-WH-05	11/11	0.4 - 0.4799	81	94	2
Beryllium	0.28	J	1.6		SD-WH-04	11/11	0.1651 - 0.2	0.92	1.2	2
Cadmium	0.87	J	15.1	J	SD-WH-01	11/11	0.1651 - 0.6	5.9	10	3
Chromium	17.7		1170		SD-WH-02	11/11	0.4127 - 1	346	837	3
Cobalt	2.4	J	34.4		SD-WH-05	11/11	0.36 - 0.4799	12	21	3
Copper	23.8		572		SD-WH-02	11/11	0.4127 - 0.4799	248	572	*15
Cyanide	0.26	J	1.1		SD-WH-05	9/10	0.2232 - 0.3788	0.57	0.74	2
Iron	4020		76600		SD-WH-05	11/11	1.4 - 3.5747	24718	58501	5
Lead	771		2540		SD-WH-06	11/11	0.2476 - 0.6	1516	1851	2
Manganese	51.9		747		SD-WH-05	11/11	0.24 - 0.4799	250	442	3
Mercury	0.25	J	0.98	J	SD-WH-02	9/10	0.02 - 0.3294	0.54	0.70	2
Nickel	11.8		44		SD-WH-01	11/11	0.4127 - 0.8	24	42	13
Selenium	1.55	J	4.1	J	SD-WH-04	11/11	0.1574 - 1	2.7	3.3	2
Silver	0.46	J	0.46	J	SD-WH-01	1/11	0.4 - 1	0.26	0.32	2
Thallium	0.2225	J	1.5		SD-WH-01	9/11	0.236 - 1.1	0.56	0.85	3
Vanadium	32.3		163		SD-WH-04	11/11	0.4127 - 0.64	76	97	2
Zinc	181		3230		SD-WH-01	6/11	0.4127 - 634	978	2139	3
Total Combustible Organics (m)	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	815000	J	815000	J	SD-WH-07-TR	1/1	250	815000	815000	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-88
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION WS
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	3570		13500		SD-WS-08	10 / 10	3.3362 - 4.7156	8500	10523	2
Antimony	1.2	J	7.2	J	SD-WS-08	10 / 10	0.3336 - 0.4716	4.0	4.9	2
Arsenic	17.7		339		SD-WS-08	10 / 10	0.3336 - 0.4716	168	226	2
Barium	60.8		200		SD-WS-08	10 / 10	0.3336 - 0.4716	119	140	2
Beryllium	0.2	J	0.87		SD-WS-08	10 / 10	0.1334 - 0.1886	0.53	0.66	2
Cadmium	1.3		16.7		SD-WS-08	10 / 10	0.1334 - 0.1886	8.1	11	2
Chromium	67.7		1320		SD-WS-08	10 / 10	0.3336 - 0.4716	504	728	2
Cobalt	5.5		44.8		SD-WS-08	10 / 10	0.3336 - 0.4716	19	25	2
Copper	68		686		SD-WS-08	10 / 10	0.3336 - 0.4716	306	414	2
Cyanide	1.4	J	12.1	J	SD-WS-08	10 / 10	0.1443 - 0.567	3.6	5.7	3
Iron	12800	J	52400	J	SD-WS-08	10 / 10	1.3345 - 3.4992	29765	37159	2
Lead	165		490		SD-WS-08	10 / 10	0.2002 - 0.2829	295	367	2
Manganese	413	J	1420	J	SD-WS-06	10 / 10	0.3336 - 0.4716	1036	1215	2
Mercury	0.22	J	1.8	J	SD-WS-02	8 / 8	0.1275 - 0.3418	0.98	1.4	2
Nickel	17.4	J	46.3	J	SD-WS-08	10 / 10	0.3336 - 0.4716	30	36	2
Selenium	0.79	J	3.8	J	SD-WS-08	10 / 10	0.1554 - 0.9153	2.1	2.6	2
Silver						0 / 10	0.33 - 0.4716	0.21	0.22	2
Thallium	0.5	J	2.2	J	SD-WS-08	8 / 10	0.23 - 0.2746	0.76	1.1	2
Vanadium	22.2		56.1		SD-WS-08	10 / 10	0.3336 - 0.4716	37	45	2
Zinc	299		3440		SD-WS-08	10 / 10	0.3336 - 0.4716	1542	2044	2
Total Combustible Organics (m	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

TABLE 4-89
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT REFERENCE POND LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	17.5	J	680		SD-MC-02	2 / 7	13 - 19	106
Acetone	23	J	2200	J	SD-MC-02	6 / 7	13	360
cis-1,2-Dichloroethene						0 / 2	12 - 25	9.3
Tetrachloroethene						0 / 8	13 - 36	9.9
Trichloroethene						0 / 8	12 - 25	8.4
SVOCs - ug/Kg								
2-Methylnaphthalene	22	J	22	J	SD-25-02-ME	1 / 8	67 - 3100	422
Acenaphthylene	22	J	22	J	SD-25-02-ME	1 / 8	67 - 3100	422
Anthracene	220	J	330		SD-25-02-ME	2 / 8	67 - 3100	462
Benzo(a)anthracene	510	J	4900	J	SD-25-02-FW	4 / 8	67 - 1000	1124
Benzo(a)pyrene	410	J	5100	J	SD-25-02-FW	4 / 8	67 - 1000	1102
Benzo(b)fluoranthene	150	J	5800	J	SD-25-02-FW	7 / 8	67 - 1000	1215
Benzo(g,h,i)perylene	190	J	2200	J	SD-25-02-FW	4 / 8	67 - 1000	568
Benzo(k)fluoranthene	630	J	6700	J	SD-25-02-FW	4 / 8	67 - 1000	1264
Carbazole	200	J	200	J	SD-25-03-FW	1 / 7	440 - 3100	478
Chrysene	500	J	5400	J	SD-25-02-FW	4 / 8	67 - 1000	1174
Dibenz(a,h)anthracene	130	J	1100	J	SD-25-02-FW	3 / 8	67 - 1000	381
Dibenzofuran						0 / 7	420 - 3100	479
Fluoranthene	190	J	11000	J	SD-25-02-FW	7 / 8	67 - 1000	2194
Fluorene	120		120		SD-25-02-ME	1 / 8	67 - 3100	434
Indeno(1,2,3-cd)pyrene	270	J	3700	J	SD-25-02-FW	4 / 8	67 - 1000	793
Naphthalene	32	J	32	J	SD-25-02-ME	1 / 8	67 - 3100	423
N-nitrosodiphenylamine						0 / 7	420 - 3100	479
Phenanthrene	450	J	3100	J	SD-25-02-FW	4 / 8	67 - 1000	943
Pyrene	1300	J	8100	J	SD-25-02-FW	3 / 8	67 - 1000	1671
PCBs/Pesticides - ug/Kg								
4,4'-DDD	11	J	59	J	SD-26-01-FW	5 / 8	0.32 - 31	21
4,4'-DDE	4.4	J	51	J	SD-26-01-FW	5 / 8	0.32 - 31	16
4,4'-DDT	2.1	J	30	J	SD-26-01-FW	4 / 8	0.32 - 30	12
Aldrin						0 / 8	0.16 - 16	5.3
alpha-Chlordane	1.3	J	8.4	J	SD-25-02-FW	2 / 8	0.16 - 15	5.5
Aroclor 1248	56	J	56	J	SD-25-02-ME	1 / 8	3.2 - 310	108
Aroclor 1254						0 / 8	3.2 - 310	101
Aroclor 1260	47		47		SD-25-02-ME	1 / 8	3.2 - 310	107
beta-BHC						0 / 8	0.16 - 16	5.3
delta-BHC						0 / 8	0.16 - 16	5.3
Endosulfan I	6.9	J	66	J	SD-25-02-FW	4 / 8	0.16 - 14	12.8
Endosulfan Sulfate	11	J	11	J	SD-25-02-FW	1 / 8	0.32 - 30	9.7
Endrin Aldehyde	4.4	J	4.4	J	SD-25-02-ME	1 / 7	0.32 - 31	12.1
gamma-Chlordane	1	J	1.3	J	SD-25-02-ME	2 / 8	0.16 - 16	4.9
Metals - mg/Kg								
Aluminum	7190		13500		SD-26-01-FW	8 / 8	3.4	9924
Antimony	0.64	J	1.7		SD-25-02-FW	6 / 8	0.062 - 0.84	0.86
Arsenic	2.5		29.9		SD-MC-02	8 / 8	0.21	10
Barium	18		80.7		SD-MC-02	8 / 8	0.018	47
Beryllium	0.23		1.1		SD-MC-02	8 / 8	0.027	0.46
Cadmium	0.78	J	2.9		SD-MC-02	3 / 8	0.0044 - 0.23	0.59
Chromium	8.9		155	J	SD-MC-02	8 / 8	0.053	43
Cobalt	3.7		12.1		SD-MC-02	8 / 8	0.36	7.7
Copper	10		93.7		SD-25-02-FW	8 / 8	0.08	42
Cyanide						0 / 6	0.65 - 1.1	0.43
Iron	8810		25500		SD-MC-02	8 / 8	0.55	15651
Lead	25.3	J	755	J	SD-25-02-FW	8 / 8	0.26	214
Manganese	87.1	J	837		SD-MC-02	8 / 8	0.018	260
Mercury	0.081	J	0.55	J	SD-25-02-FW	5 / 8	0.005 - 0.08	0.17
Nickel	5.9		19.6		SD-MC-02	8 / 8	0.14	14
Selenium	1.2	J	3.2	J	SD-25-02-FW	2 / 8	0.049 - 1.1	0.83
Silver	0.2	J	0.47		SD-MC-02	2 / 8	0.0088 - 0.68	0.25
Thallium	1		2.2		SD-25-02-FW	2 / 8	0.04 - 1.2	0.70
Vanadium	18.8		51.5		SD-MC-02	8 / 8	0.071	31
Zinc	35		377		SD-MC-02	8 / 8	0.16	141
Total Combustible Organics (mg/Kg)	59200	J	59200	J	SD-25-02-ME	1 / 1	2000	59200
Total Organic Carbon (mg/Kg)	12000		370000	J	SD-MC-02	7 / 7	N/A	86036

N/A = Not Applicable or Not Available
 J = Estimated Value

US EPA ARCHIVE DOCUMENT

TABLE 4-90
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT REFERENCE RIVER LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration
VOCs - ug/Kg								
2-Butanone	230		230		SD-MC-12	1 / 9	10 - 32	33
Acetone	44	J	670	J	SD-MC-12	4 / 10	13 - 220	114
cis-1,2-Dichloroethene						0 / 4	10 - 32	9.0
Tetrachloroethene						0 / 9	10 - 32	8.0
Trichloroethene						0 / 9	10 - 32	8.0
SVOCs - ug/Kg								
2-Methylnaphthalene	67	J	81	J	SD-MC-12	2 / 10	300 - 600	186
Acenaphthylene	150	J	450	J	SD-23-02-FW	5 / 10	380 - 600	250
Anthracene	150	J	990	J	SD-27-01-FW	6 / 10	380 - 600	359
Benzo(a)anthracene	210	J	2400	J	SD-27-01-FW	8 / 10	380 - 600	1049
Benzo(a)pyrene	250	J	2100		SD-MC-04	8 / 10	380 - 600	935
Benzo(b)fluoranthene	210	J	3000		SD-MC-04	9 / 10	380 - 600	1196
Benzo(g,h,i)perylene	500		1400		SD-MC-04	3 / 10	380 - 600	460
Benzo(k)fluoranthene	540	J	2200		SD-MC-04	7 / 10	380 - 600	1129
Carbazole	130	J	520	J	SD-27-01-FW	4 / 10	300 - 600	234
Chrysene	250	J	2600		SD-MC-04	8 / 10	380 - 600	1248
Dibenz(a,h)anthracene	110	J	350	J	SD-MC-04	5 / 10	380 - 600	235
Dibenzofuran	120	J	210	J	SD-27-01-FW	3 / 10	300 - 600	196
Fluoranthene	71	J	5500	J	SD-27-01-FW	10 / 10	380 - 430	2230
Fluorene	160	J	620	J	SD-27-01-FW	5 / 10	300 - 600	256
Indeno(1,2,3-cd)pyrene	160	J	1800		SD-MC-04	6 / 10	380 - 600	578
Naphthalene	110	J	160	J	SD-MC-12	2 / 10	300 - 600	202
N-nitrosodiphenylamine						0 / 10	300 - 600	211
Phenanthrene	220	J	4500	J	SD-27-01-FW	8 / 10	380 - 600	1442
Pyrene	81	J	3600		SD-23-02-FW	9 / 10	380 - 890	1859
PCBs/Pesticides - ug/Kg								
4,4'-DDD	5.7	J	200	J	SD-MC-01	8 / 10	3.1 - 21	41
4,4'-DDE	3.5	J	470	J	SD-MC-01	7 / 10	0.79 - 3.4	53
4,4'-DDT	3	J	180	J	SD-MC-01	6 / 10	0.79 - 6	25
Aldrin						0 / 10	0.76 - 12	2.3
alpha-Chlordane	23	J	23	J	SD-MC-01	1 / 10	0.79 - 12	4.6
Aroclor 1248						0 / 10	3 - 240	43
Aroclor 1254						0 / 10	3 - 240	43
Aroclor 1260						0 / 10	3 - 240	43
beta-BHC	0.75	J	0.75	J	SD-23-01-FW	1 / 10	0.76 - 12	2.2
delta-BHC						0 / 10	0.76 - 12	2.3
Endosulfan I	7.2	J	35	J	SD-27-02-FW	3 / 10	0.76 - 3.1	5.6
Endosulfan Sulfate	9.1	J	9.1	J	SD-27-02-FW	1 / 10	0.76 - 24	4.2
Endrin Aldehyde						0 / 7	3.1 - 24	6.0
gamma-Chlordane	0.31	J	0.31	J	SD-23-02-FW	1 / 10	0.76 - 12	2.2
Metals - mg/Kg								
Aluminum	1100		11600		SD-MC-04-TR	11 / 11	9.14	6157
Antimony	0.56	J	5.6		SD-MC-04-TR	8 / 11	0.43 - 0.74	1.23
Arsenic	4.1		44.5		SD-MC-04-TR	11 / 11	1	18
Barium	5.7		173		SD-MC-04-TR	11 / 11	0.4	57
Beryllium	0.15		1	J	SD-23-03-FW	10 / 11	0.19 - 0.2	0.47
Cadmium	0.08699		6.1		SD-MC-04	9 / 11	0.053 - 0.6	1.53
Chromium	9		512		SD-MC-04-TR	11 / 11	1	106
Cobalt	0.76		21.8	J	SD-MC-04-TR	11 / 11	0.36	7.9
Copper	1.9		344		SD-MC-04-TR	11 / 11	0.44	74
Cyanide						0 / 5	0.56 - 0.82	0.33
Iron	2040		51600		SD-MC-04-TR	11 / 11	1.4	15909
Lead	5.6	J	369		SD-MC-04-TR	11 / 11	0.6	101
Manganese	12.6	J	1980		SD-MC-04-TR	11 / 11	0.24	570
Mercury	0.03	J	0.6		SD-MC-04	7 / 10	0.0095 - 0.02	0.16
Nickel	1.1		25.8		SD-MC-04	11 / 11	0.8	12
Selenium	0.94	J	3	J	SD-23-03-FW	4 / 11	0.53 - 1	0.85
Silver	0.085	J	0.75		SD-MC-04	3 / 10	0.27 - 1	0.29
Thallium						0 / 10	0.36 - 1.1	0.38
Vanadium	2.5		53.8		SD-MC-04-TR	11 / 11	0.64	23
Zinc	10.4	J	611	J	SD-MC-04-TR	11 / 11	1.7	191
Total Combustible Organics (mg/Kg)	4800		427000		SD-23-03-FW	3 / 3	N/A	152033
Total Organic Carbon (mg/Kg)	7650		290000		SD-MC-04-TR	8 / 8	250	125131

N/A = Not Applicable or Not Available
 J = Estimated Value

US EPA ARCHIVE DOCUMENT

**TABLE 4-91
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT REFERENCE WETLAND LOCATIONS
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone						0 / 5	13 - 46	8.6	13	3
Acetone						0 / 5	10 - 180	34	71	2
cis-1,2-Dichloroethene						0 / 3	16 - 46	12	0.0	*1
Tetrachloroethene						0 / 6	13 - 69	13	33	13
Trichloroethene						0 / 6	13 - 46	9.1	12	2
SVOCs - ug/Kg										
2-Methylnaphthalene	23	J	360	J	SD-24-02-FW	2 / 6	67 - 460	195	289	2
Acenaphthylene	44	J	800	J	SD-24-02-FW	3 / 6	67 - 460	243	690	3
Anthracene	48	J	1900	J	SD-24-02-FW	4 / 6	67 - 460	440	1656	3
Benzo(a)anthracene	110	J	5900	J	SD-24-02-FW	5 / 6	67 - 460	1360	5406	3
Benzo(a)pyrene	130	J	5500	J	SD-24-02-FW	5 / 6	67 - 460	1233	4904	3
Benzo(b)fluoranthene	180	J	10000	J	SD-24-02-FW	5 / 6	67 - 460	2188	9363	3
Benzo(g,h,i)perylene	210	J	920	J	SD-24-02-FW	3 / 6	67 - 460	376	627	2
Benzo(k)fluoranthene	400	J	9600	J	SD-24-02-FW	4 / 6	67 - 460	2023	9464	3
Carbazole	48	J	990	J	SD-24-02-FW	2 / 5	230 - 460	323	990	*3
Chrysene	140	J	7300	J	SD-24-02-FW	5 / 6	67 - 460	1610	6684	3
Dibenz(a,h)anthracene	120	J	500	J	SD-24-02-FW	2 / 6	67 - 460	234	350	2
Dibenzofuran	1000	J	1000	J	SD-24-02-FW	1 / 5	230 - 460	357	1000	*5
Fluoranthene	210	J	15000	J	SD-24-02-FW	5 / 6	67 - 460	3293	15000	*3
Fluorene	44	J	2800	J	SD-24-02-FW	4 / 6	67 - 460	568	1369	6
Indeno(1,2,3-cd)pyrene	210	J	1700	J	SD-24-02-FW	3 / 6	67 - 460	518	1405	3
Naphthalene	23	J	520	J	SD-24-02-FW	2 / 6	67 - 460	221	359	2
N-nitrosodiphenylamine						0 / 5	230 - 2100	367	2035	5
Phenanthrene	170	J	12000	J	SD-24-02-FW	5 / 6	67 - 570	2408	12000	*4
Pyrene	280	J	11000	J	SD-24-02-FW	5 / 6	67 - 460	2577	10736	3
PCBs/Pesticides - ug/Kg										
4,4'-DDD	4.5		390		SD-24-03-ME	5 / 6	1.9 - 3.6	95	390	*3
4,4'-DDE	3.9		37		SD-24-03-ME	5 / 6	1.9 - 3.6	13	23	2
4,4'-DDT	2.2		130		SD-24-02-FW	5 / 6	1.9 - 3.6	34	130	*3
Aldrin	0.29	J	1.6	J	SD-24-02-FW	3 / 6	0.93 - 1.8	0.77	1.1	2
alpha-Chlordane	2	J	5.3	J	SD-24-03-FW	2 / 6	0.93 - 2.4	1.8	4.2	3
Aroclor 1248	290	J	290	J	SD-24-03-ME	1 / 6	3.2 - 46	64	290	*15
Aroclor 1254						0 / 6	3.2 - 46	16	23	2
Aroclor 1260	200		200		SD-24-03-ME	1 / 6	3.2 - 46	49	200	*15
beta-BHC	0.4	J	0.4	J	SD-24-01-FW	1 / 6	0.93 - 2.2	0.79	0.40	*2
delta-BHC						0 / 6	0.93 - 2.4	0.93	1.1	2
Endosulfan I	0.22	J	0.22	J	SD-24-03-FW	1 / 6	0.93 - 2.4	0.78	0.22	*2
Endosulfan Sulfate	6.6		6.6		SD-24-01-FW	1 / 6	1.9 - 4.3	2.5	4.9	3
Endrin Aldehyde	1.1	J	5.9	J	SD-24-03-ME	2 / 6	1.9 - 4.6	2.4	4.6	3
gamma-Chlordane	1.5	J	4.6	J	SD-24-03-FW	3 / 6	0.93 - 2.4	2.1	3.6	2
Metals - mg/Kg										
Aluminum	2560		14300		SD-SA-01-TR	6 / 6	3.5 - 9.14	8195	12242	2
Antimony	0.5	J	1.2	J	SD-24-03-ME	4 / 6	0.067 - 1.4	0.75	1.0	2
Arsenic	3.8		40.6		SD-24-03-FW	6 / 6	0.22 - 1	21	33	2
Barium	13.3		87.5		SD-SA-01-TR	6 / 6	0.018 - 0.4	48	72	2
Beryllium	0.73	J	1.2	J	SD-24-03-FW	4 / 6	0.027 - 0.22	0.66	1.0	2
Cadmium	0.22		2.9		SD-HB-00-TR	6 / 6	0.35 - 0.6	1.3	2.2	2
Chromium	10.3	J	410	J	SD-24-03-ME	6 / 6	0.055 - 1	129	410	*3
Cobalt	1.9		13.2		SD-SA-01-TR	6 / 6	0.36 - 0.37	8.4	13	2
Copper	11.6		130		SD-24-03-ME	6 / 6	0.082 - 0.44	57	93	2
Cyanide						0 / 3	0.52 - 1.4	0.43	0.0	*1
Iron	4790		24200		SD-SA-01-TR	6 / 6	0.57 - 1.4	15518	22525	2
Lead	73.9		581		SD-24-03-FW	6 / 6	0.27 - 0.6	332	524	2
Manganese	50.4	J	263	J	SD-SA-01-TR	6 / 6	0.018 - 0.24	133	210	2
Mercury	0.021	J	0.71	J	SD-24-03-ME	5 / 6	0.005 - 0.02	0.28	0.71	*3
Nickel	6		27.3		SD-HB-00-TR	6 / 6	0.15 - 0.8	19	27	*13
Selenium	0.91	J	2.1	J	SD-24-03-FW	2 / 6	0.053 - 1	0.76	1.7	3
Silver	2.5	J	2.9	J	SD-24-03-FW	2 / 6	0.01 - 1	1.1	2.9	*3
Thallium						0 / 6	0.038 - 2	0.47	0.73	2
Vanadium	7.1		148		SD-24-03-FW	6 / 6	0.073 - 0.64	56	99	2
Zinc	47		251	J	SD-24-03-ME	6 / 6	0.16 - 1.7	155	232	2
Total Combustible Organics (mg/Kg)	2810		183000		SD-24-03-FW	4 / 4	2000	89178	183000	*2
Total Organic Carbon (mg/Kg)	170000		250000		SD-HB-00-TR	2 / 2	250	210000	250000	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "I" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

TABLE 4-92
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT POND REFERENCE
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 3	2 - 5	2.0	0.0	*1
Acetone						0 / 3	5.0	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 3	1 - 2	0.67	0.0	*1
Tetrachloroethene						0 / 3	1 - 2	0.67	0.0	*1
Trichloroethene						0 / 3	1 - 2	0.67	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 3	5.0	2.5	0.0	*1
Acenaphthylene						0 / 3	5.0	2.5	0.0	*1
Anthracene						0 / 3	5.0	2.5	0.0	*1
Benzo(a)anthracene						0 / 3	5.0	2.5	0.0	*1
Benzo(a)pyrene						0 / 3	5.0	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 3	5.0	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 3	5.0	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 3	5.0	2.5	0.0	*1
Carbazole						0 / 1	5.0	2.5	0.0	*1
Chrysene						0 / 3	5.0	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 3	5.0	2.5	0.0	*1
Dibenzofuran						0 / 3	5.0	2.5	0.0	*1
Fluoranthene						0 / 3	5.0	2.5	0.0	*1
Fluorene						0 / 3	5.0	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 3	5.0	2.5	0.0	*1
Naphthalene						0 / 3	5.0	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 3	5.0	2.5	0.0	*1
Phenanthrene						0 / 3	5.0	2.5	0.0	*1
Pyrene						0 / 3	5.0	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 3	0.0092 - 0.1	0.035	0.0	*1
4,4'-DDE						0 / 3	0.0092 - 0.1	0.035	0.0	*1
4,4'-DDT						0 / 3	0.0092 - 0.1	0.035	0.0	*1
Aldrin						0 / 3	0.0092 - 0.05	0.018	0.0	*1
alpha-Chlordane						0 / 3	0.0092 - 0.05	0.018	0.0	*1
Aroclor 1248						0 / 3	0.046 - 1	0.34	0.0	*1
Aroclor 1254						0 / 3	0.046 - 1	0.34	0.0	*1
Aroclor 1260						0 / 3	0.046 - 1	0.34	0.0	*1
beta-BHC						0 / 3	0.0092 - 0.05	0.018	0.0	*1
delta-BHC						0 / 3	0.0092 - 0.05	0.018	0.0	*1
Endosulfan I						0 / 3	0.0092 - 0.05	0.018	0.0	*1
Endosulfan Sulfate						0 / 3	0.0092 - 0.1	0.035	0.0	*1
Endrin Aldehyde						0 / 3	0.0092 - 0.1	0.035	0.0	*1
gamma-Chlordane						0 / 3	0.0092 - 0.05	0.018	0.0	*1
Metals - ug/L										
Aluminum	47.15		121		SW-MC-02	2 / 3	29.2	61	121	*1
Antimony						0 / 3	1.1 - 18.3	3.4	0.0	*1
Arsenic	1.15	J	1.15	J	SW-MC-02	1 / 3	1 - 1.4	0.78	1.2	*1
Barium	22.55		40.5		SW-26-01	3 / 3	N/A	29	41	*1
Beryllium						0 / 3	0.099 - 0.22	0.070	0.0	*1
Cadmium						0 / 3	0.15 - 0.78	0.18	0.0	*1
Chromium						0 / 3	0.25 - 9	1.6	0.0	*1
Cobalt						0 / 3	0.5 - 3	0.67	0.0	*1
Copper	1		1.4		SW-26-01	2 / 3	1.4	1.0	1.4	*1
Cyanide						0 / 2	5	2.5	0.0	*1
Iron	118		3085		SW-MC-02	3 / 3	N/A	1141	3085	*1
Lead	0.665	J	1.15	J	SW-MC-02	2 / 3	0.75	0.73	1.2	*1
Manganese	46.4		285		SW-26-01	3 / 3	N/A	203	285	*1
Mercury	0.115		0.115		SW-25-01	1 / 3	0.04 - 0.08	0.058	0.12	*1
Nickel	0.78		1.15	J	SW-MC-02	2 / 3	0.5	0.73	1.2	*1
Selenium						0 / 3	1.1 - 1.8	0.78	0.0	*1
Silver						0 / 3	0.4 - 0.78	0.26	0.0	*1
Thallium						0 / 3	1.2 - 1.5	0.70	0.0	*1
Vanadium	0.85		2.4	J	SW-MC-02	2 / 3	0.55	1.2	2.4	*1
Zinc	1.375	J	2.7	J	SW-26-01	2 / 3	3.9	2.0	2.7	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

TABLE 4-93
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT RIVER REFERENCE
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 5	2 - 5	1.6	3.2	13
Acetone						0 / 5	5.0	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 5	1 - 2	0.80	1.1	2
Tetrachloroethene						0 / 5	1 - 2	0.80	1.1	2
Trichloroethene						0 / 5	1 - 2	0.80	1.1	2
SVOCs - ug/L										
2-Methylnaphthalene						0 / 5	4 - 5	2.3	2.6	2
Acenaphthylene						0 / 5	4 - 5	2.3	2.6	2
Anthracene						0 / 5	4 - 5	2.3	2.6	2
Benzo(a)anthracene						0 / 5	4 - 5	2.3	2.6	2
Benzo(a)pyrene						0 / 5	4 - 5	2.3	2.6	2
Benzo(b)fluoranthene						0 / 5	4 - 5	2.3	2.6	2
Benzo(g,h,i)perylene						0 / 5	4 - 5	2.3	2.6	2
Benzo(k)fluoranthene						0 / 5	4 - 5	2.3	2.6	2
Carbazole						0 / 3	4 - 5	2.2	0.0	*1
Chrysene						0 / 5	4 - 5	2.3	2.6	2
Dibenz(a,h)anthracene						0 / 5	4 - 5	2.3	2.6	2
Dibenzofuran						0 / 5	4 - 5	2.3	2.6	2
Fluoranthene						0 / 5	4 - 5	2.3	2.6	2
Fluorene						0 / 5	4 - 5	2.3	2.6	2
Indeno(1,2,3-cd)pyrene						0 / 5	4 - 5	2.3	2.6	2
Naphthalene						0 / 5	4 - 5	2.3	2.7	2
N-nitrosodiphenylamine						0 / 5	4 - 5	2.3	2.6	2
Phenanthrene						0 / 5	4 - 5	2.3	2.6	2
Pyrene						0 / 5	4 - 5	2.3	2.6	2
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 5	0.0083 - 0.1	0.023	0.13	15
4,4'-DDE						0 / 5	0.0083 - 0.1	0.023	0.13	15
4,4'-DDT						0 / 5	0.0083 - 0.1	0.023	0.13	15
Aldrin						0 / 5	0.0083 - 0.05	0.013	0.035	13
alpha-Chlordane						0 / 5	0.0083 - 0.05	0.013	0.035	13
Aroclor 1248						0 / 5	0.042 - 1	0.21	1.4	15
Aroclor 1254						0 / 5	0.042 - 1	0.21	1.4	15
Aroclor 1260						0 / 5	0.042 - 1	0.21	1.4	15
beta-BHC						0 / 5	0.0083 - 0.05	0.013	0.035	13
delta-BHC						0 / 5	0.0083 - 0.05	0.013	0.035	13
Endosulfan I						0 / 5	0.0083 - 0.05	0.013	0.035	13
Endosulfan Sulfate						0 / 5	0.0083 - 0.1	0.023	0.13	15
Endrin Aldehyde						0 / 5	0.0083 - 0.1	0.023	0.13	15
gamma-Chlordane						0 / 5	0.0083 - 0.05	0.013	0.035	13
Metals - ug/L										
Aluminum	21.3		2500		SW-MC-01	4 / 5	23.5	567	12834	4
Antimony						0 / 5	1.1 - 18.3	5.7	27	15
Arsenic	1.1	J	15.7	J	SW-MC-01	4 / 5	1.7	4.5	19	3
Barium	15.4		64		SW-MC-01	5 / 5	N/A	32	50	2
Beryllium						0 / 5	0.099 - 0.22	0.086	0.12	2
Cadmium						0 / 5	0.15 - 0.78	0.26	0.60	13
Chromium	0.34		0.47		SW-23-01	2 / 5	9	2.9	13	15
Cobalt	7.1	J	7.1	J	SW-MC-01	1 / 5	0.5 - 3	2.1	10	3
Copper	0.45		13.8		SW-MC-01	4 / 5	0.35	3.7	22	3
Cyanide						0 / 2	5	2.5	0.0	*1
Iron	251		15800		SW-MC-01	5 / 5	N/A	3940	23025	3
Lead	4	J	51.4		SW-MC-01	3 / 5	0.75	12	258	4
Manganese	47.5		1960		SW-MC-01	5 / 5	N/A	650	1396	2
Mercury	0.097		0.11		SW-23-01	2 / 5	0.04 - 0.087	0.058	0.099	2
Nickel	0.66		6.5	J	SW-MC-01	4 / 5	1.2	2.0	7.2	3
Selenium	1.6	J	1.6	J	SW-MC-04	1 / 5	1.1 - 1.8	0.90	1.3	2
Silver						0 / 5	0.4 - 0.78	0.31	0.41	2
Thallium						0 / 5	1.2 - 1.5	0.66	0.74	2
Vanadium	0.89		12	J	SW-MC-01	2 / 5	0.55 - 2.6	3.2	16	3
Zinc	2.2	J	71.7		SW-MC-01	3 / 5	1.6 - 9	20	128	3

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

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|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-94
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SURFACE WATER AT WETLAND REFERENCE
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/L										
2-Butanone						0 / 1	5.0	2.5	0.0	*1
Acetone						0 / 1	5.0	2.5	0.0	*1
cis-1,2-Dichloroethene						0 / 1	1.0	0.50	0.0	*1
Tetrachloroethene						0 / 1	1.0	0.50	0.0	*1
Trichloroethene						0 / 1	1.0	0.50	0.0	*1
SVOCs - ug/L										
2-Methylnaphthalene						0 / 1	5.0	2.5	0.0	*1
Acenaphthylene						0 / 1	5.0	2.5	0.0	*1
Anthracene						0 / 1	5.0	2.5	0.0	*1
Benzo(a)anthracene						0 / 1	5.0	2.5	0.0	*1
Benzo(a)pyrene						0 / 1	5.0	2.5	0.0	*1
Benzo(b)fluoranthene						0 / 1	5.0	2.5	0.0	*1
Benzo(g,h,i)perylene						0 / 1	5.0	2.5	0.0	*1
Benzo(k)fluoranthene						0 / 1	5.0	2.5	0.0	*1
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene						0 / 1	5.0	2.5	0.0	*1
Dibenz(a,h)anthracene						0 / 1	5.0	2.5	0.0	*1
Dibenzofuran						0 / 1	5.0	2.5	0.0	*1
Fluoranthene						0 / 1	5.0	2.5	0.0	*1
Fluorene						0 / 1	5.0	2.5	0.0	*1
Indeno(1,2,3-cd)pyrene						0 / 1	5.0	2.5	0.0	*1
Naphthalene						0 / 1	5.0	2.5	0.0	*1
N-nitrosodiphenylamine						0 / 1	5.0	2.5	0.0	*1
Phenanthrene						0 / 1	5.0	2.5	0.0	*1
Pyrene						0 / 1	5.0	2.5	0.0	*1
PCBs/Pesticides - ug/L										
4,4'-DDD						0 / 1	0.10	0.050	0.0	*1
4,4'-DDE						0 / 1	0.10	0.050	0.0	*1
4,4'-DDT						0 / 1	0.10	0.050	0.0	*1
Aldrin						0 / 1	0.05	0.025	0.0	*1
alpha-Chlordane						0 / 1	0.05	0.025	0.0	*1
Aroclor 1248						0 / 1	1.0	0.50	0.0	*1
Aroclor 1254						0 / 1	1.0	0.50	0.0	*1
Aroclor 1260						0 / 1	1.0	0.50	0.0	*1
beta-BHC						0 / 1	0.05	0.025	0.0	*1
delta-BHC						0 / 1	0.05	0.025	0.0	*1
Endosulfan I						0 / 1	0.05	0.025	0.0	*1
Endosulfan Sulfate						0 / 1	0.1	0.050	0.0	*1
Endrin Aldehyde						0 / 1	0.1	0.050	0.0	*1
gamma-Chlordane	0.0017	J	0.0017	J	SW-24-01	1 / 1	N/A	0.0017	0.0017	*1
Metals - ug/L										
Aluminum	142		142		SW-24-01	1 / 1	N/A	142	142	*1
Antimony						0 / 1	1.1	0.55	0.0	*1
Arsenic	3.2		3.2		SW-24-01	1 / 1	N/A	3.2	3.2	*1
Barium	45.1		45.1		SW-24-01	1 / 1	N/A	45	45	*1
Beryllium						0 / 1	0.1	0.050	0.0	*1
Cadmium						0 / 1	0.2	0.075	0.0	*1
Chromium	0.88		0.88		SW-24-01	1 / 1	N/A	0.88	0.88	*1
Cobalt						0 / 1	0.5	0.25	0.0	*1
Copper	3.9		3.9		SW-24-01	1 / 1	N/A	3.9	3.9	*1
Cyanide						0 / 1	5	2.5	0.0	*1
Iron	2780		2780		SW-24-01	1 / 1	N/A	2780	2780	*1
Lead	6.3		6.3		SW-24-01	1 / 1	N/A	6.3	6.3	*1
Manganese	520		520		SW-24-01	1 / 1	N/A	520	520	*1
Mercury	0.13		0.13		SW-24-01	1 / 1	N/A	0.13	0.13	*1
Nickel	1.8		1.8		SW-24-01	1 / 1	N/A	1.8	1.8	*1
Selenium						0 / 1	1.9	0.95	0.0	*1
Silver						0 / 1	0.4	0.20	0.0	*1
Thallium						0 / 1	1.5	0.75	0.0	*1
Vanadium						0 / 1	0.55	0.28	0.0	*1
Zinc	16.1	J	16.1	J	SW-24-01	1 / 1	N/A	16	16	*1

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-95
SUMMARY OF ECOLOGICAL COPCS DETECTED IN SEDIMENT AT STATION 20¹
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ²	95% UCL Ref ³
VOCs - ug/Kg										
2-Butanone	107.5	J	107.5	J	SD-20-01-FW	1 / 1	N/A	108	108	*1
Acetone	94	J	590	J	SD-20-01-FW	2 / 2	N/A	342	590	*1
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	1000	J	1100	J	SD-20-02-FW	2 / 2	N/A	1050	1100	*1
Benzo(a)pyrene	730	J	1200	J	SD-20-02-FW	2 / 2	N/A	965	1200	*1
Benzo(b)fluoranthene	915	J	3700	J	SD-20-03-FW	3 / 3	N/A	2772	3700	*1
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	1400	J	1500	J	SD-20-03-FW	2 / 2	N/A	1450	1500	*1
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	770	J	3000	J	SD-20-02-FW	3 / 3	N/A	2223	3000	*1
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	830	J	830	J	SD-20-02-FW	1 / 1	N/A	830	830	*1
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	650	J	890	J	SD-20-02-FW	2 / 2	N/A	770	890	*1
Pyrene	1400	J	2500	J	SD-20-02-FW	2 / 2	N/A	1950	2500	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD	14	J	32	J	SD-20-02-FW	3 / 3	N/A	24	32	*1
4,4'-DDE	13	J	32	J	SD-20-02-FW	3 / 3	N/A	25	32	*1
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	14.5	J	49	J	SD-20-03-FW	3 / 3	N/A	35	49	*1
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	38	J	42	J	SD-20-03-FW	2 / 2	N/A	40	42	*1
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	11.9	J	11.9	J	SD-20-01-FW	1 / 1	N/A	12	12	*1
Metals - mg/Kg										
Aluminum	18450	J	29700	J	SD-20-03-FW	3 / 3	N/A	24983	29700	*1
Antimony	4	J	5.4	J	SD-20-03-FW	3 / 3	N/A	4.6	5.4	*1
Arsenic	264.5	J	321	J	SD-20-02-FW	3 / 3	N/A	299	321	*1
Barium	57.25	J	151	J	SD-20-02-FW	3 / 3	N/A	107	151	*1
Beryllium	1.55	J	2	J	SD-20-03-FW	3 / 3	N/A	1.8	2.0	*1
Cadmium	13.15	J	18.5	J	SD-20-03-FW	3 / 3	N/A	16	19	*1
Chromium	1450	J	1860	J	SD-20-02-FW	3 / 3	N/A	1587	1860	*1
Cobalt	25.9	J	46.3	J	SD-20-03-FW	3 / 3	N/A	38	46	*1
Copper	888	J	1075	J	SD-20-01-FW	3 / 3	N/A	998	1075	*1
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	24100	J	43800	J	SD-20-02-FW	3 / 3	N/A	34267	43800	*1
Lead	449.5	J	1200	J	SD-20-03-FW	3 / 3	N/A	877	1200	*1
Manganese	511	J	901.5	J	SD-20-01-FW	3 / 3	N/A	735	902	*1
Mercury	1	J	3.3	J	SD-20-03-FW	3 / 3	N/A	2.3	3.3	*1
Nickel	34.05	J	57.7	J	SD-20-03-FW	3 / 3	N/A	48	58	*1
Selenium	6.9	J	11.1	J	SD-20-01-FW	3 / 3	N/A	8.3	11	*1
Silver	1.6	J	1.6	J	SD-20-02-FW	1 / 1	N/A	1.6	1.6	*1
Thallium	4.4	J	4.4	J	SD-20-03-FW	1 / 1	N/A	4.4	4.4	*1
Vanadium	49.8	J	115	J	SD-20-03-FW	3 / 3	N/A	90	115	*1
Zinc	1670	J	3470	J	SD-20-02-FW	3 / 3	N/A	2840	3470	*1
Total Combustible Organics (TCO)	234000		362000		SD-20-01-FW	3 / 3	N/A	281000	362000	*1
Total Organic Carbon (TOC)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ Includes samples applicable to the shrew model

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected. concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-96
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SEDIMENT AT STATION 22/TT-22
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone						0 / 1	26	13	0.0	*1
Acetone	2400	J	2400	J	SD-22-01-TR	1 / 2	26 - 150	1207	2400	*1
cis-1,2-Dichloroethene	73	J	73	J	SD-22-02-ME	1 / 1	68	73	73	*1
Tetrachloroethene	120		3164		SD-22-02-ME	4 / 4	205	1131	2762	2
Trichloroethene	21	J	803		SD-22-02-ME	3 / 4	26 - 68	259	698	2
SVOCs - ug/Kg										
2-Methylnaphthalene	13	J	13	J	SD-22-02-ME	1 / 3	1 - 870	239	13	*1
Acenaphthylene	12	J	12	J	SD-22-02-ME	1 / 3	1 - 870	239	12	*1
Anthracene	46	J	46	J	SD-22-02-ME	1 / 3	67 - 870	250	46	*1
Benzo(a)anthracene	300		300		SD-22-02-ME	1 / 3	67 - 870	335	300	*1
Benzo(a)pyrene	200		200		SD-22-02-ME	1 / 2	67 - 870	318	200	*1
Benzo(b)fluoranthene	430	J	440		SD-22-02-ME	2 / 4	67 - 870	394	440	*2
Benzo(g,h,i)perylene	190		190		SD-22-02-ME	1 / 3	67 - 870	298	190	*1
Benzo(k)fluoranthene	290		540	J	SD-22-01-TR	2 / 3	67 - 870	422	540	*1
Carbazole						0 / 2	540 - 870	353	0.0	*1
Chrysene	400		400		SD-22-02-ME	1 / 3	67 - 870	368	400	*1
Dibenz(a,h)anthracene	44	J	44	J	SD-22-02-ME	1 / 3	67 - 870	250	44	*1
Dibenzofuran						0 / 2	540 - 870	353	0.0	*1
Fluoranthene	260	J	840		SD-22-02-ME	3 / 4	67 - 540	475	797	2
Fluorene	26	J	26	J	SD-22-02-ME	1 / 3	1 - 870	244	26	*1
Indeno(1,2,3-cd)pyrene	220		220		SD-22-02-ME	1 / 3	67 - 870	308	220	*1
Naphthalene	25	J	25	J	SD-22-02-ME	1 / 3	1 - 870	243	25	*1
N-nitrosodiphenylamine						0 / 2	540 - 870	353	0.0	*1
Phenanthrene	490		490		SD-22-02-ME	1 / 3	67 - 870	398	490	*1
Pyrene	610		610		SD-22-02-ME	1 / 3	67 - 870	438	610	*1
PCBs/Pesticides - ug/Kg										
4,4'-DDD	9.6	J	9.6	J	SD-22-02-ME	1 / 3	0.31 - 8.7	5.4	9.6	*1
4,4'-DDE	8.3	J	31		SD-22-02-ME	3 / 4	0.31 - 4.5	18	31	*2
4,4'-DDT	2.7	J	2.7	J	SD-22-02-ME	1 / 3	0.31 - 8.7	3.1	2.7	*1
Aldrin						0 / 3	0.15 - 4.5	1.2	0.0	*1
alpha-Chlordane	1.2	J	1.2	J	SD-22-02-ME	1 / 3	0.15 - 4.5	1.5	1.2	*1
Aroclor 1248	8.1	J	8.1	J	SD-22-02-ME	1 / 3	3.1 - 87	25	8.1	*1
Aroclor 1254						0 / 3	3.1 - 87	23	0.0	*1
Aroclor 1260	29		29		SD-22-02-ME	1 / 3	3.1 - 87	32	29	*1
beta-BHC						0 / 3	0.15 - 4.5	1.2	0.0	*1
delta-BHC	0.16	J	0.16	J	SD-22-02-ME	1 / 3	0.15 - 4.5	1.2	0.16	*1
Endosulfan I	0.18	J	4.4	J	SD-22-03-FW	4 / 5	0.15 - 2.3	2.5	4.3	2
Endosulfan Sulfate						0 / 3	0.31 - 8.7	2.3	0.0	*1
Endrin Aldehyde	3.3	J	3.3	J	SD-22-02-ME	1 / 3	0.31 - 8.7	3.3	3.3	*1
gamma-Chlordane	0.19	J	0.19	J	SD-22-02-ME	1 / 3	0.15 - 4.5	1.2	0.19	*1
Metals - mg/Kg										
Aluminum	2560		13200		SD-TT-22-03	8 / 8	3.6 - 9.14	4711	10258	13
Antimony	0.94	J	329	J	SD-TT-22-01	5 / 6	0.27 - 2.1	70	329	*4
Arsenic	5.2	J	87.3	J	SD-TT-22-01	5 / 6	0.23 - 3.7	21	77	3
Barium	20.3		51.4	J	SD-22-03-FW	8 / 8	0.019 - 0.4	41	49	2
Beryllium	0.2		1.1	J	SD-22-01-FW	8 / 8	0.028 - 0.2	0.49	0.69	2
Cadmium	0.2		1.7	J	SD-TT-22-02	7 / 7	0.0049 - 0.6	1.0	1.4	2
Chromium	7.1	J	85.3	J	SD-TT-22-02	8 / 8	0.056 - 1	25	65	5
Cobalt	1.3		7		SD-TT-22-03	8 / 8	0.36 - 0.39	2.8	4.3	3
Copper	9.6	J	37.5	J	SD-TT-22-03	8 / 8	0.085 - 0.44	23	29	2
Cyanide						0 / 1	1.3	0.65	0.0	*1
Iron	2310	J	11900		SD-TT-22-03	8 / 8	0.58 - 1.4	4245	9142	13
Lead	383	J	41000	J	SD-TT-22-01	8 / 8	0.27 - 0.6	6765	32501	8
Manganese	34.4	J	194	J	SD-TT-22-03	8 / 8	0.019 - 0.24	71	116	3
Mercury	0.05	J	0.5		SD-22-02-ME	4 / 6	0.0052 - 0.1	0.15	0.46	3
Nickel	3.9		18		SD-TT-22-03	8 / 8	0.15 - 0.8	7.8	11	3
Selenium	1.9	J	8.1	J	SD-22-02-ME	6 / 8	0.054 - 2	3.7	5.7	2
Silver	0.22	J	3.3	J	SD-TT-22-01	3 / 4	0.01 - 1	1.2	2.9	2
Thallium						0 / 6	0.039 - 1.2	0.43	0.57	2
Vanadium	8.5		50.1		SD-TT-22-03	8 / 8	0.075 - 0.64	31	41	2
Zinc	23	J	122	J	SD-TT-22-03	8 / 8	0.17 - 1.7	70	96	2
Total Combustible Organics (n)	693000	J	693000	J	SD-22-02-ME	1 / 1	2000	693000	693000	*1
Total Organic Carbon (mg/Kg)	198000		514000		SD-22-03-FW	4 / 4	250	378250	514000	*2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

**TABLE 4-97
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SOIL AT STATION CB-05
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	4820		7240		SO-CB-05-08	10 / 10	N/A	5769	6210	2
Antimony	0.67	J	1.6		SO-CB-05-05	6 / 10	0.65 - 1.9	0.91	1.2	2
Arsenic	16.8		86.3		SO-CB-05-05	10 / 10	N/A	30	60	13
Barium	17.1		40.1		SO-CB-05-08	10 / 10	N/A	27	31	2
Beryllium	0.26	J	0.38	J	SO-CB-05-08	8 / 10	0.21 - 0.22	0.26	0.31	2
Cadmium	0.22	J	1.1		SO-CB-05-06	9 / 10	0.22	0.49	0.68	2
Chromium	13.4		211		SO-CB-05-03	10 / 10	N/A	56	138	5
Cobalt	3.7		9.5		SO-CB-05-05	10 / 10	N/A	5.6	6.6	2
Copper	26.5		82.9		SO-CB-05-05	10 / 10	N/A	40	50	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	6690		14500		SO-CB-05-05	10 / 10	N/A	10107	11469	2
Lead	28.9		90.9		SO-CB-05-05	10 / 10	N/A	50	62	2
Manganese	128	J	309		SO-CB-05-05	10 / 10	N/A	194	226	2
Mercury	0.07	J	0.6		SO-CB-05-05	10 / 10	N/A	0.17	0.29	5
Nickel	8.5		11.3		SO-CB-05-08	10 / 10	N/A	9.8	10	2
Selenium	1.1	J	1.2	J	SO-CB-05-05	2 / 10	0.65 - 0.83	0.52	0.98	13
Silver						0 / 10	0.21 - 0.27	0.12	0.12	2
Thallium	0.72	J	1.85	J	SO-CB-05-10	4 / 10	0.65 - 0.8	0.78	1.6	13
Vanadium	17.2		34.9		SO-CB-05-05	10 / 10	N/A	23	26	2
Zinc	60.7	J	259		SO-CB-05-06	10 / 10	N/A	130	166	2
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	19700		92100		SO-CB-05-05	10 / 10	5950 - 8850	54655	71146	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

- | | | | |
|-----------------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-98
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SOIL AT STATION DA
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	5160		10900		SO-DA-03	5/5	N/A	6979	9392	2
Antimony						0/5	1.9 - 2.2	1.0	1.1	2
Arsenic	21.8	J	272	J	SO-DA-03	5/5	N/A	99	195	2
Barium	11		90.6		SO-DA-03	5/5	N/A	35	66	2
Beryllium	0.24	J	0.53	J	SO-DA-03	2/5	0.21 - 0.24	0.22	0.53	3
Cadmium	0.3	J	4.6	J	SO-DA-03	4/5	0.23	1.4	4.6	*3
Chromium	32.6	J	550	J	SO-DA-03	5/5	N/A	193	391	2
Cobalt	2.8		25.7		SO-DA-03	5/5	N/A	9.0	26	*3
Copper	41.4	J	320	J	SO-DA-03	5/5	N/A	145	249	2
Cyanide	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Iron	9240		37000		SO-DA-03	5/5	N/A	16868	33507	3
Lead	67.4	J	274	J	SO-DA-03	5/5	N/A	134	214	2
Manganese	58.1		2850		SO-DA-03	5/5	N/A	791	2850	*3
Mercury	0.31	J	3.4	J	SO-DA-03	5/5	N/A	1.2	3.4	*3
Nickel	6.5		22.2		SO-DA-03	5/5	N/A	11	17	2
Selenium	1.2	J	2	J	SO-DA-03	3/5	0.86	1.1	1.7	2
Silver	0.28	J	0.28	J	SO-DA-03	1/5	0.21 - 0.24	0.15	0.22	2
Thallium	1.6	J	3.4	J	SO-DA-03	2/5	1.5 - 1.7	1.5	3.3	3
Vanadium	14.1		41.9		SO-DA-03	5/5	N/A	27	38	2
Zinc	53.1		843		SO-DA-03	5/5	N/A	275	593	2
Total Combustible Organics (mg/Kg)	N/A		N/A		N/A	0/0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	13100		87000		SO-DA-04	5/5	5880 - 10100	35440	63880	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

US EPA ARCHIVE DOCUMENT

**TABLE 4-99
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SOIL AT STATION NRSO
WELLS G&H SUPERFUND SITE (OU3)**

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	2890		8250		SO-NR-20	5 / 5	N/A	4608	6701	2
Antimony						0 / 5	1.7 - 2	0.89	0.96	3
Arsenic	39.6		266		SO-NR-20	5 / 5	N/A	111	201	2
Barium	16.8		74.2		SO-NR-20	5 / 5	N/A	38	60	2
Beryllium	0.3		0.56		SO-NR-20	3 / 5	0.15 - 0.16	0.27	0.47	2
Cadmium	1.2		3		SO-NR-20	2 / 5	0.3 - 0.69	0.98	2.1	2
Chromium	40		228		SO-NR-20	5 / 5	N/A	98	172	2
Cobalt	2.95		12.8		SO-NR-20	5 / 5	N/A	6.0	9.8	2
Copper	38.6		228		SO-NR-20	5 / 5	N/A	97	171	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	7960		36900		SO-NR-20	5 / 5	N/A	17216	28575	2
Lead	35.6		187		SO-NR-20	5 / 5	N/A	85	144	2
Manganese	111		830		SO-NR-20	5 / 5	N/A	307	830	*3
Mercury	0.38		2		SO-NR-20	5 / 5	N/A	0.81	2.0	3
Nickel	4.25	J	14.9		SO-NR-20	4 / 5	4.9	8.2	13	2
Selenium	0.68	J	2.4	J	SO-NR-20	3 / 5	0.6	0.92	1.7	2
Silver	0.31	J	2.7		SO-NR-20	5 / 5	N/A	1.1	2.0	2
Thallium						0 / 5	1.7 - 2	0.90	0.96	2
Vanadium	8.75		31.8		SO-NR-20	5 / 5	N/A	16	25	2
Zinc	105	J	708	J	SO-NR-20	5 / 5	N/A	290	525	2
Total Combustible Organics (TCO)	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	5100	J	54900		SO-NR-20	5 / 5	7140 - 8850	24400	44206	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

TABLE 4-100
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SOIL AT STATION KFSO
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	3840		7550		SO-KF-05	10 / 10	N/A	5604	6302	2
Antimony						0 / 10	1.7 - 1.8	0.87	0.88	2
Arsenic	19.9		54.55		SO-KF-05	10 / 10	N/A	40	46	2
Barium	27.3		77.05		SO-KF-05	10 / 10	N/A	51	61	2
Beryllium	0.21		0.485	J	SO-KF-05	10 / 10	N/A	0.36	0.41	2
Cadmium	0.86		2.05	J	SO-KF-05	7 / 10	0.44 - 0.76	1.0	1.4	2
Chromium	48.4		141		SO-KF-02	10 / 10	N/A	102	120	2
Cobalt	5.5		13.35		SO-KF-05	10 / 10	N/A	9.0	10	2
Copper	50.6		143.5		SO-KF-05	10 / 10	N/A	91	108	2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	9840		21800		SO-KF-05	10 / 10	N/A	14884	17015	2
Lead	86.5		265.5		SO-KF-05	10 / 10	N/A	160	192	2
Manganese	245		1340		SO-KF-05	10 / 10	N/A	638	816	2
Mercury	0.27	J	0.855	J	SO-KF-05	10 / 10	N/A	0.59	0.69	2
Nickel	5.6		17.75		SO-KF-05	10 / 10	N/A	12	14	2
Selenium	0.65	J	0.87	J	SO-KF-10	2 / 10	0.58 - 0.6	0.39	0.51	2
Silver	0.47	J	0.875		SO-KF-05	9 / 10	0.4	0.59	0.70	2
Thallium						0 / 10	1.7 - 1.8	0.88	0.89	2
Vanadium	15.5		37.35		SO-KF-05	10 / 10	N/A	25	29	2
Zinc	181	J	489		SO-KF-05	10 / 10	N/A	334	393	2
Total Combustible Organics (m	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	12700		62500		SO-KF-02	10 / 10	7630 - 8620	42075	50481	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

TABLE 4-101
SUMMARY OF ECOLOGICAL COPCs DETECTED IN SOIL AT STATION WSS
WELLS G&H SUPERFUND SITE (OU3)

Parameter	Minimum Detected Concentration	Minimum Qualifier	Maximum Detected Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Average Concentration	95% UCL / Max Detected Concentration ¹	95% UCL Ref ²
VOCs - ug/Kg										
2-Butanone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acetone	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Trichloroethene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
SVOCs - ug/Kg										
2-Methylnaphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Acenaphthylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Carbazole	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Chrysene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Dibenzofuran	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluoranthene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Fluorene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Naphthalene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Phenanthrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Pyrene	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
PCBs/Pesticides - ug/Kg										
4,4'-DDD	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDE	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
4,4'-DDT	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aldrin	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
alpha-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1248	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1254	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Aroclor 1260	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
beta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
delta-BHC	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan I	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endosulfan Sulfate	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Endrin Aldehyde	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
gamma-Chlordane	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Metals - mg/Kg										
Aluminum	6530		9400		SO-SS-03	5 / 5	N/A	8088	9201	2
Antimony	0.76	J	0.76	J	SO-SS-05	1 / 5	1.7 - 1.8	0.86	0.76	*3
Arsenic	8.1		10.9		SO-SS-03	5 / 5	N/A	8.9	10	2
Barium	28.9		43.6		SO-SS-04	5 / 5	N/A	35	40	2
Beryllium	0.18	J	0.33	J	SO-SS-05	4 / 5	0.2	0.22	0.30	2
Cadmium	0.31	J	0.37	J	SO-SS-05	2 / 5	0.19 - 0.2	0.20	0.37	*13
Chromium	9.3		19.7		SO-SS-05	5 / 5	N/A	13	18	2
Cobalt	2.3		5.3		SO-SS-05	5 / 5	N/A	3.9	5.0	2
Copper	18.3		33.8	J	SO-SS-02	5 / 5	N/A	27	34	*2
Cyanide	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Iron	6600		10800		SO-SS-05	5 / 5	N/A	9233	10800	*2
Lead	55.5		93.3		SO-SS-03	5 / 5	N/A	68	82	2
Manganese	90.6		204		SO-SS-05	5 / 5	N/A	148	189	2
Mercury	0.09	J	0.13	J	SO-SS-01	5 / 5	N/A	0.10	0.12	2
Nickel	6.7		9.7		SO-SS-03	5 / 5	N/A	8.0	9.4	2
Selenium	0.76	J	0.76	J	SO-SS-05	1 / 5	0.77 - 1.4	0.55	0.71	2
Silver						0 / 5	0.19 - 0.2	0.099	0.10	2
Thallium	1.5	J	1.5	J	SO-SS-01	1 / 5	0.6 - 1.4	0.77	1.2	2
Vanadium	13.1		24.3		SO-SS-03	5 / 5	N/A	19	24	2
Zinc	33.5		81.5	J	SO-SS-05	5 / 5	N/A	54	72	2
Total Combustible Organics (m	N/A		N/A		N/A	0 / 0	N/A	N/A	N/A	N/A
Total Organic Carbon (mg/Kg)	21800		36600		SO-SS-05	5 / 5	7140 - 8330	27850	33283	2

N/A = Not Applicable or Not Available

J = Estimated Value

UCL = Upper Confidence Limit

¹ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the maximum exposure case calculations, is provided.

² 95% UCL References:

* Maximum detected value is shown

- | | | | |
|----------------------------------------------|-------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct | 6. 95% Chebyshev (MVUE) UCL | 11. 95% Modified-t UCL | 16. 95% Standard Bootstrap UCL |
| 2. 95% Student's-t UCL | 7. 97.5% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 17. 95% Bootstrap-t UCL |
| 3. 95% Approximate Gamma UCL | 8. 99% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 18. 95% Hall's Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 9. 95% CLT UCL | 14. 97.5% Chebyshev (Mean, Sd) UCL | 19. 95% Percentile Bootstrap UCL |
| 5. 95% H-UCL | 10. 95% Adjusted-CLT UCL | 15. 99% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

TABLE 4-102
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 21
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.6	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.2	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.038	1.86	USEPA, 1995	1.83	22	1.71E-03	1.82E+01	0.031
Tetrachloroethene	0.038	2.67	USEPA, 1995	2.62	139	2.70E-04	1.17E+02	0.032
Trichloroethene	0.019	2.71	USEPA, 1995	2.66	152	1.25E-04	1.29E+02	0.016
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.140	3.86	USEPA, 1992	3.79	2050	6.83E-05	1.82E+03	0.124
Acenaphthylene	0.038	4.07	USEPA, 1992	4.00	3298	1.15E-05	2.95E+03	0.034
Anthracene	0.420	4.45	USEPA, 1992	4.37	7795	5.39E-05	7.08E+03	0.381
Benzo(a)anthracene	0.390	5.61	USEPA, 1992	5.51	107673	3.62E-06	1.02E+05	0.371
Benzo(a)pyrene	0.890	5.98	USEPA, 1992	5.88	248780	3.58E-06	2.40E+05	0.858
Benzo(b)fluoranthene	1.607	6.57	USEPA, 1992	6.46	945771	1.70E-06	9.33E+05	1.585
Benzo(g,h,i)perylene	0.710	7.23	USEPA, 1992	7.11	4212752	1.69E-07	4.27E+06	0.719
Benzo(k)fluoranthene	0.034	6.84	USEPA, 1992	6.72	1742593	1.92E-08	1.74E+06	0.033
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.940	5.61	USEPA, 1992	5.51	107673	8.73E-06	1.02E+05	0.893
Dibenz(a,h)anthracene	0.240	5.97	USEPA, 1992	5.87	243213	9.87E-07	2.34E+05	0.231
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3693	0.00E+00	3.31E+03	0.000
Fluoranthene	1.623	5.33	USEPA, 1992	5.24	57130	2.84E-05	5.37E+04	1.526
Fluorene	0.240	4.18	USEPA, 1992	4.11	4231	5.67E-05	3.80E+03	0.216
Indeno(1,2,3-cd)pyrene	0.620	7.66	USEPA, 1992	7.53	11149513	5.56E-08	1.15E+07	0.638
Naphthalene	1.900	3.37	USEPA, 1992	3.31	676	2.81E-03	5.89E+02	1.654
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	182	0.00E+00	1.55E+02	0.000
Phenanthrene	0.600	4.46	USEPA, 1992	4.38	7974	7.52E-05	7.24E+03	0.545
Pyrene	1.440	5.18	USEPA, 1992	5.09	40683	3.54E-05	3.80E+04	1.346
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.030	5.99	USEPA, 1992	5.89	254475	1.18E-07	2.45E+05	0.029
4,4'-DDE	0.031	5.69	USEPA, 1992	5.59	129046	2.40E-07	1.23E+05	0.030
4,4'-DDT	0.004	6.19	USEPA, 1992	6.09	400171	1.10E-08	3.89E+05	0.004
Aldrin	0.001	6.5	USEPA, 1995	6.39	807190	9.91E-10	7.94E+05	0.001
alpha-Chlordane ^f	0.050	6.32	USEPA, 1992	6.21	537076	9.37E-08	5.25E+05	0.049
Aroclor 1248	0.240	6.2	HSDB, 2000	6.09	409332	5.86E-07	3.98E+05	0.233
Aroclor 1254	0.002	6.5	ATSDR, 2000	6.39	807190	1.98E-09	7.94E+05	0.002
Aroclor 1260	0.420	6.8	ATSDR, 2000	6.68	1591754	2.64E-07	1.58E+06	0.418
beta-BHC	0.001	3.81	USEPA, 1995	3.75	1831	4.37E-07	1.62E+03	0.001
delta-BHC	0.002	4.14	USEPA, 1992	4.07	3865	4.66E-07	3.47E+03	0.002
Endosulfan I	0.035	4.1	USEPA, 1995	4.03	3530	1.00E-05	3.16E+03	0.032
Endosulfan Sulfate	0.002	3.66	USEPA, 1992	3.60	1304	1.23E-06	1.15E+03	0.001
Endrin Aldehyde	0.009	5.6	USEPA, 1992	5.51	105263	8.55E-08	1.00E+05	0.009
gamma-Chlordane ^l	0.033	6.32	USEPA, 1995	6.21	537076	6.14E-08	5.25E+05	0.032

US EPA ARCHIVE DOCUMENT

TABLE 4-102
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 21
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	13648							736.5
Antimony	2							0.2
Arsenic	175							1.5
Barium	128							7.3
Beryllium	1							0.1
Cadmium	18							12.9
Chromium	2400							1.1
Cobalt	23							1.8
Copper	457							4.3
Cyanide	0							0.0
Iron	21950							1324.0
Lead	527							20.1
Manganese	208							2.7
Mercury	10							0.1
Nickel	33							2.5
Selenium	3							0.3
Silver	0							0.0
Thallium	0							0.0
Vanadium	54							4.3
Zinc	3563							198.5

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-c from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.329$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-103
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION BW
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.5	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.2	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.417	1.86	USEPA, 1995	1.83	19	2.16E-02	1.82E+01	0.392
Tetrachloroethene	0.155	2.67	USEPA, 1995	2.62	121	1.28E-03	1.17E+02	0.150
Trichloroethene	0.053	2.71	USEPA, 1995	2.66	132	4.00E-04	1.29E+02	0.052
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.013	3.86	USEPA, 1992	3.79	1789	7.27E-06	1.82E+03	0.013
Acenaphthylene	0.019	4.07	USEPA, 1992	4.00	2877	6.60E-06	2.95E+03	0.019
Anthracene	0.069	4.45	USEPA, 1992	4.37	6800	1.01E-05	7.08E+03	0.072
Benzo(a)anthracene	0.560	5.61	USEPA, 1992	5.51	93927	5.96E-06	1.02E+05	0.610
Benzo(a)pyrene	1.000	5.98	USEPA, 1992	5.88	217021	4.61E-06	2.40E+05	1.105
Benzo(b)fluoranthene	1.500	6.57	USEPA, 1992	6.46	825034	1.82E-06	9.33E+05	1.697
Benzo(g,h,i)perylene	0.640	7.23	USEPA, 1992	7.11	3674954	1.74E-07	4.27E+06	0.743
Benzo(k)fluoranthene	0.720	6.84	USEPA, 1992	6.72	1520134	4.74E-07	1.74E+06	0.823
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.850	5.61	USEPA, 1992	5.51	93927	9.05E-06	1.02E+05	0.926
Dibenz(a,h)anthracene	0.320	5.97	USEPA, 1992	5.87	212164	1.51E-06	2.34E+05	0.354
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3222	0.00E+00	3.31E+03	0.000
Fluoranthene	1.200	5.33	USEPA, 1992	5.24	49837	2.41E-05	5.37E+04	1.293
Fluorene	0.047	4.18	USEPA, 1992	4.11	3691	1.27E-05	3.80E+03	0.048
Indeno(1,2,3-cd)pyrene	0.740	7.66	USEPA, 1992	7.53	9726171	7.61E-08	1.15E+07	0.874
Naphthalene	0.026	3.37	USEPA, 1992	3.31	590	4.41E-05	5.89E+02	0.026
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	159	0.00E+00	1.55E+02	0.000
Phenanthrene	0.570	4.46	USEPA, 1992	4.38	6956	8.19E-05	7.24E+03	0.594
Pyrene	1.000	5.18	USEPA, 1992	5.09	35490	2.82E-05	3.80E+04	1.071
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.017	5.99	USEPA, 1992	5.89	221989	7.66E-08	2.45E+05	0.019
4,4'-DDE	0.004	5.69	USEPA, 1992	5.59	112572	3.55E-08	1.23E+05	0.004
4,4'-DDT	0.001	6.19	USEPA, 1992	6.09	349086	3.72E-09	3.89E+05	0.001
Aldrin	0.000	6.5	USEPA, 1995	6.39	704145	1.21E-10	7.94E+05	0.000
alpha-Chlordane ^f	0.002	6.32	USEPA, 1992	6.21	468513	5.12E-09	5.25E+05	0.003
Aroclor 1248	0.028	6.2	HSDB, 2000	6.09	357077	7.84E-08	3.98E+05	0.031
Aroclor 1254	0.002	6.5	ATSDR, 2000	6.39	704145	2.34E-09	7.94E+05	0.002
Aroclor 1260	0.058	6.8	ATSDR, 2000	6.68	1388551	4.18E-08	1.58E+06	0.066
beta-BHC	0.000	3.81	USEPA, 1995	3.75	1597	5.32E-08	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	3371	2.52E-08	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	3079	2.76E-08	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1137	1.45E-07	1.15E+03	0.000
Endrin Aldehyde	0.002	5.6	USEPA, 1992	5.51	91825	1.96E-08	1.00E+05	0.002
gamma-Chlordane ^f	0.002	6.32	USEPA, 1995	6.21	468513	3.63E-09	5.25E+05	0.002

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TABLE 4-103
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION BW
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	18558							1001.6
Antimony	22							1.8
Arsenic	1239							5.8
Barium	129							7.4
Beryllium	1							0.1
Cadmium	11							8.6
Chromium	1518							1.2
Cobalt	40							3.2
Copper	899							5.1
Cyanide	0							0.0
Iron	111725							6739.0
Lead	607							22.5
Manganese	1036							8.0
Mercury	7							0.1
Nickel	36							2.5
Selenium	10							0.8
Silver	1							0.1
Thallium	8							0.7
Vanadium	81							6.4
Zinc	2102							167.0

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-c from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.287$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-104
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-01
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

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TABLE 4-104
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-01
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	11886							641.5
Antimony	1							0.1
Arsenic	41							0.5
Barium	40							2.3
Beryllium	1							0.1
Cadmium	5							4.9
Chromium	217							1.3
Cobalt	6							0.5
Copper	389							4.1
Cyanide	0							0.0
Iron	11059							667.1
Lead	317							13.3
Manganese	338							3.8
Mercury	2							0.1
Nickel	9							3.5
Selenium	4							0.4
Silver	0							0.0
Thallium	1							0.1
Vanadium	54							4.3
Zinc	422							98.6

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-105
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-02
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C ₁	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

TABLE 4-105
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-02
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	4439							239.5
Antimony	2							0.1
Arsenic	27							0.4
Barium	79							4.5
Beryllium	0							0.0
Cadmium	3							3.2
Chromium	106							1.4
Cobalt	4							0.3
Copper	75							2.7
Cyanide	0							0.0
Iron	5914							356.7
Lead	119							6.0
Manganese	56							1.1
Mercury	0							0.1
Nickel	8							3.6
Selenium	1							0.2
Silver	0							0.0
Thallium	0							0.0
Vanadium	27							2.1
Zinc	250							83.0

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-106
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-03
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

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TABLE 4-106
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-03
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	9264							500.0
Antimony	2							0.1
Arsenic	272							2.0
Barium	52							2.9
Beryllium	1							0.0
Cadmium	7							6.4
Chromium	457							1.3
Cobalt	19							1.5
Copper	269							3.7
Cyanide	0							0.0
Iron	30996							1869.6
Lead	196							9.0
Manganese	283							3.3
Mercury	1							0.1
Nickel	26							2.7
Selenium	4							0.4
Silver	1							0.0
Thallium	1							0.1
Vanadium	47							3.7
Zinc	1148							136.9

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_s

TABLE 4-107
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-04
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	12	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	73	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	80	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	1084	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1744	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	4123	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	56945	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	131574	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	500195	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	2228021	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	921614	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	56945	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	128629	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1953	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	30215	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	2238	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5896703	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	358	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	96	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	4217	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	21516	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	134586	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	68249	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	211641	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	426903	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	284046	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	216486	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	426903	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	841839	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	968	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	2044	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1867	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	690	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	55671	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	284046	0.00E+00	5.25E+05	0.000

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TABLE 4-107
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-04
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	9437							509.3
Antimony	4							0.3
Arsenic	112							1.1
Barium	61							3.5
Beryllium	1							0.0
Cadmium	4							3.9
Chromium	167							1.3
Cobalt	9							0.7
Copper	185							3.4
Cyanide	0							0.0
Iron	23967							1445.6
Lead	208							9.5
Manganese	404							4.2
Mercury	1							0.1
Nickel	41							2.4
Selenium	3							0.3
Silver	1							0.1
Thallium	1							0.1
Vanadium	55							4.4
Zinc	1397							146.1

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.174$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-108
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-06
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	9	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	56	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	61	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	829	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1333	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3151	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	43527	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	100571	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	382333	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1703027	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	704452	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	43527	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	98320	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1493	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	23095	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1710	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4507250	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	273	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	74	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3223	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	16446	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	102873	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	52168	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	161771	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	326311	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	217116	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	165475	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	326311	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	643475	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	740	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1562	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1427	0.00E+00	3.16E-03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	527	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	42553	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	217116	0.00E+00	5.25E+05	0.000

US EPA ARCHIVE DOCUMENT

TABLE 4-108
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-06
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	7195							388.3
Antimony	2							0.1
Arsenic	98							1.0
Barium	40							2.3
Beryllium	0							0.0
Cadmium	9							7.3
Chromium	280							1.3
Cobalt	9							0.7
Copper	180							3.3
Cyanide	0							0.0
Iron	12693							765.6
Lead	137							6.8
Manganese	79							1.4
Mercury	0							0.1
Nickel	19							2.9
Selenium	1							0.2
Silver	0							0.0
Thallium	3							0.3
Vanadium	53							4.2
Zinc	1421							146.8

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.133$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-109
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION NRSE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _i	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	14	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	15	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	206	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	331	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	782	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	10800	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	24954	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	94865	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	422556	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	174789	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	10800	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	24395	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	370	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	5730	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	424	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1118340	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	68	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	18	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	800	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	4081	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	25525	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	12944	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	40139	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	80964	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	53871	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	41058	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	80964	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	159659	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	184	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	388	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	354	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	131	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	10558	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^g	0.000	6.32	USEPA, 1995	6.21	53871	0.00E+00	5.25E+05	0.000

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TABLE 4-109
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION NRSE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	6652							359.0
Antimony	1							0.1
Arsenic	166							1.4
Barium	41							2.4
Beryllium	1							0.0
Cadmium	1							1.7
Chromium	186							1.3
Cobalt	6							0.5
Copper	202							3.4
Cyanide	0							0.0
Iron	19420							1171.4
Lead	161							7.7
Manganese	164							2.3
Mercury	3							0.1
Nickel	11							3.4
Selenium	2							0.2
Silver	2							0.1
Thallium	1							0.1
Vanadium	24							1.9
Zinc	343							92.1

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.033$
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station
 COPC - Chemical of Potential Concern
 K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)
 K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)
 f_{oc} - Fraction of Organic Carbon in Soil (Unitless)
 K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)
 C_w - Water Concentration (mg/L)
 K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)
 C_v - Concentration in Worms (mg/kg - body weight wet)
 na - one or more parameters not available to calculate C_v

TABLE 4-110
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION JY
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	62	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	68	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	916	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1474	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3483	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	111157	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	422578	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1882293	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	778605	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	108669	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1650	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	25526	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1890	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4981697	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	302	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	81	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3563	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18178	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	113702	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	57659	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	178800	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	360659	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	239970	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.122	6.2	HSDB, 2000	6.09	182893	6.64E-07	3.98E+05	0.264
Arclor 1254	0.906	6.5	ATSDR, 2000	6.39	360659	2.51E-06	7.94E+05	1.995
Aroclor 1260	0.990	6.8	ATSDR, 2000	6.68	711209	1.39E-06	1.58E+06	2.206
beta-BHC	0.000	3.81	USEPA, 1995	3.75	818	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1727	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1577	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	583	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	47032	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^t	0.000	6.32	USEPA, 1995	6.21	239970	0.00E+00	5.25E+05	0.000

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TABLE 4-110
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION JY
WELLS G&H SUPERFUND SITE OUS

Chemical of Potential Concern	C _s							C _v ^f (mg/kg)
Inorganics (mg/kg)								
Aluminum	9592							517.7
Antimony	5							0.4
Arsenic	145							1.3
Barium	127							7.2
Beryllium	0							0.0
Cadmium	11							8.9
Chromium	839							1.2
Cobalt	13							1.0
Copper	378							4.1
Cyanide	0							0.0
Iron	28394							1712.7
Lead	523							20.0
Manganese	293							3.4
Mercury	1							0.1
Nickel	52							2.2
Selenium	3							0.3
Silver	1							0.1
Thallium	3							0.2
Vanadium	49							3.9
Zinc	1820							159.3

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.147$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-111
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WG
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	1.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.4	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.082	1.86	USEPA, 1995	1.83	46	1.77E-03	1.82E+01	0.032
Tetrachloroethene	0.119	2.67	USEPA, 1995	2.62	289	4.10E-04	1.17E+02	0.048
Trichloroethene	0.042	2.71	USEPA, 1995	2.66	317	1.33E-04	1.29E+02	0.017
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.003	3.86	USEPA, 1992	3.79	4275	7.02E-07	1.82E+03	0.001
Acenaphthylene	0.001	4.07	USEPA, 1992	4.00	6877	1.45E-07	2.95E+03	0.000
Anthracene	0.018	4.45	USEPA, 1992	4.37	16254	1.11E-06	7.08E+03	0.008
Benzo(a)anthracene	0.130	5.61	USEPA, 1992	5.51	224509	5.79E-07	1.02E+05	0.059
Benzo(a)pyrene	0.160	5.98	USEPA, 1992	5.88	518733	3.08E-07	2.40E+05	0.074
Benzo(b)fluoranthene	0.290	6.57	USEPA, 1992	6.46	1972033	1.47E-07	9.33E+05	0.137
Benzo(g,h,i)perylene	0.120	7.23	USEPA, 1992	7.11	8784036	1.37E-08	4.27E+06	0.058
Benzo(k)fluoranthene	0.200	6.84	USEPA, 1992	6.72	3633491	5.50E-08	1.74E+06	0.096
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.230	5.61	USEPA, 1992	5.51	224509	1.02E-06	1.02E+05	0.105
Dibenz(a,h)anthracene	0.046	5.97	USEPA, 1992	5.87	507124	9.07E-08	2.34E+05	0.021
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	7701	0.00E+00	3.31E+03	0.000
Fluoranthene	0.410	5.33	USEPA, 1992	5.24	119123	3.44E-06	5.37E+04	0.185
Fluorene	0.014	4.18	USEPA, 1992	4.11	8822	1.59E-06	3.80E+03	0.006
Indeno(1,2,3-cd)pyrene	0.140	7.66	USEPA, 1992	7.53	23247921	6.02E-09	1.15E+07	0.069
Naphthalene	0.012	3.37	USEPA, 1992	3.31	1410	8.51E-06	5.89E+02	0.005
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	379	0.00E+00	1.55E+02	0.000
Phenanthrene	0.160	4.46	USEPA, 1992	4.38	16626	9.62E-06	7.24E+03	0.070
Pyrene	0.340	5.18	USEPA, 1992	5.09	84829	4.01E-06	3.80E+04	0.152
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.009	5.99	USEPA, 1992	5.89	530608	1.70E-08	2.45E+05	0.004
4,4'-DDE	0.003	5.69	USEPA, 1992	5.59	269075	1.19E-08	1.23E+05	0.001
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	834400	1.98E-10	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	1683078	4.75E-11	7.94E+05	0.000
alpha-Chlordane ^f	0.001	6.32	USEPA, 1992	6.21	1119861	8.75E-10	5.25E+05	0.000
Aroclor 1248	0.035	6.2	HSTDB, 2000	6.09	853501	4.10E-08	3.98E+05	0.016
Aroclor 1254	0.002	6.5	ATSDR, 2000	6.39	1683078	9.80E-10	7.94E+05	0.001
Aroclor 1260	0.011	6.8	ATSDR, 2000	6.68	3318976	3.31E-09	1.58E+06	0.005
beta-BHC	0.000	3.81	USEPA, 1995	3.75	3818	2.10E-08	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	8058	9.93E-09	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	7360	5.98E-08	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	2719	6.07E-08	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	219485	7.52E-10	1.00E+05	0.000
gamma-Chlordane ^f	0.001	6.32	USEPA, 1995	6.21	1119861	5.27E-10	5.25E+05	0.000

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TABLE 4-111
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WG
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	13755							742.3
Antimony	6							0.5
Arsenic	136							1.2
Barium	79							4.5
Beryllium	1							0.1
Cadmium	5							4.9
Chromium	561							1.2
Cobalt	16							1.2
Copper	483							4.3
Cyanide	1							0.1
Iron	20480							1235.3
Lead	429							17.0
Manganese	702							6.2
Mercury	1							0.1
Nickel	28							2.6
Selenium	4							0.4
Silver	0							0.0
Thallium	0							0.0
Vanadium	54							4.3
Zinc	866							124.9

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.686$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-112
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WH
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	1.5	0.00E+00	4.79E-01	0.000
Acetone	2.700	-0.24	USEPA, 1995	-0.24	0.5	5.70E+00	1.45E-01	0.824
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	55	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	344	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	376	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.300	3.86	USEPA, 1992	3.79	5079	5.91E-05	1.82E+03	0.107
Acenaphthylene	0.300	4.07	USEPA, 1992	4.00	8170	3.67E-05	2.95E+03	0.108
Anthracene	0.300	4.45	USEPA, 1992	4.37	19310	1.55E-05	7.08E+03	0.110
Benzo(a)anthracene	0.300	5.61	USEPA, 1992	5.51	266727	1.12E-06	1.02E+05	0.115
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	616279	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.300	6.57	USEPA, 1992	6.46	2342867	1.28E-07	9.33E+05	0.120
Benzo(g,h,i)perylene	0.300	7.23	USEPA, 1992	7.11	10435845	2.87E-08	4.27E+06	0.123
Benzo(k)fluoranthene	0.660	6.84	USEPA, 1992	6.72	4316757	1.53E-07	1.74E+06	0.266
Carbazole	0.300	na	na	na	na	na	na	na
Chrysene	0.300	5.61	USEPA, 1992	5.51	266727	1.12E-06	1.02E+05	0.115
Dibenz(a,h)anthracene	0.300	5.97	USEPA, 1992	5.87	602487	4.98E-07	2.34E+05	0.117
Dibenzofuran	0.300	4.12	USEPA, 1992	4.05	9150	3.28E-05	3.31E+03	0.109
Fluoranthene	0.300	5.33	USEPA, 1992	5.24	141523	2.12E-06	5.37E+04	0.114
Fluorene	0.300	4.18	USEPA, 1992	4.11	10480	2.86E-05	3.80E+03	0.109
Indeno(1,2,3-cd)pyrene	0.300	7.66	USEPA, 1992	7.53	27619614	1.09E-08	1.15E+07	0.125
Naphthalene	0.300	3.37	USEPA, 1992	3.31	1676	1.79E-04	5.89E+02	0.105
N-nitrosodiphenylamine	0.300	2.79	USEPA, 1992	2.74	451	6.65E-04	1.55E+02	0.103
Phenanthrene	0.300	4.46	USEPA, 1992	4.38	19752	1.52E-05	7.24E+03	0.110
Pyrene	0.300	5.18	USEPA, 1992	5.09	100781	2.98E-06	3.80E+04	0.113
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.002	5.99	USEPA, 1992	5.89	630388	3.89E-09	2.45E+05	0.001
4,4'-DDE	0.002	5.69	USEPA, 1992	5.59	319674	7.66E-09	1.23E+05	0.001
4,4'-DDT	0.002	6.19	USEPA, 1992	6.09	991306	2.47E-09	3.89E+05	0.001
Aldrin	0.001	6.5	USEPA, 1995	6.39	1999575	6.25E-10	7.94E+05	0.000
alpha-Chlordane ^f	0.001	6.32	USEPA, 1992	6.21	1330447	9.40E-10	5.25E+05	0.000
Aroclor 1248	0.025	6.2	HSDB, 2000	6.09	1013999	2.42E-08	3.98E+05	0.010
Aroclor 1254	0.025	6.5	ATSDR, 2000	6.39	1999575	1.23E-08	7.94E+05	0.010
Aroclor 1260	0.025	6.8	ATSDR, 2000	6.68	3943098	6.21E-09	1.58E+06	0.010
beta-BHC	0.001	3.81	USEPA, 1995	3.75	4536	2.76E-07	1.62E+03	0.000
delta-BHC	0.001	4.14	USEPA, 1992	4.07	9573	1.31E-07	3.47E+03	0.000
Endosulfan I	0.001	4.1	USEPA, 1995	4.03	8745	1.43E-07	3.16E+03	0.000
Endosulfan Sulfate	0.002	3.66	USEPA, 1992	3.60	3230	7.58E-07	1.15E+03	0.001
Endrin Aldehyde	0.002	5.6	USEPA, 1992	5.51	260758	9.40E-09	1.00E+05	0.001
gamma-Chlordane ^f	0.001	6.32	USEPA, 1995	6.21	1330447	9.40E-10	5.25E+05	0.000

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TABLE 4-112
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WH
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v [§] (mg/kg)
Inorganics (mg/kg)								
Aluminum	10695							577.2
Antimony	22							1.7
Arsenic	114							1.1
Barium	81							4.7
Beryllium	1							0.1
Cadmium	6							5.4
Chromium	346							1.3
Cobalt	12							1.0
Copper	248							3.6
Cyanide	1							0.0
Iron	24718							1490.9
Lead	1516							47.1
Manganese	250							3.1
Mercury	1							0.1
Nickel	24							2.8
Selenium	3							0.3
Silver	0							0.0
Thallium	1							0.0
Vanadium	76							6.0
Zinc	978							129.9

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.815$

^c $C_w = C_p / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

[§] Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-113
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	62	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	68	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	916	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1474	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3483	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	111157	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	422578	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1882293	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	778605	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	108669	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1650	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	25526	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1890	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4981697	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	302	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	81	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3563	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18178	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	113702	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	57659	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	178800	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	360659	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	239970	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	182893	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	360659	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	711209	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	818	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1727	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1577	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	583	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	47032	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	239970	0.00E+00	5.25E+05	0.000

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TABLE 4-113
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	8500							458.7
Antimony	4							0.3
Arsenic	168							1.4
Barium	119							6.8
Beryllium	1							0.0
Cadmium	8							6.9
Chromium	504							1.3
Cobalt	19							1.5
Copper	306							3.8
Cyanide	4							0.3
Iron	29765							1795.3
Lead	295							12.6
Manganese	1036							8.0
Mercury	1							0.1
Nickel	30							2.6
Selenium	2							0.3
Silver	0							0.0
Thallium	1							0.1
Vanadium	37							3.0
Zinc	1542							150.8

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.147$; Station JY used to represent this station

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-114
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 20
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.108	0.28	USEPA, 1995	0.28	0.5	2.03E-01	4.79E-01	0.097
Acetone	0.342	-0.24	USEPA, 1995	-0.24	0.2	2.09E+00	1.45E-01	0.303
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	19	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	118	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	130	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	1751	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	2817	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	6658	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	1.050	5.61	USEPA, 1992	5.51	91964	1.14E-05	1.02E+05	1.168
Benzo(a)pyrene	0.965	5.98	USEPA, 1992	5.88	212484	4.54E-06	2.40E+05	1.089
Benzo(b)fluoranthene	2.772	6.57	USEPA, 1992	6.46	807786	3.43E-06	9.33E+05	3.202
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	3598126	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	1488354	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	1.450	5.61	USEPA, 1992	5.51	91964	1.58E-05	1.02E+05	1.613
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	207729	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3155	0.00E+00	3.31E+03	0.000
Fluoranthene	2.223	5.33	USEPA, 1992	5.24	48795	4.56E-05	5.37E+04	2.447
Fluorene	0.000	4.18	USEPA, 1992	4.11	3613	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.830	7.66	USEPA, 1992	7.53	9522836	8.72E-08	1.15E+07	1.001
Naphthalene	0.000	3.37	USEPA, 1992	3.31	578	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	155	0.00E+00	1.55E+02	0.000
Phenanthrene	0.770	4.46	USEPA, 1992	4.38	6810	1.13E-04	7.24E+03	0.819
Pyrene	1.950	5.18	USEPA, 1992	5.09	34748	5.61E-05	3.80E+04	2.134
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.024	5.99	USEPA, 1992	5.89	217348	1.10E-07	2.45E+05	0.027
4,4'-DDE	0.025	5.69	USEPA, 1992	5.59	110219	2.27E-07	1.23E+05	0.028
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	341788	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	689424	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.035	6.32	USEPA, 1992	6.21	458719	7.67E-08	5.25E+05	0.040
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	349612	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	689424	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	1359522	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	1564	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	3301	0.00E+00	3.47E+03	0.000
Endosulfan I	0.040	4.1	USEPA, 1995	4.03	3015	1.33E-05	3.16E+03	0.042
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1114	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	89906	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.012	6.32	USEPA, 1995	6.21	458719	2.59E-08	5.25E+05	0.014

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TABLE 4-114
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 20
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	24983							1348.3
Antimony	5							0.4
Arsenic	299							2.1
Barium	107							6.1
Beryllium	2							0.1
Cadmium	16							12.1
Chromium	1587							1.2
Cobalt	38							3.0
Copper	998							5.2
Cyanide	0							0.0
Iron	34267							2066.9
Lead	877							30.3
Manganese	735							6.4
Mercury	2							0.1
Nickel	48							2.3
Selenium	8							0.7
Silver	2							0.1
Thallium	4							0.3
Vanadium	90							7.2
Zinc	2840							184.3

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.281$

^c $C_w = C_s/K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

US EPA ARCHIVE DOCUMENT

TABLE 4-115
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 22/TT-22
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.013	0.28	USEPA, 1995	0.28	0.8	1.56E-02	4.79E-01	0.007
Acetone	1.207	-0.24	USEPA, 1995	-0.24	0.3	4.71E+00	1.45E-01	0.680
cis-1,2-Dichloroethene	0.073	1.86	USEPA, 1995	1.83	30	2.46E-03	1.82E+01	0.045
Tetrachloroethene	1.131	2.67	USEPA, 1995	2.62	186	6.08E-03	1.17E+02	0.715
Trichloroethene	0.259	2.71	USEPA, 1995	2.66	204	1.27E-03	1.29E+02	0.164
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.239	3.86	USEPA, 1992	3.79	2749	8.71E-05	1.82E+03	0.158
Acenaphthylene	0.239	4.07	USEPA, 1992	4.00	4421	5.41E-05	2.95E+03	0.160
Anthracene	0.250	4.45	USEPA, 1992	4.37	10449	2.40E-05	7.08E+03	0.170
Benzo(a)anthracene	0.335	5.61	USEPA, 1992	5.51	144327	2.32E-06	1.02E+05	0.238
Benzo(a)pyrene	0.318	5.98	USEPA, 1992	5.88	333471	9.52E-07	2.40E+05	0.228
Benzo(b)fluoranthene	0.394	6.57	USEPA, 1992	6.46	1267735	3.11E-07	9.33E+05	0.290
Benzo(g,h,i)perylene	0.298	7.23	USEPA, 1992	7.11	5646880	5.28E-08	4.27E+06	0.225
Benzo(k)fluoranthene	0.422	6.84	USEPA, 1992	6.72	2335816	1.81E-07	1.74E+06	0.314
Carbazole	0.353	na	na	na	na	na	na	na
Chrysene	0.368	5.61	USEPA, 1992	5.51	144327	2.55E-06	1.02E+05	0.261
Dibenz(a,h)anthracene	0.250	5.97	USEPA, 1992	5.87	326008	7.66E-07	2.34E+05	0.180
Dibenzofuran	0.353	4.12	USEPA, 1992	4.05	4951	7.12E-05	3.31E+03	0.236
Fluoranthene	0.475	5.33	USEPA, 1992	5.24	76579	6.20E-06	5.37E+04	0.333
Fluorene	0.244	4.18	USEPA, 1992	4.11	5671	4.30E-05	3.80E+03	0.163
Indeno(1,2,3-cd)pyrene	0.308	7.66	USEPA, 1992	7.53	14945092	2.06E-08	1.15E+07	0.237
Naphthalene	0.243	3.37	USEPA, 1992	3.31	907	2.68E-04	5.89E+02	0.158
N-nitrosodiphenylamine	0.353	2.79	USEPA, 1992	2.74	244	1.45E-03	1.55E+02	0.224
Phenanthrene	0.398	4.46	USEPA, 1992	4.38	10688	3.73E-05	7.24E+03	0.270
Pyrene	0.438	5.18	USEPA, 1992	5.09	54533	8.04E-06	3.80E+04	0.306
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.005	5.99	USEPA, 1992	5.89	341105	1.58E-08	2.45E+05	0.004
4,4'-DDE	0.018	5.69	USEPA, 1992	5.59	172977	1.03E-07	1.23E+05	0.013
4,4'-DDT	0.003	6.19	USEPA, 1992	6.09	536400	5.78E-09	3.89E+05	0.002
Aldrin	0.001	6.5	USEPA, 1995	6.39	1081978	1.07E-09	7.94E+05	0.001
alpha-Chlordane ^f	0.002	6.32	USEPA, 1992	6.21	719911	2.13E-09	5.25E+05	0.001
Aroclor 1248	0.025	6.2	HSDB, 2000	6.09	548679	4.50E-08	3.98E+05	0.018
Aroclor 1254	0.023	6.5	ATSDR, 2000	6.39	1081978	2.08E-08	7.94E+05	0.017
Aroclor 1260	0.032	6.8	ATSDR, 2000	6.68	2133627	1.48E-08	1.58E+06	0.024
beta-BHC	0.001	3.81	USEPA, 1995	3.75	2454	4.72E-07	1.62E+03	0.001
delta-BHC	0.001	4.14	USEPA, 1992	4.07	5180	2.29E-07	3.47E+03	0.001
Endosulfan I	0.003	4.1	USEPA, 1995	4.03	4732	5.30E-07	3.16E+03	0.002
Endosulfan Sulfate	0.002	3.66	USEPA, 1992	3.60	1748	1.29E-06	1.15E+03	0.001
Endrin Aldehyde	0.003	5.6	USEPA, 1992	5.51	141097	2.34E-08	1.00E+05	0.002
gamma-Chlordane [†]	0.001	6.32	USEPA, 1995	6.21	719911	1.66E-09	5.25E+05	0.001

US EPA ARCHIVE DOCUMENT

TABLE 4-115
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION 22/TT-22
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	4711							254.3
Antimony	70							5.5
Arsenic	21							0.3
Barium	41							2.4
Beryllium	0							0.0
Cadmium	1							1.3
Chromium	25							1.5
Cobalt	3							0.2
Copper	23							1.9
Cyanide	1							0.1
Iron	4245							256.0
Lead	6765							157.4
Manganese	71							1.3
Mercury	0							0.1
Nickel	8							3.7
Selenium	4							0.4
Silver	1							0.1
Thallium	0							0.0
Vanadium	31							2.5
Zinc	70							54.6

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.441$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-116
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-05
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	4	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	23	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	25	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	343	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	551	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	1303	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	18000	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	41589	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	158108	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	704259	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	291315	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	18000	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	40659	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	617	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	9551	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	707	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1863900	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	113	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	30	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	1333	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	6801	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	42541	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	21573	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	66898	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	134941	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	89785	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	68429	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	134941	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	266099	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	306	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	646	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	590	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	218	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	17597	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	89785	0.00E+00	5.25E+05	0.000

TABLE 4-116
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION CB-05
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	5769							311.3
Antimony	1							0.1
Arsenic	30							0.4
Barium	27							1.5
Beryllium	0							0.0
Cadmium	0							0.8
Chromium	56							1.4
Cobalt	6							0.4
Copper	40							2.2
Cyanide	0							0.0
Iron	10107							609.6
Lead	50							3.0
Manganese	194							2.6
Mercury	0							0.1
Nickel	10							3.5
Selenium	1							0.1
Silver	0							0.0
Thallium	1							0.1
Vanadium	23							1.8
Zinc	130							67.0

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.055$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

US EPA ARCHIVE DOCUMENT

TABLE 4-117
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION DA
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	15	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	16	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	218	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	351	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	829	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	11455	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	26466	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	100614	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	448165	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	185382	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	11455	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	25874	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	393	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	6078	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	450	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1186118	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	72	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	19	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	848	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	4328	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	27072	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	13728	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	42571	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	85871	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	57136	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	43546	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	85871	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	169336	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	195	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	411	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	376	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	139	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	11198	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	57136	0.00E+00	5.25E+05	0.000

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TABLE 4-117
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION DA
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	6979							376.6
Antimony	1							0.1
Arsenic	99							1.0
Barium	35							2.0
Beryllium	0							0.0
Cadmium	1							1.7
Chromium	193							1.3
Cobalt	9							0.7
Copper	145							3.2
Cyanide	0							0.0
Iron	16868							1017.4
Lead	134							6.7
Manganese	791							6.7
Mercury	1							0.1
Nickel	11							3.3
Selenium	1							0.2
Silver	0							0.0
Thallium	1							0.1
Vanadium	27							2.1
Zinc	275							85.6

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.035$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-118
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION NRSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.0	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	10	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	11	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	150	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	241	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	569	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	7855	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	18148	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	68992	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	307313	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	127119	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	7855	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	17742	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	269	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	4168	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	309	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	813338	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	49	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	13	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	582	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	2968	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	18564	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	9414	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	29192	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	58883	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	39179	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSEDB, 2000	6.09	29860	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	58883	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	116116	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	134	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	282	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	258	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	95	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	7679	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	39179	0.00E+00	5.25E+05	0.000

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TABLE 4-118
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION NRSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	4608							248.7
Antimony	1							0.1
Arsenic	111							1.1
Barium	38							2.1
Beryllium	0							0.0
Cadmium	1							1.3
Chromium	98							1.4
Cobalt	6							0.5
Copper	97							2.8
Cyanide	0							0.0
Iron	17216							1038.4
Lead	85							4.6
Manganese	307							3.5
Mercury	1							0.1
Nickel	8							3.6
Selenium	1							0.1
Silver	1							0.1
Thallium	1							0.1
Vanadium	16							1.3
Zinc	290							87.2

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.024$
- ^c $C_w = C_g/K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-119
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION KFSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	3	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	18	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	19	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	262	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	421	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	995	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	13745	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	31759	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	120737	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	537798	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	222459	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	13745	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	31048	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	472	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	7293	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	540	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1423342	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	86	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	23	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	1018	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	5194	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	32486	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	16474	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	51086	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	103046	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	68563	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	52255	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	103046	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	203203	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	234	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	493	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	451	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	166	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	13438	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	68563	0.00E+00	5.25E+05	0.000

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TABLE 4-119
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION KFSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	5604							302.4
Antimony	1							0.1
Arsenic	40							0.5
Barium	51							2.9
Beryllium	0							0.0
Cadmium	1							1.4
Chromium	102							1.4
Cobalt	9							0.7
Copper	91							2.8
Cyanide	0							0.0
Iron	14884							897.8
Lead	160							7.7
Manganese	638							5.8
Mercury	1							0.1
Nickel	12							3.3
Selenium	0							0.1
Silver	1							0.0
Thallium	1							0.1
Vanadium	25							2.0
Zinc	334							91.3

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.042$

^c $C_w = C_d/K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-120
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WSS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	12	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	13	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	175	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	281	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	663	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	9164	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	21173	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	80491	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	358532	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	148306	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	9164	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	20699	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	314	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	4862	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	360	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	948895	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	58	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	15	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	679	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	3462	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	21657	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	10983	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	34057	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	68697	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	45709	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	34837	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	68697	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	135468	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	156	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	329	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	300	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	111	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	8959	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	45709	0.00E+00	5.25E+05	0.000

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TABLE 4-120
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
STATION WSS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	8088							436.5
Antimony	1							0.1
Arsenic	9							0.2
Barium	35							2.0
Beryllium	0							0.0
Cadmium	0							0.4
Chromium	13							1.6
Cobalt	4							0.3
Copper	27							2.0
Cyanide	0							0.0
Iron	9233							556.9
Lead	68							3.8
Manganese	148							2.1
Mercury	0							0.1
Nickel	8							3.7
Selenium	1							0.1
Silver	0							0.0
Thallium	1							0.1
Vanadium	19							1.5
Zinc	54							50.3

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-c from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.028$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-121
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 21
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.6	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.2	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	22	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	139	0.00E+00	1.17E+02	0.000
Trichloroethene	0.019	2.71	USEPA, 1995	2.66	152	1.25E-04	1.29E+02	0.016
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.140	3.86	USEPA, 1992	3.79	2050	6.83E-05	1.82E+03	0.124
Acenaphthylene	0.038	4.07	USEPA, 1992	4.00	3298	1.15E-05	2.95E+03	0.034
Anthracene	0.420	4.45	USEPA, 1992	4.37	7795	5.39E-05	7.08E+03	0.381
Benzo(a)anthracene	0.390	5.61	USEPA, 1992	5.51	107673	3.62E-06	1.02E+05	0.371
Benzo(a)pyrene	0.890	5.98	USEPA, 1992	5.88	248780	3.58E-06	2.40E+05	0.858
Benzo(b)fluoranthene	3.100	6.57	USEPA, 1992	6.46	945771	3.28E-06	9.33E+05	3.059
Benzo(g,h,i)perylene	0.710	7.23	USEPA, 1992	7.11	4212752	1.69E-07	4.27E+06	0.719
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	1742593	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.940	5.61	USEPA, 1992	5.51	107673	8.73E-06	1.02E+05	0.893
Dibenz(a,h)anthracene	0.240	5.97	USEPA, 1992	5.87	243213	9.87E-07	2.34E+05	0.231
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3693	0.00E+00	3.31E+03	0.000
Fluoranthene	2.500	5.33	USEPA, 1992	5.24	57130	4.38E-05	5.37E+04	2.350
Fluorene	0.240	4.18	USEPA, 1992	4.11	4231	5.67E-05	3.80E+03	0.216
Indeno(1,2,3-cd)pyrene	0.620	7.66	USEPA, 1992	7.53	11149513	5.56E-08	1.15E+07	0.638
Naphthalene	2.500	3.37	USEPA, 1992	3.31	676	3.70E-03	5.89E+02	2.176
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	182	0.00E+00	1.55E+02	0.000
Phenanthrene	0.600	4.46	USEPA, 1992	4.38	7974	7.52E-05	7.24E+03	0.545
Pyrene	2.400	5.18	USEPA, 1992	5.09	40683	5.90E-05	3.80E+04	2.243
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.035	5.99	USEPA, 1992	5.89	254475	1.38E-07	2.45E+05	0.034
4,4'-DDE	0.036	5.69	USEPA, 1992	5.59	129046	2.79E-07	1.23E+05	0.034
4,4'-DDT	0.004	6.19	USEPA, 1992	6.09	400171	1.10E-08	3.89E+05	0.004
Aldrin	0.000	6.5	USEPA, 1995	6.39	807190	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.062	6.32	USEPA, 1992	6.21	537076	1.15E-07	5.25E+05	0.061
Aroclor 1248	0.240	6.2	HSDB, 2000	6.09	409332	5.86E-07	3.98E+05	0.233
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	807190	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.420	6.8	ATSDR, 2000	6.68	1591754	2.64E-07	1.58E+06	0.418
beta-BHC	0.000	3.81	USEPA, 1995	3.75	1831	0.00E+00	1.62E+03	0.000
delta-BHC	0.002	4.14	USEPA, 1992	4.07	3865	4.66E-07	3.47E+03	0.002
Endosulfan I	0.068	4.1	USEPA, 1995	4.03	3530	1.93E-05	3.16E+03	0.061
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1304	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.009	5.6	USEPA, 1992	5.51	105263	8.55E-08	1.00E+05	0.009
gamma-Chlordane ^g	0.047	6.32	USEPA, 1995	6.21	537076	8.75E-08	5.25E+05	0.046

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TABLE 4-121
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 21
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^e (mg/kg)
Inorganics (mg/kg)								
Aluminum	18400							993.0
Antimony	2							0.2
Arsenic	248							1.9
Barium	181							10.3
Beryllium	1							0.1
Cadmium	21							14.5
Chromium	5034							1.1
Cobalt	30							2.4
Copper	601							4.6
Cyanide	0							0.0
Iron	28000							1688.9
Lead	722							25.9
Manganese	268							3.2
Mercury	18							0.1
Nickel	47							2.3
Selenium	4							0.4
Silver	0							0.0
Thallium	0							0.0
Vanadium	77							6.1
Zinc	4856							219.8

Notes:

^a $\log_{10} (K_{oc}) = 0.983 \log_{10} (K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.329$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10} (K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

US EPA ARCHIVE DOCUMENT

TABLE 4-122
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION BW
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C ₁	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.5	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.2	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.417	1.86	USEPA, 1995	1.83	19	2.16E-02	1.82E+01	0.392
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	121	0.00E+00	1.17E+02	0.000
Trichloroethene	0.053	2.71	USEPA, 1995	2.66	132	4.00E-04	1.29E+02	0.052
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.013	3.86	USEPA, 1992	3.79	1789	7.27E-06	1.82E+03	0.013
Acenaphthylene	0.019	4.07	USEPA, 1992	4.00	2877	6.60E-06	2.95E+03	0.019
Anthracene	0.069	4.45	USEPA, 1992	4.37	6800	1.01E-05	7.08E+03	0.072
Benzo(a)anthracene	0.560	5.61	USEPA, 1992	5.51	93927	5.96E-06	1.02E+05	0.610
Benzo(a)pyrene	1.000	5.98	USEPA, 1992	5.88	217021	4.61E-06	2.40E+05	1.105
Benzo(b)fluoranthene	1.500	6.57	USEPA, 1992	6.46	825034	1.82E-06	9.33E+05	1.697
Benzo(g,h,i)perylene	0.640	7.23	USEPA, 1992	7.11	3674954	1.74E-07	4.27E+06	0.743
Benzo(k)fluoranthene	0.720	6.84	USEPA, 1992	6.72	1520134	4.74E-07	1.74E+06	0.823
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.850	5.61	USEPA, 1992	5.51	93927	9.05E-06	1.02E+05	0.926
Dibenz(a,h)anthracene	0.320	5.97	USEPA, 1992	5.87	212164	1.51E-06	2.34E+05	0.354
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3222	0.00E+00	3.31E+03	0.000
Fluoranthene	1.200	5.33	USEPA, 1992	5.24	49837	2.41E-05	5.37E+04	1.293
Fluorene	0.047	4.18	USEPA, 1992	4.11	3691	1.27E-05	3.80E+03	0.048
Indeno(1,2,3-cd)pyrene	0.740	7.66	USEPA, 1992	7.53	9726171	7.61E-08	1.15E+07	0.874
Naphthalene	0.026	3.37	USEPA, 1992	3.31	590	4.41E-05	5.89E+02	0.026
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	159	0.00E+00	1.55E+02	0.000
Phenanthrene	0.570	4.46	USEPA, 1992	4.38	6956	8.19E-05	7.24E+03	0.594
Pyrene	1.000	5.18	USEPA, 1992	5.09	35490	2.82E-05	3.80E+04	1.071
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.017	5.99	USEPA, 1992	5.89	221989	7.66E-08	2.45E+05	0.019
4,4'-DDE	0.004	5.69	USEPA, 1992	5.59	112572	3.55E-08	1.23E+05	0.004
4,4'-DDT	0.001	6.19	USEPA, 1992	6.09	349086	3.72E-09	3.89E+05	0.001
Aldrin	0.000	6.5	USEPA, 1995	6.39	704145	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.002	6.32	USEPA, 1992	6.21	468513	5.12E-09	5.25E+05	0.003
Aroclor 1248	0.028	6.2	HSDB, 2000	6.09	357077	7.84E-08	3.98E+05	0.031
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	704145	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.058	6.8	ATSDR, 2000	6.68	1388551	4.18E-08	1.58E+06	0.066
beta-BHC	0.000	3.81	USEPA, 1995	3.75	1597	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	3371	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	3079	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1137	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.002	5.6	USEPA, 1992	5.51	91825	1.96E-08	1.00E+05	0.002
gamma-Chlordane ^l	0.002	6.32	USEPA, 1995	6.21	468513	3.63E-09	5.25E+05	0.002

TABLE 4-122
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION BW
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	21850							1179.2
Antimony	63							5.0
Arsenic	3036							11.0
Barium	166							9.5
Beryllium	2							0.1
Cadmium	12							9.6
Chromium	2035							1.1
Cobalt	51							4.1
Copper	1520							5.9
Cyanide	0							0.0
Iron	149491							9016.9
Lead	866							30.0
Manganese	1392							9.8
Mercury	16							0.1
Nickel	41							2.4
Selenium	14							1.0
Silver	2							0.2
Thallium	13							1.1
Vanadium	92							7.3
Zinc	2590							178.8

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.287$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-123
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-01
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

US EPA ARCHIVE DOCUMENT

TABLE 4-123
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-01
WELLS G&H SUPERFUND SITE O03

Chemical of Potential Concern	C _s							C _v ^e (mg/kg)
Inorganics (mg/kg)								
Aluminum	14742							795.6
Antimony	2							0.2
Arsenic	58							0.7
Barium	59							3.4
Beryllium	1							0.1
Cadmium	9							7.7
Chromium	332							1.3
Cobalt	14							1.1
Copper	749							4.9
Cyanide	0							0.0
Iron	18702							1128.1
Lead	443							17.4
Manganese	688							6.1
Mercury	3							0.1
Nickel	20							2.9
Selenium	5							0.5
Silver	0							0.0
Thallium	3							0.2
Vanadium	79							6.3
Zinc	638							113.0

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station
 COPC - Chemical of Potential Concern
 K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)
 K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)
 f_{oc} - Fraction of Organic Carbon in Soil (Unitless)
 K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)
 C_w - Water Concentration (mg/L)
 K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)
 C_v - Concentration in Worms (mg/kg - body weight wet)
 na - one or more parameters not available to calculate C_v

TABLE 4-124
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-02
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^g	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

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TABLE 4-124
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-02
WELLS G&H SUPERFUND SITE O03

Chemical of Potential Concern	C _s							C _v ^f (mg/kg)
Inorganics (mg/kg)								
Aluminum	5409							291.9
Antimony	2							0.1
Arsenic	41							0.5
Barium	171							9.8
Beryllium	0							0.0
Cadmium	4							3.8
Chromium	144							1.4
Cobalt	5							0.4
Copper	98							2.8
Cyanide	0							0.0
Iron	6898							416.0
Lead	238							10.6
Manganese	72							1.3
Mercury	0							0.1
Nickel	10							3.4
Selenium	2							0.2
Silver	0							0.0
Thallium	1							0.0
Vanadium	32							2.5
Zinc	314							89.5

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

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TABLE 4-125
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-03
WELLS G&H SUPERFUND SITE O03

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _e ^e (mg/kg)
Volatil Organic (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	65	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	71	0.00E+00	1.29E+02	0.000
Semivolatile Organic (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	954	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1534	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3625	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	115694	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	439827	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1959122	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	810385	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	50073	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	113105	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1718	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	26568	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1967	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5185032	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	315	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	85	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3708	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18920	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	118343	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	60012	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	186098	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	375380	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	249765	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDb, 2000	6.09	190358	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	375380	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	740238	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	852	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1797	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1642	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	606	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	48952	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	249765	0.00E+00	5.25E+05	0.000

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TABLE 4-125
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-03
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	11284							609.0
Antimony	5							0.4
Arsenic	595							3.5
Barium	67							3.8
Beryllium	1							0.1
Cadmium	13							10.1
Chromium	768							1.2
Cobalt	63							5.0
Copper	376							4.1
Cyanide	0							0.0
Iron	50627							3053.7
Lead	274							11.8
Manganese	464							4.7
Mercury	2							0.1
Nickel	37							2.5
Selenium	5							0.5
Silver	3							0.3
Thallium	1							0.1
Vanadium	62							5.0
Zinc	2099							166.9

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.153$; average of Stations CB-04 and CB-06 used to represent this station

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-126
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-04
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C ₁	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	12	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	73	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	80	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	1084	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1744	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	4123	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	56945	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	131574	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	500195	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	2228021	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	921614	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	56945	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	128629	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1953	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	30215	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	2238	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	5896703	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	358	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	96	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	4217	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	21516	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	134586	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	68249	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	211641	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	426903	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	284046	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDb, 2000	6.09	216486	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	426903	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	841839	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	968	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	2044	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1867	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	690	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	55671	0.00E+00	1.00E+05	0.000
gamma-Chlordane ¹	0.000	6.32	USEPA, 1995	6.21	284046	0.00E+00	5.25E+05	0.000

TABLE 4-126
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-04
WELLS G&H SUPERFUND SITE OUS

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	11027							595.1
Antimony	5							0.4
Arsenic	182							1.5
Barium	77							4.4
Beryllium	1							0.1
Cadmium	6							5.3
Chromium	272							1.3
Cobalt	11							0.9
Copper	244							3.6
Cyanide	0							0.0
Iron	39923							2408.1
Lead	276							11.9
Manganese	1380							9.8
Mercury	1							0.1
Nickel	77							2.0
Selenium	4							0.4
Silver	12							0.9
Thallium	5							0.4
Vanadium	68							5.4
Zinc	3066							189.0

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.174$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-127
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-06
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	9	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	56	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	61	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	829	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1333	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3151	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	43527	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	100571	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	382333	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1703027	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	704452	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	43527	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	98320	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1493	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	23095	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1710	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4507250	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	273	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	74	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3223	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	16446	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	102873	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	52168	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	161771	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	326311	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	217116	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	165475	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	326311	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	643475	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	740	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1562	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1427	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	527	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	42553	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	217116	0.00E+00	5.25E+05	0.000

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TABLE 4-127
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-06
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	8561							462.0
Antimony	5							0.4
Arsenic	140							1.3
Barium	51							2.9
Beryllium	0							0.0
Cadmium	17							12.6
Chromium	497							1.3
Cobalt	14							1.1
Copper	236							3.6
Cyanide	0							0.0
Iron	16258							980.6
Lead	189							8.8
Manganese	94							1.6
Mercury	0							0.1
Nickel	28							2.6
Selenium	2							0.2
Silver	0							0.0
Thallium	4							0.3
Vanadium	72							5.7
Zinc	2076							166.3

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.133$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-128
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION NRSE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatle Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	14	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	15	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	206	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	331	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	782	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	10800	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	24954	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	94865	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	422556	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	174789	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	10800	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	24395	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	370	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	5730	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	424	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1118340	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	68	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	18	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	800	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	4081	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	25525	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	12944	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	40139	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	80964	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	53871	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	41058	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	80964	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	159659	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	184	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	388	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	354	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	131	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	10558	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	53871	0.00E+00	5.25E+05	0.000

TABLE 4-128
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION NRSE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	8498							458.6
Antimony	1							0.1
Arsenic	214							1.7
Barium	56							3.2
Beryllium	1							0.1
Cadmium	2							2.5
Chromium	251							1.3
Cobalt	8							0.6
Copper	304							3.8
Cyanide	0							0.0
Iron	24291							1465.2
Lead	224							10.1
Manganese	248							3.0
Mercury	4							0.1
Nickel	14							3.2
Selenium	2							0.3
Silver	2							0.2
Thallium	1							0.1
Vanadium	31							2.4
Zinc	485							103.2

Notes:

^a $\log_{10} (K_{oc}) = 0.983 \log_{10} (K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.033$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10} (K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-129
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION JY
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	62	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	68	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	916	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1474	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3483	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	111157	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	422578	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1882293	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	778605	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	108669	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1650	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	25526	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1890	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4981697	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	302	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	81	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3563	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18178	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	113702	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	57659	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	178800	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	360659	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	239970	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.144	6.2	HSDB, 2000	6.09	182893	7.85E-07	3.98E+05	0.313
Arclor 1254	1.366	6.5	ATSDR, 2000	6.39	360659	3.79E-06	7.94E+05	3.009
Aroclor 1260	1.472	6.8	ATSDR, 2000	6.68	711209	2.07E-06	1.58E+06	3.279
beta-BHC	0.000	3.81	USEPA, 1995	3.75	818	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1727	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1577	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	583	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	47032	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	239970	0.00E+00	5.25E+05	0.000

TABLE 4-129
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION JY
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	12295							663.5
Antimony	20							1.5
Arsenic	282							2.1
Barium	182							10.4
Beryllium	1							0.1
Cadmium	15							11.0
Chromium	1170							1.2
Cobalt	17							1.3
Copper	502							4.4
Cyanide	0							0.0
Iron	38229							2305.9
Lead	729							26.1
Manganese	365							4.0
Mercury	2							0.1
Nickel	75							2.0
Selenium	5							0.5
Silver	1							0.1
Thallium	4							0.3
Vanadium	64							5.1
Zinc	2351							173.2

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-c from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.147$
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station
 COPC - Chemical of Potential Concern
 K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)
 K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)
 f_{oc} - Fraction of Organic Carbon in Soil (Unitless)
 K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)
 C_w - Water Concentration (mg/L)
 K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)
 C_v - Concentration in Worms (mg/kg - body weight wet)
 na - one or more parameters not available to calculate C_v

TABLE 4-130
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WG
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	1.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.4	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.082	1.86	USEPA, 1995	1.83	46	1.77E-03	1.82E+01	0.032
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	289	0.00E+00	1.17E+02	0.000
Trichloroethene	0.042	2.71	USEPA, 1995	2.66	317	1.33E-04	1.29E+02	0.017
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	4275	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.001	4.07	USEPA, 1992	4.00	6877	1.45E-07	2.95E+03	0.000
Anthracene	0.018	4.45	USEPA, 1992	4.37	16254	1.11E-06	7.08E+03	0.008
Benzo(a)anthracene	0.130	5.61	USEPA, 1992	5.51	224509	5.79E-07	1.02E+05	0.059
Benzo(a)pyrene	0.160	5.98	USEPA, 1992	5.88	518733	3.08E-07	2.40E+05	0.074
Benzo(b)fluoranthene	0.290	6.57	USEPA, 1992	6.46	1972033	1.47E-07	9.33E+05	0.137
Benzo(g,h,i)perylene	0.120	7.23	USEPA, 1992	7.11	8784036	1.37E-08	4.27E+06	0.058
Benzo(k)fluoranthene	0.200	6.84	USEPA, 1992	6.72	3633491	5.50E-08	1.74E+06	0.096
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.230	5.61	USEPA, 1992	5.51	224509	1.02E-06	1.02E+05	0.105
Dibenz(a,h)anthracene	0.046	5.97	USEPA, 1992	5.87	507124	9.07E-08	2.34E+05	0.021
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	7701	0.00E+00	3.31E+03	0.000
Fluoranthene	0.410	5.33	USEPA, 1992	5.24	119123	3.44E-06	5.37E+04	0.185
Fluorene	0.014	4.18	USEPA, 1992	4.11	8822	1.59E-06	3.80E+03	0.006
Indeno(1,2,3-cd)pyrene	0.140	7.66	USEPA, 1992	7.53	23247921	6.02E-09	1.15E+07	0.069
Naphthalene	0.012	3.37	USEPA, 1992	3.31	1410	8.51E-06	5.89E+02	0.005
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	379	0.00E+00	1.55E+02	0.000
Phenanthrene	0.160	4.46	USEPA, 1992	4.38	16626	9.62E-06	7.24E+03	0.070
Pyrene	0.340	5.18	USEPA, 1992	5.09	84829	4.01E-06	3.80E+04	0.152
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.009	5.99	USEPA, 1992	5.89	530608	1.70E-08	2.45E+05	0.004
4,4'-DDE	0.003	5.69	USEPA, 1992	5.59	269075	1.19E-08	1.23E+05	0.001
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	834400	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	1683078	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.001	6.32	USEPA, 1992	6.21	1119861	8.75E-10	5.25E+05	0.000
Aroclor 1248	0.035	6.2	HSDB, 2000	6.09	853501	4.10E-08	3.98E+05	0.016
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	1683078	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.011	6.8	ATSDR, 2000	6.68	3318976	3.31E-09	1.58E+06	0.005
beta-BHC	0.000	3.81	USEPA, 1995	3.75	3818	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	8058	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	7360	5.98E-08	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	2719	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	219485	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.001	6.32	USEPA, 1995	6.21	1119861	5.27E-10	5.25E+05	0.000

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TABLE 4-130
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WG
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v [§] (mg/kg)
Inorganics (mg/kg)								
Aluminum	16081							867.9
Antimony	9							0.7
Arsenic	263							2.0
Barium	94							5.4
Beryllium	1							0.1
Cadmium	6							5.7
Chromium	930							1.2
Cobalt	21							1.7
Copper	627							4.6
Cyanide	1							0.1
Iron	28490							1718.4
Lead	521							19.9
Manganese	1015							7.9
Mercury	3							0.1
Nickel	35							2.5
Selenium	5							0.4
Silver	1							0.1
Thallium	0							0.0
Vanadium	65							5.2
Zinc	1086							134.4

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.686$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

[§] Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-131
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WH
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{pw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	1.5	0.00E+00	4.79E-01	0.000
Acetone	2.700	-0.24	USEPA, 1995	-0.24	0.5	5.70E+00	1.45E-01	0.824
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	55	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	344	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	376	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	5079	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	8170	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	19310	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	266727	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	616279	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	2342867	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	10435845	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.660	6.84	USEPA, 1992	6.72	4316757	1.53E-07	1.74E+06	0.266
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	266727	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	602487	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	9150	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	141523	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	10480	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	27619614	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	1676	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	451	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	19752	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	100781	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	630388	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	319674	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	991306	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	1999575	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	1330447	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	1013999	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	1999575	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	3943098	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	4536	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	9573	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	8745	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	3230	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	260758	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	1330447	0.00E+00	5.25E+05	0.000

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TABLE 4-131
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WH
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	13414							723.9
Antimony	27							2.1
Arsenic	424							2.7
Barium	94							5.4
Beryllium	1							0.1
Cadmium	10							8.5
Chromium	837							1.2
Cobalt	21							1.7
Copper	572							4.5
Cyanide	1							0.1
Iron	58501							3528.6
Lead	1851							55.3
Manganese	442							4.5
Mercury	1							0.1
Nickel	42							2.4
Selenium	3							0.4
Silver	0							0.0
Thallium	1							0.1
Vanadium	97							7.7
Zinc	2139							167.9

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.815$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-132
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.3	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.1	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	10	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	62	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	68	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	916	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	1474	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	3483	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	111157	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	422578	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	1882293	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	778605	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	48109	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	108669	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	1650	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	25526	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	1890	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	4981697	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	302	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	81	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	3563	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	18178	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	113702	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	57659	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	178800	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	360659	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	239970	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	182893	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	360659	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	711209	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	818	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	1727	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1577	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	583	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	47032	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	239970	0.00E+00	5.25E+05	0.000

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TABLE 4-132
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	10523							567.9
Antimony	5							0.4
Arsenic	226							1.8
Barium	140							8.0
Beryllium	1							0.1
Cadmium	11							8.7
Chromium	728							1.2
Cobalt	25							2.0
Copper	414							4.2
Cyanide	6							0.5
Iron	37159							2241.3
Lead	367							15.0
Manganese	1215							9.0
Mercury	1							0.1
Nickel	36							2.5
Selenium	3							0.3
Silver	0							0.0
Thallium	1							0.1
Vanadium	45							3.6
Zinc	2044							165.5

Notes:

- ^a $\log_{10} (K_{oc}) = 0.983 \log_{10} (K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.147$; Station JY used to represent this station
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10} (K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-133
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 20
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.108	0.28	USEPA, 1995	0.28	0.5	2.03E-01	4.79E-01	0.097
Acetone	0.590	-0.24	USEPA, 1995	-0.24	0.2	3.61E+00	1.45E-01	0.522
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	19	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	118	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	130	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	1751	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	2817	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	6658	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	1.100	5.61	USEPA, 1992	5.51	91964	1.20E-05	1.02E+05	1.224
Benzo(a)pyrene	1.200	5.98	USEPA, 1992	5.88	212484	5.65E-06	2.40E+05	1.355
Benzo(b)fluoranthene	3.700	6.57	USEPA, 1992	6.46	807786	4.58E-06	9.33E+05	4.275
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	3598126	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	1488354	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	1.500	5.61	USEPA, 1992	5.51	91964	1.63E-05	1.02E+05	1.669
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	207729	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	3155	0.00E+00	3.31E+03	0.000
Fluoranthene	3.000	5.33	USEPA, 1992	5.24	48795	6.15E-05	5.37E+04	3.302
Fluorene	0.000	4.18	USEPA, 1992	4.11	3613	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.830	7.66	USEPA, 1992	7.53	9522836	8.72E-08	1.15E+07	1.001
Naphthalene	0.000	3.37	USEPA, 1992	3.31	578	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	155	0.00E+00	1.55E+02	0.000
Phenanthrene	0.890	4.46	USEPA, 1992	4.38	6810	1.31E-04	7.24E+03	0.947
Pyrene	2.500	5.18	USEPA, 1992	5.09	34748	7.19E-05	3.80E+04	2.735
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.032	5.99	USEPA, 1992	5.89	217348	1.47E-07	2.45E+05	0.036
4,4'-DDE	0.032	5.69	USEPA, 1992	5.59	110219	2.90E-07	1.23E+05	0.036
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	341788	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	689424	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.049	6.32	USEPA, 1992	6.21	458719	1.07E-07	5.25E+05	0.056
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	349612	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	689424	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	1359522	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	1564	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	3301	0.00E+00	3.47E+03	0.000
Endosulfan I	0.042	4.1	USEPA, 1995	4.03	3015	1.39E-05	3.16E+03	0.044
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1114	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	89906	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^g	0.012	6.32	USEPA, 1995	6.21	458719	2.59E-08	5.25E+05	0.014

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TABLE 4-133
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 20
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^f (mg/kg)
Inorganics (mg/kg)								
Aluminum	29700							1602.9
Antimony	5							0.4
Arsenic	321							2.3
Barium	151							8.6
Beryllium	2							0.2
Cadmium	19							13.4
Chromium	1860							1.1
Cobalt	46							3.7
Copper	1075							5.4
Cyanide	0							0.0
Iron	43800							2641.9
Lead	1200							39.0
Manganese	902							7.3
Mercury	3							0.1
Nickel	58							2.2
Selenium	11							0.9
Silver	2							0.1
Thallium	4							0.3
Vanadium	115							9.1
Zinc	3470							196.8

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.281$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-134
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 22/TT-22
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.8	0.00E+00	4.79E-01	0.000
Acetone	2.400	-0.24	USEPA, 1995	-0.24	0.3	9.36E+00	1.45E-01	1.353
cis-1,2-Dichloroethene	0.073	1.86	USEPA, 1995	1.83	30	2.46E-03	1.82E+01	0.045
Tetrachloroethene	2.762	2.67	USEPA, 1995	2.62	186	1.49E-02	1.17E+02	1.746
Trichloroethene	0.698	2.71	USEPA, 1995	2.66	204	3.43E-03	1.29E+02	0.442
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.013	3.86	USEPA, 1992	3.79	2749	4.73E-06	1.82E+03	0.009
Acenaphthylene	0.012	4.07	USEPA, 1992	4.00	4421	2.71E-06	2.95E+03	0.008
Anthracene	0.046	4.45	USEPA, 1992	4.37	10449	4.40E-06	7.08E+03	0.031
Benzo(a)anthracene	0.300	5.61	USEPA, 1992	5.51	144327	2.08E-06	1.02E+05	0.213
Benzo(a)pyrene	0.200	5.98	USEPA, 1992	5.88	333471	6.00E-07	2.40E+05	0.144
Benzo(b)fluoranthene	0.440	6.57	USEPA, 1992	6.46	1267735	3.47E-07	9.33E+05	0.324
Benzo(g,h,i)perylene	0.190	7.23	USEPA, 1992	7.11	5646880	3.36E-08	4.27E+06	0.144
Benzo(k)fluoranthene	0.540	6.84	USEPA, 1992	6.72	2335816	2.31E-07	1.74E+06	0.402
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.400	5.61	USEPA, 1992	5.51	144327	2.77E-06	1.02E+05	0.284
Dibenz(a,h)anthracene	0.044	5.97	USEPA, 1992	5.87	326008	1.35E-07	2.34E+05	0.032
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	4951	0.00E+00	3.31E+03	0.000
Fluoranthene	0.797	5.33	USEPA, 1992	5.24	76579	1.04E-05	5.37E+04	0.559
Fluorene	0.026	4.18	USEPA, 1992	4.11	5671	4.58E-06	3.80E+03	0.017
Indeno(1,2,3-cd)pyrene	0.220	7.66	USEPA, 1992	7.53	14945092	1.47E-08	1.15E+07	0.169
Naphthalene	0.025	3.37	USEPA, 1992	3.31	907	2.76E-05	5.89E+02	0.016
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	244	0.00E+00	1.55E+02	0.000
Phenanthrene	0.490	4.46	USEPA, 1992	4.38	10688	4.58E-05	7.24E+03	0.332
Pyrene	0.610	5.18	USEPA, 1992	5.09	54533	1.12E-05	3.80E+04	0.425
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.010	5.99	USEPA, 1992	5.89	341105	2.81E-08	2.45E+05	0.007
4,4'-DDE	0.031	5.69	USEPA, 1992	5.59	172977	1.79E-07	1.23E+05	0.022
4,4'-DDT	0.003	6.19	USEPA, 1992	6.09	536400	5.03E-09	3.89E+05	0.002
Aldrin	0.000	6.5	USEPA, 1995	6.39	1081978	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.001	6.32	USEPA, 1992	6.21	719911	1.67E-09	5.25E+05	0.001
Aroclor 1248	0.008	6.2	HSDB, 2000	6.09	548679	1.48E-08	3.98E+05	0.006
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	1081978	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.029	6.8	ATSDR, 2000	6.68	2133627	1.36E-08	1.58E+06	0.022
beta-BHC	0.000	3.81	USEPA, 1995	3.75	2454	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	5180	3.09E-08	3.47E+03	0.000
Endosulfan I	0.004	4.1	USEPA, 1995	4.03	4732	9.07E-07	3.16E+03	0.003
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	1748	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.003	5.6	USEPA, 1992	5.51	141097	2.34E-08	1.00E+05	0.002
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	719911	2.64E-10	5.25E+05	0.000

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TABLE 4-134
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION 22/TT-22
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	10258							553.6
Antimony	329							26.1
Arsenic	77							0.8
Barium	49							2.8
Beryllium	1							0.1
Cadmium	1							1.8
Chromium	65							1.4
Cobalt	4							0.3
Copper	29							2.1
Cyanide	0							0.0
Iron	9142							551.4
Lead	32501							558.6
Manganese	116							1.8
Mercury	0							0.1
Nickel	11							3.3
Selenium	6							0.5
Silver	3							0.2
Thallium	1							0.0
Vanadium	41							3.2
Zinc	96							60.6

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.441$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-135
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-05
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	4	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	23	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	25	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	343	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	551	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	1303	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	18000	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	41589	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	158108	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	704259	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	291315	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	18000	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	40659	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	617	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	9551	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	707	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1863900	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	113	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	30	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	1333	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	6801	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	42541	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	21573	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	66898	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	134941	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	89785	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	68429	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	134941	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	266099	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	306	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	646	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	590	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	218	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	17597	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^f	0.000	6.32	USEPA, 1995	6.21	89785	0.00E+00	5.25E+05	0.000

US EPA ARCHIVE DOCUMENT

TABLE 4-135
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION CB-05
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	6210							335.1
Antimony	1							0.1
Arsenic	60							0.7
Barium	31							1.8
Beryllium	0							0.0
Cadmium	1							1.0
Chromium	138							1.4
Cobalt	7							0.5
Copper	50							2.4
Cyanide	0							0.0
Iron	11469							691.8
Lead	62							3.6
Manganese	226							2.8
Mercury	0							0.1
Nickel	10							3.4
Selenium	1							0.1
Silver	0							0.0
Thallium	2							0.1
Vanadium	26							2.1
Zinc	166							72.6

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.055$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

TABLE 4-136
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION DA
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	15	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	16	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	218	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	351	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	829	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	11455	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	26466	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	100614	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	448165	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	185382	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	11455	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	25874	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	393	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	6078	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	450	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1186118	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	72	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	19	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	848	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	4328	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	27072	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	13728	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	42571	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	85871	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	57136	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	43546	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	85871	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	169336	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	195	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	411	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	376	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	139	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	11198	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	57136	0.00E+00	5.25E+05	0.000

TABLE 4-136
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION DA
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	9392							506.9
Antimony	1							0.1
Arsenic	195							1.6
Barium	66							3.8
Beryllium	1							0.0
Cadmium	5							4.4
Chromium	391							1.3
Cobalt	26							2.0
Copper	249							3.6
Cyanide	0							0.0
Iron	33507							2021.0
Lead	214							9.7
Manganese	2850							16.1
Mercury	3							0.1
Nickel	17							3.0
Selenium	2							0.2
Silver	0							0.0
Thallium	3							0.3
Vanadium	38							3.0
Zinc	593							110.2

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.035$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{tw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{tw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{tw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-137
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION NRSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{ow} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.0	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	10	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	11	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	150	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	241	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	569	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	7855	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	18148	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	68992	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	307313	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	127119	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	7855	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	17742	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	269	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	4168	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	309	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	813338	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	49	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	13	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	582	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	2968	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	18564	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	9414	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	29192	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	58883	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	39179	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	29860	0.00E+00	3.98E+05	0.000
Arclor 1254	0.000	6.5	ATSDR, 2000	6.39	58883	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	116116	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	134	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	282	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	258	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	95	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	7679	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	39179	0.00E+00	5.25E+05	0.000

US EPA ARCHIVE DOCUMENT

TABLE 4-137
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION NRSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	6701							361.7
Antimony	1							0.1
Arsenic	201							1.6
Barium	60							3.4
Beryllium	0							0.0
Cadmium	2							2.4
Chromium	172							1.3
Cobalt	10							0.8
Copper	171							3.3
Cyanide	0							0.0
Iron	28575							1723.6
Lead	144							7.1
Manganese	830							6.9
Mercury	2							0.1
Nickel	13							3.2
Selenium	2							0.2
Silver	2							0.2
Thallium	1							0.1
Vanadium	25							2.0
Zinc	525							106.0

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.024$
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station
 COPC - Chemical of Potential Concern
 K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)
 K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)
 f_{oc} - Fraction of Organic Carbon in Soil (Unitless)
 K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)
 C_w - Water Concentration (mg/L)
 K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)
 C_v - Concentration in Worms (mg/kg - body weight wet)
 na - one or more parameters not available to calculate C_s

TABLE 4-138
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION KFSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatiles Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	3	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	18	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	19	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	262	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	421	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	995	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	13745	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	31759	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	120737	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	537798	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	222459	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	13745	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	31048	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	472	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	7293	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	540	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	1423342	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	86	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	23	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	1018	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	5194	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	32486	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	16474	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	51086	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	103046	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	68563	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	52255	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	103046	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	203203	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	234	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	493	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	451	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	166	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	13438	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	68563	0.00E+00	5.25E+05	0.000

TABLE 4-138
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION KFSO
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	6302							340.1
Antimony	1							0.1
Arsenic	46							0.6
Barium	61							3.5
Beryllium	0							0.0
Cadmium	1							1.7
Chromium	120							1.4
Cobalt	10							0.8
Copper	108							2.9
Cyanide	0							0.0
Iron	17015							1026.3
Lead	192							8.9
Manganese	816							6.8
Mercury	1							0.1
Nickel	14							3.1
Selenium	1							0.1
Silver	1							0.1
Thallium	1							0.1
Vanadium	29							2.3
Zinc	393							96.3

Notes:

- ^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)
- ^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.042$
- ^c $C_w = C_s / K_d$
- ^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$
- ^e $C_v = K_{bw} \times C_w$
- ^f $\log_{10}(K_{ow})$ Value is for Chlordane
- ^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-139
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WSS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.000	0.28	USEPA, 1995	0.28	0.1	0.00E+00	4.79E-01	0.000
Acetone	0.000	-0.24	USEPA, 1995	-0.24	0.0	0.00E+00	1.45E-01	0.000
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	2	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.000	2.67	USEPA, 1995	2.62	12	0.00E+00	1.17E+02	0.000
Trichloroethene	0.000	2.71	USEPA, 1995	2.66	13	0.00E+00	1.29E+02	0.000
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.000	3.86	USEPA, 1992	3.79	175	0.00E+00	1.82E+03	0.000
Acenaphthylene	0.000	4.07	USEPA, 1992	4.00	281	0.00E+00	2.95E+03	0.000
Anthracene	0.000	4.45	USEPA, 1992	4.37	663	0.00E+00	7.08E+03	0.000
Benzo(a)anthracene	0.000	5.61	USEPA, 1992	5.51	9164	0.00E+00	1.02E+05	0.000
Benzo(a)pyrene	0.000	5.98	USEPA, 1992	5.88	21173	0.00E+00	2.40E+05	0.000
Benzo(b)fluoranthene	0.000	6.57	USEPA, 1992	6.46	80491	0.00E+00	9.33E+05	0.000
Benzo(g,h,i)perylene	0.000	7.23	USEPA, 1992	7.11	358532	0.00E+00	4.27E+06	0.000
Benzo(k)fluoranthene	0.000	6.84	USEPA, 1992	6.72	148306	0.00E+00	1.74E+06	0.000
Carbazole	0.000	na	na	na	na	na	na	na
Chrysene	0.000	5.61	USEPA, 1992	5.51	9164	0.00E+00	1.02E+05	0.000
Dibenz(a,h)anthracene	0.000	5.97	USEPA, 1992	5.87	20699	0.00E+00	2.34E+05	0.000
Dibenzofuran	0.000	4.12	USEPA, 1992	4.05	314	0.00E+00	3.31E+03	0.000
Fluoranthene	0.000	5.33	USEPA, 1992	5.24	4862	0.00E+00	5.37E+04	0.000
Fluorene	0.000	4.18	USEPA, 1992	4.11	360	0.00E+00	3.80E+03	0.000
Indeno(1,2,3-cd)pyrene	0.000	7.66	USEPA, 1992	7.53	948895	0.00E+00	1.15E+07	0.000
Naphthalene	0.000	3.37	USEPA, 1992	3.31	58	0.00E+00	5.89E+02	0.000
N-nitrosodiphenylamine	0.000	2.79	USEPA, 1992	2.74	15	0.00E+00	1.55E+02	0.000
Phenanthrene	0.000	4.46	USEPA, 1992	4.38	679	0.00E+00	7.24E+03	0.000
Pyrene	0.000	5.18	USEPA, 1992	5.09	3462	0.00E+00	3.80E+04	0.000
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.000	5.99	USEPA, 1992	5.89	21657	0.00E+00	2.45E+05	0.000
4,4'-DDE	0.000	5.69	USEPA, 1992	5.59	10983	0.00E+00	1.23E+05	0.000
4,4'-DDT	0.000	6.19	USEPA, 1992	6.09	34057	0.00E+00	3.89E+05	0.000
Aldrin	0.000	6.5	USEPA, 1995	6.39	68697	0.00E+00	7.94E+05	0.000
alpha-Chlordane ^f	0.000	6.32	USEPA, 1992	6.21	45709	0.00E+00	5.25E+05	0.000
Aroclor 1248	0.000	6.2	HSDB, 2000	6.09	34837	0.00E+00	3.98E+05	0.000
Aroclor 1254	0.000	6.5	ATSDR, 2000	6.39	68697	0.00E+00	7.94E+05	0.000
Aroclor 1260	0.000	6.8	ATSDR, 2000	6.68	135468	0.00E+00	1.58E+06	0.000
beta-BHC	0.000	3.81	USEPA, 1995	3.75	156	0.00E+00	1.62E+03	0.000
delta-BHC	0.000	4.14	USEPA, 1992	4.07	329	0.00E+00	3.47E+03	0.000
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	300	0.00E+00	3.16E+03	0.000
Endosulfan Sulfate	0.000	3.66	USEPA, 1992	3.60	111	0.00E+00	1.15E+03	0.000
Endrin Aldehyde	0.000	5.6	USEPA, 1992	5.51	8959	0.00E+00	1.00E+05	0.000
gamma-Chlordane ^l	0.000	6.32	USEPA, 1995	6.21	45709	0.00E+00	5.25E+05	0.000

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TABLE 4-139
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
STATION WSS
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	9201							496.6
Antimony	1							0.1
Arsenic	10							0.2
Barium	40							2.3
Beryllium	0							0.0
Cadmium	0							0.6
Chromium	18							1.6
Cobalt	5							0.4
Copper	34							2.1
Cyanide	0							0.0
Iron	10800							651.4
Lead	82							4.5
Manganese	189							2.5
Mercury	0							0.1
Nickel	9							3.5
Selenium	1							0.1
Silver	0							0.0
Thallium	1							0.1
Vanadium	24							1.9
Zinc	72							55.2

Notes:

^a $\log_{10} (K_{oc}) = 0.983 \log_{10} (K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.028$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10} (K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-140
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
WETLAND REFERENCE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.009	0.28	USEPA, 1995	0.28	0.2	3.53E-02	4.79E-01	0.017
Acetone	0.034	-0.24	USEPA, 1995	-0.24	0.1	4.55E-01	1.45E-01	0.066
cis-1,2-Dichloroethene	0.012	1.86	USEPA, 1995	1.83	9	1.32E-03	1.82E+01	0.024
Tetrachloroethene	0.013	2.67	USEPA, 1995	2.62	54	2.38E-04	1.17E+02	0.028
Trichloroethene	0.009	2.71	USEPA, 1995	2.66	60	1.53E-04	1.29E+02	0.020
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.195	3.86	USEPA, 1992	3.79	804	2.42E-04	1.82E+03	0.441
Accenaphthylene	0.243	4.07	USEPA, 1992	4.00	1293	1.88E-04	2.95E+03	0.553
Anthracene	0.440	4.45	USEPA, 1992	4.37	3056	1.44E-04	7.08E+03	1.020
Benzo(a)anthracene	1.360	5.61	USEPA, 1992	5.51	42218	3.22E-05	1.02E+05	3.296
Benzo(a)pyrene	1.233	5.98	USEPA, 1992	5.88	97546	1.26E-05	2.40E+05	3.033
Benzo(b)fluoranthene	2.188	6.57	USEPA, 1992	6.46	370834	5.90E-06	9.33E+05	5.507
Benzo(g,h,i)perylene	0.376	7.23	USEPA, 1992	7.11	1651809	2.28E-07	4.27E+06	0.971
Benzo(k)fluoranthene	2.023	6.84	USEPA, 1992	6.72	683266	2.96E-06	1.74E+06	5.144
Carbazole	0.323	na	na	na	na	na	na	na
Chrysene	1.610	5.61	USEPA, 1992	5.51	42218	3.81E-05	1.02E+05	3.902
Dibenz(a,h)anthracene	0.234	5.97	USEPA, 1992	5.87	95363	2.46E-06	2.34E+05	0.576
Dibenzofuran	0.357	4.12	USEPA, 1992	4.05	1448	2.47E-04	3.31E+03	0.816
Fluoranthene	3.293	5.33	USEPA, 1992	5.24	22401	1.47E-04	5.37E+04	7.895
Fluorene	0.568	4.18	USEPA, 1992	4.11	1659	3.43E-04	3.80E+03	1.303
Indeno(1,2,3-cd)pyrene	0.518	7.66	USEPA, 1992	7.53	4371694	1.18E-07	1.15E+07	1.359
Naphthalene	0.221	3.37	USEPA, 1992	3.31	265	8.35E-04	5.89E+02	0.491
N-nitrosodiphenylamine	0.367	2.79	USEPA, 1992	2.74	71	5.14E-03	1.55E+02	0.797
Phenanthrene	2.408	4.46	USEPA, 1992	4.38	3126	7.70E-04	7.24E+03	5.580
Pyrene	2.577	5.18	USEPA, 1992	5.09	15952	1.62E-04	3.80E+04	6.141
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.095	5.99	USEPA, 1992	5.89	99779	9.49E-07	2.45E+05	0.233
4,4'-DDE	0.013	5.69	USEPA, 1992	5.59	50599	2.49E-07	1.23E+05	0.031
4,4'-DDT	0.034	6.19	USEPA, 1992	6.09	156906	2.18E-07	3.89E+05	0.085
Aldrin	0.001	6.5	USEPA, 1995	6.39	316497	2.42E-09	7.94E+05	0.002
alpha-Chlordane ^f	0.002	6.32	USEPA, 1992	6.21	210586	8.68E-09	5.25E+05	0.005
Aroclor 1248	0.064	6.2	HSDB, 2000	6.09	160498	3.98E-07	3.98E+05	0.158
Aroclor 1254	0.016	6.5	ATSDR, 2000	6.39	316497	4.98E-08	7.94E+05	0.040
Aroclor 1260	0.049	6.8	ATSDR, 2000	6.68	624122	7.82E-08	1.58E+06	0.124
beta-BHC	0.001	3.81	USEPA, 1995	3.75	718	1.11E-06	1.62E+03	0.002
delta-BHC	0.001	4.14	USEPA, 1992	4.07	1515	6.12E-07	3.47E+03	0.002
Endosulfan I	0.001	4.1	USEPA, 1995	4.03	1384	5.64E-07	3.16E+03	0.002
Endosulfan Sulfate	0.003	3.66	USEPA, 1992	3.60	511	4.95E-06	1.15E+03	0.006
Endrin Aldehyde	0.002	5.6	USEPA, 1992	5.51	41273	5.73E-08	1.00E+05	0.006
gamma-Chlordane ^f	0.002	6.32	USEPA, 1995	6.21	210586	1.02E-08	5.25E+05	0.005

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TABLE 4-140
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
AVERAGE EXPOSURE CASE
WETLAND REFERENCE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^g (mg/kg)
Inorganics (mg/kg)								
Aluminum	8195							442.3
Antimony	1							0.1
Arsenic	21							0.3
Barium	48							2.7
Beryllium	1							0.1
Cadmium	1							1.6
Chromium	129							1.4
Cobalt	8							0.7
Copper	57							2.5
Cyanide	0							0.0
Iron	15518							936.0
Lead	332							13.8
Manganese	133							2.0
Mercury	0							0.1
Nickel	19							2.9
Selenium	1							0.1
Silver	1							0.1
Thallium	0							0.0
Vanadium	56							4.4
Zinc	155							70.9

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$; average $f_{oc} = 0.129$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - average COPC concentration in sediment (mg/kg); averages obtained by averaging samples collected within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculate C_v

TABLE 4-141
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
WETLAND REFERENCE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s	log ₁₀ (K _{ow})	Source	log ₁₀ (K _{oc}) ^a	K _d ^b	C _w ^c	K _{bw} ^d	C _v ^e (mg/kg)
Volatile Organics (mg/kg)								
2-Butanone	0.013	0.28	USEPA, 1995	0.28	0.2	5.42E-02	4.79E-01	0.026
Acetone	0.071	-0.24	USEPA, 1995	-0.24	0.1	9.48E-01	1.45E-01	0.137
cis-1,2-Dichloroethene	0.000	1.86	USEPA, 1995	1.83	9	0.00E+00	1.82E+01	0.000
Tetrachloroethene	0.033	2.67	USEPA, 1995	2.62	54	5.99E-04	1.17E+02	0.070
Trichloroethene	0.012	2.71	USEPA, 1995	2.66	60	2.00E-04	1.29E+02	0.026
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	0.289	3.86	USEPA, 1992	3.79	804	3.60E-04	1.82E+03	0.654
Acenaphthylene	0.690	4.07	USEPA, 1992	4.00	1293	5.34E-04	2.95E+03	1.576
Anthracene	1.656	4.45	USEPA, 1992	4.37	3056	5.42E-04	7.08E+03	3.836
Benzo(a)anthracene	5.406	5.61	USEPA, 1992	5.51	42218	1.28E-04	1.02E+05	13.103
Benzo(a)pyrene	4.904	5.98	USEPA, 1992	5.88	97546	5.03E-05	2.40E+05	12.060
Benzo(b)fluoranthene	9.363	6.57	USEPA, 1992	6.46	370834	2.52E-05	9.33E+05	23.562
Benzo(g,h,i)perylene	0.627	7.23	USEPA, 1992	7.11	1651809	3.79E-07	4.27E+06	1.618
Benzo(k)fluoranthene	9.464	6.84	USEPA, 1992	6.72	683266	1.39E-05	1.74E+06	24.070
Carbazole	0.990	na	na	na	na	na	na	na
Chrysene	6.684	5.61	USEPA, 1992	5.51	42218	1.58E-04	1.02E+05	16.200
Dibenz(a,h)anthracene	0.350	5.97	USEPA, 1992	5.87	95363	3.67E-06	2.34E+05	0.859
Dibenzofuran	1.000	4.12	USEPA, 1992	4.05	1448	6.91E-04	3.31E+03	2.286
Fluoranthene	15.000	5.33	USEPA, 1992	5.24	22401	6.70E-04	5.37E+04	35.961
Fluorene	1.369	4.18	USEPA, 1992	4.11	1659	8.26E-04	3.80E+03	3.139
Indeno(1,2,3-cd)pyrene	1.405	7.66	USEPA, 1992	7.53	4371694	3.21E-07	1.15E+07	3.690
Naphthalene	0.359	3.37	USEPA, 1992	3.31	265	1.35E-03	5.89E+02	0.797
N-nitrosodiphenylamine	2.035	2.79	USEPA, 1992	2.74	71	2.85E-02	1.55E+02	4.416
Phenanthrene	12.000	4.46	USEPA, 1992	4.38	3126	3.84E-03	7.24E+03	27.806
Pyrene	10.736	5.18	USEPA, 1992	5.09	15952	6.73E-04	3.80E+04	25.587
Pesticides and PCBs (mg/kg)								
4,4'-DDD	0.390	5.99	USEPA, 1992	5.89	99779	3.91E-06	2.45E+05	0.959
4,4'-DDE	0.023	5.69	USEPA, 1992	5.59	50599	4.62E-07	1.23E+05	0.057
4,4'-DDT	0.130	6.19	USEPA, 1992	6.09	156906	8.29E-07	3.89E+05	0.322
Aldrin	0.001	6.5	USEPA, 1995	6.39	316497	3.63E-09	7.94E+05	0.003
alpha-Chlordane ^f	0.004	6.32	USEPA, 1992	6.21	210586	1.99E-08	5.25E+05	0.010
Aroclor 1248	0.290	6.2	HSDB, 2000	6.09	160498	1.81E-06	3.98E+05	0.719
Aroclor 1254	0.023	6.5	ATSDR, 2000	6.39	316497	7.18E-08	7.94E+05	0.057
Aroclor 1260	0.200	6.8	ATSDR, 2000	6.68	624122	3.20E-07	1.58E+06	0.508
beta-BHC	0.000	3.81	USEPA, 1995	3.75	718	5.57E-07	1.62E+03	0.001
delta-BHC	0.001	4.14	USEPA, 1992	4.07	1515	7.58E-07	3.47E+03	0.003
Endosulfan I	0.000	4.1	USEPA, 1995	4.03	1384	1.59E-07	3.16E+03	0.001
Endosulfan Sulfate	0.005	3.66	USEPA, 1992	3.60	511	9.59E-06	1.15E+03	0.011
Endrin Aldehyde	0.005	5.6	USEPA, 1992	5.51	41273	1.11E-07	1.00E+05	0.011
gamma-Chlordane ^l	0.004	6.32	USEPA, 1995	6.21	210586	1.72E-08	5.25E+05	0.009

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TABLE 4-141
ESTIMATION OF COPC CONCENTRATIONS IN EARTHWORM TISSUE
MAXIMUM EXPOSURE CASE
WETLAND REFERENCE
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	C _s							C _v ^a (mg/kg)
Inorganics (mg/kg)								
Aluminum	12242							660.7
Antimony	1							0.1
Arsenic	33							0.4
Barium	72							4.1
Beryllium	1							0.1
Cadmium	2							2.4
Chromium	410							1.3
Cobalt	13							1.0
Copper	93							2.8
Cyanide	0							0.0
Iron	22525							1358.7
Lead	524							20.0
Manganese	210							2.7
Mercury	1							0.1
Nickel	27							2.7
Selenium	2							0.2
Silver	3							0.2
Thallium	1							0.1
Vanadium	99							7.9
Zinc	232							81.0

Notes:

^a $\log_{10}(K_{oc}) = 0.983 \log_{10}(K_{ow}) + 0.00028$ (equations in footnotes a-e from Sample *et al.*, 1997)

^b $K_d = f_{oc} \times K_{oc}$, average $f_{oc} = 0.129$

^c $C_w = C_s / K_d$

^d $\log_{10} K_{bw} = \log_{10} K_{ow} - 0.6$

^e $C_v = K_{bw} \times C_w$

^f $\log_{10}(K_{ow})$ Value is for Chlordane

^g Values for As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, and Zn based on regression analyses on literature derived soil-biota uptake data provided in Sample *et al.* (1998). Concentration factors for Al, Ba, and Fe taken from Beyer and Stafford (1993). An uptake factor of 0.5 was conservatively assumed for Sb, Be, Co, Ag, Tl, and V.

C_s - (5% UCL or Maximum COPC concentration in sediment (mg/kg) within a station

COPC - Chemical of Potential Concern

K_{ow} - Octanol/Water Partitioning Coefficient (Unitless)

K_{oc} - Water/Soil Organic Carbon Partitioning Coefficient (L/kg)

f_{oc} - Fraction of Organic Carbon in Soil (Unitless)

K_d - Soil/Water Partitioning Coefficient (L/kg Sediment)

C_w - Water Concentration (mg/L)

K_{bw} - Biota/Water Partitioning Coefficient (L/kg Organism)

C_v - Concentration in Worms (mg/kg - body weight wet)

na - one or more parameters not available to calculated C_v

**TABLE 4-142
TOXICITY REFERENCE VALUES FOR MUSKRAT**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Volatile Organics										
2-Butanone	rat	0.35	oral gavage (intermediate)	13 wk	neurological	121	LOAEL	12.1	ATSDR, 1992a	9.7
Acetone	rat	0.35	oral in water (intermediate)	13 wk	reproductive	1700	NOAEL	1700	ATSDR, 1994a	1367.1
cis-1,2-Dichloroethene	rat	0.35	oral in water (intermediate)	90 d	systemic	3114	NOAEL	3114	ATSDR, 1994b	2504.1
Tetrachloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	14	NOAEL	14	Sample et al., 1996	6.1
Trichloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	70	LOAEL	7	Sample et al., 1996	3.0
Semivolatile Organics										
2-Methylnaphthalene (1-methylnaphthalene)	mouse	0.03	oral in food (chronic)	81 wk	systemic	143.7	NOAEL	143.7	ATSDR, 1995a	62.5
Acenaphthylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0
Anthracene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	1000	NOAEL	1000	ATSDR, 1995b	435.1
Benzo(a)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Benzo(a)pyrene	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Benzo(b)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Benzo(g,h,i)perylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0
Benzo(k)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Carbazole ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0
Chrysene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Dibenz(a,h)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Dibenzofuran ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0
Fluoranthene	mouse	0.03	oral gavage (intermediate)	13 wk	hepatic	125	NOAEL	125	ATSDR, 1995b	54.4
Fluorene	mouse	0.03	oral gavage (intermediate)	13 wk	hematological	125	NOAEL	125	ATSDR, 1995b	54.4
Indeno(1,2,3-cd)pyrene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	0.6
Naphthalene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	140	NOAEL	140	ATSDR, 1995a	60.9
N-nitrosodiphenylamine	rat	0.35	oral in food (intermediate)	8-11 wk	systemic	150	NOAEL	150	ATSDR, 1993	120.6
Phenanthrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0
Pyrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	58.0

**TABLE 4-142
TOXICITY REFERENCE VALUES FOR MUSKRAT**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Pesticides/PCBs										
4,4'-DDD	rat	0.35	oral in food (chronic)	78 wk	cancer	85	LOAEL	9	ATSDR, 1994c	6.8
4,4'-DDE	mouse	0.03	oral in food (chronic)	78 wk	cancer	19	LOAEL	1.9	ATSDR, 1994c	0.8
4,4'-DDT	rat	0.35	oral in diet (chronic)	2 year	reproductive	0.80	NOAEL	0.80	Sample et al., 1996	0.6
Aldrin	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.2
alpha-Chlordane	mouse	0.03	oral in diet (chronic)	6 gen	reproductive	4.58	NOAEL	4.58	Sample et al., 1996	2.0
Aroclor-1248	mouse	0.03	oral in food (intermediate)	5 wk	immunological	13.0	LOAEL	1.3	ATSDR, 2000	0.6
Aroclor-1254	mink	1.00	oral in diet (chronic)	4.5 months	reproductive	0.1	NOAEL	0.14	Sample et al., 1996	0.1
Aroclor-1260	rat	0.35	oral in food (chronic)	24 months	cancer	3.45	LOAEL	0.35	ATSDR, 2000	0.3
beta-BHC	rat	0.35	oral in diet (subchronic)	13 wk	systemic, hematological	4	NOAEL	4	Sample et al., 1996	3.2
delta-BHC (mixed isomers)	rat	0.35	oral in diet (chronic)	4 gen	reproductive	1.6	NOAEL	1.6	Sample et al., 1996	1.3
Endosulfan I	rat	0.35	oral intubation (subchronic)	30 d	reproductive	1.50	NOAEL	1.5	Sample et al., 1996	1.2
Endosulfan Sulfate (Endosulfan)	rat	0.35	oral (subchronic)	30 d	reproductive	1.50	NOAEL	1.5	Sample et al., 1996	1.2
Endrin aldehyde (Endrin)	mouse	0.03	oral in diet (chronic)	120 d	reproductive	0.92	LOAEL	0.09	Sample et al., 1996	0.04
gamma-Chlordane (Chlordane)	mouse	0.03	oral in diet (chronic)	6 gen	reproductive	4.60	NOAEL	4.58	Sample et al., 1996	2.0
Metals										
Aluminum (Aluminum chloride)	rat	0.35	oral in water (chronic)	116 d	reproductive	52	NOAEL	52	ATSDR, 1999	41.8
Antimony (Antimony potassium tartrate)	mouse	0.03	oral in water (chronic)	lifetime, >1 year	lifespan	1.25	LOAEL	0.125	Sample et al., 1996	0.05
Arsenic (Arsenite)	mouse	0.03	oral in water (chronic)	3 gen	reproductive	1.26	LOAEL	0.126	Sample et al., 1996	0.05
Barium (Barium chloride)	rat	0.435	oral in water (chronic)	16 months	growth	5.1	NOAEL	5.1	Sample et al., 1996	4.3
Beryllium (Beryllium sulfate)	rat	0.35	oral in water (chronic)	lifetime, >1 year	longevity	0.66	NOAEL	0.66	Sample et al., 1996	0.5
Cadmium (Cadmium chloride)	rat	0.30	oral gavage (chronic)	6 weeks	reproductive	1.0	NOAEL	1.0	Sample et al., 1996	0.8
Chromium (Chromium Chloride)	rat	0.35	oral in food (subchronic)	20 weeks	systemic	9	NOAEL	9	ATSDR, 2000	7
Cobalt	rat	0.35	oral in food (intermediate)	69 d	reproductive	5	NOAEL	5	ATSDR, 1992d	4.0
Copper (Copper sulfate)	mink	1.0	oral in diet (chronic)	357 d	reproductive	11.7	NOAEL	11.7	Sample et al., 1996	12.2
Cyanide (Potassium cyanide)	rat	0.3	oral in diet (chronic)	gestation, lactation	reproductive	68.7	NOAEL	68.7	Sample et al., 1996	51.9
Iron (Ferrous sulfate)	rat	0.35	oral (acute)	1 time	mortality	319	LD50	3.19	USEPA, 1984	2.6
Lead (Lead acetate)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	8.0	NOAEL	8.0	Sample et al., 1996	6.4
Manganese (Manganese oxide)	rat	0.35	oral in diet (chronic)	224 d	reproductive	88	NOAEL	88	Sample et al., 1996	70.8
Mercury (Methyl mercury chloride)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.032	NOAEL	0.032	Sample et al., 1996	0.03
Nickel (Nickel sulfate hexahydrate)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	40	NOAEL	40	Sample et al., 1996	32.2
Selenium (Selenate)	rat	0.35	oral in water (chronic)	1 year	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.2
Silver	rat	0.35	oral in water (acute)	2 wk	mortality	181.2	NOAEL	181.2	ATSDR, 1990	145.7
Thallium (Thallium sulfate)	rat	0.37	oral in water (subchronic)	60 d	reproductive	0.74	LOAEL	0.074	Sample et al., 1996	0.1
Vanadium (Sodium metavanadate)	rat	0.26	oral intubation (chronic)	60 d +	reproductive	2.1	LOAEL	0.21	Sample et al., 1996	0.2
Zinc (Zinc oxide)	rat	0.35	oral in diet (chronic)	d 1-16 of gestation	reproductive	160	NOAEL	160	Sample et al., 1996	128.7

**TABLE 4-142
TOXICITY REFERENCE VALUES FOR MUSKRAT**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg · d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
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Notes:

d - day

wk - week

gen - generations

UF - Uncertainty Factor

COPC - Chemical of Potential Concern

RTV - Reference Toxicity Value

NOAEL - No Observed Adverse Effect Level

LOAEL - Lowest Observed Adverse Effect Level

1 COPC or COPC and analyte/compound used in toxicological testing

2 Body weight for mouse and rat based on USEPA (1985b cited in Sample *et al.*, 1996), other body weights are actual body weights of animals used in test

3 Lowest carcinogenic LOAEL from PAH toxicological data summarized in ATSDR, 1995b; test used benzo(a)pyrene. USEPA has classified benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene as carcinogens (ATSDR, 1995b).

4 Lowest non-carcinogenic NOAEL from PAH toxicological data summarized in ATSDR (1995b); test used benzo(a)pyrene. USEPA has indicated that acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene and pyrene are not classifiable as carcinogens (ATSDR, 1995b). Carbazole and dibenzofuran were included in this group for the development of HQs.

5 RTVs for studies in which dose was administered five times per week were multiplied for a factor of 0.7.

6 LOAELs were divided by a UF of 10 to obtain NOAELs. The LD₅₀ for iron was divided by 100 to obtain a NOAEL (10 for the LD₅₀ to LOAEL conversion and 10 for the LOAEL to NOAEL conversion)

7 Documents cited are review documents (i.e., secondary sources). Citations for primary sources may be obtained from these documents.

8 Test NOAELs were adjusted for wildlife species body weight using the following equation: $NOAEL_{wildlife} = NOAEL_{test} * (BW_{test}/BW_{wildlife})^{0.25}$ (Sample *et al.*, 1996)

**TABLE 4-143
TOXICITY REFERENCE VALUES FOR HERON**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Volatile Organics										
2-Butanone	rat	0.35	oral gavage (intermediate)	13 wk	neurological	121	LOAEL	12.1	ATSDR, 1992a	12.1
Acetone	rat	0.35	oral in water (intermediate)	13 wk	reproductive	1700	NOAEL	1700	ATSDR, 1994a	1700.0
cis-1,2-Dichloroethene	rat	0.35	oral in water (intermediate)	90 d	systemic	3114	NOAEL	3114	ATSDR, 1994b	3114.0
Tetrachloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	14	NOAEL	14	Sample et al., 1996	14.0
Trichloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	70	LOAEL	7	Sample et al., 1996	7.0
Semivolatile Organics										
2-Methylnaphthalene (1-methylnaphthalene)	mouse	0.03	oral in food (chronic)	81 wk	systemic	143.7	NOAEL	143.7	ATSDR, 1995a	143.7
Acenaphthylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Anthracene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	1000	NOAEL	1000	ATSDR, 1995b	1000.0
Benzo(a)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(a)pyrene	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(b)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(g,h,i)perylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Benzo(k)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Carbazole ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Chrysene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Dibenz(a,h)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Dibenzofuran ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Fluoranthene	mouse	0.03	oral gavage (intermediate)	13 wk	hepatic	125	NOAEL	125	ATSDR, 1995b	125.0
Fluorene	mouse	0.03	oral gavage (intermediate)	13 wk	hematological	125	NOAEL	125	ATSDR, 1995b	125.0
Indeno(1,2,3-cd)pyrene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Naphthalene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	140	NOAEL	140	ATSDR, 1995a	140.0
N-nitrosodiphenylamine	rat	0.35	oral in food (intermediate)	8-11 wk	systemic	150	NOAEL	150	ATSDR, 1993	150.0
Phenanthrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Pyrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3

**TABLE 4-143
TOXICITY REFERENCE VALUES FOR HERON**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Pesticides/PCBs										
4,4'-DDD	rat	0.35	oral in food (chronic)	78 wk	cancer	85	LOAEL	9	ATSDR, 1994c	8.50
4,4'-DDE	mouse	0.03	oral in food (chronic)	78 wk	cancer	19	LOAEL	1.9	ATSDR, 1994c	1.90
4,4'-DDT	brown pelican	3.50	oral in diet (chronic)	5 yr	reproductive	0.03	LOAEL	0.003	Sample et al., 1996	0.003
Aldrin	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.20
alpha-Chlordane (Chlordane)	red-winged blackbird	0.06	oral in diet (chronic)	84 d	mortality	2.14	NOAEL	2.14	Sample et al., 1996	2.14
Aroclor-1248	chicken	1.94			reproductive	1.0	NOAEL	1.0	NRC, 2001	0.98
Aroclor-1254	mallard	1.00			reproductive	1.5	NOAEL	1.5	NRC, 2001	1.50
Aroclor-1260	rat	0.35	oral in food (chronic)	24 months	cancer	3.45	LOAEL	0.35	ATSDR, 1995c	0.35
beta-BHC	rat	0.35	oral in diet (subchronic)	13 wk	systemic, hematological	4	NOAEL	4	Sample et al., 1996	4.00
delta-BHC (mixed isomers)	rat	0.35	oral in diet (chronic)	4 gen	reproductive	1.6	NOAEL	1.6	Sample et al., 1996	1.60
Endosulfan I	gray partridge	0.40	oral in diet (chronic)	4 wk	reproductive	10	NOAEL	10	Sample et al., 1996	10
Endosulfan sulfate (Endosulfan)	gray partridge	0.40	oral in diet (chronic)	4 wk	reproductive	10	NOAEL	10	Sample et al., 1996	10
Endrin aldehyde (Endrin)	mallard	1.15	oral in diet (chronic)	>200 d	reproductive	0.30	NOAEL	0.30	Sample et al., 1996	0.30
gamma-Chlordane (Chlordane)	red-winged blackbird	0.06	oral in diet (chronic)	84 d	mortality	2.14	NOAEL	2.14	Sample et al., 1996	2.14
Metals										
Aluminum (Aluminum sulfate)	ringed dove	0.16	oral in diet (chronic)	4 months	reproductive	109.7	NOAEL	109.7	Sample et al., 1996	109.7
Antimony	mouse	0.03	oral in water (chronic)	lifetime, >1 year	lifespan	1.25	LOAEL	0.125	Sample et al., 1996	0.13
Arsenic (Sodium arsenite)	mallard	1.00	oral in diet (chronic)	128 d	mortality	5.14	NOAEL	5.14	Sample et al., 1996	5.1
Barium (Barium hydroxide)	1-day old chickens	0.121	oral in diet (subchronic)	4 wk	mortality	208	NOAEL	208	Sample et al., 1996	208.0
Beryllium (Beryllium sulfate)	rat	0.35	oral in water (chronic)	lifetime, >1 year	longevity	0.66	NOAEL	0.66	Sample et al., 1996	0.66
Cadmium (Cadmium chloride)	mallard	1.15	oral in diet (chronic)	90 d	reproductive	1.5	NOAEL	1.5	Sample et al., 1996	1.5
Chromium (3+ as Chromic potassium sulfate)	black duck	1.25	oral in diet (chronic)	10 months	reproductive	1.0	NOAEL	1.0	Sample et al., 1996	1.0
Cobalt	rat	0.3	oral in food (intermediate)	69 d	reproductive	5	NOAEL	5	ATSDR, 1992d	5.0
Copper (Copper oxide)	1-day old chickens	0.5	oral in diet (chronic)	10 wk	mortality	47.0	NOAEL	47.0	Sample et al., 1996	47.0
Cyanide (Potassium cyanide)	rat	0.3	oral in diet (chronic)	gestation, lactation	reproductive	68.7	NOAEL	68.7	Sample et al., 1996	68.7
Iron (Ferrous sulfate)	rat	0.35	oral (acute)	1 time	mortality	319	LD50	3.19	USEPA, 1984	3.2
Lead (Lead acetate)	Japanese quail	0.15	oral in diet (chronic)	12 wk	reproductive	1.1	NOAEL	1.1	Sample et al., 1996	1.1
Manganese (Manganese oxide)	1-day old J. quail	0.072	oral in diet (chronic)	75 d	growth	977	NOAEL	977	Sample et al., 1996	977.0
Mercury (Methyl mercury dicyandiamide)	mallard	1	oral in diet (chronic)	3 gen	reproductive	0.064	LOAEL	0.0064	Sample et al., 1996	0.006
Nickel (Nickel sulfate)	mallard	0.782	oral in diet (chronic)	90 d	mortality	77.4	NOAEL	77.4	Sample et al., 1996	77.4
Selenium (Selenomethionine)	mallard	1	oral in diet (chronic)	100 d	reproductive	0.4	NOAEL	0.4	Sample et al., 1996	0.4
Silver	rat	0.35	oral in water (acute)	2 wk	mortality	181.2	NOAEL	181.2	ATSDR, 1990	181.2
Thallium (Thallium sulfate)	rat	0.37	oral in water (subchronic)	60 d	reproductive	0.74	LOAEL	0.074	Sample et al., 1996	0.074
Vanadium (Vanadyl sulfate)	mallard	1.17	oral in diet (chronic)	12 wk	mortality	11.4	NOAEL	11.4	Sample et al., 1996	11.4
Zinc (Zinc sulfate)	white leg-horn	1.94	oral in diet (chronic)	44 wk	reproductive	15	NOAEL	15	Sample et al., 1996	14.5

**TABLE 4-143
TOXICITY REFERENCE VALUES FOR HERON**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
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Notes:

d - day

wk - week

gen - generations

UF - Uncertainty Factor

COPC - Chemical of Potential Concern

RTV - Reference Toxicity Value

NOAEL - No Observed Adverse Effect Level

LOAEL - Lowest Observed Adverse Effect Level

1 COPC or COPC and analyte/compound used in toxicological testing

2 Body weight for mouse and rat based on USEPA (1985b cited in Sample *et al.*, 1996), other body weights are actual body weights of animals used in test

3 Lowest carcinogenic LOAEL from PAH toxicological data summarized in ATSDR, 1995b; test used benzo(a)pyrene. USEPA has classified benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene as carcinogens (ATSDR, 1995b).

4 Lowest non-carcinogenic NOAEL from PAH toxicological data summarized in ATSDR (1995b); test used benzo(a)pyrene. USEPA has indicated that acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene and pyrene are not classifiable as carcinogens (ATSDR, 1995b). Carbazole and dibenzofuran were included in this group for the development of HQs.

5 RTVs for studies in which dose was administered five times per week were multiplied for a factor of 0.7.

6 LOAELs were divided by a UF of 10 to obtain NOAELs. The LD₅₀ for iron was divided by 100 to obtain a NOAEL (10 for the LD₅₀ to LOAEL conversion and 10 for the LOAEL to NOAEL conversion)

7 Documents cited are review documents (i.e., secondary sources). Citations for primary sources may be obtained from these documents.

8 Test NOAELs from test species were not adjusted for body weight of heron (Sample *et al.*, 1996).

**TABLE 4-144
TOXICITY REFERENCE VALUES FOR MALLARD**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Volatile Organics										
2-Butanone	rat	0.35	oral gavage (intermediate)	13 wk	neurological	121	LOAEL	12.1	ATSDR, 1992a	12.1
Acetone	rat	0.35	oral in water (intermediate)	13 wk	reproductive	1700	NOAEL	1700	ATSDR, 1994a	1700.0
cis-1,2-Dichloroethene	rat	0.35	oral in water (intermediate)	90 d	systemic	3114	NOAEL	3114	ATSDR, 1994b	3114.0
Tetrachloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	14	NOAEL	14	Sample et al., 1996	14.0
Trichloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	70	LOAEL	7	Sample et al., 1996	7.0
Semivolatile Organics										
2-Methylnaphthalene (1-methylnaphthalene)	mouse	0.03	oral in food (chronic)	81 wk	systemic	143.7	NOAEL	143.7	ATSDR, 1995a	143.7
Acenaphthylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Anthracene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	1000	NOAEL	1000	ATSDR, 1995b	1000.0
Benzo(a)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(a)pyrene	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(b)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Benzo(g,h,i)perylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Benzo(k)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Carbazole ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Chrysene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Dibenz(a,h)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Dibenzofuran ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Fluoranthene	mouse	0.03	oral gavage (intermediate)	13 wk	hepatic	125	NOAEL	125	ATSDR, 1995b	125.0
Fluorene	mouse	0.03	oral gavage (intermediate)	13 wk	hematological	125	NOAEL	125	ATSDR, 1995b	125.0
Indeno(1,2,3-cd)pyrene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.3
Naphthalene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	140	NOAEL	140	ATSDR, 1995a	140.0
N-nitrosodiphenylamine	rat	0.35	oral in food (intermediate)	8-11 wk	systemic	150	NOAEL	150	ATSDR, 1993	150.0
Phenanthrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3
Pyrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	133.3

**TABLE 4-144
TOXICITY REFERENCE VALUES FOR MALLARD**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
Pesticides/PCBs										
4,4'-DDD	rat	0.35	oral in food (chronic)	78 wk	cancer	85	LOAEL	9	ATSDR, 1994c	8.5
4,4'-DDE	mouse	0.03	oral in food (chronic)	78 wk	cancer	19	LOAEL	1.9	ATSDR, 1994c	1.9
4,4'-DDT	brown pelican	3.50	oral in diet (chronic)	5 yr	reproductive	0.03	LOAEL	0.003	Sample et al., 1996	0.0
Aldrin	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.2
alpha-Chlordane (Chlordane)	red-winged blackbird	0.06	oral in diet (chronic)	84 d	mortality	2.14	NOAEL	2.14	Sample et al., 1996	2.1
Aroclor-1248	chicken	1.94	oral in diet (chronic)	9 wk	reproductive	1.0	NOAEL	1.0	NRC, 2001	1.0
Aroclor-1254	mallard	1.00	oral in diet (chronic)	68 d	reproductive	1.5	NOAEL	1.5	NRC, 2001	1.5
Aroclor-1260	rat	0.35	oral in food (chronic)	24 months	cancer	3.45	LOAEL	0.35	ATSDR, 1995c	0.3
beta-BHC	rat	0.35	oral in diet (subchronic)	13 wk	systemic; hematological	4	NOAEL	4	Sample et al., 1996	4.0
Delta-BHC (mixed isomers)	rat	0.35	oral in diet (chronic)	4 gen	reproductive	1.6	NOAEL	1.6	Sample et al., 1996	1.6
Endosulfan I	gray partridge	0.40	oral in diet (chronic)	4 wk	reproductive	10	NOAEL	10	Sample et al., 1996	10.0
Endosulfan sulfate (Endosulfan)	gray partridge	0.40	oral in diet (chronic)	4 wk	reproductive	10	NOAEL	10	Sample et al., 1996	10.0
Endrin aldehyde (Endrin)	mallard	1.15	oral in diet (chronic)	>200 d	reproductive	0.30	NOAEL	0.30	Sample et al., 1996	0.3
gamma-Chlordane (Chlordane)	red-winged blackbird	0.06	oral in diet (chronic)	84 d	mortality	2.14	NOAEL	2.14	Sample et al., 1996	2.1
Metals										
Aluminum (Aluminum sulfate)	ringed dove	0.16	oral in diet (chronic)	4 months	reproductive	109.7	NOAEL	109.7	Sample et al., 1996	109.7
Antimony	mouse	0.03	oral in water (chronic)	lifetime, >1 year	lifespan	1.25	LOAEL	0.125	Sample et al., 1996	0.1
Arsenic (Sodium arsenite)	mallard	1.00	oral in diet (chronic)	128 d	mortality	5.14	NOAEL	5.14	Sample et al., 1996	5.1
Barium (Barium hydroxide)	1-day old chickens	0.121	oral in diet (subchronic)	4 wk	mortality	208	NOAEL	208	Sample et al., 1996	208.0
Beryllium (Beryllium sulfate)	rat	0.35	oral in water (chronic)	lifetime, >1 year	longevity	0.66	NOAEL	0.66	Sample et al., 1996	0.7
Cadmium (Cadmium chloride)	mallard	1.15	oral in diet (chronic)	90 d	reproductive	1.5	NOAEL	1.5	Sample et al., 1996	1.5
Chromium (3+ as Chromic potassium sulfate)	black duck	1.25	oral in diet (chronic)	10 months	reproductive	1.0	NOAEL	1.0	Sample et al., 1996	1.0
Cobalt	rat	0.3	oral in food (intermediate)	69 d	reproductive	5	NOAEL	5	ATSDR, 1992d	5.0
Copper (Copper oxide)	1-day old chickens	0.5	oral in diet (chronic)	10 wk	mortality	47.0	NOAEL	47.0	Sample et al., 1996	47.0
Cyanide (Potassium cyanide)	rat	0.3	oral in diet (chronic)	gestation, lactation	reproductive	68.7	NOAEL	68.7	Sample et al., 1996	68.7
Iron (Ferrous sulfate)	rat	0.35	oral (acute)	1 time	mortality	319	LD50	3.19	USEPA, 1984	3.2
Lead (Lead acetate)	Japanese quail	0.15	oral in diet (chronic)	12 wk	reproductive	1.1	NOAEL	1.1	Sample et al., 1996	1.1
Manganese (Manganese oxide)	1-day old J. quail	0.072	oral in diet (chronic)	75 d	growth	977	NOAEL	977	Sample et al., 1996	977.0
Mercury (Methyl mercury dicyandiamide)	mallard	1	oral in diet (chronic)	3 gen	reproductive	0.064	LOAEL	0.0064	Sample et al., 1996	0.0
Nickel (Nickel sulfate)	mallard	0.782	oral in diet (chronic)	90 d	mortality	77.4	NOAEL	77.4	Sample et al., 1996	77.4
Selenium (Selenomethionine)	mallard	1	oral in diet (chronic)	100 d	reproductive	0.4	NOAEL	0.4	Sample et al., 1996	0.4
Silver	rat	0.35	oral in water (acute)	2 wk	mortality	181.2	NOAEL	181.2	ATSDR, 1990	181.2
Thallium (Thallium sulfate)	rat	0.37	oral in water (subchronic)	60 d	reproductive	0.74	LOAEL	0.074	Sample et al., 1996	0.1
Vanadium (Vanadyl sulfate)	mallard	1.17	oral in diet (chronic)	12 wk	mortality	11.4	NOAEL	11.4	Sample et al., 1996	11.4
Zinc (Zinc sulfate)	white leg-horn	1.94	oral in diet (chronic)	44 wk	reproductive	15	NOAEL	15	Sample et al., 1996	14.5

**TABLE 4-144
TOXICITY REFERENCE VALUES FOR MALLARD**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test TRV mg/kg - d ⁵	Test TRV Type	NOAEL ⁶	Source ⁷	Wildlife TRV (mg/kg-d) ⁸
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Notes:

d - day

wk - week

gen - generations

UF - Uncertainty Factor

COPC - Chemical of Potential Concern

RTV - Reference Toxicity Value

NOAEL - No Observed Adverse Effect Level

LOAEL - Lowest Observed Adverse Effect Level

1 COPC or COPC and analyte/compound used in toxicological testing

2 Body weight for mouse and rat based on USEPA (1985b cited in Sample *et al.*, 1996), other body weights are actual body weights of animals used in test

3 Lowest carcinogenic LOAEL from PAH toxicological data summarized in ATSDR, 1995b; test used benzo(a)pyrene. USEPA has classified benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene as carcinogens (ATSDR, 1995b).

4 Lowest non-carcinogenic NOAEL from PAH toxicological data summarized in ATSDR (1995b); test used benzo(a)pyrene. USEPA has indicated that acenaphthylene, anthracene, benzo(g,h,i) perylene, fluoranthene, fluorene, phenanthrene and pyrene are not classifiable as carcinogens (ATSDR, 1995b). Carbazole and dibenzofuran were included in this group for the development of HQs.

5 RTVs for studies in which dose was administered five times per week were multiplied for a factor of 0.7.

6 LOAELs were divided by a UF of 10 to obtain NOAELs. The LD₅₀ for iron was divided by 100 to obtain a NOAEL (10 for the LD₅₀ to LOAEL conversion and 10 for the LOAEL to NOAEL conversion)

7 Documents cited are review documents (i.e., secondary sources). Citations for primary sources may be obtained from these documents.

8 Test NOAELs from test species were not adjusted for body weight of mallard (Sample *et al.*, 1996).

**TABLE 4-145
TOXICITY REFERENCE VALUES FOR SHREW**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test RTV mg/kg - d ⁵	Test RTV Type	NOAEL ⁶	Source ⁷	Wildlife RTV (mg/kg-d) ⁸
Volatile Organics										
2-Butanone	rat	0.35	oral gavage (intermediate)	13 wk	neurological	121	LOAEL	12.1	ATSDR, 1992a	26.6
Acetone	rat	0.35	oral in water (intermediate)	13 wk	reproductive	1700	NOAEL	1700	ATSDR, 1994a	3736.3
cis-1,2-Dichloroethene	rat	0.35	oral in water (intermediate)	90 d	systemic	3114	NOAEL	3114	ATSDR, 1994b	6844.0
Tetrachloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	14	NOAEL	14	Sample et al., 1996	16.6
Trichloroethene	mouse	0.03	oral gavage (subchronic)	6 wk	hepatic	70	LOAEL	7	Sample et al., 1996	8.3
Semivolatile Organics										
2-Methylnaphthalene (1-methylnaphthalene)	mouse	0.03	oral in food (chronic)	81 wk	systemic	143.7	NOAEL	143.7	ATSDR, 1995a	170.9
Acenaphthylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5
Anthracene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	1000	NOAEL	1000	ATSDR, 1995b	1189.2
Benzo(a)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Benzo(a)pyrene	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Benzo(b)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Benzo(g,h,i)perylene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5
Benzo(k)fluoranthene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Carbazole ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5
Chrysene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Dibenz(a,h)anthracene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Dibenzofuran ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5
Fluoranthene	mouse	0.03	oral gavage (intermediate)	13 wk	hepatic	125	NOAEL	125	ATSDR, 1995b	148.7
Fluorene	mouse	0.03	oral gavage (intermediate)	13 wk	hematological	125	NOAEL	125	ATSDR, 1995b	148.7
Indeno(1,2,3-cd)pyrene ³	mouse	0.03	oral in food (intermediate)	30-197 days	cancer	1.30	NOAEL	1.30	ATSDR, 1995b	1.5
Naphthalene	mouse	0.03	oral gavage (intermediate)	13 wk	reproductive	140	NOAEL	140	ATSDR, 1995a	166.5
N-nitrosodiphenylamine	rat	0.35	oral in food (intermediate)	8-11 wk	systemic	150	NOAEL	150	ATSDR, 1993	329.7
Phenanthrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5
Pyrene ⁴	mouse	0.03	oral in food (intermediate)	19-29 days	reproductive	133.3	NOAEL	133.3	ATSDR, 1995b	158.5

**TABLE 4-145
TOXICITY REFERENCE VALUES FOR SHREW**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test RTV mg/kg - d ⁵	Test RTV Type	NOAEL ⁶	Source ⁷	Wildlife RTV (mg/kg-d) ⁸
Pesticides/PCBs										
4,4'-DDD	rat	0.35	oral in food (chronic)	78 wk	cancer	85	LOAEL	9	ATSDR, 1994c	18.7
4,4'-DDE	mouse	0.03	oral in food (chronic)	78 wk	cancer	19	LOAEL	1.9	ATSDR, 1994c	2.3
4,4'-DDT	rat	0.35	oral in diet (chronic)	2 year	reproductive	0.80	NOAEL	0.80	Sample et al., 1996	1.8
Aldrin	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.4
alpha-Chlordane	mouse	0.03	oral in diet (chronic)	6 gen	reproductive	4.58	NOAEL	4.58	Sample et al., 1996	5.4
Aroclor-1248	mouse	0.03	oral in food (intermediate)	5 wk	immunological	13.0	LOAEL	1.3	ATSDR, 1995c	1.5
Aroclor 1254	mouse	0.03	oral in diet (chronic)	12 months	reproductive	0.7	LOAEL	0.1	Sample et al., 1996	0.1
Aroclor-1260	rat	0.35	oral in food (chronic)	24 months	cancer	3.45	LOAEL	0.35	ATSDR, 1995c	0.8
beta-BHC	rat	0.35	oral in diet (subchronic)	13 wk	systemic; hematological	4	NOAEL	4	Sample et al., 1996	8.8
delta-BHC (mixed isomers)	rat	0.35	oral in diet (chronic)	4 gen	reproductive	1.6	NOAEL	1.6	Sample et al., 1996	3.5
Endosulfan I	rat	0.35	oral intubation (subchronic)	30 d	reproductive	1.50	NOAEL	1.5	Sample et al., 1996	3.3
Endosulfan Sulfate (Endosulfan)	rat	0.35	oral (subchronic)	30 d	reproductive	1.50	NOAEL	1.5	Sample et al., 1996	3.3
Endrin aldehyde (Endrin)	mouse	0.03	oral in diet (chronic)	120 d	reproductive	0.92	LOAEL	0.09	Sample et al., 1996	0.1
gamma-Chlordane (Chlordane)	mouse	0.03	oral in diet (chronic)	6 gen	reproductive	4.60	NOAEL	4.58	Sample et al., 1996	5.4
Metals										
Aluminum (Aluminum chloride)	mouse	0.03	oral in water (chronic)	390 d	reproductive	49	NOAEL	49	ATSDR, 1999	58.3
Antimony (Antimony potassium tartrate)	mouse	0.03	oral in water (chronic)	lifetime, >1 year	lifespan	1.25	LOAEL	0.125	Sample et al., 1996	0.1
Arsenic (Arsenite)	mouse	0.03	oral in water (chronic)	3 gen	reproductive	1.26	LOAEL	0.126	Sample et al., 1996	0.1
Barium (Barium chloride)	rat	0.435	oral in water (chronic)	16 months	growth	5.1	NOAEL	5.1	Sample et al., 1996	11.8
Beryllium (Beryllium sulfate)	rat	0.35	oral in water (chronic)	lifetime, >1 year	longevity	0.66	NOAEL	0.66	Sample et al., 1996	1.5
Cadmium (Cadmium chloride)	rat	0.30	oral gavage (chronic)	6 weeks	reproductive	1.0	NOAEL	1.0	Sample et al., 1996	2.1
Chromium (Chromium Chloride)	rat	0.35	oral in food (subchronic)	20 weeks	systemic	9	NOAEL	9	ATSDR, 2000	19.8
Cobalt	rat	0.35	oral in food (intermediate)	69 d	reproductive	5	NOAEL	5	ATSDR, 1992c	11.0
Copper (Copper sulfate)	mink	1.0	oral in diet (chronic)	357 d	reproductive	11.7	NOAEL	11.7	Sample et al., 1996	33.4
Cyanide (Potassium cyanide)	rat	0.3	oral in diet (chronic)	gestation, lactation	reproductive	68.7	NOAEL	68.7	Sample et al., 1996	141.9
Iron (Ferrous sulfate)	rat	0.35	oral (acute)	1 time	mortality	319	LD50	3.19	USEPA, 1984	7.0
Lead (Lead acetate)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	8.0	NOAEL	8.0	Sample et al., 1996	17.6
Manganese (Manganese oxide)	rat	0.35	oral in diet (chronic)	224 d	reproductive	88	NOAEL	88	Sample et al., 1996	193.4
Mercury (Methyl mercury chloride)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	0.032	NOAEL	0.032	Sample et al., 1996	0.1
Nickel (Nickel sulfate hexahydrate)	rat	0.35	oral in diet (chronic)	3 gen	reproductive	40	NOAEL	40	Sample et al., 1996	87.9
Selenium (Selenate)	rat	0.35	oral in water (chronic)	1 year	reproductive	0.2	NOAEL	0.2	Sample et al., 1996	0.4
Silver	rat	0.35	oral in water (acute)	2 wk	mortality	181.2	NOAEL	181.2	ATSDR, 1990	398.2
Thallium (Thallium sulfate)	rat	0.37	oral in water (subchronic)	60 d	reproductive	0.74	LOAEL	0.074	Sample et al., 1996	0.164
Vanadium (Sodium metavanadate)	rat	0.26	oral intubation (chronic)	60 d +	reproductive	2.1	LOAEL	0.21	Sample et al., 1996	0.4
Zinc (Zinc oxide)	rat	0.35	oral in diet (chronic)	d 1-16 of gestation	reproductive	160	NOAEL	160	Sample et al., 1996	351.7

**TABLE 4-145
TOXICITY REFERENCE VALUES FOR SHREW**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern ¹	Test Species	Body Weight (kg) ²	Exposure Route and Duration Class	Duration	System	Test RTV mg/kg - d ⁵	Test RTV Type	NOAEL ⁶	Source ⁷	Wildlife RTV (mg/kg-d) ⁸
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Notes:

d - day

wk - week

gen - generations

UF - Uncertainty Factor

COPC - Chemical of Potential Concern

RTV - Reference Toxicity Value

NOAEL - No Observed Adverse Effect Level

LOAEL - Lowest Observed Adverse Effect Level

1 COPC or COPC and analyte/compound used in toxicological testing

2 Body weight for mouse and rat based on USEPA (1985b cited in Sample *et al.*, 1996), other body weights are actual body weights of animals used in test

3 Lowest carcinogenic LOAEL from PAH toxicological data summarized in ATSDR, 1995b; test used benzo(a)pyrene. USEPA has classified benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene as carcinogens (ATSDR, 1995b).

4 Lowest non-carcinogenic NOAEL from PAH toxicological data summarized in ATSDR (1995b); test used benzo(a)pyrene. USEPA has indicated that acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene and pyrene are not classifiable as carcinogens (ATSDR, 1995b). Carbazole and dibenzofuran were included in this group for the development of HQs.

5 RTVs for studies in which dose was administered five times per week were multiplied for a factor of 0.7.

6 LOAELs were divided by a UF of 10 to obtain NOAELs. The LD₅₀ for iron was divided by 100 to obtain a NOAEL (10 for the LD₅₀ to LOAEL conversion and 10 for the LOAEL to NOAEL conversion)

7 Documents cited are review documents (i.e., secondary sources). Citations for primary sources may be obtained from these documents.

8 Test NOAELs were adjusted for wildlife species body weight using the following equation: $NOAEL_{wildlife} = NOAEL_{test} * (BW_{test}/BW_{wildlife})^{0.25}$ (Sample *et al.*, 1996)

TABLE 4-146
HAZARD QUOTIENTS FOR MUSKRAT - STATION 01

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	8	92.0
Acetone	0.0003	1367	<0.1	0.0	0.0	23	76.8
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	24	75.8
Trichloroethene	0.00007	3.05	<0.1	0.0	0.0	24	75.8
HAZARD INDEX			0.000061	0.0	0.0	17	83.3
Semivolatile Organics							
2-Methylnaphthalene	0.0008	62.5	<0.1	0.0	0.0	68	32.2
Acenaphthylene	0.0008	58.0	<0.1	0.0	0.0	68	32.2
Anthracene	0.0006	435	<0.1	0.0	0.0	57	43.2
Benzo(a)anthracene	0.0008	0.57	<0.1	0.0	0.0	69	31.2
Benzo(a)pyrene	0.02	0.57	<0.1	0.0	96.0	2.8	1.2
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.2	5.6	2.2
Benzo(g,h,i)perylene	0.0009	58.0	<0.1	0.0	0.0	73	27.2
Benzo(k)fluoranthene	0.03	0.57	<0.1	0.0	96.8	2.3	1.0
Carbazole	0.0005	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.9	3.8	1.3
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	68	32.2
Dibenzofuran	0.0008	58.0	<0.1	0.0	0.0	68	32.2
Fluoranthene	0.01	54.4	<0.1	0.0	88.9	8.8	2.3
Fluorene	0.0007	54.4	<0.1	0.0	0.0	66	33.9
Indeno(1,2,3-cd)pyrene	0.06	0.57	0.10	0.0	98.5	1.1	0.4
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	68	32.2
N-nitrosodiphenylamine	0.0008	121	<0.1	0.0	0.0	68	32.2
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.6
Pyrene	0.01	58.0	<0.1	0.0	91.2	6.9	1.8
HAZARD INDEX			0.25	0.0	95.6	3.1	1.3
Pesticides and PCBs							
4,4'-DDD	0.0002	6.84	<0.1	23.3	68.1	6.1	2.5
4,4'-DDE	0.0003	0.83	<0.1	50.4	43.1	4.6	1.9
4,4'-DDT	0.0005	0.64	<0.1	4.5	91.8	2.7	1.1
Aldrin	0.00002	0.16	<0.1	54.8	0.0	32.4	12.7
alpha-Chlordane	0.0002	1.99	<0.1	11.3	83.5	3.8	1.5
Aroclor 1248	0.0003	0.57	<0.1	37.9	0.0	44	17.8
Aroclor 1254	0.0006	0.15	<0.1	70.3	0.0	21	8.5
Aroclor 1260	0.0022	0.28	<0.1	14.5	77.5	5.8	2.3
beta-BHC	0.00002	3.22	<0.1	54.8	0.0	32.4	12.7
delta-BHC	0.00002	1.29	<0.1	54.8	0.0	32.4	12.7
Endosulfan I	0.0003	1.21	<0.1	6.4	90.1	2.5	1.0
Endosulfan Sulfate	0.00004	1.21	<0.1	54.2	0.0	32.7	13.1
Endrin Aldehyde	0.0009	0.04	<0.1	6.0	92.1	1.4	0.6
gamma-Chlordane	0.0002	1.99	<0.1	7.8	86.4	4.2	1.6
HAZARD INDEX			0.037	16.0	76.5	5.3	2.1
Inorganics							
X Aluminum	58	41.82	1	1.2	77.1	21.6	0.0
Antimony	0.003	0.05	<0.1	48.5	0.0	49.4	2.1
X Arsenic	0.70	0.05	12.8	1.0	94.7	4.3	0.1
Barium	0.86	4.33	0.20	7.0	88.4	4.2	0.4
Beryllium	0.001	0.53	<0.1	30.9	0.0	68.4	0.7
Cadmium	0.27	0.78	0.35	0.7	95.2	4.1	0.0
Chromium	0.2	7.2	<0.1	2.6	77.9	19.4	0.1
Cobalt	0.37	4.02	<0.1	2.2	92.9	4.9	0.0
Copper	5.9	12.2	0.48	20.6	72.7	6.7	0.0
Cyanide	0.007	51.9	<0.1	85.1	0.0	11.1	3.8
X Iron	325	2.57	127	0.8	93.9	5.3	0.0
Lead	3.00	6.43	0.47	0.2	94.9	4.8	0.0
Manganese	32.6	70.8	0.46	7.2	91.9	0.8	0.1
Mercury	0.00	0.03	<0.1	11.9	77.5	10.3	0.3
Nickel	0.13	32.2	<0.1	1.0	83.8	15.1	0.1
Selenium	0.03	0.16	0.21	46.1	50.9	2.8	0.2
Silver	0.002	146	<0.1	77.3	0.0	21.2	1.5
Thallium	0.004	0.06	<0.1	53.1	0.0	44.6	2.3
X Vanadium	0.24	0.16	1.52	0.5	87.7	11.7	0.0
Zinc	22.6	129	0.18	2.4	87.1	10.5	0.0
HAZARD INDEX			145.1	1.0	93.5	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-147
HAZARD QUOTIENTS FOR MUSKRAT - STATION 02

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	6	93.9
Acetone	0.00029	1367	<0.1	0.0	0.0	13	86.7
cis-1,2-Dichloroethene	0.00008	2504	<0.1	0.0	0.0	38	62.4
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	40	60.4
Trichloroethene	0.00007	3.05	<0.1	0.0	0.0	26	73.6
HAZARD INDEX			<i>0.000064</i>	<i>0.0</i>	<i>0.0</i>	<i>20</i>	<i>79.5</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0006	62.5	<0.1	0.0	0.0	59	40.7
Acenaphthylene	0.0006	58.0	<0.1	0.0	0.0	60	40.4
Anthracene	0.0006	435	<0.1	0.0	0.0	56	44.1
Benzo(a)anthracene	0.0009	0.57	<0.1	0.0	0.0	73	27.0
Benzo(a)pyrene	0.03	0.57	<0.1	0.0	96.2	2.8	1.0
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.5	5.7	1.9
Benzo(g,h,i)perylene	0.0008	58.0	<0.1	0.0	0.0	67	32.5
Benzo(k)fluoranthene	0.02	0.57	<0.1	0.0	96.7	2.3	1.1
Carbazole	0.0005	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	95.0	3.8	1.2
Dibenz(a,h)anthracene	0.0007	0.57	<0.1	0.0	0.0	61	38.7
Dibenzofuran	0.0007	58.0	<0.1	0.0	0.0	66	34.5
Fluoranthene	0.01	54.4	<0.1	0.0	89.2	8.8	2.0
Fluorene	0.0006	54.4	<0.1	0.0	0.0	60	39.5
Indeno(1,2,3-cd)pyrene	0.05	0.57	<0.1	0.0	98.4	1.1	0.5
Naphthalene	0.0006	60.9	<0.1	0.0	0.0	59	40.7
N-nitrosodiphenylamine	0.0007	121	<0.1	0.0	0.0	66	34.5
Phenanthrene	0.04	58.0	<0.1	0.0	97.6	1.7	0.7
Pyrene	0.02	58.0	<0.1	0.0	91.5	7.0	1.6
HAZARD INDEX			<i>0.24</i>	<i>0.0</i>	<i>95.4</i>	<i>3.3</i>	<i>1.3</i>
Pesticides and PCBs							
4,4'-DDD	0.0003	6.84	<0.1	19.0	72.4	6.5	2.0
4,4'-DDE	0.0004	0.83	<0.1	35.5	57.1	6.1	1.3
4,4'-DDT	0.0002	0.64	<0.1	11.1	83.9	2.4	2.6
Aldrin	0.00002	0.16	<0.1	71.2	0.0	12.4	16.5
alpha-Chlordane	0.0002	1.99	<0.1	9.0	85.9	3.9	1.2
Aroclor 1248	0.0003	0.57	<0.1	37.3	0.0	45	17.6
Aroclor 1254	0.0005	0.15	<0.1	82.7	0.0	7	10.0
Aroclor 1260	0.0021	0.28	<0.1	15.2	76.6	5.7	2.4
beta-BHC	0.00002	3.22	<0.1	71.2	0.0	12.4	16.5
delta-BHC	0.00002	1.29	<0.1	68.0	0.0	16.3	15.8
Endosulfan I	0.0001	1.21	<0.1	18.4	76.5	2.2	2.9
Endosulfan Sulfate	0.00003	1.21	<0.1	70.1	0.0	13.0	16.9
Endrin Aldehyde	0.0004	0.04	<0.1	14.8	82.6	1.3	1.4
gamma-Chlordane	0.0002	1.99	<0.1	7.7	86.5	4.2	1.6
HAZARD INDEX			<i>0.022</i>	<i>27.0</i>	<i>64.4</i>	<i>5.0</i>	<i>3.6</i>
Inorganics							
X Aluminum	56	41.82	1	1.3	77.1	21.6	0.0
Antimony	0.003	0.05	<0.1	42.7	0.0	55.5	1.8
X Arsenic	0.54	0.05	9.8	1.3	94.3	4.3	0.1
Barium	1.66	4.33	0.38	3.6	91.8	4.4	0.2
Beryllium	0.001	0.53	<0.1	32.5	0.0	66.8	0.7
Cadmium	0.07	0.78	<0.1	2.8	93.1	4.0	0.0
Chromium	0.4	7.2	<0.1	1.3	78.9	19.7	0.0
Cobalt	0.40	4.02	<0.1	2.0	93.1	4.9	0.0
Copper	2.5	12.2	0.20	49.2	46.5	4.3	0.0
Cyanide	0.007	51.9	<0.1	85.2	0.0	11.0	3.8
X Iron	436	2.57	170	0.6	94.1	5.3	0.0
X Lead	7.38	6.43	1.15	0.1	95.1	4.9	0.0
Manganese	37.1	70.8	0.52	6.4	92.8	0.8	0.0
Mercury	0.00	0.03	<0.1	9.4	79.7	10.6	0.3
Nickel	0.17	32.2	<0.1	0.7	84.0	15.1	0.1
Selenium	0.04	0.16	0.27	35.8	60.8	3.3	0.2
Silver	0.002	146	<0.1	78.8	0.0	19.6	1.6
Thallium	0.003	0.06	<0.1	61.3	0.0	36.0	2.7
X Vanadium	0.37	0.16	2.34	0.3	87.9	11.8	0.0
Zinc	8.0	129	<0.1	6.8	83.1	10.0	0.0
HAZARD INDEX			<i>186.4</i>	<i>0.8</i>	<i>93.7</i>	<i>5.4</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-148
HAZARD QUOTIENTS FOR MUSKRAT - STATION 03

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00032	9.73	<0.1	0.0	0.0	20	79.8
Acetone	0.0004	1367	<0.1	0.0	0.0	35	64.8
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	57	43.5
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	51	48.9
Trichloroethene	0.00008	3.05	<0.1	0.0	0.0	35	65.2
HAZARD INDEX			0.000075	0.0	0.0	32	67.8
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	65	34.7
Acenaphthylene	0.0005	58.0	<0.1	0.0	0.0	100	0.0
Anthracene	0.0006	435	<0.1	0.0	0.0	58	42.0
Benzo(a)anthracene	0.0014	0.57	<0.1	0.0	0.0	82	17.6
Benzo(a)pyrene	0.04	0.57	<0.1	0.0	96.5	2.8	0.7
Benzo(b)fluoranthene	0.02	0.57	<0.1	0.0	93.2	5.7	1.1
Benzo(g,h,i)perylene	0.0010	58.0	<0.1	0.0	0.0	75	24.7
Benzo(k)fluoranthene	0.04	0.57	<0.1	0.0	97.0	2.3	0.7
Carbazole	0.0006	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.04	0.57	<0.1	0.0	95.5	3.8	0.7
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	68	32.3
Dibenzofuran	0.0009	58.0	<0.1	0.0	0.0	71	28.9
Fluoranthene	0.02	54.4	<0.1	0.0	90.1	8.9	1.0
Fluorene	0.0008	54.4	<0.1	0.0	0.0	69	31.3
Indeno(1,2,3-cd)pyrene	0.07	0.57	0.13	0.0	98.6	1.1	0.3
Naphthalene	0.0007	60.9	<0.1	0.0	0.0	65	34.7
N-nitrosodiphenylamine	0.0009	121	<0.1	0.0	0.0	71	28.9
Phenanthrene	0.06	58.0	<0.1	0.0	97.9	1.7	0.4
Pyrene	0.03	58.0	<0.1	0.0	92.2	7.0	0.8
HAZARD INDEX			0.37	0.0	95.7	3.4	0.9
Pesticides and PCBs							
4,4'-DDD	0.0009	6.84	<0.1	5.3	86.3	7.8	0.6
4,4'-DDE	0.0005	0.83	<0.1	30.5	61.8	6.6	1.1
4,4'-DDT	0.0003	0.64	<0.1	6.8	89.0	2.6	1.6
Aldrin	0.00002	0.16	<0.1	66.9	0.0	17.6	15.5
alpha-Chlordane	0.0003	1.99	<0.1	7.1	87.9	4.0	0.9
Aroclor 1248	0.0003	0.57	<0.1	36.0	0.0	47	16.9
Aroclor 1254	0.0005	0.15	<0.1	81.0	0.0	9.2	9.8
Aroclor 1260	0.0020	0.28	<0.1	16.0	75.8	5.6	2.6
beta-BHC	0.00002	3.22	<0.1	66.9	0.0	17.6	15.5
delta-BHC	0.00002	1.29	<0.1	63.5	0.0	21.8	14.7
Endosulfan I	0.0001	1.21	<0.1	13.1	82.5	2.3	2.1
Endosulfan Sulfate	0.00003	1.21	<0.1	66.2	0.0	17.7	16.0
Endrin Aldehyde	0.0006	0.04	<0.1	8.7	89.1	1.4	0.8
gamma-Chlordane	0.0002	1.99	<0.1	6.5	87.9	4.3	1.4
HAZARD INDEX			0.028	20.8	71.9	4.5	2.8
Inorganics							
X Aluminum	52	41.82	1	1.4	77.0	21.6	0.0
Antimony	0.004	0.05	<0.1	38.7	0.0	59.6	1.7
X Arsenic	0.97	0.05	17.7	0.7	94.9	4.3	0.0
Barium	1.82	4.33	0.42	3.3	92.1	4.4	0.2
Beryllium	0.001	0.53	<0.1	21.0	0.0	78.5	0.5
Cadmium	0.12	0.78	0.16	1.5	94.4	4.1	0.0
Chromium	0.9	7.2	0.12	0.7	79.5	19.8	0.0
Cobalt	0.54	4.02	0.13	1.5	93.6	4.9	0.0
Copper	3.31	12.23	0.27	36.6	58.1	5.3	0.0
Cyanide	0.007	51.90	<0.1	81.0	0.0	15.4	3.6
X Iron	487	2.57	190	0.5	94.1	5.3	0.0
Lead	6.05	6.43	0.94	0.1	95.0	4.9	0.0
Manganese	69.4	70.8	0.98	3.4	95.8	0.8	0.0
Mercury	0.01	0.03	0.21	4.4	84.3	11.2	0.1
Nickel	0.19	32.2	<0.1	0.7	84.1	15.2	0.1
Selenium	0.08	0.16	0.50	19.0	76.8	4.2	0.1
Silver	0.003	146	<0.1	71.0	0.0	27.6	1.4
Thallium	0.003	0.06	<0.1	66.6	0.0	30.5	2.9
X Vanadium	0.43	0.16	2.75	0.3	87.9	11.8	0.0
Zinc	16.4	129	0.13	3.3	86.3	10.4	0.0
HAZARD INDEX			215.4	0.7	93.9	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-149
HAZARD QUOTIENTS FOR MUSKRAT - STATION 04

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00037	9.73	<0.1	0.0	0.0	32	68.3
Acetone	0.0006	1367	<0.1	0.0	0.0	57	43.2
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	33	66.9
Trichloroethene	0.00008	3.05	<0.1	0.0	0.0	33	66.9
HAZARD INDEX			0.000076	0.0	0.0	33	67.5
Semivolatile Organics							
2-Methylnaphthalene	0.0010	62.5	<0.1	0.0	0.0	74	25.8
Acenaphthylene	0.0009	58.0	<0.1	0.0	0.0	73	27.2
Anthracene	0.0014	435	<0.1	0.0	0.0	81	18.7
Benzo(a)anthracene	0.0042	0.57	<0.1	0.0	0.0	94	6.0
Benzo(a)pyrene	0.15	0.57	0.26	0.0	97.0	2.8	0.2
Benzo(b)fluoranthene	0.08	0.57	0.14	0.0	93.9	5.7	0.3
Benzo(g,h,i)perylene	0.0027	58.0	<0.1	0.0	0.0	91	9.4
Benzo(k)fluoranthene	0.16	0.57	0.28	0.0	97.6	2.3	0.2
Carbazole	0.0006	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.15	0.57	0.26	0.0	96.0	3.8	0.2
Dibenz(a,h)anthracene	0.0014	0.57	<0.1	0.0	0.0	82	18.4
Dibenzofuran	0.0008	58.0	<0.1	0.0	0.0	69	30.7
Fluoranthene	0.09	54.4	<0.1	0.0	90.8	8.9	0.3
Fluorene	0.0009	54.4	<0.1	0.0	0.0	71	28.5
Indeno(1,2,3-cd)pyrene	0.20	0.57	0.36	0.0	98.8	1.1	0.1
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	69	30.9
N-nitrosodiphenylamine	0.0010	121	<0.1	0.0	0.0	74	25.8
Phenanthrene	0.26	58.0	<0.1	0.0	98.2	1.7	0.1
Pyrene	0.11	58.0	<0.1	0.0	92.7	7.0	0.2
HAZARD INDEX			1.31	0.0	96.3	3.4	0.2
Pesticides and PCBs							
4,4'-DDD	0.0013	6.84	<0.1	3.7	87.9	7.9	0.4
4,4'-DDE	0.0007	0.83	<0.1	20.1	71.5	7.7	0.7
4,4'-DDT	0.0009	0.64	<0.1	2.3	94.4	2.7	0.5
Aldrin	0.00003	0.16	<0.1	41.2	0.0	49.3	9.5
alpha-Chlordane	0.0003	1.99	<0.1	5.9	89.2	4.1	0.8
Aroclor 1248	0.0004	0.57	<0.1	26.1	0.0	62	12.3
Aroclor 1254	0.0007	0.15	<0.1	57.9	0.0	35.1	7.0
Aroclor 1260	0.0040	0.28	<0.1	7.8	84.6	6.3	1.3
beta-BHC	0.00003	3.22	<0.1	41.2	0.0	49.3	9.5
delta-BHC	0.00003	1.29	<0.1	41.2	0.0	49.3	9.5
Endosulfan I	0.0005	1.21	<0.1	3.3	93.6	2.6	0.5
Endosulfan Sulfate	0.00005	1.21	<0.1	40.8	0.0	49.4	9.9
Endrin Aldehyde	0.0018	0.04	<0.1	3.1	95.2	1.4	0.3
gamma-Chlordane	0.0003	1.99	<0.1	4.0	90.7	4.4	0.9
HAZARD INDEX			0.067	8.7	84.2	5.9	1.2
Inorganics							
X Aluminum	155	41.82	4	0.5	77.8	21.8	0.0
Antimony	0.007	0.05	0.13	20.5	0.0	78.6	0.9
X Arsenic	2.40	0.05	44	0.3	95.4	4.3	0.0
X Barium	6.37	4.33	1.47	0.9	94.5	4.5	0.1
Beryllium	0.002	0.53	<0.1	8.8	0.0	91.0	0.2
Cadmium	0.43	0.78	0.55	0.4	95.4	4.1	0.0
Chromium	2.7	7.2	0.37	0.2	79.9	19.9	0.0
Cobalt	1.00	4.02	0.25	0.8	94.2	4.9	0.0
Copper	10.0	12.2	0.82	12.1	80.5	7.4	0.0
Cyanide	0.008	51.9	<0.1	67.2	0.0	29.8	3.0
X Iron	1324	2.57	516	0.2	94.5	5.3	0.0
X Lead	21.36	6.43	3.32	0.0	95.1	4.9	0.0
X Manganese	194.8	70.8	2.75	1.2	98.0	0.8	0.0
Mercury	0.02	0.03	0.71	1.3	87.1	11.6	0.0
Nickel	0.44	32.2	<0.1	0.3	84.5	15.2	0.0
Selenium	0.08	0.16	0.50	19.2	76.6	4.2	0.1
Silver	0.003	146	<0.1	66.5	0.0	32.2	1.3
Thallium	0.004	0.06	<0.1	51.2	0.0	46.6	2.3
X Vanadium	1.03	0.16	6.54	0.1	88.1	11.8	0.0
Zinc	37.7	129	0.29	1.5	88.0	10.6	0.0
HAZARD INDEX			581.6	0.3	94.3	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-150
HAZARD QUOTIENTS FOR MUSKRAT - STATION 05

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00029	9.73	<0.1	0.0	0.0	14	86.4
Acetone	0.0003	1367	<0.1	0.0	0.0	24	76.0
cis-1,2-Dichloroethene	0.00007	2504	<0.1	0.0	0.0	25	75.5
Tetrachloroethene	0.00022	6.09	<0.1	0.0	0.0	9	90.5
Trichloroethene	0.00007	3.05	<0.1	0.0	0.0	25	75.5
HAZARD INDEX			0.000089	0.0	0.0	15	85.4
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	64	35.6
Acenaphthylene	0.0007	58.0	<0.1	0.0	0.0	61	38.6
Anthracene	0.0009	435	<0.1	0.0	0.0	73	27.0
Benzo(a)anthracene	0.0024	0.57	<0.1	0.0	0.0	89	10.7
Benzo(a)pyrene	0.07	0.57	0.13	0.0	96.8	2.8	0.3
Benzo(b)fluoranthene	0.04	0.57	<0.1	0.0	93.7	5.7	0.6
Benzo(g,h,i)perylene	0.0013	58.0	<0.1	0.0	0.0	81	19.1
Benzo(k)fluoranthene	0.07	0.57	0.12	0.0	97.4	2.3	0.4
Carbazole	0.0005	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.06	0.57	0.11	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0007	0.57	<0.1	0.0	0.0	66	34.0
Dibenzofuran	0.0006	58.0	<0.1	0.0	0.0	60	39.9
Fluoranthene	0.05	54.4	<0.1	0.0	90.5	8.9	0.5
Fluorene	0.0008	54.4	<0.1	0.0	0.0	66	33.5
Indeno(1,2,3-cd)pyrene	0.09	0.57	0.16	0.0	98.6	1.1	0.3
Naphthalene	0.0006	60.9	<0.1	0.0	0.0	55	45.4
N-nitrosodiphenylamine	0.0008	121	<0.1	0.0	0.0	69	30.8
Phenanthrene	0.15	58.0	<0.1	0.0	98.1	1.7	0.2
Pyrene	0.06	58.0	<0.1	0.0	92.5	7.0	0.4
HAZARD INDEX			0.61	0.0	95.9	3.5	0.5
Pesticides and PCBs							
4,4'-DDD	0.0028	6.84	<0.1	1.7	90.0	8.1	0.2
4,4'-DDE	0.0007	0.83	<0.1	19.6	71.9	7.7	0.7
4,4'-DDT	0.0008	0.64	<0.1	2.5	94.2	2.7	0.6
Aldrin	0.00002	0.16	<0.1	52.2	0.0	35.7	12.1
alpha-Chlordane	0.0005	1.99	<0.1	3.7	91.7	4.2	0.5
Aroclor 1248	0.0004	0.57	<0.1	25.5	0.0	63	12.0
Aroclor 1254	0.0006	0.15	<0.1	70.4	0.0	21.1	8.5
Aroclor 1260	0.0034	0.28	<0.1	9.3	83.0	6.2	1.5
beta-BHC	0.00002	3.22	<0.1	52.2	0.0	35.7	12.1
delta-BHC	0.00002	1.29	<0.1	45.1	0.0	44.4	10.5
Endosulfan I	0.0003	1.21	<0.1	5.6	91.0	2.6	0.9
Endosulfan Sulfate	0.00004	1.21	<0.1	52.0	0.0	35.4	12.6
Endrin Aldehyde	0.0010	0.04	<0.1	5.3	92.8	1.4	0.5
gamma-Chlordane	0.0004	1.99	<0.1	2.7	92.3	4.5	0.6
HAZARD INDEX			0.046	12.8	79.7	5.8	1.7
Inorganics							
X Aluminum	55	41.82	1	1.3	77.1	21.6	0.0
Antimony	0.004	0.05	<0.1	33.7	0.0	64.9	1.5
X Arsenic	0.35	0.05	6.4	2.0	93.7	4.2	0.0
Barium	1.71	4.33	0.40	3.5	91.8	4.4	0.3
Beryllium	0.001	0.53	<0.1	22.4	0.0	77.2	0.4
Cadmium	0.03	0.78	<0.1	5.6	90.5	3.9	0.0
Chromium	0.7	7.2	0.10	0.8	79.4	19.8	0.0
Cobalt	0.41	4.02	0.10	2.0	93.1	4.9	0.0
Copper	2.3	12.2	0.19	52.7	43.3	4.0	0.0
Cyanide	0.007	51.9	<0.1	83.7	0.0	12.6	3.7
X Iron	494	2.57	192	0.5	94.2	5.3	0.0
X Lead	11.37	6.43	1.77	0.1	95.1	4.9	0.0
X Manganese	102.3	70.8	1.45	2.3	96.9	0.8	0.0
Mercury	0.01	0.03	0.29	3.1	85.4	11.3	0.1
Nickel	0.14	32.2	<0.1	0.9	83.9	15.1	0.1
Selenium	0.04	0.16	0.23	41.9	54.9	3.0	0.2
Silver	0.003	146	<0.1	75.3	0.0	23.3	1.5
Thallium	0.003	0.06	<0.1	55.7	0.0	41.9	2.5
X Vanadium	0.34	0.16	2.20	0.4	87.9	11.8	0.0
Zinc	5.6	129	<0.1	9.7	80.6	9.7	0.0
HAZARD INDEX			207.1	0.7	93.8	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-151
HAZARD QUOTIENTS FOR MUSKRAT - STATION 06

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00037	9.73	<0.1	0.0	0.0	32	68.0
Acetone	0.0005	1367	<0.1	0.0	0.0	49	50.7
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	64	36.2
Tetrachloroethene	0.00010	6.09	<0.1	0.0	0.0	49	50.8
Trichloroethene	0.00010	3.05	<0.1	0.0	0.0	50	49.6
<i>HAZARD INDEX</i>			<i>0.000088</i>	<i>0.0</i>	<i>0.0</i>	<i>42</i>	<i>57.8</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0014	62.5	<0.1	0.0	0.0	82	17.8
Acenaphthylene	0.0012	58.0	<0.1	0.0	0.0	80	20.2
Anthracene	0.0014	435	<0.1	0.0	0.0	82	18.4
Benzo(a)anthracene	0.0044	0.57	<0.1	0.0	0.0	94	5.7
Benzo(a)pyrene	0.16	0.57	0.28	0.0	97.0	2.8	0.2
Benzo(b)fluoranthene	0.09	0.57	0.15	0.0	94.0	5.7	0.3
Benzo(g,h,i)perylene	0.0025	58.0	<0.1	0.0	0.0	90	10.1
Benzo(k)fluoranthene	0.10	0.57	0.18	0.0	97.5	2.3	0.3
Carbazole	0.0013	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.16	0.57	0.29	0.0	96.0	3.8	0.2
Dibenz(a,h)anthracene	0.0017	0.57	<0.1	0.0	0.0	85	14.5
Dibenzofuran	0.0017	58.0	<0.1	0.0	0.0	85	14.9
Fluoranthene	0.13	54.4	<0.1	0.0	90.9	9.0	0.2
Fluorene	0.0010	54.4	<0.1	0.0	0.0	75	25.4
Indeno(1,2,3-cd)pyrene	0.21	0.57	0.37	0.0	98.8	1.1	0.1
Naphthalene	0.0014	60.9	<0.1	0.0	0.0	82	17.7
N-nitrosodiphenylamine	0.0017	121	<0.1	0.0	0.0	85	14.9
Phenanthrene	0.37	58.0	<0.1	0.0	98.2	1.7	0.1
Pyrene	0.11	58.0	<0.1	0.0	92.7	7.0	0.2
<i>HAZARD INDEX</i>			<i>1.29</i>	<i>0.0</i>	<i>96.1</i>	<i>3.6</i>	<i>0.2</i>
Pesticides and PCBs							
4,4'-DDD	0.0021	6.84	<0.1	4.6	87.3	7.9	0.2
4,4'-DDE	0.0019	0.83	<0.1	9.0	81.9	8.8	0.3
4,4'-DDT	0.0015	0.64	<0.1	2.8	94.2	2.7	0.3
Aldrin	0.00002	0.16	<0.1	32.0	0.0	57.3	10.7
alpha-Chlordane	0.0019	1.99	<0.1	2.3	93.3	4.2	0.1
Aroclor 1248	0.0005	0.57	<0.1	16.5	0.0	72	11.2
Aroclor 1254	0.0006	0.15	<0.1	48.0	0.0	43.4	8.5
Aroclor 1260	0.0051	0.28	<0.1	13.8	79.3	5.9	1.0
beta-BHC	0.00002	3.22	<0.1	34.6	0.0	55.1	10.3
delta-BHC	0.00004	1.29	<0.1	20.0	0.0	73.3	6.7
Endosulfan I	0.0005	1.21	<0.1	1.5	95.3	2.7	0.5
Endosulfan Sulfate	0.00005	1.21	<0.1	39.6	0.0	50.7	9.7
Endrin Aldehyde	0.0018	0.04	<0.1	2.3	95.9	1.5	0.3
gamma-Chlordane	0.0009	1.99	<0.1	1.9	93.3	4.5	0.3
<i>HAZARD INDEX</i>			<i>0.076</i>	<i>8.0</i>	<i>84.9</i>	<i>6.0</i>	<i>1.0</i>
Inorganics							
X Aluminum	108	41.82	3	1.6	76.9	21.5	0.0
Antimony	0.007	0.05	0.12	20.2	0.0	78.9	0.9
X Arsenic	2.09	0.05	38.1	2.2	93.6	4.2	0.0
X Barium	4.38	4.33	1.01	9.5	86.3	4.1	0.1
Beryllium	0.002	0.53	<0.1	7.7	0.0	92.0	0.3
Cadmium	0.28	0.78	0.37	0.5	95.4	4.1	0.0
Chromium	3.6	7.2	0.50	0.7	79.5	19.8	0.0
Cobalt	0.67	4.02	0.17	1.8	93.3	4.9	0.0
Copper	7.8	12.2	0.64	15.7	77.2	7.1	0.0
Cyanide	0.011	51.9	<0.1	64.6	0.0	33.2	2.2
X Iron	1009	2.57	393	0.8	93.9	5.3	0.0
X Lead	17.66	6.43	2.74	0.2	95.0	4.8	0.0
X Manganese	197.1	70.8	2.79	1.5	97.7	0.8	0.0
X Mercury	0.03	0.03	1.06	0.7	87.6	11.6	0.0
Nickel	0.34	32.2	<0.1	0.9	84.0	15.1	0.1
Selenium	0.07	0.16	0.44	18.0	77.7	4.2	0.1
Silver	0.001	146	<0.1	54.7	0.0	42.7	2.5
Thallium	0.004	0.06	<0.1	53.5	0.0	44.1	2.4
X Vanadium	0.81	0.16	5.20	0.7	87.5	11.7	0.0
Zinc	24.0	129	0.19	3.0	86.6	10.4	0.0
<i>HAZARD INDEX</i>			<i>449.2</i>	<i>1.0</i>	<i>93.6</i>	<i>5.4</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-152
HAZARD QUOTIENTS FOR MUSKRAT - STATION 07

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00031	9.73	<0.1	0.0	0.0	17	82.6
Acetone	0.0004	1367	<0.1	0.0	0.0	30	70.0
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	49	51.1
Tetrachloroethene	0.00009	6.09	<0.1	0.0	0.0	47	53.2
Trichloroethene	0.00008	3.05	<0.1	0.0	0.0	40	59.6
HAZARD INDEX			0.00008	0.0	0.0	32	67.9
Semivolatile Organics							
2-Methylnaphthalene	0.0011	62.5	<0.1	0.0	0.0	77	22.5
Acenaphthylene	0.0011	58.0	<0.1	0.0	0.0	77	22.7
Anthracene	0.0017	435	<0.1	0.0	0.0	85	15.1
Benzo(a)anthracene	0.0096	0.57	<0.1	0.0	0.0	97	2.6
Benzo(a)pyrene	0.32	0.57	0.57	0.0	97.1	2.8	0.1
Benzo(b)fluoranthene	0.28	0.57	0.49	0.0	94.1	5.8	0.1
Benzo(g,h,i)perylene	0.0044	58.0	<0.1	0.0	0.0	94	5.7
Benzo(k)fluoranthene	0.54	0.57	0.96	0.0	97.7	2.3	0.0
Carbazole	0.0008	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.31	0.57	0.54	0.0	96.1	3.8	0.1
Dibenz(a,h)anthracene	0.0016	0.57	<0.1	0.0	0.0	84	15.8
Dibenzofuran	0.0012	58.0	<0.1	0.0	0.0	79	20.9
Fluoranthene	0.24	54.4	<0.1	0.0	90.9	9.0	0.1
Fluorene	0.0012	54.4	<0.1	0.0	0.0	78	21.6
Indeno(1,2,3-cd)pyrene	0.43	0.57	0.77	0.0	98.8	1.1	0.1
Naphthalene	0.0011	60.9	<0.1	0.0	0.0	77	22.7
N-nitrosodiphenylamine	0.0016	121	<0.1	0.0	0.0	84	16.2
Phenanthrene	0.57	58.0	<0.1	0.0	98.3	1.7	0.0
Pyrene	0.24	58.0	<0.1	0.0	92.8	7.1	0.1
HAZARD INDEX			3.36	0.0	96.5	3.4	0.1
Pesticides and PCBs							
4,4'-DDD	0.0012	6.84	<0.1	8.1	83.9	7.6	0.4
4,4'-DDE	0.0010	0.83	<0.1	17.9	73.6	7.9	0.5
4,4'-DDT	0.0019	0.64	<0.1	2.2	94.8	2.7	0.3
Aldrin	0.00002	0.16	<0.1	46.7	0.0	37.7	15.6
alpha-Chlordane	0.0020	1.99	<0.1	2.2	93.4	4.3	0.1
Aroclor 1248	0.0002	0.57	<0.1	32.0	0.0	46	21.8
Aroclor 1254	0.0004	0.15	<0.1	68.2	0.0	19.7	12.1
Aroclor 1260	0.0025	0.28	<0.1	27.8	65.3	4.9	2.0
beta-BHC	0.00002	3.22	<0.1	45.8	0.0	40.6	13.6
delta-BHC	0.00002	1.29	<0.1	36.5	0.0	51.2	12.2
Endosulfan I	0.0002	1.21	<0.1	4.2	91.8	2.6	1.4
Endosulfan Sulfate	0.00003	1.21	<0.1	60.2	0.0	25.1	14.7
Endrin Aldehyde	0.0009	0.04	<0.1	4.6	93.4	1.4	0.6
gamma-Chlordane	0.0013	1.99	<0.1	1.3	93.9	4.6	0.2
HAZARD INDEX			0.042	14.6	79.1	4.4	1.9
Inorganics							
X Aluminum	111	41.82	3	1.6	76.9	21.5	0.0
Antimony	0.006	0.05	0.11	22.1	0.0	75.7	2.1
X Arsenic	1.75	0.05	32.0	2.6	93.2	4.2	0.0
Barium	3.87	4.33	0.89	10.8	85.1	4.1	0.1
Beryllium	0.001	0.53	<0.1	8.2	0.0	91.4	0.3
Cadmium	0.19	0.78	0.25	0.7	95.1	4.1	0.0
Chromium	2.2	7.2	0.30	1.2	79.1	19.7	0.0
Cobalt	0.69	4.02	0.17	1.7	93.4	4.9	0.0
Copper	6.1	12.2	0.50	20.2	73.1	6.7	0.0
Cyanide	0.009	51.9	<0.1	79.1	0.0	18.2	2.7
X Iron	919	2.57	358	0.9	93.8	5.3	0.0
X Lead	12.92	6.43	2.01	0.2	94.9	4.8	0.0
X Manganese	99.3	70.8	1.40	3.0	96.2	0.8	0.1
X Mercury	0.03	0.03	1.13	0.7	87.6	11.6	0.1
Nickel	0.35	32.2	<0.1	0.8	84.0	15.1	0.0
Selenium	0.07	0.16	0.42	19.1	76.6	4.2	0.1
Silver	0.002	146	<0.1	42.3	0.0	55.7	1.9
Thallium	0.006	0.06	<0.1	34.0	0.0	64.5	1.5
X Vanadium	0.81	0.16	5.15	0.7	87.5	11.7	0.0
Zinc	22.0	129	0.17	3.3	86.4	10.4	0.0
HAZARD INDEX			405.4	1.1	93.4	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-153
HAZARD QUOTIENTS FOR MUSKRAT - STATION 08

WELLS G&H SUPERFUND SITE OUS

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	6	94.2
Acetone	0.00027	1367	<0.1	0.0	0.0	8	92.2
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.00007	6.09	<0.1	0.0	0.0	24	76.4
Trichloroethene	0.00017	3.05	<0.1	0.0	0.0	9	90.7
HAZARD INDEX			0.00009	0.0	0.0	10	90.0
Semivolatile Organics							
2-Methylnaphthalene	0.0008	62.5	<0.1	0.0	0.0	67	33.0
Acenaphthylene	0.0006	58.0	<0.1	0.0	0.0	55	44.6
Anthracene	0.0005	435	<0.1	0.0	0.0	48	52.2
Benzo(a)anthracene	0.0014	0.57	<0.1	0.0	0.0	82	18.2
Benzo(a)pyrene	0.05	0.57	<0.1	0.0	96.7	2.8	0.5
Benzo(b)fluoranthene	0.05	0.57	<0.1	0.0	93.8	5.7	0.5
Benzo(g,h,i)perylene	0.0012	58.0	<0.1	0.0	0.0	79	20.7
Benzo(k)fluoranthene	0.14	0.57	0.25	0.0	97.5	2.3	0.2
Carbazole	0.0003	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.04	0.57	<0.1	0.0	95.6	3.8	0.6
Dibenz(a,h)anthracene	0.0005	0.57	<0.1	0.0	0.0	46	53.6
Dibenzofuran	0.0006	58.0	<0.1	0.0	0.0	59	41.0
Fluoranthene	0.02	54.4	<0.1	0.0	90.1	8.9	1.1
Fluorene	0.0004	54.4	<0.1	0.0	0.0	40	59.7
Indeno(1,2,3-cd)pyrene	0.09	0.57	0.15	0.0	98.6	1.1	0.3
Naphthalene	0.0005	60.9	<0.1	0.0	0.0	48	52.3
N-nitrosodiphenylamine	0.0006	121	<0.1	0.0	0.0	61	39.1
Phenanthrene	0.07	58.0	<0.1	0.0	97.9	1.7	0.4
Pyrene	0.04	58.0	<0.1	0.0	92.3	7.0	0.7
HAZARD INDEX			0.66	0.0	96.4	3.1	0.5
Pesticides and PCBs							
4,4'-DDD	0.0003	6.84	<0.1	33.9	59.0	5.3	1.7
4,4'-DDE	0.0003	0.83	<0.1	70.4	25.4	2.7	1.5
4,4'-DDT	0.0002	0.64	<0.1	15.9	79.3	2.3	2.6
Aldrin	0.00001	0.16	<0.1	60.7	0.0	20.3	19.0
alpha-Chlordane	0.0001	1.99	<0.1	20.7	73.1	3.3	2.8
Aroclor 1248	0.0002	0.57	<0.1	42.0	0.0	30	28.4
Aroclor 1254	0.0008	0.15	<0.1	86.4	0.0	6.9	6.6
Aroclor 1260	0.0020	0.28	<0.1	60.2	34.8	2.6	2.5
beta-BHC	0.00001	3.22	<0.1	58.8	0.0	21.2	19.9
delta-BHC	0.00001	1.29	<0.1	62.0	0.0	17.0	21.0
Endosulfan I	0.0001	1.21	<0.1	6.9	88.2	2.5	2.3
Endosulfan Sulfate	0.00003	1.21	<0.1	67.4	0.0	16.6	15.9
Endrin Aldehyde	0.0003	0.04	<0.1	30.3	67.0	1.0	1.7
gamma-Chlordane	0.000050	1.99	<0.1	15.0	76.2	3.7	5.1
HAZARD INDEX			0.021	55.2	37.4	3.6	3.7
Inorganics							
X Aluminum	60	41.82	1	2.6	76.1	21.3	0.0
Antimony	0.004	0.05	<0.1	39.9	0.0	58.6	1.5
X Arsenic	0.60	0.05	11.0	13.4	82.7	3.7	0.2
Barium	1.27	4.33	0.29	23.4	72.9	3.5	0.3
Beryllium	0.001	0.53	<0.1	27.0	0.0	72.3	0.6
Cadmium	0.04	0.78	<0.1	8.7	87.4	3.8	0.1
Chromium	0.7	7.2	<0.1	9.3	72.5	18.1	0.1
Cobalt	0.36	4.02	<0.1	4.5	90.7	4.8	0.0
Copper	3.9	12.2	0.32	47.5	48.0	4.4	0.0
Cyanide	0.008	51.9	<0.1	87.5	0.0	9.3	3.3
X Iron	593	2.57	231	1.7	93.0	5.2	0.0
Lead	2.11	6.43	0.33	1.4	93.8	4.8	0.0
Manganese	49.7	70.8	0.70	7.2	91.9	0.8	0.1
Mercury	0.01	0.03	0.37	4.4	84.3	11.2	0.1
Nickel	0.19	32.2	<0.1	1.6	83.3	15.0	0.1
Selenium	0.03	0.16	0.18	39.8	56.9	3.1	0.3
Silver	0.001	146	<0.1	59.7	0.0	36.4	3.9
Thallium	0.007	0.06	0.12	53.5	0.0	45.4	1.2
X Vanadium	0.30	0.16	1.92	1.6	86.8	11.6	0.0
Zinc	8.5	129	<0.1	9.8	80.5	9.7	0.1
HAZARD INDEX			248.1	2.4	92.2	5.3	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-154
HAZARD QUOTIENTS FOR MUSKRAT - STATION 09

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	6	94.3
Acetone	0.00027	1367	<0.1	0.0	0.0	7	93.4
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.00007	6.09	<0.1	0.0	0.0	23	76.7
Trichloroethene	0.00017	3.05	<0.1	0.0	0.0	9	90.8
HAZARD INDEX			0.0001	0.0	0.0	10	90.2
Semivolatile Organics							
2-Methylnaphthalene	0.0008	62.5	<0.1	0.0	0.0	67	33.0
Acenaphthylene	0.0007	58.0	<0.1	0.0	0.0	66	34.4
Anthracene	0.0009	435	<0.1	0.0	0.0	73	27.1
Benzo(a)anthracene	0.0007	0.57	<0.1	0.0	0.0	66	33.7
Benzo(a)pyrene	0.02	0.57	<0.1	0.0	95.7	2.8	1.4
Benzo(b)fluoranthene	0.02	0.57	<0.1	0.0	92.8	5.7	1.5
Benzo(g,h,i)perylene	0.0007	58.0	<0.1	0.0	0.0	66	33.9
Benzo(k)fluoranthene	0.04	0.57	<0.1	0.0	97.1	2.3	0.7
Carbazole	0.0006	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.6	3.8	1.6
Dibenz(a,h)anthracene	0.0007	0.57	<0.1	0.0	0.0	66	34.5
Dibenzofuran	0.0008	58.0	<0.1	0.0	0.0	70	30.4
Fluoranthene	0.01	54.4	<0.1	0.0	88.5	8.7	2.8
Fluorene	0.0009	54.4	<0.1	0.0	0.0	71	29.1
Indeno(1,2,3-cd)pyrene	0.04	0.57	<0.1	0.0	98.3	1.1	0.6
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	67	32.7
N-nitrosodiphenylamine	0.0008	121	<0.1	0.0	0.0	67	33.2
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.6
Pyrene	0.01	58.0	<0.1	0.0	91.1	6.9	2.0
HAZARD INDEX			0.23	0.0	95.3	3.4	1.4
Pesticides and PCBs							
4,4'-DDD	0.0006	6.84	<0.1	17.7	74.7	6.7	0.9
4,4'-DDE	0.0004	0.83	<0.1	55.9	38.8	4.2	1.2
4,4'-DDT	0.0004	0.64	<0.1	8.5	87.6	2.5	1.4
Aldrin	0.00001	0.16	<0.1	67.0	0.0	12.0	21.0
alpha-Chlordane	0.0001	1.99	<0.1	28.2	65.0	3.0	3.8
Aroclor 1248	0.0002	0.57	<0.1	42.4	0.0	29	28.7
Aroclor 1254	0.0008	0.15	<0.1	86.6	0.0	6.7	6.7
Aroclor 1260	0.0020	0.28	<0.1	61.0	34.0	2.5	2.5
beta-BHC	0.00001	3.22	<0.1	63.8	0.0	14.6	21.6
delta-BHC	0.00001	1.29	<0.1	60.8	0.0	18.7	20.6
Endosulfan I	0.0001	1.21	<0.1	8.4	86.3	2.4	2.8
Endosulfan Sulfate	0.00003	1.21	<0.1	67.8	0.0	16.2	16.0
Endrin Aldehyde	0.0004	0.04	<0.1	21.6	76.0	1.2	1.2
gamma-Chlordane	0.000049	1.99	<0.1	15.4	75.7	3.7	5.2
HAZARD INDEX			0.024	48.0	45.5	3.3	3.2
Inorganics							
X Aluminum	47	41.82	1	3.3	75.5	21.1	0.0
Antimony	0.004	0.05	<0.1	45.5	0.0	52.9	1.7
X Arsenic	0.89	0.05	16.3	9.0	86.9	3.9	0.1
Barium	1.38	4.33	0.32	21.6	74.6	3.6	0.2
Beryllium	0.001	0.53	<0.1	33.4	0.0	65.8	0.8
Cadmium	0.03	0.78	<0.1	10.8	85.3	3.7	0.2
Chromium	0.6	7.2	<0.1	11.1	71.1	17.7	0.1
Cobalt	0.30	4.02	<0.1	5.5	89.8	4.7	0.0
Copper	3.2	12.2	0.26	58.8	37.7	3.5	0.0
Cyanide	0.008	51.9	<0.1	87.9	0.0	8.8	3.3
X Iron	491	2.57	191	2.1	92.7	5.2	0.0
Lead	1.49	6.43	0.23	1.9	93.3	4.8	0.0
X Manganese	108.0	70.8	1.53	3.3	95.8	0.8	0.1
Mercury	0.01	0.03	0.22	7.5	81.5	10.8	0.2
Nickel	0.13	32.2	<0.1	2.4	82.6	14.9	0.1
Selenium	0.03	0.16	0.20	37.4	59.1	3.2	0.2
Silver	0.001	146	<0.1	59.8	0.0	36.3	3.9
Thallium	0.006	0.06	0.10	63.9	0.0	34.7	1.4
X Vanadium	0.23	0.16	1.47	2.0	86.4	11.6	0.0
Zinc	4.2	129	<0.1	19.5	71.7	8.6	0.1
HAZARD INDEX			213.3	2.8	91.9	5.2	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-155
HAZARD QUOTIENTS FOR MUSKRAT - STATION 10

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00028	9.73	<0.1	0.0	0.0	11	88.7
Acetone	0.0005	1367	<0.1	0.0	0.0	45	55.3
cis-1,2-Dichloroethene	0.0002	2504	<0.1	0.0	0.0	63	37.1
Tetrachloroethene	0.0002	6.09	<0.1	0.0	0.0	79	21.1
Trichloroethene	0.00013	3.05	<0.1	0.0	0.0	62	38.2
HAZARD INDEX			<i>0.00011</i>	<i>0.0</i>	<i>0.0</i>	<i>55</i>	<i>45.4</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0006	62.5	<0.1	0.0	0.0	60	40.3
Acenaphthylene	0.0006	58.0	<0.1	0.0	0.0	59	40.5
Anthracene	0.0007	435	<0.1	0.0	0.0	63	36.6
Benzo(a)anthracene	0.0011	0.57	<0.1	0.0	0.0	76	23.7
Benzo(a)pyrene	0.03	0.57	<0.1	0.0	96.3	2.8	0.8
Benzo(b)fluoranthene	0.02	0.57	<0.1	0.0	93.0	5.7	1.3
Benzo(g,h,i)perylene	0.0009	58.0	<0.1	0.0	0.0	73	27.0
Benzo(k)fluoranthene	0.04	0.57	<0.1	0.0	97.1	2.3	0.7
Carbazole	0.0007	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.03	0.57	<0.1	0.0	95.2	3.8	1.0
Dibenz(a,h)anthracene	0.0007	0.57	<0.1	0.0	0.0	65	35.2
Dibenzofuran	0.0010	58.0	<0.1	0.0	0.0	74	26.4
Fluoranthene	0.02	54.4	<0.1	0.0	89.5	8.8	1.6
Fluorene	0.0007	54.4	<0.1	0.0	0.0	65	35.4
Indeno(1,2,3-cd)pyrene	0.06	0.57	0.11	0.0	98.5	1.1	0.4
Naphthalene	0.0007	60.9	<0.1	0.0	0.0	62	38.2
N-nitrosodiphenylamine	0.0012	121	<0.1	0.0	0.0	80	20.4
Phenanthrene	0.05	58.0	<0.1	0.0	97.8	1.7	0.5
Pyrene	0.02	58.0	<0.1	0.0	91.7	7.0	1.3
HAZARD INDEX			<i>0.32</i>	<i>0.0</i>	<i>95.8</i>	<i>3.2</i>	<i>1.0</i>
Pesticides and PCBs							
4,4'-DDD	0.0021	6.84	<0.1	0.9	90.7	8.2	0.2
4,4'-DDE	0.0013	0.83	<0.1	2.2	88.0	9.4	0.4
4,4'-DDT	0.0002	0.64	<0.1	16.2	79.0	2.3	2.6
Aldrin	0.00002	0.16	<0.1	38.2	0.0	51.2	10.6
alpha-Chlordane	0.0005	1.99	<0.1	3.7	91.7	4.2	0.4
Aroclor 1248	0.0005	0.57	<0.1	14.6	0.0	76	9.9
Aroclor 1254	0.0007	0.15	<0.1	87.4	0.0	5.0	7.6
Aroclor 1260	0.0042	0.28	<0.1	15.2	77.8	5.8	1.2
beta-BHC	0.00001	3.22	<0.1	61.9	0.0	17.6	20.5
delta-BHC	0.00001	1.29	<0.1	66.9	0.0	10.9	22.2
Endosulfan I	0.0001	1.21	<0.1	18.7	76.6	2.2	2.5
Endosulfan Sulfate	0.00004	1.21	<0.1	75.2	0.0	11.3	13.5
Endrin Aldehyde	0.0008	0.04	<0.1	8.1	89.9	1.4	0.6
gamma-Chlordane	0.0004	1.99	<0.1	1.8	93.1	4.5	0.5
HAZARD INDEX			<i>0.044</i>	<i>18.9</i>	<i>74.0</i>	<i>5.4</i>	<i>1.8</i>
Inorganics							
X Aluminum	259	41.82	6	0.6	77.7	21.7	0.0
Antimony	0.036	0.05	0.66	4.2	0.0	95.7	0.2
X Arsenic	24.03	0.05	438	0.5	95.2	4.3	0.0
Barium	3.81	4.33	0.88	6.9	88.8	4.2	0.1
Beryllium	0.004	0.53	<0.1	4.7	0.0	95.1	0.2
Cadmium	0.76	0.78	0.98	0.2	95.6	4.2	0.0
X Chromium	16.2	7.2	2.24	0.2	79.9	19.9	0.0
Cobalt	1.05	4.02	0.26	1.4	93.7	4.9	0.0
X Copper	49.1	12.2	4.02	3.3	88.6	8.1	0.0
Cyanide	0.009	51.9	<0.1	85.8	0.0	11.5	2.7
X Iron	1479	2.57	577	1.2	93.6	5.3	0.0
X Lead	28.45	6.43	4.42	0.1	95.1	4.9	0.0
X Manganese	154.7	70.8	2.19	1.7	97.5	0.8	0.0
X Mercury	0.21	0.03	8.20	0.1	88.1	11.7	0.0
Nickel	0.42	32.2	<0.1	0.5	84.3	15.2	0.1
X Selenium	0.32	0.16	1.99	3.1	91.9	5.0	0.0
Silver	0.002	146	<0.1	51.3	0.0	47.6	1.2
Thallium	0.004	0.06	<0.1	54.8	0.0	43.0	2.1
X Vanadium	1.05	0.16	6.70	0.4	87.8	11.8	0.0
Zinc	48.7	129	0.38	1.8	87.7	10.5	0.0
HAZARD INDEX			<i>1054</i>	<i>0.9</i>	<i>94.0</i>	<i>5.1</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-156
HAZARD QUOTIENTS FOR MUSKRAT - STATION 11

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00050	9.73	<0.1	0.0	0.0	50	50.2
Acetone	0.0006	1367	<0.1	0.0	0.0	55	45.3
cis-1,2-Dichloroethene	0.0005	2504	<0.1	0.0	0.0	87	12.9
Tetrachloroethene	0.0002	6.09	<0.1	0.0	0.0	70	30.2
Trichloroethene	0.00013	3.05	<0.1	0.0	0.0	60	39.7
<i>HAZARD INDEX</i>			<i>0.00012</i>	<i>0.0</i>	<i>0.0</i>	<i>58</i>	<i>42.0</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0008	62.5	<0.1	0.0	0.0	69	31.4
Acenaphthylene	0.0008	58.0	<0.1	0.0	0.0	68	31.7
Anthracene	0.0008	435	<0.1	0.0	0.0	70	29.7
Benzo(a)anthracene	0.0009	0.57	<0.1	0.0	0.0	72	27.8
Benzo(a)pyrene	0.03	0.57	<0.1	0.0	96.4	2.8	0.8
Benzo(b)fluoranthene	0.03	0.57	<0.1	0.0	93.4	5.7	0.9
Benzo(g,h,i)perylene	0.0010	58.0	<0.1	0.0	0.0	76	24.2
Benzo(k)fluoranthene	0.06	0.57	0.11	0.0	97.3	2.3	0.4
Carbazole	0.0011	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.03	0.57	<0.1	0.0	95.2	3.8	1.0
Dibenz(a,h)anthracene	0.0009	0.57	<0.1	0.0	0.0	72	28.0
Dibenzofuran	0.0013	58.0	<0.1	0.0	0.0	81	19.1
Fluoranthene	0.02	54.4	<0.1	0.0	89.7	8.8	1.4
Fluorene	0.0009	54.4	<0.1	0.0	0.0	70	29.6
Indeno(1,2,3-cd)pyrene	0.08	0.57	0.14	0.0	98.6	1.1	0.3
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	69	30.7
N-nitrosodiphenylamine	0.0014	121	<0.1	0.0	0.0	82	17.8
Phenanthrene	0.03	58.0	<0.1	0.0	97.4	1.7	0.9
Pyrene	0.02	58.0	<0.1	0.0	91.8	7.0	1.2
<i>HAZARD INDEX</i>			<i>0.41</i>	<i>0.0</i>	<i>96.1</i>	<i>3.1</i>	<i>0.8</i>
Pesticides and PCBs							
4,4'-DDD	0.0007	6.84	<0.1	2.6	88.7	8.0	0.7
4,4'-DDE	0.0002	0.83	<0.1	12.8	76.8	8.2	2.2
4,4'-DDT	0.0001	0.64	<0.1	22.5	71.8	2.1	3.5
Aldrin	0.00001	0.16	<0.1	73.3	0.0	6.3	20.3
alpha-Chlordane	0.0002	1.99	<0.1	8.3	86.8	4.0	1.0
Aroclor 1248	0.0004	0.57	<0.1	19.1	0.0	68	13.0
Aroclor 1254	0.0007	0.15	<0.1	84.6	0.0	8.1	7.3
Aroclor 1260	0.0045	0.28	<0.1	14.3	78.7	5.9	1.1
beta-BHC	0.00001	3.22	<0.1	58.6	0.0	21.9	19.4
delta-BHC	0.00001	1.29	<0.1	58.6	0.0	21.9	19.4
Endosulfan I	0.0001	1.21	<0.1	13.3	82.5	2.3	1.8
Endosulfan Sulfate	0.00004	1.21	<0.1	71.4	0.0	15.8	12.8
Endrin Aldehyde	0.0006	0.04	<0.1	11.6	86.2	1.3	0.9
gamma-Chlordane	0.0002	1.99	<0.1	4.8	89.5	4.3	1.4
<i>HAZARD INDEX</i>			<i>0.037</i>	<i>22.5</i>	<i>69.8</i>	<i>5.6</i>	<i>2.1</i>
Inorganics							
X Aluminum	101	41.82	2	1.4	77.0	21.5	0.0
Antimony	0.005	0.05	<0.1	28.6	0.0	70.0	1.3
X Arsenic	8.08	0.05	147	1.4	94.3	4.3	0.0
Barium	4.32	4.33	1.00	6.1	89.6	4.3	0.1
Beryllium	0.002	0.53	<0.1	10.9	0.0	88.7	0.4
Cadmium	0.31	0.78	0.39	0.6	95.3	4.1	0.0
Chromium	6.0	7.2	0.83	0.4	79.7	19.8	0.0
Cobalt	0.85	4.02	0.21	1.7	93.4	4.9	0.0
Copper	9.6	12.2	0.78	16.9	76.0	7.0	0.0
Cyanide	0.010	51.9	<0.1	80.0	0.0	17.4	2.5
X Iron	1356	2.57	529	1.3	93.5	5.3	0.0
X Lead	13.26	6.43	2.06	0.1	95.0	4.9	0.0
X Manganese	248.6	70.8	3.51	1.1	98.1	0.8	0.0
X Mercury	0.04	0.03	1.74	0.6	87.7	11.7	0.0
Nickel	0.29	32.2	<0.1	0.7	84.1	15.2	0.1
Selenium	0.13	0.16	0.82	7.5	87.7	4.8	0.1
Silver	0.002	146	<0.1	45.5	0.0	53.4	1.0
Thallium	0.004	0.06	<0.1	55.5	0.0	42.4	2.2
X Vanadium	0.65	0.16	4.18	0.6	87.6	11.7	0.0
Zinc	33.2	129	0.26	2.6	86.9	10.5	0.0
<i>HAZARD INDEX</i>			<i>694.5</i>	<i>1.3</i>	<i>93.5</i>	<i>5.2</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-157
HAZARD QUOTIENTS FOR MUSKRAT - STATION 12
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00037	9.73	<0.1	0.0	0.0	31	68.7
Acetone	0.0007	1367	<0.1	0.0	0.0	65	35.1
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	50	50.1
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	63	37.1
Trichloroethene	0.00009	3.05	<0.1	0.0	0.0	42	57.8
<i>HAZARD INDEX</i>			<i>0.00009</i>	<i>0.0</i>	<i>0.0</i>	<i>43</i>	<i>57.1</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	64	35.6
Acenaphthylene	0.0007	58.0	<0.1	0.0	0.0	64	35.7
Anthracene	0.0008	435	<0.1	0.0	0.0	66	33.6
Benzo(a)anthracene	0.0009	0.57	<0.1	0.0	0.0	70	29.6
Benzo(a)pyrene	0.03	0.57	<0.1	0.0	96.2	2.8	1.0
Benzo(b)fluoranthene	0.03	0.57	<0.1	0.0	93.4	5.7	0.9
Benzo(g,h,i)perylene	0.0010	58.0	<0.1	0.0	0.0	74	25.7
Benzo(k)fluoranthene	0.05	0.57	<0.1	0.0	97.2	2.3	0.5
Carbazole	0.0007	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	95.2	3.8	1.0
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	69	31.3
Dibenzofuran	0.0009	58.0	<0.1	0.0	0.0	72	27.8
Fluoranthene	0.02	54.4	<0.1	0.0	89.6	8.8	1.6
Fluorene	0.0008	54.4	<0.1	0.0	0.0	66	33.6
Indeno(1,2,3-cd)pyrene	0.04	0.57	<0.1	0.0	98.3	1.1	0.6
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	68	32.2
N-nitrosodiphenylamine	0.0006	121	<0.1	0.0	0.0	58	42.2
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.6
Pyrene	0.02	58.0	<0.1	0.0	91.7	7.0	1.4
<i>HAZARD INDEX</i>			<i>0.31</i>	<i>0.0</i>	<i>95.5</i>	<i>3.5</i>	<i>1.0</i>
Pesticides and PCBs							
4,4'-DDD	0.0001	6.84	<0.1	24.2	63.7	5.7	6.3
4,4'-DDE	0.0001	0.83	<0.1	37.9	50.2	5.4	6.6
4,4'-DDT	0.0002	0.64	<0.1	17.9	77.0	2.2	2.8
Aldrin	0.00001	0.16	<0.1	71.6	0.0	8.5	19.9
alpha-Chlordane	0.0001	1.99	<0.1	20.2	74.0	3.4	2.4
Aroclor 1248	0.0002	0.57	<0.1	42.1	0.0	29	28.5
Aroclor 1254	0.0007	0.15	<0.1	86.3	0.0	6.2	7.5
Aroclor 1260	0.0015	0.28	<0.1	43.4	49.5	3.7	3.4
beta-BHC	0.00001	3.22	<0.1	60.6	0.0	19.4	20.1
delta-BHC	0.00001	1.29	<0.1	61.8	0.0	17.6	20.5
Endosulfan I	0.0001	1.21	<0.1	29.3	64.9	1.8	4.0
Endosulfan Sulfate	0.00004	1.21	<0.1	75.3	0.0	11.2	13.5
Endrin Aldehyde	0.0002	0.04	<0.1	26.3	70.6	1.1	2.0
gamma-Chlordane	0.0001	1.99	<0.1	12.7	79.8	3.9	3.6
<i>HAZARD INDEX</i>			<i>0.017</i>	<i>48.3</i>	<i>43.2</i>	<i>3.9</i>	<i>4.6</i>
Inorganics							
X Aluminum	142	41.82	3	1.0	77.3	21.6	0.0
X Antimony	0.095	0.05	1.74	1.6	0.0	98.4	0.1
X Arsenic	39.95	0.05	729	0.3	95.4	4.3	0.0
Barium	2.96	4.33	0.68	8.9	86.9	4.1	0.1
Beryllium	0.002	0.53	<0.1	7.4	0.0	92.3	0.3
Cadmium	0.36	0.78	0.47	0.5	95.4	4.1	0.0
Chromium	6.5	7.2	0.90	0.4	79.7	19.9	0.0
Cobalt	1.23	4.02	0.31	1.2	93.9	4.9	0.0
X Copper	19.5	12.2	1.59	8.3	84.0	7.7	0.0
Cyanide	0.010	51.9	<0.1	83.3	0.0	14.1	2.6
X Iron	2499	2.57	974	0.7	94.0	5.3	0.0
X Lead	18.66	6.43	2.90	0.1	95.1	4.9	0.0
X Manganese	151.2	70.8	2.14	1.8	97.4	0.8	0.0
X Mercury	0.20	0.03	7.83	0.1	88.1	11.7	0.0
Nickel	0.24	32.2	<0.1	0.8	83.9	15.1	0.1
X Selenium	0.41	0.16	2.53	2.4	92.5	5.0	0.0
Silver	0.003	146	<0.1	34.5	0.0	64.7	0.8
Thallium	0.004	0.06	<0.1	49.3	0.0	48.8	1.9
X Vanadium	1.01	0.16	6.45	0.4	87.8	11.8	0.0
Zinc	55.2	129	0.43	1.6	87.9	10.6	0.0
<i>HAZARD INDEX</i>			<i>1734.4</i>	<i>0.5</i>	<i>94.4</i>	<i>5.1</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-158
HAZARD QUOTIENTS FOR MUSKRAT - STATION 13

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00053	9.73	<0.1	0.0	0.0	53	47.2
Acetone	0.0060	1367	<0.1	0.0	0.0	96	4.2
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	41	59.4
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	64	36.3
Trichloroethene	0.00010	3.05	<0.1	0.0	0.0	50	49.7
HAZARD INDEX			<i>0.00012</i>	<i>0.0</i>	<i>0.0</i>	<i>56</i>	<i>44.1</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0004	62.5	<0.1	0.0	0.0	42	57.8
Acenaphthylene	0.0004	58.0	<0.1	0.0	0.0	38	62.1
Anthracene	0.0007	435	<0.1	0.0	0.0	63	37.5
Benzo(a)anthracene	0.0022	0.57	<0.1	0.0	0.0	88	11.6
Benzo(a)pyrene	0.07	0.57	0.13	0.0	96.8	2.8	0.3
Benzo(b)fluoranthene	0.07	0.57	0.12	0.0	93.9	5.7	0.4
Benzo(g,h,i)perylene	0.0012	58.0	<0.1	0.0	0.0	79	20.7
Benzo(k)fluoranthene	0.13	0.57	0.24	0.0	97.5	2.3	0.2
Carbazole	0.0004	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.06	0.57	0.11	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	67	33.1
Dibenzofuran	0.00058	58.0	<0.1	0.0	0.0	57	43.5
Fluoranthene	0.06	54.4	<0.1	0.0	90.6	8.9	0.4
Fluorene	0.0006	54.4	<0.1	0.0	0.0	57	43.1
Indeno(1,2,3-cd)pyrene	0.14	0.57	0.24	0.0	98.7	1.1	0.2
Naphthalene	0.00045	60.9	<0.1	0.0	0.0	43	56.7
N-nitrosodiphenylamine	0.00058	121	<0.1	0.0	0.0	57	43.5
Phenanthrene	0.13	58.0	<0.1	0.0	98.1	1.7	0.2
Pyrene	0.06	58.0	<0.1	0.0	92.5	7.0	0.5
HAZARD INDEX			<i>0.85</i>	<i>0.0</i>	<i>96.4</i>	<i>3.2</i>	<i>0.4</i>
Pesticides and PCBs							
4,4'-DDD	0.0017	6.84	<0.1	1.1	90.4	8.2	0.3
4,4'-DDE	0.0007	0.83	<0.1	4.1	86.0	9.2	0.7
4,4'-DDT	0.0003	0.64	<0.1	9.5	86.5	2.5	1.5
Aldrin	0.00001	0.16	<0.1	67.2	0.0	14.1	18.6
alpha-Chlordane	0.0014	1.99	<0.1	1.4	94.2	4.3	0.2
Aroclor 1248	0.0003	0.57	<0.1	26.1	0.0	56	17.7
Aroclor 1254	0.0007	0.15	<0.1	86.8	0.0	5.6	7.5
Aroclor 1260	0.0062	0.28	<0.1	10.4	82.6	6.2	0.8
beta-BHC	0.00001	3.22	<0.1	57.2	0.0	23.9	19.0
delta-BHC	0.00002	1.29	<0.1	34.1	0.0	54.6	11.3
Endosulfan I	0.0001	1.21	<0.1	30.2	63.9	1.8	4.1
Endosulfan Sulfate	0.00004	1.21	<0.1	79.0	0.0	6.8	14.1
Endrin Aldehyde	0.0008	0.04	<0.1	8.2	89.9	1.4	0.6
gamma-Chlordane	0.0058	1.99	<0.1	0.1	95.2	4.6	0.0
HAZARD INDEX			<i>0.053</i>	<i>15.6</i>	<i>78.2</i>	<i>4.7</i>	<i>1.5</i>
Inorganics							
X Aluminum	233	41.82	6	0.6	77.6	21.7	0.0
X Antimony	0.056	0.05	1.04	2.6	0.0	97.2	0.1
X Arsenic	36.68	0.05	669.0	0.3	91.6	8.1	0.0
X Barium	5.56	4.33	1.28	4.7	90.9	4.3	0.1
Beryllium	0.003	0.53	<0.1	5.5	0.0	94.3	0.2
Cadmium	0.47	0.78	0.60	0.4	95.5	4.2	0.0
Chromium	6.1	7.2	0.84	0.4	79.7	19.9	0.0
Cobalt	0.91	4.02	0.23	1.6	93.5	4.9	0.0
X Copper	29.9	12.2	2.44	5.4	86.6	8.0	0.0
Cyanide	NA	51.9	<0.1				
X Iron	1831	2.57	714	0.9	93.8	5.3	0.0
X Lead	42.04	6.43	6.53	0.0	95.1	4.9	0.0
X Manganese	192.6	70.8	2.72	1.4	97.8	0.8	0.0
X Mercury	0.15	0.03	5.81	0.2	88.1	11.7	0.0
Nickel	0.41	32.2	<0.1	0.5	84.2	15.2	0.1
X Selenium	0.46	0.16	2.86	2.1	92.8	5.0	0.0
Silver	0.003	146	<0.1	34.0	0.0	65.2	0.8
Thallium	0.006	0.06	<0.1	34.8	0.0	63.8	1.4
X Vanadium	1.49	0.16	9.49	0.3	87.9	11.8	0.0
Zinc	37.6	129	0.29	2.3	87.2	10.5	0.0
HAZARD INDEX			<i>1422.5</i>	<i>0.6</i>	<i>92.5</i>	<i>6.8</i>	<i>0.0</i>

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not analyzed

TABLE 4-159
HAZARD QUOTIENTS FOR MUSKRAT - STATION 14
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	6	94.4
Acetone	0.0004	1367	<0.1	0.0	0.0	39	61.3
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.00007	6.09	<0.1	0.0	0.0	23	77.3
Trichloroethene	0.00007	3.05	<0.1	0.0	0.0	23	77.3
HAZARD INDEX			0.000060	0.0	0.0	15	85.1
Semivolatile Organics							
2-Methylnaphthalene	0.0028	62.5	<0.1	0.0	0.0	91	9.0
Acenaphthylene	0.0028	58.0	<0.1	0.0	0.0	91	9.0
Anthracene	0.0025	435	<0.1	0.0	0.0	90	10.2
Benzo(a)anthracene	0.0025	0.57	<0.1	0.0	0.0	90	10.0
Benzo(a)pyrene	0.08	0.57	0.15	0.0	96.9	2.8	0.3
Benzo(b)fluoranthene	0.06	0.57	0.10	0.0	93.8	5.7	0.4
Benzo(g,h,i)perylene	0.0028	58.0	<0.1	0.0	0.0	91	9.0
Benzo(k)fluoranthene	0.11	0.57	0.20	0.0	97.5	2.3	0.2
Carbazole	0.0025	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.07	0.57	0.13	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0028	0.57	<0.1	0.0	0.0	91	9.0
Dibenzofuran	0.0028	58.0	<0.1	0.0	0.0	91	9.0
Fluoranthene	0.06	54.4	<0.1	0.0	90.7	8.9	0.4
Fluorene	0.0028	54.4	<0.1	0.0	0.0	91	9.0
Indeno(1,2,3-cd)pyrene	0.23	0.57	0.41	0.0	98.8	1.1	0.1
Naphthalene	0.0028	60.9	<0.1	0.0	0.0	91	9.0
N-nitrosodiphenylamine	0.0028	121	<0.1	0.0	0.0	91	9.0
Phenanthrene	0.21	58.0	<0.1	0.0	98.2	1.7	0.1
Pyrene	0.06	58.0	<0.1	0.0	92.5	7.0	0.5
HAZARD INDEX			1.00	0.0	96.4	3.3	0.3
Pesticides and PCBs							
4,4'-DDD	0.0003	6.84	<0.1	5.9	84.8	7.6	1.6
4,4'-DDE	0.0003	0.83	<0.1	10.5	79.2	8.5	1.8
4,4'-DDT	0.0009	0.64	<0.1	3.4	93.3	2.7	0.5
Aldrin	0.00002	0.16	<0.1	36.6	0.0	53.3	10.1
alpha-Chlordane	0.0002	1.99	<0.1	7.7	87.5	4.0	0.9
Aroclor 1248	0.0004	0.57	<0.1	19.7	0.0	67	13.3
Aroclor 1254	0.0009	0.15	<0.1	65.7	0.0	28.6	5.7
Aroclor 1260	0.0044	0.28	<0.1	14.8	78.3	5.8	1.2
beta-BHC	0.00002	3.22	<0.1	32.5	0.0	56.7	10.8
delta-BHC	0.00002	1.29	<0.1	32.5	0.0	56.7	10.8
Endosulfan I	0.0010	1.21	<0.1	1.9	95.2	2.7	0.3
Endosulfan Sulfate	0.00006	1.21	<0.1	48.1	0.0	43.3	8.6
Endrin Aldehyde	0.0018	0.04	<0.1	3.7	94.6	1.4	0.3
gamma-Chlordane	0.0003	1.99	<0.1	2.6	92.2	4.5	0.7
HAZARD INDEX			0.070	11.8	81.4	5.7	1.1
Inorganics							
Aluminum	41	41.82	1	3.5	75.3	21.1	0.1
Antimony	0.004	0.05	<0.1	40.3	0.0	57.8	1.9
X Arsenic	1.81	0.05	33.0	6.2	89.6	4.0	0.1
Barium	1.08	4.33	0.25	24.2	72.0	3.4	0.3
Beryllium	0.0005	0.53	<0.1	35.7	0.0	63.0	1.3
Cadmium	0.04	0.78	<0.1	4.5	91.4	4.0	0.1
Chromium	1.3	7.2	0.17	2.1	78.2	19.5	0.2
Cobalt	0.21	4.02	<0.1	7.0	88.3	4.6	0.1
Copper	3.211	12.2	0.26	50.5	45.2	4.2	0.1
Cyanide	0.009	51.9	<0.1	89.5	0.0	7.6	2.8
X Iron	634	2.57	247	2.7	92.1	5.2	0.0
Lead	3.31	6.43	0.51	0.5	94.7	4.8	0.0
Manganese	40.6	70.8	0.57	6.5	92.6	0.8	0.1
Mercury	0.01	0.03	0.47	2.2	86.1	11.5	0.2
Nickel	0.11	32.2	<0.1	1.8	83.0	15.0	0.3
Selenium	0.03	0.16	0.22	28.2	67.9	3.7	0.2
Silver	0.001	146	<0.1	76.2	0.0	22.1	1.7
Thallium	0.003	0.06	<0.1	62.2	0.0	35.4	2.4
X Vanadium	0.23	0.16	1.48	1.8	86.6	11.6	0.1
Zinc	5.7	129	<0.1	15.1	75.6	9.1	0.2
HAZARD INDEX			285.3	3.2	91.6	5.2	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-160
HAZARD QUOTIENTS FOR MUSKRAT - STATION 15
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	0.0008	1367	<0.1	0.0	0.0	70	30.1
cis-1,2-Dichloroethene	0.0005	2504	<0.1	0.0	0.0	88	11.9
Tetrachloroethene	0.0002	6.09	<0.1	0.0	0.0	76	24.1
Trichloroethene	0.0003	3.05	<0.1	0.0	0.0	81	18.8
HAZARD INDEX			0.0001	0.0	0.0	66	34.1
Semivolatile Organics							
2-Methylnaphthalene	0.00028	62.5	<0.1	0.0	0.0	8	91.5
Acenaphthylene	0.00027	58.0	<0.1	0.0	0.0	6	93.9
Anthracene	0.0004	435	<0.1	0.0	0.0	32	68.3
Benzo(a)anthracene	0.0007	0.57	<0.1	0.0	0.0	65	35.0
Benzo(a)pyrene	0.02	0.57	<0.1	0.0	95.5	2.8	1.7
Benzo(b)fluoranthene	0.02	0.57	<0.1	0.0	92.9	5.7	1.4
Benzo(g,h,i)perylene	0.0006	58.0	<0.1	0.0	0.0	58	41.8
Benzo(k)fluoranthene	0.03	0.57	<0.1	0.0	96.8	2.3	0.9
Carbazole	NA	58.0	<0.1				
Chrysene	0.03	0.57	<0.1	0.0	95.2	3.8	1.0
Dibenz(a,h)anthracene	0.0004	0.57	<0.1	0.0	0.0	36	64.2
Dibenzofuran	NA	58.0	<0.1				
Fluoranthene	0.03	54.4	<0.1	0.0	90.1	8.9	1.0
Fluorene	0.0004	54.4	<0.1	0.0	0.0	39	61.0
Indeno(1,2,3-cd)pyrene	0.04	0.57	<0.1	0.0	98.2	1.1	0.7
Naphthalene	0.00029	60.9	<0.1	0.0	0.0	12	87.8
N-nitrosodiphenylamine	NA	120.6	<0.1				
Phenanthrene	0.06	58.0	<0.1	0.0	97.9	1.7	0.5
Pyrene	0.02	58.0	<0.1	0.0	91.8	7.0	1.3
HAZARD INDEX			0.22	0.0	95.3	3.3	1.4
Pesticides and PCBs							
4,4'-DDD	0.0002	6.84	<0.1	8.8	81.6	7.4	2.3
4,4'-DDE	0.0001	0.83	<0.1	23.1	65.8	7.1	4.0
4,4'-DDT	0.0002	0.64	<0.1	17.2	77.9	2.3	2.7
Aldrin	0.00001	0.16	<0.1	77.0	0.0	1.7	21.3
alpha-Chlordane	0.0003	1.99	<0.1	5.4	89.8	4.1	0.6
Aroclor 1248	0.0002	0.57	<0.1	33.0	0.0	45	22.4
Aroclor 1254	0.0006	0.15	<0.1	91.5	0.0	0.6	7.9
Aroclor 1260	0.0035	0.28	<0.1	18.4	74.6	5.6	1.4
beta-BHC	0.00001	3.22	<0.1	73.6	0.0	1.9	24.4
delta-BHC	0.00001	1.29	<0.1	73.6	0.0	1.9	24.4
Endosulfan I	0.0007	1.21	<0.1	2.8	94.2	2.7	0.4
Endosulfan Sulfate	0.00003	1.21	<0.1	83.8	0.0	1.1	15.0
Endrin Aldehyde	0.0004	0.04	<0.1	17.1	80.4	1.2	1.3
gamma-Chlordane	0.0001	1.99	<0.1	12.8	79.7	3.9	3.7
HAZARD INDEX			0.028	29.2	64.2	3.8	2.8
Inorganics							
X Aluminum	65	41.82	2	2.2	76.4	21.4	0.1
Antimony	0.012	0.05	0.23	12.0	0.0	87.5	0.6
X Arsenic	4.73	0.05	86	2.4	93.4	4.2	0.1
Barium	3.22	4.33	0.74	8.2	87.5	4.2	0.1
Beryllium	0.002	0.53	<0.1	7.6	0.0	92.2	0.3
X Cadmium	1.58	0.78	2.04	0.1	95.7	4.2	0.0
Chromium	3.2	7.2	0.44	0.8	79.3	19.8	0.1
Cobalt	0.85	4.02	0.21	1.7	93.4	4.9	0.0
Copper	11.4	12.2	0.93	14.2	78.6	7.2	0.0
Cyanide	NA	51.9	<0.1				
X Iron	771	2.57	301	2.2	92.5	5.2	0.0
Lead	4.85	6.43	0.75	0.3	94.8	4.8	0.0
X Manganese	320.6	70.8	4.53	0.8	98.3	0.8	0.0
Mercury	0.02	0.03	0.71	1.5	86.9	11.5	0.1
Nickel	0.26	32.2	<0.1	0.8	84.0	15.1	0.1
X Selenium	0.25	0.16	1.54	4.0	91.1	4.9	0.0
Silver	0.002	146	<0.1	61.0	0.0	37.6	1.4
Thallium	0.008	0.06	0.13	26.1	0.0	72.9	1.0
X Vanadium	0.40	0.16	2.52	1.0	87.2	11.7	0.0
Zinc	58.1	129	0.45	1.5	87.9	10.6	0.0
HAZARD INDEX			403.6	2.3	92.5	5.1	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-161
HAZARD QUOTIENTS FOR MUSKRAT - STATION 16

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	7	92.6
Acetone	0.00028	1367	<0.1	0.0	0.0	10	89.6
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	29	71.3
Trichloroethene	0.00017	3.05	<0.1	0.0	0.0	12	88.2
<i>HAZARD INDEX</i>			0.000096	0.0	0.0	13	87.4
Semivolatile Organics							
2-Methylnaphthalene	0.0009	62.5	<0.1	0.0	0.0	72	27.8
Acenaphthylene	0.0009	58.0	<0.1	0.0	0.0	72	27.8
Anthracene	0.0009	435	<0.1	0.0	0.0	72	27.8
Benzo(a)anthracene	0.0009	0.57	<0.1	0.0	0.0	72	27.8
Benzo(a)pyrene	0.02	0.57	<0.1	0.0	96.1	2.8	1.1
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	91.7	5.6	2.7
Benzo(g,h,i)perylene	0.0009	58.0	<0.1	0.0	0.0	72	27.8
Benzo(k)fluoranthene	0.02	0.57	<0.1	0.0	96.7	2.3	1.1
Carbazole	0.0007	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.8	3.8	1.5
Dibenz(a,h)anthracene	0.0009	0.57	<0.1	0.0	0.0	72	27.8
Dibenzofuran	0.0009	58.0	<0.1	0.0	0.0	72	27.8
Fluoranthene	0.0033	54.4	<0.1	0.0	84.0	8.3	7.7
Fluorene	0.0009	54.4	<0.1	0.0	0.0	72	27.8
Indeno(1,2,3-cd)pyrene	0.06	0.57	0.11	0.0	98.5	1.1	0.4
Naphthalene	0.0009	60.9	<0.1	0.0	0.0	72	27.8
N-nitrosodiphenylamine	0.0009	121	<0.1	0.0	0.0	72	27.8
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.7
Pyrene	0.00	58.0	<0.1	0.0	87.7	6.7	5.7
<i>HAZARD INDEX</i>			0.24	0.0	95.4	3.2	1.3
Pesticides and PCBs							
4,4'-DDD	0.0004	6.84	<0.1	28.1	64.6	5.8	1.4
4,4'-DDE	0.0003	0.83	<0.1	79.9	16.6	1.8	1.7
4,4'-DDT	0.0003	0.64	<0.1	11.0	84.7	2.5	1.8
Aldrin	0.00001	0.16	<0.1	57.8	0.0	24.1	18.1
alpha-Chlordane	0.0001	1.99	<0.1	23.5	70.1	3.2	3.2
Aroclor 1248	0.0002	0.57	<0.1	39.1	0.0	34	26.5
Aroclor 1254	0.0008	0.15	<0.1	85.0	0.0	8.5	6.5
Aroclor 1260	0.0022	0.28	<0.1	55.1	39.6	3.0	2.3
beta-BHC	0.00001	3.22	<0.1	55.9	0.0	25.2	18.9
delta-BHC	0.00001	1.29	<0.1	58.5	0.0	21.7	19.8
Endosulfan I	0.0001	1.21	<0.1	5.7	89.9	2.5	1.9
Endosulfan Sulfate	0.00003	1.21	<0.1	64.8	0.0	19.9	15.3
Endrin Aldehyde	0.0005	0.04	<0.1	16.5	81.3	1.2	0.9
gamma-Chlordane	0.0000	1.99	<0.1	23.2	65.7	3.2	7.9
<i>HAZARD INDEX</i>			0.028	41.6	52.0	3.6	2.8
Inorganics							
Aluminum	34	41.82	1	4.7	74.5	20.8	0.0
Antimony	0.002	0.05	<0.1	65.9	0.0	31.7	2.4
X Arsenic	0.38	0.05	7.0	21.0	75.3	3.4	0.3
Barium	1.06	4.33	0.24	28.1	68.3	3.3	0.3
Beryllium	0.0003	0.53	<0.1	56.2	0.0	42.5	1.3
Cadmium	0.01	0.78	<0.1	22.0	74.4	3.2	0.4
Chromium	0.3	7.2	<0.1	21.1	63.0	15.7	0.2
Cobalt	0.21	4.02	<0.1	7.8	87.5	4.6	0.0
Copper	2.5	12.2	0.20	75.6	22.3	2.0	0.0
Cyanide	0.0076	51.9	<0.1	88.8	0.0	7.8	3.3
X Iron	257	2.57	100	4.0	90.9	5.1	0.0
Lead	0.47	6.43	<0.1	6.2	89.2	4.6	0.1
Manganese	35.6	70.8	0.50	10.1	89.0	0.7	0.2
Mercury	0.0039	0.03	0.15	10.7	78.6	10.4	0.3
Nickel	0.06	32.2	<0.1	4.9	80.3	14.5	0.3
Selenium	0.02	0.16	0.15	48.0	49.0	2.7	0.3
Silver	0.001	146	<0.1	61.7	0.0	34.3	4.0
Thallium	0.005	0.06	<0.1	82.4	0.0	15.9	1.8
Vanadium	0.15	0.16	0.93	3.2	85.3	11.4	0.1
Zinc	2.8	129	<0.1	29.6	62.6	7.5	0.2
<i>HAZARD INDEX</i>			110.5	5.4	89.3	5.2	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-162
HAZARD QUOTIENTS FOR MUSKRAT - STATION 18

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00040	9.73	<0.1	0.0	0.0	38	62.5
Acetone	0.0008	1367	<0.1	0.0	0.0	69	30.7
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	60	40.1
Tetrachloroethene	0.0002	6.09	<0.1	0.0	0.0	72	27.6
Trichloroethene	0.00010	3.05	<0.1	0.0	0.0	51	48.9
<i>HAZARD INDEX</i>			<i>0.00011</i>	<i>0.0</i>	<i>0.0</i>	<i>52</i>	<i>48.1</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	65	35.3
Acenaphthylene	0.0007	58.0	<0.1	0.0	0.0	65	35.3
Anthracene	0.0008	435	<0.1	0.0	0.0	70	30.5
Benzo(a)anthracene	0.0020	0.57	<0.1	0.0	0.0	87	12.6
Benzo(a)pyrene	0.09	0.57	0.17	0.0	96.9	2.8	0.3
Benzo(b)fluoranthene	0.04	0.57	<0.1	0.0	93.7	5.7	0.6
Benzo(g,h,i)perylene	0.0021	58.0	<0.1	0.0	0.0	88	12.0
Benzo(k)fluoranthene	0.06	0.57	0.11	0.0	97.3	2.3	0.4
Carbazole	0.0007	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.06	0.57	0.11	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0011	0.57	<0.1	0.0	0.0	77	23.1
Dibenzofuran	0.0010	58.0	<0.1	0.0	0.0	75	25.4
Fluoranthene	0.04	54.4	<0.1	0.0	90.5	8.9	0.6
Fluorene	0.0008	54.4	<0.1	0.0	0.0	68	31.8
Indeno(1,2,3-cd)pyrene	0.17	0.57	0.29	0.0	98.8	1.1	0.2
Naphthalene	0.0007	60.9	<0.1	0.0	0.0	65	34.7
N-nitrosodiphenylamine	0.0010	121	<0.1	0.0	0.0	74	26.1
Phenanthrene	0.10	58.0	<0.1	0.0	98.0	1.7	0.3
Pyrene	0.04	58.0	<0.1	0.0	92.4	7.0	0.6
<i>HAZARD INDEX</i>			<i>0.76</i>	<i>0.0</i>	<i>96.4</i>	<i>3.1</i>	<i>0.4</i>
Pesticides and PCBs							
4,4'-DDD	0.0002	6.84	<0.1	8.6	81.7	7.4	2.3
4,4'-DDE	0.0003	0.83	<0.1	9.6	80.2	8.6	1.7
4,4'-DDT	0.0002	0.64	<0.1	18.5	76.4	2.2	2.9
Aldrin	0.00001	0.16	<0.1	65.6	0.0	16.3	18.2
alpha-Chlordane	0.0004	1.99	<0.1	5.3	90.0	4.1	0.6
Aroclor 1248	0.0003	0.57	<0.1	27.1	0.0	55	18.3
Aroclor 1254	0.0007	0.15	<0.1	86.0	0.0	6.5	7.5
Aroclor 1260	0.0030	0.28	<0.1	21.3	71.7	5.3	1.7
beta-BHC	0.00001	3.22	<0.1	61.4	0.0	18.2	20.4
delta-BHC	0.00001	1.29	<0.1	61.4	0.0	18.2	20.4
Endosulfan I	0.0001	1.21	<0.1	18.1	77.3	2.2	2.4
Endosulfan Sulfate	0.00004	1.21	<0.1	74.6	0.0	12.0	13.4
Endrin Aldehyde	0.0005	0.04	<0.1	12.1	85.7	1.3	0.9
gamma-Chlordane	0.0003	1.99	<0.1	2.5	92.3	4.5	0.7
<i>HAZARD INDEX</i>			<i>0.031</i>	<i>26.8</i>	<i>66.1</i>	<i>4.6</i>	<i>2.5</i>
Inorganics							
X Aluminum	155	41.82	4	0.9	77.4	21.7	0.0
Antimony	0.026	0.05	0.48	5.7	0.0	94.1	0.3
X Arsenic	20.10	0.05	367	0.6	95.1	4.3	0.0
X Barium	4.47	4.33	1.03	5.9	89.8	4.3	0.1
Beryllium	0.003	0.53	<0.1	5.7	0.0	94.1	0.2
Cadmium	0.63	0.78	0.81	0.3	95.6	4.2	0.0
X Chromium	20.2	7.2	2.79	0.1	79.9	19.9	0.0
Cobalt	1.26	4.02	0.31	1.1	93.9	4.9	0.0
X Copper	25.0	12.2	2.04	6.5	85.6	7.9	0.0
Cyanide	0.010	51.9	<0.1	82.8	0.0	14.6	2.6
X Iron	2467	2.57	962	0.7	94.0	5.3	0.0
X Lead	17.08	6.43	2.65	0.1	95.0	4.9	0.0
X Manganese	244.8	70.8	3.46	1.1	98.1	0.8	0.0
X Mercury	0.07	0.03	2.91	0.4	87.9	11.7	0.0
Nickel	0.35	32.2	<0.1	0.6	84.2	15.2	0.1
X Selenium	0.26	0.16	1.59	3.8	91.2	4.9	0.0
Silver	0.002	146	<0.1	47.9	0.0	51.0	1.1
Thallium	0.004	0.06	<0.1	54.0	0.0	43.9	2.1
X Vanadium	0.92	0.16	5.85	0.4	87.8	11.7	0.0
Zinc	52.5	129	0.41	1.6	87.8	10.6	0.0
<i>HAZARD INDEX</i>			<i>1356.5</i>	<i>0.7</i>	<i>94.2</i>	<i>5.2</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-163
HAZARD QUOTIENTS FOR MUSKRAT - STATION 19

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatle Organics							
2-Butanone	0.00078	9.73	<0.1	0.0	0.0	68	32.4
Acetone	0.0010	1367	<0.1	0.0	0.0	0	0.0
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	NA	6.1	<0.1				
Trichloroethene	NA	3.0	<0.1				
HAZARD INDEX			0.00011	0.0	0.0	52	48.3
Semivolatle Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	65	35.0
Acenaphthylene	0.0007	58.0	<0.1	0.0	0.0	65	35.0
Anthracene	0.0007	435	<0.1	0.0	0.0	65	35.0
Benzo(a)anthracene	0.0008	0.57	<0.1	0.0	0.0	67	33.4
Benzo(a)pyrene	0.02	0.57	<0.1	0.0	96.0	2.8	1.2
Benzo(b)fluoranthene	0.03	0.57	<0.1	0.0	93.4	5.7	0.9
Benzo(g,h,i)perylene	0.0007	58.0	<0.1	0.0	0.0	65	35.0
Benzo(k)fluoranthene	0.07	0.57	0.12	0.0	97.4	2.3	0.4
Carbazole	0.0005	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.8	3.8	1.4
Dibenz(a,h)anthracene	0.0007	0.57	<0.1	0.0	0.0	65	35.0
Dibenzofuran	0.0007	58.0	<0.1	0.0	0.0	65	35.0
Fluoranthene	0.01	54.4	<0.1	0.0	88.9	8.8	2.3
Fluorene	0.0007	54.4	<0.1	0.0	0.0	65	35.0
Indeno(1,2,3-cd)pyrene	0.04	0.57	<0.1	0.0	98.3	1.1	0.6
Naphthalene	0.0007	60.9	<0.1	0.0	0.0	65	35.0
N-nitrosodiphenylamine	NA	120.6	<0.1				
Phenanthrene	0.03	58.0	<0.1	0.0	97.4	1.7	0.9
Pyrene	0.01	58.0	<0.1	0.0	90.9	6.9	2.2
HAZARD INDEX			0.32	0.0	95.7	3.3	1.0
Pesticides and PCBs							
4,4'-DDD	0.0002	6.84	<0.1	10.5	79.6	7.2	2.7
4,4'-DDE	0.0003	0.83	<0.1	11.3	78.4	8.4	2.0
4,4'-DDT	0.0002	0.64	<0.1	14.3	81.1	2.4	2.3
Aldrin	0.00001	0.16	<0.1	68.2	0.0	12.9	18.9
alpha-Chlordane	0.0002	1.99	<0.1	10.1	84.8	3.9	1.2
Aroclor 1248	0.0002	0.57	<0.1	46.2	0.0	22	31.3
Aroclor 1254	0.0007	0.15	<0.1	87.0	0.0	5.4	7.6
Aroclor 1260	0.0012	0.28	<0.1	52.8	40.1	3.0	4.2
beta-BHC	0.00001	3.22	<0.1	53.2	0.0	29.2	17.6
delta-BHC	0.00001	1.29	<0.1	63.4	0.0	15.6	21.0
Endosulfan I	0.0001	1.21	<0.1	19.7	75.5	2.1	2.7
Endosulfan Sulfate	0.00004	1.21	<0.1	76.5	0.0	9.8	13.7
Endrin Aldehyde	0.0004	0.04	<0.1	18.2	79.2	1.2	1.4
gamma-Chlordane	0.0002	1.99	<0.1	4.4	90.0	4.4	1.3
HAZARD INDEX			0.019	42.8	50.0	3.2	4.1
Inorganics							
X Aluminum	124	41.82	3	1.1	77.2	21.6	0.0
Antimony	0.032	0.05	0.60	4.6	0.0	95.2	0.2
X Arsenic	69.89	0.05	1275	0.2	95.5	4.3	0.0
X Barium	5.71	4.33	1.32	4.6	91.0	4.3	0.1
Beryllium	0.003	0.53	<0.1	5.9	0.0	93.9	0.2
Cadmium	0.72	0.78	0.93	0.2	95.6	4.2	0.0
X Chromium	14.2	7.2	1.97	0.2	79.9	19.9	0.0
Cobalt	1.33	4.02	0.33	1.1	94.0	4.9	0.0
X Copper	19.9	12.2	1.62	8.2	84.1	7.7	0.0
Cyanide	NA	51.9	<0.1				
X Iron	5795	2.57	2259	0.3	94.4	5.3	0.0
X Lead	14.57	6.43	2.26	0.1	95.0	4.9	0.0
X Manganese	308.2	70.8	4.35	0.9	98.3	0.8	0.0
X Mercury	0.05	0.03	1.80	0.6	87.7	11.7	0.0
Nickel	0.25	32.2	<0.1	0.8	84.0	15.1	0.1
X Selenium	0.30	0.16	1.84	3.3	91.7	5.0	0.0
Silver	0.002	146	<0.1	48.0	0.0	50.9	1.1
Thallium	0.003	0.06	<0.1	59.6	0.0	38.1	2.3
X Vanadium	0.93	0.16	5.93	0.4	87.8	11.7	0.0
Zinc	47.3	129	0.37	1.8	87.6	10.5	0.0
HAZARD INDEX			3560.2	0.3	94.7	5.0	0.0

NOTES

HQ = Hazard quotient
 TRV = Toxicity Reference Value
 X = Indicates a COPC with a HQ >= 1
 TRV = Toxicity Reference Value
 Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water
 NA = Not analyzed

TABLE 4-164
HAZARD QUOTIENTS FOR MUSKRAT - STATION 20

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00050	9.73	<0.1	0.0	0.0	50	50.1
Acetone	0.0011	1367	<0.1	0.0	0.0	76	24.0
cis-1,2-Dichloroethene	0.0014	2504	<0.1	0.0	0.0	96	4.3
Tetrachloroethene	0.0010	6.09	<0.1	0.0	0.0	95	5.2
Trichloroethene	0.00480	3.05	<0.1	0.0	0.0	99	1.1
HAZARD INDEX			0.0018	0.0	0.0	97	2.9
Semivolatile Organics							
2-Methylnaphthalene	0.00028	62.5	<0.1	0.0	0.0	11	89.2
Acenaphthylene	0.00027	58.0	<0.1	0.0	0.0	5	94.7
Anthracene	0.0003	435	<0.1	0.0	0.0	19	80.6
Benzo(a)anthracene	0.0021	0.57	<0.1	0.0	0.0	88	12.3
Benzo(a)pyrene	0.06	0.57	0.11	0.0	96.7	2.8	0.4
Benzo(b)fluoranthene	0.09	0.57	0.16	0.0	94.0	5.8	0.3
Benzo(g,h,i)perylene	0.0007	58.0	<0.1	0.0	0.0	66	33.9
Benzo(k)fluoranthene	0.04	0.57	<0.1	0.0	97.1	2.3	0.7
Carbazole	NA	58.0	<0.1				
Chrysene	0.07	0.57	0.12	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0005	0.57	<0.1	0.0	0.0	47	52.6
Dibenzofuran	NA	58.0	<0.1				
Fluoranthene	0.05	54.4	<0.1	0.0	90.6	8.9	0.5
Fluorene	0.0003	54.4	<0.1	0.0	0.0	25	75.0
Indeno(1,2,3-cd)pyrene	0.11	0.57	0.20	0.0	98.7	1.1	0.2
Naphthalene	0.000285	60.9	<0.1	0.0	0.0	11	88.5
N-nitrosodiphenylamine	NA	121	<0.1				
Phenanthrene	0.08	58.0	<0.1	0.0	98.0	1.7	0.3
Pyrene	0.05	58.0	<0.1	0.0	92.5	7.0	0.5
HAZARD INDEX			0.66	0.0	95.9	3.7	0.5
Pesticides and PCBs							
4,4'-DDD	0.0006	6.84	<0.1	3.2	88.0	7.9	0.9
4,4'-DDE	0.0005	0.83	<0.1	5.7	84.3	9.0	1.0
4,4'-DDT	0.0004	0.64	<0.1	7.6	88.6	2.6	1.2
Aldrin	NA	0.2	<0.1				
alpha-Chlordane	0.0016	1.99	<0.1	1.2	94.4	4.3	0.1
Aroclor 1248	0.0002	0.57	<0.1	39.1	0.0	34	26.5
Aroclor 1254	0.0006	0.15	<0.1	91.5	0.0	0.6	7.9
Aroclor 1260	0.0034	0.28	<0.1	19.1	73.9	5.5	1.5
beta-BHC	0.00001	3.22	<0.1	73.7	0.0	1.8	24.5
delta-BHC	0.00001	1.29	<0.1	73.7	0.0	1.8	24.5
Endosulfan I	0.0023	1.21	<0.1	0.8	96.4	2.7	0.1
Endosulfan Sulfate	0.00003	1.21	<0.1	83.9	0.0	1.1	15.0
Endrin Aldehyde	0.0003	0.04	<0.1	23.9	73.2	1.1	1.8
gamma-Chlordane	0.0005	1.99	<0.1	1.6	93.4	4.5	0.5
HAZARD INDEX			0.028	29.4	64.0	3.8	2.8
Inorganics							
X Aluminum	238	41.82	6	0.6	77.7	21.7	0.0
Antimony	0.012	0.05	0.22	12.6	0.0	86.8	0.6
X Arsenic	7.96	0.05	145	1.4	94.3	4.2	0.0
X Barium	4.95	4.33	1.14	5.3	90.3	4.3	0.1
Beryllium	0.004	0.53	<0.1	4.5	0.0	95.4	0.2
X Cadmium	0.91	0.78	1.17	0.2	95.6	4.2	0.0
X Chromium	17.2	7.2	2.38	0.2	79.9	19.9	0.0
Cobalt	1.68	4.02	0.42	0.9	94.2	4.9	0.0
X Copper	29.8	12.2	2.44	5.4	86.6	8.0	0.0
Cyanide	NA	51.9	<0.1				
X Iron	1352	2.57	527	1.3	93.4	5.3	0.0
X Lead	37.15	6.43	5.77	0.0	95.1	4.9	0.0
X Manganese	211.3	70.8	2.99	1.3	97.9	0.8	0.0
X Mercury	0.04	0.03	1.60	0.7	87.6	11.7	0.0
Nickel	0.66	32.2	<0.1	0.3	84.4	15.2	0.0
X Selenium	0.33	0.16	2.07	3.0	92.0	5.0	0.0
Silver	0.003	146	<0.1	33.0	0.0	66.2	0.8
Thallium	0.008	0.06	0.12	26.8	0.0	72.1	1.0
X Vanadium	1.54	0.16	9.81	0.3	88.0	11.8	0.0
Zinc	60.3	129	0.47	1.4	88.0	10.6	0.0
HAZARD INDEX			708.4	1.3	93.3	5.4	0.0

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >> 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not analyzed

TABLE 4-165
HAZARD QUOTIENTS FOR MUSKRAT - STATION 21

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.73	<0.1				
Acetone	NA	1367	<0.1				
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	60	39.8
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	64	36.5
Trichloroethene	0.00010	3.05	<0.1	0.0	0.0	47	53.1
HAZARD INDEX			0.00	0.0	0.0	36	63.7
Semivolatile Organics							
2-Methylnaphthalene	0.0006	62.5	<0.1	0.0	0.0	57	43.5
Acenaphthylene	0.0003	58.0	<0.1	0.0	0.0	26	73.9
Anthracene	0.0012	435	<0.1	0.0	0.0	80	20.4
Benzo(a)anthracene	0.0012	0.57	<0.1	0.0	0.0	78	21.7
Benzo(a)pyrene	0.07	0.57	0.13	0.0	96.8	2.8	0.3
Benzo(b)fluoranthene	0.07	0.57	0.12	0.0	93.9	5.7	0.4
Benzo(g,h,i)perylene	0.0019	58.0	<0.1	0.0	0.0	87	13.2
Benzo(k)fluoranthene	0.0037	0.57	<0.1	0.0	91.0	2.1	6.9
Carbazole	NA	58.0	<0.1				
Chrysene	0.06	0.57	0.10	0.0	95.7	3.8	0.4
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	69	31.0
Dibenzofuran	NA	58.0	<0.1				
Fluoranthene	0.043	54.4	<0.1	0.0	90.5	8.9	0.6
Fluorene	0.0008	54.4	<0.1	0.0	0.0	69	31.0
Indeno(1,2,3-cd)pyrene	0.13	0.57	0.24	0.0	98.7	1.1	0.2
Naphthalene	0.0047	60.9	<0.1	0.0	0.0	95	5.4
N-nitrosodiphenylamine	NA	121	<0.1				
Phenanthrene	0.08	58.0	<0.1	0.0	98.0	1.7	0.3
Pyrene	0.05	58.0	<0.1	0.0	92.4	7.0	0.5
HAZARD INDEX			0.60	0.0	96.1	3.3	0.5
Pesticides and PCBs							
4,4'-DDD	0.0009	6.84	<0.1	2.2	89.2	8.0	0.6
4,4'-DDE	0.0008	0.83	<0.1	3.7	86.4	9.3	0.6
4,4'-DDT	0.0004	0.64	<0.1	8.0	88.2	2.6	1.3
Aldrin	0.00001	0.16	<0.1	67.4	0.0	13.9	18.7
alpha-Chlordane	0.0027	1.99	<0.1	0.7	94.9	4.3	0.1
Aroclor 1248	0.0007	0.57	<0.1	10.9	0.0	82	7.3
Aroclor 1254	0.0006	0.15	<0.1	91.5	0.0	0.6	7.9
Aroclor 1260	0.0149	0.28	<0.1	4.3	88.7	6.6	0.3
beta-BHC	0.00001	3.22	<0.1	63.4	0.0	15.6	21.0
delta-BHC	0.00001	1.29	<0.1	53.0	0.0	29.4	17.6
Endosulfan I	0.0030	1.21	<0.1	0.6	96.6	2.7	0.1
Endosulfan Sulfate	0.00004	1.21	<0.1	76.2	0.0	10.1	13.6
Endrin Aldehyde	0.0015	0.04	<0.1	4.4	93.8	1.4	0.3
gamma-Chlordane	0.0017	1.99	<0.1	0.5	94.8	4.6	0.1
HAZARD INDEX			0.103	8.0	85.9	5.2	0.8
Inorganics							
X Aluminum	148	41.82	4	1.0	77.4	21.6	0.0
Antimony	0.006	0.05	0.11	23.8	0.0	75.1	1.1
X Arsenic	4.97	0.05	90.7	2.3	93.5	4.2	0.0
X Barium	6.82	4.33	1.58	3.8	91.7	4.4	0.1
Beryllium	0.002	0.53	<0.1	7.8	0.0	91.9	0.3
X Cadmium	1.00	0.78	1.28	0.2	95.7	4.2	0.0
X Chromium	28.2	7.2	3.90	0.1	80.0	19.9	0.0
Cobalt	1.10	4.02	0.27	1.3	93.8	4.9	0.0
X Copper	14.3	12.2	1.17	11.3	81.2	7.5	0.0
Cyanide	NA	51.9	<0.1				
X Iron	983	2.57	383	1.8	93.0	5.2	0.0
X Lead	25.42	6.43	3.95	0.1	95.1	4.9	0.0
Manganese	62.1	70.8	0.88	4.3	94.9	0.8	0.1
X Mercury	0.19	0.03	7.41	0.1	88.1	11.7	0.0
Nickel	0.50	32.2	<0.1	0.4	84.3	15.2	0.1
Selenium	0.16	0.16	0.98	6.3	88.9	4.8	0.1
Silver	0.002	146	<0.1	60.3	0.0	38.4	1.4
Thallium	0.003	0.06	<0.1	77.2	0.0	19.8	3.0
X Vanadium	1.07	0.16	6.82	0.4	87.8	11.8	0.0
Zinc	78.6	129	0.61	1.1	88.3	10.6	0.0
HAZARD INDEX			506.5	1.8	92.7	5.5	0.0

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

NA = Not analyzed

TABLE 4-166
HAZARD QUOTIENTS FOR MUSKRAT - STATION AM
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Inorganics							
X	Aluminum	82	41.82	1.96	1.9	76.6	21.4
	Antimony	0.006	0.05	0.12	25.7	0.0	73.4
X	Arsenic	3.44	0.05	62.66	2.3	93.4	4.2
	Barium	3.30	4.33	0.76	9.0	86.7	4.1
	Beryllium	0.002	0.53	<0.1	11.4	0.0	88.3
	Cadmium	0.223	0.78	0.29	1.5	94.4	4.1
	Chromium	3.85	7.24	0.53	1.7	78.7	19.6
	Cobalt	0.97	4.02	0.24	1.7	93.4	4.9
	Copper	7.34	12.23	0.60	25.3	68.4	6.3
	Cyanide	0.009	51.90	<0.1	75.0	0.0	22.2
X	Iron	1040	2.57	405.34	1.0	93.7	5.3
X	Lead	7.26	6.43	1.13	0.4	94.8	4.8
X	Manganese	330	70.76	4.66	1.1	98.1	0.8
X	Mercury	0.038	0.03	1.49	1.1	87.3	11.6
	Nickel	0.279	32.17	<0.1	1.1	83.7	15.1
	Selenium	0.062	0.16	0.39	19.0	76.7	4.2
	Silver	0.001	145.71	<0.1	52.3	0.0	44.2
	Thallium	0.005	0.06	<0.1	78.0	0.0	20.3
X	Vanadium	0.539	0.16	3.44	0.9	87.4	11.7
	Zinc	21.37	128.66	0.17	3.9	85.8	10.3
	HAZARD INDEX			483.9	1.2	93.5	5.3

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-167
HAZARD QUOTIENTS FOR MUSKRAT - STATION AS
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	187	41.82	4.46	0.9	77.4	21.7	0.0
	Antimony	0.007	0.05	0.14	18.4	0.0	79.8	1.8
X	Arsenic	3.39	0.05	61.92	1.3	90.6	8.0	0.0
X	Barium	5.69	4.33	1.31	7.3	88.4	4.2	0.1
	Beryllium	0.002	0.53	<0.1	4.8	0.0	95.0	0.2
	Cadmium	0.673	0.78	0.87	0.2	95.6	4.2	0.0
X	Chromium	8.80	7.24	1.22	0.3	79.8	19.9	0.0
	Cobalt	0.97	4.02	0.24	1.2	93.9	4.9	0.0
X	Copper	15.43	12.23	1.26	8.0	84.3	7.7	0.0
	Cyanide	0.014	51.90	<0.1	53.3	0.0	44.9	1.8
X	Iron	1263	2.57	492.51	0.7	94.0	5.3	0.0
X	Lead	27.64	6.43	4.30	0.1	95.0	4.9	0.0
X	Manganese	112	70.76	1.58	2.6	96.5	0.8	0.1
X	Mercury	0.062	0.03	2.39	0.3	88.0	11.7	0.0
	Nickel	0.574	32.17	<0.1	0.5	84.3	15.2	0.0
	Selenium	0.098	0.16	0.61	13.0	82.4	4.5	0.1
	Silver	0.002	145.71	<0.1	33.3	0.0	65.2	1.5
	Thallium	0.005	0.06	<0.1	42.7	0.0	55.4	1.9
X	Vanadium	1.312	0.16	8.37	0.4	87.8	11.7	0.0
	Zinc	48.45	128.66	0.38	1.5	87.9	10.6	0.0
	HAZARD INDEX			581.7	0.8	93.3	5.9	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-168
HAZARD QUOTIENTS FOR MUSKRAT - STATION BW
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.73	<0.1				
Acetone	NA	1367	<0.1				
cis-1,2-Dichloroethene	0.0010	2504	<0.1	0.0	0.0	94	5.7
Tetrachloroethene	0.0004	6.09	<0.1	0.0	0.0	88	12.2
Trichloroethene	0.00017	3.05	<0.1	0.0	0.0	71	28.9
HAZARD INDEX			0.0002	0.0	0.0	66	33.7
Semivolatile Organics							
2-Methylnaphthalene	0.00028	62.5	<0.1	0.0	0.0	11	89.2
Acenaphthylene	0.00030	58.0	<0.1	0.0	0.0	15	85.0
Anthracene	0.0004	435	<0.1	0.0	0.0	39	61.0
Benzo(a)anthracene	0.0016	0.57	<0.1	0.0	0.0	84	16.1
Benzo(a)pyrene	0.08	0.57	0.15	0.0	96.9	2.8	0.3
Benzo(b)fluoranthene	0.06	0.57	0.11	0.0	93.8	5.7	0.4
Benzo(g,h,i)perylene	0.0018	58.0	<0.1	0.0	0.0	86	14.4
Benzo(k)fluoranthene	0.07	0.57	0.13	0.0	97.4	2.3	0.3
Carbazole	NA	58.0	<0.1				
Chrysene	0.05	0.57	<0.1	0.0	95.7	3.8	0.5
Dibenz(a,h)anthracene	0.0010	0.57	<0.1	0.0	0.0	75	25.2
Dibenzofuran	NA	58.0	<0.1				
Fluoranthene	0.03	54.4	<0.1	0.0	90.3	8.9	0.8
Fluorene	0.0004	54.4	<0.1	0.0	0.0	30	69.6
Indeno(1,2,3-cd)pyrene	0.16	0.57	0.28	0.0	98.7	1.1	0.2
Naphthalene	0.00031	60.9	<0.1	0.0	0.0	19	80.6
N-nitrosodiphenylamine	NA	120.6	<0.1				
Phenanthrene	0.08	58.0	<0.1	0.0	98.0	1.7	0.3
Pyrene	0.03	58.0	<0.1	0.0	92.2	7.0	0.8
HAZARD INDEX			0.76	0.0	96.5	3.1	0.4
Pesticides and PCBs							
4,4'-DDD	0.0005	6.84	<0.1	3.8	87.3	7.9	1.0
4,4'-DDE	0.0001	0.83	<0.1	22.2	66.8	7.2	3.9
4,4'-DDT	0.0001	0.64	<0.1	22.1	72.3	2.1	3.5
Aldrin	0.00001	0.16	<0.1	77.0	0.0	1.7	21.3
alpha-Chlordane	0.0002	1.99	<0.1	12.4	82.4	3.7	1.5
Aroclor 1248	0.0002	0.57	<0.1	39.1	0.0	34	26.5
Aroclor 1254	0.0006	0.15	<0.1	91.5	0.0	0.6	7.9
Aroclor 1260	0.0027	0.28	<0.1	24.2	68.8	5.1	1.9
beta-BHC	0.00001	3.22	<0.1	73.6	0.0	1.9	24.4
delta-BHC	0.00001	1.29	<0.1	73.6	0.0	1.9	24.4
Endosulfan I	0.0000	1.21	<0.1	65.6	24.8	0.7	8.9
Endosulfan Sulfate	0.00003	1.21	<0.1	83.8	0.0	1.1	15.0
Endrin Aldehyde	0.0004	0.04	<0.1	18.6	78.8	1.2	1.4
gamma-Chlordane	0.0001	1.99	<0.1	7.9	85.6	4.2	2.3
HAZARD INDEX			0.024	34.8	58.7	3.2	3.3
Inorganics							
X Aluminum	200	41.82	4.79	0.7	77.6	21.7	0.0
Antimony	0.054	0.05	1.00	2.7	0.0	97.1	0.1
X Arsenic	35.87	0.05	654.20	0.3	91.6	8.1	0.0
X Barium	6.91	4.33	1.60	3.8	91.8	4.4	0.1
Beryllium	0.003	0.53	<0.1	5.2	0.0	94.6	0.2
Cadmium	0.597	0.78	0.77	0.3	95.6	4.2	0.0
X Chromium	17.86	7.24	2.47	0.1	79.9	19.9	0.0
Cobalt	1.89	4.02	0.47	0.8	94.3	4.9	0.0
X Copper	26.63	12.23	2.18	6.1	86.0	7.9	0.0
Cyanide	NA	51.9	<0.1				
X Iron	4933	2.57	1922.90	0.3	94.3	5.3	0.0
X Lead	29.28	6.43	4.55	0.1	95.1	4.9	0.0
X Manganese	299	70.76	4.22	0.9	98.3	0.8	0.0
X Mercury	0.132	0.03	5.13	0.2	88.1	11.7	0.0
Nickel	0.557	32.17	<0.1	0.4	84.4	15.2	0.1
X Selenium	0.461	0.16	2.87	2.1	92.8	5.0	0.0
Silver	0.005	145.71	<0.1	24.0	0.0	75.4	0.5
Thallium	0.021	0.06	0.35	9.4	0.0	90.2	0.4
X Vanadium	1.604	0.16	10.23	0.3	88.0	11.8	0.0
Zinc	46.73	128.66	0.36	1.8	87.6	10.5	0.0
HAZARD INDEX			2618.1	0.4	93.5	6.1	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

**TABLE 4-169
HAZARD QUOTIENTS FOR MUSKRAT - STATION CB-01**

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	129	41.82	3.08	1.2	77.2	21.6	0.0
	Antimony	0.005	0.05	<0.1	35.6	0.0	63.1	1.3
X	Arsenic	1.23	0.05	22.35	6.6	89.3	4.0	0.1
	Barium	2.37	4.33	0.55	12.6	83.3	4.0	0.1
	Beryllium	0.003	0.53	<0.1	7.6	0.0	92.2	0.2
	Cadmium	0.294	0.78	0.38	1.1	94.7	4.1	0.0
	Chromium	2.62	7.24	0.36	2.5	78.0	19.4	0.0
	Cobalt	0.30	4.02	<0.1	5.4	89.9	4.7	0.0
X	Copper	12.68	12.23	1.04	14.6	78.2	7.2	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	497	2.57	193.70	2.1	92.7	5.2	0.0
X	Lead	15.34	6.43	2.38	0.2	95.0	4.8	0.0
X	Manganese	100	70.76	1.42	3.6	95.6	0.8	0.1
X	Mercury	0.031	0.03	1.21	1.3	87.0	11.6	0.0
	Nickel	0.144	32.17	<0.1	2.1	82.8	14.9	0.1
X	Selenium	0.181	0.16	1.13	6.5	88.6	4.8	0.0
	Silver	0.001	145.71	<0.1	42.0	0.0	55.2	2.7
	Thallium	0.006	0.06	0.11	60.9	0.0	37.7	1.3
X	Vanadium	1.068	0.16	6.81	0.4	87.8	11.8	0.0
	Zinc	10.04	128.66	<0.1	8.2	81.8	9.8	0.1
	HAZARD INDEX			234.8	2.6	91.8	5.6	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not Analyzed

TABLE 4-170
HAZARD QUOTIENTS FOR MUSKRAT - STATION CB-02

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	49	41.82	1.18	3.2	75.6	21.2	0.0
	Antimony	0.005	0.05	<0.1	30.9	0.0	67.9	1.1
X	Arsenic	0.83	0.05	15.20	9.7	86.3	3.9	0.2
X	Barium	4.34	4.33	1.00	6.9	88.8	4.2	0.1
	Beryllium	0.001	0.53	<0.1	22.3	0.0	77.2	0.5
	Cadmium	0.177	0.78	0.23	1.9	94.0	4.1	0.0
	Chromium	1.31	7.24	0.18	5.0	76.0	18.9	0.0
	Cobalt	0.22	4.02	<0.1	7.5	87.9	4.6	0.0
	Copper	3.95	12.23	0.32	47.0	48.5	4.5	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	271	2.57	105.45	3.8	91.1	5.1	0.0
	Lead	5.76	6.43	0.90	0.5	94.7	4.8	0.0
	Manganese	20	70.76	0.28	18.2	80.8	0.7	0.3
	Mercury	0.005	0.03	0.20	8.0	81.0	10.8	0.2
	Nickel	0.130	32.17	<0.1	2.4	82.6	14.9	0.1
	Selenium	0.078	0.16	0.48	15.1	80.4	4.4	0.1
	Silver	0.001	145.71	<0.1	93.9	0.0	0.0	6.1
	Thallium	0.005	0.06	<0.1	78.4	0.0	19.9	1.7
X	Vanadium	0.534	0.16	3.40	0.9	87.4	11.7	0.0
	Zinc	6.29	128.66	<0.1	13.2	77.4	9.3	0.1
	HAZARD INDEX			129.1	4.7	89.9	5.4	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-171
HAZARD QUOTIENTS FOR MUSKRAT - STATION CB-03

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	101	41.82	2.41	1.6	76.9	21.5	0.0
	Antimony	0.005	0.05	<0.1	31.0	0.0	67.8	1.1
X	Arsenic	7.63	0.05	139.24	1.1	94.7	4.3	0.0
	Barium	2.95	4.33	0.68	10.1	85.7	4.1	0.1
	Beryllium	0.001	0.53	<0.1	13.2	0.0	86.4	0.3
	Cadmium	0.419	0.78	0.54	0.8	95.1	4.1	0.0
	Chromium	5.43	7.24	0.75	1.2	79.1	19.7	0.0
	Cobalt	0.92	4.02	0.23	1.7	93.3	4.9	0.0
	Copper	9.34	12.23	0.76	19.9	73.4	6.7	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	1374	2.57	535.61	0.7	94.0	5.3	0.0
X	Lead	9.50	6.43	1.48	0.3	94.8	4.8	0.0
X	Manganese	85	70.76	1.20	4.2	94.9	0.8	0.1
	Mercury	0.025	0.03	0.96	1.7	86.7	11.5	0.0
	Nickel	0.395	32.17	<0.1	0.8	84.0	15.1	0.0
X	Selenium	0.184	0.16	1.15	6.4	88.7	4.8	0.0
	Silver	0.002	145.71	<0.1	31.9	0.0	66.0	2.1
	Thallium	0.006	0.06	<0.1	69.5	0.0	29.0	1.5
X	Vanadium	0.938	0.16	5.99	0.5	87.7	11.7	0.0
	Zinc	25.88	128.66	0.20	3.2	86.4	10.4	0.0
	<i>HAZARD INDEX</i>			<i>691.4</i>	<i>0.9</i>	<i>93.9</i>	<i>5.2</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-172
HAZARD QUOTIENTS FOR MUSKRAT - STATION CB-04

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	103	41.82	2.46	1.5	76.9	21.5	0.0
	Antimony	0.010	0.05	0.18	16.4	0.0	83.0	0.6
X	Arsenic	3.17	0.05	57.86	2.5	93.2	4.2	0.0
	Barium	3.44	4.33	0.80	8.6	87.1	4.2	0.1
	Beryllium	0.002	0.53	<0.1	11.7	0.0	88.0	0.3
	Cadmium	0.226	0.78	0.29	1.5	94.4	4.1	0.0
	Chromium	2.03	7.24	0.28	3.2	77.4	19.3	0.0
	Cobalt	0.43	4.02	0.11	3.8	91.4	4.8	0.0
	Copper	7.00	12.23	0.57	26.6	67.2	6.2	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	1065	2.57	415.07	1.0	93.8	5.3	0.0
X	Lead	10.08	6.43	1.57	0.3	94.9	4.8	0.0
X	Manganese	119	70.76	1.68	3.0	96.2	0.8	0.1
	Mercury	0.015	0.03	0.58	2.8	85.7	11.4	0.1
	Nickel	0.637	32.17	<0.1	0.5	84.3	15.2	0.0
	Selenium	0.150	0.16	0.93	7.9	87.3	4.7	0.1
	Silver	0.004	145.71	<0.1	15.7	0.0	83.3	1.0
	Thallium	0.007	0.06	0.11	59.1	0.0	39.6	1.3
X	Vanadium	1.103	0.16	7.03	0.4	87.8	11.8	0.0
	Zinc	31.33	128.66	0.24	2.6	86.9	10.5	0.0
	HAZARD INDEX			489.8	1.2	93.4	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not Analyzed

TABLE 4-173
HAZARD QUOTIENTS FOR MUSKRAT - STATION CB-06

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	79	41.82	1.88	2.0	76.6	21.4	0.0
	Antimony	0.006	0.05	0.11	28.6	0.0	70.3	1.1
X	Arsenic	2.80	0.05	51.05	2.9	92.9	4.2	0.0
	Barium	2.37	4.33	0.55	12.6	83.3	4.0	0.1
	Beryllium	0.001	0.53	<0.1	23.1	0.0	76.3	0.6
	Cadmium	0.486	0.78	0.63	0.7	95.2	4.1	0.0
	Chromium	3.36	7.24	0.46	2.0	78.5	19.6	0.0
	Cobalt	0.45	4.02	0.11	3.6	91.6	4.8	0.0
	Copper	6.86	12.23	0.56	27.1	66.8	6.1	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	569	2.57	221.72	1.8	93.0	5.2	0.0
X	Lead	6.63	6.43	1.03	0.4	94.7	4.8	0.0
	Manganese	26	70.76	0.37	13.7	85.4	0.7	0.2
	Mercury	0.005	0.03	0.20	8.3	80.7	10.7	0.2
	Nickel	0.289	32.17	<0.1	1.1	83.8	15.1	0.1
	Selenium	0.075	0.16	0.47	15.7	79.9	4.3	0.1
	Silver	0.001	145.71	<0.1	63.0	0.0	32.9	4.1
	Thallium	0.012	0.06	0.19	34.2	0.0	65.1	0.7
X	Vanadium	1.057	0.16	6.74	0.4	87.8	11.7	0.0
	Zinc	31.83	128.66	0.25	2.6	86.9	10.5	0.0
	HAZARD INDEX			286.3	2.1	92.5	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not Analyzed

TABLE 4-174
HAZARD QUOTIENTS FOR MUSKRAT - STATION NRSE

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	73	41.82	1.74	2.0	76.6	21.4	0.1
	Antimony	0.004	0.05	<0.1	40.0	0.0	58.1	0.0
X	Arsenic	4.71	0.05	85.90	2.4	93.4	4.2	0.1
	Barium	2.38	4.33	0.55	11.0	84.8	4.0	0.2
	Beryllium	0.001	0.53	<0.1	13.2	0.0	86.4	0.5
	Cadmium	0.077	0.78	<0.1	2.2	93.7	4.1	0.1
	Chromium	2.22	7.24	0.31	1.2	79.0	19.7	0.1
	Cobalt	0.32	4.02	<0.1	4.6	90.6	4.8	0.0
	Copper	7.25	12.23	0.59	22.4	71.1	6.5	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	872	2.57	339.87	2.0	92.8	5.2	0.0
X	Lead	7.80	6.43	1.21	0.2	94.9	4.8	0.0
	Manganese	50	70.76	0.70	5.3	93.8	0.8	0.1
X	Mercury	0.053	0.03	2.06	0.5	87.8	11.7	0.0
	Nickel	0.168	32.17	<0.1	1.2	83.6	15.1	0.2
	Selenium	0.090	0.16	0.56	11.0	84.4	4.6	0.1
	Silver	0.005	145.71	<0.1	23.6	0.0	75.8	0.5
	Thallium	0.004	0.06	<0.1	47.2	0.0	51.0	1.8
X	Vanadium	0.473	0.16	3.02	0.9	87.4	11.7	0.0
	Zinc	8.35	128.66	<0.1	10.3	79.9	9.6	0.2
	HAZARD INDEX			436.9	2.1	92.7	5.2	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-175
HAZARD QUOTIENTS FOR MUSKRAT - STATION JY

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Pesticides and PCBs							
	Aroclor 1248	0.0007	0.57	<0.1	25.1	0.0	74.9
	Aroclor 1254	0.0018	0.15	<0.1	72.3	0.0	27.7
	Aroclor 1260	0.0021	0.28	<0.1	69.1	0.0	24.0
	<i>HAZARD INDEX</i>		<i>0.021</i>	<i>68.5</i>	<i>2.5</i>	<i>0.0</i>	<i>29.0</i>
Inorganics							
X	Aluminum	104	41.82	2.49	1.4	77.0	0.0
	Antimony	0.014	0.05	0.26	10.4	0.0	0.5
X	Arsenic	4.13	0.05	75.28	2.7	93.0	0.1
X	Barium	6.78	4.33	1.57	3.9	91.7	0.1
	Beryllium	0.001	0.53	<0.1	14.1	0.0	85.4
	Cadmium	0.627	0.78	0.81	0.3	95.6	0.0
X	Chromium	9.88	7.24	1.36	0.3	79.8	0.0
	Cobalt	0.61	4.02	0.15	2.4	92.7	0.0
	Copper	12.13	12.23	0.99	13.4	79.3	0.0
	Cyanide	NA	51.9	<0.1			
X	Iron	1267	2.57	493.77	1.4	93.4	0.0
X	Lead	25.25	6.43	3.93	0.1	95.1	0.0
X	Manganese	86	70.76	1.22	3.1	96.1	0.1
	Mercury	0.016	0.03	0.60	1.7	86.6	0.1
	Nickel	0.796	32.17	<0.1	0.3	84.5	0.0
	Selenium	0.148	0.16	0.92	6.7	88.5	0.1
	Silver	0.003	145.71	<0.1	39.8	0.0	59.3
	Thallium	0.008	0.06	0.13	25.1	0.0	73.9
X	Vanadium	0.974	0.16	6.22	0.4	87.8	0.0
	Zinc	40.57	128.66	0.32	2.1	87.3	0.0
	<i>HAZARD INDEX</i>		<i>590.0</i>	<i>1.6</i>	<i>93.1</i>	<i>5.3</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not Analyzed

TABLE 4-176
HAZARD QUOTIENTS FOR MUSKRAT - STATION KFSE

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Inorganics							
X	Aluminum	54	41.82	1.29	2.9	75.8	21.2
	Antimony	0.004	0.05	<0.1	44.0	0.0	54.4
X	Arsenic	1.15	0.05	20.95	7.0	88.9	4.0
	Barium	2.02	4.33	0.47	14.7	81.2	3.9
	Beryllium	0.001	0.53	<0.1	22.1	0.0	77.4
	Cadmium	0.034	0.78	<0.1	9.7	86.4	3.8
	Chromium	0.86	7.24	0.12	7.6	73.9	18.4
	Cobalt	0.32	4.02	<0.1	5.0	90.2	4.7
	Copper	4.05	12.23	0.33	45.9	49.5	4.6
	Cyanide	NA	51.9	<0.1			
X	Iron	536	2.57	209.13	1.9	92.8	5.2
	Lead	4.78	6.43	0.74	0.6	94.6	4.8
X	Manganese	87	70.76	1.23	4.1	95.0	0.8
	Mercury	0.011	0.03	0.41	3.9	84.7	11.3
	Nickel	0.106	32.17	<0.1	2.9	82.2	14.8
	Selenium	0.027	0.16	0.17	43.8	53.0	2.9
	Silver	0.001	145.71	<0.1	39.2	0.0	58.3
	Thallium	0.006	0.06	0.10	64.9	0.0	33.7
X	Vanadium	0.375	0.16	2.39	1.3	87.1	11.7
	Zinc	7.02	128.66	<0.1	11.8	78.7	9.5
	HAZARD INDEX			237.6	2.5	92.2	5.3

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

NA = Not Analyzed

**TABLE 4-177
HAZARD QUOTIENTS FOR MUSKRAT - STATION LP**

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	76	41.82	1.81	2.3	76.3	21.4	0.0
	Antimony	0.004	0.05	<0.1	31.4	0.0	65.6	3.0
X	Arsenic	1.99	0.05	36.21	2.3	93.4	4.2	0.0
	Barium	1.97	4.33	0.45	21.2	75.0	3.6	0.2
	Beryllium	0.001	0.53	<0.1	12.2	0.0	87.3	0.5
	Cadmium	0.108	0.78	0.14	1.3	94.6	4.1	0.0
	Chromium	0.64	7.24	<0.1	4.1	76.7	19.1	0.0
	Cobalt	0.33	4.02	<0.1	3.6	91.5	4.8	0.0
	Copper	6.44	12.23	0.53	19.1	74.1	6.8	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	469	2.57	182.76	1.8	93.0	5.2	0.0
	Lead	4.02	6.43	0.63	0.8	94.4	4.8	0.0
	Manganese	52	70.76	0.74	5.6	93.5	0.8	0.1
	Mercury	0.009	0.03	0.37	2.1	86.2	11.5	0.2
	Nickel	0.152	32.17	<0.1	1.9	83.0	15.0	0.1
	Selenium	0.049	0.16	0.31	26.0	70.1	3.8	0.2
	Silver	0.001	145.71	<0.1	64.6	0.0	32.5	3.0
	Thallium	0.006	0.06	<0.1	33.8	0.0	64.7	1.5
X	Vanadium	0.333	0.16	2.12	1.8	86.6	11.6	0.1
	Zinc	15.98	128.66	0.12	4.5	85.3	10.3	0.0
	HAZARD INDEX			226.5	2.0	92.6	5.3	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-178
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-28

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Inorganics							
X Aluminum	179	41.82	4.28	0.8	77.5	21.7	0.0
Antimony	0.046	0.05	0.85	3.2	0.0	96.6	0.0
X Arsenic	20.97	0.05	382.41	0.5	95.2	4.3	0.0
X Barium	5.13	4.33	1.18	5.1	90.5	4.3	0.1
Beryllium	0.003	0.53	<0.1	6.4	0.0	93.4	0.2
X Cadmium	0.827	0.78	1.07	0.2	95.6	4.2	0.0
X Chromium	33.11	7.24	4.58	0.1	80.0	19.9	0.0
Cobalt	1.40	4.02	0.35	1.0	94.0	4.9	0.0
X Copper	28.39	12.23	2.32	5.7	86.3	7.9	0.0
Cyanide	NA	51.9	<0.1				
X Iron	2953	2.57	1151.29	0.6	94.1	5.3	0.0
X Lead	20.34	6.43	3.16	0.1	95.1	4.9	0.0
X Manganese	198	70.76	2.80	1.3	97.8	0.8	0.0
X Mercury	0.081	0.03	3.17	0.3	88.0	11.7	0.0
Nickel	0.414	32.17	<0.1	0.5	84.3	15.2	0.1
X Selenium	0.400	0.16	2.49	2.5	92.5	5.0	0.0
Silver	0.011	145.71	<0.1	10.2	0.0	89.6	0.2
Thallium	0.003	0.06	<0.1	68.1	0.0	29.2	2.7
X Vanadium	1.156	0.16	7.38	0.4	87.9	11.8	0.0
Zinc	55.79	128.66	0.43	1.5	87.9	10.6	0.0
HAZARD INDEX			1567.8	0.6	94.2	5.2	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-179
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-29

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Inorganics							
X	Aluminum	175	41.82	4.20	0.8	77.5	21.7
	Antimony	0.011	0.05	0.20	13.8	0.0	85.5
X	Arsenic	20.81	0.05	379.54	0.5	95.2	4.3
	Barium	3.91	4.33	0.90	6.7	88.9	4.2
	Beryllium	0.002	0.53	<0.1	7.2	0.0	92.6
	Cadmium	0.751	0.78	0.97	0.2	95.6	4.2
X	Chromium	36.75	7.24	5.08	0.1	80.0	19.9
	Cobalt	1.64	4.02	0.41	0.9	94.2	4.9
X	Copper	28.87	12.23	2.36	5.6	86.4	7.9
	Cyanide	NA	51.9	<0.1			
X	Iron	3252	2.57	1267.91	0.5	94.2	5.3
X	Lead	24.18	6.43	3.76	0.1	95.1	4.9
X	Manganese	228	70.76	3.22	1.2	98.0	0.8
X	Mercury	0.172	0.03	6.68	0.2	88.1	11.7
	Nickel	0.467	32.17	<0.1	0.4	84.3	15.2
X	Selenium	0.360	0.16	2.24	2.7	92.2	5.0
	Silver	0.004	145.71	<0.1	25.7	0.0	73.7
	Thallium	0.023	0.06	0.38	8.7	0.0	90.9
X	Vanadium	1.327	0.16	8.46	0.3	87.9	11.8
	Zinc	63.03	128.66	0.49	1.4	88.0	10.6
	HAZARD INDEX			1686.8	0.5	94.2	5.2

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-180
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-30

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Inorganics							
X Aluminum	155	41.82	3.70	1.0	77.3	21.6	0.0
Antimony	0.017	0.05	0.31	9.7	0.0	90.0	0.4
X Arsenic	16.34	0.05	297.98	0.5	95.2	4.3	0.0
Barium	3.87	4.33	0.89	7.7	88.0	4.2	0.1
Beryllium	0.002	0.53	<0.1	8.2	0.0	91.6	0.2
Cadmium	0.370	0.78	0.48	0.9	95.0	4.1	0.0
X Chromium	27.88	7.24	3.85	0.2	79.9	19.9	0.0
Cobalt	0.92	4.02	0.23	1.7	93.3	4.9	0.0
X Copper	40.27	12.23	3.29	4.6	87.4	8.0	0.0
Cyanide	NA	51.9	<0.1				
X Iron	1696	2.57	661.31	0.6	94.1	5.3	0.0
X Lead	21.21	6.43	3.30	0.1	95.0	4.9	0.0
X Manganese	240	70.76	3.39	1.5	97.7	0.8	0.0
X Mercury	0.498	0.03	19.36	0.1	88.2	11.7	0.0
Nickel	0.319	32.17	<0.1	1.0	83.9	15.1	0.1
X Selenium	0.198	0.16	1.23	6.0	89.2	4.8	0.0
Silver	0.002	145.71	<0.1	24.0	0.0	74.5	1.6
Thallium	0.012	0.06	0.21	31.9	0.0	67.4	0.7
X Vanadium	0.853	0.16	5.44	0.6	87.7	11.7	0.0
Zinc	26.71	128.66	0.21	3.1	86.5	10.4	0.0
HAZARD INDEX			1005.2	0.6	94.1	5.3	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

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TABLE 4-181
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-31

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	119	41.82	2.84	1.3	77.1	21.6	0.0
	Antimony	0.002	0.05	<0.1	70.3	0.0	27.1	2.6
X	Arsenic	0.54	0.05	9.89	14.9	81.2	3.7	0.2
X	Barium	4.99	4.33	1.15	6.0	89.7	4.3	0.1
	Beryllium	0.001	0.53	<0.1	13.2	0.0	86.5	0.3
	Cadmium	0.238	0.78	0.31	1.4	94.5	4.1	0.0
	Chromium	2.24	7.24	0.31	2.9	77.7	19.4	0.0
	Cobalt	0.59	4.02	0.15	2.7	92.4	4.8	0.0
	Copper	5.01	12.23	0.41	37.1	57.6	5.3	0.0
	Cyanide	NA	51.9	<0.1				
X	Iron	1066	2.57	415.63	1.0	93.8	5.3	0.0
X	Lead	13.39	6.43	2.08	0.2	94.9	4.8	0.0
X	Manganese	174	70.76	2.46	2.1	97.1	0.8	0.0
X	Mercury	0.029	0.03	1.11	1.5	86.9	11.6	0.0
	Nickel	0.401	32.17	<0.1	0.8	84.0	15.1	0.0
	Selenium	0.133	0.16	0.83	8.8	86.4	4.7	0.1
	Silver	0.001	145.71	<0.1	43.0	0.0	54.2	2.8
	Thallium	0.004	0.06	<0.1	97.9	0.0	0.0	2.1
X	Vanadium	0.917	0.16	5.85	0.5	87.7	11.7	0.0
	Zinc	10.95	128.66	<0.1	7.6	82.5	9.9	0.1
	HAZARD INDEX			443.2	1.4	93.2	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-182
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-32

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	0.0009	1367	<0.1	0.0	0.0	71	29.3
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	NA	6.1	<0.1				
Trichloroethene	NA	3.0	<0.1				
HAZARD INDEX			0.0001	0.0	0.0	1	99.5
Semivolatile Organics							
2-Methylnaphthalene	0.00053	62.5	<0.1	0.0	0.0	53	47.3
Acenaphthylene	0.00053	58.0	<0.1	0.0	0.0	53	47.3
Anthracene	0.0005	435	<0.1	0.0	0.0	53	47.3
Benzo(a)anthracene	0.0012	0.57	<0.1	0.0	0.0	79	21.2
Benzo(a)pyrene	0.04	0.57	<0.1	0.0	96.5	2.8	0.6
Benzo(b)fluoranthene	0.03	0.57	<0.1	0.0	93.5	5.7	0.8
Benzo(g,h,i)perylene	0.0008	58.0	<0.1	0.0	0.0	68	31.9
Benzo(k)fluoranthene	0.02	0.57	<0.1	0.0	96.4	2.3	1.4
Carbazole	0.00028	58.0	<0.1	0.0	0.0	100.0	0.0
Chrysene	0.03	0.57	<0.1	0.0	95.3	3.8	0.9
Dibenz(a,h)anthracene	0.0005	0.57	<0.1	0.0	0.0	53	47.3
Dibenzofuran	0.00053	58.0	<0.1	0.0	0.0	53	47.3
Fluoranthene	0.03	54.4	<0.1	0.0	90.2	8.9	1.0
Fluorene	0.0005	54.4	<0.1	0.0	0.0	53	47.3
Indeno(1,2,3-cd)pyrene	0.05	0.57	<0.1	0.0	98.4	1.1	0.6
Naphthalene	0.00053	60.9	<0.1	0.0	0.0	53	47.3
N-nitrosodiphenylamine	0.00053	121	<0.1	0.0	0.0	53	47.3
Phenanthrene	0.06	58.0	<0.1	0.0	97.9	1.7	0.4
Pyrene	0.03	58.0	<0.1	0.0	92.1	7.0	0.9
HAZARD INDEX			0.30	0.0	95.2	3.8	1.1
Pesticides and PCBs							
4,4'-DDD	0.0001	6.84	<0.1	84.3	10.5	0.9	4.3
4,4'-DDE	0.0003	0.83	<0.1	90.9	6.5	0.7	1.9
4,4'-DDT	0.0001	0.64	<0.1	41.5	50.3	1.5	6.7
Aldrin	0.00001	0.16	<0.1	72.4	0.0	4.9	22.7
alpha-Chlordane	0.0000	1.99	<0.1	54.9	35.9	1.6	7.5
Aroclor 1248	0.0001	0.57	<0.1	54.8	0.0	8	37.1
Aroclor 1254	0.0007	0.15	<0.1	91.4	0.0	1.5	7.0
Aroclor 1260	0.0014	0.28	<0.1	85.4	10.3	0.8	3.5
beta-BHC	0.00001	3.22	<0.1	70.8	0.0	5.2	24.0
delta-BHC	0.00001	1.29	<0.1	70.8	0.0	5.2	24.0
Endosulfan I	0.0000	1.21	<0.1	24.9	64.9	1.8	8.4
Endosulfan Sulfate	0.00003	1.21	<0.1	77.6	0.0	4.0	18.4
Endrin Aldehyde	0.0002	0.04	<0.1	52.8	43.5	0.7	3.0
gamma-Chlordane	0.0000	1.99	<0.1	34.1	51.9	2.5	11.5
HAZARD INDEX			0.013	77.4	16.3	1.1	5.2
Inorganics							
X Aluminum	87	41.82	2.08	1.8	76.7	21.5	0.0
Antimony	0.008	0.05	0.15	19.7	0.0	79.6	0.7
X Arsenic	7.07	0.05	128.91	1.1	94.6	4.3	0.0
Barium	3.92	4.33	0.90	7.6	88.1	4.2	0.1
Beryllium	0.001	0.53	<0.1	13.4	0.0	86.3	0.3
Cadmium	0.286	0.78	0.37	1.2	94.7	4.1	0.0
Chromium	6.29	7.24	0.87	1.0	79.2	19.7	0.0
Cobalt	1.05	4.02	0.26	1.5	93.6	4.9	0.0
Copper	10.31	12.23	0.84	18.0	75.1	6.9	0.0
Cyanide	NA	51.9	<0.1				
X Iron	1393	2.57	542.97	0.7	94.0	5.3	0.0
X Lead	10.43	6.43	1.62	0.3	94.9	4.8	0.0
X Manganese	223	70.76	3.15	1.6	97.6	0.8	0.0
X Mercury	0.055	0.03	2.12	0.8	87.6	11.6	0.0
Nickel	0.281	32.17	<0.1	1.1	83.8	15.1	0.1
Selenium	0.134	0.16	0.83	8.8	86.4	4.7	0.1
Silver	0.001	145.71	<0.1	51.6	0.0	45.0	3.4
Thallium	0.005	0.06	<0.1	81.0	0.0	17.2	1.8
X Vanadium	0.630	0.16	4.02	0.7	87.5	11.7	0.0
Zinc	26.90	128.66	0.21	3.1	86.5	10.4	0.0
HAZARD INDEX			689.4	0.9	93.9	5.2	0.0

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-183
HAZARD QUOTIENTS FOR MUSKRAT - STATION TT-33

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	0.0007	1367	<0.1	0.0	0.0	65	35.0
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	NA	6.1	<0.1				
Trichloroethene	NA	3.0	<0.1				
HAZARD INDEX			0.0001	0.0	0.0	0	99.6
Semivolatile Organics							
2-Methylnaphthalene	0.00040	62.5	<0.1	0.0	0.0	38	62.4
Acenaphthylene	0.00040	58.0	<0.1	0.0	0.0	38	62.4
Anthracene	0.0004	435	<0.1	0.0	0.0	38	62.4
Benzo(a)anthracene	0.0005	0.57	<0.1	0.0	0.0	51	49.5
Benzo(a)pyrene	0.01	0.57	<0.1	0.0	95.1	2.8	2.1
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.0	5.6	2.3
Benzo(g,h,i)perylene	0.0004	58.0	<0.1	0.0	0.0	36	64.2
Benzo(k)fluoranthene	0.010	0.57	<0.1	0.0	95.3	2.2	2.4
Carbazole	0.00015	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.01	0.57	<0.1	0.0	93.7	3.7	2.5
Dibenz(a,h)anthracene	0.0004	0.57	<0.1	0.0	0.0	38	62.4
Dibenzofuran	0.00040	58.0	<0.1	0.0	0.0	38	62.4
Fluoranthene	0.01	54.4	<0.1	0.0	88.1	8.7	3.2
Fluorene	0.0004	54.4	<0.1	0.0	0.0	38	62.4
Indeno(1,2,3-cd)pyrene	0.01	0.57	<0.1	0.0	97.0	1.1	1.9
Naphthalene	0.00040	60.9	<0.1	0.0	0.0	38	62.4
N-nitrosodiphenylamine	0.00040	121	<0.1	0.0	0.0	38	62.4
Phenanthrene	0.02	58.0	<0.1	0.0	96.9	1.7	1.4
Pyrene	0.01	58.0	<0.1	0.0	90.4	6.9	2.7
HAZARD INDEX			0.10	0.0	93.2	3.7	3.1
Pesticides and PCBs							
4,4'-DDD	0.0001	6.84	<0.1	71.6	22.7	2.0	3.7
4,4'-DDE	0.0003	0.83	<0.1	83.8	13.0	1.4	1.8
4,4'-DDT	0.0001	0.64	<0.1	38.2	54.1	1.6	6.1
Aldrin	0.00001	0.16	<0.1	71.9	0.0	5.5	22.5
alpha-Chlordane	0.0000	1.99	<0.1	52.4	38.7	1.8	7.2
Aroclor 1248	0.0001	0.57	<0.1	54.1	0.0	9	36.6
Aroclor 1254	0.0007	0.15	<0.1	91.2	0.0	1.8	7.0
Aroclor 1260	0.0015	0.28	<0.1	83.8	11.8	0.9	3.5
beta-BHC	0.00001	3.22	<0.1	70.3	0.0	5.9	23.8
delta-BHC	0.00001	1.29	<0.1	70.3	0.0	5.9	23.8
Endosulfan I	0.0000	1.21	<0.1	22.9	67.4	1.9	7.8
Endosulfan Sulfate	0.00003	1.21	<0.1	77.1	0.0	4.7	18.2
Endrin Aldehyde	0.0002	0.04	<0.1	49.1	47.4	0.7	2.8
gamma-Chlordane	0.0000	1.99	<0.1	31.9	54.7	2.7	10.8
HAZARD INDEX			0.016	75.0	18.6	1.3	5.0
Inorganics							
X Aluminum	105	41.82	2.50	1.5	77.0	21.5	0.0
Antimony	0.015	0.05	0.28	10.9	0.0	88.7	0.4
X Arsenic	6.76	0.05	123.32	1.2	94.5	4.3	0.0
Barium	3.49	4.33	0.81	8.5	87.2	4.2	0.1
Beryllium	0.002	0.53	<0.1	12.7	0.0	87.0	0.3
Cadmium	0.316	0.78	0.41	1.0	94.8	4.1	0.0
X Chromium	11.66	7.24	1.61	0.6	79.6	19.8	0.0
Cobalt	0.97	4.02	0.24	1.7	93.4	4.9	0.0
X Copper	13.19	12.23	1.08	14.1	78.7	7.2	0.0
Cyanide	NA	51.9	<0.1				
X Iron	1351	2.57	526.68	0.8	93.9	5.3	0.0
X Lead	9.57	6.43	1.49	0.3	94.9	4.8	0.0
X Manganese	173	70.76	2.45	2.1	97.1	0.8	0.0
X Mercury	0.063	0.03	2.46	0.7	87.7	11.7	0.0
Nickel	0.231	32.17	<0.1	1.3	83.5	15.1	0.1
Selenium	0.149	0.16	0.92	7.9	87.3	4.7	0.1
Silver	0.004	145.71	<0.1	14.3	0.0	84.8	0.9
Thallium	0.005	0.06	<0.1	79.8	0.0	18.5	1.7
X Vanadium	0.600	0.16	3.83	0.8	87.5	11.7	0.0
Zinc	21.35	128.66	0.17	3.9	85.8	10.3	0.0
HAZARD INDEX			668.3	0.9	93.8	5.3	0.0

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-184
HAZARD QUOTIENTS FOR MUSKRAT - STATION UF
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	239	41.82	5.71	0.3	77.9	21.8	0.0
	Antimony	NA	0.05	<0.1				
X	Arsenic	3.44	0.05	62.82	0.2	95.5	4.3	0.0
X	Barium	9.37	4.33	2.16	0.6	94.8	4.5	0.0
	Beryllium	0.003	0.53	<0.1	6.0	0.0	93.9	0.1
	Cadmium	0.660	0.78	0.85	0.3	95.6	4.2	0.0
	Chromium	5.49	7.24	0.76	0.1	80.0	19.9	0.0
	Cobalt	1.28	4.02	0.32	0.6	94.4	5.0	0.0
X	Copper	15.76	12.23	1.29	7.7	84.5	7.8	0.0
	Cyanide	0.0092	51.90	<0.1	61.6	0.0	35.6	2.7
X	Iron	2009	2.57	783.09	0.1	94.5	5.3	0.0
X	Lead	35.38	6.43	5.50	0.0	95.1	4.9	0.0
X	Manganese	260	70.76	3.67	0.9	98.3	0.8	0.0
X	Mercury	0.037	0.03	1.45	0.6	87.7	11.7	0.0
	Nickel	0.722	32.17	<0.1	0.2	84.6	15.2	0.0
	Selenium	0.118	0.16	0.73	13.0	82.4	4.5	0.1
	Silver	0.004	145.71	<0.1	49.5	0.0	49.5	1.0
	Thallium	0.004	0.06	<0.1	50.7	0.0	47.1	2.2
X	Vanadium	1.631	0.16	10.40	0.1	88.1	11.8	0.0
	Zinc	51.39	128.66	0.40	1.1	88.3	10.6	0.0
	HAZARD INDEX			879.3	0.2	94.4	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-185
HAZARD QUOTIENTS FOR MUSKRAT - STATION WG

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	NA	1367	<0.1				
cis-1,2-Dichloroethene	0.0003	2504	<0.1	0.0	0.0	77	23.5
Tetrachloroethene	0.0003	6.09	<0.1	0.0	0.0	85	15.4
Trichloroethene	0.00015	3.05	<0.1	0.0	0.0	66	33.9
HAZARD INDEX			0.0001	0.0	0.0	60	39.6
Semivolatile Organics							
2-Methylnaphthalene	0.00026	62.5	<0.1	0.0	0.0	3	97.3
Acenaphthylene	0.00025	58.0	<0.1	0.0	0.0	1	99.1
Anthracene	0.0003	435	<0.1	0.0	0.0	14	85.7
Benzo(a)anthracene	0.0006	0.57	<0.1	0.0	0.0	55	45.3
Benzo(a)pyrene	0.01	0.57	<0.1	0.0	95.3	2.8	1.9
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.3	5.6	2.1
Benzo(g,h,i)perylene	0.0005	58.0	<0.1	0.0	0.0	53	47.3
Benzo(k)fluoranthene	0.02	0.57	<0.1	0.0	96.5	2.3	1.2
Carbazole	NA	58.0	<0.1				
Chrysene	0.01	0.57	<0.1	0.0	94.5	3.8	1.8
Dibenz(a,h)anthracene	0.0004	0.57	<0.1	0.0	0.0	30	70.1
Dibenzofuran	NA	58.0	<0.1				
Fluoranthene	0.01	54.4	<0.1	0.0	88.9	8.8	2.3
Fluorene	0.0003	54.4	<0.1	0.0	0.0	11	88.5
Indeno(1,2,3-cd)pyrene	0.03	0.57	<0.1	0.0	98.1	1.1	0.8
Naphthalene	NA	60.9	<0.1				
N-nitrosodiphenylamine	0.00025	121	<0.1	0.0	0.0	0.0	100.0
Phenanthrene	0.02	58.0	<0.1	0.0	97.2	1.7	1.1
Pyrene	0.01	58.0	<0.1	0.0	90.9	6.9	2.2
HAZARD INDEX			0.16	0.0	95.0	3.1	1.9
Pesticides and PCBs							
4,4'-DDD	0.0003	6.84	<0.1	6.9	83.8	7.5	1.8
4,4'-DDE	0.0001	0.83	<0.1	26.1	62.7	6.7	4.5
4,4'-DDT	0.0001	0.64	<0.1	63.1	26.2	0.8	9.9
Aldrin	0.00001	0.16	<0.1	77.0	0.0	1.6	21.4
alpha-Chlordane	0.0001	1.99	<0.1	25.3	68.6	3.1	3.0
Aroclor 1248	0.0002	0.57	<0.1	36.0	0.0	0.0	24.4
Aroclor 1254	0.0006	0.15	<0.1	91.5	0.0	0.6	7.9
Aroclor 1260	0.0011	0.28	<0.1	60.3	32.5	2.4	4.7
beta-BHC	0.00001	3.22	<0.1	73.7	0.0	1.8	24.5
delta-BHC	0.00001	1.29	<0.1	73.7	0.0	1.8	24.5
Endosulfan I	0.0001	1.21	<0.1	31.8	62.1	1.8	4.3
Endosulfan Sulfate	0.00003	1.21	<0.1	83.8	0.0	1.1	15.0
Endrin Aldehyde	0.0001	0.04	<0.1	68.0	26.4	0.4	5.2
gamma-Chlordane	0.0000	1.99	<0.1	19.2	71.8	3.5	5.5
HAZARD INDEX			0.011	72.3	18.3	2.5	6.9
Inorganics							
X Aluminum	149	41.82	3.56	1.0	77.4	21.6	0.0
Antimony	0.016	0.05	0.29	9.5	0.0	90.0	0.4
X Arsenic	3.89	0.05	71.03	2.9	92.9	4.2	0.1
Barium	4.31	4.33	0.99	6.1	89.5	4.3	0.1
Beryllium	0.003	0.53	<0.1	5.9	0.0	93.9	0.2
Cadmium	0.295	0.78	0.38	0.6	95.3	4.1	0.0
Chromium	6.62	7.24	0.91	0.4	79.7	19.9	0.0
Cobalt	0.75	4.02	0.19	1.9	93.2	4.9	0.0
X Copper	15.06	12.23	1.23	10.8	81.7	7.5	0.0
Cyanide	0.010	51.90	<0.1	77.7	0.0	19.9	2.5
X Iron	918	2.57	358.05	1.9	92.9	5.2	0.0
X Lead	20.69	6.43	3.22	0.1	95.1	4.9	0.0
X Manganese	204	70.76	2.88	1.3	97.9	0.8	0.0
X Mercury	0.028	0.03	1.07	1.0	87.3	11.6	0.1
Nickel	0.437	32.17	<0.1	0.5	84.3	15.2	0.1
X Selenium	0.176	0.16	1.10	5.6	89.5	4.9	0.0
Silver	0.002	145.71	<0.1	54.6	0.0	44.2	1.2
Thallium	0.003	0.06	<0.1	68.6	0.0	28.7	2.7
X Vanadium	1.075	0.16	6.86	0.4	87.8	11.8	0.0
Zinc	19.78	128.66	0.15	4.3	85.3	10.3	0.1
HAZARD INDEX			452.0	2.0	92.6	5.4	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-186
HAZARD QUOTIENTS FOR MUSKRAT - STATION WH
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	0.0066	1367	<0.1	0.0	0.0	96	3.8
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	NA	6.1	<0.1				
Trichloroethene	NA	3.0	<0.1				
HAZARD INDEX			0.0001	0.0	0.0	8	91.7
Semivolatile Organics							
2-Methylnaphthalene	0.00096	62.5	<0.1	0.0	0.0	74	26.4
Acenaphthylene	0.00096	58.0	<0.1	0.0	0.0	74	26.4
Anthracene	0.0010	435	<0.1	0.0	0.0	74	26.4
Benzo(a)anthracene	0.0010	0.57	<0.1	0.0	0.0	74	26.4
Benzo(a)pyrene	NA	0.6	<0.1				
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.3	5.6	2.0
Benzo(g,h,i)perylene	0.0010	58.0	<0.1	0.0	0.0	74	26.4
Benzo(k)fluoranthene	0.07	0.57	0.12	0.0	97.4	2.3	0.4
Carbazole	0.00070	58.0	<0.1	0.0	0.0	100.0	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.9	3.8	1.4
Dibenz(a,h)anthracene	0.0010	0.57	<0.1	0.0	0.0	74	26.4
Dibenzofuran	0.00096	58.0	<0.1	0.0	0.0	74	26.4
Fluoranthene	0.01	54.4	<0.1	0.0	88.2	8.7	3.1
Fluorene	0.0010	54.4	<0.1	0.0	0.0	74	26.4
Indeno(1,2,3-cd)pyrene	0.06	0.57	0.11	0.0	98.5	1.1	0.4
Naphthalene	0.000955	60.9	<0.1	0.0	0.0	74	26.4
N-nitrosodiphenylamine	0.00096	121	<0.1	0.0	0.0	74	26.4
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.6
Pyrene	0.01	58.0	<0.1	0.0	90.6	6.9	2.5
HAZARD INDEX			0.29	0.0	95.8	3.1	1.1
Pesticides and PCBs							
4,4'-DDD	0.0001	6.84	<0.1	20.5	67.9	6.1	5.4
4,4'-DDE	0.0001	0.83	<0.1	31.2	57.3	6.1	5.4
4,4'-DDT	0.0002	0.64	<0.1	13.3	82.2	2.4	2.1
Aldrin	0.00001	0.16	<0.1	62.5	0.0	20.1	17.3
alpha-Chlordane	0.0001	1.99	<0.1	21.2	73.0	3.3	2.5
Aroclor 1248	0.0002	0.57	<0.1	40.9	0.0	31	27.7
Aroclor 1254	0.0007	0.15	<0.1	84.4	0.0	8.3	7.3
Aroclor 1260	0.0015	0.28	<0.1	42.2	50.7	3.8	3.3
beta-BHC	0.00001	3.22	<0.1	58.3	0.0	22.4	19.3
delta-BHC	0.00001	1.29	<0.1	58.3	0.0	22.4	19.3
Endosulfan I	0.0001	1.21	<0.1	14.6	81.1	2.3	2.0
Endosulfan Sulfate	0.00004	1.21	<0.1	72.3	0.0	14.7	12.9
Endrin Aldehyde	0.0005	0.04	<0.1	14.4	83.2	1.3	1.1
gamma-Chlordane	0.0001	1.99	<0.1	10.4	82.6	4.0	3.0
HAZARD INDEX			0.023	36.4	56.2	3.9	3.5
Inorganics							
X Aluminum	116	41.82	2.78	1.2	77.2	21.6	0.0
Antimony	0.052	0.05	0.96	2.8	0.0	97.0	0.1
X Arsenic	3.28	0.05	59.77	3.4	92.3	4.2	0.1
X Barium	4.45	4.33	1.03	5.9	89.7	4.3	0.1
Beryllium	0.002	0.53	<0.1	7.6	0.0	92.1	0.3
Cadmium	0.332	0.78	0.43	0.5	95.3	4.1	0.0
Chromium	4.10	7.24	0.57	0.7	79.5	19.8	0.1
Cobalt	0.59	4.02	0.15	2.5	92.7	4.9	0.0
Copper	8.52	12.23	0.70	19.0	74.1	6.8	0.0
Cyanide	0.010	51.90	<0.1	83.4	0.0	13.9	2.6
X Iron	1105	2.57	430.73	1.6	93.2	5.2	0.0
X Lead	73.12	6.43	11.37	0.0	95.1	4.9	0.0
X Manganese	74	70.76	1.05	3.6	95.6	0.8	0.1
Mercury	0.011	0.03	0.43	2.4	86.0	11.4	0.2
Nickel	0.368	32.17	<0.1	0.5	84.2	15.2	0.1
Selenium	0.134	0.16	0.83	7.3	87.8	4.8	0.1
Silver	0.002	145.71	<0.1	63.1	0.0	35.4	1.4
Thallium	0.003	0.06	<0.1	59.1	0.0	38.6	2.3
X Vanadium	1.505	0.16	9.60	0.3	87.9	11.8	0.0
Zinc	22.21	128.66	0.17	3.9	85.8	10.3	0.1
HAZARD INDEX			520.6	1.8	92.7	5.5	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-187
HAZARD QUOTIENTS FOR MUSKRAT - STATION WS

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ	
Inorganics								
X	Aluminum	93	41.82	2.21	1.5	76.9	21.5	0.0
	Antimony	0.011	0.05	0.20	13.7	0.0	85.6	0.6
X	Arsenic	4.77	0.05	86.97	2.3	93.4	4.2	0.1
X	Barium	6.40	4.33	1.48	4.1	91.5	4.4	0.1
	Beryllium	0.001	0.53	<0.1	12.6	0.0	86.9	0.5
	Cadmium	0.457	0.78	0.59	0.4	95.5	4.1	0.0
	Chromium	5.95	7.24	0.82	0.4	79.7	19.8	0.0
	Cobalt	0.91	4.02	0.23	1.6	93.5	4.9	0.0
	Copper	10.15	12.23	0.83	16.0	76.9	7.1	0.0
	Cyanide	0.017	51.90	<0.1	47.8	0.0	50.7	1.5
X	Iron	1327	2.57	517.29	1.3	93.4	5.3	0.0
X	Lead	14.23	6.43	2.21	0.1	95.0	4.9	0.0
X	Manganese	299	70.76	4.23	0.9	98.3	0.8	0.0
	Mercury	0.020	0.03	0.77	1.4	87.0	11.6	0.1
	Nickel	0.465	32.17	<0.1	0.4	84.3	15.2	0.1
	Selenium	0.104	0.16	0.65	9.4	85.8	4.7	0.1
	Silver	0.002	145.71	<0.1	67.8	0.0	30.6	1.6
	Thallium	0.004	0.06	<0.1	52.1	0.0	45.9	2.0
X	Vanadium	0.746	0.16	4.76	0.6	87.7	11.7	0.0
	Zinc	34.51	128.66	0.27	2.5	87.0	10.5	0.0
	<i>HAZARD INDEX</i>			<i>623.6</i>	<i>1.5</i>	<i>93.3</i>	<i>5.2</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-188
HAZARD QUOTIENTS FOR MUSKRAT - STATION WW
WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	NA	9.7	<0.1				
Acetone	0.0012	1367	<0.1	0.0	0.0	79	20.8
cis-1,2-Dichloroethene	NA	2504	<0.1				
Tetrachloroethene	NA	6.1	<0.1				
Trichloroethene	NA	3.0	<0.1				
HAZARD INDEX			0.0001	0.0	0.0	1	98.6
Semivolatile Organics							
2-Methylnaphthalene	0.00097	62.5	<0.1	0.0	0.0	74	26.1
Acenaphthylene	0.00097	58.0	<0.1	0.0	0.0	74	26.1
Anthracene	0.0010	435	<0.1	0.0	0.0	74	26.1
Benzo(a)anthracene	0.0010	0.57	<0.1	0.0	0.0	74	26.1
Benzo(a)pyrene	NA	0.6	<0.1				
Benzo(b)fluoranthene	0.01	0.57	<0.1	0.0	92.5	5.7	1.8
Benzo(g,h,i)perylene	0.0010	58.0	<0.1	0.0	0.0	74	26.1
Benzo(k)fluoranthene	0.06	0.57	0.11	0.0	97.3	2.3	0.4
Carbazole	0.00071	58.0	<0.1	0.0	0.0	100.0	0.0
Chrysene	0.02	0.57	<0.1	0.0	94.9	3.8	1.4
Dibenz(a,h)anthracene	0.0010	0.57	<0.1	0.0	0.0	74	26.1
Dibenzofuran	0.00097	58.0	<0.1	0.0	0.0	74	26.1
Fluoranthene	0.01	54.4	<0.1	0.0	89.3	8.8	1.9
Fluorene	0.0010	54.4	<0.1	0.0	0.0	74	26.1
Indeno(1,2,3-cd)pyrene	0.07	0.57	0.12	0.0	98.5	1.1	0.4
Naphthalene	0.000967	60.9	<0.1	0.0	0.0	74	26.1
N-nitrosodiphenylamine	0.00097	121	<0.1	0.0	0.0	74	26.1
Phenanthrene	0.04	58.0	<0.1	0.0	97.7	1.7	0.6
Pyrene	0.02	58.0	<0.1	0.0	91.5	7.0	1.6
HAZARD INDEX			0.29	0.0	95.8	3.1	1.1
Pesticides and PCBs							
4,4'-DDD	0.0001	6.84	<0.1	20.2	68.3	6.2	5.3
4,4'-DDE	0.0001	0.83	<0.1	34.3	54.0	5.8	5.9
4,4'-DDT	0.0002	0.64	<0.1	13.1	82.5	2.4	2.1
Aldrin	0.00001	0.16	<0.1	62.5	0.0	20.1	17.3
alpha-Chlordane	0.0001	1.99	<0.1	21.2	73.0	3.3	2.5
Aroclor 1248	0.0002	0.57	<0.1	40.6	0.0	32	27.5
Aroclor 1254	0.0007	0.15	<0.1	84.2	0.0	8.5	7.3
Aroclor 1260	0.0015	0.28	<0.1	41.8	51.1	3.8	3.3
beta-BHC	0.00001	3.22	<0.1	58.3	0.0	22.4	19.3
delta-BHC	0.00001	1.29	<0.1	58.3	0.0	22.4	19.3
Endosulfan I	0.0001	1.21	<0.1	14.6	81.1	2.3	2.0
Endosulfan Sulfate	0.00004	1.21	<0.1	72.1	0.0	15.0	12.9
Endrin Aldehyde	0.0005	0.04	<0.1	14.2	83.5	1.3	1.1
gamma-Chlordane	0.0001	1.99	<0.1	10.4	82.6	4.0	3.0
HAZARD INDEX			0.023	36.0	56.7	4.0	3.4
Inorganics							
X Aluminum	113	41.82	2.71	1.3	77.1	21.6	0.0
X Antimony	0.069	0.05	1.27	2.1	0.0	97.8	0.1
X Arsenic	1.25	0.05	22.72	9.0	86.9	3.9	0.2
X Barium	23.10	4.33	5.33	1.1	94.3	4.5	0.0
Beryllium	0.001	0.53	<0.1	19.8	0.0	79.5	0.7
Cadmium	0.228	0.78	0.29	0.7	95.1	4.1	0.0
X Chromium	145.26	7.24	20.07	0.0	80.0	19.9	0.0
Cobalt	0.60	4.02	0.15	2.4	92.7	4.9	0.0
Copper	11.34	12.23	0.93	14.3	78.5	7.2	0.0
Cyanide	NA	51.9	<0.1				
X Iron	543	2.57	211.87	3.2	91.6	5.2	0.0
X Lead	14.54	6.43	2.26	0.1	95.0	4.9	0.0
X Manganese	97	70.76	1.37	2.7	96.4	0.8	0.0
Mercury	0.020	0.03	0.77	1.3	87.0	11.6	0.1
Nickel	0.362	32.17	<0.1	0.6	84.2	15.2	0.1
X Selenium	0.207	0.16	1.29	4.8	90.3	4.9	0.0
Silver	0.002	145.71	<0.1	55.9	0.0	42.8	1.3
Thallium	0.005	0.06	<0.1	41.0	0.0	57.4	1.6
X Vanadium	1.360	0.16	8.67	0.3	87.9	11.8	0.0
Zinc	27.26	128.66	0.21	3.1	86.4	10.4	0.0
HAZARD INDEX			280.0	3.3	89.8	6.9	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-189
HAZARD QUOTIENT SUMMARY FOR MUSKRAT

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT ¹												
			Aluminum	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Selenium	Vanadium
	Pond	Reference	2.6		5.1					269	1.6	1.1			3.9
	Wetland	Reference	2.1		10					267	2.5				7.0
	River	Reference	1.6		9.0					274		2.3			2.9
1	Pond	6	1.4		13					127					1.5
2	Pond	6	1.3		10					170	1.1				2.3
3	Pond	6	1.2		18					190					2.7
4	Pond	6	3.7		44	1.5				516	3.3	2.8			6.5
5	River	5	1.3		6.4					192	1.8	1.4			2.2
6	River	4	2.6		38	1.0				393	2.7	2.8	1.1		5.2
7	River	3	2.6		32					358	2.0	1.4	1.1		5.1
8	River	2	1.4		11					231					1.9
9	River	2	1.1		16					191		1.5			1.5
10	River	1	6.2		438			2.2	4.0	577	4.4	2.2	8.2	2.0	6.7
11	River	1	2.4		147					529	2.1	3.5	1.7		4.2
12	River	1	3.4	1.7	729				1.6	974	2.9	2.1	7.8	2.5	6.5
13	Wetland	1	5.6	1.0	669	1.3			2.4	714	6.5	2.7	5.8	2.9	9.5
14	River	1			33					247					1.5
15	Wetland	1	1.6		86			2.0		301		4.5		1.5	2.5
16	River	2			7.0					100					
18	Wetland	1	3.7		367	1.0		2.8	2.0	962	2.7	3.5	2.9	1.6	5.9
19	Wetland	1	3.0		1275	1.3		2.0	1.6	2259	2.3	4.4	1.8	1.8	5.9
20	Wetland	1	5.7		145	1.1	1.2	2.4	2.4	527	5.8	3.0	1.6	2.1	9.8
21	Wetland	1	3.5		91	1.6	1.3	3.9	1.2	383	4.0		7.4		6.8
AM	River	2	2.0		63					405	1.1	4.7	1.5		3.4
AS	River	3	4.5		62	1.3		1.2	1.3	493	4.3	1.6	2.4		8.4
BW	Wetland	1	4.8		654	1.6		2.5	2.2	1923	4.6	4.2	5.1	2.9	10
CB-01	Wetland	2	3.1		22				1.0	194	2.4	1.4	1.2	1.1	6.8
CB-02	Wetland	2	1.2		15	1.0				105					3.4
CB-03	Wetland	2	2.4		139					536	1.5	1.2		1.1	6.0
CB-04	Wetland	2	2.5		58					415	1.6	1.7			7.0
CB-06	Wetland	2	1.9		51					222	1.0				6.7
JY	Wetland	1	2.5		75	1.6		1.4		494	3.9	1.2			6.2
KFSE	River	2	1.3		21					209		1.2			2.4
LP	River	3	1.8		36					183					2.1
NRSE	Wetland	1	1.7		86					340	1.2		2.1		3.0
TT-28	River	1	4.3		382	1.2	1.1	4.6	2.3	1151	3.2	2.8	3.2	2.5	7.4
TT-29	River	1	4.2		380			5.1	2.4	1268	3.8	3.2	6.7	2.2	8.5
TT-30	River	2	3.7		298			3.9	3.3	661	3.3	3.4	19.4	1.2	5.4
TT-31	Wetland	2	2.8		10	1.2				416	2.1	2.5	1.1		5.9
TT-32	River	2	2.1		129					543	1.6	3.2	2.1		4.0
TT-33	River	2	2.5		123			1.6	1.1	527	1.5	2.5	2.5		3.8
UF	Pond	6	5.7		63	2.2			1.3	783	5.5	3.7	1.4		10
WG	Wetland	1	3.6		71				1.2	358	3.2	2.9	1.1	1.1	6.9
WH	Wetland	1	2.8		60	1.0				431	11	1.0			9.6
WS	River	1	2.2		87	1.5				517	2.2	4.2			4.8
WW	Wetland	1	2.7	1.3	23	5.3		20		212	2.3	1.4		1.3	8.7
% of OU3 stations (non-reference) with HQ>1			95	7	100	40	9	30	37	100	77	74	53	35	98

¹ A blank cell indicates that the HQ was less than 1.0

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TABLE 4-190
HAZARD QUOTIENTS FOR MUSKRAT POND REFERENCE

WELLS G&H SUPERFUND SITE OU3

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00045	9.73	<0.1	0.0	0.0	55	44.9
Acetone	0.0011	1367	<0.1	0.0	0.0	77	23.0
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	0.0	0.0
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	26	74.3
Trichloroethene	0.00009	3.05	<0.1	0.0	0.0	23	77.3
HAZARD INDEX			0.000091	0.0	0.0	40	59.8
Semivolatile Organics							
2-Methylnaphthalene	0.0012	62.5	<0.1	0.0	0.0	80	20.3
Acenaphthylene	0.0012	58.0	<0.1	0.0	0.0	80	20.3
Anthracene	0.0013	435	<0.1	0.0	0.0	81	18.9
Benzo(a)anthracene	0.0029	0.57	<0.1	0.0	0.0	91	8.7
Benzo(a)pyrene	0.09	0.57	0.16	0.0	96.9	2.8	0.3
Benzo(b)fluoranthene	0.05	0.57	<0.1	0.0	93.8	5.7	0.5
Benzo(g,h,i)perylene	0.0016	58.0	<0.1	0.0	0.0	84	15.9
Benzo(k)fluoranthene	0.13	0.57	0.23	0.0	97.5	2.3	0.2
Carbazole	0.0014	58.0	<0.1	0.0	0.0	82	18.4
Chrysene	0.07	0.57	0.13	0.0	95.8	3.8	0.4
Dibenz(a,h)anthracene	0.0011	0.57	<0.1	0.0	0.0	78	22.1
Dibenzofuran	0.0014	58.0	<0.1	0.0	0.0	82	18.4
Fluoranthene	0.06	54.4	<0.1	0.0	90.6	8.9	0.4
Fluorene	0.0013	54.4	<0.1	0.0	0.0	80	19.9
Indeno(1,2,3-cd)pyrene	0.17	0.57	0.30	0.0	98.8	1.1	0.1
Naphthalene	0.0012	60.9	<0.1	0.0	0.0	80	20.3
N-nitrosodiphenylamine	0.0014	121	<0.1	0.0	0.0	82	18.4
Phenanthrene	0.13	58.0	<0.1	0.0	98.1	1.7	0.2
Pyrene	0.06	58.0	<0.1	0.0	92.5	7.0	0.5
HAZARD INDEX			0.92	0.0	96.4	3.2	0.3
Pesticides and PCBs							
4,4'-DDD	0.0006	6.84	<0.1	3.7	87.8	7.9	0.6
4,4'-DDE	0.0005	0.83	<0.1	25.7	66.5	7.1	0.7
4,4'-DDT	0.0010	0.64	<0.1	1.4	95.5	2.8	0.3
Aldrin	0.00002	0.16	<0.1	34.6	0.0	57.0	8.4
alpha-Chlordane	0.0003	1.99	<0.1	2.5	92.7	4.2	0.6
Aroclor 1248	0.0004	0.57	<0.1	20.6	0.0	70	9.5
Aroclor 1254	0.0003	0.15	<0.1	21.5	0.0	68.6	9.9
Aroclor 1260	0.0038	0.28	<0.1	4.0	88.5	6.6	0.9
beta-BHC	0.00002	3.22	<0.1	34.6	0.0	57.0	8.4
delta-BHC	0.00002	1.29	<0.1	34.6	0.0	57.0	8.4
Endosulfan I	0.0011	1.21	<0.1	0.7	96.4	2.7	0.2
Endosulfan Sulfate	0.00004	1.21	<0.1	35.8	0.0	55.6	8.6
Endrin Aldehyde	0.0019	0.04	<0.1	0.8	97.6	1.5	0.2
gamma-Chlordane	0.0003	1.99	<0.1	2.9	91.9	4.5	0.7
HAZARD INDEX			0.068	2.7	90.8	5.7	0.8
Inorganics							
X Aluminum	107	41.82	3	0.3	77.9	21.8	0.0
Antimony	0.002	0.05	<0.1	0.0	0.0	85.4	14.6
X Arsenic	0.28	0.05	5.1	2.1	93.7	4.2	0.0
Barium	2.89	4.33	0.67	15.9	80.2	3.8	0.1
Beryllium	0.001	0.53	<0.1	10.8	0.0	88.6	0.6
Cadmium	0.04	0.8	<0.1	6.7	89.3	3.9	0.1
Chromium	0.5	7.24	<0.1	1.1	79.2	19.7	0.0
Cobalt	0.37	4.0	<0.1	3.4	91.8	4.8	0.0
Copper	1.8	12.2	0.14	34.0	60.4	5.6	0.0
Cyanide	0.0	51.90	<0.1	83.9	0.0	12.9	3.3
X Iron	691	2.57	269	0.3	94.4	5.3	0.0
X Lead	10.34	6.4	1.61	0.0	95.1	4.9	0.0
X Manganese	77.5	70.76	1.09	4.1	95.1	0.8	0.0
Mercury	0.00	0.03	0.14	4.7	84.0	11.2	0.2
Nickel	0.22	32.17	<0.1	2.2	82.8	14.9	0.0
Selenium	0.04	0.16	0.27	11.1	84.1	4.6	0.2
Silver	0.005	145.71	<0.1	88.4	0.0	11.1	0.5
Thallium	0.004	0.06	<0.1	53.1	0.0	45.0	1.9
X Vanadium	0.62	0.16	3.95	0.0	88.2	11.8	0.0
Zinc	3.6	129	<0.1	14.9	75.9	9.1	0.0
HAZARD INDEX			285.1	0.4	94.0	5.5	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

**TABLE 4-191
HAZARD QUOTIENTS FOR MUSKRAT WETLAND REFERENCE
WELLS G&H SUPERFUND SITE OU3**

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00027	9.73	<0.1	0.0	0.0	7	92.6
Acetone	0.00033	1367	<0.1	0.0	0.0	24	76.0
cis-1,2-Dichloroethene	0.00008	2504	<0.1	0.0	0.0	35	65.2
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	37	62.5
Trichloroethene	0.00007	3.05	<0.1	0.0	0.0	30	70.4
<i>HAZARD INDEX</i>			<i>0.000065</i>	<i>0.0</i>	<i>0.0</i>	<i>22</i>	<i>78.4</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	64	35.6
Acenaphthylene	0.0008	58.0	<0.1	0.0	0.0	69	30.8
Anthracene	0.0013	435	<0.1	0.0	0.0	80	19.7
Benzo(a)anthracene	0.0034	0.57	<0.1	0.0	0.0	93	7.3
Benzo(a)pyrene	0.10	0.57	0.18	0.0	96.9	2.8	0.2
Benzo(b)fluoranthene	0.09	0.57	1.58E-01	0.0	94.0	5.8	0.3
Benzo(g,h,i)perylene	0.0011	58.0	<0.1	0.0	0.0	78	22.3
Benzo(k)fluoranthene	0.21	0.57	0.37	0.0	97.6	2.3	0.1
Carbazole	0.0008	58.0	<0.1	0.0	0.0	100	0.0
Chrysene	0.10	0.57	0.17	0.0	95.9	3.8	0.3
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	68	31.5
Dibenzofuran	0.0011	58.0	<0.1	0.0	0.0	77	23.2
Fluoranthene	0.09	54.4	<0.1	0.0	90.8	8.9	0.3
Fluorene	0.0016	54.4	<0.1	0.0	0.0	84	15.9
Indeno(1,2,3-cd)pyrene	0.11	0.57	0.20	0.0	98.7	1.1	0.2
Naphthalene	0.0008	60.9	<0.1	0.0	0.0	67	32.7
N-nitrosodiphenylamine	0.0011	121	<0.1	0.0	0.0	77	22.7
Phenanthrene	0.33	58.0	<0.1	0.0	98.2	1.7	0.1
Pyrene	0.09	58.0	<0.1	0.0	92.7	7.0	0.3
<i>HAZARD INDEX</i>			<i>1.09</i>	<i>0.0</i>	<i>96.2</i>	<i>3.5</i>	<i>0.3</i>
Pesticides and PCBs							
4,4'-DDD	0.0027	6.84	<0.1	0.9	90.8	8.2	0.2
4,4'-DDE	0.0004	0.83	<0.1	31.0	61.3	6.6	1.1
4,4'-DDT	0.0029	0.64	<0.1	0.5	96.5	2.8	0.2
Aldrin	0.00001	0.16	<0.1	63.6	0.0	15.1	21.3
alpha-Chlordane	0.0001	1.99	<0.1	6.9	86.8	3.9	2.3
Aroclor 1248	0.0003	0.57	<0.1	27.2	0.0	54	18.4
Aroclor 1254	0.0002	0.15	<0.1	46.0	0.0	22.8	31.2
Aroclor 1260	0.0019	0.28	<0.1	8.3	82.8	6.2	2.7
beta-BHC	0.00001	3.22	<0.1	63.2	0.0	15.6	21.2
delta-BHC	0.00001	1.29	<0.1	61.6	0.0	17.8	20.6
Endosulfan I	0.0001	1.21	<0.1	9.8	84.5	2.4	3.3
Endosulfan Sulfate	0.00003	1.21	<0.1	57.1	0.0	23.2	19.7
Endrin Aldehyde	0.0004	0.04	<0.1	3.7	93.6	1.4	1.3
gamma-Chlordane	0.0001	1.99	<0.1	6.5	89.1	4.3	0.1
<i>HAZARD INDEX</i>			<i>0.024</i>	<i>7.7</i>	<i>83.5</i>	<i>5.4</i>	<i>3.3</i>
Inorganics							
X Aluminum	88	41.82	2	0.3	77.9	21.8	0.0
Antimony	0.003	0.05	<0.1	44.1	0.0	54.2	1.7
X Arsenic	0.58	0.05	10.5	1.0	94.7	4.3	0.1
Barium	2.93	4.33	0.68	15.7	80.3	3.8	0.2
Beryllium	0.002	0.53	<0.1	7.8	0.0	91.9	0.3
Cadmium	0.08	0.78	<0.1	3.2	92.8	4.0	0.0
Chromium	1.5	7.2	0.21	0.4	79.8	19.9	0.0
Cobalt	0.41	4.02	0.10	3.1	92.1	4.8	0.0
Copper	2.2	12.2	0.18	27.5	66.4	6.1	0.0
Cyanide	0.0	51.9	<0.1	83.6	0.0	13.1	3.3
X Iron	68.5	2.57	267	0.3	94.4	5.3	0.0
X Lead	16.01	6.43	2.49	0.0	95.1	4.9	0.0
Manganese	41.4	70.8	0.59	7.6	91.5	0.8	0.1
Mercury	0.01	0.03	0.22	2.9	85.5	11.4	0.2
Nickel	0.30	32.2	<0.1	1.6	83.3	15.0	0.1
Selenium	0.04	0.16	0.24	12.1	83.1	4.5	0.2
Silver	0.007	146	<0.1	63.8	0.0	35.9	0.3
Thallium	0.003	0.06	<0.1	62.5	0.0	35.1	2.4
X Vanadium	1.11	0.16	7.05	0.0	88.2	11.8	0.0
Zinc	3.9	129	<0.1	13.8	76.9	9.2	0.0
<i>HAZARD INDEX</i>			<i>291.6</i>	<i>0.4</i>	<i>94.0</i>	<i>5.6</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

**TABLE 4-192
HAZARD QUOTIENTS FOR MUSKRAT RIVER REFERENCE
WELLS G&H SUPERFUND SITE OU3**

	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00024	9.73	<0.1	0.0	0.0	32	67.9
Acetone	0.0005	1367	<0.1	0.0	0.0	51	48.6
cis-1,2-Dichloroethene	0.0001	2504	<0.1	0.0	0.0	21	79.3
Tetrachloroethene	0.0001	6.09	<0.1	0.0	0.0	19	81.2
Trichloroethene	0.00010	3.05	<0.1	0.0	0.0	19	81.2
HAZARD INDEX			0.000074	0.0	0.0	23	76.6
Semivolatile Organics							
2-Methylnaphthalene	0.0007	62.5	<0.1	0.0	0.0	65	34.7
Acenaphthylene	0.0008	58.0	<0.1	0.0	0.0	72	28.4
Anthracene	0.0011	435	<0.1	0.0	0.0	78	21.6
Benzo(a)anthracene	0.0027	0.57	<0.1	0.0	0.0	91	8.6
Benzo(a)pyrene	0.08	0.57	0.14	0.0	96.9	2.8	0.3
Benzo(b)fluoranthene	0.05	0.57	<0.1	0.0	93.8	5.7	0.5
Benzo(g,h,i)perylene	0.0013	58.0	<0.1	0.0	0.0	82	17.7
Benzo(k)fluoranthene	0.12	0.57	0.20	0.0	97.5	2.3	0.2
Carbazole	0.0008	58.0	<0.1	0.0	0.0	71	28.5
Chrysene	0.08	0.57	0.14	0.0	95.9	3.8	0.3
Dibenz(a,h)anthracene	0.0008	0.57	<0.1	0.0	0.0	70	29.7
Dibenzofuran	0.0007	58.0	<0.1	0.0	0.0	66	33.6
Fluoranthene	0.06	54.4	<0.1	0.0	90.7	8.9	0.4
Fluorene	0.0008	54.4	<0.1	0.0	0.0	72	27.9
Indeno(1,2,3-cd)pyrene	0.12	0.57	0.22	0.0	98.7	1.1	0.2
Naphthalene	0.0007	60.9	<0.1	0.0	0.0	67	33.0
N-nitrosodiphenylamine	0.0007	121	<0.1	0.0	0.0	68	32.0
Phenanthrene	0.20	58.0	<0.1	0.0	98.2	1.7	0.1
Pyrene	0.06	58.0	<0.1	0.0	92.6	7.0	0.4
HAZARD INDEX			0.79	0.0	96.3	3.4	0.4
Pesticides and PCBs							
4,4'-DDD	0.0012	6.84	<0.1	2.0	89.7	8.1	0.2
4,4'-DDE	0.0014	0.83	<0.1	9.8	81.3	8.7	0.2
4,4'-DDT	0.0021	0.64	<0.1	0.7	96.4	2.8	0.1
Aldrin	0.00001	0.16	<0.1	53.3	0.0	37.6	9.1
alpha-Chlordane	0.0003	1.99	<0.1	2.9	92.4	4.2	0.5
Aroclor 1248	0.0002	0.57	<0.1	38.1	0.0	51	11.0
Aroclor 1254	0.0002	0.15	<0.1	38.1	0.0	50.9	11.0
Aroclor 1260	0.0016	0.28	<0.1	9.5	82.9	6.2	1.3
beta-BHC	0.00001	3.22	<0.1	54.0	0.0	36.7	9.2
delta-BHC	0.00001	1.29	<0.1	53.3	0.0	37.6	9.1
Endosulfan I	0.0005	1.21	<0.1	1.6	95.5	2.7	0.3
Endosulfan Sulfate	0.00003	1.21	<0.1	54.7	0.0	36.7	8.6
Endrin Aldehyde	0.0010	0.04	<0.1	1.5	96.8	1.5	0.2
gamma-Chlordane	0.0001	1.99	<0.1	6.3	88.3	4.3	1.1
HAZARD INDEX			0.037	4.9	89.1	5.1	0.9
Inorganics							
X Aluminum	66	41.82	2	0.4	77.7	21.7	0.1
Antimony	0.005	0.05	<0.1	29.4	0.0	58.8	11.8
X Arsenic	0.49	0.05	9.0	1.2	94.5	4.3	0.1
Barium	3.40	4.33	0.78	13.5	82.4	3.9	0.1
Beryllium	0.001	0.53	<0.1	10.6	0.0	88.7	0.7
Cadmium	0.09	0.78	0.11	2.7	93.2	4.1	0.0
Chromium	1.2	7.2	0.17	0.4	79.7	19.9	0.0
Cobalt	0.38	4.02	<0.1	3.3	91.9	4.8	0.1
Copper	2.7	12.2	0.22	22.5	70.9	6.5	0.0
Cyanide	0.0	51.9	<0.1	86.3	0.0	10.4	3.4
X Iron	702	2.57	274	0.3	94.4	5.3	0.1
Lead	4.87	6.43	0.76	0.0	95.1	4.9	0.0
X Manganese	166.2	70.8	2.35	1.9	97.3	0.8	0.0
Mercury	0.00	0.03	0.13	4.9	83.8	11.1	0.2
Nickel	0.18	32.2	<0.1	2.6	82.4	14.9	0.1
Selenium	0.04	0.16	0.27	11.0	84.2	4.6	0.2
Silver	0.005	146	<0.1	86.8	0.0	12.6	0.6
Thallium	0.003	0.06	<0.1	67.1	0.0	30.6	2.3
X Vanadium	0.45	0.16	2.88	0.0	88.1	11.8	0.1
Zinc	4.7	129	<0.1	11.5	79.0	9.5	0.0
HAZARD INDEX			292.3	0.4	94.1	5.4	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-193
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR HERON
WELLS G&H SUPERFUND SITE 0U3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Prey HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.00013	12.1	<0.1	0.0	7	93.3
Acetone	0.00020	1700	<0.1	0.0	39	61.1
cis-1,2-Dichloroethene	0.00007	3114	<0.1	0.0	33	67.0
Tetrachloroethene	0.00004	14.00	<0.1	0.0	22	78.2
Trichloroethene	0.00005	7.00	<0.1	0.0	27	72.9
HAZARD INDEX			0.000020	0.0	16	84.4
Semivolatile Organics						
2-Methylnaphthalene	0.00017	143.7	<0.1	0.0	27	72.6
Acenaphthylene	0.00017	133.3	<0.1	0.0	27	73.0
Anthracene	0.00018	1000	<0.1	0.0	33	67.2
Benzo(a)anthracene	0.00032	1.30	<0.1	0.0	62	37.9
Benzo(a)pyrene	0.00033	1.30	<0.1	0.0	63	37.0
Benzo(b)fluoranthene	0.00047	1.30	<0.1	0.0	74	26.1
Benzo(g,h,i)perylene	0.00025	133.3	<0.1	0.0	50	49.6
Benzo(k)fluoranthene	0.00037	1.30	<0.1	0.0	67	33.0
Carbazole	0.00006	133.3	<0.1	0.0	100	0.0
Chrysene	0.00037	1.30	<0.1	0.0	67	32.8
Dibenz(a,h)anthracene	0.00018	1.30	<0.1	0.0	33	66.6
Dibenzofuran	0.00018	133.3	<0.1	0.0	33	67.3
Fluoranthene	0.00055	125.0	<0.1	0.0	78	22.1
Fluorene	0.00017	125.0	<0.1	0.0	29	70.8
Indeno(1,2,3-cd)pyrene	0.00026	1.30	<0.1	0.0	52	47.7
Naphthalene	0.00018	140.0	<0.1	0.0	32	67.8
N-nitrosodiphenylamine	0.00019	150	<0.1	0.0	34	65.7
Phenanthrene	0.00033	133.3	<0.1	0.0	63	36.9
Pyrene	0.00047	133.3	<0.1	0.0	74	26.0
HAZARD INDEX			0.0018	0.0	63	37.2
Pesticides and PCBs						
4,4'-DDD	0.0012	8.50	<0.1	99.3	0.5	0.2
4,4'-DDE	0.0015	1.90	<0.1	99.6	0.3	0.2
4,4'-DDT	0.0003	0.003	0.10	98.7	0.4	0.9
Aldrin	0.0001	0.20	<0.1	98.0	0.4	1.6
alpha-Chlordane	0.0008	2.14	<0.1	99.5	0.3	0.1
Aroclor 1248	0.00096	0.98	<0.1	96.2	1	2.5
Aroclor 1260	0.0043	0.35	<0.1	99.1	0.3	0.6
beta-BHC	0.0001	4.00	<0.1	97.9	0.4	1.6
delta-BHC	0.0001	1.60	<0.1	97.7	0.6	1.7
Endosulfan I	0.0001	10.0	<0.1	97.2	1.3	1.5
Endosulfan Sulfate	0.0002	10.0	<0.1	98.1	0.3	1.6
Endrin Aldehyde	0.0002	0.30	<0.1	98.6	0.3	1.1
gamma-Chlordane	0.0004	2.14	<0.1	98.8	0.9	0.3
HAZARD INDEX			0.12	98.7	0.4	0.8
Inorganics						
Aluminum	4.95	110	<0.1	52.8	46.9	0.3
Antimony	0.00	0.13	<0.1	66.1	33.0	0.9
Arsenic	0.20	5.14	<0.1	59.0	40.6	0.3
Barium	0.55	208	<0.1	97.1	2.6	0.3
Beryllium	0.000	0.66	<0.1	64.2	35.2	0.6
Cadmium	0.01	1.45	<0.1	71.4	28.3	0.3
Chromium	0.20	1.00	0.20	29.6	70.1	0.3
Cobalt	0.03	5.00	<0.1	86.5	13.3	0.2
Copper	2.69	47.0	<0.1	96.5	3.5	0.0
Cyanide	0.01	68.7	<0.1	97.0	2.0	0.9
X Iron	24.78	3.19	7.77	72.8	26.9	0.3
Lead	0.10	1.13	<0.1	39.6	60.1	0.4
Manganese	5.30	977	<0.1	97.5	2.1	0.4
Mercury	0.001	0.01	0.18	41.3	58.1	0.6
Nickel	0.01	77.4	<0.1	49.4	49.4	1.1
Selenium	0.02	0.40	<0.1	96.4	3.4	0.2
Silver	0.002	181	<0.1	91.7	7.5	0.9
Thallium	0.00	0.07	<0.1	92.3	6.8	0.9
Vanadium	0.02	11.4	<0.1	46.4	53.2	0.4
Zinc	1.61	14.5	0.11	82.4	17.4	0.2
HAZARD INDEX			8.66	77.2	28.5	0.3

NOTES

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

TABLE 4-194
MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR HERON
WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Prey HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatle Organics						
2-Butanone	0.00003	12.10	<0.1	0.0	100	0.0
Acetone	0.00031	1700	<0.1	0.0	100	0.0
cis-1,2-Dichloroethene	0.00014	3114	<0.1	0.0	31	68.8
Tetrachloroethene	0.00005	14.00	<0.1	0.0	20	80.0
Trichloroethene	0.00011	7.00	<0.1	0.0	59	41.3
HAZARD INDEX			<i>0.000021</i>	<i>0.0</i>	<i>58</i>	<i>42.2</i>
Semivolatle Organics						
2-Methylnaphthalene	0.0000	143.7	<0.1	0.0	100	0.0
Acenaphthylene	0.0001	133.3	<0.1	0.0	100	0.0
Anthracene	0.0001	1000	<0.1	0.0	100	0.0
Benzo(a)anthracene	0.0005	1.30	<0.1	0.0	100	0.0
Benzo(a)pyrene	0.0003	1.30	<0.1	0.0	100	0.0
Benzo(b)fluoranthene	0.0005	1.30	<0.1	0.0	100	0.0
Benzo(g,h,i)perylene	0.0002	133.3	<0.1	0.0	100	0.0
Benzo(k)fluoranthene	0.0006	1.30	<0.1	0.0	100	0.0
Carbazole	0.0001	133.3	<0.1	0.0	100	0.0
Chrysene	0.0003	1.30	<0.1	0.0	100	0.0
Dibenz(a,h)anthracene	0.0001	1.30	<0.1	0.0	100	0.0
Dibenzofuran	0.0001	133.3	<0.1	0.0	100	0.0
Fluoranthene	0.0011	125.0	<0.1	0.0	100	0.0
Fluorene	0.0001	125.0	<0.1	0.0	100	0.0
Indeno(1,2,3-cd)pyrene	0.0003	1.30	<0.1	0.0	100	0.0
Naphthalene	0.0003	140.0	<0.1	0.0	50	50.4
N-nitrosodiphenylamine	0.0001	150	<0.1	0.0	100	0.0
Phenanthrene	0.0005	133.3	<0.1	0.0	100	0.0
Pyrene	0.0008	133.3	<0.1	0.0	100	0.0
HAZARD INDEX			<i>0.0020</i>	<i>0.0</i>	<i>100</i>	<i>0.0</i>
Pesticides and PCBs						
4,4'-DDD	0.00135	8.50	<0.1	98.9	1.1	0.0
4,4'-DDE	0.00181	1.90	<0.1	99.6	0.4	0.0
4,4'-DDT	0.00034	0.003	0.1	99.2	0.8	0.0
Aldrin	0.00010	0.20	<0.1	99.3	0.7	0.0
alpha-Chlordane	0.00098	2.14	<0.1	99.2	0.6	0.1
Aroclor 1248	0.00134	0.98	<0.1	98.2	2	0.0
Aroclor 1260	0.00496	0.35	<0.1	99.5	0.5	0.0
beta-BHC	0.000084	4.00	<0.1	99.3	1	0.0
delta-BHC	0.000097	1.60	<0.1	98.8	1	0.0
Endosulfan I	0.00011	10.0	<0.1	97.1	2.9	0.0
Endosulfan Sulfate	0.00018	10.0	<0.1	99.7	0.3	0.0
Endrin Aldehyde	0.00028	0.30	<0.1	99.6	0.4	0.0
gamma-Chlordane	0.00060	2.14	<0.1	97.0	2.7	0.2
HAZARD INDEX			<i>0.15</i>	<i>99.2</i>	<i>0.8</i>	<i>0.0</i>
Inorganics						
Aluminum	6.14	109.7	<0.1	57.9	41.7	0.4
Antimony	0.01	0.13	<0.1	66.9	33	0.5
Arsenic	0.30	5.14	<0.1	60.1	39.6	0.4
Barium	0.74	208	<0.1	97.6	2.1	0.3
Beryllium	0.0007	0.66	<0.1	76.4	23	0.6
Cadmium	0.01	1.45	<0.1	78.8	20.1	1.0
Chromium	0.35	1.00	0.3	29.1	70.6	0.3
Cobalt	0.04	5.00	<0.1	88.1	11.7	0.2
Copper	3.20	47.0	<0.1	95.2	4.8	0.1
Cyanide	0.02	47.0	<0.1	97.9	2.1	0.0
X Iron	37.27	3.19	11.7	74.9	24.8	0.3
Lead	0.14	1.13	0.1	47.9	51.5	0.6
Manganese	6.89	977	<0.1	97.7	2.0	0.4
Mercury	0.003	0.01	0.4	60.0	39.4	0.6
Nickel	0.01	77.4	<0.1	54.3	45	1.1
Selenium	0.06	0.40	0.1	97.8	2.1	0.1
Silver	0.004	181	<0.1	92.0	7.5	0.5
Thallium	0.01	0.07	0.1	93.5	6.1	0.4
Vanadium	0.03	11.4	<0.1	56.8	43	0.4
Zinc	2.99	14.5	0.2	88.6	10.7	0.7
HAZARD INDEX			<i>13.35</i>	<i>73.6</i>	<i>26.1</i>	<i>0.3</i>

NOTES:
 HQ = Hazard quotient
 TRV = Toxicity Reference Value
 X = Indicates a COPC with a HQ >= 1
 0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ
 Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

TABLE 4-195
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR HERON (REFERENCE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Prey HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.00010	12.1	<0.1	0.0	11	88.5
Acetone	0.00016	1700	<0.1	0.0	24	75.6
cis-1,2-Dichloroethene	0.00004	3114	<0.1	0.0	6	94.0
Tetrachloroethene	0.00004	14.00	<0.1	0.0	6	94.0
Trichloroethene	0.00004	7.00	<0.1	0.0	5	94.9
HAZARD INDEX			0.000017	0.0	9	91.4
Semivolatile Organics						
2-Methylnaphthalene	0.00018	143.7	<0.1	0.0	34	65.9
Acenaphthylene	0.00019	133.3	<0.1	0.0	37	62.8
Anthracene	0.00021	1000	<0.1	0.0	45	55.5
Benzo(a)anthracene	0.00038	1.30	<0.1	0.0	69	30.9
Benzo(a)pyrene	0.00036	1.30	<0.1	0.0	67	32.6
Benzo(b)fluoranthene	0.00045	1.30	<0.1	0.0	74	26.2
Benzo(g,h,i)perylene	0.00022	133.3	<0.1	0.0	48	52.1
Benzo(k)fluoranthene	0.00043	1.30	<0.1	0.0	73	27.0
Carbazole	0.00019	133.3	<0.1	0.0	41	59.4
Chrysene	0.00042	1.30	<0.1	0.0	72	28.2
Dibenz(a,h)anthracene	0.00018	1.30	<0.1	0.0	35	64.5
Dibenzofuran	0.00019	133.3	<0.1	0.0	38	61.5
Fluoranthene	0.00068	125.0	<0.1	0.0	83	17.2
Fluorene	0.00021	125.0	<0.1	0.0	43	56.7
Indeno(1,2,3-cd)pyrene	0.00026	1.30	<0.1	0.0	55	44.8
Naphthalene	0.00018	140.0	<0.1	0.0	35	64.8
N-nitrosodiphenylamine	0.00019	150	<0.1	0.0	39	60.9
Phenanthrene	0.00046	133.3	<0.1	0.0	75	25.4
Pyrene	0.00057	133.3	<0.1	0.0	79	20.7
HAZARD INDEX			0.0019	0.0	67	33.2
Pesticides and PCBs						
4,4'-DDD	0.0001	8.50	<0.1	91.0	7.9	1.1
4,4'-DDE	0.0008	1.90	<0.1	99.0	0.8	0.2
4,4'-DDT	0.0001	0.003	<0.1	93.1	5.4	1.5
Aldrin	0.0000	0.20	<0.1	96.7	1.5	1.8
alpha-Chlordane	0.0000	2.14	<0.1	96.5	2.0	1.6
Aroclor 1248	0.00044	0.98	<0.1	93.2	4	3.2
Aroclor 1260	0.0011	0.35	<0.1	97.4	1.3	1.3
beta-BHC	0.0000	4.00	<0.1	96.7	1.5	1.8
delta-BHC	0.0000	1.60	<0.1	96.6	1.6	1.8
Endosulfan I	0.0000	10.0	<0.1	95.0	3.3	1.7
Endosulfan Sulfate	0.0001	10.0	<0.1	96.7	1.5	1.7
Endrin Aldehyde	0.0001	0.30	<0.1	96.4	1.9	1.7
gamma-Chlordane	0.0000	2.14	<0.1	96.8	1.7	1.5
HAZARD INDEX			0.04	93.6	4.9	1.5
Inorganics						
Aluminum	2.41	110	<0.1	25.3	74.0	0.7
Antimony	0.01	0.13	<0.1	91.4	4.4	4.2
Arsenic	0.02	5.14	<0.1	76.4	22.6	1.0
Barium	0.91	208	<0.1	98.5	1.3	0.2
Beryllium	0.000	0.66	<0.1	65.8	33.2	1.1
Cadmium	0.00	1.45	<0.1	94.4	5.4	0.2
Chromium	0.04	1.00	<0.1	49.7	50.0	0.3
Cobalt	0.03	5.00	<0.1	92.6	7.1	0.3
Copper	1.08	47.0	<0.1	98.7	1.3	0.0
Cyanide	0.02	68.7	<0.1	99.0	0.4	0.6
X Iron	8.69	3.19	2.72	57.3	41.1	1.6
Lead	0.05	1.13	<0.1	6.8	92.4	0.8
Manganese	6.19	977	<0.1	98.3	1.3	0.4
Mercury	0.003	0.01	0.44	98.4	1.5	0.1
Nickel	0.01	77.4	<0.1	72.0	27.4	0.6
Selenium	0.04	0.40	<0.1	99.3	0.5	0.1
Silver	0.009	181	<0.1	98.7	1.2	0.2
Thallium	0.00	0.07	<0.1	95.8	3.2	0.9
Vanadium	0.01	11.4	<0.1	0.0	98.6	1.4
Zinc	2.18	14.5	0.15	98.2	1.7	0.0
HAZARD INDEX			3.65	65.5	33.2	1.3

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

TABLE 4-196
MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR HERON (REFERENCE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Prey HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.00019	12.10	<0.1	0.0	46	54.4
Acetone	0.00008	1700	<0.1	0.0	100	0.0
cis-1,2-Dichloroethene	0.00005	3114	<0.1	0.0	6	94.1
Tetrachloroethene	0.00005	14.00	<0.1	0.0	6	94.2
Trichloroethene	0.00005	7.00	<0.1	0.0	5	95.4
<i>HAZARD INDEX</i>			<i>0.000026</i>	<i>0.0</i>	<i>30</i>	<i>70.2</i>
Semivolatile Organics						
2-Methylnaphthalene	0.0002	143.7	<0.1	0.0	40	59.6
Acenaphthylene	0.0003	133.3	<0.1	0.0	52	47.7
Anthracene	0.0003	1000	<0.1	0.0	53	47.3
Benzo(a)anthracene	0.0006	1.30	<0.1	0.0	81	19.0
Benzo(a)pyrene	0.0006	1.30	<0.1	0.0	79	21.2
Benzo(b)fluoranthene	0.0006	1.30	<0.1	0.0	81	19.2
Benzo(g,h,i)perylene	0.0003	133.3	<0.1	0.0	63	36.8
Benzo(k)fluoranthene	0.0007	1.30	<0.1	0.0	84	16.5
Carbazole	0.0002	133.3	<0.1	0.0	47	53.0
Chrysene	0.0007	1.30	<0.1	0.0	83	16.9
Dibenz(a,h)anthracene	0.0002	1.30	<0.1	0.0	47	53.4
Dibenzofuran	0.0003	133.3	<0.1	0.0	54	45.7
Fluoranthene	0.0010	125.0	<0.1	0.0	88	11.7
Fluorene	0.0003	125.0	<0.1	0.0	63	36.5
Indeno(1,2,3-cd)pyrene	0.0004	1.30	<0.1	0.0	72	28.2
Naphthalene	0.0003	140.0	<0.1	0.0	45	54.5
N-nitrosodiphenylamine	0.0003	150	<0.1	0.0	55	45.3
Phenanthrene	0.0007	133.3	<0.1	0.0	82	18.4
Pyrene	0.0008	133.3	<0.1	0.0	85	14.6
<i>HAZARD INDEX</i>			<i>0.0031</i>	<i>0.0</i>	<i>78</i>	<i>21.5</i>
Pesticides and PCBs						
4,4'-DDD	0.00022	8.50	<0.1	86.3	11.5	2.2
4,4'-DDE	0.00113	1.90	<0.1	98.5	1.1	0.4
4,4'-DDT	0.00011	0.003	<0.1	87.6	8.1	4.3
Aldrin	0.00005	0.20	<0.1	96.3	0.8	2.9
alpha-Chlordane	0.00005	2.14	<0.1	94.6	2.7	2.6
Aroclor 1248	0.02507	0.98	<0.1	99.7	0	0.2
Aroclor 1260	0.00152	0.35	<0.1	93.9	2.9	3.2
beta-BHC	0.000047	4.00	<0.1	96.7	0	2.9
delta-BHC	0.000049	1.60	<0.1	93.1	4	2.8
Endosulfan I	0.00004	10.0	<0.1	87.7	9.1	3.2
Endosulfan Sulfate	0.00009	10.0	<0.1	93.0	2.0	5.0
Endrin Aldehyde	0.00009	0.30	<0.1	93.6	1.4	5.0
gamma-Chlordane	0.00005	2.14	<0.1	97.6	2.2	0.2
<i>HAZARD INDEX</i>			<i>0.09</i>	<i>93.9</i>	<i>3.9</i>	<i>2.2</i>
Inorganics						
Aluminum	2.82	109.7	<0.1	24.3	73.4	2.4
Antimony	0.00	0.13	<0.1	66.4	8	25.4
Arsenic	0.01	5.14	<0.1	27.6	68.2	4.2
Barium	1.08	208	<0.1	98.4	1.4	0.2
Beryllium	0.0004	0.66	<0.1	62.9	36	1.2
Cadmium	0.01	1.45	<0.1	92.0	7.6	0.4
Chromium	0.11	1.00	0.1	22.5	77.5	0.0
Cobalt	0.03	5.00	<0.1	90.3	8.4	1.3
Copper	1.14	47.0	<0.1	98.2	1.8	0.0
Cyanide	0.01	68.7	<0.1	99.0	1.0	0.0
X Iron	10.87	3.19	3.4	55.4	41.9	2.7
Lead	0.07	1.13	<0.1	2.3	96.4	1.3
Manganese	7.29	977	<0.1	97.3	2.1	0.6
Mercury	0.004	0.01	0.6	98.0	1.9	0.1
Nickel	0.01	77.4	<0.1	21.5	76	2.6
Selenium	0.04	0.40	0.1	99.0	0.9	0.1
Silver	0.012	181	<0.1	97.8	2.0	0.1
Thallium	0.00	0.07	<0.1	94.6	4.4	1.0
Vanadium	0.01	11.4	<0.1	0.0	98	2.4
Zinc	2.57	14.5	0.2	97.8	2.1	0.1
<i>HAZARD INDEX</i>			<i>4.61</i>	<i>62.8</i>	<i>35.0</i>	<i>2.2</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

**TABLE 4-197
HAZARD QUOTIENT SUMMARY FOR HERON AND MALLARD**

WELLS G&H SUPERFUND SITE OU3

Species	Case	COPC HAZARD QUOTIENT ¹				
		Arsenic	Chromium	Iron	Lead	Mercury
Heron	Reference Average			3		
	Reference 95% UCL			3		
	Site-wide ² Average			8		
	Site-wide 95% UCL			12		
Mallard	Reference Average			37	1.3	
	Reference 95% UCL			47	2	
	Site-wide ³ Average		3	68	2	1.5
	Site-wide 95% UCL		4	90	3	2
	38-acre ⁴ Average		5	97	4	2
	38-acre 95% UCL		9	112	4	3

¹ A blank cell indicates that the HQ was less than 1.0

² Stations included in the heron site-wide analysis are shown in Table 4-32

³ Stations included in the mallard site-wide analysis are shown in Table 4-32

⁴ Stations included in the mallard 38-acre wetland analysis are shown in Table 4-32

TABLE 4-198
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (SITE-WIDE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00011	12.1	<0.1	0.0	0.0	33	66.5
Acetone	0.00044	1700	<0.1	0.0	0.0	83	16.5
cis-1,2-Dichloroethene	0.00012	3114	<0.1	0.0	0.0	77	22.7
Tetrachloroethene	0.00005	14.00	<0.1	0.0	0.0	67	33.0
Trichloroethene	0.00007	7.00	<0.1	0.0	0.0	72	27.8
HAZARD INDEX			0.000023	0.0	0.0	56	0.4
Semivolatile Organics							
2-Methylnaphthalene	0.0003	143.7	<0.1	0.0	0.0	73	27.4
Acenaphthylene	0.0003	133.3	<0.1	0.0	0.0	72	27.9
Anthracene	0.0003	1000	<0.1	0.0	0.0	77	22.8
Benzo(a)anthracene	0.001	1.30	<0.1	0.0	0.0	92	8.3
Benzo(a)pyrene	0.01	1.30	<0.1	0.0	92.1	7.3	0.6
Benzo(b)fluoranthene	0.01	1.30	<0.1	0.0	85.1	14.1	0.7
Benzo(g,h,i)perylene	0.001	133.3	<0.1	0.0	0.0	87	12.6
Benzo(k)fluoranthene	0.02	1.30	<0.1	0.0	93.6	5.9	0.4
Carbazole	0.0002	133.3	<0.1	0.0	0.0	100	0.0
Chrysene	0.01	1.30	<0.1	0.0	89.6	9.7	0.7
Dibenz(a,h)anthracene	0.0003	1.30	<0.1	0.0	0.0	78	22.4
Dibenzofuran	0.0003	133.3	<0.1	0.0	0.0	77	22.6
Fluoranthene	0.01	125.0	<0.1	0.0	78.2	20.9	0.9
Fluorene	0.0003	125.0	<0.1	0.0	0.0	74	25.8
Indeno(1,2,3-cd)pyrene	0.02	1.30	<0.1	0.0	96.7	2.9	0.4
Naphthalene	0.0003	140.0	<0.1	0.0	0.0	77	23.3
N-nitrosodiphenylamine	0.0003	150	<0.1	0.0	0.0	79	21.5
Phenanthrene	0.02	133.3	<0.1	0.0	95.2	4.5	0.4
Pyrene	0.01	133.3	<0.1	0.0	82.2	16.9	0.9
HAZARD INDEX			0.05	0.0	90.7	8.6	0.7
Pesticides and PCBs							
4,4'-DDD	0.00032	8.50	<0.1	61.0	31.0	7.6	0.5
4,4'-DDE	0.00048	1.90	<0.1	85.2	11.3	3.3	0.3
4,4'-DDT	0.00016	0.003	<0.1	57.4	38.7	3.0	0.9
Aldrin	0.00003	0.20	<0.1	92.1	0.0	5.0	2.9
alpha-Chlordane	0.00017	2.14	<0.1	43.4	50.0	6.2	0.4
Aroclor 1248	0.00029	0.98	<0.1	74.3	0.0	21	5.0
Aroclor 1260	0.0032	0.35	<0.1	65.9	28.0	5.7	0.5
beta-BHC	0.00002	4.00	<0.1	91.8	0.0	5	2.9
delta-BHC	0.00002	1.60	<0.1	89.7	0.0	7	3.0
Endosulfan I	0.00009	10.0	<0.1	33.5	61.1	4.7	0.8
Endosulfan Sulfate	0.00007	10.0	<0.1	94.6	0.0	3.2	2.2
Endrin Aldehyde	0.00024	0.30	<0.1	70.1	28.1	1.2	0.6
gamma-Chlordane	0.00015	2.14	<0.1	21.1	69.4	9.1	0.4
HAZARD INDEX			0.07	59.2	36.4	3.5	0.8
Inorganics							
Aluminum	26.6	110	0.24	15.3	48.2	36.5	0.0
Antimony	0.01	0.13	<0.1	40.4	0.0	59	0.2
Arsenic	1.54	5.14	0.30	11.7	71.2	17.0	0.0
Barium	1.55	208	<0.1	53.6	41.0	5.3	0.1
Beryllium	0.00	0.66	<0.1	40.5	0.0	59	0.1
Cadmium	0.06	1.45	<0.1	9.2	81.2	9.6	0.0
X Chromium	2.93	1.00	2.93	3.2	57.8	39.0	0.0
Cobalt	0.15	5.00	<0.1	24.3	66.2	9.4	0.0
Copper	5.89	47.0	0.13	68.7	25.0	6.2	0.0
Cyanide	0.02	68.7	<0.1	94.9	0.0	4.8	0.4
X Iron	217	3.19	68.0	13.0	75.5	11.5	0.0
X Lead	2.71	1.13	2.40	2.3	85.8	11.9	0.0
Manganese	27.62	977	<0.1	29.2	69.2	1.5	0.0
X Mercury	0.01	0.01	1.46	8.0	67.6	24.3	0.0
Nickel	0.07	77.4	<0.1	9.9	60.5	29.5	0.1
Selenium	0.06	0.40	0.14	58.1	36.5	5.4	0.0
Silver	0.00	181	<0.1	83.3	0.0	16.4	0.3
Thallium	0.01	0.07	0.11	83.8	0.0	15.9	0.3
Vanadium	0.17	11.4	<0.1	7.2	68.1	24.7	0.0
Zinc	6.6	14.5	0.46	31.1	51.9	16.9	0.0
HAZARD INDEX			76.33	12.6	74.4	13.0	0.02

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

US EPA ARCHIVE DOCUMENT

TABLE 4-199
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (SITE-WIDE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.0001	12.1	<0.1	0.0	0.0	100	0.0
Acetone	0.0013	1700	<0.1	0.0	0.0	100	0.0
cis-1,2-Dichloroethene	0.0002	3114	<0.1	0.0	0.0	76	24.2
Tetrachloroethene	0.0001	14.00	<0.1	0.0	0.0	64	36.3
Trichloroethene	0.0003	7.00	<0.1	0.0	0.0	91	9.4
HAZARD INDEX			0.00006	0.0	0.0	90	9.7
Semivolatile Organics							
2-Methylnaphthalene	0.000	143.7	<0.1	0.0	0.0	100	0.0
Acenaphthylene	0.0003	133.3	<0.1	0.0	0.0	100	0.0
Anthracene	0.000	1000	<0.1	0.0	0.0	100	0.0
Benzo(a)anthracene	0.002	1.30	<0.1	0.0	0.0	100	0.0
Benzo(a)pyrene	0.027	1.30	<0.1	0.0	92.6	7.4	0.0
Benzo(b)fluoranthene	0.022	1.30	<0.1	0.0	85.8	14.2	0.0
Benzo(g,h,i)perylene	0.001	133.3	<0.1	0.0	0.0	100	0.0
Benzo(k)fluoranthene	0.020	1.30	<0.1	0.0	94.0	6.0	0.0
Carbazole	0.000	133.3	<0.1	0.0	0.0	100	0.0
Chrysene	0.024	1.30	<0.1	0.0	90.2	9.8	0.0
Dibenz(a,h)anthracene	0.000	1.30	<0.1	0.0	0.0	100	0.0
Dibenzofuran	0.000	133.3	<0.1	0.0	0.0	100	0.0
Fluoranthene	0.020	125.0	<0.1	0.0	78.9	21.1	0.0
Fluorene	0.000	125.0	<0.1	0.0	0.0	100	0.0
Indeno(1,2,3-cd)pyrene	0.022	1.30	<0.1	0.0	97.1	2.9	0.0
Naphthalene	0.001	140.0	<0.1	0.0	0.0	87	13.1
N-nitrosodiphenylamine	0.000	150	<0.1	0.0	0.0	100	0.0
Phenanthrene	0.046	133.3	<0.1	0.0	95.5	4.5	0.0
Pyrene	0.011	133.3	<0.1	0.0	82.9	17.1	0.0
HAZARD INDEX			0.09	0.0	90.1	9.9	0.0
Pesticides and PCBs							
4,4'-DDD	0.0006	8.50	<0.1	48.2	41.6	10.2	0.0
4,4'-DDE	0.0007	1.90	<0.1	78.6	16.6	4.8	0.0
4,4'-DDT	0.0002	0.003	<0.1	57.6	39.3	3.1	0.0
Aldrin	0.00003	0.20	<0.1	89.2	0.0	10.8	0.0
alpha-Chlordane	0.0003	2.14	<0.1	31.8	60.7	7.5	0.0
Aroclor 1248	0.0003	0.98	<0.1	70.5	0.0	30	0.0
Aroclor 1260	0.0056	0.35	<0.1	48.6	42.7	8.6	0.0
beta-BHC	0.00003	4.00	<0.1	91.8	0.0	8	0.0
delta-BHC	0.00003	1.60	<0.1	84.2	0.0	16	0.0
Endosulfan I	0.0002	10.0	<0.1	18.4	75.8	5.8	0.0
Endosulfan Sulfate	0.0001	10.0	<0.1	97.6	0.0	2.4	0.0
Endrin Aldehyde	0.0003	0.30	<0.1	68.4	30.3	1.2	0.0
gamma-Chlordane	0.0006	2.14	<0.1	7.6	81.7	10.7	0.0
HAZARD INDEX			0.10	56.5	39.1	4.4	0.0
Inorganics							
Aluminum	29.2	110	0.3	16.5	47.5	36.0	0.0
Antimony	0.01	0.13	0.1	28.8	0.0	71	0.2
Arsenic	2.81	5.14	0.5	9.0	73.4	17.6	0.0
Barium	1.81	208	<0.1	59.5	35.8	4.6	0.1
Beryllium	0.001	0.66	<0.1	41.7	0.0	58	0.2
Cadmium	0.07	1.45	<0.1	11.4	79.2	9.3	0.1
X Chromium	4.04	1.00	4.0	3.3	57.7	39.0	0.0
Cobalt	0.17	5.00	<0.1	26.0	64.7	9.2	0.0
Copper	7.41	47.0	0.2	63.1	29.5	7.4	0.0
Cyanide	0.02	68.7	<0.1	92.7	0.0	7.3	0.0
X Iron	286	3.19	89.7	13.2	75.3	11.5	0.0
X Lead	3.03	1.13	2.7	2.8	85.4	11.8	0.0
Manganese	32.8	977	<0.1	30.2	68.2	1.5	0.0
X Mercury	0.01	0.01	2.0	7.8	67.8	24.4	0.1
Nickel	0.08	77.4	<0.1	11.0	59.7	29.1	0.1
Selenium	0.07	0.40	0.2	52.8	41.2	6.0	0.0
Silver	0.00	181	<0.1	82.8	0.0	17.0	0.2
Thallium	0.01	0.07	0.2	81.3	0.0	18.5	0.2
Vanadium	0.20	11.4	<0.1	7.7	67.7	24.5	0.0
Zinc	7.3	14.5	0.5	30.9	52.0	16.9	0.2
HAZARD INDEX			100.5	12.8	74.2	13.0	0.0

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

US EPA ARCHIVE DOCUMENT

TABLE 4-200
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (38-ACRE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00016	12.1	<0.1	0.0	0.0	56	44.3
Acetone	0.00066	1700	<0.1	0.0	0.0	89	10.9
cis-1,2-Dichloroethene	0.00013	3114	<0.1	0.0	0.0	87	13.5
Tetrachloroethene	0.00009	14.00	<0.1	0.0	0.0	84	16.2
Trichloroethene	0.00013	7.00	<0.1	0.0	0.0	89	10.8
HAZARD INDEX			0.000040	0.0	0.0	77	0.2
Semivolatile Organics							
2-Methylnaphthalene	0.0002	143.7	<0.1	0.0	0.0	67	33.1
Acenaphthylene	0.0002	133.3	<0.1	0.0	0.0	66	34.0
Anthracene	0.0003	1000	<0.1	0.0	0.0	72	27.6
Benzo(a)anthracene	0.001	1.30	<0.1	0.0	0.0	86	13.7
Benzo(a)pyrene	0.01	1.30	<0.1	0.0	91.8	7.3	0.9
Benzo(b)fluoranthene	0.01	1.30	<0.1	0.0	84.9	14.1	1.0
Benzo(g,h,i)perylene	0.000	133.3	<0.1	0.0	0.0	84	15.5
Benzo(k)fluoranthene	0.01	1.30	<0.1	0.0	93.4	5.9	0.7
Carbazole	0.0003	133.3	<0.1	0.0	0.0	100	0.0
Chrysene	0.01	1.30	<0.1	0.0	89.2	9.6	1.1
Dibenz(a,h)anthracene	0.0003	1.30	<0.1	0.0	0.0	76	24.2
Dibenzofuran	0.0003	133.3	<0.1	0.0	0.0	79	20.9
Fluoranthene	0.01	125.0	<0.1	0.0	77.8	20.8	1.4
Fluorene	0.0003	125.0	<0.1	0.0	0.0	71	29.0
Indeno(1,2,3-cd)pyrene	0.01	1.30	<0.1	0.0	96.6	2.9	0.5
Naphthalene	0.0004	140.0	<0.1	0.0	0.0	80	20.5
N-nitrosodiphenylamine	0.0004	150	<0.1	0.0	0.0	81	19.3
Phenanthrene	0.01	133.3	<0.1	0.0	94.9	4.4	0.6
Pyrene	0.01	133.3	<0.1	0.0	81.8	16.8	1.4
HAZARD INDEX			0.04	0.0	90.6	8.3	1.1
Pesticides and PCBs							
4,4'-DDD	0.00019	8.50	<0.1	27.3	57.8	14.1	0.8
4,4'-DDE	0.00016	1.90	<0.1	49.1	38.8	11.3	0.9
4,4'-DDT	0.00012	0.003	<0.1	74.3	22.7	1.8	1.2
Aldrin	0.00003	0.20	<0.1	92.6	0.0	4.7	2.7
alpha-Chlordane	0.00017	2.14	<0.1	30.3	61.7	7.6	0.4
Aroclor 1248	0.00030	0.98	<0.1	67.3	0.0	28	4.8
Aroclor 1260	0.0036	0.35	<0.1	48.0	42.9	8.7	0.4
beta-BHC	0.00002	4.00	<0.1	92.4	0.0	4	3.2
delta-BHC	0.00002	1.60	<0.1	91.3	0.0	5	3.2
Endosulfan I	0.00015	10.0	<0.1	33.0	61.8	4.7	0.5
Endosulfan Sulfate	0.00008	10.0	<0.1	96.3	0.0	1.9	1.8
Endrin Aldehyde	0.00026	0.30	<0.1	70.0	28.3	1.2	0.6
gamma-Chlordane	0.00021	2.14	<0.1	9.9	79.4	10.4	0.3
HAZARD INDEX			0.06	69.2	26.2	3.5	1.1
Inorganics							
Aluminum	32.6	110	0.30	12.0	50.1	37.9	0.0
Antimony	0.02	0.13	0.12	26.9	0.0	73	0.1
Arsenic	2.59	5.14	0.50	11.8	71.1	17.0	0.0
Barium	1.78	208	<0.1	40.2	52.9	6.8	0.1
Beryllium	0.00	0.66	<0.1	35.6	0.0	64	0.1
Cadmium	0.08	1.45	<0.1	5.5	84.6	10.0	0.0
X Chromium	5.24	1.00	5.24	1.4	58.9	39.7	0.0
Cobalt	0.19	5.00	<0.1	21.2	69.0	9.8	0.0
Copper	7.16	47.0	0.15	61.8	30.6	7.6	0.0
Cyanide	0.00	68.7	<0.1	0.0	0.0	100.0	0.0
X Iron	310	3.19	97.1	15.2	73.6	11.2	0.0
X Lead	4.10	1.13	3.63	1.0	86.9	12.0	0.0
Manganese	33.71	977	<0.1	21.4	76.8	1.7	0.0
X Mercury	0.01	0.01	1.95	5.9	69.2	24.9	0.0
Nickel	0.09	77.4	<0.1	6.5	62.8	30.7	0.1
Selenium	0.06	0.40	0.16	42.9	49.7	7.3	0.0
Silver	0.00	181	<0.1	82.1	0.0	17.7	0.2
Thallium	0.01	0.07	<0.1	78.5	0.0	21.2	0.3
Vanadium	0.21	11.4	<0.1	5.4	69.4	25.2	0.0
Zinc	8.7	14.5	0.60	26.8	55.2	18.0	0.0
HAZARD INDEX			110.00	14.1	72.8	13.0	0.02

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-201
MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (38-ACRE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatle Organics							
2-Butanone	0.0001	12.1	<0.1	0.0	0.0	100	0.0
Acetone	0.0013	1700	<0.1	0.0	0.0	100	0.0
cis-1,2-Dichloroethene	0.0002	3114	<0.1	0.0	0.0	90	10.0
Tetrachloroethene	0.0000	14.00	<0.1	0.0	0.0	100	0.0
Trichloroethene	0.0010	7.00	<0.1	0.0	0.0	100	0.0
HAZARD INDEX			0.00015	0.0	0.0	100	0.0
Semivolatile Organics							
2-Methylnaphthalene	0.000	143.7	<0.1	0.0	0.0	100	0.0
Acenaphthylene	0.0000	133.3	<0.1	0.0	0.0	100	0.0
Anthracene	0.000	1000	<0.1	0.0	0.0	100	0.0
Benzo(a)anthracene	0.001	1.30	<0.1	0.0	0.0	100	0.0
Benzo(a)pyrene	0.010	1.30	<0.1	0.0	92.6	7.4	0.0
Benzo(b)fluoranthene	0.010	1.30	<0.1	0.0	85.8	14.2	0.0
Benzo(g,h,i)perylene	0.000	133.3	<0.1	0.0	0.0	100	0.0
Benzo(k)fluoranthene	0.013	1.30	<0.1	0.0	94.0	6.0	0.0
Carbazole	0.000	133.3	<0.1	0.0	0.0	100	0.0
Chrysene	0.008	1.30	<0.1	0.0	90.2	9.8	0.0
Dibenz(a,h)anthracene	0.000	1.30	<0.1	0.0	0.0	100	0.0
Dibenzofuran	0.000	133.3	<0.1	0.0	0.0	100	0.0
Fluoranthene	0.007	125.0	<0.1	0.0	78.9	21.1	0.0
Fluorene	0.000	125.0	<0.1	0.0	0.0	100	0.0
Indeno(1,2,3-cd)pyrene	0.018	1.30	<0.1	0.0	97.1	2.9	0.0
Naphthalene	0.001	140.0	<0.1	0.0	0.0	83	16.7
N-nitrosodiphenylamine	0.000	150	<0.1	0.0	0.0	100	0.0
Phenanthrene	0.014	133.3	<0.1	0.0	95.5	4.5	0.0
Pyrene	0.007	133.3	<0.1	0.0	82.9	17.1	0.0
HAZARD INDEX			0.05	0.0	91.5	8.5	0.0
Pesticides and PCBs							
4,4'-DDD	0.0006	8.50	<0.1	0.0	80.4	19.6	0.0
4,4'-DDE	0.0003	1.90	<0.1	0.0	77.5	22.5	0.0
4,4'-DDT	0.0001	0.003	<0.1	74.3	23.9	1.9	0.0
Aldrin	0.00003	0.20	<0.1	78.0	0.0	22.0	0.0
alpha-Chlordane	0.0004	2.14	<0.1	0.0	89.0	11.0	0.0
Aroclor 1248	0.0001	0.98	<0.1	0.0	0.0	100	0.0
Aroclor 1260	0.0095	0.35	<0.1	23.9	63.3	12.8	0.0
beta-BHC	0.00000	4.00	<0.1	0.0	0.0	100	0.0
delta-BHC	0.00001	1.60	<0.1	0.0	0.0	100	0.0
Endosulfan I	0.0005	10.0	<0.1	0.0	92.9	7.1	0.0
Endosulfan Sulfate	0.0001	10.0	<0.1	99.4	0.0	0.6	0.0
Endrin Aldehyde	0.0003	0.30	<0.1	67.9	30.8	1.3	0.0
gamma-Chlordane	0.0002	2.14	<0.1	0.0	88.4	11.6	0.0
HAZARD INDEX			0.08	56.4	36.9	6.7	0.0
Inorganics							
Aluminum	35.1	110	0.3	11.4	50.3	38.1	0.2
Antimony	0.01	0.13	0.1	0.0	0.0	100	0.2
Arsenic	4.12	5.14	0.8	8.7	73.6	17.6	0.0
Barium	1.07	208	<0.1	0.0	88.4	11.4	0.1
Beryllium	0.001	0.66	<0.1	0.0	0.0	100	0.4
Cadmium	0.12	1.45	<0.1	4.4	85.5	10.1	0.1
X Chromium	9.12	1.00	9.1	0.9	59.2	39.9	0.0
Cobalt	0.21	5.00	<0.1	21.9	68.4	9.7	0.1
Copper	7.98	47.00	0.2	60.8	31.4	7.8	0.0
Cyanide	0.00	68.70	<0.1	0.0	0.0	100.0	0.0
X Iron	357	3.19	111.9	14.7	74.0	11.3	0.1
X Lead	4.64	1.13	4.1	1.0	87.0	12.0	0.0
X Manganese	39.1	977	<0.1	23.3	74.9	1.7	0.0
X Mercury	0.02	0.01	3.0	0.0	73.5	26.4	0.1
Nickel	0.09	77.4	<0.1	0.0	67.1	32.8	0.1
Selenium	0.07	0.40	0.2	41.2	51.2	7.5	0.0
Silver	0.01	181	<0.1	82.2	0.0	17.6	0.2
Thallium	0.00	0.07	<0.1	0.0	0.0	99.2	0.8
Vanadium	0.21	11.4	<0.1	0.0	73.3	26.6	0.1
Zinc	9.4	14.5	0.6	25.2	56.3	18.3	0.2
HAZARD INDEX			130.5	13.1	73.0	13.9	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-202
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (REFERENCE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.00010	12.1	<0.1	0.0	0.0	48	52.4
Acetone	0.00024	1700	<0.1	0.0	0.0	69	30.7
cis-1,2-Dichloroethene	0.00003	3114	<0.1	0.0	0.0	31	69.2
Tetrachloroethene	0.00003	14.00	<0.1	0.0	0.0	31	69.1
Trichloroethene	0.00003	7.00	<0.1	0.0	0.0	27	72.5
<i>HAZARD INDEX</i>			<i>0.000015</i>	<i>0.0</i>	<i>0.0</i>	<i>40</i>	<i>0.6</i>
Semivolatile Organics							
2-Methylnaphthalene	0.0003	143.7	<0.1	0.0	0.0	78	21.6
Acenaphthylene	0.0004	133.3	<0.1	0.0	0.0	81	19.4
Anthracene	0.0005	1000	<0.1	0.0	0.0	85	15.1
Benzo(a)anthracene	0.001	1.30	<0.1	0.0	0.0	94	6.0
Benzo(a)pyrene	0.01	1.30	<0.1	0.0	92.2	7.3	0.5
Benzo(b)fluoranthene	0.01	1.30	<0.1	0.0	85.2	14.1	0.7
Benzo(g,h,i)perylene	0.001	133.3	<0.1	0.0	0.0	87	13.4
Benzo(k)fluoranthene	0.02	1.30	<0.1	0.0	93.7	5.9	0.3
Carbazole	0.0004	133.3	<0.1	0.0	0.0	83	17.3
Chrysene	0.01	1.30	<0.1	0.0	89.8	9.7	0.5
Dibenz(a,h)anthracene	0.0003	1.30	<0.1	0.0	0.0	79	20.6
Dibenzofuran	0.0004	133.3	<0.1	0.0	0.0	81	18.6
Fluoranthene	0.01	125.0	<0.1	0.0	78.4	20.9	0.6
Fluorene	0.0004	125.0	<0.1	0.0	0.0	84	13.8
Indeno(1,2,3-cd)pyrene	0.02	1.30	<0.1	0.0	96.8	2.9	0.3
Naphthalene	0.0003	140.0	<0.1	0.0	0.0	79	20.8
N-nitrosodiphenylamine	0.0004	150	<0.1	0.0	0.0	82	18.2
Phenanthrene	0.03	133.3	<0.1	0.0	95.3	4.5	0.2
Pyrene	0.01	133.3	<0.1	0.0	82.4	17.0	0.6
<i>HAZARD INDEX</i>			<i>0.06</i>	<i>0.0</i>	<i>90.8</i>	<i>8.6</i>	<i>0.6</i>
Pesticides and PCBs							
4,4'-DDD	0.00029	8.50	<0.1	21.8	62.6	15.3	0.3
4,4'-DDE	0.00051	1.90	<0.1	74.7	19.5	5.7	0.2
4,4'-DDT	0.00034	0.003	0.1	11.9	81.4	6.4	0.3
Aldrin	0.00002	0.20	<0.1	86.6	0.0	11.5	1.9
alpha-Chlordane	0.00006	2.14	<0.1	35.9	56.3	6.9	0.8
Aroclor 1248	0.00028	0.98	<0.1	73.3	0.0	24	3.0
Aroclor 1260	0.0008	0.35	<0.1	52.7	38.4	7.8	1.1
beta-BHC	0.00002	4.00	<0.1	86.7	0.0	11	1.9
delta-BHC	0.00002	1.60	<0.1	86.4	0.0	12	1.9
Endosulfan I	0.00011	10.0	<0.1	18.5	75.3	5.8	0.4
Endosulfan Sulfate	0.00005	10.0	<0.1	86.7	0.0	11.5	1.9
Endrin Aldehyde	0.00021	0.30	<0.1	19.1	77.3	3.2	0.4
gamma-Chlordane	0.00005	2.14	<0.1	44.9	48.0	6.3	0.8
<i>HAZARD INDEX</i>			<i>0.12</i>	<i>13.2</i>	<i>80.1</i>	<i>6.5</i>	<i>0.3</i>
Inorganics							
Aluminum	17.9	110	0.16	4.4	54.3	41.2	0.1
Antimony	0.00	0.13	<0.1	78.6	0.0	19	2.6
Arsenic	0.09	5.14	<0.1	16.9	67.0	16.0	0.1
Barium	1.68	208	<0.1	74.7	22.4	2.9	0.1
Beryllium	0.00	0.66	<0.1	42.6	0.0	57	0.3
Cadmium	0.02	1.45	<0.1	38.3	55.1	6.5	0.0
Chromium	0.23	1.00	0.23	6.4	55.8	37.7	0.0
Cobalt	0.09	5.00	<0.1	36.3	55.8	7.9	0.0
Copper	1.92	47.0	<0.1	85.3	11.7	2.9	0.0
Cyanide	1.92	68.7	<0.1	97.6	0.0	2.0	0.4
X Iron	117	3.2	36.8	4.6	82.7	12.6	0.1
X Lead	1.49	1.1	1.32	0.2	87.7	12.1	0.0
Manganese	24.37	977.0	<0.1	35.4	63.1	1.4	0.1
Mercury	0.00	0.0	0.18	39.6	44.3	16.0	0.2
Nickel	0.05	77.4	<0.1	24.5	50.7	24.8	0.1
Selenium	0.02	0.4	<0.1	68.3	27.6	4.0	0.1
Silver	0.01	181.2	<0.1	96.5	0.0	3.5	0.1
Thallium	0.01	0.1	<0.1	91.4	0.0	8.2	0.3
Vanadium	0.12	11.4	<0.1	0.0	73.4	26.6	0.1
Zinc	2.1	14.5	0.15	69.9	22.7	7.4	0.0
<i>HAZARD INDEX</i>			<i>39.14</i>	<i>5.3</i>	<i>81.8</i>	<i>12.8</i>	<i>0.07</i>

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water.

TABLE 4-203
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR MALLARD (REFERENCE)

WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	TRV (mg/kg-day)	Total HQ	Percent Animal HQ	Percent Plant HQ	Percent Surface Sediment HQ	Percent Surface Water HQ
Volatile Organics							
2-Butanone	0.0004	12.1	<0.1	0.0	0.0	85	14.6
Acetone	0.0003	1700	<0.1	0.0	0.0	100	0.0
cis-1,2-Dichloroethene	0.0000	3114	<0.1	0.0	0.0	30	69.5
Tetrachloroethene	0.0000	14.00	<0.1	0.0	0.0	30	69.8
Trichloroethene	0.0000	7.00	<0.1	0.0	0.0	25	74.9
HAZARD INDEX			0.00004	0.0	0.0	75	25.2
Semivolatile Organics							
2-Methylnaphthalene	0.000	143.7	<0.1	0.0	0.0	83	17.4
Acenaphthylene	0.0006	133.3	<0.1	0.0	0.0	88	11.5
Anthracene	0.001	1000	<0.1	0.0	0.0	89	11.4
Benzo(a)anthracene	0.002	1.30	<0.1	0.0	0.0	97	3.2
Benzo(a)pyrene	0.025	1.30	<0.1	0.0	92.4	7.3	0.3
Benzo(b)fluoranthene	0.015	1.30	<0.1	0.0	85.4	14.2	0.5
Benzo(g,h,i)perylene	0.001	133.3	<0.1	0.0	0.0	92	7.7
Benzo(k)fluoranthene	0.042	1.30	<0.1	0.0	93.9	6.0	0.2
Carbazole	0.000	133.3	<0.1	0.0	0.0	86	13.9
Chrysene	0.025	1.30	<0.1	0.0	90.0	9.7	0.3
Dibenz(a,h)anthracene	0.001	1.30	<0.1	0.0	0.0	86	14.1
Dibenzofuran	0.001	133.3	<0.1	0.0	0.0	89	10.7
Fluoranthene	0.018	125.0	<0.1	0.0	78.6	21.0	0.4
Fluorene	0.001	125.0	<0.1	0.0	0.0	92	7.6
Indeno(1,2,3-cd)pyrene	0.044	1.30	<0.1	0.0	96.9	2.9	0.2
Naphthalene	0.001	140.0	<0.1	0.0	0.0	85	14.6
N-nitrosodiphenylamine	0.001	150	<0.1	0.0	0.0	89	10.6
Phenanthrene	0.049	133.3	<0.1	0.0	95.4	4.5	0.1
Pyrene	0.017	133.3	<0.1	0.0	82.6	17.0	0.4
HAZARD INDEX			0.12	0.0	91.4	8.3	0.3
Pesticides and PCBs							
4,4'-DDD	0.0006	8.50	<0.1	12.7	69.8	17.0	0.5
4,4'-DDE	0.0007	1.90	<0.1	64.9	26.9	7.8	0.4
4,4'-DDT	0.0005	0.003	0.2	0.0	92.2	7.2	0.6
Aldrin	0.00000	0.20	<0.1	0.0	0.0	65.0	35.0
alpha-Chlordane	0.0001	2.14	<0.1	0.0	87.7	10.8	1.5
Aroclor 1248	0.0001	0.98	<0.1	0.0	0.0	78	21.6
Aroclor 1260	0.0015	0.35	<0.1	27.6	58.7	11.8	1.9
beta-BHC	0.00000	4.00	<0.1	0.0	0.0	47	53.4
delta-BHC	0.00001	1.60	<0.1	0.0	0.0	91	9.0
Endosulfan I	0.0002	10.0	<0.1	0.0	92.6	7.1	0.4
Endosulfan Sulfate	0.0000	10.0	<0.1	0.0	0.0	74.2	25.8
Endrin Aldehyde	0.0001	0.30	<0.1	0.0	94.2	3.9	1.9
gamma-Chlordane	0.0000	2.14	<0.1	0.0	88.3	11.6	0.1
HAZARD INDEX			0.19	0.8	91.1	7.5	0.6
Inorganics							
Aluminum	20.7	110	0.2	4.0	54.5	41.3	0.2
Antimony	0.00	0.13	<0.1	0.0	0.0	69	30.6
Arsenic	0.12	5.14	<0.1	0.0	80.6	19.3	0.2
Barium	2.04	208	<0.1	72.9	23.9	3.1	0.1
Beryllium	0.001	0.66	<0.1	0.0	0.0	100	0.5
Cadmium	0.03	1.45	<0.1	29.1	63.4	7.5	0.1
Chromium	0.88	1.00	0.9	1.7	58.7	39.6	0.0
Cobalt	0.11	5.00	<0.1	31.6	59.7	8.5	0.2
Copper	2.14	47.0	<0.1	79.9	16.1	4.0	0.0
Cyanide	0.00	68.7	<0.1	0.0	0.0	100.0	0.0
X Iron	149	3.19	46.8	4.3	83.0	12.6	0.1
X Lead	2.30	1.13	2.0	0.0	87.8	12.1	0.0
Manganese	38.0	977	<0.1	23.1	75.1	1.7	0.1
Mercury	0.00	0.01	0.2	0.0	73.3	26.4	0.3
Nickel	0.05	77.4	<0.1	0.0	66.0	32.2	1.7
Selenium	0.03	0.40	<0.1	63.3	31.9	4.7	0.1
Silver	0.02	181	<0.1	94.2	0.0	5.7	0.1
Thallium	0.00	0.07	<0.1	0.0	0.0	96.8	3.2
Vanadium	0.16	11.4	<0.1	0.0	73.3	26.6	0.1
Zinc	2.4	14.5	0.2	61.8	28.8	9.4	0.0
HAZARD INDEX			50.5	4.4	82.2	13.2	0.1

NOTES:

HQ = Hazard quotient

TRV = Toxicity Reference Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (plant and animal), sediment, and water

TABLE 4-204
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION 20
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.020	26.59	<0.1	90.7	6.6	2.7
Acetone	0.062	3736	<0.1	92.3	6.8	0.9
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8.3	<0.1			
<i>HAZARD INDEX</i>			0.00	88.5	6.4	5.1
Semivolatile Organics						
2-Methylnaphthalene	NA	170.9	<0.1			
Acenaphthylene	NA	158.5	<0.1			
Anthracene	NA	1189.2	<0.1			
Benzo(a)anthracene	0.23	1.55	0.15	94.2	5.6	0.2
Benzo(a)pyrene	0.22	1.55	0.14	94.3	5.5	0.3
Benzo(b)fluoranthene	0.64	1.55	0.41	94.5	5.4	0.1
Benzo(g,h,i)perylene	NA	158.5	<0.1			
Benzo(k)fluoranthene	NA	1.5	<0.1			
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.32	1.55	0.21	94.3	5.6	0.2
Dibenz(a,h)anthracene	NA	1.5	<0.1			
Dibenzofuran	NA	158.5	<0.1			
Fluoranthene	0.49	148.65	<0.1	94.3	5.6	0.1
Fluorene	NA	148.7	<0.1			
Indeno(1,2,3-cd)pyrene	0.20	1.55	0.13	94.6	5.1	0.3
Naphthalene	NA	166.5	<0.1			
N-nitrosodiphenylamine	NA	329.7	<0.1			
Phenanthrene	0.16	158.52	<0.1	93.9	5.8	0.3
Pyrene	0.43	158.52	<0.1	94.2	5.6	0.1
<i>HAZARD INDEX</i>			1.05	94.3	5.4	0.2
Pesticides and PCBs						
4,4'-DDD	0.0054	18.68	<0.1	94.3	5.5	0.2
4,4'-DDE	0.0056	2.26	<0.1	94.3	5.5	0.2
4,4'-DDT	NA	1.8	<0.1			
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.0080	5.45	<0.1	94.5	5.4	0.1
Aroclor 1248	NA	1.5	<0.1			
Aroclor 1254	NA	0.081	<0.1			
Aroclor 1260	NA	0.76	<0.1			
beta-BHC	NA	8.8	<0.1			
delta-BHC	NA	3.5	<0.1			
Endosulfan I	0.008	3.30	<0.1	94.1	5.9	0.1
Endosulfan Sulfate	NA	3.3	<0.1			
Endrin Aldehyde	NA	0.11	<0.1			
gamma-Chlordane	0.0027	5.45	<0.1	94.4	5.4	0.2
<i>HAZARD INDEX</i>			0.01	76.4	4.6	19.0
Inorganics						
X Aluminum	563	58.27	9.66	45.1	54.8	0.0
Antimony	0.12	0.15	0.84	54.7	45.2	0.1
X Arsenic	2.3	0.15	15.29	17.6	82.1	0.2
Barium	2.5	11.84	0.21	46.4	53.2	0.3
Beryllium	0.049	1.45	<0.1	54.8	45.2	0.0
X Cadmium	2.5	2.12	1.17	91.9	8.1	0.0
X Chromium	20	19.78	1.00	1.1	98.9	0.0
Cobalt	1.0	10.99	<0.1	54.7	45.2	0.0
Copper	13	33.43	0.40	7.4	92.5	0.0
Cyanide	NA	142	<0.1			
X Iron	813	7.01	115.98	47.9	52.0	0.1
Lead	17	17.58	0.94	34.5	65.5	0.0
Manganese	10	193.41	<0.1	11.6	87.4	1.0
Mercury	0.045	0.07	0.64	36.9	63.0	0.1
Nickel	1.0	87.91	<0.1	42.4	57.6	0.1
Selenium	0.23	0.44	0.53	56.0	43.9	0.1
Silver	0.044	398.25	<0.1	54.7	45.2	0.1
Thallium	0.12	0.16	0.73	54.7	45.2	0.1
X Vanadium	2.5	0.43	5.75	54.8	45.2	0.0
Zinc	70	351.65	0.20	49.7	50.2	0.0
<i>HAZARD INDEX</i>			153.53	44.8	55.1	0.1

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore prey dose could not be calculated.

US EPA ARCHIVE DOCUMENT

TABLE 4-205
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION 21
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.0065	6844	<0.1	90.8	7.3	2.0
Tetrachloroethene	0.0066	16.65	<0.1	91.3	7.1	1.7
Trichloroethene	0.0034	8.32	<0.1	89.8	6.9	3.3
HAZARD INDEX			<i>0.00</i>	<i>88.2</i>	<i>6.8</i>	<i>4.9</i>
Semivolatile Organics						
2-Methylnaphthalene	0.026	170.89	<0.1	91.1	6.7	2.1
Acenaphthylene	0.007	158.52	<0.1	86.3	6.3	7.4
Anthracene	0.08	1189.21	<0.1	92.6	6.7	0.7
Benzo(a)anthracene	0.08	1.55	<0.1	92.9	6.4	0.7
Benzo(a)pyrene	0.17	1.55	0.11	93.3	6.3	0.3
Benzo(b)fluoranthene	0.32	1.55	0.21	93.6	6.2	0.2
Benzo(g,h,i)perylene	0.14	158.52	<0.1	93.6	6.1	0.4
Benzo(k)fluoranthene	0.0073	1.55	<0.1	86.7	5.7	7.6
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.18	1.55	0.12	93.3	6.4	0.3
Dibenz(a,h)anthracene	0.047	1.55	<0.1	92.5	6.3	1.2
Dibenzofuran	NA	159	<0.1			
Fluoranthene	0.31	148.65	<0.1	93.3	6.5	0.2
Fluorene	0.044	148.65	<0.1	92.0	6.7	1.2
Indeno(1,2,3-cd)pyrene	0.13	1.55	<0.1	93.6	6.0	0.4
Naphthalene	0.34	166.49	<0.1	92.8	7.0	0.2
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	0.11	158.52	<0.1	92.8	6.7	0.5
Pyrene	0.27	158.52	<0.1	93.3	6.5	0.2
HAZARD INDEX			<i>0.61</i>	<i>93.3</i>	<i>6.3</i>	<i>0.4</i>
Pesticides and PCBs						
4,4'-DDD	0.0058	18.68	<0.1	93.5	6.4	0.2
4,4'-DDE	0.0060	2.26	<0.1	93.4	6.4	0.2
4,4'-DDT	0.0009	1.76	<0.1	92.5	6.2	1.3
Aldrin	0.00016	0.44	<0.1	90.6	6.0	3.4
alpha-Chlordane	0.010	5.45	<0.1	93.7	6.3	0.0
Aroclor 1248	0.047	1.55	<0.1	93.5	6.3	0.2
Aroclor 1254	0.00043	0.08	<0.1	69.6	4.6	25.8
Aroclor 1260	0.08	0.76	0.11	93.7	6.2	0.1
beta-BHC	0.00015	8.79	<0.1	89.7	6.6	3.7
delta-BHC	0.00033	3.52	<0.1	91.6	6.7	1.7
Endosulfan I	0.0064	3.30	<0.1	93.1	6.8	0.1
Endosulfan Sulfate	0.00030	3.30	<0.1	89.6	6.7	3.7
Endrin Aldehyde	0.0017	0.11	<0.1	93.0	6.4	0.6
gamma-Chlordane	0.0065	5.45	<0.1	93.6	6.3	0.1
HAZARD INDEX			<i>0.17</i>	<i>92.8</i>	<i>6.2</i>	<i>1.0</i>
Inorganics						
X Aluminum	307	58.27	5.28	45.1	54.8	0.0
Antimony	0.055	0.15	0.37	54.6	45.1	0.3
X Arsenic	1.4	0.15	9.25	20.0	79.6	0.4
Barium	3.0	11.84	0.25	46.4	53.3	0.3
Beryllium	0.025	1.45	<0.1	54.7	45.2	0.1
X Cadmium	2.6	2.12	1.25	91.8	8.2	0.0
X Chromium	30	19.78	1.51	0.7	99.3	0.0
Cobalt	0.63	10.99	<0.1	54.7	45.2	0.1
Copper	6.5	33.43	0.19	12.5	87.5	0.1
Cyanide	NA	142	<0.1			
X Iron	521	7.01	74.32	47.9	52.0	0.1
Lead	10	17.58	0.59	36.7	63.2	0.0
Manganese	3.2	193.41	<0.1	16.0	80.8	3.3
X Mercury	0.14	0.07	1.96	14.3	85.6	0.0
Nickel	0.88	87.91	<0.1	54.1	45.8	0.1
Selenium	0.11	0.44	0.24	62.0	37.8	0.2
Silver	0.0082	398.25	<0.1	54.4	44.9	0.7
Thallium	0.0062	0.16	<0.1	53.2	44.0	2.8
X Vanadium	1.5	0.43	3.42	54.8	45.2	0.0
Zinc	81	351.65	0.23	45.9	54.0	0.0
HAZARD INDEX			<i>98.98</i>	<i>44.4</i>	<i>55.4</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore prey dose could not be calculated.

TABLE 4-206
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
STATION 22/TT-22
WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.0021	26.59	<0.1	66.5	7.6	25.9
Acetone	0.14	3736.31	<0.1	89.2	10.4	0.4
cis-1,2-Dichloroethene	0.009	6844.04	<0.1	89.1	9.5	1.4
Tetrachloroethene	0.15	16.65	<0.1	90.5	9.4	0.1
Trichloroethene	0.034	8.32	<0.1	90.3	9.4	0.3
HAZARD INDEX			0.01	90.3	9.4	0.3
Semivolatile Organics						
2-Methylnaphthalene	0.033	170.89	<0.1	89.5	8.9	1.6
Acenaphthylene	0.034	158.52	<0.1	89.6	8.8	1.6
Anthracene	0.036	1189.21	<0.1	89.8	8.7	1.5
Benzo(a)anthracene	0.049	1.55	<0.1	90.5	8.4	1.1
Benzo(a)pyrene	0.048	1.55	<0.1	90.6	8.3	1.2
Benzo(b)fluoranthene	0.06	1.55	<0.1	91.0	8.1	0.9
Benzo(g,h,i)perylene	0.047	158.52	<0.1	90.9	7.9	1.2
Benzo(k)fluoranthene	0.06	1.55	<0.1	91.1	8.0	0.8
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.054	1.55	<0.1	90.6	8.4	1.0
Dibenz(a,h)anthracene	0.037	1.55	<0.1	90.3	8.2	1.5
Dibenzofuran	0.049	158.52	<0.1	90.1	8.8	1.1
Fluoranthene	0.07	148.65	<0.1	90.7	8.5	0.8
Fluorene	0.034	148.65	<0.1	89.6	8.8	1.6
Indeno(1,2,3-cd)pyrene	0.049	1.55	<0.1	91.1	7.8	1.1
Naphthalene	0.033	166.49	<0.1	89.3	9.0	1.7
N-nitrosodiphenylamine	0.047	329.67	<0.1	89.6	9.2	1.2
Phenanthrene	0.06	158.52	<0.1	90.3	8.7	1.0
Pyrene	0.06	158.52	<0.1	90.6	8.5	0.9
HAZARD INDEX			0.24	90.8	8.2	1.1
Pesticides and PCBs						
4,4'-DDD	0.0008	18.68	<0.1	90.4	8.2	1.4
4,4'-DDE	0.0026	2.26	<0.1	91.2	8.4	0.4
4,4'-DDT	0.00047	1.76	<0.1	89.6	8.1	2.3
Aldrin	0.00018	0.44	<0.1	89.0	7.9	3.1
alpha-Chlordane	0.00023	5.45	<0.1	89.9	8.1	2.0
Aroclor 1248	0.0038	1.55	<0.1	89.1	8.0	2.9
Aroclor 1254	0.0035	0.08	<0.1	88.9	7.9	3.1
Aroclor 1260	0.0049	0.76	<0.1	89.8	7.9	2.2
beta-BHC	0.00016	8.79	<0.1	87.9	8.7	3.4
delta-BHC	0.00017	3.52	<0.1	88.1	8.6	3.2
Endosulfan I	0.00035	3.30	<0.1	89.6	8.8	1.6
Endosulfan Sulfate	0.00032	3.30	<0.1	87.8	8.8	3.5
Endrin Aldehyde	0.00049	0.11	<0.1	89.5	8.3	2.2
gamma-Chlordane	0.00018	5.45	<0.1	89.4	8.0	2.6
HAZARD INDEX			0.06	89.1	8.0	2.9
Inorganics						
X Aluminum	106	58.27	1.82	45.1	54.8	0.1
X Antimony	1.9	0.15	12.83	54.8	45.2	0.0
X Arsenic	0.20	0.15	1.35	31.0	66.3	2.7
Barium	0.97	11.84	<0.1	46.2	53.0	0.9
Beryllium	0.013	1.45	<0.1	54.7	45.2	0.1
Cadmium	0.26	2.12	0.12	95.2	4.8	0.0
Chromium	0.60	19.78	<0.1	47.8	51.2	0.9
Cobalt	0.077	10.99	<0.1	54.5	45.0	0.4
Copper	0.65	33.43	<0.1	55.9	43.4	0.7
Cyanide	0.018	141.90	<0.1	53.1	43.9	3.0
X Iron	101	7.01	14.43	47.7	51.8	0.5
X Lead	113	17.58	6.44	26.2	73.8	0.0
Manganese	1.2	193.41	<0.1	19.9	71.6	8.5
Mercury	0.014	0.07	0.20	86.4	13.3	0.3
Nickel	0.79	87.91	<0.1	87.8	12.1	0.1
Selenium	0.12	0.44	0.27	61.2	38.6	0.2
Silver	0.033	398.25	<0.1	54.7	45.2	0.2
Thallium	0.012	0.16	<0.1	54.0	44.6	1.4
X Vanadium	0.85	0.43	1.98	54.7	45.2	0.0
Zinc	11	351.65	<0.1	92.1	7.7	0.3
HAZARD INDEX			39.71	46.6	53.1	0.3

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore prey dose could not be calculated.

TABLE 4-207
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION BW
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.08	6844.04	<0.1	93.3	6.5	0.2
Tetrachloroethene	0.03	16.65	<0.1	93.3	6.3	0.4
Trichloroethene	0.01	8.32	<0.1	92.7	6.2	1.1
HAZARD INDEX			0.00	92.5	6.2	1.3
Semivolatile Organics						
2-Methylnaphthalene	0.0032	170.89	<0.1	77.8	5.0	17.2
Acenaphthylene	0.00	158.52	<0.1	82.4	5.3	12.3
Anthracene	0.01	1189.21	<0.1	90.6	5.7	3.7
Benzo(a)anthracene	0.12	1.55	<0.1	93.9	5.6	0.4
Benzo(a)pyrene	0.22	1.55	0.14	94.2	5.6	0.2
Benzo(b)fluoranthene	0.34	1.55	0.22	94.4	5.5	0.2
Benzo(g,h,i)perylene	0.15	158.52	<0.1	94.3	5.3	0.4
Benzo(k)fluoranthene	0.16	1.55	0.11	94.3	5.4	0.3
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.19	1.55	0.12	94.0	5.7	0.3
Dibenz(a,h)anthracene	0.07	1.55	<0.1	93.7	5.6	0.8
Dibenzofuran	NA	159	<0.1			
Fluoranthene	0.26	148.65	<0.1	94.1	5.7	0.2
Fluorene	0.01	148.65	<0.1	89.0	5.7	5.4
Indeno(1,2,3-cd)pyrene	0.17	1.55	0.11	94.4	5.2	0.3
Naphthalene	0.01	166.49	<0.1	84.9	5.6	9.5
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	0.12	158.52	<0.1	93.6	5.9	0.5
Pyrene	0.21	158.52	<0.1	94.0	5.8	0.3
HAZARD INDEX			0.83	94.2	5.5	0.3
Pesticides and PCBs						
4,4'-DDD	0.0038	18.68	<0.1	94.1	5.6	0.3
4,4'-DDE	0.0009	2.26	<0.1	93.2	5.6	1.2
4,4'-DDT	0.0003	1.76	<0.1	91.0	5.4	3.7
Aldrin	0.000025	0.44	<0.1	73.4	4.3	22.3
alpha-Chlordane	0.0005	5.45	<0.1	93.6	5.5	0.9
Aroclor 1248	0.0063	1.55	<0.1	92.8	5.5	1.7
Aroclor 1254	0.0005	0.08	<0.1	72.9	4.2	22.9
Aroclor 1260	0.0133	0.76	<0.1	93.8	5.4	0.8
beta-BHC	0.000023	8.79	<0.1	71.3	4.6	24.1
delta-BHC	0.000023	3.52	<0.1	71.5	4.6	23.9
Endosulfan I	0.000023	3.30	<0.1	71.5	4.6	23.9
Endosulfan Sulfate	0.0000	3.30	<0.1	70.6	4.6	24.8
Endrin Aldehyde	0.0004	0.11	<0.1	91.7	5.5	2.7
gamma-Chlordane	0.0004	5.45	<0.1	93.3	5.5	1.2
HAZARD INDEX			0.03	89.5	5.2	5.3
Inorganics						
X Aluminum	418.0	58.27	7.17	45.1	54.8	0.0
X Antimony	0.6	0.15	4.12	54.8	45.2	0.0
X Arsenic	8.9	0.15	59.46	12.4	87.6	0.1
Barium	3.0	11.84	0.25	46.4	53.3	0.3
Beryllium	0.038	1.45	<0.1	54.7	45.2	0.0
Cadmium	1.7	2.12	0.82	92.5	7.5	0.0
Chromium	19.0	19.78	0.96	1.2	98.8	0.0
Cobalt	1.1	10.99	<0.1	54.7	45.2	0.0
Copper	12.1	33.43	0.36	8.0	92.0	0.0
Cyanide	NA	142	<0.1			
X Iron	2650.0	7.01	377.97	47.9	52.1	0.0
Lead	11.7	17.58	0.67	36.1	63.9	0.0
Manganese	14.4	193.41	<0.1	10.5	88.8	0.7
X Mercury	0.1	0.07	1.43	18.8	81.2	0.0
Nickel	0.9	87.91	<0.1	51.0	49.0	0.1
Selenium	0.3	0.44	0.62	54.9	45.1	0.1
Silver	0.040	398.25	<0.1	54.7	45.2	0.1
X Thallium	0.2	0.16	1.36	54.7	45.2	0.1
X Vanadium	2.2	0.43	5.13	54.8	45.2	0.0
Zinc	57.4	351.65	0.16	54.8	45.2	0.0
HAZARD INDEX			460.70	43.3	56.7	0.0

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-208
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-01
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	267.7	58.27	4.59	45.1	54.8	0.0
	Antimony	0.034	0.15	0.23	54.6	45.1	0.4
X	Arsenic	0.4	0.15	2.42	27.5	71.7	0.8
	Barium	0.9	11.84	<0.1	46.2	53.0	0.8
	Beryllium	0.028	1.45	<0.1	54.7	45.2	0.0
	Cadmium	1.0	2.12	0.46	93.5	6.5	0.0
	Chromium	2.9	19.78	0.15	8.5	91.5	0.0
	Cobalt	0.2	10.99	<0.1	54.7	45.2	0.1
	Copper	5.6	33.43	0.17	13.8	86.2	0.0
	Cyanide	NA	142	<0.1			
X	Iron	262.5	7.01	37.44	47.9	52.0	0.1
	Lead	6.4	17.58	0.37	39.0	60.9	0.0
	Manganese	5.0	193.41	<0.1	14.1	83.3	2.6
	Mercury	0.035	0.07	0.50	45.6	54.3	0.1
	Nickel	0.8	87.91	<0.1	85.4	14.6	0.0
	Selenium	0.1	0.44	0.27	61.2	38.7	0.1
	Silver	0.0090	398.25	<0.1	54.3	44.8	0.9
	Thallium	0.029	0.16	0.17	54.4	44.9	0.7
X	Vanadium	1.5	0.43	3.41	54.8	45.2	0.0
	Zinc	23.8	351.65	<0.1	78.0	21.9	0.1
	<i>HAZARD INDEX</i>			<i>50.40</i>	<i>47.4</i>	<i>52.5</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-209
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-02
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	100	58.27	1.72	45.1	54.8	0.0
	Antimony	0.042	0.15	0.28	54.6	45.1	0.3
X	Arsenic	0.25	0.15	1.65	30.0	68.9	1.1
	Barium	1.8	11.84	0.15	46.4	53.2	0.4
	Beryllium	0.0078	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.65	2.12	0.30	94.1	5.9	0.0
	Chromium	1.6	19.78	<0.1	16.6	83.3	0.1
	Cobalt	0.12	10.99	<0.1	54.7	45.1	0.2
	Copper	1.4	33.43	<0.1	34.9	65.0	0.1
	Cyanide	NA	142	<0.1			
X	Iron	140	7.01	20.04	47.8	52.0	0.2
	Lead	2.6	17.58	0.15	43.6	56.3	0.0
	Manganese	1.0	193.41	<0.1	20.1	67.2	12.7
	Mercury	0.016	0.07	0.22	81.0	18.9	0.2
	Nickel	0.78	87.91	<0.1	86.9	13.0	0.0
	Selenium	0.054	0.44	0.12	66.8	32.9	0.3
	Silver	NA	398	<0.1			
	Thallium	0.012	0.16	<0.1	53.9	44.5	1.6
X	Vanadium	0.73	0.43	1.70	54.8	45.2	0.0
	Zinc	19	351.65	<0.1	83.5	16.5	0.1
	<i>HAZARD INDEX</i>			<i>26.62</i>	<i>47.9</i>	<i>51.9</i>	<i>0.2</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-210
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-03
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	209	58.27	3.58	45.1	54.8	0.0
	Antimony	0.042	0.15	0.28	54.6	45.1	0.3
X	Arsenic	2.1	0.15	14.00	18.0	81.8	0.1
	Barium	1.2	11.84	0.10	46.3	53.1	0.6
	Beryllium	0.015	1.45	<0.1	54.7	45.2	0.1
	Cadmium	1.3	2.12	0.62	93.0	7.0	0.0
	Chromium	5.9	19.78	0.30	4.0	95.9	0.0
	Cobalt	0.53	10.99	<0.1	54.7	45.2	0.0
	Copper	4.0	33.43	0.12	17.4	82.6	0.0
	Cyanide	NA	142	<0.1			
X	Iron	735	7.01	104.88	47.9	52.1	0.0
	Lead	4.1	17.58	0.23	41.3	58.7	0.0
	Manganese	4.3	193.41	<0.1	14.7	82.2	3.1
	Mercury	0.031	0.07	0.43	50.6	49.3	0.1
	Nickel	0.82	87.91	<0.1	61.7	38.3	0.0
	Selenium	0.12	0.44	0.27	61.1	38.8	0.1
	Silver	0.014	398.25	<0.1	54.4	45.0	0.6
	Thallium	0.019	0.16	0.12	54.2	44.8	1.0
X	Vanadium	1.3	0.43	3.00	54.8	45.2	0.0
	Zinc	40	351.65	0.11	64.5	35.5	0.0
	<i>HAZARD INDEX</i>			<i>128.13</i>	<i>44.9</i>	<i>55.1</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-211
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-04
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	213	58.27	3.65	45.1	54.8
	Antimony	0.097	0.15	0.65	54.7	45.2
X	Arsenic	0.91	0.15	6.05	22.2	77.5
	Barium	1.4	11.84	0.12	46.3	53.2
	Beryllium	0.017	1.45	<0.1	54.7	45.2
	Cadmium	0.79	2.12	0.37	93.8	6.2
	Chromium	2.3	19.78	0.12	10.9	89.0
	Cobalt	0.24	10.99	<0.1	54.7	45.2
	Copper	2.9	33.43	<0.1	21.7	78.2
	Cyanide	NA	142	<0.1		
X	Iron	569	7.01	81.10	47.9	52.1
	Lead	4.4	17.58	0.25	41.0	59.0
	Manganese	5.9	193.41	<0.1	13.5	84.3
	Mercury	0.024	0.07	0.33	61.7	38.1
	Nickel	0.96	87.91	<0.1	46.8	53.2
	Selenium	0.10	0.44	0.23	62.5	37.4
	Silver	0.036	398.25	<0.1	54.6	45.1
	Thallium	0.031	0.16	0.19	54.4	45.0
X	Vanadium	1.5	0.43	3.52	54.8	45.2
	Zinc	45	351.65	0.13	61.4	38.5
	<i>HAZARD INDEX</i>			<i>96.87</i>	<i>46.7</i>	<i>53.3</i>
						<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-212
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-05
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	130	58.27	2.23	45.1	54.8	0.0
	Antimony	0.025	0.15	0.17	54.5	45.0	0.5
X	Arsenic	0.27	0.15	1.81	29.4	69.6	1.0
	Barium	0.63	11.84	<0.1	46.0	52.8	1.1
	Beryllium	0.0071	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.15	2.12	<0.1	95.8	4.1	0.1
	Chromium	0.97	19.78	<0.1	28.1	71.7	0.1
	Cobalt	0.15	10.99	<0.1	54.7	45.2	0.1
	Copper	0.92	33.43	<0.1	46.0	53.9	0.2
	Cyanide	NA	142	<0.1			
X	Iron	240	7.01	34.22	47.9	52.0	0.1
	Lead	1.2	17.58	<0.1	47.7	52.2	0.1
	Manganese	3.0	193.41	<0.1	16.1	79.6	4.3
	Mercury	0.014	0.07	0.21	85.0	14.9	0.2
	Nickel	0.77	87.91	<0.1	84.4	15.6	0.0
	Selenium	0.024	0.44	<0.1	72.3	27.0	0.7
	Silver	0.0032	398.25	<0.1	53.4	44.1	2.5
	Thallium	0.022	0.16	0.13	54.3	44.8	0.9
X	Vanadium	0.62	0.43	1.45	54.7	45.2	0.0
	Zinc	14	351.65	<0.1	88.7	11.3	0.1
	<i>HAZARD INDEX</i>			<i>40.62</i>	<i>47.5</i>	<i>52.3</i>	<i>0.2</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-213
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-06
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	162	58.27	2.78	45.1	54.8
	Antimony	0.047	0.15	0.32	54.6	45.1
X	Arsenic	0.80	0.15	5.37	22.9	76.8
	Barium	0.94	11.84	<0.1	46.2	53.0
	Beryllium	0.0075	1.45	<0.1	54.7	45.2
	Cadmium	1.5	2.12	0.70	92.8	7.2
	Chromium	3.7	19.78	0.19	6.6	93.4
	Cobalt	0.25	10.99	<0.1	54.7	45.2
	Copper	2.8	33.43	<0.1	22.1	77.9
	Cyanide	NA	142	<0.1		
X	Iron	301	7.01	42.97	47.9	52.0
	Lead	3.0	17.58	0.17	43.0	57.0
	Manganese	1.4	193.41	<0.1	19.2	71.3
	Mercury	0.016	0.07	0.22	81.5	18.3
	Nickel	0.78	87.91	<0.1	70.6	29.4
	Selenium	0.053	0.44	0.12	67.1	32.6
	Silver	0.0036	398.25	<0.1	53.5	44.2
	Thallium	0.088	0.16	0.54	54.6	45.1
X	Vanadium	1.4	0.43	3.38	54.8	45.2
	Zinc	45	351.65	0.13	61.2	38.8
	<i>HAZARD INDEX</i>			<i>57.08</i>	<i>46.5</i>	<i>53.4</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-214
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION DA
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	157	58.27	2.70	45.1	54.8	0.0
	Antimony	0.028	0.15	0.19	54.5	45.0	0.5
X	Arsenic	0.81	0.15	5.40	22.8	76.8	0.3
	Barium	0.82	11.84	<0.1	46.2	53.0	0.9
	Beryllium	0.0060	1.45	<0.1	54.7	45.2	0.2
	Cadmium	0.33	2.12	0.16	94.9	5.0	0.0
	Chromium	2.6	19.78	0.13	9.5	90.4	0.1
	Cobalt	0.25	10.99	<0.1	54.7	45.2	0.1
	Copper	2.4	33.43	<0.1	24.9	75.1	0.1
	Cyanide	NA	142	<0.1			
X	Iron	400	7.01	57.09	47.9	52.0	0.1
	Lead	2.9	17.58	0.17	43.1	56.9	0.0
	Manganese	11	193.41	<0.1	11.3	87.5	1.2
	Mercury	0.030	0.07	0.43	51.1	48.8	0.1
	Nickel	0.77	87.91	<0.1	81.9	18.1	0.0
	Selenium	0.042	0.44	<0.1	68.6	31.0	0.4
	Silver	0.0041	398.25	<0.1	53.7	44.3	2.0
	Thallium	0.040	0.16	0.25	54.5	45.0	0.5
X	Vanadium	0.73	0.43	1.70	54.8	45.2	0.0
	Zinc	20	351.65	<0.1	82.6	17.4	0.1
	<i>HAZARD INDEX</i>			<i>68.59</i>	<i>46.1</i>	<i>53.8</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-215
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION NRSE
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	150	58.27	2.57	45.1	54.8	0.1
	Antimony	0.025	0.15	0.17	54.4	45.0	0.6
X	Arsenic	1.3	0.15	8.78	20.2	79.3	0.4
	Barium	0.96	11.84	<0.1	46.2	53.0	0.9
	Beryllium	0.014	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.33	2.12	0.16	94.9	5.0	0.0
	Chromium	2.6	19.78	0.13	9.8	89.9	0.2
	Cobalt	0.18	10.99	<0.1	54.7	45.2	0.2
	Copper	3.1	33.43	<0.1	20.6	79.3	0.2
	Cyanide	NA	142	<0.1			
X	Iron	461	7.01	65.76	47.9	52.0	0.1
	Lead	3.5	17.58	0.20	42.2	57.8	0.1
	Manganese	2.6	193.41	<0.1	16.9	79.1	4.0
	Mercury	0.049	0.07	0.70	34.2	65.7	0.1
	Nickel	0.77	87.91	<0.1	82.6	17.3	0.1
	Selenium	0.064	0.44	0.14	65.7	34.0	0.3
	Silver	0.041	398.25	<0.1	54.7	45.2	0.1
	Thallium	0.026	0.16	0.16	54.4	44.9	0.7
X	Vanadium	0.65	0.43	1.51	54.7	45.2	0.1
	Zinc	22	351.65	<0.1	80.3	19.6	0.1
	<i>HAZARD INDEX</i>			<i>80.56</i>	<i>44.8</i>	<i>55.0</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-216
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION JY
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8	<0.1			
HAZARD INDEX			0.00	0.0	0.0	100.0
Semivolatile Organics						
2-Methylnaphthalene	NA	171	<0.1			
Acenaphthylene	NA	159	<0.1			
Anthracene	NA	1189	<0.1			
Benzo(a)anthracene	NA	2	<0.1			
Benzo(a)pyrene	NA	2	<0.1			
Benzo(b)fluoranthene	NA	2	<0.1			
Benzo(g,h,i)perylene	NA	159	<0.1			
Benzo(k)fluoranthene	NA	2	<0.1			
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	NA	2	<0.1			
Dibenz(a,h)anthracene	NA	2	<0.1			
Dibenzofuran	NA	159	<0.1			
Fluoranthene	NA	149	<0.1			
Fluorene	NA	149	<0.1			
Indeno(1,2,3-cd)pyrene	NA	2	<0.1			
Naphthalene	NA	166	<0.1			
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	NA	159	<0.1			
Pyrene	NA	159	<0.1			
HAZARD INDEX			0.00	0.0	0.0	100.0
Pesticides and PCBs						
4,4'-DDD	NA	19	<0.1			
4,4'-DDE	NA	2	<0.1			
4,4'-DDT	NA	2	<0.1			
Aldrin	NA	0	<0.1			
alpha-Chlordane	NA	5	<0.1			
Aroclor 1248	0.0514	1.55	<0.1	96.9	2.9	0.2
X Aroclor 1254	0.3872	0.08	4.79	97.1	2.9	0.0
Aroclor 1260	0.4280	0.76	0.56	97.1	2.9	0.0
beta-BHC	NA	9	<0.1			
delta-BHC	NA	4	<0.1			
Endosulfan I	NA	3	<0.1			
Endosulfan Sulfate	NA	3	<0.1			
Endrin Aldehyde	NA	0	<0.1			
gamma-Chlordane	NA	5	<0.1			
HAZARD INDEX			5.39	97.1	2.9	0.0
Inorganics						
X Aluminum	216	58.27	3.71	45.1	54.8	0.0
Antimony	0.15	0.15	0.99	54.7	45.2	0.1
X Arsenic	1.2	0.15	7.74	20.9	78.6	0.5
Barium	2.9	11.84	0.25	46.4	53.3	0.3
Beryllium	0.013	1.45	<0.1	54.7	45.2	0.1
Cadmium	1.8	2.12	0.86	92.4	7.6	0.0
Chromium	11	19.78	0.54	2.2	97.8	0.1
Cobalt	0.34	10.99	<0.1	54.7	45.2	0.1
Copper	5.4	33.43	0.16	14.1	85.8	0.1
Cyanide	NA	142	<0.1			
X Iron	674	7.01	96.11	47.9	52.0	0.1
Lead	10	17.58	0.58	36.8	63.2	0.0
Manganese	4.4	193.41	<0.1	14.7	82.9	2.4
Mercury	0.024	0.07	0.34	60.6	39.2	0.2
Nickel	1.1	87.91	<0.1	39.8	60.1	0.1
Selenium	0.10	0.44	0.23	62.5	37.4	0.2
Silver	0.019	398.25	<0.1	54.6	45.1	0.3
Thallium	0.069	0.16	0.42	54.6	45.1	0.2
X Vanadium	1.3	0.43	3.11	54.7	45.2	0.0
Zinc	53	351.65	0.15	57.1	42.8	0.1
HAZARD INDEX			115.27	46.3	53.6	0.1

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-217
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION NRSO
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	104	58.27	1.78	45.1	54.8
	Antimony	0.024	0.15	0.16	54.4	45.0
X	Arsenic	0.91	0.15	6.06	22.2	77.3
	Barium	0.88	11.84	<0.1	46.1	52.9
	Beryllium	0.0075	1.45	<0.1	54.7	45.1
	Cadmium	0.26	2.12	0.12	95.2	4.7
	Chromium	1.5	19.78	<0.1	17.8	81.8
	Cobalt	0.16	10.99	<0.1	54.7	45.1
	Copper	1.7	33.43	<0.1	30.8	69.0
	Cyanide	NA	142	<0.1		
X	Iron	409	7.01	58.31	47.9	52.0
	Lead	1.9	17.58	0.11	45.1	54.7
	Manganese	4.6	193.41	<0.1	14.5	83.2
	Mercury	0.025	0.07	0.35	59.3	40.5
	Nickel	0.79	87.91	<0.1	87.0	12.9
	Selenium	0.038	0.44	<0.1	69.3	30.2
	Silver	0.030	398.25	<0.1	54.7	45.2
	Thallium	0.025	0.16	0.15	54.4	44.9
X	Vanadium	0.44	0.43	1.03	54.7	45.2
	Zinc	20	351.65	<0.1	82.0	17.9
	<i>HAZARD INDEX</i>			<i>68.48</i>	<i>45.8</i>	<i>54.0</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-218
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION KFSO
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	126	58.27	2.17	45.1	54.8	0.0
	Antimony	0.024	0.15	0.16	54.5	45.0	0.6
X	Arsenic	0.35	0.15	2.34	27.8	71.4	0.8
	Barium	1.2	11.84	0.10	46.3	53.1	0.6
	Beryllium	0.010	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.27	2.12	0.13	95.2	4.8	0.0
	Chromium	1.5	19.78	<0.1	17.3	82.6	0.1
	Cobalt	0.25	10.99	<0.1	54.7	45.2	0.1
	Copper	1.6	33.43	<0.1	31.8	68.1	0.1
	Cyanide	NA	142	<0.1			
X	Iron	353	7.01	50.38	47.9	52.0	0.1
	Lead	3.4	17.58	0.19	42.2	57.8	0.0
	Manganese	9.1	193.41	<0.1	12.0	86.6	1.4
	Mercury	0.021	0.07	0.31	66.1	33.8	0.1
	Nickel	0.77	87.91	<0.1	81.0	19.0	0.0
	Selenium	0.019	0.44	<0.1	73.6	25.5	0.9
	Silver	0.016	398.25	<0.1	54.5	45.0	0.5
	Thallium	0.024	0.16	0.15	54.3	44.9	0.8
X	Vanadium	0.69	0.43	1.60	54.7	45.2	0.0
	Zinc	21	351.65	<0.1	80.6	19.3	0.1
	<i>HAZARD INDEX</i>			<i>57.83</i>	<i>47.4</i>	<i>52.5</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

US EPA ARCHIVE DOCUMENT

TABLE 4-219
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WSS
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	182	58.27	3.13	45.1	54.8	0.0
	Antimony	0.024	0.15	0.16	54.4	44.9	0.6
	Arsenic	0.096	0.15	0.64	35.5	58.9	5.7
	Barium	0.81	11.84	<0.1	46.1	52.9	1.0
	Beryllium	0.0059	1.45	<0.1	54.6	45.1	0.2
	Cadmium	0.070	2.12	<0.1	96.4	3.4	0.1
	Chromium	0.47	19.78	<0.1	63.6	35.2	1.2
	Cobalt	0.11	10.99	<0.1	54.6	45.1	0.3
	Copper	0.72	33.43	<0.1	53.2	46.2	0.7
	Cyanide	NA	142	<0.1			
X	Iron	219	7.01	31.30	47.8	52.0	0.2
	Lead	1.6	17.58	<0.1	46.2	53.6	0.2
	Manganese	2.3	193.41	<0.1	17.3	78.3	4.4
	Mercury	0.013	0.07	0.18	89.8	9.8	0.3
	Nickel	0.79	87.91	<0.1	87.3	12.6	0.1
	Selenium	0.025	0.44	<0.1	72.0	27.3	0.8
	Silver	0.0028	398.25	<0.1	53.7	44.3	2.0
	Thallium	0.021	0.16	0.13	54.3	44.9	0.8
X	Vanadium	0.51	0.43	1.19	54.7	45.2	0.1
	Zinc	10	351.65	<0.1	93.2	6.6	0.3
	<i>HAZARD INDEX</i>			<i>37.09</i>	<i>48.0</i>	<i>51.7</i>	<i>0.3</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-220
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WG
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.007	6844.04	<0.1	84.2	14.0	1.8
Tetrachloroethene	0.011	16.65	<0.1	85.2	13.8	1.0
Trichloroethene	0.004	8.32	<0.1	83.7	13.5	2.9
HAZARD INDEX			0.00	83.0	13.4	3.6
Semivolatile Organics						
2-Methylnaphthalene	0.0008	170.89	<0.1	29.1	4.5	66.5
Acenaphthylene	0.00064	158.52	<0.1	12.6	1.9	85.5
Anthracene	0.0022	1189.21	<0.1	65.7	9.9	24.5
Benzo(a)anthracene	0.013	1.55	<0.1	83.8	12.1	4.1
Benzo(a)pyrene	0.016	1.55	<0.1	84.7	12.0	3.3
Benzo(b)fluoranthene	0.030	1.55	<0.1	86.2	11.9	1.8
Benzo(g,h,i)perylene	0.013	158.52	<0.1	84.4	11.4	4.2
Benzo(k)fluoranthene	0.021	1.55	<0.1	85.6	11.7	2.6
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.023	1.55	<0.1	85.3	12.3	2.4
Dibenz(a,h)anthracene	0.005	1.55	<0.1	78.2	11.1	10.7
Dibenzofuran	NA	159	<0.1			
Fluoranthene	0.04	148.65	<0.1	86.1	12.5	1.4
Fluorene	0.0019	148.65	<0.1	61.1	9.3	29.6
Indeno(1,2,3-cd)pyrene	0.015	1.55	<0.1	85.1	11.3	3.6
Naphthalene	0.0016	166.49	<0.1	57.5	9.0	33.5
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	0.016	158.52	<0.1	83.9	12.6	3.5
Pyrene	0.033	158.52	<0.1	85.8	12.6	1.6
HAZARD INDEX			0.08	85.0	11.9	3.1
Pesticides and PCBs						
4,4'-DDD	0.0009	18.68	<0.1	86.5	12.3	1.2
4,4'-DDE	0.00033	2.26	<0.1	84.5	12.1	3.4
4,4'-DDT	0.000028	1.76	<0.1	52.6	7.4	40.0
Aldrin	0.000014	0.44	<0.1	52.3	7.3	40.4
alpha-Chlordane	0.00010	5.45	<0.1	83.7	11.7	4.6
Aroclor 1248	0.0036	1.55	<0.1	85.0	11.9	3.0
Aroclor 1254	0.00028	0.08	<0.1	52.9	7.4	39.7
Aroclor 1260	0.0012	0.76	<0.1	80.1	11.0	8.9
beta-BHC	0.000013	8.79	<0.1	49.7	7.7	42.7
delta-BHC	0.000013	3.52	<0.1	50.0	7.6	42.4
Endosulfan I	0.00005	3.30	<0.1	76.5	11.7	11.8
Endosulfan Sulfate	0.000026	3.30	<0.1	50.2	7.8	42.0
Endrin Aldehyde	0.000027	0.11	<0.1	52.1	7.5	40.4
gamma-Chlordane	0.00006	5.45	<0.1	81.2	11.4	7.4
HAZARD INDEX			0.01	68.9	9.6	21.5
Inorganics						
X Aluminum	310	58.27	5.32	45.1	54.8	0.0
X Antimony	0.16	0.15	1.10	54.7	45.2	0.1
X Arsenic	1.1	0.15	7.32	21.2	78.3	0.5
Barium	1.8	11.84	0.15	46.4	53.2	0.5
Beryllium	0.033	1.45	<0.1	54.7	45.2	0.0
Cadmium	0.98	2.12	0.46	93.5	6.5	0.0
Chromium	7.2	19.78	0.36	3.3	96.7	0.1
Cobalt	0.43	10.99	<0.1	54.7	45.2	0.1
Copper	6.8	33.43	0.20	12.0	87.9	0.1
Cyanide	0.024	141.90	<0.1	53.5	44.2	2.3
X Iron	486	7.01	69.35	47.9	52.0	0.1
Lead	8.5	17.58	0.48	37.7	62.3	0.0
Manganese	9.9	193.41	<0.1	11.7	87.3	1.0
Mercury	0.033	0.07	0.46	48.1	51.8	0.1
Nickel	0.85	87.91	<0.1	58.6	41.3	0.1
Selenium	0.12	0.44	0.27	61.3	38.6	0.2
Silver	0.010	398.25	<0.1	54.5	45.0	0.5
Thallium	0.010	0.16	<0.1	53.8	44.5	1.7
X Vanadium	1.5	0.43	3.44	54.8	45.2	0.0
Zinc	34	351.65	<0.1	68.7	31.2	0.1
HAZARD INDEX			89.20	45.8	54.0	0.1

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-221
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WH
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	0.19	3736.31	<0.1	82.1	17.6	0.3
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8	<0.1			
HAZARD INDEX			0.00	45.6	9.8	44.6
Semivolatile Organics						
2-Methylnaphthalene	0.025	170.89	<0.1	82.6	15.1	2.2
Acenaphthylene	0.025	158.52	<0.1	82.8	15.0	2.2
Anthracene	0.025	1189.21	<0.1	83.0	14.8	2.2
Benzo(a)anthracene	0.026	1.55	<0.1	83.6	14.3	2.1
Benzo(a)pyrene	NA	2	<0.1			
Benzo(b)fluoranthene	0.027	1.55	<0.1	84.1	13.8	2.1
Benzo(g,h,i)perylene	0.027	158.52	<0.1	84.4	13.5	2.0
Benzo(k)fluoranthene	0.06	1.55	<0.1	85.2	13.9	0.9
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.026	1.55	<0.1	83.6	14.3	2.1
Dibenz(a,h)anthracene	0.026	1.55	<0.1	83.8	14.1	2.1
Dibenzofuran	0.025	158.52	<0.1	82.8	15.0	2.2
Fluoranthene	0.026	148.65	<0.1	83.4	14.4	2.1
Fluorene	0.025	148.65	<0.1	82.8	15.0	2.2
Indeno(1,2,3-cd)pyrene	0.028	1.55	<0.1	84.7	13.4	2.0
Naphthalene	0.024	166.49	<0.1	82.4	15.4	2.3
N-nitrosodiphenylamine	0.024	329.67	<0.1	82.0	15.7	2.3
Phenanthrene	0.025	158.52	<0.1	83.0	14.8	2.2
Pyrene	0.026	158.52	<0.1	83.4	14.5	2.2
HAZARD INDEX			0.13	84.1	13.9	2.0
Pesticides and PCBs						
4,4'-DDD	0.00022	18.68	<0.1	81.3	13.7	5.0
4,4'-DDE	0.00022	2.26	<0.1	81.2	13.8	5.0
4,4'-DDT	0.00022	1.76	<0.1	81.4	13.6	4.9
Aldrin	0.00011	0.44	<0.1	81.7	13.5	4.8
alpha-Chlordane	0.00011	5.45	<0.1	82.1	13.6	4.2
Aroclor 1248	0.0022	1.55	<0.1	81.5	13.6	4.9
Aroclor 1254	0.0022	0.08	<0.1	81.6	13.5	4.9
Aroclor 1260	0.0023	0.76	<0.1	81.8	13.3	4.9
beta-BHC	0.00011	8.79	<0.1	80.1	14.7	5.2
delta-BHC	0.00011	3.52	<0.1	80.3	14.5	5.2
Endosulfan I	0.00011	3.30	<0.1	80.3	14.5	5.2
Endosulfan Sulfate	0.00021	3.30	<0.1	79.9	14.7	5.4
Endrin Aldehyde	0.00022	0.11	<0.1	81.1	13.9	5.0
gamma-Chlordane	0.00011	5.45	<0.1	82.1	13.7	4.2
HAZARD INDEX			0.03	81.6	13.5	4.9
Inorganics						
X Aluminum	241	58.27	4.13	45.1	54.8	0.0
X Antimony	0.59	0.15	3.99	54.8	45.2	0.0
X Arsenic	0.93	0.15	6.20	22.0	77.4	0.6
Barium	1.9	11.84	0.16	46.4	53.2	0.4
Beryllium	0.025	1.45	<0.1	54.7	45.2	0.1
Cadmium	1.1	2.12	0.51	93.3	6.7	0.0
Chromium	4.5	19.78	0.23	5.3	94.5	0.1
Cobalt	0.33	10.99	<0.1	54.7	45.2	0.1
Copper	3.8	33.43	0.11	18.2	81.6	0.1
Cyanide	0.016	141.90	<0.1	52.9	43.7	3.4
X Iron	587	7.01	83.68	47.9	52.0	0.1
X Lead	28	17.58	1.57	32.1	67.8	0.0
Manganese	3.8	193.41	<0.1	15.3	82.0	2.7
Mercury	0.021	0.07	0.29	67.7	32.1	0.2
Nickel	0.81	87.91	<0.1	63.7	36.2	0.1
Selenium	0.092	0.44	0.21	63.1	36.7	0.2
Silver	0.0073	398.25	<0.1	54.4	44.9	0.8
Thallium	0.016	0.16	<0.1	54.2	44.7	1.1
X Vanadium	2.1	0.43	4.82	54.8	45.2	0.0
Zinc	37	351.65	0.10	66.9	33.0	0.1
HAZARD INDEX			106.18	46.8	53.1	0.1

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-222
 AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WS
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	191	58.27	3.29	45.1	54.8	0.0
	Antimony	0.11	0.15	0.73	54.7	45.2	0.1
X	Arsenic	1.3	0.15	8.89	20.2	79.4	0.4
	Barium	2.8	11.84	0.23	46.4	53.3	0.3
	Beryllium	0.014	1.45	<0.1	54.7	45.2	0.1
	Cadmium	1.4	2.12	0.66	92.9	7.1	0.0
	Chromium	6.5	19.78	0.33	3.6	96.3	0.1
	Cobalt	0.52	10.99	<0.1	54.7	45.2	0.1
	Copper	4.5	33.43	0.13	16.0	83.9	0.1
	Cyanide	0.099	141.90	<0.1	54.5	45.0	0.6
X	Iron	706	7.01	100.75	47.9	52.0	0.1
	Lead	6.0	17.58	0.34	39.4	60.6	0.0
	Manganese	14	193.41	<0.1	10.5	88.8	0.7
	Mercury	0.027	0.07	0.39	55.3	44.5	0.2
	Nickel	0.86	87.91	<0.1	56.7	43.3	0.1
	Selenium	0.073	0.44	0.17	64.7	35.0	0.3
	Silver	0.0059	398.25	<0.1	54.3	44.8	0.9
	Thallium	0.021	0.16	0.13	54.3	44.9	0.8
X	Vanadium	1.0	0.43	2.38	54.7	45.2	0.0
	Zinc	47	351.65	0.14	59.8	40.1	0.1
	<i>HAZARD INDEX</i>			<i>118.69</i>	<i>46.0</i>	<i>53.9</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-223
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION 20
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.020	26.6	<0.1	93.2	6.8	0.0
Acetone	0.11	3736	<0.1	93.1	6.9	0.0
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8	<0.1			
HAZARD INDEX			0.001	93.2	6.8	0.0
Semivolatile Organics						
2-Methylnaphthalene	NA	171	<0.1			
Acenaphthylene	NA	159	<0.1			
Anthracene	NA	1189	<0.1			
Benzo(a)anthracene	0.24	1.5	0.16	94.4	5.6	0.0
Benzo(a)pyrene	0.27	1.5	0.17	94.5	5.5	0.0
Benzo(b)fluoranthene	0.9	1.55	0.55	94.6	5.4	0.0
Benzo(g,h,i)perylene	NA	159	<0.1			
Benzo(k)fluoranthene	NA	1.5	<0.1			
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.33	1.55	0.22	94.4	5.6	0.0
Dibenz(a,h)anthracene	NA	1.5	<0.1			
Dibenzofuran	NA	159	<0.1			
Fluoranthene	0.66	148.65	<0.1	94.4	5.6	0.0
Fluorene	NA	149	<0.1			
Indeno(1,2,3-cd)pyrene	0.20	1.5	0.13	94.8	5.2	0.0
Naphthalene	NA	166	<0.1			
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	0.19	159	<0.1	94.2	5.8	0.0
Pyrene	0.55	159	<0.1	94.3	5.7	0.0
HAZARD INDEX			1.24	94.6	5.4	0.0
Pesticides and PCBs						
4,4'-DDD	0.0072	18.7	<0.1	94.5	5.5	0.0
4,4'-DDE	0.0071	2.26	<0.1	94.5	5.5	0.0
4,4'-DDT	NA	1.8	<0.1			
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.011	5.45	<0.1	94.6	5.4	0.0
Aroclor 1248	NA	1.5	<0.1			
Aroclor 1254	NA	0.081	<0.1			
Aroclor 1260	NA	0.76	<0.1			
beta-BHC	NA	8.8	<0.1			
delta-BHC	NA	3.5	<0.1			
Endosulfan I	0.009	3.30	<0.1	94.1	5.9	0.0
Endosulfan Sulfate	NA	3.3	<0.1			
Endrin Aldehyde	NA	0.11	<0.1			
gamma-Chlordane	0.0027	5.45	<0.1	94.6	5.4	0.0
HAZARD INDEX			0.01	94.4	5.6	0.0
Inorganics						
X Aluminum	669	58.27	11.5	45.1	54.8	0.1
Antimony	0.15	0.15	0.99	54.7	45.2	0.1
X Arsenic	2.5	0.15	16.40	17.3	82.3	0.4
	3.5	11.84	0.30	46.4	53.3	0.3
Beryllium	0.055	1.45	<0.1	54.7	45.2	0.1
X Cadmium	2.7	2.12	1.30	91.7	8.3	0.0
X Chromium	23	19.78	1.17	0.9	99.0	0.1
Cobalt	1.3	10.99	0.12	54.7	45.2	0.1
Copper	14	33.43	0.43	7.0	92.8	0.1
Cyanide	NA	141.90	<0.1			
X Iron	1040	7.01	148.4	47.9	52.0	0.1
X Lead	22	17.58	1.26	33.1	66.8	0.1
Manganese	13	193.41	<0.1	10.9	88.1	1.0
Mercury	0.058	0.070	0.83	29.8	70.0	0.2
Nickel	1.1	87.91	<0.1	36.6	63.3	0.1
Selenium	0.30	0.44	0.68	54.1	45.8	0.1
Silver	0.044	398.25	<0.1	54.7	45.2	0.2
Thallium	0.12	0.16	0.73	54.7	45.2	0.1
X Vanadium	3.1	0.43	7.33	54.7	45.2	0.0
Zinc	80	351.65	0.23	46.3	53.5	0.2
HAZARD INDEX			191.7	45.2	54.7	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-224
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION 21
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.00017	6844	<0.1	0.0	0.0	100.0
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	0.0033	8.3	<0.1	92.8	7.2	0.0
HAZARD INDEX			0.000	92.8	7.2	0.0
Semivolatile Organics						
2-Methylnaphthalene	0.025	171	<0.1	93.1	6.9	0.0
Acenaphthylene	0.007	159	<0.1	93.2	6.8	0.0
Anthracene	0.08	1189	<0.1	93.3	6.7	0.0
Benzo(a)anthracene	0.07	1.5	<0.1	93.5	6.5	0.0
Benzo(a)pyrene	0.17	1.5	0.11	93.6	6.4	0.0
Benzo(b)fluoranthene	0.61	1.55	0.40	93.8	6.2	0.0
Benzo(g,h,i)perylene	0.14	158.52	<0.1	93.9	6.1	0.0
Benzo(k)fluoranthene	NA	1.55	<0.1			
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.18	1.55	0.12	93.5	6.5	0.0
Dibenz(a,h)anthracene	0.047	1.5	<0.1	93.6	6.4	0.0
Dibenzofuran	NA	158.52	<0.1			
Fluoranthene	0.47	148.65	<0.1	93.5	6.5	0.0
Fluorene	0.044	149	<0.1	93.2	6.8	0.0
Indeno(1,2,3-cd)pyrene	0.13	2	<0.1	94.0	6.0	0.0
Naphthalene	0.44	166	<0.1	92.9	7.0	0.2
N-nitrosodiphenylamine	NA	329.67	<0.1			
Phenanthrene	0.11	159	<0.1	93.3	6.7	0.0
Pyrene	0.45	159	<0.1	93.4	6.6	0.0
HAZARD INDEX			0.80	93.7	6.3	0.0
Pesticides and PCBs						
4,4'-DDD	0.0068	18.7	<0.1	93.6	6.4	0.0
4,4'-DDE	0.0069	2.26	<0.1	93.6	6.4	0.0
4,4'-DDT	0.0009	1.8	<0.1	93.7	6.3	0.0
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.012	5.45	<0.1	93.7	6.3	0.0
Aroclor 1248	0.047	1.55	<0.1	93.7	6.3	0.0
Aroclor 1254	NA	0.08	<0.1			
Aroclor 1260	0.08	0.76	0.11	93.8	6.2	0.0
beta-BHC	NA	8.79	<0.1			
delta-BHC	0.00033	3.52	<0.1	93.2	6.8	0.0
Endosulfan I	0.012	3.30	<0.1	93.2	6.8	0.0
Endosulfan Sulfate	NA	3.30	<0.1			
Endrin Aldehyde	0.0017	0.11	<0.1	93.5	6.5	0.0
gamma-Chlordane	0.009	5.45	<0.1	93.7	6.3	0.0
HAZARD INDEX			0.17	93.7	6.3	0.0
Inorganics						
X Aluminum	415	58.27	7.1	45.1	54.8	0.1
Antimony	0.055	0.15	0.37	54.6	45.1	0.4
X Arsenic	1.9	0.15	12.87	18.4	81.1	0.5
Barium	4.2	11.84	0.35	46.5	53.3	0.2
Beryllium	0.030	1.45	<0.1	54.7	45.2	0.1
X Cadmium	3.0	2.12	1.41	91.5	8.5	0.0
X Chromium	62	19.78	3.15	0.3	99.7	0.0
Cobalt	0.82	10.99	<0.1	54.7	45.2	0.1
Copper	8.3	33.43	0.25	10.4	89.4	0.2
Cyanide	NA	141.90	<0.1			
X Iron	665	7.01	94.9	47.8	52.0	0.2
Lead	14	17.58	0.79	35.3	64.6	0.1
Manganese	4.0	193.41	<0.1	14.9	81.9	3.2
X Mercury	0.25	0.070	3.50	8.6	91.3	0.1
Nickel	1.0	87.91	<0.1	42.9	57.0	0.1
Selenium	0.11	0.4	0.26	61.5	38.3	0.2
Silver	0.0083	398.25	<0.1	54.3	44.9	0.8
Thallium	0.00018	0.16	<0.1	0.0	0.0	100.0
X Vanadium	2.1	0.43	4.93	54.7	45.2	0.1
Zinc	102	351.65	0.29	40.8	59.1	0.1
HAZARD INDEX			130.3	43.2	56.6	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-225
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION 22/TT-22
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	26.6	<0.1			
Acetone	0.28	3736	<0.1	89.6	10.4	0.0
cis-1,2-Dichloroethene	0.0095	6844	<0.1	88.8	9.5	1.7
Tetrachloroethene	0.36	16.6	<0.1	90.6	9.4	0.0
Trichloroethene	0.092	8.3	<0.1	90.6	9.4	0.0
HAZARD INDEX			0.033	90.6	9.4	0.0
Semivolatile Organics						
2-Methylnaphthalene	0.0018	171	<0.1	91.0	9.0	0.0
Acenaphthylene	0.0017	159	<0.1	91.1	8.9	0.0
Anthracene	0.0064	1189	<0.1	91.2	8.8	0.0
Benzo(a)anthracene	0.044	2	<0.1	91.5	8.5	0.0
Benzo(a)pyrene	0.030	2	<0.1	91.6	8.4	0.0
Benzo(b)fluoranthene	0.066	1.55	<0.1	91.8	8.2	0.0
Benzo(g,h,i)perylene	0.029	158.52	<0.1	92.0	8.0	0.0
Benzo(k)fluoranthene	0.082	1.55	<0.1	91.9	8.1	0.0
Carbazole (a)	0.058	(a)	(a)	(a)	(a)	(a)
Chrysene	0.058	1.55	<0.1	91.5	8.5	0.0
Dibenz(a,h)anthracene	0.0065	2	<0.1	91.6	8.4	0.0
Dibenzofuran	NA	158.52	<0.1			
Fluoranthene	0.12	148.65	<0.1	91.5	8.5	0.0
Fluorene	0.0036	149	<0.1	91.1	8.9	0.0
Indeno(1,2,3-cd)pyrene	0.035	2	<0.1	92.1	7.9	0.0
Naphthalene	0.0041	166	<0.1	75.5	7.6	16.9
N-nitrosodiphenylamine	NA	329.67	<0.1			
Phenanthrene	0.069	159	<0.1	91.2	8.8	0.0
Pyrene	0.088	159	<0.1	91.4	8.6	0.0
HAZARD INDEX			0.21	91.8	8.2	0.0
Pesticides and PCBs						
4,4'-DDD	0.0014	18.7	<0.1	91.7	8.3	0.0
4,4'-DDE	0.0045	2.26	<0.1	91.6	8.4	0.0
4,4'-DDT	0.00040	1.8	<0.1	91.7	8.3	0.0
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.00018	5.45	<0.1	91.5	8.2	0.3
Aroclor 1248	0.0012	1.55	<0.1	91.7	8.3	0.0
Aroclor 1254	NA	0.08	<0.1			
Aroclor 1260	0.0044	0.76	<0.1	91.9	8.1	0.0
beta-BHC	NA	8.79	<0.1			
delta-BHC	0.000022	3.52	<0.1	91.1	8.9	0.0
Endosulfan I	0.00059	3.30	<0.1	91.1	8.9	0.0
Endosulfan Sulfate	NA	3.30	<0.1			
Endrin Aldehyde	0.00048	0.11	<0.1	91.5	8.5	0.0
gamma-Chlordane	0.000029	5.45	<0.1	90.8	8.2	1.1
HAZARD INDEX			0.01	91.7	8.3	0.0
Inorganics						
X Aluminum	231	58.27	4.0	45.1	54.7	0.2
X Antimony	9.0	0.15	60.43	54.8	45.2	0.0
X Arsenic	0.65	0.15	4.35	23.8	74.6	1.6
Barium	1.2	11.84	<0.1	46.2	53.0	0.8
Beryllium	0.019	1.45	<0.1	54.7	45.2	0.2
Cadmium	0.35	2.12	0.16	94.8	5.1	0.2
Chromium	1.1	19.78	<0.1	24.9	73.9	1.2
Cobalt	0.12	10.99	<0.1	54.4	44.9	0.7
Copper	0.77	33.43	<0.1	50.8	47.2	2.0
Cyanide	NA	141.90	<0.1			
X Iron	218	7.01	31.1	47.6	51.7	0.7
X Lead	507	17.58	28.82	20.8	79.2	0.0
Manganese	1.9	193.41	<0.1	17.9	75.4	6.7
Mercury	0.020	0.070	0.28	70.1	29.2	0.7
Nickel	0.77	87.91	<0.1	81.6	18.2	0.1
Selenium	0.17	0.4	0.39	58.5	41.4	0.1
Silver	0.079	398.25	<0.1	54.7	45.2	0.1
Thallium	0.016	0.16	<0.1	54.1	44.7	1.1
X Vanadium	1.1	0.43	2.59	54.7	45.2	0.1
Zinc	13	351.65	<0.1	89.6	9.3	1.1
HAZARD INDEX			132.5	44.5	55.3	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-226
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION BW
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.079	6844	<0.1	93.3	6.5	0.2
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	0.010	8.3	<0.1	93.7	6.3	0.0
HAZARD INDEX			0.001	93.7	6.3	0.0
Semivolatile Organics						
2-Methylnaphthalene	0.0027	171	<0.1	93.9	6.1	0.0
Acenaphthylene	0.0039	159	<0.1	94.0	6.0	0.0
Anthracene	0.014	1189	<0.1	94.1	5.9	0.0
Benzo(a)anthracene	0.12	2	<0.1	94.3	5.7	0.0
Benzo(a)pyrene	0.22	2	0.14	94.4	5.6	0.0
Benzo(b)fluoranthene	0.34	1.55	0.22	94.5	5.5	0.0
Benzo(g,h,i)perylene	0.15	158.52	<0.1	94.7	5.3	0.0
Benzo(k)fluoranthene	0.16	1.55	0.11	94.6	5.4	0.0
Carbazole (a)	0.18	1.55	0.12	94.3	5.7	0.0
Chrysene	0.071	2	<0.1	94.4	5.6	0.0
Dibenz(a,h)anthracene	NA	159	<0.1			
Dibenzofuran	0.26	148.65	<0.1	94.3	5.7	0.0
Fluorene	0.0097	149	<0.1	94.0	6.0	0.0
Indeno(1,2,3-cd)pyrene	0.17	2	0.11	94.7	5.3	0.0
Naphthalene	0.0059	166	<0.1	82.9	5.4	11.6
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	0.12	159	<0.1	94.1	5.9	0.0
Pyrene	0.21	159	<0.1	94.2	5.8	0.0
HAZARD INDEX			0.83	94.5	5.5	0.0
Pesticides and PCBs						
4,4'-DDD	0.0038	18.7	<0.1	94.4	5.6	0.0
4,4'-DDE	0.00087	2.26	<0.1	94.3	5.7	0.0
4,4'-DDT	0.00029	1.8	<0.1	94.4	5.6	0.0
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.00054	5.45	<0.1	94.4	5.5	0.1
Aroclor 1248	0.0062	1.55	<0.1	94.4	5.6	0.0
Aroclor 1254	NA	0.08	<0.1			
Aroclor 1260	0.013	0.76	<0.1	94.6	5.4	0.0
beta-BHC	NA	8.79	<0.1			
delta-BHC	NA	3.52	<0.1			
Endosulfan I	NA	3.30	<0.1			
Endosulfan Sulfate	NA	3.30	<0.1			
Endrin Aldehyde	0.00039	0.11	<0.1	94.3	5.7	0.0
gamma-Chlordane	0.00038	5.45	<0.1	94.4	5.5	0.1
HAZARD INDEX			0.03	94.5	5.5	0.0
Inorganics						
X Aluminum	492	58.27	8.5	45.1	54.8	0.1
X Antimony	1.7	0.15	11.49	54.8	45.2	0.0
X Arsenic	21	0.15	141.56	9.8	90.2	0.0
Barium	3.8	11.84	0.32	46.5	53.3	0.2
Beryllium	0.045	1.45	<0.1	54.7	45.2	0.1
Cadmium	2.0	2.12	0.92	92.3	7.7	0.0
X Chromium	25	19.78	1.28	0.8	99.1	0.1
Cobalt	1.4	10.99	0.13	54.7	45.2	0.1
Copper	20	33.43	0.59	5.6	94.4	0.1
Cyanide	NA	142	<0.1			
X Iron	3546	7.01	505.8	47.9	52.1	0.0
Lead	16	17.58	0.93	34.5	65.4	0.1
Manganese	19	193.41	<0.1	9.7	89.7	0.7
X Mercury	0.21	0.070	3.03	9.8	90.1	0.1
Nickel	0.96	87.91	<0.1	46.7	53.2	0.1
Selenium	0.36	0.4	0.82	52.7	47.2	0.1
Silver	0.057	398.25	<0.1	54.7	45.2	0.1
X Thallium	0.36	0.16	2.21	54.7	45.2	0.0
X Vanadium	2.5	0.43	5.89	54.7	45.2	0.1
Zinc	66	351.65	0.19	51.2	48.6	0.2
HAZARD INDEX			683.8	39.9	60.0	0.0

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-227
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-01
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	332	58.27	5.7	45.1	54.8
	Antimony	0.056	0.15	0.38	54.8	45.2
X	Arsenic	0.50	0.15	3.31	25.6	73.6
	Barium	1.4	11.84	0.12	46.3	53.1
	Beryllium	0.037	1.45	<0.1	54.8	45.2
	Cadmium	1.6	2.12	0.74	92.7	7.3
	Chromium	4.3	19.78	0.22	5.6	94.4
	Cobalt	0.38	10.99	<0.1	54.7	45.2
	Copper	10	33.43	0.30	9.0	91.0
	Cyanide	NA	142	<0.1		
X	Iron	444	7.01	63.3	47.9	52.0
	Lead	8.8	17.58	0.50	37.5	62.5
	Manganese	10	193.41	<0.1	11.7	86.6
	Mercury	0.054	0.070	0.76	32.0	67.9
	Nickel	0.79	87.91	<0.1	68.1	31.9
	Selenium	0.15	0.4	0.34	59.4	40.6
	Silver	0.012	398.25	<0.1	54.8	45.2
	Thallium	0.070	0.16	0.42	54.8	45.2
X	Vanadium	2.2	0.43	5.06	54.8	45.2
	Zinc	29	351.65	<0.1	72.9	27.0
	<i>HAZARD INDEX</i>			<i>81.4</i>	<i>47.3</i>	<i>52.6</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-228
MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
STATION CB-02
WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	122	58.27	2.1	45.1	54.8	0.1
	Antimony	0.049	0.15	0.33	54.8	45.2	0.0
X	Arsenic	0.37	0.15	2.44	27.4	71.4	1.2
	Barium	4.0	11.84	0.33	46.5	53.3	0.2
	Beryllium	0.0093	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.77	2.12	0.36	93.8	6.2	0.0
	Chromium	2.0	19.78	0.10	12.6	87.3	0.1
	Cobalt	0.15	10.99	<0.1	54.6	45.1	0.3
	Copper	1.7	33.43	<0.1	30.7	69.1	0.2
	Cyanide	NA	142	<0.1			
X	Iron	164	7.01	23.4	47.8	51.9	0.3
	Lead	4.9	17.58	0.28	40.4	59.6	0.0
	Manganese	1.3	193.41	<0.1	18.8	68.1	13.1
	Mercury	0.017	0.070	0.25	76.4	23.4	0.2
	Nickel	0.77	87.91	<0.1	84.0	15.9	0.1
	Selenium	0.069	0.4	0.16	65.3	34.7	0.0
	Silver	NA	398	<0.1			
	Thallium	0.015	0.16	<0.1	54.8	45.2	0.0
X	Vanadium	0.87	0.43	2.03	54.7	45.2	0.0
	Zinc	21	351.65	<0.1	81.2	18.7	0.1
	<i>HAZARD INDEX</i>			<i>32.0</i>	<i>47.3</i>	<i>52.4</i>	<i>0.3</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-229
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-03
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	254	58.27	4.4	45.1	54.8	0.0
	Antimony	0.131	0.15	0.88	54.8	45.2	0.0
X	Arsenic	4	0.15	29.40	14.9	85.0	0.1
	Barium	1.5	11.84	0.13	46.3	53.2	0.5
	Beryllium	0.018	1.45	<0.1	54.7	45.2	0.1
	Cadmium	2.1	2.12	0.98	92.2	7.8	0.0
	Chromium	9.7	19.78	0.49	2.4	97.6	0.0
	Cobalt	1.7	10.99	0.16	54.8	45.2	0.0
	Copper	5.4	33.43	0.16	14.1	85.8	0.1
	Cyanide	NA	142	<0.1			
X	Iron	1201	7.01	171.3	47.9	52.1	0.0
	Lead	5.6	17.58	0.32	39.7	60.3	0.0
	Manganese	6.8	193.41	<0.1	12.9	84.5	2.5
	Mercury	0.047	0.070	0.67	35.6	64.3	0.1
	Nickel	0.92	87.91	<0.1	50.3	49.6	0.1
	Selenium	0.16	0.4	0.36	59.1	40.9	0.0
	Silver	0.087	398.25	<0.1	54.8	45.2	0.0
	Thallium	0.026	0.16	0.16	54.8	45.2	0.0
X	Vanadium	1.7	0.43	3.98	54.8	45.2	0.0
	Zinc	57	351.65	0.16	54.8	45.2	0.0
	<i>HAZARD INDEX</i>			<i>213.6</i>	<i>43.5</i>	<i>56.4</i>	<i>0.0</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-230
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-04
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	248	58.27	4.3	45.1	54.8	0.0
	Antimony	0.13	0.15	0.88	54.8	45.2	0.0
X	Arsenic	1.4	0.15	9.56	19.8	79.9	0.3
	Barium	1.8	11.84	0.15	46.4	53.2	0.4
	Beryllium	0.021	1.45	<0.1	54.7	45.2	0.0
	Cadmium	1.1	2.12	0.50	93.3	6.7	0.0
	Chromium	3.6	19.78	0.18	6.8	93.1	0.1
	Cobalt	0.31	10.99	<0.1	54.7	45.2	0.1
	Copper	3.7	33.43	0.11	18.4	81.5	0.1
	Cyanide	NA	142	<0.1			
X	Iron	947	7.01	135.1	47.9	52.1	0.0
	Lead	5.6	17.58	0.32	39.7	60.3	0.0
	Manganese	19	193.41	<0.1	9.7	89.4	0.9
	Mercury	0.030	0.070	0.43	50.7	49.1	0.1
	Nickel	1.3	87.91	<0.1	28.7	71.2	0.0
	Selenium	0.12	0.4	0.28	61.0	39.0	0.0
	Silver	0.31	398.25	<0.1	54.8	45.2	0.0
	Thallium	0.145	0.16	0.88	54.8	45.2	0.0
X	Vanadium	1.9	0.43	4.36	54.8	45.2	0.0
	Zinc	73	351.65	0.21	48.4	51.5	0.0
	<i>HAZARD INDEX</i>			<i>157.4</i>	<i>46.5</i>	<i>53.5</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-231
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-05
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	140	58.27	2.4	45.1	54.8	0.1
	Antimony	0.031	0.15	0.21	54.8	45.2	0.0
X	Arsenic	0.51	0.15	3.41	25.4	73.8	0.9
	Barium	0.72	11.84	<0.1	46.1	52.8	1.1
	Beryllium	0.0085	1.45	<0.1	54.7	45.2	0.1
	Cadmium	0.19	2.12	<0.1	95.6	4.4	0.0
	Chromium	2.0	19.78	<0.1	13.1	86.8	0.1
	Cobalt	0.18	10.99	<0.1	54.6	45.1	0.2
	Copper	1.1	33.43	<0.1	41.8	57.9	0.3
	Cyanide	NA	142	<0.1			
X	Iron	272	7.01	38.9	47.8	52.0	0.2
	Lead	1.4	17.58	<0.1	46.7	53.2	0.1
	Manganese	3.5	193.41	<0.1	15.3	79.8	4.9
	Mercury	0.017	0.070	0.24	78.3	21.5	0.2
	Nickel	0.77	87.91	<0.1	83.6	16.4	0.1
	Selenium	0.039	0.4	<0.1	69.3	30.7	0.0
	Silver	0.0033	398.25	<0.1	54.8	45.2	0.0
	Thallium	0.045	0.16	0.27	54.8	45.2	0.0
X	Vanadium	0.71	0.43	1.65	54.7	45.2	0.1
	Zinc	16	351.65	<0.1	86.9	13.0	0.1
	<i>HAZARD INDEX</i>			<i>47.6</i>	<i>46.6</i>	<i>53.2</i>	<i>0.2</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-232
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION CB-06
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	193	58.27	3.3	45.1	54.8	0.0
	Antimony	0.13	0.15	0.87	54.8	45.2	0.0
X	Arsenic	1.1	0.15	7.48	21.1	78.5	0.4
	Barium	1.2	11.84	0.10	46.3	53.1	0.7
	Beryllium	0.011	1.45	<0.1	54.7	45.2	0.1
X	Cadmium	2.6	2.12	1.22	91.8	8.2	0.0
	Chromium	6	19.78	0.32	3.7	96.3	0.0
	Cobalt	0.38	10.99	<0.1	54.7	45.2	0.1
	Copper	3.6	33.43	0.11	18.8	81.1	0.1
	Cyanide	NA	142	<0.1			
X	Iron	386	7.01	55.0	47.9	52.0	0.1
	Lead	4.0	17.58	0.23	41.4	58.5	0.0
	Manganese	1.6	193.41	<0.1	18.1	71.3	10.5
	Mercury	0.018	0.070	0.25	75.9	23.9	0.2
	Nickel	0.84	87.91	<0.1	59.5	40.5	0.1
	Selenium	0.070	0.4	0.16	65.2	34.8	0.0
	Silver	0.0045	398.25	<0.1	54.8	45.2	0.0
	Thallium	0.11	0.16	0.69	54.8	45.2	0.0
X	Vanadium	2.0	0.43	4.61	54.8	45.2	0.0
	Zinc	57	351.65	0.16	55.0	45.0	0.0
	<i>HAZARD INDEX</i>			<i>74.6</i>	<i>46.2</i>	<i>53.6</i>	<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-233
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION DA
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	212	58.27	3.6	45.1	54.8
	Antimony	0.029	0.15	0.20	54.8	45.2
X	Arsenic	1.5	0.15	10.23	19.5	80.2
	Barium	1.5	11.84	0.13	46.3	53.2
	Beryllium	0.014	1.45	<0.1	54.7	45.2
	Cadmium	0.89	2.12	0.42	93.6	6.4
	Chromium	5.1	19.78	0.26	4.7	95.2
	Cobalt	0.7	10.99	<0.1	54.7	45.2
	Copper	3.8	33.43	0.11	18.2	81.7
	Cyanide	NA	142	<0.1		
X	Iron	795	7.01	113.4	47.9	52.1
	Lead	4.5	17.58	0.25	40.9	59.1
	Manganese	38	193.41	0.20	7.9	91.7
	Mercury	0.06	0.070	0.85	29.3	70.6
	Nickel	0.78	87.91	<0.1	72.5	27.4
	Selenium	0.061	0.4	0.14	66.2	33.8
	Silver	0.0059	398.25	<0.1	54.8	45.2
	Thallium	0.09	0.16	0.55	54.8	45.2
X	Vanadium	1.0	0.43	2.42	54.7	45.2
	Zinc	28	351.65	<0.1	73.9	26.0
	<i>HAZARD INDEX</i>			<i>132.9</i>	<i>45.7</i>	<i>54.2</i>
						<i>0.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-234
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION NRSE
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	192	58.27	3.3	45.0	54.7	0.3
	Antimony	0.028	0.15	0.19	54.4	44.9	0.7
X	Arsenic	1.7	0.15	11.21	19.0	80.4	0.6
	Barium	1.3	11.84	0.11	46.2	53.0	0.7
	Beryllium	0.020	1.45	<0.1	54.7	45.2	0.2
	Cadmium	0.49	2.12	0.23	94.4	5.5	0.1
	Chromium	3.4	19.78	0.17	7.4	92.3	0.4
	Cobalt	0.22	10.99	<0.1	54.6	45.1	0.4
	Copper	4.5	33.43	0.13	16.1	83.6	0.3
	Cyanide	NA	142	<0.1			
X	Iron	578	7.01	82.4	47.8	51.9	0.3
	Lead	4.7	17.58	0.27	40.5	59.1	0.4
	Manganese	3.8	193.41	<0.1	15.2	81.4	3.4
X	Mercury	0.074	0.070	1.05	24.4	75.4	0.2
	Nickel	0.77	87.91	<0.1	77.3	22.6	0.1
	Selenium	0.081	0.4	0.19	63.9	35.8	0.2
	Silver	0.061	398.25	<0.1	54.7	45.2	0.1
	Thallium	0.028	0.16	0.17	54.4	44.9	0.6
X	Vanadium	0.84	0.43	1.96	54.7	45.2	0.2
	Zinc	26	351.65	<0.1	76.0	23.4	0.5
	<i>HAZARD INDEX</i>			<i>101.5</i>	<i>44.5</i>	<i>55.2</i>	<i>0.3</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-235
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION JY
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8.3	<0.1			
HAZARD INDEX			0.000	0.0	0.0	100.0
Semivolatile Organics						
2-Methylnaphthalene	NA	171	<0.1			
Acenaphthylene	NA	159	<0.1			
Anthracene	NA	1189	<0.1			
Benzo(a)anthracene	NA	1.5	<0.1			
Benzo(a)pyrene	NA	1.5	<0.1			
Benzo(b)fluoranthene	NA	1.5	<0.1			
Benzo(g,h,i)perylene	NA	159	<0.1			
Benzo(k)fluoranthene	NA	1.5	<0.1			
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	NA	1.5	<0.1			
Dibenz(a,h)anthracene	NA	1.5	<0.1			
Dibenzofuran	NA	159	<0.1			
Fluoranthene	NA	149	<0.1			
Fluorene	NA	149	<0.1			
Indeno(1,2,3-cd)pyrene	NA	1.5	<0.1			
Naphthalene	NA	166	<0.1			
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	NA	159	<0.1			
Pyrene	NA	159	<0.1			
HAZARD INDEX			0.00	0.0	0.0	100.0
Pesticides and PCBs						
4,4'-DDD	NA	19	<0.1			
4,4'-DDE	NA	2.3	<0.1			
4,4'-DDT	NA	1.8	<0.1			
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	NA	5.4	<0.1			
Aroclor 1248	0.061	1.5	<0.1	97.1	2.9	0.0
X Aroclor 1254	0.58	0.081	7.2	97.1	2.9	0.0
Aroclor 1260	0.64	0.76	0.84	97.1	2.9	0.0
beta-BHC	NA	8.8	<0.1			
delta-BHC	NA	3.5	<0.1			
Endosulfan I	NA	3.3	<0.1			
Endosulfan Sulfate	NA	3.3	<0.1			
Endrin Aldehyde	NA	0.11	<0.1			
gamma-Chlordane	NA	5.4	<0.1			
HAZARD INDEX			8.10	97.1	2.9	0.0
Inorganics						
X Aluminum	277	58.27	4.8	45.1	54.8	0.2
X Antimony	0.53	0.15	3.58	54.7	45.2	0.0
X Arsenic	2.2	0.15	14.52	17.8	81.7	0.5
Barium	4.2	11.84	0.36	46.5	53.3	0.2
Beryllium	0.018	1.45	<0.1	54.7	45.2	0.2
X Cadmium	2.3	2.12	1.07	92.0	7.9	0.0
Chromium	15	19.78	0.74	1.5	98.4	0.1
Cobalt	0.45	10.99	<0.1	54.7	45.1	0.2
Copper	7.0	33.43	0.21	11.7	88.1	0.2
Cyanide	NA	142	<0.1			
X Iron	908	7.01	129.5	47.8	52.0	0.2
Lead	14	17.58	0.79	35.3	64.6	0.1
Manganese	5.4	193.41	<0.1	13.8	83.8	2.4
Mercury	0.039	0.070	0.55	41.8	57.9	0.3
Nickel	1.3	87.91	<0.1	29.2	70.7	0.1
Selenium	0.15	0.4	0.35	59.2	40.7	0.1
Silver	0.029	398.25	<0.1	54.6	45.1	0.2
Thallium	0.11	0.16	0.67	54.7	45.2	0.2
X Vanadium	1.8	0.43	4.10	54.7	45.2	0.1
Zinc	62	351.65	0.18	52.8	47.0	0.2
HAZARD INDEX			161.5	45.4	54.4	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-236
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION NRSO
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	151	58.27	2.6	45.0	54.7	0.3
	Antimony	0.026	0.15	0.18	54.3	44.9	0.8
X	Arsenic	1.6	0.15	10.53	19.3	80.0	0.6
	Barium	1.4	11.84	0.12	46.3	53.1	0.7
	Beryllium	0.013	1.45	<0.1	54.6	45.1	0.3
	Cadmium	0.48	2.12	0.23	94.4	5.5	0.1
	Chromium	2.4	19.78	0.12	10.6	88.9	0.5
	Cobalt	0.27	10.99	<0.1	54.6	45.1	0.3
	Copper	2.8	33.43	<0.1	22.5	76.9	0.6
	Cyanide	NA	142	<0.1			
X	Iron	679	7.01	96.9	47.8	52.0	0.2
	Lead	3.1	17.58	0.18	42.5	57.0	0.5
	Manganese	12	193.41	<0.1	11.2	87.7	1.1
	Mercury	0.041	0.070	0.58	40.0	59.6	0.3
	Nickel	0.77	87.91	<0.1	79.0	20.9	0.1
	Selenium	0.064	0.4	0.14	65.7	34.0	0.3
	Silver	0.055	398.25	<0.1	54.7	45.2	0.1
	Thallium	0.026	0.16	0.16	54.4	44.9	0.7
X	Vanadium	0.69	0.43	1.61	54.7	45.1	0.2
	Zinc	27	351.65	<0.1	75.1	24.4	0.5
	<i>HAZARD INDEX</i>			<i>113.6</i>	<i>45.2</i>	<i>54.5</i>	<i>0.3</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-237
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION KFSO
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	142	58.27	2.4	45.1	54.8
	Antimony	0.024	0.15	0.16	54.8	45.2
X	Arsenic	0.40	0.15	2.68	26.8	72.1
	Barium	1.4	11.84	0.12	46.3	53.1
	Beryllium	0.011	1.45	<0.1	54.7	45.2
	Cadmium	0.34	2.12	0.16	94.9	5.1
	Chromium	1.7	19.78	<0.1	14.9	85.0
	Cobalt	0.28	10.99	<0.1	54.7	45.2
	Copper	1.9	33.43	<0.1	29.2	70.7
	Cyanide	NA	142	<0.1		
X	Iron	404	7.01	57.6	47.9	52.0
	Lead	4.1	17.58	0.23	41.4	58.6
	Manganese	12	193.41	<0.1	11.2	87.3
	Mercury	0.023	0.070	0.33	62.7	37.1
	Nickel	0.77	87.91	<0.1	77.1	22.8
	Selenium	0.023	0.4	<0.1	72.9	27.1
	Silver	0.019	398.25	<0.1	54.8	45.2
	Thallium	0.024	0.16	0.15	54.8	45.2
X	Vanadium	0.79	0.43	1.84	54.7	45.2
	Zinc	23	351.65	<0.1	78.8	21.1
	<i>HAZARD INDEX</i>			<i>66.1</i>	<i>47.3</i>	<i>52.6</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-238
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WSS
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ	
Inorganics							
X	Aluminum	208	58.27	3.6	45.0	54.7	0.2
	Antimony	0.021	0.15	0.14	54.2	44.8	1.0
	Arsenic	0.11	0.15	0.73	33.4	57.3	9.3
	Barium	0.93	11.84	<0.1	46.1	52.9	1.0
	Beryllium	0.0082	1.45	<0.1	54.5	45.1	0.4
	Cadmium	0.12	2.12	<0.1	95.6	3.9	0.5
	Chromium	0.53	19.78	<0.1	55.0	42.5	2.4
	Cobalt	0.14	10.99	<0.1	54.4	45.0	0.6
	Copper	0.84	33.43	<0.1	48.3	49.8	1.9
	Cyanide	NA	142	<0.1			
X	Iron	258	7.01	36.7	47.6	51.8	0.6
	Lead	1.9	17.58	0.11	45.0	54.1	0.9
	Manganese	2.9	193.41	<0.1	16.2	79.5	4.3
	Mercury	0.013	0.070	0.19	88.1	10.9	1.0
	Nickel	0.78	87.91	<0.1	84.9	15.0	0.1
	Selenium	0.031	0.4	<0.1	70.6	28.7	0.7
	Silver	0.0028	398.25	<0.1	53.4	44.1	2.4
	Thallium	0.033	0.16	0.20	54.5	45.0	0.5
X	Vanadium	0.65	0.43	1.52	54.7	45.1	0.2
	Zinc	11	351.65	<0.1	91.0	7.8	1.2
	<i>HAZARD INDEX</i>			<i>43.5</i>	<i>47.8</i>	<i>51.5</i>	<i>0.7</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

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TABLE 4-239
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WG
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	NA	3736	<0.1			
cis-1,2-Dichloroethene	0.007	6844	<0.1	83.8	14.0	2.3
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	0.004	8.3	<0.1	86.1	13.9	0.0
HAZARD INDEX			0.000	86.1	13.9	0.0
Semivolatile Organics						
2-Methylnaphthalene	0.00000	171	<0.1	0.0	0.0	0.0
Acenaphthylene	0.00009	159	<0.1	86.7	13.3	0.0
Anthracene	0.0017	1189	<0.1	86.9	13.1	0.0
Benzo(a)anthracene	0.013	2	<0.1	87.4	12.6	0.0
Benzo(a)pyrene	0.016	2	<0.1	87.6	12.4	0.0
Benzo(b)fluoranthene	0.029	1.55	<0.1	87.8	12.2	0.0
Benzo(g,h,i)perylene	0.012	158.52	<0.1	88.1	11.9	0.0
Benzo(k)fluoranthene	0.020	1.55	<0.1	87.9	12.1	0.0
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.023	1.55	<0.1	87.4	12.6	0.0
Dibenz(a,h)anthracene	0.005	2	<0.1	87.6	12.4	0.0
Dibenzofuran	NA	158.5	<0.1			
Fluoranthene	0.04	148.65	<0.1	87.3	12.7	0.0
Fluorene	0.0013	149	<0.1	86.8	13.2	0.0
Indeno(1,2,3-cd)pyrene	0.015	2	<0.1	88.3	11.7	0.0
Naphthalene	0.0018	166	<0.1	53.1	8.3	38.6
N-nitrosodiphenylamine	NA	329.7	<0.1			
Phenanthrene	0.015	159	<0.1	86.9	13.1	0.0
Pyrene	0.033	159	<0.1	87.2	12.8	0.0
HAZARD INDEX			0.08	87.7	12.3	0.0
Pesticides and PCBs						
4,4'-DDD	0.0009	18.7	<0.1	87.6	12.4	0.0
4,4'-DDE	0.00032	2.26	<0.1	87.5	12.5	0.0
4,4'-DDT	0.000000	1.8	<0.1	0.0	0.0	0.0
Aldrin	0.0000000	0.44	<0.1	0.0	0.0	0.0
alpha-Chlordane	0.00010	5.45	<0.1	87.3	12.2	0.5
Aroclor 1248	0.0035	1.55	<0.1	87.7	12.3	0.0
Aroclor 1254	0.00000	0.08	<0.1	0.0	0.0	0.0
Aroclor 1260	0.0011	0.76	<0.1	87.9	12.1	0.0
beta-BHC	0.0000000	8.79	<0.1	0.0	0.0	0.0
delta-BHC	0.0000000	3.52	<0.1	0.0	0.0	0.0
Endosulfan I	0.00004	3.30	<0.1	86.8	13.2	0.0
Endosulfan Sulfate	0.000000	3.30	<0.1	0.0	0.0	0.0
Endrin Aldehyde	0.000000	0.11	<0.1	0.0	0.0	0.0
gamma-Chlordane	0.00006	5.45	<0.1	87.3	12.2	0.5
HAZARD INDEX			0.00	87.8	12.2	0.0
Inorganics						
X Aluminum	363	58.27	6.2	45.1	54.8	0.1
X Antimony	0.25	0.15	1.69	54.7	45.2	0.1
X Arsenic	2.0	0.15	13.57	18.1	81.4	0.5
Barium	2.2	11.84	0.18	46.4	53.2	0.4
Beryllium	0.041	1.45	<0.1	54.7	45.2	0.1
Cadmium	1.2	2.12	0.55	93.2	6.8	0.0
Chromium	12	19.78	0.59	1.9	98.0	0.1
Cobalt	0.57	10.99	<0.1	54.7	45.2	0.2
Copper	8.6	33.43	0.26	10.1	89.7	0.2
Cyanide	0.035	142	<0.1	54.8	45.2	0.0
X Iron	677	7.01	96.6	47.8	52.0	0.2
Lead	10	17.58	0.58	36.7	63.1	0.2
Manganese	14	193.41	<0.1	10.6	88.5	0.9
Mercury	0.054	0.070	0.76	31.9	67.9	0.2
Nickel	0.90	87.91	<0.1	52.2	47.7	0.1
Selenium	0.14	0.4	0.32	59.9	39.9	0.1
Silver	0.026	398.25	<0.1	54.6	45.1	0.3
Thallium	0.012	0.16	<0.1	54.0	44.6	1.5
X Vanadium	1.8	0.43	4.15	54.7	45.2	0.1
Zinc	39	351.65	0.11	65.2	34.5	0.4
HAZARD INDEX			125.8	44.6	55.2	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-240
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WH
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	NA	27	<0.1			
Acetone	0.19	3736	<0.1	82.3	17.7	0.0
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	NA	17	<0.1			
Trichloroethene	NA	8	<0.1			
HAZARD INDEX			0.000	82.3	17.7	0.0
Semivolatile Organics						
2-Methylnaphthalene	NA	171	<0.1			
Acenaphthylene	NA	159	<0.1			
Anthracene	NA	1189	<0.1			
Benzo(a)anthracene	NA	1.5	<0.1			
Benzo(a)pyrene	NA	1.5	<0.1			
Benzo(b)fluoranthene	NA	1.5	<0.1			
Benzo(g,h,i)perylene	NA	159	<0.1			
Benzo(k)fluoranthene	0.06	1.5	<0.1	86.0	14.0	0.0
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	NA	1.5	<0.1			
Dibenz(a,h)anthracene	NA	1.5	<0.1			
Dibenzofuran	NA	159	<0.1			
Fluoranthene	NA	149	<0.1			
Fluorene	NA	149	<0.1			
Indeno(1,2,3-cd)pyrene	NA	1.5	<0.1			
Naphthalene	0.00069	166	<0.1	0.0	0.0	100.0
N-nitrosodiphenylamine	NA	330	<0.1			
Phenanthrene	NA	159	<0.1			
Pyrene	NA	159	<0.1			
HAZARD INDEX			0.04	86.0	14.0	0.0
Pesticides and PCBs						
4,4'-DDD	NA	19	<0.1			
4,4'-DDE	NA	2.3	<0.1			
4,4'-DDT	NA	1.8	<0.1			
Aldrin	NA	0.44	<0.1			
alpha-Chlordane	0.000005	5.4	<0.1	0.0	0.0	100.0
Aroclor 1248	NA	1.5	<0.1			
Aroclor 1254	NA	0.081	<0.1			
Aroclor 1260	NA	0.76	<0.1			
beta-BHC	NA	8.8	<0.1			
delta-BHC	NA	3.5	<0.1			
Endosulfan I	NA	3.3	<0.1			
Endosulfan Sulfate	NA	3.3	<0.1			
Endrin Aldehyde	NA	0.11	<0.1			
gamma-Chlordane	0.000003	5.4	<0.1	0.0	0.0	100.0
HAZARD INDEX			0.00	0.0	0.0	100.0
Inorganics						
X Aluminum	303	58	5.2	45.1	54.8	0.2
X Antimony	0.73	0.15	4.88	54.8	45.2	0.0
X Arsenic	3.2	0.15	21.34	16.2	83.5	0.3
Barium	2.2	12	0.18	46.4	53.2	0.4
Beryllium	0.032	1.5	<0.1	54.7	45.2	0.1
Cadmium	1.7	2.1	0.81	92.5	7.5	0.0
Chromium	11	20	0.53	2.2	97.7	0.1
Cobalt	0.58	11	<0.1	54.7	45.2	0.1
Copper	7.9	33	0.24	10.8	89.0	0.2
Cyanide	0.020	142	<0.1	54.8	45.2	0.0
X Iron	1389	7.0	198.1	47.9	52.0	0.1
X Lead	33	18	1.89	31.3	68.7	0.1
Manganese	6.4	193	<0.1	13.2	84.8	2.0
Mercury	0.023	0.070	0.33	62.2	37.3	0.6
Nickel	0.96	88	<0.1	46.5	53.5	0.1
Selenium	0.11	0.44	0.24	62.0	37.8	0.2
Silver	0.009	398	<0.1	54.3	44.9	0.8
Thallium	0.023	0.16	0.14	54.3	44.9	0.8
X Vanadium	2.6	0.43	6.15	54.7	45.2	0.1
Zinc	58	352	0.17	54.4	45.4	0.2
HAZARD INDEX			240.3	45.2	54.6	0.1

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-241
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 STATION WS
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Inorganics						
X	Aluminum	237	58	4.1	45.1	54.7
	Antimony	0.14	0.15	0.91	54.7	45.2
X	Arsenic	1.8	0.15	11.80	18.8	80.6
	Barium	3.2	12	0.27	46.4	53.3
	Beryllium	0.018	1.5	<0.1	54.7	45.2
	Cadmium	1.8	2.1	0.83	92.5	7.5
	Chromium	9.2	20	0.47	2.5	97.4
	Cobalt	0.69	11	<0.1	54.7	45.2
	Copper	5.9	33	0.18	13.3	86.5
	Cyanide	5.9	142	<0.1	54.8	45.2
X	Iron	883	7.0	125.9	47.8	52.0
	Lead	7.4	18	0.42	38.3	61.5
	Manganese	17	193	<0.1	10.1	89.2
	Mercury	0.033	0.070	0.46	47.9	51.7
	Nickel	0.91	88	<0.1	50.9	49.0
	Selenium	0.089	0.44	0.20	63.3	36.5
	Silver	0.0062	398	<0.1	54.2	44.7
	Thallium	0.030	0.16	0.18	54.4	45.0
X	Vanadium	1.2	0.43	2.86	54.7	45.2
	Zinc	57	352	0.16	55.1	44.6
	<i>HAZARD INDEX</i>			<i>148.9</i>	<i>45.7</i>	<i>54.1</i>

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ \geq 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-242
AVERAGE EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
WETLAND REFERENCE (STATION 24)
WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.0038	26.59	<0.1	82.9	2.8	14.3
Acetone	0.0134	3736.31	<0.1	92.7	3.2	4.1
cis-1,2-Dichloroethene	0.0048	6844.04	<0.1	94.7	3.0	2.3
Tetrachloroethene	0.0055	16.65	<0.1	95.1	2.9	2.0
Trichloroethene	0.0039	8.32	<0.1	94.3	2.9	2.8
HAZARD INDEX			0.00	92.9	2.9	4.3
Semivolatile Organics						
2-Methylnaphthalene	0.086	170.89	<0.1	96.6	2.8	0.6
Acenaphthylene	0.108	158.52	<0.1	96.7	2.8	0.5
Anthracene	0.20	1189.21	<0.1	97.0	2.7	0.3
Benzo(a)anthracene	0.64	1.55	0.41	97.3	2.6	0.1
Benzo(a)pyrene	0.59	1.55	0.38	97.3	2.6	0.1
Benzo(b)fluoranthene	1.07	1.55	0.69	97.4	2.5	0.1
Benzo(g,h,i)perylene	0.19	158.52	<0.1	97.2	2.5	0.3
Benzo(k)fluoranthene	0.99	1.55	0.64	97.4	2.5	0.1
Carbazole	(a)	(a)	(a)	(a)	(a)	(a)
Chrysene	0.76	1.55	0.49	97.3	2.6	0.1
Dibenz(a,h)anthracene	0.112	1.55	<0.1	96.9	2.6	0.5
Dibenzofuran	0.159	158.52	<0.1	96.9	2.8	0.3
Fluoranthene	1.53	148.65	<0.1	97.3	2.7	0.0
Fluorene	0.25	148.65	<0.1	97.0	2.8	0.2
Indeno(1,2,3-cd)pyrene	0.26	1.55	0.17	97.4	2.4	0.2
Naphthalene	0.096	166.49	<0.1	96.6	2.9	0.6
N-nitrosodiphenylamine	0.155	329.67	<0.1	96.7	2.9	0.4
Phenanthrene	1.08	158.52	<0.1	97.2	2.7	0.1
Pyrene	1.19	158.52	<0.1	97.3	2.7	0.0
HAZARD INDEX			2.89	97.3	2.6	0.1
Pesticides and PCBs						
4,4'-DDD	0.045	18.68	<0.1	97.4	2.6	0.0
4,4'-DDE	0.0059	2.26	<0.1	97.2	2.6	0.2
4,4'-DDT	0.0164	1.76	<0.1	97.4	2.6	0.1
Aldrin	0.00038	0.44	<0.1	96.0	2.5	1.5
alpha-Chlordane	0.00089	5.45	<0.1	96.8	2.5	0.6
Aroclor 1248	0.031	1.55	<0.1	97.1	2.6	0.4
Aroclor 1254	0.0078	0.08	<0.1	96.1	2.5	1.4
Aroclor 1260	0.024	0.76	<0.1	97.0	2.5	0.5
beta-BHC	0.00035	8.79	<0.1	95.7	2.8	1.6
delta-BHC	0.00042	3.52	<0.1	95.9	2.7	1.3
Endosulfan I	0.00035	3.30	<0.1	95.7	2.7	1.6
Endosulfan Sulfate	0.00111	3.30	<0.1	96.2	2.8	1.0
Endrin Aldehyde	0.00112	0.11	<0.1	96.4	2.6	1.0
gamma-Chlordane	0.00103	5.45	<0.1	97.4	2.6	0.0
HAZARD INDEX			0.17	96.5	2.5	1.0
Inorganics						
X Aluminum	185	58.27	3.17	45.1	54.8	0.0
Antimony	0.021	0.15	0.14	54.4	45.0	0.6
X Arsenic	0.19	0.15	1.28	31.9	67.7	0.4
Barium	1.1	11.84	<0.1	46.2	53.0	0.9
Beryllium	0.018	1.45	<0.1	54.7	45.2	0.1
Cadmium	0.32	2.12	0.15	95.0	5.0	0.0
Chromium	1.9	19.78	<0.1	13.9	86.1	0.0
Cobalt	0.23	10.99	<0.1	54.8	45.2	0.0
Copper	1.2	33.43	<0.1	39.8	60.2	0.1
Cyanide	0.012	141.90	<0.1	52.3	43.2	4.4
X Iron	369	7.01	52.58	47.8	52.0	0.2
Lead	6.7	17.58	0.38	38.8	61.1	0.0
Manganese	2.1	193.41	<0.1	17.5	77.1	5.4
Mercury	0.016	0.07	0.23	78.9	20.9	0.2
Nickel	0.78	87.91	<0.1	70.2	29.8	0.1
Selenium	0.032	0.44	<0.1	70.3	29.0	0.6
Silver	0.030	398.25	<0.1	54.7	45.2	0.1
Thallium	0.013	0.16	<0.1	54.1	44.7	1.3
X Vanadium	1.5	0.43	3.55	54.8	45.2	0.0
Zinc	15	351.65	<0.1	87.5	12.5	0.0
HAZARD INDEX			61.94	48.0	57.9	0.2

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

TABLE 4-243
 MAXIMUM EXPOSURE CASE HAZARD QUOTIENTS FOR SHREW
 WETLAND REFERENCE (STATION 24)
 WELLS G&H SUPERFUND SITE OU3

COPC	Total Dose (mg/kg-day)	RTV (mg/kg-day)	Total HQ	Percent Earthworm HQ	Percent Surface Soil HQ	Percent Surface Water HQ
Volatile Organics						
2-Butanone	0.0058	26.6	<0.1	84.9	2.8	12.2
Acetone	0.027	3736	<0.1	96.7	3.3	0.0
cis-1,2-Dichloroethene	NA	6844	<0.1			
Tetrachloroethene	0.0139	16.6	<0.1	95.4	2.9	1.7
Trichloroethene	0.0052	8.3	<0.1	92.7	2.8	4.5
<i>HAZARD INDEX</i>			0.002	93.1	2.9	4.1
Semivolatile Organics						
2-Methylnaphthalene	0.127	171	<0.1	96.8	2.8	0.4
Acenaphthylene	0.31	159	<0.1	97.0	2.8	0.2
Anthracene	0.74	1189	<0.1	97.2	2.8	0.1
X Benzo(a)anthracene	2.5	2	1.64	97.3	2.6	0.0
X Benzo(a)pyrene	2.33	2	1.51	97.4	2.6	0.0
X Benzo(b)fluoranthene	4.6	1.55	2.95	97.4	2.5	0.0
Benzo(g,h,i)perylene	0.31	158.52	<0.1	97.3	2.5	0.2
X Benzo(k)fluoranthene	4.7	1.55	3.01	97.5	2.5	0.0
Carbazole (a)	(a)	(a)	(a)	(a)	(a)	(a)
X Chrysene	3.1	1.55	2.03	97.3	2.6	0.0
Dibenz(a,h)anthracene	0.167	2	0.11	97.1	2.6	0.3
Dibenzofuran	0.44	158.52	<0.1	97.1	2.8	0.1
Fluoranthene	7.0	148.65	<0.1	97.3	2.7	0.0
Fluorene	0.61	149	<0.1	97.1	2.8	0.1
Indeno(1,2,3-cd)pyrene	0.71	2	0.46	97.5	2.4	0.1
Naphthalene	0.155	166	<0.1	96.8	2.9	0.4
N-nitrosodiphenylamine	0.86	329.67	<0.1	97.0	2.9	0.1
Phenanthrene	5.4	159	<0.1	97.2	2.8	0.0
Pyrene	5.0	159	<0.1	97.3	2.7	0.0
<i>HAZARD INDEX</i>			11.83	97.4	2.6	0.0
Pesticides and PCBs						
4,4'-DDD	0.19	18.7	<0.1	97.4	2.6	0.0
4,4'-DDE	0.0110	2.26	<0.1	97.1	2.6	0.3
4,4'-DDT	0.062	1.8	<0.1	97.4	2.6	0.0
Aldrin	0.00057	0.44	<0.1	96.1	2.5	1.3
alpha-Chlordane	0.0020	5.45	<0.1	97.1	2.6	0.4
Aroclor 1248	0.139	1.55	<0.1	97.2	2.6	0.2
Aroclor 1254	0.0113	0.08	0.14	94.8	2.5	2.7
Aroclor 1260	0.098	0.76	1.30E-01	97.2	2.5	0.3
beta-BHC	0.00018	8.79	<0.1	93.1	2.7	4.2
delta-BHC	0.00052	3.52	<0.1	95.8	2.7	1.5
Endosulfan I	0.00011	3.30	<0.1	90.2	2.6	7.2
Endosulfan Sulfate	0.0022	3.30	<0.1	95.8	2.8	1.4
Endrin Aldehyde	0.0022	0.11	<0.1	96.0	2.6	1.4
gamma-Chlordane	0.0017	5.45	<0.1	97.0	2.6	0.4
<i>HAZARD INDEX</i>			0.43	96.4	2.5	1.1
Inorganics						
X Aluminum	278	58.27	4.8	44.7	54.3	1.0
Antimony	0.034	0.15	0.23	45.4	37.5	17.0
X Arsenic	0.30	0.15	1.97	28.7	69.8	1.4
Barium	1.7	11.84	0.14	46.3	53.1	0.7
Beryllium	0.028	1.45	<0.1	54.7	45.2	0.1
Cadmium	0.48	2.12	0.23	94.5	5.5	0.0
Chromium	5	19.78	0.27	4.5	95.4	0.1
Cobalt	0.34	10.99	<0.1	54.4	44.9	0.7
Copper	1.7	33.43	<0.1	31.3	68.4	0.3
Cyanide	NA	142	<0.1			
X Iron	539	7.01	76.9	47.5	51.6	0.9
Lead	10	17.58	0.58	36.6	62.9	0.6
Manganese	3.4	193.41	<0.1	15.0	76.0	9.0
Mercury	0.023	0.070	0.33	62.2	37.7	0.1
Nickel	0.84	87.91	<0.1	59.6	40.2	0.2
Selenium	0.062	0.4	0.14	65.8	33.7	0.5
Silver	0.08	398.25	<0.1	54.7	45.2	0.1
Thallium	0.020	0.16	0.12	54.3	44.9	0.8
X Vanadium	2.7	0.43	6.31	54.7	45.2	0.1
Zinc	18	351.65	<0.1	84.1	15.8	0.2
<i>HAZARD INDEX</i>			92.2	47.4	51.6	0.9

NOTES:

HQ = Hazard quotient

RTV = Reference Toxicity Value

X = Indicates a COPC with a HQ >= 1.

0.0 = Indicates COPC was not detected in medium, or that the detected concentration was low, contributing less than 0.05% of the Total HQ.

Total Dose = Sum of exposure from ingestion of food (animal), sediment, and water.

(a) Carbazole lacks a BCF, therefore dose calculations could not be carried through.

**TABLE 4-244
HAZARD QUOTIENT SUMMARY FOR SHREW¹
AVERAGE EXPOSURE CASE**

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT											
			Aroclor 1254	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Iron	Lead	Mercury	Thallium	Vanadium	
	Wetland	Reference ²		3		1.3			53					4
20	Wetland	1		10		15	1.2	1.0	116					6
21	Wetland	1		5		9	1.2	2	74		2			3
22/TT-22	Wetland	1		2	13	1.3			14	6				2
BW	Wetland	1		7	4	59			378		1.4	1.4		5
CB-01	Wetland	2		5		2			37					3
CB-02	Wetland	2		2		2			20					2
CB-03	Wetland	2		4		14			105					3
CB-04	Wetland	2		4		6			81					4
CB-05	Wetland	2		2		2			34					1.4
CB-06	Wetland	2		3		5			43					3
DA	River	2		3		5			57					2
NRSE	Wetland	1		3		9			66					2
JY	Wetland	1	5	4		8			96					3
NRSO	River	1		2		6			58					
KFSO	River	2		2		2			50					2
WSS	Wetland	1		3					31					1.2
WG	Wetland	1		5	1.1	7			69					3
WH	Wetland	1		4	4	6			84	2				5
WS	River	1		3		9			101					2
% of OU3 stations (non-reference) with HQ>1				100	21	95	11	11	100	11	11	5		95

¹ Only COPCs having one or more station with HQ>1 are presented.

A blank cell indicates that the HQ <1.0

² Reference stations include 24, HB, and SA.

TABLE 4-245
 HAZARD QUOTIENT SUMMARY FOR SHREW¹
 MAXIMUM EXPOSURE CASE ²
 WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT										
			Aroclor 1254	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Iron	Lead	Mercury	Thallium	Vanadium
	Wetland	Reference ³		5		2			77				6
20	Wetland	1		11		16	1	1	148	1			7
21	Wetland	1		7		13	1	3	95		3		5
22/TT-22	Wetland	1		4	60	4			31	29			3
BW	Wetland	1		8	11	142			506		3	2	6
CB-01	Wetland	2		6		3			63				5
CB-02	Wetland	2		2		2			23				2
CB-03	Wetland	2		4		29			171				4
CB-04	Wetland	2		4		10			135				4
CB-05	Wetland	2		2		3			39				2
CB-06	Wetland	2		3		7	1		55				5
DA	River	2		4		10			113				2
NRSE	Wetland	1		3		11			82		1		2
JY	Wetland	1	7	5	4	15	1		130				4
NRSO	River	1		3		11			97				2
KFSO	River	2		2		3			58				2
WSS	Wetland	1		4					37				2
WG	Wetland	1		6	2	14			97				4
WH	Wetland	1		5	5	21			198	2			6
WS	Riparian	1		4		12			126				3
% of OU3 stations (non-reference) with HQ>1			5	100	26	95	21	16	100	16	16	5	100

¹ Only COPCs having one or more station with HQ>1 are presented.

² HQs were calculated using 95% UCL values for surface water and sediment data. Where 95% UCLs could not be calculated (number of samples <4), maximum station values were used.

³ Reference stations include 24, HB, and SA.

⁴ A blank cell indicates that the HQ <1.0

TABLE 4-246
COMPARISON OF COPC CONCENTRATIONS IN FISH TISSUE TO REFERENCE SAMPLES AND TISSUE RESIDUE BENCHMARKS
REACH 2
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	White Sucker - Whole Body						Tissue Benchmark Conc. mg/kg	Species (2)	Effect	Endpoint	Fraction	Exposure Route	Life-Stage	Effect	ERED Reference ID (3)
	Study Area Average Conc mg/kg bw	Reference Average Conc mg/kg bw	Ratio	Study Area (1) Average Conc. µg/g lipid	Reference Average Conc. µg/g lipid	Ratio									
SVOCs															
Benzo(g,h,i)perylene	nd	nd		nd	nd		29.56	<i>Cyprinus carpio</i> (common carp)	Physiological	NOED	Liver	Injection	na	No significant increase in EROD enzyme and CYP 1A protein content.	URS218
Pesticides															
4,4'-DDD	0.028	0.064	0.44	0.72	1.4	0.51	0.6	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	LOED	Whole Body	Combined	Adult	Sig. different from control	JAW4
4,4'-DDE	0.044	0.10	0.43	1.1	2.0	0.56	na								
4,4'-DDT	0.0069	0.0086	0.81	0.18	0.20	0.90	12.2	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	NOED	Whole Body	Ingestion	Adult	Hatchability	JA219
Aldrin	0.0013	0.0023	0.55	0.032	0.071	0.45	na								
alpha-Chlordane	0.018	0.016	1.1	0.46	0.37	1.2	na								
Aroclor-1248	0.013	0.022	0.56	0.32	0.69	0.46	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
Aroclor-1254	0.08	0.13	0.61	0.0003	0.0003	1.29	4.240	<i>Brachydanio rerio</i> (zebra fish)	Growth	NOED	Whole Body	Water	na	Weight	JA41
Aroclor-1260	0.12	0.19	0.63	3.1	3.7	0.82	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
beta-BHC	0.0013	0.0023	0.55	0.032	0.071	0.45	na								
delta-BHC	0.0013	0.0023	0.55	0.032	0.071	0.45	na								
Endosulfan I	0.0013	0.0032	0.39	0.032	0.082	0.39	na								
Endosulfan sulfate	0.0025	0.0045	0.55	0.063	0.14	0.45	na								
Endrin aldehyde ⁽⁴⁾	0.0025	0.0071	0.35	0.063	0.17	0.38	0.08	<i>Lepomis macrochirus</i> (bluegill)	Growth	NOED	Whole Body	Absorption	na	No increase in mortality	JA23
gamma-Chlordane	0.011	0.011	1.0	0.28	0.28	1.0	na								
Inorganics															
Aluminum	2.1	8.5	0.24				na								
Antimony	0.055	0.084	0.66				na								
Arsenic	0.050	0.048	1.0				0.52	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on mortality	URS10
Barium	0.46	0.73	0.63				na								
Cadmium	0.048	0.12	0.40				0.9	<i>Cyprinodon variegatus</i> (sheepshead minnow)	Development	LOED	Whole Body	Absorption	Egg-embryo	Decreased time to hatch	URS198
Chromium	0.28	0.16	1.8				na								
Cobalt	0.025	0.065	0.38				na								
Copper	0.79	0.63	1.3				13	<i>Lepomis macrochirus</i> (bluegill)	Growth	LOED	Gill	Combined	Immature	Effect on growth - over 22 month period	JBS
Iron	27	31	0.85				na								
Lead	0.34	0.25	1.4				0.451	<i>Pimephales promelas</i> (fathead minnow)	Behavior	LOED	Brain	Absorption	Immature	Sig. reduction in feeding rate and ineffective feeding behaviors	URS230
Manganese	5.9	2.0	3.0				na								
Mercury	0.063	0.019	3.2	1.6	0.40	4.1	0.135	<i>Perca flavescens</i> (yellow perch)	Growth	NOED	Whole Body	Combined	Adult	No effect after 2 years, tissue concentration after one year	URS232
Nickel	0.025	0.023	1.1				na								
Selenium	0.93	0.68	1.4				3	<i>Micropterus salmoides</i> (largemouth bass)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on survivorship	URS160
Silver	0.020	0.018	1.1				0.12	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Water	Juvenile	na	JA88
Zinc	44	19	2.3				na								

ERED - U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Environmental Residue-Effects Database (last update - February 1998)

Conc. - concentration

ID - identification number

na - no test data available in the ERED database

NOED - no observed effect dose

LOED - lowest observed effect dose

nd - not detected in this data set

Ratio = study area average concentration divided by reference average concentration

(1) With exception of mercury, lipid normalized tissue concentrations were not calculated for inorganic COPCs because inorganics are not expected to preferentially concentrate in lipid material

(2) ERED database records of several freshwater fish were queried - members of Ictaluridae, Centrarchidae, Cyprinidae, Percidae, and Esocidae.

(3) Citations for primary references are provided in the ERED database

(4) Value for Endrin

a Test involved PCBs, specific congeners not indicated

TABLE 4-247
COMPARISON OF COPC CONCENTRATIONS IN FISH TISSUE TO REFERENCE SAMPLES AND TISSUE RESIDUE BENCHMARKS
REACH 3
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Largemouth Bass - Pillet						Largemouth Bass - Offal						Tissue Benchmark Conc. mg/kg	Species (2)	Effect	Endpoint	Fraction	Exposure Route	Life-Stage	Effect	ERED Reference ID (3)
	Study Area Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio	Study Area (1) Average Conc. u/g lipid	Reference Average Conc. u/g lipid	Ratio	Study Area Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio	Study Area (1) Average Conc. u/g lipid	Reference Average Conc. u/g lipid	Ratio									
SVOCs																					
Benzo(a,h)perylene	0.29	0.52	0.56	56	137	0.41	nd	nd		nd	nd		29.56	<i>Cyprinus carpio</i> (common carp)	Physiological	NOED	Liver	Injection	na	No significant increase in EROD enzyme and CYP1A protein content	URS218
Pesticides																					
4,4'-DDD	0.0037	0.00073	5.0	0.63	0.19	3.4	0.029	0.0052	5.6	1.2	0.24	4.9	0.6	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	LOED	Whole Body	Combined	Adult	Sig. different from control	JAW4
4,4'-DDE	0.013	0.0070	1.9	2.0	1.8	1.1	0.063	0.053	1.2	4.1	2.7	1.5	na								
4,4'-DDT	0.0021	0.00073	2.8	0.26	0.19	1.4	0.0073	0.0048	1.5	0.55	0.23	2.4	12.2	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	NOED	Whole Body	Ingestion	Adult	Hatchability	JA219
Aldrin	0.00069	0.00038	1.8	0.098	0.097	1.0	0.0021	0.0022	1.0	0.26	0.11	2.4	na								
alpha-Chlordane	0.0024	0.00040	6.0	0.41	0.10	4.1	0.015	0.0027	5.6	0.71	0.12	5.8	na								
Aroclor-1248	0.0067	0.0037	1.8	0.95	0.95	1.0	0.041	0.021	1.9	2.9	1.1	2.7	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
Aroclor-1254	0.02	0.004	4.3	0.0002	0.0001	2.9	0.10	0.02	4.7	0.0004	0.0001	5.6	4,240	<i>Brachydanio rerio</i> (zebra fish)	Growth	NOED	Whole Body	Water	na		JA41
Aroclor-1260	0.051	0.012	4.1	7.7	3.760	2.0	0.21	0.092	2.3	16	5.5	2.9	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
beta-BHC	0.00069	0.00038	1.8	0.098	0.097	1.0	0.0021	0.0022	1.0	0.26	0.11	2.4	na								
delta-BHC	0.00069	0.00038	1.8	0.098	0.097	1.0	0.0021	0.0022	1.0	0.26	0.11	2.4	na								
Endosulfan I	0.00069	0.00038	1.8	0.098	0.097	1.0	0.0031	0.0022	1.4	0.27	0.11	2.5	na								
Endosulfan sulfate	0.0013	0.00073	1.8	0.19	0.19	1.0	0.0046	0.0043	1.1	0.50	0.21	2.4	na								
Endrin aldehyde	0.0019	0.00073	2.6	0.24	0.19	1.3	0.0045	0.0043	1.0	0.54	0.21	2.5	0.08	<i>Lepomis macrochirus</i> (bluegill)	Growth	NOED	Whole Body	Absorption	na	No increase in mortality	JA23
gamma-Chlordane	0.0012	0.00038	3.3	0.22	0.097	2.3	0.0085	0.0022	3.9	0.41	0.11	3.8	na								
Inorganics																					
Aluminum	0.66	0.78	0.84				5.5	1.2	4.8				na								
Antimony	0.058	0.052	1.1				0.053	0.051	1.0				na								
Arsenic	0.044	0.048	0.92				0.060	0.045	1.3				0.52	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on mortality	URS10
Barium	0.066	0.079	0.84				1.4	0.80	1.7				na								
Cadmium	0.0076	0.0070	1.1				0.031	0.023	1.3				0.9	<i>Cyprinodon variegatus</i> (sheepshead minnow)	Development	LOED	Whole Body	Absorption	Egg-embryo	Decreased time to hatch	URS198
Chromium	0.055	0.071	0.78				0.58	0.31	1.9				na								
Cobalt	0.024	0.035	0.69				0.054	0.042	1.3				na								
Copper	0.27	0.12	2.3				2.5	0.34	7.3				13	<i>Lepomis macrochirus</i> (bluegill)	Growth	LOED	Gill	Combined	Immature	Effect on growth - over 22 month period	JB5
Iron	1.9	2.8	0.67				39	16	2.4				na								
Lead	0.039	0.038	1.0				0.036	0.033	1.1				0.451	<i>Pimephales promelas</i> (fathead minnow)	Behavior	LOED	Brain	Absorption	Immature	Sig. reduction in feeding rate and ineffective feeding behaviors	URS230
Manganese	0.11	0.11	1.0				3.0	4.7	0.63				na								
Mercury	0.18	0.50	0.36	20.8825	146.558	0.1	0.071	0.33	0.22	9.8	22	0.44	0.135	<i>Perca flavescens</i> (yellow perch)	Growth	NOED	Whole Body	Combined	Adult	No effect after 2 years, tissue concentration after one year	URS232
Nickel	0.023	0.023	1.0				0.024	0.022	1.1				na								
Selenium	0.62	0.61	1.0				0.65	0.72	0.91				3	<i>Micropterus salmoides</i> (largemouth bass)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on survivorship	URS160
Silver	0.020	0.019	1.1				0.021	0.021	1.0				0.12	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Water	Juvenile	na	JA88
Zinc	5.4	3.8	1.4				30	20	1.5				na								

ERED - U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Environmental Residue-Effects Database (last update - February 1998)

Conc. - concentration

ID - identification number

na - no test data available in the ERED database

NOED - no observed effect dose

LOED - lowest observed effect dose

nd - not detected in this data set

Ratio = study area average concentration divided by reference average concentration

(1) With exception of mercury, lipid normalized tissue concentrations were not calculated for inorganic COPCs because inorganics are not expected to preferentially concentrate in lipid material

(2) ERED database records of several freshwater fish were queried - members of Ictaluridae, Centrarchidae, Cyprinidae, Percidae, and Esocidae.

(3) Citations for primary references are provided in the ERED database

(4) Value for Endrin

* Test involved PCBs, specific congeners not indicated

TABLE 4-250
COMPARISON OF COPC CONCENTRATIONS IN FISH TISSUE TO REFERENCE SAMPLES AND TISSUE RESIDUE BENCHMARKS
REACH 6
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Largemouth Bass - Fillet						Largemouth Bass - Offal						Tissue Benchmark Conc. mg/kg	Species (2)	Effect	Endpoint	Fraction	Exposure Route	Life-Stage	Effect	ERED Reference ID (3)
	Study Area Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio	Study Area(1) Average Conc. ug/g lipid	Reference Average Conc. ug/g lipid	Ratio	Study Area Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio	Study Area Average Conc. ug/g lipid	Reference Average Conc. ug/g lipid	Ratio									
SVOCs																					
Benzo(g,h,i)perylene	0.55	0.52	1.1	90	137	0.66	nd	nd		nd	nd		29.56	<i>Cyprinus carpio</i> (common carp)	Physiological	NOED	Liver	Injection	na	No significant increase in EROD enzyme and CYP 1A protein content.	URS218
Pesticides																					
4,4'-DDD	0.014	0.00073	20	2.1	0.19	11	0.12	0.0052	23	2.6	0.24	10	0.6	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	LOED	Whole Body	Combined	Adult	Sig. different from control	JAW4
4,4'-DDE	0.041	0.0070	5.9	6.0	1.8	3.3	0.35	0.053	6.6	7.5	2.7	2.8	na								
4,4'-DDT	0.0032	0.00073	4.4	0.47	0.19	2.5	0.026	0.0048	5.5	0.56	0.23	2.4	12.2	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	NOED	Whole Body	Ingestion	Adult	Hatchability	JA219
Aldrin	0.0012	0.00038	3.2	0.18	0.097	1.9	0.0043	0.0022	2.0	0.093	0.11	0.86	na								
alpha-Chlordane	0.0058	0.00040	15	0.85	0.10	8.5	0.056	0.0027	21	1.2	0.12	9.7	na								
Aroclor-1248	0.011	0.0037	3.1	1.7	0.95	1.8	0.013	0.021	0.58	0.27	1.1	0.25	3.7999 ^a	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
Aroclor-1254	0.09	0.004	23.80	0.00	0.00	15.63	0.57	0.02	26.82	0.00	0.00	14.85	4,240	<i>Brachydanio rerio</i> (zebra fish)	Growth	NOED	Whole Body	Water	na	Weight	JA41
Aroclor-1260	0.057	0.012	4.6	8.3	3.76	2.2	0.44	0.092	4.8	9.3	5.5	1.7	3.7999 ^a	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
beta-BHC	0.0012	0.00038	3.1	0.17	0.097	1.8	0.0018	0.0022	0.83	0.038	0.11	0.35	na								
delta-BHC	0.0012	0.00038	3.1	0.17	0.097	1.8	0.0013	0.0022	0.58	0.027	0.11	0.25	na								
Endosulfan I	0.0012	0.00038	3.1	0.17	0.097	1.8	0.0054	0.0022	2.5	0.11	0.11	1.1	na								
Endosulfan sulfate	0.0023	0.00073	3.2	0.35	0.19	1.9	0.0051	0.0043	1.2	0.10	0.21	0.49	na								
Endrin aldehyde	0.0023	0.00073	3.2	0.35	0.19	1.9	0.014	0.0043	3.3	0.30	0.21	1.4	0.08	<i>Lepomis macrochirus</i> (bluegill)	Growth	NOED	Whole Body	Absorption	na	No increase in mortality	JA23
gamma-Chlordane	0.0023	0.00038	6.0	0.33	0.097	3.4	0.018	0.0022	8.2	0.37	0.11	3.5	na								
Inorganics																					
Aluminum	0.55	0.78	0.70				0.60	1.2	0.52				na								
Antimony	0.046	0.052	0.89				0.047	0.051	0.92				na								
Arsenic	0.045	0.048	0.92				0.045	0.045	1.0				0.52	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on mortality	URS10
Barium	0.073	0.079	0.93				0.28	0.80	0.34				na								
Cadmium	0.013	0.0070	1.9				0.019	0.023	0.83				0.9	<i>Cyprinodon variegatus</i> (sheepshead minnow)	Development	LOED	Whole Body	Absorption	Egg-embryo	Decreased time to hatch	URS198
Chromium	0.075	0.071	1.0				0.34	0.31	1.1				na								
Cobalt	0.021	0.035	0.61				0.021	0.042	0.51				na								
Copper	0.14	0.12	1.2				0.50	0.34	1.5				13	<i>Lepomis macrochirus</i> (bluegill)	Growth	LOED	Gill	Combined	Immature	Effect on growth - over 22 month period	JB5
Iron	1.8	2.8	0.65				21	16	1.3				na								
Lead	0.040	0.038	1.1				0.10	0.033	3.1				0.451	<i>Pimephales promelas</i> (fathead minnow)	Behavior	LOED	Brain	Absorption	Immature	Sig. reduction in feeding rate and ineffective feeding behaviors	URS230
Manganese	0.052	0.11	0.47				2.0	4.7	0.42				na								
Mercury	0.17	0.50	0.34	28	147	0.19	0.11	0.33	0.34	2.3	22	0.10	0.135	<i>Perca flavescens</i> (yellow perch)	Growth	NOED	Whole Body	Combined	Adult	No effect after 2 years, tissue concentration after one year	URS232
Nickel	0.021	0.023	0.92				0.021	0.022	1.0				na								
Selenium	0.59	0.61	1.0				0.75	0.72	1.0				3	<i>Micropterus salmoides</i> (largemouth bass)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on survivorship	URS160
Silver	0.017	0.019	0.92				0.022	0.021	1.0				0.12	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Water	Juvenile	na	JA88
Zinc	5.6	3.8	1.5				21	20	1.1				na								

ERED - U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Environmental Residue-Effects Database (last update - February 1998)

Conc. - concentration

ID - identification number

na - no test data available in the ERED database

NOED - no observed effect dose

LOED - lowest observed effect dose

nd - not detected in this data set

Ratio = study area average concentration divided by reference average concentration

(1) With exception of mercury, lipid normalized tissue concentrations were not calculated for inorganic COPCs because inorganics are not expected to preferentially concentrate in lipid material

(2) ERED database records of several freshwater fish were queried - members of Ictaluridae, Centrarchidae, Cyprinidae, Percidae, and Esocidae

(3) Citations for primary references are provided in the ERED database

(4) Value for Endrin

a Test involved PCBs, specific congeners not indicated

TABLE 4-251
COMPARISON OF COPC CONCENTRATIONS IN PUMPKINSEED TISSUE TO REFERENCE SAMPLES AND TISSUE RESIDUE BENCHMARKS

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Pumpkinseed - Whole Body						Tissue Benchmark Conc. mg/kg	Species (2)	Effect	Endpoint	Fraction	Exposure Route	Life-Stage	Effect	ERED Reference ID (3)
	Study Area Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio	Study Area (1) Average Conc. µg/g lipid	Reference Average Conc. µg/g lipid	Ratio									
Pesticides															
4,4'-DDD	0.024	0.0025	9.6	1.1	0.14	8.2	na								
4,4'-DDE	0.028	0.017	1.6	1.3	0.92	1.5	19.6	<i>Pimephales promelas</i> (fathead minnow)	Reproduction	LOED	Whole Body	Combined	Adult	Sig. different from control	JAW4
4,4'-DDT	0.0048	0.0025	1.9	0.23	0.14	1.7	4.2	<i>Lepomis macrochirus</i> (bluegill)	Behavior	LOED	Whole Body	Absorption	Immature	Behavioral changes, loss of equilibrium, convulsions	URS86
Aldrin	0.0022	0.0017	1.3	0.11	0.088	1.2	na								
alpha-Chlordane	0.013	0.0013	10	0.59	0.069	8.6	na								
Aroclor-1248	0.028	0.016	1.8	1.4	0.86	1.6	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
Aroclor-1254	0.090	0.008	11.1	0.0004	0.00005	9.5	4.240	<i>Brachydanio rerio</i> (zebra fish)	Growth	NOED	Whole Body	Water	na	Weight	JA41
Aroclor-1260	0.065	0.022	3.0	3.2	1.2	2.6	3.7999*	<i>Ictalurus punctatus</i> (channel catfish)	Growth	LOED	Brain	Ingestion	Immature	40% reduction in mean weight	URS104
beta-BHC	0.0026	0.0017	1.5	0.13	0.088	1.4	na								
delta-BHC	0.0023	0.0017	1.4	0.11	0.088	1.3	na								
Endosulfan I	0.0026	0.0016	1.6	0.13	0.081	1.6	na								
Endosulfan sulfate	0.0047	0.0032	1.5	0.23	0.17	1.4	na								
Endrin aldehyde (4)	0.0045	0.0032	1.4	0.23	0.17	1.3	na								
gamma-Chlordane	0.0035	0.0017	2.1	0.17	0.088	1.9	4.240	<i>Brachydanio rerio</i> (zebra fish)	Growth	NOED	Whole Body	Water	na	Weight	JA41
Inorganics															
Aluminum	13	6.4	2.1				na								
Antimony	0.10	0.10	0.98				na								
Arsenic	0.30	0.10	3.0				0.52	<i>Lepomis macrochirus</i> (bluegill)	Mortality	NOED	Whole Body	Absorption	Immature	No effect on mortality	URS10
Barium	0.87	4.4	0.20				na								
Cadmium	0.025	0.017	1.5				0.9	<i>Cyprinodon variegatus</i> (sheepshead minnow)	Development	LOED	Whole Body	Absorption	Egg-embryo	Decreased time to hatch	URS198
Chromium	0.32	0.33	1.0				na								
Cobalt	0.056	0.047	1.2				na								
Copper	0.90	0.60	1.5				13	<i>Lepomis macrochirus</i> (bluegill)	Growth	LOED	Gill	Combined	Immature	Effect on growth - over 22 month period	JBS
Iron	42	45	0.94				na								
Lead	0.15	0.070	2.2				0.451	<i>Pimephales promelas</i> (fathead minnow)	Behavior	LOED	Brain	Absorption	Immature	Sig. reduction in feeding rate and ineffective feeding behaviors	URS230
Manganese	11	21	0.50				na								
Mercury	0.033	0.081	0.41	1.6	4.5	0.36	0.135	<i>Perca flavescens</i> (yellow perch)	Growth	NOED	Whole Body	Combined	Adult	No effect after 2 years, tissue concentration after one year	URS232
Selenium	0.76	0.60	1.3				4	<i>Lepomis macrochirus</i> (bluegill)	Reproduction	NOED	Whole Body	Combined	Adult	No effect on percent hatch	JA95
Zinc	28	34	0.80				na								

ERED - U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Environmental Residue-Effects Database (last update - February 1998)

Conc. - concentration

ID - identification number

na - no test data available in the ERED database

NOED - no observed effect dose

LOED - lowest observed effect dose

nd - not detected in this data set

Ratio = study area average concentration divided by reference average concentration

(1) With exception of mercury, lipid normalized tissue concentrations were not calculated for inorganic COPCs because inorganics are not expected to preferentially concentrate in lipid material

(2) ERED database records of several freshwater fish were queried - members of Ictaluridae, Centrarchidae, Cyprinidae, Percidae, and Esocidae

(3) Citations for primary references are provided in the ERED database

(4) Value for Endrin

TABLE 4-252
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 1 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark *	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref. ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Volatile Organics (ug/kg)									
2-Butanone	6,530	SCV	78	0.0	275	15	0.0	290	0.0
Acetone	210	SCV	607	2.9	1784	6	8.5	4,300	20.4
cis-1,2-Dichloroethene	9,674	SCV	113	0.0	196	3	0.0	562	0.1
Tetrachloroethene	9,916	SCV	222	0.0	464	6	0.0	3,164	0.3
Trichloroethene	5,321	SCV	133	0.0	860	15	0.2	2,025	0.4
Semivolatile Organics (ug/kg)									
2-Methylnaphthalene ^b	3,144	SCV	254	0.1	140	*3	0.0	140	0.0
Acenaphthylene	640	ERM	249	0.4	38	*15	0.1	38	0.1
Anthracene	37,000	SEL	279	0.0	376	3	0.0	660	0.0
Benzo(a)anthracene	148,000	SEL	511	0.0	652	5	0.0	1,700	0.0
Benzo(a)pyrene	144,000	SEL	624	0.0	773	3	0.0	1,900	0.0
Benzo(b)fluoranthene ^c	134,000	SEL	1,017	0.0	1338	5	0.0	3,700	0.0
Benzo(g,h,i)perylene	32,000	SEL	466	0.0	578	5	0.0	1,600	0.1
Benzo(k)fluoranthene	32,000	SEL	649	0.0	796	3	0.0	3,400	0.1
Carbazole	N/A	N/A	424	N/A	170	*5	N/A	170	N/A
Chrysene	46,000	SEL	680	0.0	874	5	0.0	2,200	0.0
Dibenz(a,h)anthracene	13,000	SEL	321	0.0	411	3	0.0	430	0.0
Dibenzofuran	10,158	SCV	439	0.0	605	5	0.1	N/A	N/A
Fluoranthene	102,000	SEL	1188	0.0	1498	3	0.0	5,200	0.1
Fluorene	16,000	SEL	281	0.0	240	*3	0.0	240	0.0
Indeno(1,2,3-cd)pyrene	32,000	SEL	492	0.0	638	5	0.0	1,500	0.0
Naphthalene	5,804	SCV	368	0.1	555	3	0.1	2,500	0.4
N-nitrosodiphenylamine	N/A	N/A	439	N/A	560	*3	N/A	560	N/A
Phenanthrene	95,000	SEL	596	0.0	743	3	0.0	2,700	0.0
Pyrene	85,000	SEL	958	0.0	1332	5	0.0	4,000	0.0
Pesticides and PCBs (ug/kg)									
4,4'-DDD	600	SEL	26	0.0	109	15	0.2	310	0.5
4,4'-DDE	1,900	SEL	19	0.0	34	5	0.0	160	0.1
4,4'-DDT	1,200	SEL	2.9	0.0	3.7	3	0.0	12	0.0
Aldrin	800	SEL	1.7	0.0	2.6	3	0.0	18	0.0
alpha-Chlordane ^d	600	SEL	12	0.0	41	15	0.1	93	0.2
Aroclor 1248	15,000	SEL	86	0.0	125	5	0.0	560	0.0
Aroclor 1254	3,400	SEL	240	0.1	1075	15	0.3	2,600	0.8
Aroclor 1260	2,400	SEL	299	0.1	1136	15	0.5	2,400	1.0
beta-BHC	2,100	SEL	1.4	0.0	3.1	*15	0.0	3.1	0.0
delta-BHC ^e	1,200	SEL	1.7	0.0	7.0	15	0.0	15	0.0
Endosulfan I	133	SCV	7.4	0.1	31	15	0.2	68	0.5
Endosulfan Sulfate	133	SCV	2.5	0.0	0.72	*3	0.0	0.7	0.0
Endrin Aldehyde ^f	13,000	SEL	3.8	0.0	6.3	13	0.0	12	0.0
gamma-Chlordane ^g	600	SEL	21	0.0	24	6	0.0	650	1.1

TABLE 4-252 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATION IN REACH 1 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	12,448	0.5	13543	3	0.5	34,400	1.3
Antimony ^d	25	ERM	14	0.6	34	14	1.4	329	13.2
Arsenic	33	SEL	439	13.3	757	5	22.9	4,550	138
Barium	N/A	NOAA SB	122.0	N/A	123	5	N/A	3,420	N/A
Beryllium	N/A	N/A	0.9	N/A	1.1	13	N/A	2.9	N/A
Cadmium	10	SEL	8.4	0.8	12	14	1.2	37	3.7
Chromium	110	SEL	2,040	18.5	4324	5	39.3	24,600	224
Cobalt	10	NOAA SB	18	1.8	20	3	2.0	58	5.8
Copper	110	SEL	535	4.9	620	3	5.6	2,340	21.3
Cyanide	0.1	LEL	1.3	12.8	1.7	5	17.0	12	121
Iron	40,000	SEL	34,510	0.9	41453	5	1.0	258,000	6.5
Lead	250	SEL	879	3.5	2752	14	11.0	41,000	164
Manganese	1,100	SEL	573	0.5	652	3	0.6	2,020	1.8
Mercury	2	SEL	3.1	1.6	5.2	5	2.6	45	22.4
Nickel	75	SEL	26	0.3	29	3	0.4	150	2.0
Selenium	0.3	NOAA SB	4.7	15.7	5.3	3	17.8	30	101
Silver	4	ERM	0.7	0.2	1.0	13	0.3	5.3	1.4
Thallium	N/A	N/A	1.5	N/A	3.0	14	N/A	18	N/A
Vanadium	50	NOAA SB	53	1.1	58	3	1.2	163	3.3
Zinc	820	SEL	1,547	1.9	2144	14	2.6	4,940	6.0

Notes:

^a SCVs adjusted for average organic carbon content in Reach 1 (TOC=24.2%);

SELs adjusted using the maximum allowable organic carbon content of 10%.

^b Benchmark value for 1-methylnaphthalene reported

^c Benchmark value for benzo(k)fluoranthene reported

^d Benchmark value for chlordan reported

^e Benchmark value for BHC reported

^f Benchmark value for endrin reported

^g ERM from Long and Morgan (1990)

^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.

ⁱ 95% UCL. References:

* Maximum detected value is shown

1 Sample size too small/not enough distinct values

8. 99% Chebyshev (MVUE) UCL

15. 99% Chebyshev (Mean, Sd) UCL

2 95% Student's-t UCL

9. 95% CLT UCL

16. 95% Standard Bootstrap UCL

3. 95% Approximate Gamma UCL

10. 95% Adjusted-CLT UCL

17. 95% Bootstrap-t UCL

4. 95% Adjusted Gamma UCL

11. 95% Modified-t UCL

18. 95% Half's Bootstrap UCL

5. 95% H-UCL

12. 95% Jackknife UCL

19. 95% Percentile Bootstrap UCL

6. 95% Chebyshev (MVUE) UCL

13. 95% Chebyshev (Mean, Sd) UCL

20. 95% BCA Bootstrap UCL

7. 97.5% Chebyshev (MVUE) UCL

14. 97.5% Chebyshev (Mean, Sd) UCL

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-253
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 2 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Volatile Organics (ug/kg)									
2-Butanone	2,519	SCV	7.0	0.0	7.7	2	0.0	0.0	0.0
Acetone	81	SCV	416	5.1	4225	15	52.0	7,300	89.9
cis-1,2-Dichloroethene	3,733	SCV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene	3,826	SCV	7.0	0.0	7.7	2	0.0	0.0	0.0
Trichloroethene	2,053	SCV	7.0	0.0	7.7	2	0.0	0.0	0.0
Semivolatile Organics (ug/kg)									
2-Methylnaphthalene ^b	1,213	SCV	215	0.2	220	*2	0.2	220	0.2
Acenaphthylene	640	ERM	193	0.3	120	*2	0.2	120	0.2
Anthracene	34,526	SEL	235	0.0	324	5	0.0	930	0.0
Benzo(a)anthracene	138,103	SEL	273	0.0	394	3	0.0	1,000	0.0
Benzo(a)pyrene	134,370	SEL	287	0.0	437	3	0.0	1,100	0.0
Benzo(b)fluoranthene ^c	125,039	SEL	505	0.0	1116	6	0.0	2,300	0.0
Benzo(g,h,i)perylene	29,860	SEL	248	0.0	391	13	0.0	700	0.0
Benzo(k)fluoranthene	29,860	SEL	479	0.0	1001	6	0.0	2,100	0.1
Carbazole	N/A	N/A	214	N/A	321	13	N/A	480	N/A
Chrysene	42,924	SEL	318	0.0	482	3	0.0	1,400	0.0
Dibenz(a,h)anthracene	12,131	SEL	186	0.0	160	*13	0.0	160	0.0
Dibenzofuran	3,919	SCV	220	0.1	327	13	0.1	500	0.1
Fluoranthene	95,179	SEL	410	0.0	885	6	0.0	1,800	0.0
Fluorene	14,930	SEL	215	0.0	294	3	0.0	810	0.1
Indeno(1,2,3-cd)pyrene	29,860	SEL	233	0.0	390	13	0.0	680	0.0
Naphthalene	2,240	SCV	197	0.1	250	*13	0.1	250	0.1
N-nitrosodiphenylamine	N/A	N/A	205	N/A	58	*2	N/A	58	N/A
Phenanthrene	88,647	SEL	328	0.0	498	3	0.0	1,900	0.0
Pyrene	79,316	SEL	459	0.0	962	6	0.0	2,200	0.0
Pesticides and PCBs (ug/kg)									
4,4'-DDD	560	SEL	12	0.0	21	3	0.0	83	0.1
4,4'-DDE	1,773	SEL	5.4	0.0	9.6	3	0.0	27	0.0
4,4'-DDT	1,120	SEL	3.2	0.0	5.3	3	0.0	19	0.0
Aldrin	747	SEL	0.8	0.0	1.5	5	0.0	2.0	0.0
alpha-Chlordane ^d	560	SEL	0.9	0.0	1.1	2	0.0	1.9	0.0
Aroclor 1248	13,997	SEL	21	0.0	29	13	0.0	0.0	N/A
Aroclor 1254	3,173	SEL	21	0.0	29	13	0.0	0.0	0.0
Aroclor 1260	2,240	SEL	21	0.0	29	13	0.0	0.0	N/A
beta-BHC	1,960	SEL	0.8	0.0	0.92	*13	0.0	0.9	0.0
delta-BHC ^e	1,120	SEL	0.9	0.0	0.85	*13	0.0	0.9	0.0
Endosulfan I	51	SCV	2.1	0.0	0.51	*13	0.0	0.5	0.0
Endosulfan Sulfate	51	SCV	2.1	0.0	2.9	13	0.1	0.0	0.0
Endrin Aldehyde ^f	12,131	SEL	1.9	0.0	0.90	*13	0.0	0.9	0.0
gamma-Chlordane ^e	560	SEL	0.7	0.0	0.93	3	0.0	2.4	0.0

TABLE 4-253 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 2 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	7,715	0.3	8456	3	0.3	21,100	0.8
Antimony ^d	25	ERM	1.9	0.1	3.3	13	0.1	24	0.9
Arsenic	33	SEL	120	3.6	152	5	4.6	1,410	43
Barium	N/A	N/A	49.0	N/A	56	3	N/A	389.0	N/A
Beryllium	N/A	N/A	0.5	N/A	0.54	3	N/A	2.0	N/A
Cadmium	10	SEL	4.2	0.4	5.1	3	0.5	35	3.5
Chromium	110	SEL	329	3.0	463	5	4.2	5,310	48.3
Cobalt	10	NOAA SB	10	1.0	12	5	1.2	130	13.0
Copper	110	SEL	234	2.1	303	5	2.8	3,760	34.2
Cyanide	0.1	LEL	0.3	3.2	0.39	2	3.9	0.9	8.5
Iron	40,000	SEL	17,978	0.4	25859	13	0.6	86,500	2.2
Lead	250	SEL	170	0.7	201	3	0.8	664	2.7
Manganese	1,100	SEL	332	0.3	388	5	0.4	2,640	2.4
Mercury	2	SEL	1.9	1.0	2.0	5	1.0	89	44.6
Nickel	75	SEL	17	0.2	26	13	0.4	177	2.4
Selenium	0.3	NOAA SB	2.1	7.0	3.4	14	11.5	9.3	31.0
Silver	4	ERM	0.5	0.1	1.2	13	0.3	12	N/A
Thallium	N/A	N/A	1.2	N/A	1.9	13	N/A	10	N/A
Vanadium	50	NOAA SB	36	0.7	43	5	0.9	114	2.3
Zinc	820	SEL	745	0.9	926	5	1.1	8,750	10.7

Notes:

- ^a SELs and SCVs adjusted for average organic carbon content in Reach 2 (TOC = 9.3%);
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.

ⁱ 95% UCL References:

- | | | |
|-----------------------------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | * Maximum detected value is shown | |
| 2. 95% Student's-t UCL | 8. 99% Chebyshev (MVUE) UCL | 15. 99% Chebyshev (Mean, Sd) UCL |
| 3. 95% Approximate Gamma UCL | 9. 95% CLT UCL | 16. 95% Standard Bootstrap UCL |
| 4. 95% Adjusted Gamma UCL | 10. 95% Adjusted-CLT UCL | 17. 95% Bootstrap-t UCL |
| 5. 95% H-UCL | 11. 95% Modified-t UCL | 18. 95% Hall's Bootstrap UCL |
| 6. 95% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 19. 95% Percentile Bootstrap UCL |
| 7. 97.5% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | 20. 95% BCA Bootstrap UCL |
| | 14. 97.5% Chebyshev (Mean, Sd) UCL | |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-254
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 3 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	916	SCV	23	0.0	58	13	0.1	89	0.1
Acetone	30	SCV	46	1.6	80	3	2.7	0.0	0.0
cis-1,2-Dichloroethene	1,357	SCV	21	0.0	24	*1	0.0	24	0.0
Tetrachloroethene	1,391	SCV	19	0.0	31	5	0.0	0.0	0.0
Trichloroethene	746	SCV	15	0.0	19	3	0.0	35	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	441	SCV	371	0.8	130	*3	0.3	130	0.3
Acenaphthylene	640	ERM	367	0.6	480	*3	0.8	480	0.8
Anthracene	12,554	SEL	605	0.0	764	2	0.1	1,100	0.1
Benzo(a)anthracene	50,216	SEL	3,993	0.1	5354	2	0.1	9,600	0.2
Benzo(a)pyrene	48,859	SEL	3,891	0.1	5262	2	0.1	10,000	0.2
Benzo(b)fluoranthene ^c	45,466	SEL	6,812	0.1	9063	2	0.2	16,000	0.4
Benzo(g,h,i)perylene	10,858	SEL	1,778	0.2	2520	2	0.2	5,300	0.5
Benzo(k)fluoranthene	10,858	SEL	5,291	0.5	7382	2	0.7	14,000	1.3
Carbazole	N/A	N/A	338	N/A	465	2	N/A	680	N/A
Chrysene	15,608	SEL	4,996	0.3	6612	2	0.4	10,000	0.6
Dibenz(a,h)anthracene	4,411	SEL	573	0.1	957	3	0.2	2,000	0.5
Dibenzofuran	1,425	SCV	407	0.3	190	*3	0.1	190	0.1
Fluoranthene	34,609	SEL	9,142	0.3	12494	2	0.4	23,000	0.7
Fluorene	5,429	SEL	391	0.1	476	2	0.1	640	0.1
Indeno(1,2,3-cd)pyrene	10,858	SEL	2,028	0.2	3493	3	0.3	6,900	0.6
Naphthalene	814	SCV	367	0.5	130	*3	0.2	130	0.2
N-nitrosodiphenylamine	N/A	N/A	559	N/A	792	2	N/A	0.0	N/A
Phenanthrene	32,234	SEL	4,138	0.1	5790	2	0.2	12,000	0.4
Pyrene	28,841	SEL	7,080	0.2	9267	2	0.3	15,000	0.5
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	204	SEL	39	0.2	47	2	0.2	76	0.4
4,4'-DDE	645	SEL	32	0.1	41	2	0.1	69	0.1
4,4'-DDT	407	SEL	22	0.1	30	2	0.1	47	0.1
Aldrin	271	SEL	2.6	0.0	4.4	3	0.0	5.7	0.0
alpha-Chlordane ^d	204	SEL	35	0.2	46	2	0.2	80	0.4
Aroclor 1248	5,090	SEL	46	0.0	58	3	0.0	67	0.0
Aroclor 1254	1,154	SEL	35	0.0	117	15	0.1	0.0	0.0
Aroclor 1260	814	SEL	53	0.1	68	3	0.1	95	0.1
beta-BHC	713	SEL	3.2	0.0	4.2	2	0.0	6.6	0.0
delta-BHC ^e	407	SEL	4.5	0.0	8.3	3	0.0	24	0.1
Endosulfan I	19	SCV	3.7	0.2	2.8	3	0.1	0.0	0.0
Endosulfan Sulfate	19	SCV	3.7	0.2	3.9	*3	0.2	3.9	0.2
Endrin Aldehyde ^f	4,411	SEL	5.5	0.0	10	3	0.0	27	0.0
gamma-Chlordane ^g	204	SEL	26	0.1	34	2	0.2	53	0.3

TABLE 4-254 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 3 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	9002	0.4	10837	3	0.4	22,600	0.9
Antimony ^c	25	ERM	1.6	0.1	2.4	13	0.1	5.1	0.2
Arsenic	33	SEL	69	2.1	93	3	2.8	485	14.7
Barium	N/A	N/A	50.9	N/A	63	3	N/A	118.0	N/A
Beryllium	N/A	N/A	0.5	N/A	0.62	3	N/A	1.3	N/A
Cadmium	10	SEL	3.2	0.3	4.6	3	0.5	13	1.3
Chromium	110	SEL	156	1.4	221	3	2.0	918	8.3
Cobalt	10	NOAA SB	11	1.1	13	3	1.3	33	3.3
Copper	110	SEL	203	1.8	291	3	2.6	1,560	14.2
Cyanide	0.1	LEL	1.0	10.4	1.7	3	16.6	3.8	38.0
Iron	40,000	SEL	16101	0.4	19944	5	0.5	35,400	0.9
Lead	250	SEL	195	0.8	276	3	1.1	661	2.6
Manganese	1,100	SEL	257	0.2	313	3	0.3	595	0.5
Mercury	2	SEL	1.1	0.5	1.5	3	0.8	5.7	2.9
Nickel	75	SEL	17	0.2	22	3	0.3	39	0.5
Selenium	0.3	NOAA SB	1.0	3.5	1.3	3	4.4	3.1	10.3
Silver	4	ERM	0.3	0.1	0.57	13	0.2	1.1	0.3
Thallium	N/A	N/A	1.5	N/A	1.8	2	N/A	3.8	N/A
Vanadium	50	NOAA SB	30	0.6	38	3	0.8	79	1.6
Zinc	820	SEL	918	1.1	1287	3	1.6	2,800	3.4

Notes:

- ^a SELs and SCVs adjusted for average organic carbon content in Reach 3 (TOC = 3.4%);
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.
- ¹ 95% UCL References:
 - 1. Sample size too small/not enough distinct values
 - 2. 95% Student's-t UCL
 - 3. 95% Approximate Gamma UCL
 - 4. 95% Adjusted Gamma UCL
 - 5. 95% H-UCL
 - 6. 95% Chebyshev (MVUE) UCL
 - 7. 97.5% Chebyshev (MVUE) UCL
 - 8. 99% Chebyshev (MVUE) UCL
 - 9. 95% CLT UCL
 - 10. 95% Adjusted-CLT UCL
 - 11. 95% Modified-t UCL
 - 12. 95% Jackknife UCL
 - 13. 95% Chebyshev (Mean, Sd) UCL
 - 14. 97.5% Chebyshev (Mean, Sd) UCL
 - 15. 99% Chebyshev (Mean, Sd) UCL
 - 16. 95% Standard Bootstrap UCL
 - 17. 95% Bootstrap-t UCL
 - 18. 95% Hall's Bootstrap UCL
 - 19. 95% Percentile Bootstrap UCL
 - 20. 95% BCA Bootstrap UCL

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-255
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 4 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark *	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Volatile Organics (ug/kg)									
2-Butanone	2,700	SCV	51	0.0	62	*1	0.0	62	0.0
Acetone	87	SCV	105	1.2	133	2	1.5	0	0.0
cis-1,2-Dichloroethene	4,000	SCV	38	0.0	38	*1	0.0	38	0.0
Tetrachloroethene	4,100	SCV	21	0.0	76	3	0.0	0	0.0
Trichloroethene	2,200	SCV	22	0.0	52	*3	0.0	52	0.0
Semivolatile Organics (ug/kg)									
2-Methylnaphthalene ^b	1,300	SCV	499	0.4	40	*3	0.0	40	0.0
Acenaphthylene	640	ERM	425	0.7	130	*3	0.2	130	0.2
Anthracene	37,000	SEL	477	0.0	947	2	0.0	1,300	0.0
Benzo(a)anthracene	148,000	SEL	1,788	0.0	3424	2	0.0	4,200	0.0
Benzo(a)pyrene	144,000	SEL	1,910	0.0	3744	2	0.0	5,100	0.0
Benzo(b)fluoranthene ^c	134,000	SEL	2,087	0.0	4354	2	0.0	6,100	0.0
Benzo(g,h,i)perylene	32,000	SEL	954	0.0	1707	2	0.1	1,900	0.1
Benzo(k)fluoranthene	32,000	SEL	983	0.0	1843	2	0.1	2,400	0.1
Carbazole	N/A	N/A	547	N/A	98	*2	N/A	98	N/A
Chrysene	46,000	SEL	2,690	0.1	5245	2	0.1	6,900	0.2
Dibenz(a,h)anthracene	13,000	SEL	635	0.0	720	*2	0.1	720	0.1
Dibenzofuran	4,200	SCV	614	0.1	1830	13	0.4	0	0.0
Fluoranthene	102,000	SEL	5,016	0.0	9774	2	0.1	11,000	0.1
Fluorene	16,000	SEL	316	0.0	430	*2	0.0	430	0.0
Indeno(1,2,3-cd)pyrene	32,000	SEL	968	0.0	1855	2	0.1	2,400	0.1
Naphthalene	2,400	SCV	502	0.2	53	*3	0.0	53	0.0
N-nitrosodiphenylamine	N/A	N/A	614	N/A	1830	13	N/A	0	N/A
Phenanthrene	95,000	SEL	2,666	0.0	5381	2	0.1	6,300	0.1
Pyrene	85,000	SEL	3,380	0.0	6412	2	0.1	7,500	0.1
Pesticides and PCBs (ug/kg)									
4,4'-DDD	600	SEL	71	0.1	94	*15	0.2	94	0.2
4,4'-DDE	1,900	SEL	71	0.0	100	*2	0.1	100	0.1
4,4'-DDT	1,200	SEL	18	0.0	32	*2	0.0	32	0.0
Aldrin	800	SEL	5.8	0.0	13	2	0.0	0	0.0
alpha-Chlordane ^d	600	SEL	34	0.1	61	2	0.1	80	0.1
Aroclor 1248	15,000	SEL	139	0.0	120	*2	0.0	120	0.0
Aroclor 1254	3,400	SEL	110	0.0	256	2	0.1	0	0.0
Aroclor 1260	2,400	SEL	130	0.1	82	*2	0.0	82	0.0
beta-BHC	2,100	SEL	5.8	0.0	13	2	0.0	0	0.0
delta-BHC ^e	1,200	SEL	12	0.0	24	2	0.0	25	0.0
Endosulfan I	55	SCV	11	0.2	13	2	0.2	0	0.0
Endosulfan Sulfate	55	SCV	11	0.2	25	2	0.5	0	0.0
Endrin Aldehyde ^f	13,000	SEL	11	0.0	25	2	0.0	0	0.0
gamma-Chlordane ^g	600	SEL	18	0.0	42	2	0.1	48	0.1

TABLE 4-255 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 4 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	9,898	0.4	12435	2	0.5	15,700	0.6
Antimony ^e	25	ERM	2.0	0.1	2.5	2	0.1	2.8	0.1
Arsenic	33	SEL	69	2.1	98	2	3.0	135	4.1
Barium	N/A	N/A	75.8	N/A	101	2	N/A	130.0	N/A
Beryllium	N/A	N/A	0.6	N/A	0.75	2	N/A	1.0	N/A
Cadmium	10	SEL	5.0	0.5	6.8	2	0.7	10	1.0
Chromium	110	SEL	266	2.4	354	2	3.2	442	4.0
Cobalt	10	NOAA SB	14	1.4	17	2	1.7	21	2.1
Copper	110	SEL	224	2.0	308	2	2.8	435	4.0
Cyanide	0.1	LEL	1.7	17.0	2.8	2	27.7	3.3	33.0
Iron	40,000	SEL	22,091	0.6	29367	2	0.7	40,600	1.0
Lead	250	SEL	345	1.4	405	2	1.6	455	1.8
Manganese	1,100	SEL	584	0.5	957	3	0.9	1,630	1.5
Mercury	2	SEL	1.2	0.6	2.8	5	1.4	3.2	1.6
Nickel	75	SEL	22	0.3	28	2	0.4	36	0.5
Selenium	0.3	NOAA SB	1.1	3.8	2.0	3	6.7	3.4	11.3
Silver	4	ERM	0.3	0.1	0.18	*3	0.0	0.2	0.0
Thallium	N/A	N/A	0.6	N/A	0.82	2	N/A	1.2	N/A
Vanadium	50	NOAA SB	39	0.8	49	2	1.0	60	1.2
Zinc	820	SEL	1,035	1.3	1390	2	1.7	1,920	2.3

Notes:

- ^a SELs and SCVs adjusted for average organic carbon content in Reach 4 (TOC =10.0%);
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.
- ⁱ 95% UCL References:

1. Sample size too small/not enough distinct values	8. 99% Chebyshev (MVUE) UCL	15. 99% Chebyshev (Mean, Sd) UCL
2. 95% Student's-t UCL	9. 95% CLT UCL	16. 95% Standard Bootstrap UCL
3. 95% Approximate Gamma UCL	10. 95% Adjusted-CLT UCL	17. 95% Bootstrap-t UCL
4. 95% Adjusted Gamma UCL	11. 95% Modified-t UCL	18. 95% Hall's Bootstrap UCL
5. 95% H-UCL	12. 95% Jackknife UCL	19. 95% Percentile Bootstrap UCL
6. 95% Chebyshev (MVUE) UCL	13. 95% Chebyshev (Mean, Sd) UCL	20. 95% BCA Bootstrap UCL
7. 97.5% Chebyshev (MVUE) UCL	14. 97.5% Chebyshev (Mean, Sd) UCL	

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-256
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 5 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^a	95% UCL Ref ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	815	SCV	17	0.0	39	*1	0.0	39	0.0
Acetone	26	SCV	34	1.3	0.0	*1	0.0	0.0	0.0
cis-1,2-Dichloroethene	1,208	SCV	7.0	0.0	7.0	*1	0.0	7.0	0.0
Tetrachloroethene	1,238	SCV	9.0	0.0	14	2	0.0	0.0	0.0
Trichloroethene	664	SCV	7.0	0.0	6.0	*2	0.0	6.0	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	393	SCV	195	0.5	56	*2	0.1	55.5	0.1
Acenaphthylene	640	ERM	172	0.3	250	*2	0.4	250	0.4
Anthracene	11,172	SEL	291	0.0	520	*3	0.0	520	0.0
Benzo(a)anthracene	44,689	SEL	899	0.0	2100	2	0.0	2300	0.1
Benzo(a)pyrene	43,481	SEL	884	0.0	2193	2	0.1	2500	0.1
Benzo(b)fluoranthene ^c	40,461	SEL	1,015	0.0	2605	2	0.1	3000	0.1
Benzo(g,h,i)perylene	9,662	SEL	458	0.0	1047	2	0.1	1200	0.1
Benzo(k)fluoranthene	9,662	SEL	665	0.1	1648	2	0.2	1900	0.2
Carbazole	N/A	N/A	207	N/A	220	*1	N/A	220	N/A
Chrysene	13,890	SEL	1,054	0.1	2560	2	0.2	2900	0.2
Dibenz(a,h)anthracene	3,925	SEL	209	0.1	113	*2	0.0	112.5	0.0
Dibenzofuran	1,268	SCV	162	0.1	87	*1	0.1	87	0.1
Fluoranthene	30,799	SEL	1,813	0.1	4113	2	0.1	4400	0.1
Fluorene	4,831	SEL	214	0.0	230	*2	0.0	230	0.0
Indeno(1,2,3-cd)pyrene	9,662	SEL	430	0.0	1053	2	0.1	1200	0.1
Naphthalene	725	SCV	129	0.2	83	*2	0.1	83	0.1
N-nitrosodiphenylamine	N/A	N/A	242	N/A	0.0	*1	N/A	0.0	N/A
Phenanthrene	28,685	SEL	1,063	0.0	2200	*2	0.1	2200	0.1
Pyrene	25,666	SEL	1,690	0.1	3833	2	0.1	4100	0.2
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	181	SEL	95	0.5	180	*1	1.0	180	1.0
4,4'-DDE	574	SEL	23	0.0	36	*1	0.1	35.5	0.1
4,4'-DDT	362	SEL	10	0.0	9.3	*1	0.0	9.25	0.0
Aldrin	242	SEL	3.2	0.0	0.0	*1	0.0	0.0	N/A
alpha-Chlordane ^d	181	SEL	9.3	0.1	13	*1	0.1	13.05	0.1
Aroclor 1248	4,529	SEL	113	0.0	120	*1	0.0	120	0.0
Aroclor 1254	1,027	SEL	53	0.1	0.0	*1	0.0	0.0	0.0
Aroclor 1260	725	SEL	90	0.1	75	*1	0.1	74.5	0.1
beta-BHC	634	SEL	3.2	0.0	0.0	*1	0.0	0	N/A
delta-BHC ^e	362	SEL	4.6	0.0	3.7	*1	0.0	3.65	0.0
Endosulfan I	17	SCV	6.1	0.4	0.0	*1	0.0	0	N/A
Endosulfan Sulfate	17	SCV	6.1	0.4	0.0	*1	0.0	0	N/A
Endrin Aldehyde ^f	3,925	SEL	6.1	0.0	0.0	*1	0.0	0	N/A
gamma-Chlordane ^a	181	SEL	8.6	0.0	12	*1	0.1	11.65	0.1

TABLE 4-256 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 5 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	5,073	0.2	6470	*3	0.3	6470	0.3
Antimony ^e	25	ERM	1.2	0.0	1.8	*2	0.1	1.8	0.1
Arsenic	33	SEL	12	0.4	22	2	0.7	25	0.8
Barium	N/A	N/A	32	N/A	43	*2	N/A	43.2	N/A
Beryllium	N/A	N/A	0	N/A	0.30	*2	N/A	0.3	N/A
Cadmium	10	SEL	0.6	0.1	1.4	2	0.1	1.6	0.2
Chromium	110	SEL	62	0.6	136	2	1.2	149	1.4
Cobalt	10	NOAA SB	8.5	0.8	15	2	1.5	16	1.6
Copper	110	SEL	39	0.4	75	2	0.7	80	0.7
Cyanide	0.1	LEL	0.4	3.7	0.0	*1	0.0	0.0	0.0
Iron	40,000	SEL	11,163	0.3	14200	*2	0.4	14200	0.4
Lead	250	SEL	236	0.9	569	2	2.3	655	2.6
Manganese	1,100	SEL	349	0.3	952	*3	0.9	952	0.9
Mercury	2	SEL	0.4	0.2	1.0	2	0.5	1.2	0.6
Nickel	75	SEL	9.3	0.1	11	*2	0.1	11	0.1
Selenium	0.3	NOAA SB	0.5	1.6	1.6	3	5.4	0.0	N/A
Silver	4	ERM	0.3	0.1	0.43	2	0.1	0.5	0.1
Thallium	N/A	N/A	0.6	N/A	0.97	*2	N/A	1.0	N/A
Vanadium	50	NOAA SB	17	0.3	23	2	0.5	24	0.5
Zinc	820	SEL	234	0.3	571	*13	0.7	571	0.7

Notes:

- ^a SELs and SCVs adjusted for average total combustible organic carbon content in Reach 5 (TCO = 3.0%);
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ⁿ The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.

⁹ 95% UCL References:

- | | | |
|-----------------------------------------------------|------------------------------------|----------------------------------|
| 1. Sample size too small/not enough distinct values | * Maximum detected value is shown | 15. 99% Chebyshev (Mean, Sd) UCL |
| 2. 95% Student's t UCL | 8. 99% Chebyshev (MVUE) UCL | 16. 95% Standard Bootstrap UCL |
| 3. 95% Approximate Gamma UCL | 9. 95% CLT UCL | 17. 95% Bootstrap-t UCL |
| 4. 95% Adjusted Gamma UCL | 10. 95% Adjusted-CLT UCL | 18. 95% Half's Bootstrap UCL |
| 5. 95% H-UCL | 11. 95% Modified-t UCL | 19. 95% Percentile Bootstrap UCL |
| 6. 95% Chebyshev (MVUE) UCL | 12. 95% Jackknife UCL | 20. 95% BCA Bootstrap UCL |
| 7. 97.5% Chebyshev (MVUE) UCL | 13. 95% Chebyshev (Mean, Sd) UCL | |
| | 14. 97.5% Chebyshev (Mean, Sd) UCL | |

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-257
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 6 TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	1,131	SCV	20	0.0	99	*15	0.1	99	0.1
Acetone	36	SCV	79	2.2	565	*6	15.5	565	15.5
cis-1,2-Dichloroethene	1,675	SCV	36	0.0	62	*3	0.0	62	0.0
Tetrachloroethene	1,717	SCV	28	0.0	464	6	0.3	0	0.0
Trichloroethene	921	SCV	13	0.0	37	*15	0.0	37	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	544	SCV	193	0.4	70	*3	0.1	70	0.1
Acenaphthylene	640	ERM	201	0.3	350	*15	0.5	350	0.5
Anthracene	15,493	SEL	224	0.0	376	3	0.0	960	0.1
Benzo(a)anthracene	61,972	SEL	796	0.0	652	5	0.0	3,900	0.1
Benzo(a)pyrene	60,298	SEL	846	0.0	773	3	0.0	4,200	0.1
Benzo(b)fluoranthene ^c	56,110	SEL	1,074	0.0	1338	5	0.0	6,000	0.1
Benzo(g,b,i)perylene	13,399	SEL	535	0.0	578	5	0.0	2,300	0.2
Benzo(k)fluoranthene	13,399	SEL	685	0.1	796	3	0.1	3,800	0.3
Carbazole	N/A	N/A	229	N/A	400	*5	N/A	400	N/A
Chrysene	19,262	SEL	973	0.1	874	5	0.0	5,900	0.3
Dibenz(a,h)anthracene	5,444	SEL	287	0.1	411	3	0.1	1,100	0.2
Dibenzofuran	1,759	SCV	235	0.1	170	*5	0.1	170	0.1
Fluoranthene	42,711	SEL	1685	0.0	1498	3	0.0	8,500	0.2
Fluorene	6,700	SEL	220	0.0	384	3	0.1	490	0.1
Indeno(1,2,3-cd)pyrene	13,399	SEL	574	0.0	638	5	0.0	2,600	0.2
Naphthalene	1,005	SCV	185	0.2	160	*3	0.2	160	0.2
N-nitrosodiphenylamine	N/A	N/A	248	N/A	571	3	N/A	0	N/A
Phenanthrene	39,780	SEL	802	0.0	743	3	0.0	4,600	0.1
Pyrene	35,592	SEL	1494	0.0	1332	5	0.0	7,000	0.2
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	251	SEL	22	0.1	109	15	0.4	160	0.6
4,4'-DDE	796	SEL	15	0.0	34	5	0.0	91	0.1
4,4'-DDT	502	SEL	5.1	0.0	3.7	3	0.0	21	0.0
Aldrin	335	SEL	1.9	0.0	0.30	*3	0.0	0	0.0
alpha-Chlordane ^d	251	SEL	5.9	0.0	29	*15	0.1	29	0.1
Aroclor 1248	6,281	SEL	68	0.0	125	5	0.0	200	0.0
Aroclor 1254	1,424	SEL	36	0.0	1075	15	0.8	0	0.0
Aroclor 1260	1,005	SEL	65	0.1	170	*15	0.2	170	0.2
beta-BHC	879	SEL	1.9	0.0	3.9	15	0.0	0	0.0
delta-BHC ^e	502	SEL	2.1	0.0	2.3	*15	0.0	2	0.0
Endosulfan I	23	SCV	3.8	0.2	31	15	1.3	0	0.0
Endosulfan Sulfate	23	SCV	3.8	0.2	0.78	*3	0.0	1	0.0
Endrin Aldehyde ^f	5,444	SEL	4.8	0.0	6.3	13	0.0	11	0.0
gamma-Chlordane ^g	251	SEL	4.8	0.0	22	*6	0.1	22	0.1

TABLE 4-257 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN REACH 6 TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	12,409	0.5	13543	3	0.5	25,000	1.0
Antimony ^d	25	ERM	1.7	0.1	11	*14	0.4	11	0.4
Arsenic	33	SEL	117	3.5	757	5	22.9	1,570	47.6
Barium	N/A	N/A	106.6	N/A	123	5	N/A	368.0	N/A
Beryllium	N/A	N/A	0.7	N/A	1.1	13	N/A	1.7	N/A
Cadmium	10	SEL	7.5	0.8	12	14	1.2	38	3.8
Chromium	110	SEL	272	2.5	3000	*5	27.3	3,000	27.3
Cobalt	10	NOAA SB	21	2.1	20	3	2.0	72	7.2
Copper	110	SEL	314	2.9	620	3	5.6	1,250	11.4
Cyanide	0.1	LEL	0.9	8.8	1.7	5	17.0	4.4	44.0
Iron	40,000	SEL	31,013	0.8	41453	5	1.0	106,000	2.7
Lead	250	SEL	429	1.7	1290	*14	5.2	1,290	5.2
Manganese	1,100	SEL	605	0.6	652	3	0.6	3,060	2.8
Mercury	2	SEL	1.0	0.5	5.2	5	2.6	14	6.8
Nickel	75	SEL	27	0.4	29	3	0.4	64	0.9
Selenium	0.3	NOAA SB	1.6	5.4	5.1	*3	17.0	5.1	17.0
Silver	4	ERM	0.5	0.1	1.0	13	0.3	1.4	0.4
Thallium	N/A	N/A	0.6	N/A	2.9	*14	N/A	2.9	N/A
Vanadium	50	NOAA SB	52	1.0	58	3	1.2	180	3.6
Zinc	820	SEL	1,901	2.3	2144	14	2.6	7,670	9.4

Notes:

- ^a SELs and SCVs adjusted for average organic carbon content in Reach 6 (TOC = 4.2%);
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.
- ⁱ 95% UCL References:

1. Sample size too small/not enough distinct values	* Maximum detected value is shown	15. 99% Chebyshev (Mean, Sd) UCL
2. 95% Student's-t UCL	8. 99% Chebyshev (MVUE) UCL	16. 95% Standard Bootstrap UCL
3. 95% Approximate Gamma UCL	9. 95% CLT UCL	17. 95% Bootstrap-t UCL
4. 95% Adjusted Gamma UCL	10. 95% Adjusted-CLT UCL	18. 95% Hall's Bootstrap UCL
5. 95% H-UCL	11. 95% Modified-t UCL	19. 95% Percentile Bootstrap UCL
6. 95% Chebyshev (MVUE) UCL	12. 95% Jackknife UCL	20. 95% BCA Bootstrap UCL
7. 97.5% Chebyshev (MVUE) UCL	13. 95% Chebyshev (Mean, Sd) UCL	
	14. 97.5% Chebyshev (Mean, Sd) UCL	

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reach (see Table 4-32 for samples used for each reach).

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples within the reach (See Table 4-32 for samples used for each reach).

Max. Detected Conc. - maximum detected concentration among all samples at all stations within the reach

**TABLE 4-258
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN POND REFERENCE TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	3,127	SCV	100	0.0	680	*15	0.2	680	0.2
Acetone	101	SCV	348	3.5	1446	4	14.3	2,200	21.8
cis-1,2-Dichloroethene	4,632	SCV	7.3	0.0	0.0	*1	0.0	0.0	0.0
Tetrachloroethene	4,748	SCV	9.2	0.0	12	2	0.0	0.0	0.0
Trichloroethene	2,548	SCV	7.9	0.0	9.5	2	0.0	0.0	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	1,505	SCV	366	0.2	93	*3	0.1	93	0.1
Acenaphthylene	640	ERM	395	0.6	390	*3	0.6	390	0.6
Anthracene	37,000	SEL	432	0.0	440	*13	0.0	440	0.0
Benzo(a)anthracene	148,000	SEL	1,128	0.0	2296	3	0.0	4,900	0.0
Benzo(a)pyrene	144,000	SEL	1,230	0.0	2643	3	0.0	5,100	0.0
Benzo(b)fluoranthene ^c	134,000	SEL	1,480	0.0	3541	3	0.0	5,800	0.0
Benzo(g,h,i)perylene	32,000	SEL	643	0.0	1628	13	0.1	2,200	0.1
Benzo(k)fluoranthene	32,000	SEL	1,350	0.0	3100	6	0.1	6,700	0.2
Carbazole	N/A	N/A	433	N/A	370	*3	N/A	370	N/A
Chrysene	46,000	SEL	1,398	0.0	3096	3	0.1	5,400	0.1
Dibenz(a,h)anthracene	13,000	SEL	376	0.0	567	3	0.0	1,100	0.1
Dibenzofuran	4,864	SCV	407	0.1	120	*5	0.0	120	N/A
Fluoranthene	102,000	SEL	2,417	0.0	6104	3	0.1	11,000	0.1
Fluorene	16,000	SEL	387	0.0	210	*5	0.0	210	0.0
Indeno(1,2,3-cd)pyrene	32,000	SEL	893	0.0	3700	*15	0.1	3,700	0.1
Naphthalene	2,779	SCV	373	0.1	160	*3	0.1	160	0.1
N-nitrosodiphenylamine	N/A	N/A	412	N/A	1049	13	N/A	0.0	N/A
Phenanthrene	95,000	SEL	1,103	0.0	2188	3	0.0	3,300	0.0
Pyrene	85,000	SEL	1,970	0.0	5337	6	0.1	8,100	0.1
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	600	SEL	27	0.0	52	3	0.1	97	0.2
4,4'-DDE	1,900	SEL	18	0.0	32	3	0.0	51	0.0
4,4'-DDT	1,200	SEL	12	0.0	18	2	0.0	30	0.0
Aldrin	800	SEL	4.4	0.0	15	15	0.0	0.0	0.0
alpha-Chlordane ^d	600	SEL	11	0.0	29	6	0.0	69	0.1
Aroclor 1248	15,000	SEL	88	0.0	56	*2	0.0	56	0.0
Aroclor 1254	3,400	SEL	83	0.0	298	15	0.1	0.0	0.0
Aroclor 1260	2,400	SEL	87	0.0	47	*15	0.0	47	0.0
beta-BHC	2,100	SEL	4.4	0.0	15	15	0.0	0.0	0.0
delta-BHC ^e	1,200	SEL	4.4	0.0	15	15	0.0	0.0	0.0
Endosulfan I	64	SCV	10	0.2	36	4	0.6	66	1.0
Endosulfan Sulfate	64	SCV	7.9	0.1	11	*15	0.2	11	0.2
Endrin Aldehyde ^f	13,000	SEL	11	0.0	4.4	*2	0.0	4.4	0.0
gamma-Chlordane ^d	600	SEL	4.0	0.0	1.3	*3	0.0	1.3	0.0

TABLE 4-258 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATION IN POND REFERENCE TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	11,480	0.5	13873	2	0.5	20,200	0.8
Antimony ^d	25	ERM	0.9	0.0	1.2	2	0.0	2	0.1
Arsenic	33	SEL	13	0.4	23	3	0.7	34	1.0
Barium	N/A	N/A	62.3	N/A	85	2	N/A	155	N/A
Beryllium	N/A	N/A	0.6	N/A	0.88	3	N/A	1	N/A
Cadmium	10	SEL	1.2	0.1	4.1	*4	0.4	4	0.4
Chromium	110	SEL	46	0.4	79	3	0.7	155	1.4
Cobalt	10	NOAA SB	9.4	0.9	12	2	1.2	19	1.9
Copper	110	SEL	53	0.5	75	2	0.7	125	1.1
Cyanide	0.1	LEL	0.4	4.3	0.50	2	5.0	0.0	0.0
Iron	40,000	SEL	17,321	0.4	20816	2	0.5	27,700	0.7
Lead	250	SEL	213	0.9	396	3	1.6	755	3.0
Manganese	1,100	SEL	288	0.3	450	3	0.4	837	0.8
Mercury	2	SEL	0.2	0.1	0.27	2	0.1	1	0.3
Nickel	75	SEL	17	0.2	21	2	0.3	32	0.4
Selenium	0.3	NOAA SB	0.8	2.7	1.6	5	5.2	3	10.7
Silver	4	ERM	0.3	0.1	0.50	3	0.1	1	0.2
Thallium	N/A	N/A	0.6	N/A	1.1	3	N/A	2	N/A
Vanadium	50	NOAA SB	35	0.7	42	2	0.8	56	1.1
Zinc	820	SEL	223	0.3	347	2	0.4	645	0.8

Notes:

- ^a SCVs adjusted for average organic carbon content in Lake Reference (TOC = 11.6%)
- SELs adjusted using the maximum allowable organic carbon content of 10%.
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.
- ⁱ 95% UCL References:

1 Sample size too small/not enough distinct values	* Maximum detected value is shown	15 99% Chebyshev (Mean, Sd) UCL
2 95% Student's-t UCL	8 99% Chebyshev (MVUE) UCL	16 95% Standard Bootstrap UCL
3 95% Approximate Gamma UCL	9 95% CLT UCL	17 95% Bootstrap-t UCL
4 95% Adjusted Gamma UCL	10 95% Adjusted-CLT UCL	18 95% Hall's Bootstrap UCL
5 95% H-UCL	11 95% Modified-t UCL	19 95% Percentile Bootstrap UCL
6 95% Chebyshev (MVUE) UCL	12 95% Jackknife UCL	20 95% BCA Bootstrap UCL
7 97.5% Chebyshev (MVUE) UCL	13 95% Chebyshev (Mean, Sd) UCL	
	14 97.5% Chebyshev (Mean, Sd) UCL	

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reference area. Samples were included from Stations 02-IP, 03-IP, 25, and 26.

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples for stations 02-IP, 03-IP, 25 and 26

Max. Detected Conc. - maximum detected concentration among all samples for 02-IP, 03-IP, 25 and 26

TABLE 4-259
 COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN
 WETLAND REFERENCE TO BENCHMARKS FOR BENTHIC INVERTEBRATES
 USEPA WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark *	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ¹	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	5,670	SCV	8.6	0.0	13	3	0.0	0.0	0.0
Acetone	183	SCV	34	0.2	71	2	0.4	0.0	0.0
cis-1,2-Dichloroethene	8,400	SCV	12	0.0	0.0	*1	0.0	0.0	0.0
Tetrachloroethene	8,610	SCV	13	0.0	33	13	0.0	0.0	0.0
Trichloroethene	4,620	SCV	9.1	0.0	12	2	0.0	0.0	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	2,730	SCV	195	0.1	289	2	0.1	360	0.1
Acenaphthylene	640	ERM	243	0.4	690	3	1.1	800	1.3
Anthracene	37,000	SEL	440	0.0	1656	3	0.0	1,900	0.1
Benzo(a)anthracene	148,000	SEL	1,360	0.0	5406	3	0.0	5,900	0.0
Benzo(a)pyrene	144,000	SEL	1,233	0.0	4904	3	0.0	5,500	0.0
Benzo(b)fluoranthene ^c	134,000	SEL	2,188	0.0	9363	3	0.1	10,000	0.1
Benzo(g,h,i)perylene	32,000	SEL	376	0.0	627	2	0.0	920	0.0
Benzo(k)fluoranthene	32,000	SEL	2,023	0.1	9464	3	0.3	9,600	0.3
Carbazole	N/A		323	N/A	990	*3	N/A	990	N/A
Chrysene	46,000	SEL	1,610	0.0	6684	3	0.1	7,300	0.2
Dibenz(a,h)anthracene	13,000	SEL	234	0.0	350	2	0.0	500	0.0
Dibenzofuran	8,820	SCV	357	0.0	1000	*5	0.1	1,000	N/A
Fluoranthene	102,000	SEL	3,293	0.0	15000	*3	0.1	15,000	0.1
Fluorene	16,000	SEL	568	0.0	1369	6	0.1	2,800	0.2
Indeno(1,2,3-cd)pyrene	32,000	SEL	518	0.0	1405	3	0.0	1,700	0.1
Naphthalene	5,040	SCV	221	0.0	359	2	0.1	520	0.1
N-nitrosodiphenylamine	N/A		367	N/A	2035	5	N/A	0.0	N/A
Phenanthrene	95,000	SEL	2,408	0.0	12000	*4	0.1	12,000	0.1
Pyrene	85,000	SEL	2,577	0.0	10736	3	0.1	11,000	0.1
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	600	SEL	95	0.2	390	*3	0.7	390	0.7
4,4'-DDE	1,900	SEL	13	0.0	23	2	0.0	37	0.0
4,4'-DDT	1,200	SEL	34	0.0	130	*3	0.1	130	0.1
Aldrin	800	SEL	0.8	0.0	1.1	2	0.0	1.6	0.0
alpha-Chlordane ^d	600	SEL	1.8	0.0	4.2	3	0.0	5.3	0.0
Aroclor 1248	15,000	SEL	64	0.0	290	*15	0.0	290	0.0
Aroclor 1254	3,400	SEL	16	0.0	23	2	0.0	0.0	0.0
Aroclor 1260	2,400	SEL	49	0.0	200	*15	0.1	200	0.1
beta-BHC	2,100	SEL	0.8	0.0	0.40	*2	0.0	0.4	0.0
delta-BHC ^e	1,200	SEL	0.9	0.0	1.1	2	0.0	0.0	0.0
Endosulfan I	116	SCV	0.8	0.0	0.22	*2	0.0	0.2	0.0
Endosulfan Sulfate	116	SCV	2.5	0.0	4.9	3	0.0	6.6	0.1
Endrin Aldehyde ^f	13,000	SEL	2.4	0.0	4.6	3	0.0	5.9	0.0
gamma-Chlordane ^d	600	SEL	2.1	0.0	3.6	2	0.0	4.6	0.0

TABLE 4-259 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATIONS AT STATION 24 (WETLAND REFERENCE) TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	8,195	0.3	12242	2	0.5	14,300	0.6
Antimony ^d	25	ERM	0.8	0.0	1.0	2	0.0	1.2	0.0
Arsenic	33	SEL	21	0.6	33	2	1.0	41	1.2
Barium	N/A	N/A	47.9	N/A	72	2	N/A	87.5	N/A
Beryllium	N/A	N/A	0.7	N/A	1.0	2	N/A	1.2	N/A
Cadmium	10	SEL	1.3	0.1	2.2	2	0.2	2.9	0.3
Chromium	110	SEL	129	1.2	410	*3	3.7	410	3.7
Cobalt	10	NOAA SB	8.4	0.8	13	2	1.3	13	1.3
Copper	110	SEL	57	0.5	93	2	0.8	130	1.2
Cyanide	0.1	LEL	0.4	4.3	0.0	*1	0.0	0.0	0.0
Iron	40,000	SEL	15,518	0.4	22525	2	0.6	24,200	0.6
Lead	250	SEL	332	1.3	524	2	2.1	581	2.3
Manganese	1,100	SEL	133	0.1	210	2	0.2	263	0.2
Mercury	2	SEL	0.3	0.1	0.71	*3	0.4	0.7	0.4
Nickel	75	SEL	19	0.3	27	*13	0.4	27	0.4
Selenium	0.3	NOAA SB	0.8	2.5	1.7	3	5.6	2.1	7.0
Silver	4	ERM	1.1	0.3	2.9	*3	0.8	2.9	0.8
Thallium	N/A	N/A	0.5	N/A	0.73	2	N/A	0.0	N/A
Vanadium	50	NOAA SB	56	1.1	99	2	2.0	148	3.0
Zinc	820	SEL	155	0.2	232	2	0.3	251	0.3

Notes:

^a SCVs adjusted for average organic carbon content (TOC = 21.0%)

SELs adjusted using the maximum allowable organic carbon content of 10%.

^b Benchmark value for 1-methylnaphthalene reported

^c Benchmark value for benzo(k)fluoranthene reported

^d Benchmark value for chlordane reported

^e Benchmark value for BHC reported

^f Benchmark value for endrin reported

^g ERM from Long and Morgan (1990)

^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.

ⁱ 95% UCL References:

* Maximum detected value is shown

- 1. Sample size too small/not enough distinct values
- 2. 95% Student's-t UCL
- 3. 95% Approximate Gamma UCL
- 4. 95% Adjusted Gamma UCL
- 5. 95% H-UCL
- 6. 95% Chebyshev (MVUE) UCL
- 7. 97.5% Chebyshev (MVUE) UCL

- 8. 99% Chebyshev (MVUE) UCL
- 9. 95% CLT UCL
- 10. 95% Adjusted-CLT UCL
- 11. 95% Modified-t UCL
- 12. 95% Jackknife UCL
- 13. 95% Chebyshev (Mean, Sd) UCL
- 14. 97.5% Chebyshev (Mean, Sd) UCL
- 15. 99% Chebyshev (Mean, Sd) UCL
- 16. 95% Standard Bootstrap UCL
- 17. 95% Bootstrap-t UCL
- 18. 95% Hall's Bootstrap UCL
- 19. 95% Percentile Bootstrap UCL
- 20. 95% BCA Bootstrap UCL

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reference area. Samples were included from Stations 24, HB, and SA.

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples for stations 24, HB, and SA.

Max. Detected Conc. - maximum detected concentration among all samples for stations 24, HB, and SA.

**TABLE 4-260
COMPARISON OF SEDIMENT COPC CONCENTRATIONS IN RIVER REFERENCE TO
BENCHMARKS FOR BENTHIC INVERTEBRATES**

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
<u>Volatile Organics (ug/kg)</u>									
2-Butanone	3,379	SCV	33	0.0	230	*15	0.1	230	0.1
Acetone	109	SCV	114	1.0	280	3	2.6	670	6.2
cis-1,2-Dichloroethene	5,005	SCV	9.0	0.0	15	2	0.0	0.0	0.0
Tetrachloroethene	5,130	SCV	8.0	0.0	10	2	0.0	0.0	0.0
Trichloroethene	2,753	SCV	8.0	0.0	10	2	0.0	0.0	0.0
<u>Semivolatile Organics (ug/kg)</u>									
2-Methylnaphthalene ^b	1,627	SCV	186	0.1	81	*2	0.0	81	0.0
Acenaphthylene	640	ERM	250	0.4	302	2	0.5	450	0.7
Anthracene	37,000	SEL	359	0.0	519	3	0.0	990	0.0
Benzo(a)anthracene	148,000	SEL	1,049	0.0	1494	2	0.0	2,400	0.0
Benzo(a)pyrene	144,000	SEL	935	0.0	1353	2	0.0	2,100	0.0
Benzo(b)fluoranthene ^c	134,000	SEL	1,196	0.0	1768	2	0.0	3,000	0.0
Benzo(g,h,i)perylene	32,000	SEL	460	0.0	1055	13	0.0	1,400	0.0
Benzo(k)fluoranthene	32,000	SEL	1,129	0.0	1598	2	0.0	2,200	0.1
Carbazole	N/A	N/A	234	N/A	302	3	N/A	520	N/A
Chrysene	46,000	SEL	1,248	0.0	1767	2	0.0	2,600	0.1
Dibenz(a,h)anthracene	13,000	SEL	235	0.0	276	2	0.0	350	0.0
Dibenzofuran	5,256	SCV	196	0.0	210	*2	0.0	210	N/A
Fluoranthene	102,000	SEL	2,230	0.0	3273	2	0.0	5,500	0.1
Fluorene	16,000	SEL	256	0.0	338	2	0.0	620	0.0
Indeno(1,2,3-cd)pyrene	32,000	SEL	578	0.0	1003	3	0.0	1,800	0.1
Naphthalene	3,003	SCV	202	0.1	160	*2	0.1	160	0.1
N-nitrosodiphenylamine	N/A	N/A	211	N/A	235	2	N/A	0.0	N/A
Phenanthrene	95,000	SEL	1,442	0.0	2716	3	0.0	4,500	0.0
Pyrene	85,000	SEL	1,859	0.0	2702	2	0.0	3,600	0.0
<u>Pesticides and PCBs (ug/kg)</u>									
4,4'-DDD	600	SEL	41	0.1	103	3	0.2	200	0.3
4,4'-DDE	1,900	SEL	53	0.0	205	8	0.1	470	0.2
4,4'-DDT	1,200	SEL	25	0.0	96	4	0.1	180	0.2
Aldrin	800	SEL	2.3	0.0	4.5	3	0.0	0.0	0.0
alpha-Chlordane ^d	600	SEL	4.6	0.0	11	3	0.0	23	0.0
Aroclor 1248	15,000	SEL	43	0.0	107	3	0.0	0.0	0.0
Aroclor 1254	3,400	SEL	43	0.0	107	3	0.0	0.0	0.0
Aroclor 1260	2,400	SEL	43	0.0	107	3	0.0	0.0	0.0
beta-BHC	2,100	SEL	2.2	0.0	0.75	*15	0.0	0.8	0.0
delta-BHC ^e	1,200	SEL	2.3	0.0	4.5	3	0.0	0.0	0.0
Endosulfan I	69	SCV	5.6	0.1	27	8	0.4	35	0.5
Endosulfan Sulfate	69	SCV	4.2	0.1	9.1	*3	0.1	9.1	0.1
Endrin Aldehyde ^f	13,000	SEL	6.0	0.0	13	3	0.0	0.0	0.0
gamma-Chlordane ^g	600	SEL	2.2	0.0	0.31	*3	0.0	0.3	0.0

TABLE 4-260 (continued). COMPARISON OF SEDIMENT COPC CONCENTRATION IN RIVER REFERENCE TO BENCHMARKS FOR BENTHIC INVERTEBRATES

Chemical of Potential Concern	Sediment Benchmark ^a	Source	Average Conc.	Average Case HQ	95% UCL / Max Detected Conc. ^b	95% UCL Ref ^c	95% UCL HQ	Max. Detected Conc.	Max. Detection HQ
Inorganics (mg/kg)									
Aluminum	25,500	TEL	6,157	0.2	7825	2	0.3	11,600	0.5
Antimony ^e	25	ERM	1.2	0.0	2.2	3	0.1	5.6	0.2
Arsenic	33	SEL	18	0.5	25	2	0.8	45	1.3
Barium	N/A	N/A	57.1	N/A	85	2	N/A	173.0	N/A
Beryllium	N/A	N/A	0.5	N/A	0.64	2	N/A	1.0	N/A
Cadmium	10	SEL	1.5	0.2	3.9	3	0.4	6.1	0.6
Chromium	110	SEL	106	1.0	512	*15	4.7	512	4.7
Cobalt	10	NOAA SB	7.9	0.8	14	3	1.4	22	2.2
Copper	110	SEL	74	0.7	344	*8	3.1	344	3.1
Cyanide	0.1	LEL	0.3	3.3	0.39	2	3.9	0.0	0.0
Iron	40,000	SEL	15,909	0.4	27455	3	0.7	51,600	1.3
Lead	250	SEL	101	0.4	225	3	0.9	369	1.5
Manganese	1,100	SEL	570	0.5	1203	3	1.1	1,980	1.8
Mercury	2	SEL	0.2	0.1	0.42	3	0.2	0.6	0.3
Nickel	75	SEL	12	0.2	16	2	0.2	26	0.3
Selenium	0.3	NOAA SB	0.8	2.8	1.4	3	4.6	3.0	10.0
Silver	4	ERM	0.3	0.1	0.45	3	0.1	0.8	0.2
Thallium	N/A	N/A	0.4	N/A	0.45	2	N/A	0.0	N/A
Vanadium	50	NOAA SB	23	0.5	32	2	0.6	54	1.1
Zinc	820	SEL	191	0.2	413	3	0.5	611	0.7

Notes:

- ^a SCVs adjusted for average organic carbon content in River Reference (TOC = 12.5%);
- SELs adjusted using the maximum allowable organic carbon content of 10%.
- ^b Benchmark value for 1-methylnaphthalene reported
- ^c Benchmark value for benzo(k)fluoranthene reported
- ^d Benchmark value for chlordane reported
- ^e Benchmark value for BHC reported
- ^f Benchmark value for endrin reported
- ^g ERM from Long and Morgan (1990)
- ^h The lesser value of the maximum detected concentration and the 95% UCL concentration, as used in the 95% UCL HQ calculation, is provided.
- ⁱ 95% UCL References:
 - 1 Sample size too small/not enough distinct values
 - 2 95% Student's-t UCL
 - 3 95% Approximate Gamma UCL
 - 4 95% Adjusted Gamma UCL
 - 5 95% H-UCL
 - 6 95% Chebyshev (MVUE) UCL
 - 7 97.5% Chebyshev (MVUE) UCL
 - * Maximum detected value is shown
 - 8 99% Chebyshev (MVUE) UCL
 - 9 95% CLT UCL
 - 10 95% Adjusted-CLT UCL
 - 11 95% Modified-t UCL
 - 12 95% Jackknife UCL
 - 13 95% Chebyshev (Mean, Sd) UCL
 - 14 97.5% Chebyshev (Mean, Sd) UCL
 - 15 99% Chebyshev (Mean, Sd) UCL
 - 16 95% Standard Bootstrap UCL
 - 17 95% Bootstrap-t UCL
 - 18 95% Hall's Bootstrap UCL
 - 19 95% Percentile Bootstrap UCL
 - 20 95% BCA Bootstrap UCL

In the case that the 95% UCL reference displays a "1" indicating that the sample size was too small to calculate a 95% UCL (<4) or did not contain enough distinct observations, the maximum detected concentration, if available, is provided. Zero concentration values represent compounds that were not detected.

N/A - Not Available

Max. - Maximum

Conc. - Concentration

HQ - Hazard Quotient

SEL - Severe Effect Level; Persaud *et al.* (1993)

ERM - Effects - Range Median; Long *et al.* (1995)

TEL - Threshold Effect Level (Buchman, 1999)

NOAA SB - NOAA Sediment Background (Buchman, 1999)

SCV - Secondary Chronic Value; Jones *et al.* (1997)

LEL - Ontario Ministry of Environment and Energy Lowest Effect Level (OME, 1996). No SEL available. Value for cyanide is free cyanide.

0.0 - indicates the HQ was <0.05

Average Conc. - Individual samples were averaged to compute a mean concentration for the reference area. Samples were included from Stations 01-IP, 04-IP, 12-IP, 23, and 27.

95% UCL Conc. - Upper Confidence Limit value for all of the sediment samples for stations 01-IP, 04-IP, 12-IP, 23, 27.

Max. Detected Conc. - maximum detected concentration among all samples for stations 01-IP, 04-IP, 12-IP, 23, 27.

**TABLE 4-261
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
AVERAGE CASE HQ
WELLS G&H SUPERFUND SITE OU3**

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Volatile Organics									
2-Butanone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acetone	2.9	5.1	1.6	1.2	1.3	2.2	3.5	1.0	0.2
cis-1,2-Dichloroethene	0.0	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tetrachloroethene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trichloroethene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAZARD INDEX	3.0	5.1	1.6	1.3	1.3	2.2	3.5	1.1	0.2
Semivolatile Organics									
2-Methylnaphthalene	0.1	0.2	0.8	0.4	0.5	0.4	0.2	0.1	0.1
Acenaphthylene	0.4	0.3	0.6	0.7	0.3	0.3	0.6	0.4	0.4
Anthracene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(a)anthracene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(a)pyrene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(b)fluoranthene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(g,h,i)perylene	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(k)fluoranthene	0.0	0.0	0.5	0.0	0.1	0.1	0.0	0.0	0.1
Carbazole	N/A	N/A	N/A						
Chrysene	0.0	0.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0
Dibenz(a,h)anthracene	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Dibenzofuran	0.0	0.1	0.3	0.1	0.1	0.1	0.1	0.0	0.0
Fluoranthene	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0
Fluorene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Indeno(1,2,3-cd)pyrene	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Naphthalene	0.1	0.1	0.5	0.2	0.2	0.2	0.1	0.1	0.0
N-nitrosodiphenylamine	N/A	N/A	N/A						
Phenanthrene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Pyrene	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
HAZARD INDEX	0.74	0.7	4.5	1.8	1.7	1.4	1.3	0.8	0.8
Pesticides and PCBs									
4,4'-DDD	0.0	0.0	0.2	0.1	0.5	0.1	0.0	0.1	0.2
4,4'-DDE	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4,4'-DDT	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Aldrin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
alpha-Chlordane	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Aroclor 1248	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aroclor 1254	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Aroclor 1260	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
beta-BHC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
delta-BHC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Endosulfan I	0.1	0.0	0.2	0.2	0.4	0.2	0.2	0.1	0.0
Endosulfan Sulfate	0.0	0.0	0.2	0.2	0.4	0.2	0.1	0.1	0.0
Endrin Aldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
gamma-Chlordane	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
HAZARD INDEX	0.4	0.1	1.1	0.8	1.7	0.6	0.5	0.3	0.3

Original includes color coding.

US EPA ARCHIVE DOCUMENT

TABLE 4-261
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
AVERAGE CASE HQ
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Inorganics									
Aluminum	0.5	0.3	0.4	0.4	0.2	0.5	0.5	0.2	0.3
Antimony	0.6	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0
Arsenic	13.3	3.6	2.1	2.1	0.4	3.5	0.4	0.5	0.6
Barium	N/A	N/A	N/A						
Beryllium	N/A	N/A	N/A						
Cadmium	0.8	0.4	0.3	0.5	0.1	0.8	0.1	0.2	0.1
Chromium	18.5	3.0	1.4	2.4	0.6	2.5	0.4	1.0	1.2
Cobalt	1.8	1.0	1.1	1.4	0.8	2.1	0.9	0.8	0.8
Copper	4.9	2.1	1.8	2.0	0.4	2.9	0.5	0.7	0.5
Cyanide	12.8	3.2	10.4	17.0	3.7	8.8	4.3	3.3	4.3
Iron	0.9	0.4	0.4	0.6	0.3	0.8	0.4	0.4	0.4
Lead	3.5	0.7	0.8	1.4	0.9	1.7	0.9	0.4	1.3
Manganese	0.5	0.3	0.2	0.5	0.3	0.6	0.3	0.5	0.1
Mercury	1.6	1.0	0.5	0.6	0.2	0.5	0.1	0.1	0.1
Nickel	0.3	0.2	0.2	0.3	0.1	0.4	0.2	0.2	0.3
Selenium	15.7	7.0	3.5	3.8	1.6	5.4	2.7	2.8	2.5
Silver	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
Thallium	N/A	N/A	N/A						
Vanadium	1.1	0.7	0.6	0.8	0.3	1.0	0.7	0.5	1.1
Zinc	1.9	0.9	1.1	1.3	0.3	2.3	0.3	0.2	0.2
HAZARD INDEX	78.8	25.2	25.1	35.2	10.2	33.8	12.7	11.9	14.3

N/A - not available

0.0 - indicates the HQ was <0.05

Shaded - HQ or HI >1.0

Shaded and Boxed - HQ or HI >10

Original includes color coding.

TABLE 4-262
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
95% UCL CASE HQ
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Volatile Organics									
2-Butanone	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0
Acetone	8.5	52.0	2.7	1.5	0.0	15.5	14.3	2.6	0.4
cis-1,2-Dichloroethene	0.0	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tetrachloroethene	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Trichloroethene	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAZARD INDEX	8.7	52.0	2.8	1.6	0.1	15.9	14.6	2.7	0.4
Semivolatile Organics									
2-Methylnaphthalene	0.0	0.2	0.3	0.0	0.1	0.1	0.1	0.0	0.1
Acenaphthylene	0.1	0.2	0.8	0.2	0.4	0.5	0.6	0.5	1.1
Anthracene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(a)anthracene	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Benzo(a)pyrene	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Benzo(b)fluoranthene	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.1
Benzo(g,h,i)perylene	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.0	0.0
Benzo(k)fluoranthene	0.0	0.0	0.7	0.1	0.2	0.1	0.1	0.0	0.3
Carbazole	N/A	N/A	N/A						
Chrysene	0.0	0.0	0.4	0.1	0.2	0.0	0.1	0.0	0.1
Dibenz(a,h)anthracene	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0
Dibenzofuran	0.1	0.1	0.1	0.4	0.1	0.1	0.0	0.0	0.1
Fluoranthene	0.0	0.0	0.4	0.1	0.1	0.0	0.1	0.0	0.1
Fluorene	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1
Indeno(1,2,3-cd)pyrene	0.0	0.0	0.3	0.1	0.1	0.0	0.1	0.0	0.0
Naphthalene	0.1	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.1
N-nitrosodiphenylamine	N/A	N/A	N/A						
Phenanthrene	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.1
Pyrene	0.0	0.0	0.3	0.1	0.1	0.0	0.1	0.0	0.1
HAZARD INDEX	0.5	0.7	4.6	1.4	1.9	1.4	1.4	0.9	2.6
Pesticides and PCBs									
4,4'-DDD	0.2	0.0	0.2	0.2	1.0	0.4	0.1	0.2	0.7
4,4'-DDE	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0
4,4'-DDT	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1
Aldrin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
alpha-Chlordane	0.1	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0
Aroclor 1248	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aroclor 1254	0.3	0.0	0.1	0.1	0.0	0.8	0.1	0.0	0.0
Aroclor 1260	0.5	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.1
beta-BHC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
delta-BHC ^c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Endosulfan I	0.2	0.0	0.1	0.2	0.0	1.3	0.6	0.4	0.0
Endosulfan Sulfate	0.0	0.1	0.2	0.5	0.0	0.0	0.2	0.1	0.0
Endrin Aldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
gamma-Chlordane	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0
HAZARD INDEX	1.4	0.1	1.4	1.3	1.4	3.0	1.1	1.0	0.9

Original includes color coding.

TABLE 4-262
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
95% UCL CASE HQ
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Inorganics									
Aluminum	0.5	0.3	0.4	0.5	0.3	0.5	0.5	0.3	0.5
Antimony	1.4	0.1	0.1	0.1	0.1	0.4	0.0	0.1	0.0
Arsenic	22.9	4.6	2.8	3.0	0.7	22.9	0.7	0.8	1.0
Barium	N/A	N/A	N/A						
Beryllium	N/A	N/A	N/A						
Cadmium	1.2	0.5	0.5	0.7	0.1	1.2	0.4	0.4	0.2
Chromium	39.3	4.2	2.0	3.2	1.2	27.3	0.7	4.7	3.7
Cobalt	2.0	1.2	1.3	1.7	1.5	2.0	1.2	1.4	1.3
Copper	5.6	2.8	2.6	2.8	0.7	5.6	0.7	3.1	0.8
Cyanide	17.0	3.9	16.6	27.7	0.0	17.0	5.0	3.9	0.0
Iron	1.0	0.6	0.5	0.7	0.4	1.0	0.5	0.7	0.6
Lead	11.0	0.8	1.1	1.6	2.3	5.2	1.6	0.9	2.1
Manganese	0.6	0.4	0.3	0.9	0.9	0.6	0.4	1.1	0.2
Mercury	2.6	1.0	0.8	1.4	0.5	2.6	0.1	0.2	0.4
Nickel	0.4	0.4	0.3	0.4	0.1	0.4	0.3	0.2	0.4
Selenium	17.8	11.5	4.4	6.7	5.4	17.0	5.2	4.6	5.6
Silver	0.3	0.3	0.2	0.0	0.1	0.3	0.1	0.1	0.8
Thallium	N/A	N/A	N/A						
Vanadium	1.2	0.9	0.8	1.0	0.5	1.2	0.8	0.6	2.0
Zinc	2.6	1.1	1.6	1.7	0.7	2.6	0.4	0.5	0.3
HAZARD INDEX	127.5	34.5	36.2	54.1	15.3	107.9	18.8	23.6	19.8

N/A - not available

0.0 - indicates the HQ was <0.05

Shaded - HQ or HI >1.0

Shaded and Boxed - HQ or HI >10

Original includes color coding.

US EPA ARCHIVE DOCUMENT

**TABLE 4-263
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
MAXIMUM DETECTION HQ
WELLS G&H SUPERFUND SITE OU3**

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Volatile Organics									
2-Butanone	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0
Acetone	20.4	89.9	0.0	0.0	0.0	15.5	21.8	6.2	0.0
cis-1,2-Dichloroethene	0.1	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tetrachloroethene	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trichloroethene	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAZARD INDEX	21.2	89.9	0.2	0.1	0.1	15.7	22.1	6.2	0.0
Semivolatile Organics									
2-Methylnaphthalene	0.0	0.2	0.3	0.0	0.1	0.1	0.1	0.0	0.1
Acenaphthylene	0.1	0.2	0.8	0.2	0.4	0.5	0.6	0.7	1.3
Anthracene	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1
Benzo(a)anthracene	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0
Benzo(a)pyrene	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0
Benzo(b)fluoranthene	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.0	0.1
Benzo(g,h,i)perylene	0.1	0.0	0.5	0.1	0.1	0.2	0.1	0.0	0.0
Benzo(k)fluoranthene	0.1	0.1	1.3	0.1	0.2	0.3	0.2	0.1	0.3
Carbazole	N/A	N/A	N/A						
Chrysene	0.0	0.0	0.6	0.2	0.2	0.3	0.1	0.1	0.2
Dibenz(a,h)anthracene	0.0	0.0	0.5	0.1	0.0	0.2	0.1	0.0	0.0
Dibenzofuran	N/A	0.1	0.1	0.0	0.1	0.1	N/A	N/A	N/A
Fluoranthene	0.1	0.0	0.7	0.1	0.1	0.2	0.1	0.1	0.1
Fluorene	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2
Indeno(1,2,3-cd)pyrene	0.0	0.0	0.6	0.1	0.1	0.2	0.1	0.1	0.1
Naphthalene	0.4	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.1
N-nitrosodiphenylamine	N/A	N/A	N/A						
Phenanthrene	0.0	0.0	0.4	0.1	0.1	0.1	0.0	0.0	0.1
Pyrene	0.0	0.0	0.5	0.1	0.2	0.2	0.1	0.0	0.1
HAZARD INDEX	1.0	1.0	7.4	1.1	2.1	3.0	1.7	1.3	2.8
Pesticides and PCBs									
4,4'-DDD	0.5	0.1	0.4	0.2	1.0	0.6	0.2	0.3	0.7
4,4'-DDE	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.0
4,4'-DDT	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1
Aldrin	0.0	0.0	0.0	0.0	N/A	0.0	0.0	0.0	0.0
alpha-Chlordane	0.2	0.0	0.4	0.1	0.1	0.1	0.1	0.0	0.0
Aroclor 1248	0.0	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aroclor 1254	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aroclor 1260	1.0	N/A	0.1	0.0	0.1	0.2	0.0	0.0	0.1
beta-BHC	0.0	0.0	0.0	0.0	N/A	0.0	0.0	0.0	0.0
delta-BHC	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Endosulfan I	0.5	0.0	0.0	0.0	N/A	0.0	1.0	0.5	0.0
Endosulfan Sulfate	0.0	0.0	0.2	0.0	N/A	0.0	0.2	0.1	0.1
Endrin Aldehyde	0.0	0.0	0.0	0.0	N/A	0.0	0.0	0.0	0.0
gamma-Chlordane	1.1	0.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0
HAZARD INDEX	4.2	0.2	1.7	0.5	1.4	1.2	1.6	1.4	1.0

Original includes color coding.

US EPA ARCHIVE DOCUMENT

TABLE 4-263
HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES BY REACH
MAXIMUM DETECTION HQ
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Pond Reference	River Reference	Wetland Reference
Inorganics									
Aluminum	1.3	0.8	0.9	0.6	0.3	1.0	0.8	0.5	0.6
Antimony	13.2	0.9	0.2	0.1	0.1	0.4	0.1	0.2	0.0
Arsenic	138	42.7	14.7	4.1	0.8	47.6	1.0	1.3	1.2
Barium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium	3.7	3.5	1.3	1.0	0.2	3.8	0.4	0.6	0.3
Chromium	224	48.3	8.3	4.0	1.4	27.3	1.4	4.7	3.7
Cobalt	5.8	13.0	3.3	2.1	1.6	7.2	1.9	2.2	1.3
Copper	21.3	34.2	14.2	4.0	0.7	11.4	1.1	3.1	1.2
Cyanide	121	8.5	38.0	33.0	0.0	44.0	0.0	0.0	0.0
Iron	6.5	2.2	0.9	1.0	0.4	2.7	0.7	1.3	0.6
Lead	164	2.7	2.6	1.8	2.6	5.2	3.0	1.5	2.3
Manganese	1.8	2.4	0.5	1.5	0.9	2.8	0.8	1.8	0.2
Mercury	22.4	44.6	2.9	1.6	0.6	6.8	0.3	0.3	0.4
Nickel	2.0	2.4	0.5	0.5	0.1	0.9	0.4	0.3	0.4
Selenium	101	31.0	10.3	11.3	N/A	17.0	10.7	10.0	7.0
Silver	1.4	N/A	0.3	0.0	0.1	0.4	0.2	0.2	0.8
Thallium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	3.3	2.3	1.6	1.2	0.5	3.6	1.1	1.1	3.0
Zinc	6.0	10.7	3.4	2.3	0.7	9.4	0.8	0.7	0.3
HAZARD INDEX	836.2	250.0	104.0	70.2	10.8	191.2	24.8	29.8	23.3

N/A - not available

0.0 - indicates the HQ was <0.05

Shaded - HQ or HI >1.0

Shaded and Boxed - HQ or HI >10

Original includes color coding.

US EPA ARCHIVE DOCUMENT

TABLE 4-264
SUMMARY OF AVS-SEM DATA
SUMMER MONTHS

WELLS G&H SUPERFUND SITE OU3

Location	Sample Date	SEM-AVS ($\mu\text{mol/g}$)	TOC (mg/kg dry wt)	f_{oc} ($\text{g}_{oc}/\text{g sed}$)	SEM-AVS/ f_{oc} ($\mu\text{mol/g}_{oc}$)
SD-01-01-FW	8/15/1995	-1.6	114	0.0001	-14,033
SD-01-02-FW	8/15/1995	0.7	2,100	0.002	311
SD-01-03-FW	8/15/1995	-0.1	114	0.0001	-853
SD-01-04-FW	8/15/1995	0.9	17,000	0.017	52
SD-01-05-FW	8/15/1995	-14.4	116	0.0001	-124,534
SD-01-06-FW	8/15/1995	-110.6	65,700	0.066	-1,683
SD-01-07-FW	8/15/1995	-19.0	9,100	0.009	-2,085
SD-01-08-FW	8/15/1995	1.1	830	0.001	1,334
SD-01-09-FW	8/15/1995	1.6	2,410	0.002	672
SD-01-10-FW	8/15/1995	-8.5	11,000	0.011	-772
SD-02-01-FW	8/16/1995	-0.5	6,525	0.007	-75
SD-02-01-02-FW	8/16/1995	6.4	6,525	0.007	986
SD-02-02-FW	8/16/1995	-0.2	9,420	0.009	-20
SD-02-03-FW	8/16/1995	-16.8	2,690	0.003	-6,250
SD-03-01-FW	8/16/1995	-2.2	1,170	0.001	-1,870
SD-03-02-FW	8/16/1995	-38.9	55,000	0.055	-707
SD-03-03-FW	8/16/1995	-0.7	602	0.001	-1,122
SD-04-01-FW	8/17/1995	-26.2	21,500	0.022	-1,220
SD-04-02-FW	8/17/1995	-86.0	54,400	0.054	-1,580
SD-04-03-FW	8/17/1995	-21.1	93,400	0.093	-226
SD-05-01-FW	8/17/1995	1.1	3,840	0.004	281
SD-05-02-FW	8/17/1995	1.0	1,840	0.002	548
SD-05-03-FW	8/17/1995	-20.5	56,000	0.056	-367
SD-06-01-FW	8/18/1995	-51.2	46,700	0.047	-1,096
SD-06-02-FW	8/18/1995	-251.5	41,600	0.042	-6,047
SD-06-03-FW	8/18/1995	-392.6	69,900	0.070	-5,616
SD-06-03-TR	6/26/2001	13.7	100,000	0.100	137
SD-07-01-FW	8/18/1995	-19.5	15,150	0.015	-1,290
SD-07-01-02-FW	8/18/1995	-16.6	15,150	0.015	-1,097
SD-07-02-FW	8/21/1995	-22.2	93,000	0.093	-239
SD-07-03-FW	8/21/1995	-9.9	13,800	0.014	-721
SD-07-04-FW	8/29/1995	-65.0	83,600	0.084	-777
SD-07-05-FW	8/21/1995	-385.3	88,700	0.089	-4,344
SD-07-06-FW	8/21/1995	19.3	70,100	0.070	275
SD-07-07-FW	8/21/1995	-83.5	52,700	0.053	-1,585
SD-07-08-FW	8/21/1995	-41.8	25,500	0.026	-1,641
SD-07-09-FW	8/21/1995	-11.6	82,700	0.083	-140
SD-07-10-FW	8/21/1995	-77.1	99,000	0.099	-779
SD-08-01-FW	8/21/1995	12.5	117	0.0001	106,951
SD-08-02-FW	8/21/1995	6.2	17,900	0.018	347
SD-08-03-FW	8/21/1995	6.5	7,560	0.008	859
SD-09-01-FW	8/22/1995	2.4	4,230	0.004	566
SD-09-02-FW	8/22/1995	0.6	46,200	0.046	14
SD-09-03-FW	8/22/1995	-15.2	7,320	0.007	-2,082
SD-09-04-FW	8/22/1995	-0.6	121	0.0001	-4,976
SD-09-05-FW	8/22/1995	-14.4	114	0.0001	-126,125
SD-09-06-FW	8/22/1995	-7.0	1,050	0.001	-6,708
SD-09-07-FW	8/22/1995	4.4	10,900	0.011	407
SD-09-08-FW	8/22/1995	2.6	117	0.0001	22,426
SD-09-09-FW	8/22/1995	1.6	117	0.0001	13,877
SD-09-10-FW	8/22/1995	7.2	3,860	0.004	1,863
SD-10-01-FW	8/23/1995	-88.8	229,500	0.230	-387
SD-10-01-02-FW	8/23/1995	-201.5	262,000	0.262	-769
SD-10-02-FW	8/23/1995	-34.8	262,000	0.262	-133
SD-10-02-TR	6/22/2002	36.6	680,000	0.680	54
SD-10-03-FW	8/23/1995	21.9	97,300	0.097	226

US EPA ARCHIVE DOCUMENT

TABLE 4-264
SUMMARY OF AVS-SEM DATA
SUMMER MONTHS

WELLS G&H SUPERFUND SITE OU3

Location	Sample Date	SEM-AVS (umol/g)	TOC (mg/kg dry wt)	f _{oc} (g _{oc} /g sed)	SEM-AVS/f _{oc} (umol/g _{oc})
SD-11-01-FW	8/24/1995	87.9	36,700	0.037	2,396
SD-11-02-FW	8/24/1995	-727.9	49,900	0.050	-14,588
SD-11-03-FW	8/24/1995	-0.1	121,000	0.121	-1
SD-12-01-FW	8/31/1995	-34.6	173,000	0.173	-200
SD-12-02-FW	8/31/1995	-34.4	105,000	0.105	-328
SD-12-03-FW	8/31/1995	-68.4	42,200	0.042	-1,620
SD-12-03-TR	6/19/2001	3.4	150,000	0.150	23
SD-13-01-FW	9/8/1995	-18.4	234,000	0.234	-79
SD-13-01-TR	6/22/2001	18.2	300,000	0.300	61
SD-13-02-FW	9/8/1995	-59.1	385,000	0.385	-154
SD-13-03-FW	9/8/1995	23.0	229,000	0.229	101
SD-14-01-FW	9/5/1995	-19.7	11,000	0.011	-1,793
SD-14-02-FW	9/5/1995	4.2	4,480	0.004	937
SD-14-03-FW	9/5/1995	12.4	12,300	0.012	1,010
SD-15-01-FW	9/5/1995	-65.9	432,000	0.432	-152
SD-15-02-FW	9/5/1995	-5.0	381,000	0.381	-13
SD-15-03-FW	9/5/1995	30.0	450,000	0.450	67
SD-16-01-FW	8/29/1995	1.3	1,390	0.001	899
SD-16-02-FW	8/23/1995	3.3	125	0.0001	26,635
SD-16-03-FW	8/23/1995	1.4	3,040	0.003	452
SD-18-01-FW	8/29/1995	1.3	61,100	0.061	21
SD-18-02-FW	9/7/1995	-29.8	259,000	0.259	-115
SD-18-02-TR	6/21/2001	24.5	300,000	0.300	82
SD-18-03-FW	9/7/1995	-172.4	262,000	0.262	-658
SD-19-01-FW	8/31/1995	-22.8	323,500	0.324	-70
SD-19-02-FW	8/31/1995	0.5	380,000	0.380	1
SD-19-01-02-FW	8/31/1995	4.1	323,500	0.324	13
SD-19-03-FW	8/31/1995	38.8	363,000	0.363	107
SD-19-01-TR	6/19/2001	16.9	290,000.000	0.290	58
SD-20-01-FW	9/7/1995	15.4	362,000	0.362	43
SD-20-01-02-FW	9/7/1995	3.7	362,000	0.362	10
SD-20-02-FW	9/7/1995	29.8	234,000	0.234	127
SD-20-03-FW	9/7/1995	48.2	247,000	0.247	195
SD-21-01-FW	9/8/1995	51.1	288,000	0.288	177
SD-21-02-FW	9/8/1995	46.8	441,000	0.441	106
SD-21-03-FW	9/8/1995	30.8	244,000	0.244	126
SD-22-01-FW	9/8/1995	-1.9	371,000	0.371	-5
SD-22-02-FW	9/8/1995	5.3	198,000	0.198	27
SD-22-03-FW	9/8/1995	0.4	514,000	0.514	1
SD-22-01-TR	6/18/2001	1.1	430,000	0.430	3
SD-TT-30-01-TR	6/22/2001	20.5	240,000	0.240	85
SD-TT-32-02-TR	6/20/2001	11.7	150,000	0.150	78
SD-TT-33-02-TR	6/20/2001	7.1	86,000	0.086	83
SD-UF-02-TR-02	6/27/2001	14.9	360,000	0.360	41
SD-UF-02-TR	6/27/2001	25.3	360,000	0.360	70
SD-WH-07-TR	6/18/2001	3.3	815,000	0.815	4
SD-WH-07-TR-02	6/18/2001	2.8	815,000	0.815	3
SD-WW-06-TR	6/21/2001	14.8	760,000	0.760	19
SD-AO-03-TR	6/27/2001	24.4	210,000	0.210	116
SD-AO-03-TR-02	6/27/2001	18.0	210,000	0.210	86

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TABLE 4-264
SUMMARY OF AVS-SEM DATA
SUMMER MONTHS

WELLS G&H SUPERFUND SITE OU3

Location	Sample Date	SEM-AVS ($\mu\text{mol/g}$)	TOC (mg/kg dry wt)	f_{oc} (goc/g sed)	SEM-AVS/ f_{oc} ($\mu\text{mol/goc}$)
Reference					
SD-MC-01-TR	6/25/2001	2.7	270,000	0.270	10
SD-MC-01	6/21/1999	-4.8	160,000	0.160	-30
SD-MC-02	6/21/1999	-109.9	370,000	0.370	-297
SD-MC-03-TR	6/25/2001	8.2	330,000	0.330	25
SD-MC-03	6/18/1999	-37.9	110,000	0.110	-344
SD-MC-04-TR	6/26/2001	8.2	290,000	0.290	28
SD-MC-04	6/17/1999	10.2	120,000	0.120	85
SD-12-00-IP	6/17/1999	0.6	130,000	0.130	5
SD-23-01-FW	8/29/1995	-0.9	24,300	0.024	-38
SD-23-02-FW	8/29/1995	-4.1	4,800	0.005	-859
SD-23-03-FW	8/29/1995	-0.2	427,000	0.427	0
SD-24-01-FW	8/29/1995	-2.6	2,810	0.003	-912
SD-24-02-FW	8/29/1995	-26.3	17,900	0.018	-1,467
SD-24-03-FW	8/29/1995	5.3	183,000	0.183	29
SD-25-01-FW	9/11/1995	1.0	52,600	0.053	19
SD-25-02-FW	9/11/1995	4.2	71,600	0.072	59
SD-25-03-FW	9/11/1995	0.1	12,000	0.012	4
SD-26-01-FW	9/11/1995	-12.2	36,800	0.037	-333
SD-26-02-FW	9/11/1995	-5.9	12,050	0.012	-490
SD-26-02-02-FW	9/11/1995	-8.7	12,050	0.012	-719
SD-26-03-FW	9/11/1995	-5.3	47,200	0.047	-113
SD-27-01-FW	9/12/1995	-12.9	13,400	0.013	-964
SD-27-02-FW	9/10/1995	-0.2	7,650	0.008	-32
SD-27-03-FW	9/12/1995	-15.2	10,000	0.010	-1,518
SD-SA-01-TR	6/25/2001	3.7	170,000	0.170	22
SD-HB-00-TR	6/26/2001	2.8	250,000	0.250	11

**TABLE 4-265
SUMMARY OF AVS-SEM DATA
WINTER MONTHS**

WELLS G&H SUPERFUND SITE OU3

Location	Sample Date	SEM-AVS ($\mu\text{mol/g}$)	TOC (mg/kg dry wt)	f_{oc} (goc/g sed)	SEM-AVS/ f_{oc} ($\mu\text{mol/goc}$)
SD-01-06-ME	11/12/1997	-42.7	230,000	0.230	-186
SD-02-01-ME	11/13/1997	-22.5	125,000	0.125	-180
SD-02-02-ME	11/13/1997	-89.7	160,000	0.160	-561
SD-03-02-ME	11/13/1997	-60.3	195,000	0.195	-309
SD-04-03-ME	11/14/1997	-1.6	255,000	0.255	-6
SD-05-03-ME	11/13/1997	-19.1	59,100	0.059	-323
SD-05-03-02-ME	11/14/1997	-12.2	59,100	0.059	-207
SD-06-03-ME	11/18/1997	8.0	197,000	0.197	41
SD-07-02-ME	11/20/1997	-3.0	194,000	0.194	-15
SD-07-05-ME	11/20/1997	-30.6	210,000	0.210	-146
SD-07-10-ME	11/19/1997	8.1	218,000	0.218	37
SD-10-01-ME	11/19/1997	-36.1	465,000	0.465	-78
SD-10-02-ME	11/19/1997	11.7	463,000	0.463	25
SD-10-01-02-ME	11/19/1997	-36.5	465,000	0.465	-79
SD-11-01-ME	11/14/1997	8.3	387,000	0.387	21
SD-12-01-ME	11/20/1997	-16.3	912,000	0.912	-18
SD-12-03-ME	11/20/1997	8.9	431,000	0.431	21
SD-13-01-ME	11/17/1997	2.3	232,000	0.232	10
SD-13-03-ME	11/17/1997	5.3	118,000	0.118	45
SD-15-01-ME	11/17/1997	-3.2	702,000	0.702	-5
SD-18-02-ME	11/18/1997	10.3	361,000	0.361	29
SD-18-03-ME	11/18/1997	13.2	423,000	0.423	31
SD-19-01-ME	11/19/1997	4.3	686,000	0.686	6
SD-20-01-ME	11/17/1997	7.6	441,000	0.441	17
SD-21-01-ME	11/14/1997	-0.3	344,000	0.344	-0.76
SD-22-02-ME	11/12/1997	23.4	693,000	0.693	34
Reference					
SD-24-03-ME	11/12/1997	-4.3	153,000	0.153	-28
SD-25-02-ME	11/18/1997	0.9	59,200	0.059	15

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TABLE 4-266
COMPARISON OF COPC CONCENTRATIONS IN SITE CRAYFISH TISSUE AGAINST REFERENCE DATA AND TISSUE RESIDUE BENCHMARKS

WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Site Average Conc. mg/kg bw	Reference Average Conc. mg/kg bw	Ratio Site to Reference	Site ¹ Average Conc. u g/g lipid	Reference Average Conc. u g/g lipid	Ratio Site to Reference	Benchmark Conc. mg/kg	Species ¹	Effect	Endpoint	Fraction	Exposure Route	Life-Stage	Effect	ERED Reference ID ³
Pesticides/PCBs															
4,4'-DDD	0.0024	0.0008	3.1	0.2809	0.0755	3.7	na								
4,4'-DDE	0.0050	0.0047	1.1	0.592	0.454	1.3	na								
4,4'-DDT	0.0012	0.0005	2.4	0.1376	0.0495	2.8	0.0465	<i>Orconectes nais</i> (crayfish)	Mortality	NOED	Whole Body	Absorption	Adult	No effect over 3 days	URS136
Aldrin	0.0003	0.0003	1.1	0.0351	0.0255	1.4	na								
alpha-Chlordane	0.0009	0.0003	3.7	0.1105	0.0255	4.3	na								
Aroclor-1260	0.0258	0.0052	5.0	3.1565	0.519	6.1	23 ^a	<i>Callinectes sapidus</i> (blue crab)	Mortality	NOED	Whole Body	Absorption	Immature	No effect over 20 days	URS74
Endosulfan I	0.0004	0.0003	1.5	0.0476	0.0255	1.9	na								
Endosulfan sulfate	0.0008	0.0005	1.6	0.0895	0.0495	1.8	na								
Endrin aldehyde	0.0020	0.0005	4.2	0.2443	0.0495	4.9	na								
gamma-Chlordane	0.0004	0.0003	1.6	0.0483	0.0255	1.9	na								
Inorganics															
Aluminum	50.0	9.75	5.1				na								
Arsenic	2.2	0.1925	11.5				na								
Barium	10.2	15.4	0.7				na								
Cadmium	0.1	0.08	0.9				22	<i>Cambarus latimanus</i> (crayfish)	Mortality	LOED	Whole Body	Combined	Adult	Sig. greater mortality than control	URS209
Chromium	1.1	0.18	6.3				na								
Cobalt	0.4	0.42	1.0				na								
Copper	49.7	20.1	2.5				26	<i>Orconectes rusticus</i> (crayfish)	Mortality	NOED	Whole Body	Absorption	Adult	No effect on survivorship	URS79
Iron	345.0	66.35	5.2				na								
Lead	0.8	0.0333	23.4				na								
Manganese	98.9	106	0.9				na								
Mercury	0.009	0.0055	1.7	0.0012	0.0005	2.4	12.32	<i>Uca pugnax</i> (fiddler crab)	Development	LOED	Whole Body	Absorption	Adult	Inhibition of limb regeneration and molting	URS50
Selenium	0.407	0.16	2.5				na								
Silver	0.032	0.155	0.2				na								
Thallium	0.083	0.065	1.3				na								
Zinc	25.4	18.15	1.4				na								

ERED - U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Environmental Residue-Effects Database (last update - February 1998)

Conc. - concentration

ID - identification number

na - no test data available in the ERED database for species group included in search

NOED - no observed effect dose

LOED - lowest observed effect dose

1 With exception of mercury, lipid normalized tissue concentrations were not calculated for inorganic COPCs because inorganics are not expected to preferentially concentrate in lipid material

2 The ERED database was queried for data on crayfish, lobsters and crabs, all members of Order Decapoda

3 Citations for primary references are provided in the ERED database

a Test involved PCBs, specific congeners not indicated

TABLE 4-267
 SUMMARY OF TOXICITY TESTING RESULTS AS COMPARED TO LABORATORY CONTROLS
 WELLS G&H SUPERFUND SITE OU3

Station	Habitat	<i>C. tentans</i> , 10-day Acute		<i>C. tentans</i> , Life Cycle Chronic				<i>H. azteca</i> , 10-day Acute		<i>H. azteca</i> , 42-day Chronic			
		survival	growth	survival	growth	% emerged	days to emerge	% hatched	survival	growth	survival	growth	reproduction
SA	wetland-R												
HB	wetland-R	p <0.05		p <0.05		p <0.05							
WW	wetland												
WH	wetland							p <0.05					
TT-33	wetland						p <0.05	p <0.05					
TT-32	wetland						p <0.05	p <0.05					
22	wetland												
19	wetland							p <0.05					
13	wetland		p <0.05				p <0.05						
04-IP	stream-R												
01-IP	stream-R												
TT-30	stream												
TT-29	stream												
18	stream						p <0.05						p <0.05
12	stream		p <0.05									p <0.05	
10	stream												
03-IP	pond-R								p <0.05				
UF	pond												
6	pond			p <0.05		p <0.05							
4	pond		p <0.05			p <0.05							

p < 0.05 indicates a statistically significant difference (p <0.05) in the response for this endpoint as compared to laboratory controls

TABLE 4-268
 SUMMARY OF TOXICITY TESTING RESULTS AS COMPARED TO CORRESPONDING REFERENCE SAMPLES
 WELLS G&H SUPERFUND SITE OU3

Station	Habitat ¹	<i>C. tentans</i> , 10-day Acute		<i>C. tentans</i> , Life Cycle Chronic				<i>H. azteca</i> , 10-day Acute		<i>H. azteca</i> , 42-day Chronic			Toxicity Index ²
		survival	growth	survival	growth	% emerged	% hatched	survival	growth	survival	growth	reproduction	
SA	wetland-R												0
HB	wetland-R												0
WW	wetland												0
WH	wetland												0
TT-33	wetland		p < 0.05		p < 0.05				p < 0.05				3
TT-32	wetland		p < 0.05		p < 0.05				p < 0.05				3
22	wetland												0
19	wetland		p < 0.05		p < 0.05				p < 0.05				3
13	wetland		p < 0.05		p < 0.05				p < 0.05				3
04-IP	stream-R												0
01-IP	stream-R												0
TT-30	stream		p < 0.05										1
TT-29	stream				p < 0.05								1
18	stream												0
12	stream		p < 0.05										1
10	stream	p < 0.05	p < 0.05										2
03-IP	pond-R												0
UF	pond												0
6	pond		p < 0.05										1
4	pond		p < 0.05										1

p < 0.05 indicates a statistically significant difference (p < 0.05) in the response for this endpoint as compared to field reference

¹ "R" indicates a reference location

² Toxicity Index was computed by summing the number of tests significantly different (p < 0.05) from the field reference.

TABLE 4-269
SUMMARY OF BENTHIC INVERTEBRATE COMMUNITY INDICES AT 20 TOXICITY TESTING STATIONS
WELLS G&H SUPERFUND SITE OU3

Station	Habitat ¹	Total Invertebrate Abundance ²	Number of Taxa ³	Shannon - Weiner Diversity Index	Pielou's Evenness Index	Community Loss Index	Average Percent Chironomids	Average Percent Oligochaetes	Percent Chironomids + Percent Oligochaetes	Percent Dominant	Dominant taxon	Higher Taxa of Dominant	Tolerance Value of Dominant Species ⁴	Community Index ⁵
HB	wetland-R	1318	36	1.33	0.40	0.00	5	11	16	44	<i>Hyalella azteca</i>	Amphipoda	8	0
SA	wetland-R	1097	29	1.40	0.48	0.93	83	12	95	61	<i>Chironomus decorus</i>	Chironomidae	10	0
TT-33	wetland	1122	35	1.33	0.40	0.00	3	94	97	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	6
TT-32	wetland	1938	35	1.33	0.40	0.69	3	88	91	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	3
13	wetland	1943	36	1.73	0.56	0.53	12	64	76	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	1
WW	wetland	554	34	1.76	0.58	0.74	11	16	27	53	<i>Pisidium</i> sp.	Pelecypoda	8	1
19	wetland	508	31	1.77	0.64	0.84	49	34	83	45	<i>Chironomus decorus</i>	Chironomidae	10	2
22	wetland	1108	39	2.40	0.74	0.69	37	15	52	27	<i>Caecidotea communis</i>	Isopoda	6	0
WH	wetland	1488	30	2.29	0.77	0.00	4	33	37	21	<i>Caecidotea communis</i>	Isopoda	6	2
01-IP	stream-R	1348	31	1.64	0.55	0.65	4	90	94	40	<i>Aulodrilus limnobius</i>	Oligochaeta	5.2 ^a	0
04-IP	stream-R	1179	38	2.06	0.64	0.00	39	53	92	32	<i>Aulodrilus limnobius</i>	Oligochaeta	5.2 ^a	0
12	stream	1824	35	1.33	0.40	0.00	0.4	97	97	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	7
TT-29	stream	3065	35	1.33	0.40	0.00	0.3	99	99	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	7
18	stream	4750	35	1.33	0.40	0.00	5	94	99	61	<i>Ilyodrilus templetoni</i>	Oligochaeta	9.6 ^a	7
TT-30	stream	980	36	1.30	0.61	0.47	14	68	82	61	<i>Limnodrilus claparedianus</i>	Oligochaeta	9.6 ^a	3
10	stream	68	36	1.30	0.61	0.00	1	89	90	61	<i>Ilyodrilus templetoni</i>	Oligochaeta	9.6 ^a	6
03-IP	pond-R	19	6	0.99	0.92	0.00	42	0	42	42	<i>Chaoborus punctipennis</i>	Diptera	8 ^b	
4	pond	4972	33	1.37	0.40	0.09	1	96	97	61	<i>Dero digitata</i>	Chironomidae	8	
UF	pond	2278	31	1.64	0.55	0.10	3	94	97	61	<i>Aulodrilus pigueti</i>	Oligochaeta	4.7 ^a	
6	pond	896	30	1.72	0.77	0.10	37	61	98	35	<i>Limnodrilus hoffmeisteri</i>	Oligochaeta	9.6 ^a	

¹ "R" indicates a reference location

² Total number of organisms observed in all three replicate sediment samples, highlighted samples are 20% less than the lower of the reference values

³ Total number of taxa observed in all three replicate sediment samples

⁴ Regional Tolerance Values (Mid-Atlantic), (Barbour, et al., 1999)

⁵ Community Index was computed by summing the number of tests indicating impairment as compared to corresponding reference locations (shaded cells).

^a Regional Tolerance Values (Southeast), (Barbour, et al., 1999)

^b Regional Tolerance Values (Midwest), (Barbour, et al., 1999)

Shaded cells correspond to indicator values at levels less than the lower of the two reference locations for Total Abundance, Number of Taxa, Diversity, and Evenness and greater than reference for Community Loss, Percent Oligochaetes - Chironomids, Percent Dominant and Tolerance Value.

TABLE 4-270

PEARSON CORRELATIONS COEFFICIENTS FOR SELECTED CHEMICAL CHARACTERISTICS OF SEDIMENTS WITH SELECTED BENTHIC COMMUNITY INDICES
WELLS G&H SUPERFUND SITE OU3

Benthic Invertebrate Community Variables	Sediment Chemistry Variables								
	TOC	SEM	SEM/AVS	Arsenic	Chromium	Copper	Lead	Mercury	Zinc
Toxicity Index	-0.366	0.383	-0.147	0.621*	0.345	0.435	-0.301	0.421	0.361
Community Index	-0.217	0.686*	-0.377	0.727**	0.630*	0.750**	-0.052	0.571*	0.716**
Invertebrate Abundance	-0.234	0.265	0.081	0.277	0.241	0.323	0.029	0.369	0.405
Number of Taxa	-0.072	-0.306	0.165	-0.317	-0.145	-0.315	0.195	-0.177	-0.308
Pielou's Evenness	0.627*	-0.259	0.197	-0.42	-0.423	-0.408	0.306	-0.476*	-0.373
Shannon Diversity	0.477*	-0.423	0.104	-0.537*	-0.435	-0.544*	0.472*	-0.532*	-0.506*
Percent Dominance	-0.433	0.489*	-0.091	0.619*	0.606*	0.641*	-0.290	0.583*	0.531*
Percent Chironomids + Oligochates	-0.540*	0.405	-0.158	0.601*	0.357	0.573*	-0.172	0.639*	0.485*
Growth <i>H. azteca</i>	0.102	-0.480*	0.291	-0.520*	-0.559*	-0.505*	0.041	-0.344	-0.521*
Growth <i>C. tentans</i>	0.067	-0.597*	0.105	-0.645*	-0.568*	-0.669*	-0.261	-0.453	-0.609*

* Indicates a statistically significant correlation ($p < 0.05$), with probabilities not adjusted for multiple comparisons

** Indicates a statistically significant correlation ($p < 0.05$), with probabilities adjusted (Bonferroni) for multiple comparisons

1 Toxicity Index was computed by summing the number of tests significantly different ($p < 0.05$) from the field reference.

TABLE 4-271
HAZARD QUOTIENT SUMMARY FOR MUSKRAT, USING LOEL¹ TRVS²

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT ³					
			Arsenic	Chromium	Copper	Lead	Mercury	
Reference	Pond							
Reference	Wetland							
Reference	River							
1	Lake	6						
2	Lake	6						
3	Lake	6						
4	Lake	6						
5	River	5						
6	River	4						
7	River	3						
8	River	2						
9	River	2						
10	River	1	6.0		3.1			1.6
11	River	1	2.0					
12	River	1	9.9		1.2			1.6
13	Wetland	1	9.1		1.9			1.2
14	River	1						
15	Wetland	1	1.2					
16	River	2						
18	Wetland	1	5.0		1.6			
19	Wetland	1	17.4		1.3			
20	Wetland	1	2.0		1.9			
21	Wetland	1	1.2					1.5
AM	River	2						
AS	River	3						
BW	Wetland	1	8.9		1.7			1.0
CB-01	Wetland	2						
CB-02	Wetland	2						
CB-03	Wetland	2	1.9					
CB-04	Wetland	2						
CB-06	Wetland	2						
JY	Wetland	1	1.0					
KFSE	River	2						
LP	River	3						
NRSE	Wetland	1	1.2					
TT-28	River	1	5.2	1.0	1.8			
TT-29	River	1	5.2	1.1	1.8			1.3
TT-30	River	2	4.1		2.5			3.9
TT-31	Wetland	2						
TT-32	River	2	1.8					
TT-33	River	2	1.7					
UF	Lake	6						
WG	Wetland	1						
WH	Wetland	1					1.1	
WS	River	1	1.2					
WW	Wetland	1		4.5				
% of OU3 stations (non-reference) with HQ>1			44	7	23	2	16	

¹ LOEL: Lowest Observed Adverse Effect Level
² TRV: Toxicity Reference Value
³ A blank cell indicates that the HQ was less than 1.0

**TABLE 4-272
HAZARD QUOTIENT SUMMARY FOR HERON AND MALLARD, USING LOAEL¹ TRVS²**

WELLS G&H SUPERFUND SITE OU3

Species	Case	COPC HAZARD QUOTIENT			
		Arsenic	Chromium	Lead	Mercury
Heron	Reference Average				
	Reference 95% UCL				
	Site-wide ³ Average				
	Site-wide 95% UCL				
Mallard	Reference Average				
	Reference 95% UCL				
	Site-wide ⁴ Average				
	Site-wide 95% UCL				
	38-acre ⁵ Average		1.0		
	38-acre 95% UCL		1.8		

¹ LOAEL: Lowest Observed Adverse Effect Level

A blank cell indicates that the HQ was less than 1.0

² TRV: Toxicity Reference Value

³ Stations included in the heron site-wide analysis are shown in Table 4-32

⁴ Stations included in the mallard site-wide analysis are shown in Table 4-32

⁵ Stations included in the mallard 38-acre wetland analysis are shown in Table 4-32

**TABLE 4-273
HAZARD QUOTIENT SUMMARY FOR SHREW, USING LOEL¹ RTVS²**

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT						
			Aroclor 1254	Antimony	Arsenic	Cadmium	Chromium	Lead	Mercury
	Wetland	Reference ³							
20	Wetland	1			1.5				
21	Wetland	1							
22/TT-22	Wetland	1		1.3					
BW	Wetland	1			5.9				
CB-01	Wetland	2							
CB-02	Wetland	2							
CB-03	Wetland	2			1.4				
CB-04	Wetland	2							
CB-05	Wetland	2							
CB-06	Wetland	2							
DA	River	2							
NRSE	Wetland	1							
JY	Wetland	1							
NRSO	River	1							
KFSO	River	2							
WSS	Wetland	1							
WG	Wetland	1							
WH	Wetland	1							
WS	River	1							
% of OU3 stations (non-reference) with HQ>1			0	5	16	0	0	0	0

¹ LOAEL: Lowest Observed Adverse Effect Level

² RTV: Reference Toxicity Value.

³ Reference stations include 24, HB, and SA.

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**TABLE 4-274
COPC SUMMARY FOR ALL INDICATOR SPECIES OR GROUPS**

WELLS G&H SUPERFUND SITE OU3

Species	COPC						
	Arsenic	Cadmium	Copper	Chromium	Lead	Mercury	Zinc
Piscivorous birds							
Waterfowl				X	X	X	
Semi-aquatic mammals	X		X	X	X	X	
Small terrestrial mammals	X						
Fish							
Invertebrates ¹	X	X	X	X	X	X	X

X - An "X" in the box indicates potential to population risk from the COPC based on NOAEL TRVs, exceeding reference values

Shading in the box indicates potential risk to populations from exposure to the COPC based on LOAEL TRVs

¹ X indicates an HQ >1, shading indicates a HQ > 10 for the average case scenario

TABLE 4-275
SUMMARY OF THE RELATIVE MAGNITUDE OF UNCERTAINTY ASSOCIATED WITH EACH RECEPTOR AND COPC
WELLS G&H SUPERFUND SITE OU3

Species / Endpoint	Risk Summary by COPC ¹	Major Uncertainties and Assumptions	Relative Magnitude of Uncertainty
Piscivorous birds	No COPCs with Risk	Fish tissue site-specific	Low
		Crayfish tissue site-specific, but represents one species TRVs (conservative NOAEL TRVs used)	Moderate Low
Waterfowl	General	Plant tissue from site-specific uptake factors	Moderate
		Crayfish tissue site-specific, but represents one species	Moderate
		Bioavailbity of metals	Moderate
	Chromium -low Lead - low Mercury -low	TRV -Chromium	Moderate
		TRV - Lead	Moderate
		TRV - Mercury	Moderate
Semi-aquatic mammals	General	Crayfish tissue site-specific, but represents one species	Moderate
		Plant tissue from site-specific uptake factors	Moderate
		Bioavailbity of metals	Moderate
	Arsenic - High Lead - Low Mercury - Low	TRV - Arsenic	Moderate
		TRV - Lead	Moderate
		TRV - Mercury	Moderate
Small terresrial mammals	General	Estimates from wetland sediments	Moderate
		Only earthworms used for dietary exposure from prey	High
		Bioavailbity of metals	Moderate
	Arsenic - low	TRV - Arsenic	Moderate
Fish	No COPCs with Risk	Site-specific tissue concentrations	High
Invertebrates		Bioavailbity of metals	High

¹ Each COPC contributing risk is listed, a relative indication of risk to populations.
 Low = majority of habitat exceeds lower Threshold Effects Level based on NOAEL RTVs
 High = Majority of habitat exceeds upper Threshold Effects Level based on LOAEL RTVs

TABLE 4-276
HAZARD QUOTIENT COMPARISON FOR MUSKRAT VARYING PLANT TISSUE COPC CONCENTRATIONS

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT												
			Aluminum	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Selenium	Vanadium
18	Wetland	1	3.7		367	1.0		2.8	2.0	962	2.7	3.5	2.9	1.6	5.9
18*	Wetland	1	4.4		133			4.2	1.2	465	1.0		1.1		6.8
20	Wetland	1	5.7		145	1.1	1.2	2.4	2.4	527	5.8	3.0	1.6	2.1	9.8
20*	Wetland	1	5.1		143			2.1	1.1	305	1.2		1.6		5.8
21	Wetland	1	3.5		91	1.6	1.3	3.9	1.2	383	4.0		7.4		6.8
21*	Wetland	1	2.7		39			2.0		201	1.1		5.4	1.2	3.9
23	Wetland	Reference	2.1		10					267	2.5				7.0
23*	Wetland	Reference	1.4		14					206		1.1			3.1
% of OU3 stations (non-reference) with HQ>1			32	0	32	11	11	21	16	32	26	11	21	11	32

* Second row calculated with site-specific plant tissue data, and the first row were calculated using models with uptake factors and site sediment data to estimate plant tissue concentrations. Note that Station 23 utilized mean reference wetland sediment data during calculations, but site-specific plant tissue data was only for the actual station.

**TABLE 4-277
COMPARISON OF ARITHMETIC AND GEOMETRIC MEANS FOR SELECTED METALS FOR MUSKRAT**

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	ARITHMETIC AND GEOMETRIC STATION MEANS* (mg/kg)			
			Arsenic	Copper	Lead	Mercury
Reference	Pond		10		214	
Reference*	Pond		7.4		126	
02	Pond	6	19			
02*	Pond	6	11			
04	Pond	6	86			
04*	Pond	6	70			
06	Pond	4				1.4
06*	Pond	4				1.0
07	Pond	3				1.4
07*	Pond	3				0.9
13	Wetland	1	1267			
13*	Wetland	1	396			
BW	Wetland	1		899		6.6
BW*	Wetland	1		792		3.5
CB-01	Wetland	2		389		1.5
CB-01*	Wetland	2		240		0.9
CB-02	Wetland	2	27			
CB-02*	Wetland	2	22			
CB-03	Wetland	2	272			
CB-03*	Wetland	2	109			
CB-04	Wetland	2	112			
CB-04*	Wetland	2	85			
JY	Wetland	1	145			
JY*	Wetland	1	88			
LP	River	3	70			
LP*	River	3	35			
TT-30	River	2				24.9
TT-30*	River	2				7.4
WG	Wetland	1	136			
WG*	Wetland	1	46			
WH	Wetland	1	114			
WH*	Wetland	1	44			

* Second row provides the station geometric mean; first row provides the station arithmetic mean

TABLE 4-278
HAZARD QUOTIENT COMPARISON FOR MUSKRAT VARYING SEDIMENT COPC CONCENTRATIONS

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	ARITHMETIC AND GEOMETRIC MEANS*			
			Arsenic	Copper	Lead	Mercury
Reference	Pond		5		1.6	
Reference*	Pond		4		0.9	
02	Pond	6	10			
02*	Pond	6	6			
04	Pond	6	44			
04*	Pond	6	36			
06	Pond	4				1.1
06*	Pond	4				0.8
07	Pond	3				1.1
07*	Pond	3				0.7
13	Wetland	1	669			
13*	Wetland	1	211			
BW	Wetland	1		2.2		5.1
BW*	Wetland	1		1.9		2.7
CB-01	Wetland	2		1.0		1.2
CB-01*	Wetland	2		0.7		0.8
CB-02	Wetland	2	15			
CB-02*	Wetland	2	13			
CB-03	Wetland	2	139			
CB-03*	Wetland	2	57			
CB-04	Wetland	2	58			
CB-04*	Wetland	2	45			
JY	Wetland	1	75			
JY*	Wetland	1	46			
LP	River	3	36			
LP*	River	3	18			
TT-30	River	2				19.4
TT-30*	River	2				5.7
WG	Wetland	1	71			
WG*	Wetland	1	25			
WH	Wetland	1	60			
WH*	Wetland	1	24			

* Second row calculated with sediment station geometric mean data and the first row were calculated using sediment station arithmetic mean data. Pairs of data shown only for lognormal data sets.
~~Indicates that the calculated HQ was less than 1 when calculated with the geometric mean, but greater than 1 when calculated with the arithmetic mean~~

US EPA ARCHIVE DOCUMENT

TABLE 4-279
COMPARISON OF GEOMETRIC AND ARITHMETIC HAZARD QUOTIENTS AND HAZARD INDICES FOR BENTHIC INVERTEBRATES
FOR BENTHIC INVERTEBRATES BY REACH
WELLS G&H SUPERFUND SITE OU3

Chemical of Potential Concern	Reach 1		Reach 2		Reach 3		Reach 4		Reach 5		Reach 6		Pond Reference		River Reference		Wetland Reference	
	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A
Inorganics																		
Arsenic	3.9	13.3	1.6	3.6	1.3	2.1							0.3	0.4				
Cadmium													0.0	0.1	0.0	0.2		
Chromium	4.6	18.5	1.2	3.0	0.8	1.4	2.2	2.4	0.4	0.6	0.8	2.5	0.3	0.4			0.5	1.2
Copper			1.1	2.1	0.95	1.8			0.3	0.4	1.2	2.9			0.2	0.7		
Lead					0.4	0.8			0.6	0.9	1.0	1.7	0.6	0.9	0.2	0.4		
Mercury		1.6	0.2	0.96	0.3	0.5	0.5	0.6	0.1	0.2	0.1	0.5			0.0	0.1	0.0	0.1
Zinc			0.5	0.9											0.1	0.2		

0.0 - indicates the HQ was <0.05

Boxed - HQ >10

G - HQ based on Geometric Mean, calculated for log-normally distributed data, only.

A - HQ based on Arithmetic Mean (from Tables 4-261 to 4-263)

Indicates that the calculated HQ was less than 1 when calculated with the geometric mean, but greater than 1 when calculated with the arithmetic mean

TABLE 4-280
HAZARD QUOTIENT SUMMARY FOR MUSKRAT - MAXIMUM EXPOSURE CASE

WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach					
			Arsenic	Chromium	Copper	Lead	Mercury
	Pond	Reference	9			3.7	
	Wetland	Reference	17			3.9	
	River	Reference	13			1.7	
1	Pond	6	86		3	3	
2	Pond	6	29			2.7	
3	Pond	6	40			2.3	
4	Pond	6	61		1.1	4.6	
5	River	5	11			4.3	
6	River	4	59			3.3	2.5
7	River	3	42			2.6	1.9
8	River	2	16				
9	River	2	19				
10	River	1	728	3.8	5.4	6.1	14.6
11	River	1	242	1.5	1.1	4.5	2.9
12	River	1	1620	1.7	3.3	6.5	34.8
13	Wetland	1	2131	1.2	4.2	8.6	10.8
14	River	1	40				1.1
15	Wetland	1	100		1.2	1.1	
16	River	2	8				
18	Wetland	1	561	4.9	2.7	3.8	4.5
19	Wetland	1	2151	3.8	3.1	4.5	4.8
20	Wetland	1	165	3.0	2.6	9.0	2.6
21	Wetland	1	128	8.2	1.5	5.4	14.1
AM	River	2	63			1.1	1.5
AS	River	3	62	1.5	1.4	5.0	2.4
BW	Wetland	1	1537	3.3	3.6	6.5	12.1
CB-01	Wetland	2	31		1.9	3.3	2.3
CB-02	Wetland	2	22			1.8	
CB-03	Wetland	2	302	1.3	1.0	2.1	1.9
CB-04	Wetland	2	93			2.1	
CB-06	Wetland	2	72			1.4	
JY	Wetland	1	145	1.9	1.3	5.5	1.4
KFSE	River	2	28				
LP	River	3	76			1.1	
NRSE	Wetland	1	111			1.7	3.5
TT-28	River	1	501	6.9	3.2	4.9	3.9
TT-29	River	1	533	8.9	3.2	4.9	10.3
TT-30	River	2	534	7.8	7.6	4.8	69.2
TT-31	Wetland	2	17			2.5	1.4
TT-32	River	2	205	1.1	1.1	2.2	3.3
TT-33	River	2	147	3.2	1.3	2.1	4.2
UF	Pond	6	64		1.4	6.4	1.6
WG	Wetland	1	135	1.5	1.6	3.9	2.3
WH	Wetland	1	217	1.4	1.4	13.9	
WS	River	1	117	1.2	1.1	2.8	1.1
WW	Wetland	1	30	25.1	1.1	2.6	
% of OU3 stations (non-reference) with HQ>1			100	49	60	88	63

¹ A blank cell indicates that the HQ was less than 1.0

TABLE 4-281
HAZARD QUOTIENT SUMMARY FOR MUSKRAT, USING LOEL¹ TRVS²
MAXIMUM EXPOSURE CASE
WELLS G&H SUPERFUND SITE OU3

Station	Habitat Type	Aberjona River Reach	COPC HAZARD QUOTIENT ³					
			Arsenic	Chromium	Copper	Lead	Mercury	
Reference	Pond							
Reference	Wetland							
Reference	River							
1	Pond	6	1.2		2.3			
2	Pond	6						
3	Pond	6						
4	Pond	6						
5	River	5						
6	River	4						
7	River	3						
8	River	2						
9	River	2						
10	River	1	9.9		4.2			2.9
11	River	1	3.3					
12	River	1	22.1		2.6			7.0
13	Wetland	1	29.1		3.2			2.2
14	River	1						
15	Wetland	1	1.4					
16	River	2						
18	Wetland	1	7.7	1.1	2.1			
19	Wetland	1	29.3		2.4			
20	Wetland	1	2.2		2.0			
21	Wetland	1	1.7	1.8	1.2			2.8
AM	River	2						
AS	River	3			1.1			
BW	Wetland	1	21.0		2.8			2.4
CB-01	Wetland	2			1.4			
CB-02	Wetland	2						
CB-03	Wetland	2	4.1					
CB-04	Wetland	2	1.3					
CB-06	Wetland	2						
JY	Wetland	1	2.0					
KFSE	River	2						
LP	River	3						
NRSE	Wetland	1	1.5					
TT-28	River	1	6.8	1.5	2.5			
TT-29	River	1	7.3	2.0	2.5			2.1
TT-30	River	2	7.3	1.8	5.9			13.8
TT-31	Wetland	2						
TT-32	River	2	2.8					
TT-33	River	2	2.0					
UF	Pond	6						
WG	Wetland	1	1.8		1.2			
WH	Wetland	1	3.0		1.1		1.4	
WS	River	1	1.6					
WW	Wetland	1		5.7				
% of OU3 stations (non-reference) with HQ>1			53	14	37	2	16	

¹ LOAEL: Lowest Observed Adverse Effect Level

² TRV: Toxicity Reference Value

³ A blank cell indicates that the HQ was less than 1.0