APPENDIX B

SUMMARY STATISTICS

APPENDIX B
SUMMARY STATISTICS

This appendix provides the summary statistics calculated for each area/medium evaluated in the HHRA. Summary statistics are provided in the following order:

Waste Area - Surface Soil:
- N
- L
- I
- H
- G

Transect - Surface Soil:
- 7
- 6
- 5
- 4
- 3
- 2
- 1

Background Subsurface Soil

Background Surface Soil

Surface Water

Sediment

Transect Subsurface Soil:
- 7
- 6
- 5
- 4
- 3
- 2
- 1

Two tables are provided for each area. The first table presents the summary statistics by constituent, including frequency of detection; Shapiro-Wilk's Test for Normality; Minimum, Maximum and Mean Concentrations; 95% Upper Confidence Limit; and the Selected Site Concentration. These statistics are discussed in Section 3 of the text. The second table presents the sample identification for each sample included in the calculation of the summary statistics.

Table
Site Concentration Selection
N Waste

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
N	Waste	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg	4	4	100%	4	0 69	0 98	Lognormal	3 90E-03	9 76E-02	3 45E-01	2 92E-01	2 91E+07	2 91E+07	3 45E-01
N	Waste	PEST	4,4'-DDT	ug/kg dw	4	1	25%	4	0 69	0 71	Lognormal	1 75E+00	2 02E+00	2 70E+00	2 55E+00	2 82E+00	2 82E+00	2 70E+00
N	Waste	PEST	Aldrin	ug/kg dw	4	1	25%	3	0 75	0 75	Normal	9 00E-01	1 03E+00	1 28E+00	1 39E+00	1 85E+00	1 39E+00	1 28E+00
N	Waste	PEST	Alpha Chlordane	ug/kg dw	4	1	25%	3	0 75	0 75	Normal	9 00E-01	9 67E-01	1 10E+00	1 16E+00	1 22E+00	1 16E+00	1 10E+00
N	Waste	METALS	Aluminum	mg/kg dw	4	4	100%	4	0 86	0 89	Lognormal	7 50E+03	8 75E+03	1 10E+04	1 06E+04	1 14E+04	1 14E+04	1 10E+04
N	Waste	SVOA	Anthracene	ug/kg dw	4	3	75%	3	1 00	1 00	Normal	3 60E+01	4 70E+01	5 80E+01	6 55E+01	8 74E+01	6 55E+01	5 80E+01
N	Waste	METALS	Antimony	mg/kg dw	4	1	25%	1	NC	NC	NC	7 10E-01	7 10E-01	7 10E-01	NC	NC	NC	7 10E-01
N	Waste	METALS	Arsenic	mg/kg dw	4	4	100%	4	0 95	0 98	Lognormal	5 50E+00	6 33E+00	7 30E+00	7 20E+00	7 47E+00	7 47E+00	7 30E+00
N	Waste	METALS	Barium	mg/kg dw	4	4	100%	4	0 86	0 84	Normal	1 40E+02	6 83E+02	1 20E+03	1 21E+03	3 76E+05	1 21E+03	1 20E+03
N	Waste	SVOA	Benzo(a)anthracene	ug/kg dw	4	4	100%	4	0 94	0 94	Normal	7 00E+01	1 68E+02	2 70E+02	2 77E+02	1 37E+03	2 77E+02	2 70E+02
N	Waste	SVOA	Benzo(a)pyrene	ug/kg dw	4	4	100%	4	0 93	0 94	Lognormal	7 20E+01	1 87E+02	3 30E+02	3 28E+02	2 74E+03	2 74E+03	3 30E+02
N	Waste	SVOA	Benzo(b)fluoranthene	ug/kg dw	4	4	100%	4	0 93	0 97	Lognormal	5 90E+01	1 65E+02	3 20E+02	3 03E+02	3 55E+03	3 55E+03	3 20E+02
N	Waste	SVOA	Benzo(g,h,i)perylene	ug/kg dw	4	1	25%	4	0 65	0 68	Lognormal	8 00E+01	1 44E+02	3 00E+02	2 66E+02	9 66E+02	9 66E+02	3 00E+02
N	Waste	SVOA	Benzo(k)fluoranthene	ug/kg dw	4	4	100%	4	0 94	0 94	Normal	8 00E+01	2 18E+02	3 60E+02	3 70E+02	2 88E+03	3 70E+02	3 60E+02
N	Waste	PEST	beta-BHC	ug/kg dw	4	1	25%	3	0 75	0 75	Lognormal	2 70E-01	2 93E-01	3 38E-01	3 58E-01	3 82E-01	3 62E-01	3 38E-01
N	Waste	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	4	1	25%	4	0 72	0 73	Lognormal	9 00E+01	1 01E+02	1 30E+02	1 24E+02	1 33E+02	1 33E+02	1 30E+02
N	Waste	METALS	Cadmium	mg/kg dw	4	4	100%	4	0 98	0 98	Lognormal	3 00E-01	8 48E-01	1 50E+00	1 46E+00	1 18E+01	1 18E+01	1 50E+00
N	Waste	METALS	Calcium	mg/kg dw	4	4	100%	4	0 98	0 98	Lognormal	1 60E+04	5 73E+04	1 09E+05	1 04E+05	1 99E+06	1 99E+06	1 09E+05
N	Waste	METALS	Chromium	mg/kg dw	4	4	100%	4	0 63	0 63	Lognormal	1 20E+01	1 65E+01	1 80E+01	2 00E+01	2 29E+01	2 29E+01	1 80E+01
N	Waste	SVOA	Chrysene	ug/kg dw	4	4	100%	4	0 90	0 91	Lognormal	8 80E+01	2 00E+02	3 10E+02	3 26E+02	1 43E+03	1 43E+03	3 10E+02
N	Waste	METALS	Cobalt	mg/kg dw	4	4	100%	4	0 98	0 98	Lognormal	5 60E+00	5 84E+00	6 15E+00	6 12E+00	NC	NC	6 15E+00
N	Waste	METALS	Copper	mg/kg dw	4	4	100%	4	0 88	0 97	Lognormal	1 60E+01	5 01E+01	1 10E+02	1 00E+02	2 28E+03	2 28E+03	1 10E+02
N	Waste	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	4	2	50%	4	0 88	0 87	Normal	4 90E+01	7 25E+01	1 10E+02	1 07E+02	1 78E+02	1 07E+02	1 07E+02
N	Waste	PEST	Dieldrin	ug/kg dw	4	1	25%	3	0 85	0 86	Lognormal	1 75E+00	1 89E+00	2 13E+00	2 23E+00	2 33E+00	2 33E+00	2 13E+00
N	Waste	SVOA	Fluoranthene	ug/kg dw	4	4	100%	4	0 96	0 95	Normal	1 70E+02	3 93E+02	6 10E+02	6 27E+02	2 44E+03	6 27E+02	6 10E+02
N	Waste	PEST	Gamma Chlordane	ug/kg dw	4	1	25%	4	0 73	0 73	Lognormal	9 00E-01	1 38E+00	1 85E+00	2 02E+00	3 73E+00	3 73E+00	1 85E+00
N	Waste	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	4	3	75%	4	0 85	0 88	Lognormal	8 75E+01	1 44E+02	2 50E+02	2 34E+02	5 70E+02	5 70E+02	2 50E+02
N	Waste	METALS	Iron	mg/kg dw	4	4	100%	4	0 86	0 86	Normal	1 30E+04	1 43E+04	1 50E+04	1 54E+04	NC	1 54E+04	1 50E+04
N	Waste	METALS	Lead	mg/kg dw	4	4	100%	4	0 77	0 91	Lognormal	1 90E+01	1 38E+02	4 10E+02	3 58E+02	5 63E+06	5 63E+06	4 10E+02
N	Waste	METALS	Magnesium	mg/kg dw	4	4	100%	4	0 79	0 83	Lognormal	5 20E+03	7 18E+03	1 15E+04	1 06E+04	1 59E+04	1 59E+04	1 15E+04
N	Waste	METALS	Manganese	mg/kg dw	4	4	100%	4	0 89	0 88	Normal	2 60E+02	3 74E+02	4 10E+02	4 47E+02	5 01E+02	4 47E+02	4 10E+02
N	Waste	METALS	Mercury	mg/kg dw	4	4	100%	4	0 84	0 86	Lognormal	3 10E-02	6 78E-02	9 50E-02	1 06E-01	3 52E-01	3 52E-01	9 50E-02
N	Waste	PEST	Methoxychlor	ug/kg dw	4	1	25%	4	0 64	0 65	Lognormal	9 00E+00	2 06E+01	5 50E+01	4 76E+01	1 40E+03	1 40E+03	5 50E+01
N	Waste	METALS	Molybdenum	mg/kg dw	4	4	100%	4	0 94	0 96	Lognormal	7 00E-01	1 03E+00	1 45E+00	1 39E+00	1 82E+00	1 82E+00	1 45E+00
N	Waste	METALS	Nickel	mg/kg dw	4	4	100%	4	0 97	0 97	Normal	1 50E+01	1 61E+01	1 70E+01	1 71E+01	NC	1 71E+01	1 70E+01
N	Waste	SVOA	Pentachlorophenol	ug/kg dw	4	4	100%	4	0 79	0 82	Lognormal	2 32E+02	3 07E+02	4 74E+02	4 42E+02	6 13E+02	6 13E+02	4 74E+02
N	Waste	SVOA	Phenanthrene	ug/kg dw	4	4	100%	4	0 97	0 80	Normal	8 00E+01	1 76E+02	2 80E+02	2 63E+02	7 22E+02	2 63E+02	2 60E+02
N	Waste	METALS	Potassium	mg/kg dw	4	4	100%	4	0 95	0 95	Normal	1 20E+03	1 40E+03	1 60E+03	1 61E+03	1 70E+03	1 61E+03	1 60E+03
N	Waste	SVOA	Pyrene	ug/kg dw	4	4	100%	4	0 97	0 97	Normal	1 50E+02	3 41E+02	5 50E+02	5 51E+02	2 15E+03	5 51E+02	5 50E+02
N	Waste	METALS	Selenium	mg/kg dw	4	1	25%	4	0 87	0 89	Lognormal	4 95E-01	5 69E-01	6 80E-01	6 61E-01	8 91E-01	8 91E-01	6 80E-01
N	Waste	PCB	Total PCBs	ug/kg dw	4	1	25%	4	0 83	0 64	Lognormal	9 00E+00	5 13E+01	1 78E+02	1 51E+02	5 08E+06	5 08E+06	1 78E+02
N	Waste	METALS	Vanadium	mg/kg dw	4	4	100%	4	0 83	0 65	Lognormal	2 10E+01	2 38E+01	2 90E+01	2 80E+01	2 94E+01	2 94E+01	2 90E+01
N	Waste	METALS	Zinc	mg/kg dw	4	4	100%	4	0 85	0 85	Normal	6 20E+01	1 49E+02	2 50E+02	2 61E+02	2 24E+03	2 61E+02	2 50E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
N Waste

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
N	Waste	WASTE-N-B1-0-0.5FT	11/30/99	0	0.5
N	Waste	WASTE-N-B2-0-0.5FT	11/30/99	0	0.5
N	Waste	WASTE-N-B3-0-0.5FT	11/30/99	0	0.5
N	Waste	WASTE-N-B4-0-0.5FT	12/2/99	0	0.5

* - multiple depths averaged together

Table
Site Concentration Selection
L Waste

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
L	Waste	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg	4	4	100%	4	0 87	0 89	Lognormal	9 32E-02	3 60E-01	8 21E-01	7 62E-01	1 25E+02	1 25E+02	8 21E-01
L	Waste	SVOA	2-Methylnaphthalene	ug/kg dw	4	1	25%	4 0000	0 7005	0 7155	Lognormal	9 00E+01	1 04E+02	1 40E+02	1 32E+02	1 47E+02	1 47E+02	1 40E+02
L	Waste	PEST	4,4'-DDE	ug/kg dw	4	3	75%	4	0 96	0 87	Normal	1 80E+00	1 10E+01	2 00E+01	1 97E+01	4 01E+03	1 97E+01	1 97E+01
L	Waste	PEST	4,4'-DDT	ug/kg dw	4	1	25%	4	0 94	0 85	Normal	1 80E+00	8 95E+00	1 60E+01	1 58E+01	1 07E+03	1 58E+01	1 58E+01
L	Waste	SVOA	Acenaphthene	ug/kg dw	4	2	50%	4 0000	0 6541	0 7405	Lognormal	9 00E+01	4 81E+02	1 60E+03	1 36E+03	8 49E+06	8 49E+06	1 60E+03
L	Waste	PEST	Aldrin	ug/kg dw	4	1	25%	4	0 84	0 74	Normal	9 00E-01	3 63E+00	5 50E+00	6 19E+00	1 79E+02	6 19E+00	5 50E+00
L	Waste	METALS	Aluminum	mg/kg dw	4	4	100%	4	0 93	0 92	Normal	3 50E+03	5 75E+03	7 60E+03	7 98E+03	1 24E+04	7 98E+03	7 60E+03
L	Waste	SVOA	Anthracene	ug/kg dw	4	3	75%	4	0 69	0 91	Lognormal	9 00E+01	1 05E+03	3 60E+03	3 06E+03	9 95E+06	9 95E+06	3 60E+03
L	Waste	METALS	Antimony	mg/kg dw	4	4	100%	4	0 87	0 94	Lognormal	2 00E+00	3 28E+00	5 40E+00	5 01E+00	8 65E+00	8 65E+00	5 40E+00
L	Waste	METALS	Arsenic	mg/kg dw	4	4	100%	4	0 92	0 92	Lognormal	3 00E+01	3 33E+01	3 70E+01	3 71E+01	NC	NC	3 70E+01
L	Waste	METALS	Barium	mg/kg dw	4	4	100%	4	0 95	0 86	Normal	8 30E+01	1 71E+02	2 50E+02	2 69E+02	1 43E+03	2 69E+02	2 50E+02
L	Waste	SVOA	Benzo(a)anthracene	ug/kg dw	4	3	75%	4 0000	0 7895	0 9958	Lognormal	9 00E+01	2 56E+03	7 80E+03	6 74E+03	3 26E+11	3 26E+11	7 80E+03
L	Waste	SVOA	Benzo(a)pyrene	ug/kg dw	4	3	75%	4 0000	0 7988	0 9830	Lognormal	4 90E+01	2 30E+03	7 00E+03	6 06E+03	3 48E+13	3 48E+13	7 00E+03
L	Waste	SVOA	Benzo(b)fluoranthene	ug/kg dw	4	3	75%	4	0 80	1 00	Lognormal	9 00E+01	2 19E+03	6 60E+03	5 72E+03	7 02E+10	7 02E+10	6 60E+03
L	Waste	SVOA	Benzo(g,h,i)perylene	ug/kg dw	4	3	75%	4	0 83	1 00	Lognormal	9 00E+01	1 33E+03	3 80E+03	3 33E+03	1 14E+09	1 14E+09	3 80E+03
L	Waste	SVOA	Benzo(k)fluoranthene	ug/kg dw	4	3	75%	4	0 81	0 99	Lognormal	9 00E+01	2 29E+03	6 60E+03	5 93E+03	2 12E+11	2 12E+11	6 60E+03
L	Waste	METALS	Beryllium	mg/kg dw	4	4	100%	4	0 86	0 87	Lognormal	1 40E+00	1 48E+00	1 60E+00	1 59E+00	NC	NC	1 60E+00
L	Waste	PEST	beta BHC	ug/kg dw	4	1	25%	4	0 90	0 93	Lognormal	2 50E-01	1 66E+00	3 70E+00	3 37E+00	1 36E+03	1 36E+03	3 70E+00
L	Waste	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	4	2	50%	4	0 93	0 94	Lognormal	9 00E+01	1 90E+02	3 10E+02	2 97E+02	7 98E+02	7 98E+02	3 10E+02
L	Waste	METALS	Cadmium	mg/kg dw	4	4	100%	4	0 99	0 88	Normal	7 10E-01	5 60E+00	1 00E+01	1 02E+01	1 03E+04	1 02E+01	1 00E+01
L	Waste	METALS	Calcium	mg/kg dw	4	4	100%	4	0 85	0 74	Normal	2 80E+03	2 00E+04	2 80E+04	3 42E+04	1 65E+07	3 42E+04	2 90E+04
L	Waste	SVOA	Carbazole	ug/kg dw	4	3	75%	4 0000	0 6861	0 8445	Lognormal	9 00E+01	4 80E+02	1 50E+03	1 26E+03	1 62E+06	1 62E+06	1 50E+03
L	Waste	METALS	Chromium	mg/kg dw	4	4	100%	4	0 99	0 99	Lognormal	1 70E+01	4 53E+01	7 90E+01	7 61E+01	4 49E+02	4 49E+02	7 90E+01
L	Waste	SVOA	Chrysene	ug/kg dw	4	3	75%	4 0000	0 8098	0 9870	Lognormal	9 00E+01	2 64E+03	7 80E+03	6 78E+03	3 67E+11	3 67E+11	7 80E+03
L	Waste	METALS	Cobalt	mg/kg dw	4	4	100%	4	0 94	0 94	Lognormal	1 10E+01	1 38E+01	1 70E+01	1 70E+01	1 90E+01	1 90E+01	1 70E+01
L	Waste	METALS	Copper	mg/kg dw	4	4	100%	4	0 85	0 98	Lognormal	1 90E+02	1 76E+03	4 70E+03	4 19E+03	7 41E+07	7 41E+07	4 70E+03
L	Waste	METALS	Cyanide, Total	mg/kg dw	4	1	25%	4	0 84	0 84	Lognormal	2 70E-01	6 05E-01	1 60E+00	1 39E+00	3 66E+01	3 66E+01	1 60E+00
L	Waste	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	4	2	50%	4 0000	0 8137	0 8571	Lognormal	4 90E+01	4 55E+02	1 30E+03	1 15E+03	5 84E+06	5 84E+06	1 30E+03
L	Waste	SVOA	Dibenzofuran	ug/kg dw	4	1	25%	4	0 64	0 65	Lognormal	9 00E+01	2 56E+02	7 50E+02	6 44E+02	8 24E+04	8 24E+04	7 50E+02
L	Waste	PEST	Dieldrin	ug/kg dw	4	1	25%	4	0 91	0 78	Normal	1 80E+00	7 63E+00	1 20E+01	1 29E+01	4 22E+02	1 29E+01	1 20E+01
L	Waste	PEST	Endrin ketone	ug/kg dw	4	3	75%	4	0 88	0 93	Lognormal	1 80E+00	1 23E+01	2 80E+01	2 54E+01	1 23E+04	1 23E+04	2 80E+01
L	Waste	SVOA	Fluoranthene	ug/kg dw	4	3	75%	4	0 78	0 97	Lognormal	9 00E+01	5 77E+03	1 80E+04	1 55E+04	1 57E+15	1 57E+15	1 80E+04
L	Waste	SVOA	Fluorene	ug/kg dw	4	2	50%	4 0000	0 6357	0 8601	Lognormal	9 00E+01	4 21E+02	1 40E+03	1 19E+03	5 22E+06	5 22E+06	1 40E+03
L	Waste	PEST	Gamma Chlordane	ug/kg dw	4	3	75%	4	0 99	0 82	Normal	9 00E-01	1 15E+01	2 10E+01	2 13E+01	5 98E+05	2 13E+01	2 10E+01
L	Waste	PEST	Heptachlor epoxide	ug/kg dw	4	3	75%	4	0 89	0 83	Normal	9 00E-01	5 85E+00	9 20E+00	1 05E+01	3 51E+03	1 05E+01	9 20E+00
L	Waste	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	4	3	75%	4	0 78	1 00	Lognormal	9 00E+01	1 56E+03	4 60E+03	4 16E+03	7 61E+09	7 61E+09	4 60E+03
L	Waste	METALS	Iron	mg/kg dw	4	4	100%	4	0 87	0 78	Normal	7 10E+03	2 30E+04	3 20E+04	3 61E+04	3 34E+05	3 61E+04	3 20E+04
L	Waste	METALS	Lead	mg/kg dw	4	4	100%	4	0 83	0 99	Lognormal	6 40E+01	3 69E+02	9 40E+02	8 29E+02	2 54E+05	2 54E+05	9 40E+02
L	Waste	METALS	Magnesium	mg/kg dw	4	4	100%	4	0 97	0 84	Normal	3 40E+02	2 49E+03	4 20E+03	4 45E+03	2 73E+06	4 45E+03	4 20E+03
L	Waste	METALS	Manganese	mg/kg dw	4	4	100%	4	0 98	0 85	Normal	2 30E+01	3 51E+02	6 50E+02	6 76E+02	8 66E+07	6 76E+02	6 50E+02
L	Waste	METALS	Mercury	mg/kg dw	4	4	100%	4	0 94	0 79	Normal	3 90E-02	3 22E-01	5 60E-01	5 74E-01	7 12E+02	5 74E-01	5 60E-01
L	Waste	PEST	Methoxychlor	ug/kg dw	4	2	50%	3	0 99	0 99	Normal	9 00E+00	2 63E+01	4 60E+01	5 77E+01	1 51E+04	5 77E+01	4 60E+01
L	Waste	METALS	Molybdenum	mg/kg dw	4	4	100%	4	0 88	0 88	Lognormal	9 30E+00	1 45E+01	2 30E+01	2 21E+01	4 26E+01	4 26E+01	2 30E+01
L	Waste	SVOA	Naphthalene	ug/kg dw	4	1	25%	4 0000	0 6454	0 6804	Lognormal	9 00E+01	1 49E+02	3 20E+02	2 83E+02	1 22E+03	1 22E+03	3 20E+02
L	Waste	METALS	Nickel	mg/kg dw	4	4	100%	4	0 98	0 98	Normal	3 80E+01	4 88E+01	6 50E+01	6 58E+01	8 04E+01	5 58E+01	5 50E+01
L	Waste	SVOA	Pentachlorophenol	ug/kg dw	4	1	25%	3 0000	0 7840	0 7838	Normal	2 35E+02	2 38E+02	2 40E+02	2 43E+02	NC	2 43E+02	2 40E+02
L	Waste	SVOA	Phenanthrene	ug/kg dw	4	3	75%	4 0000	0 7207	0 9705	Lognormal	9 00E+01	3 62E+03	1 20E+04	1 02E+04	7 19E+12	7 19E+12	1 20E+04
L	Waste	METALS	Potassium	mg/kg dw	4	4	100%	4	1 00	0 97	Normal	5 00E+02	1 09E+03	1 70E+03	1 68E+03	4 80E+03	1 68E+03	1 68E+03
L	Waste	SVOA	Pyrene	ug/kg dw	4	3	75%	4	0 79	0 97	Lognormal	9 00E+01	4 27E+03	1 30E+04	1 12E+04	4 88E+13	4 88E+13	1 30E+04
L	Waste	METALS	Selenium	mg/kg dw	4	4	100%	4	0 86	0 87	Lognormal	1 80E+00	3 06E+00	4 30E+00	4 56E+00	9 00E+00	9 00E+00	4 30E+00
L	Waste	METALS	Silver	mg/kg dw	4	3	75%	4	0 93	0 97	Lognormal	5 50E-01	8 13E-01	1 20E+00	1 14E+00	1 57E+00	1 57E+00	1 20E+00
L	Waste	METALS	Sodium	mg/kg dw	4	4	100%	4	0 90	0 90	Lognormal	2 10E+02	3 45E+02	5 40E+02	5 28E+02	1 09E+03	1 09E+03	5 40E+02
L	Waste	METALS	Thallium	mg/kg dw	4	4	100%	4	1 00	1 00	Normal	1 60E+00	1 85E+00	2 10E+00	2 09E+00	2 17E+00	2 09E+00	2 09E+00
L	Waste	VOA	Toluene	ug/kg dw	4	1	25%	4 0000	0 7518	0 8303	Lognormal	3 15E+00	6 08E+00	1 30E+01	1 16E+01	6 23E+01	6 23E+01	1 30E+01
L	Waste	PCB	Total PCBs	ug/kg dw	4	2	50%	4	0 92	0 84	Normal	9 00E+00	4 90E+02	1 17E+03	1 07E+03	2 53E+13	1 07E+03	1 07E+03
L	Waste	METALS	Vanadium	mg/kg dw	4	4	100%	4	0 77	0 78	Lognormal	3 90E+01	4 43E+01	4 90E+01	5 07E+01	5 30E+01	5 30E+01	4 90E+01
L	Waste	METALS	Zinc	mg/kg dw	4	4	100%	4	1 00	0 95	Normal	1 60E+02	5 10E+02	8 70E+02	8 61E+02	8 86E+03	8 61E+02	8 61E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
L Waste

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
L	Waste	WASTE-L-B1-0-0.5FT	9/27/99	0	0.5
L	Waste	WASTE-L-B2-0-0.5FT	9/27/99	0	0.5
L	Waste	WASTE-L-B3-0-0.5FT	9/27/99	0	0.5
L	Waste	WASTE-L-B4-0-0.5FT	9/27/99	0	0.5

* - multiple depths averaged together

Table
Site Concentration Selection
I Waste

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
I	Waste	SVOA	1,2,4-Trichlorobenzene	ug/kg dw	4	1	25%	4	0.67	0.69	Lognormal	6.50E+01	1.11E+02	1.80E+02	1.85E+02	2.38E+02	2.38E+02	1.80E+02
I	Waste	SVOA	1,4-Dichlorobenzene	ug/kg dw	4	1	25%	1	NC	NC	NC	4.60E+01	4.60E+01	4.60E+01	NC	NC	NC	4.60E+01
I	Waste	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg	4	4	100%	4	0.66	0.88	Lognormal	7.23E-02	3.34E+00	1.27E+01	1.07E+01	5.83E+13	5.83E+13	1.27E+01
I	Waste	HERB	2,4-DB	ug/kg dw	4	1	25%	3	0.75	0.78	Lognormal	4.35E+00	1.27E+01	2.81E+01	3.87E+01	8.37E+05	8.37E+05	2.81E+01
I	Waste	SVOA	2,4-Dichlorophenol	ug/kg dw	4	1	25%	1	NC	NC	NC	8.20E+01	8.20E+01	8.20E+01	NC	NC	NC	8.20E+01
I	Waste	SVOA	2-Nitroaniline	ug/kg dw	4	1	25%	1	NC	NC	NC	1.60E+02	1.60E+02	1.60E+02	NC	NC	NC	1.60E+02
I	Waste	PEST	4,4'-DDD	ug/kg dw	3	3	100%	3	0.75	0.79	Lognormal	3.10E-01	6.69E+01	2.00E+02	2.61E+02	6.19E+56	6.19E+56	2.00E+02
I	Waste	PEST	4,4'-DDE	ug/kg dw	3	3	100%	3	0.76	0.95	Lognormal	1.65E+00	1.03E+02	3.00E+02	3.91E+02	1.38E+32	1.38E+32	3.00E+02
I	Waste	PEST	4,4'-DDT	ug/kg dw	3	2	67%	3	0.76	0.92	Lognormal	2.50E+00	1.57E+02	4.60E+02	5.99E+02	3.98E+32	3.98E+32	4.60E+02
I	Waste	SVOA	4-Chloroaniline	ug/kg dw	4	2	50%	4	0.63	0.69	Lognormal	1.65E+02	4.64E+03	1.80E+04	1.51E+04	3.35E+15	3.35E+15	1.80E+04
I	Waste	PEST	Aldrin	ug/kg dw	3	3	100%	3	0.78	0.93	Lognormal	8.20E-01	8.48E+01	2.50E+02	3.26E+02	2.37E+38	2.37E+38	2.50E+02
I	Waste	PEST	Alpha Chlordane	ug/kg dw	3	1	33%	1	NC	NC	NC	2.65E+00	2.65E+00	2.65E+00	NC	NC	NC	2.65E+00
I	Waste	METALS	Aluminum	mg/kg dw	4	4	100%	4	0.86	0.98	Lognormal	3.75E+03	5.84E+03	8.00E+03	7.71E+03	1.04E+04	1.04E+04	8.00E+03
I	Waste	SVOA	Anthracene	ug/kg dw	4	2	50%	4	0.71	0.92	Lognormal	2.85E+01	2.36E+02	7.30E+02	6.25E+02	3.37E+08	3.37E+08	7.30E+02
I	Waste	METALS	Antimony	mg/kg dw	4	4	100%	4	0.84	0.86	Lognormal	2.90E+00	6.08E+00	8.40E+00	9.34E+00	2.71E+01	2.71E+01	8.40E+00
I	Waste	METALS	Arsenic	mg/kg dw	4	4	100%	4	0.87	0.86	Normal	4.55E+00	7.79E+00	1.20E+01	1.21E+01	2.83E+01	1.21E+01	1.20E+01
I	Waste	METALS	Barium	mg/kg dw	4	4	100%	4	0.75	0.90	Lognormal	8.30E+01	2.61E+02	7.40E+02	6.45E+02	4.07E+04	4.07E+04	7.40E+02
I	Waste	SVOA	Benzo(a)anthracene	ug/kg dw	4	3	75%	4	0.69	0.85	Lognormal	7.80E+01	6.53E+02	2.20E+03	1.87E+03	1.36E+08	1.36E+08	2.20E+03
I	Waste	SVOA	Benzo(a)pyrene	ug/kg dw	4	3	75%	4	0.66	0.88	Lognormal	4.95E+01	8.29E+02	2.20E+03	1.86E+03	2.87E+09	2.87E+09	2.20E+03
I	Waste	SVOA	Benzo(b)fluoranthene	ug/kg dw	4	3	75%	4	0.67	0.82	Lognormal	9.50E+01	8.14E+02	2.80E+03	2.37E+03	4.08E+08	4.08E+08	2.80E+03
I	Waste	SVOA	Benzo(g,h,i)perylene	ug/kg dw	4	3	75%	4	0.68	0.78	Lognormal	9.00E+01	4.88E+02	1.60E+03	1.36E+03	5.62E+08	5.62E+08	1.60E+03
I	Waste	SVOA	Benzo(k)fluoranthene	ug/kg dw	4	3	75%	4	0.70	0.87	Lognormal	5.50E+01	3.10E+02	9.60E+02	8.21E+02	1.05E+08	1.05E+08	9.60E+02
I	Waste	METALS	Beryllium	mg/kg dw	4	4	100%	4	0.84	0.93	Lognormal	4.60E-01	8.10E-01	1.70E+00	1.55E+00	4.65E+00	4.65E+00	1.70E+00
I	Waste	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	4	1	25%	1	NC	NC	NC	8.75E+01	8.75E+01	8.75E+01	NC	NC	NC	8.75E+01
I	Waste	METALS	Cadmium	mg/kg dw	4	4	100%	4	0.79	0.88	Lognormal	2.20E+00	1.12E+01	3.10E+01	2.72E+01	4.57E+04	4.57E+04	3.10E+01
I	Waste	METALS	Calcium	mg/kg dw	4	4	100%	4	0.92	0.92	Lognormal	9.20E+04	1.57E+05	2.35E+05	2.36E+05	4.80E+05	4.80E+05	2.35E+05
I	Waste	SVOA	Carbazole	ug/kg dw	4	1	25%	4	0.66	0.70	Lognormal	8.50E+01	1.48E+02	3.20E+02	2.83E+02	1.30E+03	1.30E+03	3.20E+02
I	Waste	METALS	Chromium	mg/kg dw	4	4	100%	4	0.91	0.96	Lognormal	1.30E+01	3.33E+01	6.50E+01	6.10E+01	5.57E+02	5.57E+02	6.50E+01
I	Waste	SVOA	Chrysene	ug/kg dw	4	3	75%	4	0.68	0.83	Lognormal	9.50E+01	8.62E+02	2.20E+03	1.87E+03	5.53E+07	5.53E+07	2.20E+03
I	Waste	METALS	Cobalt	mg/kg dw	4	4	100%	4	0.79	0.98	Lognormal	2.00E+00	1.21E+01	3.30E+01	2.88E+01	1.80E+04	1.80E+04	3.30E+01
I	Waste	METALS	Copper	mg/kg dw	4	4	100%	4	0.85	0.83	Normal	1.65E+03	8.66E+03	1.30E+04	1.34E+04	2.97E+08	1.34E+04	1.30E+04
I	Waste	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	4	2	50%	4	0.68	0.74	Lognormal	3.85E+01	1.23E+02	3.60E+02	3.09E+02	4.44E+04	4.44E+04	3.60E+02
I	Waste	SVOA	Dibenzofuran	ug/kg dw	4	1	25%	4	0.99	0.99	Normal	8.50E+01	9.25E+01	1.00E+02	1.00E+02	NC	1.00E+02	1.00E+02
I	Waste	PEST	Dieldrin	ug/kg dw	3	3	100%	3	0.78	0.98	Lognormal	1.70E+00	7.04E+01	2.00E+02	2.60E+02	6.67E+25	6.67E+25	2.00E+02
I	Waste	SVOA	Di-n-butylphthalate	ug/kg dw	4	1	25%	1	NC	NC	NC	5.20E+01	5.20E+01	5.20E+01	NC	NC	NC	5.20E+01
I	Waste	PEST	Endosulfan I	ug/kg dw	3	3	100%	3	0.76	0.97	Lognormal	7.20E-01	8.88E+01	2.60E+02	3.39E+02	6.21E+36	6.21E+36	2.60E+02
I	Waste	PEST	Endosulfan II	ug/kg dw	3	3	100%	3	0.77	0.97	Lognormal	2.25E+00	2.06E+02	6.00E+02	7.81E+02	3.87E+35	3.87E+35	6.00E+02
I	Waste	PEST	Endosulfan sulfate	ug/kg dw	3	1	33%	2	1.00	1.00	Normal	8.50E+00	8.65E+00	8.80E+00	9.60E+00	NC	9.60E+00	8.80E+00
I	Waste	PEST	Endrin	ug/kg dw	3	3	100%	3	0.77	0.98	Lognormal	9.10E-01	8.22E+01	2.40E+02	3.13E+02	1.44E+35	1.44E+35	2.40E+02
I	Waste	PEST	Endrin aldehyde	ug/kg dw	3	3	100%	3	0.77	0.98	Lognormal	4.70E+00	5.15E+02	1.50E+03	1.95E+03	5.90E+37	5.90E+37	1.50E+03
I	Waste	PEST	Endrin ketone	ug/kg dw	3	3	100%	3	0.77	0.97	Lognormal	3.20E+00	2.42E+02	7.00E+02	9.11E+02	1.29E+33	1.29E+33	7.00E+02
I	Waste	SVOA	Fluoranthene	ug/kg dw	4	4	100%	4	0.66	0.84	Lognormal	1.20E+02	1.66E+03	6.00E+03	5.07E+03	2.32E+10	2.32E+10	6.00E+03
I	Waste	SVOA	Fluorene	ug/kg dw	4	1	25%	4	0.68	0.72	Lognormal	8.50E+01	1.25E+02	2.30E+02	2.08E+02	4.33E+02	4.33E+02	2.30E+02
I	Waste	PEST	Gamma Chlordane	ug/kg dw	3	3	100%	3	0.76	0.83	Lognormal	5.55E+00	1.32E+02	3.80E+02	4.94E+02	1.18E+24	1.18E+24	3.80E+02
I	Waste	PEST	Heptachlor	ug/kg dw	3	2	67%	3	0.79	0.96	Lognormal	8.55E-01	2.48E+01	6.90E+01	8.94E+01	3.91E+21	3.91E+21	6.90E+01
I	Waste	PEST	Heptachlor epoxide	ug/kg dw	3	3	100%	3	0.77	0.96	Lognormal	9.40E-01	4.85E+01	1.40E+02	1.82E+02	3.61E+28	3.51E+28	1.40E+02
I	Waste	SVOA	Hexachlorobenzene	ug/kg dw	4	1	25%	4	0.66	0.88	Lognormal	3.53E+01	5.48E+01	1.10E+02	9.81E+01	2.92E+02	2.92E+02	1.10E+02
I	Waste	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	4	2	50%	4	0.66	0.76	Lognormal	9.00E+01	4.84E+02	1.60E+03	1.36E+03	7.84E+08	7.84E+08	1.60E+03
I	Waste	METALS	Iron	mg/kg dw	4	4	100%	4	1.00	0.95	Normal	5.35E+03	1.08E+04	1.60E+04	1.60E+04	3.68E+04	1.60E+04	1.60E+04
I	Waste	METALS	Lead	mg/kg dw	4	4	100%	4	0.87	0.88	Normal	2.20E+02	8.95E+02	1.50E+03	1.41E+03	9.07E+04	1.41E+03	1.41E+03
I	Waste	METALS	Magnesium	mg/kg dw	4	4	100%	4	0.93	0.96	Lognormal	7.60E+03	1.24E+04	1.90E+04	1.80E+04	2.87E+04	2.87E+04	1.90E+04
I	Waste	METALS	Manganese	mg/kg dw	4	4	100%	4	0.77	0.80	Lognormal	1.60E+02	2.03E+02	3.00E+02	2.81E+02	3.58E+02	3.58E+02	3.00E+02
I	Waste	METALS	Mercury	mg/kg dw	4	4	100%	4	0.72	0.89	Lognormal	4.75E-02	8.04E-01	2.00E+00	1.71E+00	5.71E+06	5.71E+06	2.00E+00
I	Waste	PEST	Methoxychlor	ug/kg dw	3	3	100%	3	0.78	0.94	Lognormal	1.60E+01	1.03E+03	3.00E+03	3.91E+03	1.37E+33	1.37E+33	3.00E+03
I	Waste	METALS	Molybdenum	mg/kg dw	4	4	100%	4	0.95	0.92	Normal	2.70E+00	5.86E+00	8.50E+00	8.97E+00	2.65E+01	8.97E+00	8.50E+00
I	Waste	METALS	Nickel	mg/kg dw	4	4	100%	4	0.92	0.95	Lognormal	1.45E+01	3.54E+01	8.50E+01	8.25E+01	4.46E+02	4.46E+02	8.50E+01
I	Waste	SVOA	Pentachlorophenol	ug/kg dw	4	4	100%	4	0.73	0.84	Lognormal	2.20E+02	8.34E+02	1.65E+03	1.44E+03	8.33E+04	8.33E+04	1.65E+03
I	Waste	SVOA	Phenanthrene	ug/kg dw	4	4	100%	4	0.84	0.76	Lognormal	5.00E+01	8.80E+02	3.30E+03	2.78E+03	3.21E+11	3.21E+11	3.30E+03
I	Waste	METALS	Potassium	mg/kg dw	4	4	100%	4	0.93	0.93	Lognormal	1.05E+03	1.24E+03	1.50E+03	1.48E+03	1.59E+03	1.59E+03	1.50E+03
I	Waste	SVOA	Pyrene	ug/kg dw	4	4	100%	4	0.87	0.83	Lognormal	1.40E+02	1.35E+03	4.70E+03	3.98E+03	1.14E+09	1.14E+09	4.70E+03
I	Waste	METALS	Selenium	mg/kg dw	4	3	75%	4	0.77	0.78	Lognormal	5.50E-01	1.10E+00	1.60E+00	1.78E+00	6.89E+00	6.89E+00	1.60E+00
I	Waste	METALS	Silver	mg/kg dw	4	4	100%	4	0.91	0.94	Lognormal	1.75E+00	8.71E+00	1.90E+01	1.81E+01	5.71E+03	5.71E+03	1.90E+01
I	Waste	METALS	Sodium	mg/kg dw	4	4	100%	4	0.87	0.86	Normal	4.40E+02	6.35E+02	8.70E+02	8.66E+02	1.29E+03	8.66E+02	8.70E+02
I	Waste	VOA	Toluene	ug/kg dw	4	1	25%	4	0.95	0.94	Normal	2.35E+00	2.89E+00	3.30E+00	3.39E+00	3.64E+00	3.39E+00	3.30E+00
I	Waste	PCB	Total PCBs	ug/kg dw	4	3	75%	4	0.85	0.98	Lognormal	6.10E+01	3.13E+04	1.21E+05	1.02E+05	8.78E+28	8.78E+28	1.21E+05
I	Waste	METALS	Vanadium	mg/kg dw	4	4	100%	4	1.00	0.98	Normal	1.07E+01	1.87E+01	2.60E+01	2.63E+01	4.38E+01	2.63E+01	2.60E+01
I	Waste	METALS	Zinc	mg/kg dw	4	4	100%	4	0.92	0.95	Lognormal	4.05E+02	1.43E+03	2.80E+03	2.80E+03	4.33E+04	4.33E+04	2.80E+03

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
I Waste

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
I	Waste	WASTE-I-B1-0-0.5FT	10/13/99	0	0.5
I	Waste	WASTE-I-B2-0-0.5FT	10/13/99	0	0.5
I	Waste	WASTE-I-B3-0-0.5FT	10/13/99	0	0.5
I	Waste	WASTE-I-B4-0-0.5FT	10/14/99	0	0.5

* - multiple depths averaged together

Table
Site Concentration Selection
H Waste

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
H	Waste	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg	4	4	100%	4	0 92	0 94	Lognormal	3 45E-02	5 33E-01	1 29E+00	1 17E+00	1 77E+05	1 77E+05	1 29E+00
H	Waste	HERB	2,4-DB	ug/kg dw	4	2	50%	4	0 85	0 84	Normal	4 30E+00	6 74E+00	9 70E+00	9 94E+00	1 83E+01	9 94E+00	9 70E+00
H	Waste	VOA	2-Hexanone	ug/kg dw	4	1	25%	1	NC	NC	NC	5 70E+00	5 70E+00	5 70E+00	NC	NC	NC	5 70E+00
H	Waste	PEST	4,4'-DDE	ug/kg dw	4	3	75%	4	0 90	0 95	Lognormal	1 70E+00	3 44E+01	8 60E+01	8 03E+01	8 00E+08	8 00E+08	8 60E+01
H	Waste	PEST	4,4'-DDT	ug/kg dw	4	3	75%	4	0 90	0 91	Lognormal	1 70E+00	4 51E+01	1 10E+02	1 04E+02	1 17E+10	1 17E+10	1 10E+02
H	Waste	PEST	Aldrin	ug/kg dw	4	2	50%	4	0 86	0 83	Normal	9 00E-01	8 21E+00	2 10E+01	1 94E+01	9 33E+08	1 94E+01	1 94E+01
H	Waste	METALS	Aluminum	mg/kg dw	4	4	100%	4	0 89	0 93	Lognormal	4 30E+03	7 95E+03	1 40E+04	1 32E+04	3 92E+04	3 92E+04	1 40E+04
H	Waste	METALS	Antimony	mg/kg dw	4	4	100%	4	0 96	0 91	Normal	6 90E-01	1 57E+00	2 30E+00	2 37E+00	7 15E+00	2 37E+00	2 30E+00
H	Waste	METALS	Arsenic	mg/kg dw	4	4	100%	4	0 71	0 84	Lognormal	6 50E+00	2 26E+01	6 40E+01	5 53E+01	7 22E+03	7 22E+03	6 40E+01
H	Waste	METALS	Barium	mg/kg dw	4	4	100%	4	0 86	0 86	Normal	9 90E+01	1 12E+02	1 20E+02	1 24E+02	NC	1 24E+02	1 20E+02
H	Waste	SVOA	Benzo(a)anthracene	ug/kg dw	4	3	75%	4	0 8283	0 8559	Lognormal	9 00E+01	1 04E+02	1 30E+02	1 25E+02	1 33E+02	1 33E+02	1 30E+02
H	Waste	SVOA	Benzo(a)pyrene	ug/kg dw	4	3	75%	4	0 95	0 88	Normal	4 70E+01	9 93E+01	1 40E+02	1 45E+02	3 50E+02	1 45E+02	1 40E+02
H	Waste	SVOA	Benzo(b)fluoranthene	ug/kg dw	4	3	75%	4	0 96	0 97	Lognormal	9 00E+01	1 13E+02	1 40E+02	1 39E+02	1 54E+02	1 54E+02	1 40E+02
H	Waste	SVOA	Benzo(g,h,i)perylene	ug/kg dw	4	1	25%	4	0 84	0 88	Lognormal	9 00E+01	1 61E+02	3 70E+02	3 25E+02	2 17E+03	2 17E+03	3 70E+02
H	Waste	SVOA	Benzo(k)fluoranthene	ug/kg dw	4	3	75%	4	0 76	0 79	Lognormal	8 20E+01	9 88E+01	1 30E+02	1 23E+02	1 37E+02	1 37E+02	1 30E+02
H	Waste	METALS	Beryllium	mg/kg dw	4	4	100%	4	0 85	0 89	Lognormal	7 30E-01	1 52E+00	3 80E+00	3 31E+00	4 69E+01	4 69E+01	3 80E+00
H	Waste	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	4	2	50%	4	0 94	0 94	Lognormal	9 00E+01	1 04E+02	1 20E+02	1 20E+02	1 26E+02	1 26E+02	1 20E+02
H	Waste	METALS	Cadmium	mg/kg dw	4	4	100%	4	0 82	0 87	Lognormal	2 70E+00	9 03E+00	2 20E+01	1 97E+01	2 17E+03	2 17E+03	2 20E+01
H	Waste	METALS	Calcium	mg/kg dw	4	4	100%	4	0 81	0 92	Lognormal	5 90E+03	1 78E+04	4 20E+04	3 73E+04	1 07E+08	1 07E+08	4 20E+04
H	Waste	VOA	Carbon disulfide	ug/kg dw	4	1	25%	3	0 8997	0 9968	Normal	2 55E+00	3 42E+00	4 30E+00	4 89E+00	6 98E+00	4 89E+00	4 30E+00
H	Waste	METALS	Chromium	mg/kg dw	4	4	100%	4	0 92	0 89	Normal	1 50E+01	1 95E+01	2 30E+01	2 34E+01	2 58E+01	2 34E+01	2 30E+01
H	Waste	SVOA	Chrysene	ug/kg dw	4	3	75%	4	0 78	0 87	Lognormal	9 00E+01	1 58E+02	3 00E+02	2 71E+02	7 34E+02	7 34E+02	3 00E+02
H	Waste	METALS	Cobalt	mg/kg dw	4	4	100%	4	0 82	0 87	Lognormal	5 20E+00	1 00E+01	2 00E+01	1 82E+01	8 61E+01	8 61E+01	2 00E+01
H	Waste	METALS	Copper	mg/kg dw	4	4	100%	4	0 86	0 85	Normal	2 00E+02	3 75E+02	4 80E+02	5 33E+02	1 01E+03	5 33E+02	4 80E+02
H	Waste	PEST	Endosulfan II	ug/kg dw	4	1	25%	3	0 76	0 78	Lognormal	1 70E+00	3 57E+00	7 20E+00	6 87E+00	1 85E+03	1 85E+03	7 20E+00
H	Waste	PEST	Endrin ketone	ug/kg dw	4	3	75%	4	0 75	0 89	Lognormal	1 40E+00	2 50E+01	8 20E+01	7 03E+01	1 02E+10	1 02E+10	8 20E+01
H	Waste	SVOA	Fluoranthene	ug/kg dw	4	3	75%	4	0 96	0 94	Normal	9 00E+01	1 70E+02	2 40E+02	2 50E+02	5 21E+02	2 50E+02	2 40E+02
H	Waste	PEST	Gamma Chlordane	ug/kg dw	4	2	50%	4	0 78	0 75	Normal	9 00E-01	1 47E+01	3 00E+01	3 35E+01	1 92E+10	3 35E+01	3 00E+01
H	Waste	PEST	Heptachlor	ug/kg dw	4	1	25%	3	0 78	0 80	Lognormal	9 00E-01	1 28E+00	2 00E+00	2 33E+00	8 26E+00	8 26E+00	2 00E+00
H	Waste	PEST	Heptachlor epoxide	ug/kg dw	4	3	75%	4	0 86	0 86	Lognormal	5 90E-01	1 84E+01	4 40E+01	4 05E+01	1 11E+12	1 11E+12	4 40E+01
H	Waste	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	4	2	50%	4	0 82	0 83	Lognormal	8 70E+01	9 18E+01	1 00E+02	9 84E+01	NC	NC	1 00E+02
H	Waste	METALS	Iron	mg/kg dw	4	4	100%	4	0 97	0 96	Normal	1 40E+04	1 63E+04	1 80E+04	1 63E+04	1 69E+04	1 63E+04	1 80E+04
H	Waste	METALS	Lead	mg/kg dw	4	4	100%	4	0 82	0 92	Normal	5 30E+01	1 46E+02	2 30E+02	2 44E+02	1 78E+03	2 44E+02	2 30E+02
H	Waste	METALS	Magnesium	mg/kg dw	4	4	100%	4	0 87	0 85	Normal	6 90E+02	2 02E+03	2 50E+03	3 07E+03	1 90E+04	3 07E+03	2 50E+03
H	Waste	METALS	Manganese	mg/kg dw	4	4	100%	4	0 95	0 83	Normal	9 80E+01	4 37E+02	7 20E+02	7 39E+02	2 81E+04	7 39E+02	7 20E+02
H	Waste	METALS	Mercury	mg/kg dw	4	4	100%	4	0 77	0 94	Lognormal	6 40E-02	2 84E-01	7 70E-01	6 71E-01	1 42E+02	1 42E+02	7 70E-01
H	Waste	PEST	Methoxychlor	ug/kg dw	4	2	50%	4	0 78	0 87	Lognormal	9 00E+00	4 54E+01	1 30E+02	1 13E+02	2 00E+05	2 00E+05	1 30E+02
H	Waste	METALS	Molybdenum	mg/kg dw	4	4	100%	4	0 89	0 96	Lognormal	9 80E-01	4 95E+00	1 10E+01	9 97E+00	9 82E+02	9 82E+02	1 10E+01
H	Waste	METALS	Nickel	mg/kg dw	4	4	100%	4	0 68	0 73	Lognormal	2 00E+01	3 40E+01	7 00E+01	6 23E+01	2 15E+02	2 15E+02	7 00E+01
H	Waste	SVOA	Pentachlorophenol	ug/kg dw	4	1	25%	4	0 8193	0 8173	Normal	2 25E+02	2 32E+02	2 41E+02	2 41E+02	NC	2 41E+02	2 41E+02
H	Waste	SVOA	Phenanthrene	ug/kg dw	4	1	25%	4	0 7913	0 8009	Lognormal	9 00E+01	9 83E+01	1 10E+02	1 07E+02	NC	NC	1 10E+02
H	Waste	METALS	Potassium	mg/kg dw	4	4	100%	4	0 90	0 94	Lognormal	8 30E+02	1 16E+03	1 60E+03	1 54E+03	1 89E+03	1 89E+03	1 60E+03
H	Waste	SVOA	Pyrene	ug/kg dw	4	3	75%	4	0 81	0 78	Normal	9 00E+01	1 58E+02	1 80E+02	2 13E+02	3 38E+02	2 13E+02	1 80E+02
H	Waste	METALS	Selenium	mg/kg dw	4	3	75%	4	0 67	0 77	Lognormal	4 20E-01	1 58E+00	4 70E+00	4 03E+00	9 42E+02	9 42E+02	4 70E+00
H	Waste	METALS	Silver	mg/kg dw	4	3	75%	4	0 87	0 85	Normal	5 10E-01	1 39E+00	2 70E+00	2 64E+00	6 13E+01	2 64E+00	2 64E+00
H	Waste	METALS	Sodium	mg/kg dw	4	4	100%	4	0 96	0 96	Normal	1 10E+02	2 48E+02	3 90E+02	3 86E+02	1 46E+03	3 86E+02	3 90E+02
H	Waste	VOA	Tetrachloroethene	ug/kg dw	4	1	25%	4	0 7066	0 8198	Lognormal	2 55E+00	6 73E+00	1 70E+01	1 48E+01	2 98E+02	2 98E+02	1 70E+01
H	Waste	METALS	Thallium	mg/kg dw	4	1	25%	4	0 68	0 70	Lognormal	4 70E-01	1 01E+00	2 50E+00	2 18E+00	3 00E+01	3 00E+01	2 50E+00
H	Waste	PCB	Total PCBs	ug/kg dw	4	3	75%	4	0 84	0 82	Normal	8 50E+00	6 60E+02	1 52E+03	1 58E+03	1 34E+20	1 58E+03	1 52E+03
H	Waste	METALS	Vanadium	mg/kg dw	4	4	100%	4	0 91	0 93	Lognormal	2 00E+01	3 00E+01	4 50E+01	4 36E+01	6 80E+01	6 80E+01	4 50E+01
H	Waste	METALS	Zinc	mg/kg dw	4	4	100%	4	0 73	0 85	Lognormal	3 50E+02	1 28E+03	3 60E+03	3 12E+03	8 29E+05	8 29E+05	3 60E+03

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
H Waste

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
H	Waste	WASTE-H-B1-0-0.5FT	9/27/99	0	0.5
H	Waste	WASTE-H-B2-0-0.5FT	9/27/99	0	0.5
H	Waste	WASTE-H-B3-0-0.5FT	9/27/99	0	0.5
H	Waste	WASTE-H-B4-0-0.5FT	9/27/99	0	0.5

* - multiple depths averaged together

Table
Site Concentration Selection
G Waste

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
G	Waste	8260A	1998 Total TEQ w/ EMPC as ND	ug/kg	4	4	100%	4	0 75	0 88	Lognormal	8 13E-04	3 05E-03	6 35E-03	7 27E-03	1 32E+00	1 32E+00	6 35E-03
G	Waste	PEST	4,4'-DDT	ug/kg dw	4	3	75%	3	0 90	0 93	Lognormal	8 45E-02	1 15E-01	1 60E-01	1 82E-01	3 31E-01	3 31E-01	1 60E-01
G	Waste	PEST	Alpha Chlordane	ug/kg dw	4	2	50%	2	1 00	1 00	Normal	1 20E-01	1 90E-01	2 60E-01	6 32E-01	NC	6 32E-01	2 60E-01
G	Waste	METALS	Aluminum	mg/kg dw	4	4	100%	4	0 85	0 81	Normal	9 30E+03	1 30E+04	1 50E+04	1 59E+04	1 85E+04	1 59E+04	1 50E+04
G	Waste	METALS	Antimony	mg/kg dw	4	2	50%	2	1 00	1 00	Normal	6 50E-01	6 85E-01	7 20E-01	9 06E-01	NC	9 06E-01	7 20E-01
G	Waste	METALS	Arsenic	mg/kg dw	4	4	100%	4	0 82	0 82	Normal	6 50E+00	7 19E+00	8 05E+00	8 14E+00	8 43E+00	8 14E+00	8 05E+00
G	Waste	METALS	Barium	mg/kg dw	4	4	100%	4	0 86	0 84	Normal	7 90E+01	1 17E+02	1 40E+02	1 49E+02	1 85E+02	1 49E+02	1 40E+02
G	Waste	METALS	Beryllium	mg/kg dw	4	4	100%	4	0 92	0 91	Normal	5 10E-01	5 89E-01	6 40E-01	6 57E-01	6 79E-01	6 57E-01	6 40E-01
G	Waste	METALS	Cadmium	mg/kg dw	4	4	100%	4	0 89	0 95	Lognormal	1 80E-01	2 60E-01	3 90E-01	3 67E-01	5 04E-01	5 04E-01	3 90E-01
G	Waste	METALS	Calcium	mg/kg dw	4	4	100%	4	0 95	0 91	Normal	5 10E+03	9 73E+03	1 40E+04	1 40E+04	2 72E+04	1 40E+04	1 40E+04
G	Waste	METALS	Chromium	mg/kg dw	4	4	100%	4	0 87	0 84	Normal	1 50E+01	1 93E+01	2 20E+01	2 28E+01	2 49E+01	2 28E+01	2 20E+01
G	Waste	METALS	Cobalt	mg/kg dw	4	4	100%	4	0 97	0 95	Normal	5 80E+00	7 33E+00	8 60E+00	8 69E+00	9 43E+00	8 69E+00	8 60E+00
G	Waste	METALS	Copper	mg/kg dw	4	4	100%	4	0 97	0 99	Lognormal	1 00E+02	1 83E+02	2 90E+02	2 80E+02	6 00E+02	6 00E+02	2 90E+02
G	Waste	PEST	delta-BHC	ug/kg dw	4	3	75%	3	0 82	0 87	Lognormal	5 80E-02	1 03E-01	1 82E-01	2 18E-01	3 40E+00	3 40E+00	1 82E-01
G	Waste	PEST	Dieldrin	ug/kg dw	4	1	25%	1	NC	NC	NC	6 20E-02	6 20E-02	6 20E-02	NC	NC	NC	6 20E-02
G	Waste	PEST	Endosulfan I	ug/kg dw	4	1	25%	1	NC	NC	NC	2 20E-01	2 20E-01	2 20E-01	NC	NC	NC	2 20E-01
G	Waste	PEST	Endosulfan II	ug/kg dw	4	1	25%	1	NC	NC	NC	3 40E-01	3 40E-01	3 40E-01	NC	NC	NC	3 40E-01
G	Waste	PEST	Endosulfan sulfate	ug/kg dw	4	2	50%	2	1 00	1 00	Normal	1 20E-01	1 50E-01	1 80E-01	3 39E-01	NC	3 39E-01	1 80E-01
G	Waste	PEST	Endrin	ug/kg dw	4	2	50%	2	1 00	1 00	Normal	1 40E-01	1 48E-01	1 55E-01	1 95E-01	NC	1 95E-01	1 55E-01
G	Waste	PEST	Endrin aldehyde	ug/kg dw	4	2	50%	2	1 00	1 00	Lognormal	1 20E-01	3 95E-01	6 70E-01	2 13E+00	NC	NC	6 70E-01
G	Waste	PEST	Endrin ketone	ug/kg dw	4	2	50%	2	1 00	1 00	Normal	7 90E-01	9 10E-01	1 03E+00	1 67E+00	NC	1 67E+00	1 03E+00
G	Waste	PEST	Gamma Chlordane	ug/kg dw	4	3	75%	3	0 98	0 92	Normal	7 70E-02	2 02E-01	3 10E-01	4 00E-01	2 90E+01	4 00E-01	3 10E-01
G	Waste	PEST	Heptachlor epoxide	ug/kg dw	4	1	25%	1	NC	NC	NC	2 20E-01	2 20E-01	2 20E-01	NC	NC	NC	2 20E-01
G	Waste	METALS	Iron	mg/kg dw	4	4	100%	4	0 93	0 92	Normal	1 60E+04	1 84E+04	2 00E+04	2 05E+04	2 11E+04	2 05E+04	2 00E+04
G	Waste	METALS	Lead	mg/kg dw	4	4	100%	4	0 87	0 87	Lognormal	1 10E+01	1 36E+01	1 60E+01	1 66E+01	1 83E+01	1 83E+01	1 60E+01
G	Waste	METALS	Magnesium	mg/kg dw	4	4	100%	4	0 93	0 93	Lognormal	3 30E+03	4 09E+03	4 95E+03	4 99E+03	5 52E+03	5 52E+03	4 95E+03
G	Waste	METALS	Manganese	mg/kg dw	4	4	100%	4	0 94	0 86	Normal	2 60E+02	5 44E+02	7 40E+02	7 66E+02	1 85E+03	7 66E+02	7 40E+02
G	Waste	METALS	Mercury	mg/kg dw	4	4	100%	4	0 81	0 78	Normal	1 50E-02	2 45E-02	2 90E-02	3 23E-02	4 55E-02	3 23E-02	2 90E-02
G	Waste	PEST	Methoxychlor	ug/kg dw	4	1	25%	1	NC	NC	NC	9 40E-01	9 40E-01	9 40E-01	NC	NC	NC	9 40E-01
G	Waste	METALS	Molybdenum	mg/kg dw	4	4	100%	4	0 84	0 90	Lognormal	3 80E-01	5 19E-01	7 80E-01	7 31E-01	9 75E-01	9 75E-01	7 80E-01
G	Waste	METALS	Nickel	mg/kg dw	4	4	100%	4	0 95	0 96	Lognormal	1 70E+01	1 89E+01	2 15E+01	2 11E+01	2 17E+01	2 17E+01	2 15E+01
G	Waste	METALS	Potassium	mg/kg dw	4	4	100%	4	0 91	0 91	Lognormal	1 20E+03	1 45E+03	1 70E+03	1 73E+03	1 87E+03	1 87E+03	1 70E+03
G	Waste	PCB	Total PCBs	ug/kg dw	4	2	50%	4	0 65	0 69	Lognormal	7 80E+00	1 81E+01	4 65E+01	4 04E+01	7 79E+02	7 79E+02	4 65E+01
G	Waste	METALS	Vanadium	mg/kg dw	4	4	100%	4	0 78	0 78	Normal	3 20E+01	3 58E+01	4 00E+01	4 09E+01	4 26E+01	4 09E+01	4 00E+01
G	Waste	METALS	Zinc	mg/kg dw	4	4	100%	4	0 88	0 88	Lognormal	5 80E+01	6 09E+01	6 95E+01	6 79E+01	NC	NC	6 95E+01

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
G Waste

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
G	Waste	WASTE-G-B1-0-0.5FT	10/6/99	0	0.5
G	Waste	WASTE-G-B2-0-0.5FT	10/6/99	0	0.5
G	Waste	WASTE-G-B3-0-0.5FT	10/7/99	0	0.5
G	Waste	WASTE-G-B4-0-0.5FT	10/7/99	0	0.5

* - multiple depths averaged together

Table
Site Concentration Selection
T7 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T7	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	3	3	100%	3	0 95	1 00	Lognormal	9 34E-04	2 80E-03	5 23E-03	6 51E-03	2 99E+00	2 99E+00	5 23E-03
T7	Surface Soil	VOA	2-Butanone (MEK)	ug/kg dw	9	3	33%	9	0 8390	0 9556	Lognormal	9 10E+00	1 84E+01	3 70E+01	2 33E+01	2 48E+01	2 48E+01	2 48E+01
T7	Surface Soil	SVOA	2-Methylnaphthalene	ug/kg dw	9	1	11%	1	NC	NC	NC	6 50E+01	6 50E+01	6 50E+01	NC	NC	NC	6 50E+01
T7	Surface Soil	PEST	4,4'-DDD	ug/kg dw	9	1	11%	1	NC	NC	NC	1 30E+00	1 30E+00	1 30E+00	NC	NC	NC	1 30E+00
T7	Surface Soil	PEST	4,4'-DDE	ug/kg dw	9	7	78%	9	0 58	0 82	Lognormal	3 00E-01	9 80E+00	5 40E+01	2 11E+01	1 39E+02	1 39E+02	5 40E+01
T7	Surface Soil	PEST	4,4'-DDT	ug/kg dw	9	6	67%	9	0 71	0 78	Lognormal	1 10E+00	7 71E+00	2 90E+01	1 39E+01	5 00E+01	5 00E+01	2 90E+01
T7	Surface Soil	SVOA	Acenaphthene	ug/kg dw	9	2	22%	9	0 7850	0 8415	Lognormal	5 90E+01	9 77E+01	1 60E+02	1 14E+02	1 17E+02	1 17E+02	1 17E+02
T7	Surface Soil	VOA	Acetone	ug/kg dw	9	5	56%	9	0 7742	0 8681	Lognormal	2 50E+01	1 85E+02	5 00E+02	3 09E+02	1 13E+03	1 13E+03	5 00E+02
T7	Surface Soil	PEST	Alpha Chlordane	ug/kg dw	9	2	22%	9	0 59	0 80	Lognormal	3 00E-01	2 40E+00	1 10E+01	4 55E+00	8 34E+00	8 34E+00	8 34E+00
T7	Surface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 82	0 86	Lognormal	6 90E+03	8 33E+03	1 20E+04	9 40E+03	9 49E+03	9 49E+03	9 49E+03
T7	Surface Soil	SVOA	Anthracene	ug/kg dw	9	3	33%	9	0 56	0 75	Lognormal	4 10E+01	1 18E+02	3 60E+02	1 76E+02	1 88E+02	1 88E+02	1 88E+02
T7	Surface Soil	METALS	Antimony	mg/kg dw	9	1	11%	2	1 00	1 00	Lognormal	3 15E-01	5 23E-01	7 30E-01	1 83E+00	NC	NC	7 30E-01
T7	Surface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 45	0 53	Lognormal	6 20E+00	9 99E+00	3 40E+01	1 58E+01	1 50E+01	1 50E+01	1 50E+01
T7	Surface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 95	0 95	Normal	1 30E+02	1 67E+02	2 00E+02	1 82E+02	1 84E+02	1 82E+02	1 82E+02
T7	Surface Soil	VOA	Benzene	ug/kg dw	9	2	22%	9	0 8935	0 9341	Lognormal	2 10E+00	3 14E+00	4 60E+00	3 68E+00	3 79E+00	3 79E+00	3 79E+00
T7	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	9	9	100%	9	0 5822	0 8216	Lognormal	3 60E+01	3 42E+02	1 90E+03	7 19E+02	2 73E+03	2 73E+03	1 90E+03
T7	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	9	9	100%	9	0 5690	0 8303	Lognormal	4 40E+01	3 74E+02	2 10E+03	7 89E+02	2 43E+03	2 43E+03	2 10E+03
T7	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	9	9	100%	9	0 5897	0 8663	Lognormal	4 00E+01	4 06E+02	2 20E+03	8 39E+02	2 83E+03	2 83E+03	2 20E+03
T7	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	9	9	100%	9	0 61	0 86	Lognormal	4 00E+01	2 29E+02	1 10E+03	4 41E+02	8 65E+02	8 65E+02	8 65E+02
T7	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	9	9	100%	9	0 5485	0 8079	Lognormal	3 70E+01	3 54E+02	2 10E+03	7 71E+02	2 73E+03	2 73E+03	2 10E+03
T7	Surface Soil	METALS	Beryllium	mg/kg dw	9	3	33%	9	0 79	0 86	Lognormal	2 85E-01	4 23E-01	8 25E-01	5 35E-01	5 57E-01	5 57E-01	5 57E 01
T7	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	9	4	44%	6	0 85	0 88	Lognormal	4 20E+01	7 18E+01	9 10E+01	8 95E+01	1 02E+02	1 02E+02	9 10E+01
T7	Surface Soil	SVOA	Butylbenzylphthalate	ug/kg dw	9	1	11%	1	NC	NC	NC	5 80E+01	5 80E+01	5 80E+01	NC	NC	NC	5 80E+01
T7	Surface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 88	0 93	Lognormal	1 50E+00	3 12E+00	6 10E+00	4 18E+00	4 88E+00	4 88E+00	4 88E+00
T7	Surface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 79	0 88	Lognormal	5 95E+03	1 46E+04	3 80E+04	2 14E+04	2 66E+04	2 66E+04	2 66E+04
T7	Surface Soil	SVOA	Carbazole	ug/kg dw	9	3	33%	9	0 5714	0 7358	Lognormal	5 80E+01	1 18E+02	3 10E+02	1 82E+02	1 63E+02	1 63E+02	1 63E+02
T7	Surface Soil	VOA	Carbon disulfide	ug/kg dw	9	2	22%	9	0 8355	0 8561	Lognormal	2 50E+00	3 17E+00	4 30E+00	3 60E+00	3 66E+00	3 66E+00	3 66E+00
T7	Surface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 95	0 97	Lognormal	1 20E+01	1 53E+01	2 00E+01	1 69E+01	1 71E+01	1 71E+01	1 71E+01
T7	Surface Soil	SVOA	Chrysene	ug/kg dw	9	9	100%	9	0 6026	0 8437	Lognormal	4 80E+01	4 88E+02	2 60E+03	1 00E+03	3 88E+03	3 88E+03	2 60E+03
T7	Surface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 87	0 88	Lognormal	6 00E+00	6 63E+00	7 80E+00	7 03E+00	NC	NC	7 80E+00
T7	Surface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 63	0 81	Lognormal	2 10E+01	4 29E+01	1 30E+02	6 42E+01	6 76E+01	6 76E+01	6 76E+01
T7	Surface Soil	PEST	delta-BHC	ug/kg dw	9	1	11%	1	NC	NC	NC	1 80E-01	1 80E-01	1 80E-01	NC	NC	NC	1 80E-01
T7	Surface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	9	3	33%	9	0 5482	0 6984	Lognormal	4 75E+01	1 03E+02	4 10E+02	1 76E+02	1 95E+02	1 95E+02	1 95E+02
T7	Surface Soil	SVOA	Dibenzofuran	ug/kg dw	9	1	11%	1	NC	NC	NC	5 20E+01	5 20E+01	5 20E+01	NC	NC	NC	5 20E+01
T7	Surface Soil	HERB	Dicamba	ug/kg dw	9	1	11%	1	NC	NC	NC	2 65E+00	2 65E+00	2 65E+00	NC	NC	NC	2 65E+00
T7	Surface Soil	PEST	Dieldrin	ug/kg dw	9	2	22%	9	0 80	0 80	Normal	2 70E-01	1 81E+00	3 00E+00	2 24E+00	3 77E+00	2 24E+00	2 24E+00
T7	Surface Soil	SVOA	Di-n-butylphthalate	ug/kg dw	9	7	78%	9	0 8849	0 9255	Lognormal	4 00E+01	8 88E+01	1 70E+02	1 12E+02	1 26E+02	1 26E+02	1 26E+02
T7	Surface Soil	PEST	Endosulfan II	ug/kg dw	9	1	11%	1	NC	NC	NC	1 00E+00	1 00E+00	1 00E+00	NC	NC	NC	1 00E+00
T7	Surface Soil	PEST	Endrin	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	1 00E-01	2 50E-01	4 00E-01	1 20E+00	NC	NC	4 00E-01
T7	Surface Soil	PEST	Endrin ketone	ug/kg dw	9	4	44%	8	0 68	0 63	Normal	1 70E-01	1 40E+00	1 90E+00	1 89E+00	6 60E+00	1 89E+00	1 89E+00
T7	Surface Soil	VOA	Ethylbenzene	ug/kg dw	9	1	11%	6	0 9842	0 9834	Normal	2 50E+00	2 75E+00	3 00E+00	2 90E+00	NC	2 90E+00	2 90E+00
T7	Surface Soil	SVOA	Fluoranthene	ug/kg dw	9	9	100%	9	0 5713	0 8049	Lognormal	8 40E+01	9 68E+02	5 60E+03	2 08E+03	1 07E+04	1 07E+04	5 60E+03
T7	Surface Soil	SVOA	Fluorene	ug/kg dw	9	2	22%	9	0 8548	0 8430	Normal	5 60E+01	9 51E+01	1 40E+02	1 09E+02	1 13E+02	1 09E+02	1 09E+02
T7	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	9	4	44%	8	0 53	0 83	Lognormal	1 00E-01	1 97E+00	1 00E+01	3 87E+00	1 00E+01	1 00E+01	1 00E+01
T7	Surface Soil	PEST	gamma BHC (Lindane)	ug/kg dw	9	1	11%	1	NC	NC	NC	8 70E-02	8 70E-02	8 70E-02	NC	NC	NC	8 70E-02
T7	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	2 60E-01	4 40E 01	6 20E-01	1 58E+00	NC	NC	6 20E-01
T7	Surface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	9	4	44%	8	0 57	0 83	Lognormal	5 20E+01	2 40E+02	1 10E+03	4 45E+02	6 21E+02	6 21E+02	6 21E+02
T7	Surface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 87	0 89	Lognormal	1 30E+04	1 47E+04	1 75E+04	1 57E+04	1 58E+04	1 58E+04	1 58E+04
T7	Surface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 75	0 87	Lognormal	3 60E+01	6 46E+01	1 50E+02	8 65E+01	9 23E+01	9 23E+01	9 23E+01
T7	Surface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 88	0 97	Lognormal	2 80E+03	5 66E+03	1 10E+04	7 19E+03	7 73E+03	7 73E+03	7 73E+03
T7	Surface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 91	0 91	Normal	2 70E+02	3 45E+02	4 35E+02	3 84E+02	3 91E+02	3 84E+02	3 84E+02
T7	Surface Soil	METALS	Mercury	mg/kg dw	9	9	100%	9	0 88	0 93	Lognormal	4 40E-02	8 51E-02	1 60E-01	1 10E-01	1 24E-01	1 24E-01	1 24E-01
T7	Surface Soil	PEST	Methoxychlor	ug/kg dw	9	5	56%	9	0 86	0 77	Normal	9 90E-01	6 82E+00	1 00E+01	8 88E+00	1 61E+01	8 88E+00	8 88E+00
T7	Surface Soil	METALS	Molybdenum	mg/kg dw	9	8	89%	9	0 79	0 84	Lognormal	3 40E 01	7 93E-01	1 80E+00	1 05E+00	1 14E+00	1 14E+00	1 14E+00
T7	Surface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 54	0 65	Lognormal	1 50E+01	2 17E+01	5 50E+01	2 98E+01	2 91E+01	2 91E+01	2 91E+01
T7	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	9	3	33%	9	0 8508	0 8517	Lognormal	2 30E+02	2 41E+02	2 51E+02	2 46E+02	NC	NC	2 51E+02
T7	Surface Soil	SVOA	Phenanthrene	ug/kg dw	9	9	100%	9	0 5924	0 7681	Lognormal	3 70E+01	5 09E+02	2 90E+03	1 10E+03	9 82E+03	9 82E+03	2 90E+03
T7	Surface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 94	0 97	Lognormal	1 50E+03	2 02E+03	2 65E+03	2 29E+03	2 33E+03	2 33E+03	2 33E+03
T7	Surface Soil	SVOA	Pyrene	ug/kg dw	9	9	100%	9	0 57	0 80	Lognormal	7 20E+01	6 86E+02	3 90E+03	1 46E+03	6 09E+03	6 09E+03	3 90E+03
T7	Surface Soil	METALS	Selenium	mg/kg dw	9	6	67%	9	0 74	0 80	Lognormal	4 90E-01	6 93E-01	1 10E+00	8 42E-01	8 66E-01	8 66E-01	8 66E-01
T7	Surface Soil	METALS	Silver	mg/kg dw	9	4	44%	4	0 94	0 91	Normal	2 70E 01	3 65E-01	4 40E-01	4 68E-01	5 10E-01	4 48E-01	4 40E-01
T7	Surface Soil	METALS	Thallium	mg/kg dw	9	1	11%	9	0 68	0 74	Lognormal	4 85E-01	5 72E-01	8 50E-01	6 40E-01	6 40E-01	6 40E-01	6 40E-01
T7	Surface Soil	VOA	Toluene	ug/kg dw	9	4	44%	9	0 7303	0 8462	Lognormal	2 20E+00	4 68E+00	1 20E+01	6 79E+00	7 74E+00	7 74E+00	7 74E+00
T7	Surface Soil	PCB	Total PCBs	ug/kg dw	9	8	89%	9	0 89	0 92	Lognormal	7 50E+00	3 52E+01	9 00E+01	5 28E+01	1 05E+02	1 05E+02	9 00E+01
T7	Surface Soil	VOA	Trichloroethene	ug/kg dw	9	1	11%	3	0 9231	0 9210	Normal	2 50E+00	2 56E+00	2 60E+00	2 65E+00	NC	2 65E+00	2 60E+00
T7	Surface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 87	0 89	Lognormal	2 10E+01	2 47E+01	3 25E+01	2 70E+01	2 71E+01	2 71E+01	2 71E+01
T7	Surface Soil	VOA	Xylenes, Total	ug/kg dw	9	1	11%	9	0 8533	0 8775	Lognormal	2 50E+00	3 18E+00	4 20E+00	3 59E+00	3 65E+00	3 65E+00	3 65E+00
T7	Surface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 84	0 91	Lognormal	150 00	383 89	870 00	543 49	697 07	697 07	697 07

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TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T7 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T7	Surface Soil	DAS-T7-S1-0-0.5FT	4/20/00	0	0.5
T7	Surface Soil	DAS-T7-S2-0-0.5FT	4/20/00	0	0.5
T7	Surface Soil	UAS-T7-S1-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S2-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S3-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S4-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S5-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S6-0-0.5FT	11/19/99	0	0.5
T7	Surface Soil	UAS-T7-S7-0-0.5FT	11/19/99	0	0.5

Table
Site Concentration Selection
T6 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T6	Surface Soil	8260A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	4	4	100%	4	0 93	0 99	Lognormal	1 71E-03	6 37E-03	1 32E-02	1 22E-02	2 99E-01	2 99E-01	1 32E-02
T6	Surface Soil	PEST	4,4'-DDD	ug/kg dw	8	2	25%	6	0 71	0 76	Lognormal	1 80E+00	2 93E+00	6 40E+00	4 44E+00	5 55E+00	5 55E+00	5 55E+00
T6	Surface Soil	PEST	4,4'-DDE	ug/kg dw	8	6	75%	8	0 70	0 87	Lognormal	6 60E-01	5 35E+00	1 80E+01	1 00E+01	4 78E+01	4 78E+01	1 80E+01
T6	Surface Soil	PEST	4,4'-DDT	ug/kg dw	8	3	38%	8	0 59	0 69	Lognormal	1 60E+00	3 56E+01	1 40E+02	7 67E+01	3 10E+03	3 10E+03	1 40E+02
T6	Surface Soil	SVOA	Acenaphthene	ug/kg dw	8	2	25%	8	0 60	0 77	Lognormal	1 60E+01	1 28E+02	4 20E+02	2 08E+02	3 87E+02	3 87E+02	3 87E+02
T6	Surface Soil	VOA	Acetone	ug/kg dw	8	3	38%	8	0 64	0 74	Lognormal	2 65E+01	1 05E+02	4 20E+02	2 01E+02	4 48E+02	4 48E+02	4 20E+02
T6	Surface Soil	PEST	Alpha Chlordane	ug/kg dw	8	2	25%	8	0 74	0 91	Lognormal	5 00E-01	4 52E+00	1 70E+01	8 41E+00	3 53E+01	3 53E+01	1 70E+01
T6	Surface Soil	PEST	alpha BHC	ug/kg dw	8	1	13%	1	NC	NC	NC	2 20E-01	2 20E-01	2 20E-01	NC	NC	NC	2 20E-01
T6	Surface Soil	METALS	Aluminum	mg/kg dw	8	8	100%	8	0 92	0 88	Normal	5 20E+03	7 98E+03	9 70E+03	8 95E+03	9 28E+03	8 95E+03	8 95E+03
T6	Surface Soil	SVOA	Anthracene	ug/kg dw	8	3	38%	8	0 47	0 74	Lognormal	3 20E+01	2 43E+02	1 40E+03	5 57E+02	1 11E+03	1 11E+03	1 11E+03
T6	Surface Soil	METALS	Antimony	mg/kg dw	8	4	50%	4	0 94	0 94	Normal	5 90E-01	6 88E-01	7 70E-01	7 85E-01	8 20E-01	7 85E-01	7 70E-01
T6	Surface Soil	METALS	Arsenic	mg/kg dw	8	8	100%	8	0 91	0 95	Lognormal	4 00E+00	8 01E+00	9 20E+00	7 20E+00	7 52E+00	7 52E+00	7 52E+00
T6	Surface Soil	METALS	Barium	mg/kg dw	8	8	100%	8	0 92	0 92	Normal	8 90E+01	1 50E+02	2 00E+02	1 78E+02	1 90E+02	1 78E+02	1 78E+02
T6	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	8	7	88%	8	0 45	0 79	Lognormal	2 50E+01	6 06E+02	4 20E+03	1 58E+03	7 08E+03	7 08E+03	4 20E+03
T6	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	8	2	25%	8	0 43	0 55	Lognormal	4 85E+01	5 04E+02	3 60E+03	1 34E+03	4 09E+03	4 09E+03	3 60E+03
T6	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	8	7	88%	8	0 44	0 74	Lognormal	3 40E+01	8 34E+02	4 40E+03	1 65E+03	6 02E+03	6 02E+03	4 40E+03
T6	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	8	1	13%	8	0 43	0 48	Lognormal	9 00E+01	2 48E+02	1 30E+03	5 32E+02	6 45E+02	6 45E+02	6 45E+02
T6	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	8	2	25%	8	0 43	0 55	Lognormal	5 30E+01	5 03E+02	3 40E+03	1 29E+03	2 79E+03	2 79E+03	2 79E+03
T6	Surface Soil	METALS	Beryllium	mg/kg dw	8	7	88%	8	0 91	0 87	Normal	1 70E-01	4 90E-01	8 60E-01	6 23E-01	7 67E-01	6 23E-01	6 23E-01
T6	Surface Soil	PEST	beta BHC	ug/kg dw	8	1	13%	8	0 83	0 88	Lognormal	2 80E-01	1 34E+00	3 80E+00	2 21E+00	6 26E+00	6 26E+00	3 80E+00
T6	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	8	2	25%	8	0 60	0 77	Lognormal	2 90E+01	1 19E+02	3 60E+02	1 86E+02	2 42E+02	2 42E+02	2 42E+02
T6	Surface Soil	SVOA	Butylbenzylphthalate	ug/kg dw	8	1	13%	1	NC	NC	NC	5 70E+01	5 70E+01	5 70E+01	NC	NC	NC	5 70E+01
T6	Surface Soil	METALS	Cadmium	mg/kg dw	8	8	100%	8	0 69	0 83	Lognormal	8 10E-01	1 50E+00	4 00E+00	2 22E+00	2 48E+00	2 48E+00	2 48E+00
T6	Surface Soil	METALS	Calcium	mg/kg dw	8	8	100%	8	0 85	0 84	Normal	9 50E+03	6 26E+04	1 50E+05	1 01E+05	4 62E+05	1 01E+05	1 01E+05
T6	Surface Soil	SVOA	Carbazole	ug/kg dw	8	1	13%	8	0 43	0 47	Lognormal	9 00E+01	1 91E+02	8 60E+02	3 72E+02	4 06E+02	4 06E+02	4 06E+02
T6	Surface Soil	METALS	Chromium	mg/kg dw	8	8	100%	8	0 81	0 83	Lognormal	1 30E+01	1 44E+01	1 80E+01	1 55E+01	1 56E+01	1 56E+01	1 56E+01
T6	Surface Soil	SVOA	Chrysene	ug/kg dw	8	7	88%	8	0 45	0 79	Lognormal	3 00E+01	7 12E+02	4 90E+03	1 85E+03	8 00E+03	8 00E+03	4 90E+03
T6	Surface Soil	METALS	Cobalt	mg/kg dw	8	8	100%	8	0 88	0 90	Lognormal	3 90E+00	5 98E+00	9 20E+00	7 07E+00	7 41E+00	7 41E+00	7 41E+00
T6	Surface Soil	METALS	Copper	mg/kg dw	8	8	100%	8	0 85	0 93	Lognormal	1 80E+01	2 93E+01	5 60E+01	3 76E+01	4 02E+01	4 02E+01	4 02E+01
T6	Surface Soil	PEST	delta BHC	ug/kg dw	8	1	13%	1	NC	NC	NC	1 20E-01	1 20E-01	1 20E-01	NC	NC	NC	1 20E-01
T6	Surface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	8	3	38%	8	0 47	0 66	Lognormal	2 60E+01	1 18E+02	6 00E+02	2 49E+02	3 30E+02	3 30E+02	3 30E+02
T6	Surface Soil	SVOA	Dibenzofuran	ug/kg dw	8	1	13%	8	0 49	0 53	Lognormal	9 00E+01	1 12E+02	2 30E+02	1 44E+02	1 43E+02	1 43E+02	1 43E+02
T6	Surface Soil	HERB	Dicamba	ug/kg dw	8	2	25%	2	1 00	1 00	Lognormal	1 70E+00	2 35E+00	3 00E+00	6 45E+00	NC	NC	3 00E+00
T6	Surface Soil	PEST	Dieldrin	ug/kg dw	8	1	13%	1	NC	NC	NC	1 80E+00	1 80E+00	1 80E+00	NC	NC	NC	1 80E+00
T6	Surface Soil	PEST	Endosulfan sulfate	ug/kg dw	8	3	38%	3	0 95	0 99	Lognormal	5 70E-01	1 14E+00	1 90E+00	2 30E+00	3 48E+01	3 48E+01	1 90E+00
T6	Surface Soil	PEST	Endrin	ug/kg dw	8	1	13%	4	0 87	0 88	Lognormal	1 85E+00	1 99E+00	2 20E+00	2 16E+00	NC	NC	2 20E+00
T6	Surface Soil	PEST	Endrin aldehyde	ug/kg dw	8	1	13%	1	NC	NC	NC	7 50E-01	7 50E-01	7 50E-01	NC	NC	NC	7 50E-01
T6	Surface Soil	PEST	Endrin ketone	ug/kg dw	8	2	25%	2	1 00	1 00	Lognormal	2 30E-01	4 50E-01	6 70E-01	1 84E+00	NC	NC	6 70E-01
T6	Surface Soil	SVOA	Fluoranthene	ug/kg dw	8	7	88%	8	0 45	0 81	Lognormal	4 20E+01	1 38E+03	9 80E+03	3 66E+03	2 45E+04	2 45E+04	9 80E+03
T6	Surface Soil	SVOA	Fluorene	ug/kg dw	8	1	13%	8	0 44	0 48	Lognormal	9 00E+01	1 58E+02	5 80E+02	2 71E+02	2 78E+02	2 78E+02	2 78E+02
T6	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	8	2	25%	8	0 71	0 82	Lognormal	9 40E-01	4 70E+00	1 80E+01	8 77E+00	2 82E+01	2 82E+01	1 80E+01
T6	Surface Soil	PEST	gamma BHC (Lindane)	ug/kg dw	8	1	13%	1	NC	NC	NC	1 30E 01	1 30E-01	1 30E-01	NC	NC	NC	1 30E 01
T6	Surface Soil	PEST	Heptachlor	ug/kg dw	8	1	13%	5	0 72	0 79	Lognormal	9 50E-01	1 78E+00	4 10E+00	3 07E+00	5 30E+00	5 30E+00	4 10E+00
T6	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	8	1	13%	1	NC	NC	NC	1 80E-01	1 80E-01	1 80E-01	NC	NC	NC	1 80E 01
T6	Surface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	8	4	50%	8	0 47	0 65	Lognormal	5 10E+01	2 20E+02	1 10E+03	4 58E+02	5 88E+02	5 88E+02	5 88E+02
T6	Surface Soil	METALS	Iron	mg/kg dw	8	8	100%	8	0 88	0 87	Normal	9 00E+03	1 36E+04	1 90E+04	1 57E+04	1 63E+04	1 57E+04	1 57E+04
T6	Surface Soil	METALS	Lead	mg/kg dw	8	8	100%	8	0 81	0 84	Lognormal	2 90E+01	5 54E+01	1 10E+02	7 65E+01	9 21E+01	9 21E+01	9 21E+01
T6	Surface Soil	METALS	Magnesium	mg/kg dw	8	8	100%	8	0 83	0 87	Lognormal	4 90E+03	8 71E+03	1 80E+04	1 18E+04	1 35E+04	1 35E+04	1 35E+04
T6	Surface Soil	METALS	Manganese	mg/kg dw	8	8	100%	8	0 73	0 83	Lognormal	2 80E+02	3 85E+02	6 60E+02	4 64E+02	4 69E+02	4 69E+02	4 69E+02
T6	Surface Soil	HERB	MCPP	ug/kg dw	8	1	13%	8	0 45	0 50	Lognormal	1 05E+03	1 55E+03	4 50E+03	2 35E+03	2 35E+03	2 35E+03	2 35E+03
T6	Surface Soil	METALS	Mercury	mg/kg dw	8	8	100%	8	0 86	0 88	Lognormal	3 90E-02	5 73E-02	8 60E-02	6 93E-02	7 28E-02	7 28E-02	7 28E-02
T6	Surface Soil	PEST	Methoxychlor	ug/kg dw	8	3	38%	3	0 99	0 94	Normal	1 50E+00	3 60E+00	5 50E+00	6 98E+00	2 45E+02	6 98E+00	5 50E+00
T6	Surface Soil	METALS	Molybdenum	mg/kg dw	8	8	100%	8	0 58	0 83	Lognormal	2 80E-01	8 40E-01	3 20E+00	1 49E+00	1 84E+00	1 84E+00	1 84E+00
T6	Surface Soil	METALS	Nickel	mg/kg dw	8	8	100%	8	0 93	0 96	Lognormal	1 30E+01	1 73E+01	2 30E+01	1 93E+01	1 96E+01	1 96E+01	1 96E+01
T6	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	8	5	63%	7	0 90	0 90	Lognormal	2 31E+02	2 40E+02	2 49E+02	2 45E+02	NC	NC	2 49E+02
T6	Surface Soil	SVOA	Phenanthrene	ug/kg dw	8	6	75%	8	0 44	0 74	Lognormal	2 80E+01	9 75E+02	7 10E+03	2 63E+03	1 62E+04	1 62E+04	7 10E+03
T6	Surface Soil	METALS	Potassium	mg/kg dw	8	8	100%	8	0 94	0 97	Lognormal	1 30E+03	1 78E+03	2 40E+03	1 99E+03	2 03E+03	2 03E+03	2 03E+03
T6	Surface Soil	SVOA	Pyrene	ug/kg dw	8	6	75%	8	0 44	0 68	Lognormal	9 70E+01	1 11E+03	7 70E+03	2 89E+03	1 02E+04	1 02E+04	7 70E+03
T6	Surface Soil	METALS	Selenium	mg/kg dw	8	1	13%	8	0 79	0 81	Lognormal	5 00E-01	5 68E-01	6 80E-01	6 02E-01	NC	NC	6 80E-01
T6	Surface Soil	METALS	Silver	mg/kg dw	8	1	13%	1	NC	NC	NC	2 90E 01	2 90E-01	2 90E-01	NC	NC	NC	2 90E-01
T6	Surface Soil	METALS	Thallium	mg/kg dw	8	2	25%	8	0 67	0 71	Lognormal	5 00E-01	6 19E-01	9 70E-01	7 24E-01	7 30E 01	7 30E 01	7 30E 01
T6	Surface Soil	VOA	Toluene	ug/kg dw	8	1	13%	1	NC	NC	NC	2 20E+00	2 20E+00	2 20E+00	NC	NC	NC	2 20E+00
T6	Surface Soil	PCB	Total PCBs	ug/kg dw	8	6	75%	8	0 84	0 83	Lognormal	9 00E+00	8 31E+01	3 85E+02	1 73E+02	1 02E+03	1 02E+03	3 85E+02
T6	Surface Soil	METALS	Vanadium	mg/kg dw	8	8	100%	8	0 95	0 95	Normal	1 70E+01	2 54E+01	3 30E+01	2 89E+01	2 99E+01	2 89E+01	2 89E+01
T6	Surface Soil	METALS	Zinc	mg/kg dw	8	8	100%	8	0 80	0 89	Lognormal	8 20E+01	1 58E+02	3 50E+02	2 19E+02	2 50E+02	2 50E+02	2 50E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T6 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T6	Surface Soil	DAS-T6-S1-0-0.5FT	4/20/00	0	0.5
T6	Surface Soil	DAS-T6-S2-0-0.5FT	4/20/00	0	0.5
T6	Surface Soil	DAS-T6-S3-0-0.5FT	4/20/00	0	0.5
T6	Surface Soil	UAS-T6-S1-0-0.5FT	11/18/99	0	0.5
T6	Surface Soil	UAS-T6-S2-0-0.5FT	11/18/99	0	0.5
T6	Surface Soil	UAS-T6-S3-0-0.5FT	11/18/99	0	0.5
T6	Surface Soil	UAS-T6-S4-0-0.5FT	11/18/99	0	0.5
T6	Surface Soil	UAS-T6-S5-0-0.5FT	11/18/99	0	0.5

Table
Site Concentration Selection
T5 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T5	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	4	4	100%	4	0 70	0 81	Lognormal	2 48E-03	7 87E-03	2 18E-02	1 86E-02	1 37E+00	1 37E+00	2 18E-02
T5	Surface Soil	HERB	2,4-DB	ug/kg dw	9	2	22%	9	0 59	0 81	Lognormal	4 30E+00	8 15E+00	2 30E+01	1 26E+01	1 45E+01	1 45E+01	1 45E+01
T5	Surface Soil	VOA	2-Butanone (MEK)	ug/kg dw	9	5	56%	9	0 79	0 84	Lognormal	1 30E+01	1 83E+01	3 40E+01	2 27E+01	2 34E+01	2 34E+01	2 34E+01
T5	Surface Soil	PEST	4,4'-DDD	ug/kg dw	9	1	11%	9	0 53	0 69	Lognormal	1 70E+00	6 73E+00	3 60E+01	1 37E+01	2 14E+01	2 14E+01	2 14E+01
T5	Surface Soil	PEST	4,4'-DDE	ug/kg dw	9	3	33%	9	0 70	0 75	Lognormal	1 70E+00	3 15E+00	8 30E+00	4 56E+00	5 21E+00	5 21E+00	5 21E+00
T5	Surface Soil	PEST	4,4'-DDT	ug/kg dw	9	3	33%	9	0 50	0 68	Lognormal	1 70E+00	1 67E+01	1 10E+02	3 88E+01	1 43E+02	1 43E+02	1 10E+02
T5	Surface Soil	SVOA	Acenaphthylene	ug/kg dw	9	1	11%	1	NC	NC	NC	3 40E+01	3 40E+01	3 40E+01	NC	NC	NC	3 40E+01
T5	Surface Soil	VOA	Acetone	ug/kg dw	9	5	56%	9	0 78	0 81	Lognormal	2 60E+01	1 37E+02	4 60E+02	2 24E+02	6 42E+02	6 42E+02	4 60E+02
T5	Surface Soil	PEST	Aldrin	ug/kg dw	9	1	11%	9	0 50	0 68	Lognormal	9 00E-01	3 98E+00	2 30E+01	8 46E+00	1 37E+01	1 37E+01	1 37E+01
T5	Surface Soil	PEST	Alpha Chlordane	ug/kg dw	9	3	33%	9	0 51	0 88	Lognormal	1 60E-01	8 12E+00	5 40E+01	1 89E+01	1 69E+02	1 69E+02	5 40E+01
T5	Surface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 91	0 91	Normal	5 30E+03	8 37E+03	1 10E+04	9 71E+03	1 02E+04	9 71E+03	9 71E+03
T5	Surface Soil	SVOA	Anthracene	ug/kg dw	9	1	11%	1	NC	NC	NC	8 90E+01	8 90E+01	8 90E+01	NC	NC	NC	8 90E+01
T5	Surface Soil	METALS	Antimony	mg/kg dw	9	3	33%	3	0 78	0 78	Lognormal	6 20E-01	7 18E-01	8 05E-01	9 91E-01	1 21E+00	1 21E+00	9 05E-01
T5	Surface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 96	0 96	Lognormal	5 40E+00	6 33E+00	7 60E+00	6 79E+00	6 83E+00	6 83E+00	6 83E+00
T5	Surface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 89	0 88	Normal	1 50E+02	1 74E+02	1 90E+02	1 81E+02	NC	1 81E+02	1 81E+02
T5	Surface Soil	VOA	Benzene	ug/kg dw	9	1	11%	1	NC	NC	NC	1 60E+00	1 80E+00	1 80E+00	NC	NC	NC	1 80E+00
T5	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	9	6	67%	9	0 55	0 80	Lognormal	3 60E+01	1 21E+02	4 60E+02	2 01E+02	2 27E+02	2 27E+02	2 27E+02
T5	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	9	4	44%	9	0 58	0 72	Lognormal	4 70E+01	1 38E+02	6 00E+02	2 52E+02	3 37E+02	3 37E+02	3 37E+02
T5	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	9	6	67%	9	0 50	0 68	Lognormal	7 00E+01	1 78E+02	7 60E+02	3 19E+02	3 32E+02	3 32E+02	3 32E+02
T5	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	9	4	44%	9	0 67	0 81	Lognormal	4 40E+01	1 58E+02	4 30E+02	2 44E+02	3 17E+02	3 17E+02	3 17E+02
T5	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	9	4	44%	9	0 56	0 77	Lognormal	5 80E+01	1 59E+02	6 00E+02	2 64E+02	2 84E+02	2 84E+02	2 84E+02
T5	Surface Soil	METALS	Beryllium	mg/kg dw	9	9	100%	9	0 98	0 97	Normal	4 00E-01	5 29E-01	6 60E-01	5 61E-01	5 89E-01	5 81E-01	5 81E-01
T5	Surface Soil	PEST	beta BHC	ug/kg dw	9	1	11%	1	NC	NC	NC	1 00E-01	1 00E-01	1 00E-01	NC	NC	NC	1 00E-01
T5	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	9	4	44%	9	0 82	0 86	Lognormal	5 30E+01	1 06E+02	1 60E+02	1 30E+02	1 39E+02	1 39E+02	1 39E+02
T5	Surface Soil	SVOA	Butylbenzylphthalate	ug/kg dw	9	1	11%	9	0 43	0 48	Lognormal	9 00E+01	1 22E+02	3 40E+02	1 72E+02	1 66E+02	1 66E+02	1 66E+02
T5	Surface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 74	0 87	Lognormal	1 40E+00	3 42E+00	8 40E+00	4 79E+00	5 34E+00	5 34E+00	5 34E+00
T5	Surface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 87	0 87	Lognormal	3 80E+03	9 93E+03	2 05E+04	1 38E+04	1 90E+04	1 90E+04	1 90E+04
T5	Surface Soil	SVOA	Carbazole	ug/kg dw	9	1	11%	1	NC	NC	NC	7 10E+01	7 10E+01	7 10E+01	NC	NC	NC	7 10E+01
T5	Surface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 96	0 96	Normal	1 10E+01	1 46E+01	1 85E+01	1 61E+01	1 63E+01	1 61E+01	1 61E+01
T5	Surface Soil	SVOA	Chrysene	ug/kg dw	9	6	67%	9	0 55	0 84	Lognormal	4 90E+01	1 70E+02	7 10E+02	2 97E+02	3 35E+02	3 35E+02	3 35E+02
T5	Surface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 96	0 95	Normal	5 20E+00	5 99E+00	6 90E+00	6 31E+00	NC	6 31E+00	6 31E+00
T5	Surface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 83	0 85	Lognormal	3 80E+01	5 42E+01	8 45E+01	6 51E+01	6 78E+01	6 78E+01	6 78E+01
T5	Surface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	9	4	44%	9	0 65	0 73	Lognormal	4 65E+01	9 86E+01	3 20E+02	1 55E+02	1 85E+02	1 85E+02	1 85E+02
T5	Surface Soil	HERB	Dicamba	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	1 30E+00	2 10E+00	2 90E+00	7 15E+00	NC	NC	2 90E+00
T5	Surface Soil	PEST	Dieldrin	ug/kg dw	9	2	22%	9	0 43	0 61	Lognormal	1 40E+00	1 58E+01	1 20E+02	4 01E+01	9 51E+01	9 51E+01	9 51E+01
T5	Surface Soil	SVOA	Diethylphthalate	ug/kg dw	9	1	11%	1	NC	NC	NC	3 90E+01	3 90E+01	3 90E+01	NC	NC	NC	3 90E+01
T5	Surface Soil	SVOA	Di-n-butylphthalate	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	3 20E+01	3 35E+01	3 50E+01	4 30E+01	NC	4 30E+01	3 50E+01
T5	Surface Soil	PEST	Endrin	ug/kg dw	9	1	11%	8	0 64	0 68	Lognormal	1 70E+00	2 62E+00	6 10E+00	3 68E+00	3 98E+00	3 96E+00	3 96E+00
T5	Surface Soil	PEST	Endrin aldehyde	ug/kg dw	9	2	22%	8	0 85	0 79	Normal	2 40E-01	2 29E+00	5 08E+00	3 29E+00	8 10E+00	3 29E+00	3 29E+00
T5	Surface Soil	PEST	Endrin ketone	ug/kg dw	9	1	11%	8	0 66	0 68	Lognormal	1 70E+00	2 47E+00	4 95E+00	3 30E+00	3 51E+00	3 51E+00	3 51E+00
T5	Surface Soil	SVOA	Fluoranthene	ug/kg dw	9	5	56%	9	0 53	0 74	Lognormal	9 00E+01	2 43E+02	1 10E+03	4 46E+02	5 15E+02	5 15E+02	5 15E+02
T5	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	9	2	22%	9	0 57	0 66	Lognormal	9 00E-01	1 77E+01	7 80E+01	3 77E+01	7 83E+02	7 83E+02	7 80E+01
T5	Surface Soil	PEST	Heptachlor	ug/kg dw	9	1	11%	9	0 42	0 62	Lognormal	9 00E-01	1 15E+01	9 10E+01	3 00E+01	8 13E+01	8 13E+01	8 13E+01
T5	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	9	2	22%	9	0 53	0 89	Lognormal	9 10E-02	4 94E+00	3 00E+01	1 09E+01	8 51E+01	8 51E+01	3 00E+01
T5	Surface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	9	5	56%	9	0 70	0 76	Lognormal	7 90E+01	1 71E+02	4 50E+02	2 56E+02	3 08E+02	3 08E+02	3 08E+02
T5	Surface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 91	0 91	Lognormal	1 20E+04	1 39E+04	1 60E+04	1 48E+04	NC	NC	1 60E+04
T5	Surface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 79	0 86	Lognormal	3 50E+01	8 03E+01	1 70E+02	1 11E+02	1 31E+02	1 31E+02	1 31E+02
T5	Surface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 93	0 92	Normal	3 00E+03	4 13E+03	5 00E+03	4 56E+03	4 65E+03	4 56E+03	4 56E+03
T5	Surface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 89	0 87	Normal	2 80E+02	3 48E+02	4 00E+02	3 75E+02	3 80E+02	3 75E+02	3 75E+02
T5	Surface Soil	HERB	MCPA	ug/kg dw	9	2	22%	9	0 55	0 64	Lognormal	1 05E+03	1 58E+03	4 40E+03	2 26E+03	2 28E+03	2 28E+03	2 28E+03
T5	Surface Soil	HERB	MCPP	ug/kg dw	9	6	67%	9	0 87	0 92	Lognormal	1 10E+03	2 95E+03	6 80E+03	4 18E+03	5 59E+03	5 59E+03	5 59E+03
T5	Surface Soil	METALS	Mercury	mg/kg dw	9	9	100%	9	0 87	0 92	Lognormal	4 40E-02	6 97E-02	1 15E-01	8 49E-02	8 91E-02	8 91E-02	8 91E-02
T5	Surface Soil	PEST	Methoxychlor	ug/kg dw	9	3	33%	9	0 84	0 85	Lognormal	1 30E+00	1 47E+01	3 80E+01	2 16E+01	4 99E+01	4 99E+01	3 80E+01
T5	Surface Soil	METALS	Molybdenum	mg/kg dw	9	9	100%	9	0 96	0 97	Lognormal	2 20E-01	4 64E-01	7 80E-01	5 79E-01	6 44E-01	6 44E-01	6 44E-01
T5	Surface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 95	0 95	Normal	1 40E+01	1 68E+01	1 90E+01	1 79E+01	1 80E+01	1 79E+01	1 79E+01
T5	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	9	3	33%	5	0 89	0 89	Normal	2 25E+02	2 34E+02	2 41E+02	2 40E+02	NC	2 40E+02	2 40E+02
T5	Surface Soil	SVOA	Phenanthrene	ug/kg dw	9	6	67%	9	0 65	0 88	Lognormal	2 20E+01	1 01E+02	3 60E+02	1 64E+02	2 49E+02	2 49E+02	2 49E+02
T5	Surface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 83	0 87	Lognormal	1 50E+03	1 76E+03	2 40E+03	1 93E+03	1 94E+03	1 94E+03	1 94E+03
T5	Surface Soil	SVOA	Pyrene	ug/kg dw	9	5	56%	9	0 55	0 78	Lognormal	7 70E+01	1 99E+02	8 10E+02	3 44E+02	3 78E+02	3 78E+02	3 78E+02
T5	Surface Soil	METALS	Selenium	mg/kg dw	9	1	11%	1	NC	NC	NC	4 80E-01	4 80E-01	4 80E-01	NC	NC	NC	4 80E-01
T5	Surface Soil	METALS	Silver	mg/kg dw	9	3	33%	9	0 65	0 57	Normal	2 10E-01	5 01E-01	6 00E-01	5 71E-01	6 40E-01	5 71E-01	5 71E-01
T5	Surface Soil	VOA	Toluene	ug/kg dw	9	1	11%	7	0 89	0 89	Lognormal	2 60E+00	2 70E+00	2 80E+00	2 76E+00	NC	NC	2 80E+00
T5	Surface Soil	PCB	Total PCBs	ug/kg dw	9	7	78%	9	0 90	0 92	Lognormal	1 00E+01	6 67E+01	1 65E+02	1 01E+02	2 81E+02	2 81E+02	1 65E+02
T5	Surface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 85	0 84	Normal	1 70E+01	2 43E+01	2 90E+01	2 72E+01	2 80E+01	2 72E+01	2 72E+01
T5	Surface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 71	0 82	Lognormal	1 40E+02	3 74E+02	9 80E+02	5 53E+02	6 51E+02	6 51E+02	6 51E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T5 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T5	Surface Soil	DAS-T5-S1-0-0.5FT	4/19/00	0	0.5
T5	Surface Soil	DAS-T5-S2-0-0.5FT	4/19/00	0	0.5
T5	Surface Soil	DAS-T5-S3-0-0.5FT	4/19/00	0	0.5
T5	Surface Soil	UAS-T5-S1-0-0.5FT	11/17/99	0	0.5
T5	Surface Soil	UAS-T5-S2-0-0.5FT	11/17/99	0	0.5
T5	Surface Soil	UAS-T5-S3-0-0.5FT	11/17/99	0	0.5
T5	Surface Soil	UAS-T5-S4-0-0.5FT	11/17/99	0	0.5
T5	Surface Soil	UAS-T5-S5-0-0.5FT	11/17/99	0	0.5
T5	Surface Soil	UAS-T5-S6-0-0.5FT	11/17/99	0	0.5

Table
Site Concentration Selection
T4 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T4	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	5	5	100%	5	0 68	0 92	Lognormal	2 76E-03	4 71E-03	7 42E-03	6 32E-03	7 44E-03	7 44E-03	7 42E-03
T4	Surface Soil	HERB	2,4-DB	ug/kg dw	10	1	10%	10	0 39	0 45	Lognormal	4 25E+00	7 68E+00	3 50E+01	1 32E+01	1 17E+01	1 17E+01	1 17E+01
T4	Surface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	1	10%	10	0 69	0 95	Lognormal	1 00E+01	1 50E+01	2 45E+01	1 76E+01	1 80E+01	1 80E+01	1 80E+01
T4	Surface Soil	SVOA	2-Methylnaphthalene	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	6 15E+01	6 66E+01	7 20E+01	9 99E+01	NC	NC	7 20E+01
T4	Surface Soil	PEST	4,4'-DDE	ug/kg dw	10	4	40%	4	0 97	0 98	Lognormal	7 30E-01	1 08E+00	1 50E+00	1 48E+00	2 03E+00	2 03E+00	1 50E+00
T4	Surface Soil	PEST	4,4'-DDT	ug/kg dw	10	5	50%	10	0 91	0 91	Lognormal	9 20E-01	1 74E+00	3 00E+00	2 08E+00	2 22E+00	2 22E+00	2 22E+00
T4	Surface Soil	SVOA	Acenaphthene	ug/kg dw	10	5	50%	10	0 46	0 72	Lognormal	5 70E+01	2 11E+02	1 20E+03	4 14E+02	4 20E+02	4 20E+02	4 20E+02
T4	Surface Soil	SVOA	Acenaphthylene	ug/kg dw	10	3	30%	3	1 00	0 98	Normal	2 40E+01	4 93E+01	7 50E+01	9 23E+01	1 11E+03	9 23E+01	7 50E+01
T4	Surface Soil	VOA	Acetone	ug/kg dw	10	2	20%	10	0 58	0 65	Lognormal	2 05E+01	9 88E+01	4 60E+02	1 86E+02	3 01E+02	3 01E+02	3 01E+02
T4	Surface Soil	PEST	Alpha Chlordane	ug/kg dw	10	4	40%	10	0 63	0 71	Lognormal	9 00E-01	1 32E+00	3 10E+00	1 73E+00	1 74E+00	1 74E+00	1 74E+00
T4	Surface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0 85	0 96	Lognormal	5 10E+03	9 40E+03	1 40E+04	1 09E+04	1 14E+04	1 14E+04	1 14E+04
T4	Surface Soil	SVOA	Anthracene	ug/kg dw	10	6	60%	10	0 50	0 84	Lognormal	3 00E+01	3 65E+02	2 30E+03	7 67E+02	1 24E+03	1 24E+03	1 24E+03
T4	Surface Soil	METALS	Antimony	mg/kg dw	10	1	10%	1	NC	NC	NC	6 50E-01	6 50E-01	6 50E-01	NC	NC	NC	6 50E-01
T4	Surface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0 97	0 95	Normal	3 40E+00	6 76E+00	1 00E+01	7 97E+00	8 51E+00	7 97E+00	7 97E+00
T4	Surface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0 48	0 75	Lognormal	7 70E+01	2 85E+02	1 20E+03	4 57E+02	4 53E+02	4 53E+02	4 53E+02
T4	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	10	8	80%	10	0 56	0 83	Lognormal	3 40E+01	7 03E+02	4 30E+03	1 46E+03	4 79E+03	4 79E+03	4 30E+03
T4	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	10	5	50%	10	0 58	0 85	Lognormal	5 00E+01	5 91E+02	3 50E+03	1 21E+03	4 73E+03	4 73E+03	3 50E+03
T4	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	10	5	50%	10	0 58	0 79	Lognormal	8 00E+01	5 98E+02	3 50E+03	1 21E+03	2 81E+03	2 81E+03	2 81E+03
T4	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	10	4	40%	10	0 54	0 70	Lognormal	9 00E+01	3 93E+02	2 20E+03	7 75E+02	1 18E+03	1 18E+03	1 18E+03
T4	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	10	5	50%	10	0 53	0 77	Lognormal	9 00E+01	5 42E+02	3 30E+03	1 12E+03	1 94E+03	1 94E+03	1 94E+03
T4	Surface Soil	METALS	Beryllium	mg/kg dw	10	10	100%	10	0 95	0 89	Normal	2 70E-01	5 83E-01	8 60E-01	6 78E-01	7 26E-01	6 78E-01	6 78E-01
T4	Surface Soil	PEST	beta BHC	ug/kg dw	10	4	40%	10	0 66	0 80	Lognormal	1 00E-01	4 41E-01	1 30E+00	6 58E-01	8 06E-01	8 06E-01	8 06E-01
T4	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	10	1	10%	1	NC	NC	NC	6 60E+01	6 60E+01	6 60E+01	NC	NC	NC	6 60E+01
T4	Surface Soil	METALS	Cadmium	mg/kg dw	10	10	100%	10	0 95	0 96	Lognormal	4 60E-01	1 62E+00	3 20E+00	2 12E+00	2 67E+00	2 67E+00	2 67E+00
T4	Surface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0 87	0 88	Lognormal	6 00E+03	5 13E+04	1 50E+05	7 99E+04	2 88E+05	2 88E+05	1 50E+05
T4	Surface Soil	SVOA	Carbazole	ug/kg dw	10	5	50%	10	0 44	0 84	Lognormal	6 20E+01	1 88E+02	1 00E+03	3 54E+02	3 26E+02	3 26E+02	3 26E+02
T4	Surface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0 93	0 97	Lognormal	1 10E+01	1 76E+01	2 90E+01	2 07E+01	2 14E+01	2 14E+01	2 14E+01
T4	Surface Soil	SVOA	Chrysene	ug/kg dw	10	9	90%	10	0 56	0 94	Lognormal	3 50E+01	7 10E+02	4 40E+03	1 49E+03	6 58E+03	6 58E+03	4 40E+03
T4	Surface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0 95	0 98	Lognormal	3 40E+00	6 40E+00	1 00E+01	7 49E+00	7 84E+00	7 84E+00	7 84E+00
T4	Surface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0 74	0 95	Lognormal	2 55E+01	6 51E+01	1 80E+02	9 04E+01	9 81E+01	9 81E+01	9 81E+01
T4	Surface Soil	PEST	delta-BHC	ug/kg dw	10	4	40%	3	1 00	0 96	Normal	8 20E-02	1 84E-01	2 40E-01	2 97E-01	2 76E+00	2 97E-01	2 40E-01
T4	Surface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	10	1	10%	10	0 39	0 51	Lognormal	4 50E+01	1 31E+02	8 10E+02	2 69E+02	2 35E+02	2 35E+02	2 35E+02
T4	Surface Soil	SVOA	Dibenzofuran	ug/kg dw	10	3	30%	10	0 45	0 67	Lognormal	4 50E+01	1 63E+02	7 70E+02	2 67E+02	2 76E+02	2 76E+02	2 76E+02
T4	Surface Soil	HERB	Dicamba	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	1 50E+00	1 63E+00	1 75E+00	2 41E+00	NC	NC	1 75E+00
T4	Surface Soil	PEST	Dieldrin	ug/kg dw	10	6	60%	10	0 57	0 80	Lognormal	1 15E+00	2 84E+00	1 00E+01	4 34E+00	4 35E+00	4 35E+00	4 35E+00
T4	Surface Soil	PEST	Endosulfan sulfate	ug/kg dw	10	2	20%	2	1 00	1 00	Normal	1 00E-01	1 20E-01	1 40E-01	2 46E-01	NC	2 46E-01	1 40E-01
T4	Surface Soil	PEST	Endrin ketone	ug/kg dw	10	4	40%	10	0 86	0 68	Normal	1 70E-01	1 90F+00	4 00E+00	2 45E+00	4 75E+00	2 45E+00	2 45E+00
T4	Surface Soil	SVOA	Fluoranthene	ug/kg dw	10	9	90%	10	0 57	0 95	Lognormal	4 10E+01	1 58E+03	1 00E+04	3 36E+03	3 63E+04	3 63E+04	1 00E+04
T4	Surface Soil	SVOA	Fluorene	ug/kg dw	10	4	40%	10	0 46	0 75	Lognormal	4 40E+01	2 33E+02	1 40E+03	4 72E+02	5 03E+02	5 03E+02	5 03E+02
T4	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	10	4	40%	10	0 57	0 64	Lognormal	9 00E-01	1 83E+00	6 60E+00	2 91F+00	3 09E+00	3 09E+00	3 09F+00
T4	Surface Soil	PEST	Heptachlor	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	3 40E-01	4 90E-01	6 40E-01	1 44F+00	NC	NC	6 40E-01
T4	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	10	3	30%	10	0 76	0 75	Normal	1 90E-01	1 01E+00	2 30E+00	1 31E+00	1 73E+00	1 31E+00	1 31E+00
T4	Surface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	10	4	40%	10	0 52	0 69	Lognormal	9 00E+01	3 55E+02	2 00E+03	7 02E+02	9 56E+02	9 56E+02	9 56E+02
T4	Surface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0 93	0 90	Normal	7 70E+03	1 54E+04	2 10E+04	1 78E+04	1 89E+04	1 78E+04	1 78E+04
T4	Surface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0 87	0 97	Lognormal	2 80E+01	1 00E+02	2 60E+02	1 43E+02	1 95E+02	1 95E+02	1 95E+02
T4	Surface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0 74	0 88	Lognormal	3 70E+03	7 63E+03	2 10E+04	1 08E+04	1 18E+04	1 18E+04	1 18E+04
T4	Surface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0 92	0 82	Normal	1 80E+02	4 14F+02	6 10E+02	4 78E+02	5 18E+02	4 78E+02	4 78F+02
T4	Surface Soil	HERB	MCPA[(4 chloro 2 methylphenoxy) acetic a	ug/kg dw	10	3	30%	10	0 69	0 75	Lognormal	1 00F+03	1 57E+03	3 70E+03	2 07E+03	2 15E+03	2 15E+03	2 15E+03
T4	Surface Soil	METALS	Mercury	mg/kg dw	10	10	100%	10	0 52	0 85	Lognormal	2 70E-02	1 22E-01	5 70E-01	2 14E-01	2 30E-01	2 30E-01	2 30E-01
T4	Surface Soil	PEST	Methoxychlor	ug/kg dw	10	5	50%	7	0 84	0 79	Normal	9 30E-01	6 20E+00	9 70E+00	8 97E+00	3 07E+01	8 97E+00	8 97E+00
T4	Surface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0 80	0 97	Lognormal	3 20E-01	1 02E+00	2 30E+00	1 34E+00	1 60E+00	1 60E+00	1 60E+00
T4	Surface Soil	SVOA	Naphthalene	ug/kg dw	10	2	20%	2	1 00	1 00	Normal	4 10E+01	6 00E+01	7 90E+01	1 80E+02	NC	1 80E+02	7 90E+01
T4	Surface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0 92	0 92	Normal	1 20E+01	1 82E+01	2 40E+01	2 01E+01	2 05E+01	2 01E+01	2 01E+01
T4	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	10	10	100%	10	0 62	0 68	Lognormal	2 21E+02	2 89E+02	5 03E+02	3 47E+02	3 49E+02	3 49E+02	3 49E+02
T4	Surface Soil	SVOA	Phenanthrene	ug/kg dw	10	7	70%	10	0 52	0 88	Lognormal	7 50E+01	1 35E+03	9 20E+03	2 99E+03	1 38E+04	1 38E+04	9 20E+03
T4	Surface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0 97	0 96	Normal	1 20E+03	1 84E+03	2 60E+03	2 07E+03	2 13E+03	2 07E+03	2 07E+03
T4	Surface Soil	SVOA	Pyrene	ug/kg dw	10	7	70%	10	0 58	0 88	Lognormal	9 50E+01	1 35E+03	8 50E+03	2 87E+03	1 11E+04	1 11E+04	8 50E+03
T4	Surface Soil	METALS	Selenium	mg/kg dw	10	1	10%	10	0 70	0 77	Lognormal	4 88E-01	5 79E-01	8 60E-01	6 44E-01	6 43E-01	6 43E-01	6 43E-01
T4	Surface Soil	METALS	Silver	mg/kg dw	10	3	30%	3	0 92	0 95	Lognormal	2 40E-01	3 25E-01	4 45E-01	5 05E-01	8 62F-01	8 62E-01	4 45E-01
T4	Surface Soil	METALS	Thallium	mg/kg dw	10	3	30%	10	0 71	0 76	Lognormal	4 88E-01	8 64E-01	1 10E+00	8 02E 01	8 16E 01	8 16E-01	8 16E-01
T4	Surface Soil	VOA	Toluene	ug/kg dw	10	1	10%	10	0 86	0 93	Lognormal	2 05E+00	2 86E+00	4 50E+00	3 28E+00	3 31E+00	3 31E+00	3 31E+00
T4	Surface Soil	PCB	Total PCBs	ug/kg dw	10	5	50%	10	0 79	0 76	Normal	7 60E+00	3 21E+01	5 80E+01	4 37E+01	7 79E+01	4 37E+01	4 37E+01
T4	Surface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0 97	0 95	Normal	1 50E+01	2 58E+01	3 50E+01	2 93E+01	3 04E+01	2 93E+01	2 93E+01
T4	Surface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0 88	0 97	Lognormal	7 60E+01	2 22E+02	5 50E+02	3 04F+02	3 75E+02	3 75E+02	3 75E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T4 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T4	Surface Soil	DAS-T4-S1-0-0.5FT	4/19/00	0	0.5
T4	Surface Soil	DAS-T4-S2-0-0.5FT	4/20/00	0	0.5
T4	Surface Soil	DAS-T4-S3-0-0.5FT	4/20/00	0	0.5
T4	Surface Soil	UAS-T4-S1-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S2-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S3-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S4-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S5-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S6-0-0.5FT	11/16/99	0	0.5
T4	Surface Soil	UAS-T4-S7-0-0.5FT	11/17/99	0	0.5

Table
Site Concentration Selection
T3 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T3	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	4	4	100%	4	0 94	0 96	Lognormal	2 66E-03	3 07E-03	3 66E-03	3 58E-03	3 75E-03	3 75E-03	3 66E-03
T3	Surface Soil	HERB	2,4 DB	ug/kg dw	10	1	10%	10	0 44	0 56	Lognormal	4 35E+00	6 89E+00	4 10E+01	1 55E+01	1 44E+01	1 44E+01	1 44E+01
T3	Surface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	6	60%	10	0 87	0 84	Normal	1 40F+01	2 77E+01	4 70E+01	3 52E+01	4 08E+01	3 52E+01	3 52E+01
T3	Surface Soil	VOA	2 Hexanone	ug/kg dw	10	1	10%	1	NC	NC	NC	6 90E+00	6 90E+00	6 90E+00	NC	NC	NC	6 90E+00
T3	Surface Soil	PEST	4,4' DDE	ug/kg dw	10	5	50%	5	0 82	0 90	Lognormal	1 10F-01	6 22F-01	1 70E+00	1 28E+00	2 34E+01	2 34E+01	1 70E+00
T3	Surface Soil	PEST	4,4' DDT	ug/kg dw	10	4	40%	5	0 89	0 88	Normal	4 00E-01	1 21E+00	1 80E+00	1 81E+00	3 96E+00	1 81E+00	1 80E+00
T3	Surface Soil	VOA	Acetone	ug/kg dw	10	6	60%	10	0 85	0 74	Normal	2 85E+01	3 08E+02	6 70E+02	4 59E+02	3 40E+03	4 59E+02	4 59E+02
T3	Surface Soil	PEST	Alpha Chlordane	ug/kg dw	10	2	20%	10	0 41	0 48	Lognormal	9 00E-01	1 48E+00	5 80E+00	2 36E+00	2 15E+00	2 15E+00	2 15E+00
T3	Surface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0 94	0 96	Lognormal	3 30E+03	9 46E+03	1 70E+04	1 20E+04	1 39E+04	1 39E+04	1 39E+04
T3	Surface Soil	SVOA	Anthracene	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	2 60E+01	3 65E+01	5 10E+01	1 17E+02	NC	NC	5 10E+01
T3	Surface Soil	METALS	Antimony	mg/kg dw	10	4	40%	10	0 64	0 71	Lognormal	1 03E+00	1 20E+00	1 90E+00	1 35E+00	1 34E+00	1 34E+00	1 34E+00
T3	Surface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0 96	0 88	Normal	2 60E+00	6 64E+00	9 70E+00	7 86E+00	8 73E+00	7 86E+00	7 86E+00
T3	Surface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0 84	0 87	Normal	4 00E+01	1 65E+02	2 20E+02	1 95E+02	2 49E+02	1 95E+02	1 95E+02
T3	Surface Soil	VOA	Benzene	ug/kg dw	10	1	10%	1	NC	NC	NC	2 10E+00	2 10E+00	2 10E+00	NC	NC	NC	2 10E+00
T3	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	10	5	50%	10	0 58	0 85	Lognormal	2 30E+01	1 20E+02	4 60E+02	1 95E+02	2 42E+02	2 42E+02	2 42E+02
T3	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	10	4	40%	10	0 41	0 55	Lognormal	4 30E+01	1 37E+02	8 60E+02	2 84E+02	2 56E+02	2 56E+02	2 56E+02
T3	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	10	6	60%	10	0 46	0 81	Lognormal	2 70E+01	1 64E+02	9 70E+02	3 29E+02	3 96E+02	3 96E+02	3 96E+02
T3	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	10	5	50%	10	0 46	0 74	Lognormal	3 80E+01	1 54E+02	8 30E+02	2 92E+02	2 92E+02	2 92E+02	2 92E+02
T3	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	10	4	40%	10	0 43	0 68	Lognormal	3 80E+01	1 78E+02	1 00E+03	3 46E+02	3 37E+02	3 37E+02	3 37E+02
T3	Surface Soil	METALS	Beryllium	mg/kg dw	10	9	90%	10	0 95	0 97	Lognormal	1 80E-01	5 87E-01	1 10E+00	7 57E-01	9 15E-01	9 15E-01	9 15E-01
T3	Surface Soil	PEST	beta-BHC	ug/kg dw	10	1	10%	10	0 43	0 48	Lognormal	2 75E-01	3 38E-01	7 50E-01	4 22E-01	4 09E-01	4 09E-01	4 09E-01
T3	Surface Soil	SVOA	bis(2 Ethylhexyl)phthalate	ug/kg dw	10	4	40%	10	0 49	0 65	Lognormal	6 10E+01	1 31E+02	4 30E+02	1 92E+02	1 84E+02	1 84E+02	1 84E+02
T3	Surface Soil	METALS	Cadmium	mg/kg dw	10	10	100%	10	0 91	0 95	Lognormal	1 50E+00	2 34E+00	3 80E+00	2 72E+00	2 80E+00	2 80E+00	2 80E+00
T3	Surface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0 42	0 78	Lognormal	3 50E+03	3 27E+04	2 50E+05	7 71E+04	1 07E+05	1 07E+05	1 07E+05
T3	Surface Soil	SVOA	Carbazole	ug/kg dw	10	1	10%	1	NC	NC	NC	8 80E+01	8 80E+01	8 80E+01	NC	NC	NC	8 80E+01
T3	Surface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0 89	0 92	Lognormal	1 10E+01	1 59E+01	2 30E+01	1 84E+01	1 89E+01	1 89E+01	1 89E+01
T3	Surface Soil	SVOA	Chrysene	ug/kg dw	10	7	70%	10	0 46	0 80	Lognormal	2 80E+01	1 63E+02	9 80E+02	3 30E+02	4 17E+02	4 17E+02	4 17E+02
T3	Surface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0 92	0 83	Normal	2 30E+00	6 50E+00	1 00E+01	7 75E+00	8 76E+00	7 75E+00	7 75E+00
T3	Surface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0 93	0 91	Normal	4 80E+01	6 56E+01	7 90E+01	7 19E+01	7 32E+01	7 19E+01	7 19E+01
T3	Surface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	10	1	10%	10	0 39	0 43	Lognormal	5 00E+01	7 15E+01	2 50E+02	1 08E+02	9 83E+01	9 83E+01	9 83E+01
T3	Surface Soil	HERB	Dicamba	ug/kg dw	10	2	20%	3	0 76	0 78	Lognormal	1 60E+00	8 80E+00	2 30E+01	2 95E+01	1 59E+10	1 59E+10	2 30E+01
T3	Surface Soil	PEST	Dieldrin	ug/kg dw	10	4	40%	4	0 85	0 82	Normal	6 70E-01	9 28E-01	1 08E+00	1 14E+00	1 32E+00	1 14E+00	1 08E+00
T3	Surface Soil	PEST	Endrin ketone	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	1 70E-01	4 60E-01	7 50E-01	2 29E+00	NC	NC	7 50E-01
T3	Surface Soil	SVOA	Fluoranthene	ug/kg dw	10	6	60%	10	0 48	0 83	Lognormal	3 70E+01	2 49E+02	1 50E+03	5 06E+02	6 15E+02	6 15E+02	6 15E+02
T3	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	10	3	30%	10	0 51	0 70	Lognormal	5 90E-01	1 40E+00	5 10E+00	2 16E+00	2 09E+00	2 09E+00	2 09E+00
T3	Surface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	10	1	10%	10	0 38	0 42	Lognormal	9 50E+01	1 59E+02	6 90E+02	2 67E+02	2 38E+02	2 38E+02	2 38E+02
T3	Surface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0 93	0 79	Normal	4 10E+03	1 45E+04	2 20E+04	1 74E+04	2 09E+04	1 74E+04	1 74E+04
T3	Surface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0 90	0 95	Lognormal	3 55E+01	5 45E+01	9 00E+01	6 36E+01	6 53E+01	6 53E+01	6 53E+01
T3	Surface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0 64	0 85	Lognormal	3 00E+03	6 25E+03	1 80E+04	8 75E+03	8 94E+03	8 94E+03	8 94E+03
T3	Surface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0 94	0 83	Normal	1 20E+02	3 79E+02	6 10E+02	4 55E+02	5 33E+02	4 55E+02	4 55E+02
T3	Surface Soil	HERB	MCPA	ug/kg dw	10	2	20%	9	0 54	NC	NC	1 05E+03	1 54E+03	4 00E+03	2 13E+03	NC	2 13E+03	2 13E+03
T3	Surface Soil	HERB	MCPP	ug/kg dw	10	2	20%	10	0 82	0 70	Lognormal	1 05E+03	2 25E+03	7 70E+03	3 51E+03	3 90E+03	3 90E+03	3 90E+03
T3	Surface Soil	METALS	Mercury	mg/kg dw	10	10	100%	10	0 98	0 98	Lognormal	4 20F-02	6 27E-02	9 30E-02	7 18E-02	7 35E-02	7 35E-02	7 35E-02
T3	Surface Soil	PEST	Methoxychlor	ug/kg dw	10	1	10%	1	NC	NC	NC	2 60E+00	2 60E+00	2 60E+00	NC	NC	NC	2 60E+00
T3	Surface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0 91	0 95	Lognormal	3 70E-01	7 38E-01	1 40E+00	9 40E-01	1 04E+00	1 04E+00	1 04E+00
T3	Surface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0 87	0 89	Lognormal	1 40E+01	1 86E+01	2 60E+01	2 11E+01	2 15E+01	2 15E+01	2 15E+01
T3	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	10	2	20%	10	0 42	0 46	Lognormal	2 23E+02	2 97E+02	7 40E+02	3 87E+02	3 71E+02	3 71E+02	3 71E+02
T3	Surface Soil	SVOA	Phenanthrene	ug/kg dw	10	4	40%	10	0 49	0 70	Lognormal	2 40E+01	1 33E+02	5 30E+02	2 15E+02	2 47E+02	2 47E+02	2 47E+02
T3	Surface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0 95	0 97	Lognormal	1 20E+03	2 18E+03	3 70E+03	2 61E+03	2 76E+03	2 76E+03	2 76E+03
T3	Surface Soil	SVOA	Pyrene	ug/kg dw	10	3	30%	10	0 40	0 51	Lognormal	9 50E+01	2 39E+02	1 40E+03	4 75E+02	4 20E+02	4 20E+02	4 20E+02
T3	Surface Soil	METALS	Selenium	mg/kg dw	10	2	20%	10	0 40	0 46	Lognormal	5 00E-01	8 30E-01	3 20E+00	1 31E+00	1 19E+00	1 19E+00	1 19E+00
T3	Surface Soil	METALS	Silver	mg/kg dw	10	4	40%	4	0 94	0 93	Normal	2 00F-01	2 98E-01	3 80E-01	3 95E-01	5 20E-01	3 95E-01	3 80E-01
T3	Surface Soil	METALS	Thallium	mg/kg dw	10	3	30%	10	0 68	0 75	Lognormal	5 00E-01	6 93E-01	1 40E+00	8 54E-01	8 58E-01	8 58E-01	8 58E-01
T3	Surface Soil	VOA	Toluene	ug/kg dw	10	3	30%	10	0 71	0 78	Lognormal	2 50E+00	3 17E+00	5 30E+00	3 66E+00	3 66E+00	3 66E+00	3 66E+00
T3	Surface Soil	PCB	Total PCBs	ug/kg dw	10	9	90%	10	0 88	0 83	Normal	1 30E+01	6 29E+01	1 16E+02	8 51E+01	1 51E+02	8 51E+01	8 51E+01
T3	Surface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0 94	0 95	Lognormal	1 30E+01	2 68E+01	4 20E+01	3 17E+01	3 37E+01	3 37E+01	3 37E+01
T3	Surface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0 88	0 93	Lognormal	1 59E+02	2 70E+02	4 60E+02	3 27E+02	3 42E+02	3 42E+02	3 42E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T3 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T3	Surface Soil	DAS-T3-S1-0-0.5FT	4/19/00	0	0.5
T3	Surface Soil	DAS-T3-S2-0-0.5FT	4/19/00	0	0.5
T3	Surface Soil	DAS-T3-S3-0-0.5FT	4/19/00	0	0.5
T3	Surface Soil	UAS-T3-S1-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S2-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S3-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S4-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S5-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S6-0-0.5FT	11/15/99	0	0.5
T3	Surface Soil	UAS-T3-S7-0-0.5FT	11/15/99	0	0.5

Table
Site Concentration Selection
T2 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T2	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	4	4	100%	4	0 83	0 84	Lognormal	2 10E-03	5 87E-03	9 94E-03	1 06E-02	1 79E-01	1 79E-01	9 94E-03
T2	Surface Soil	VOA	2 Butanone (MEK)	ug/kg	9	6	67%	9	0 94	0 84	Lognormal	1 20E+01	2 19E+01	3 40E+01	2 68E+01	2 91E+01	2 91E+01	2 91E+01
T2	Surface Soil	VOA	2 Hexanone	ug/kg dw	9	1	11%	1	NC	NC	NC	4 60E+00	4 60E+00	4 60E+00	NC	NC	NC	4 60E+00
T2	Surface Soil	PEST	4,4' DDD	ug/kg dw	9	1	11%	1	NC	NC	NC	5 60E-01	5 60E-01	5 60E-01	NC	NC	NC	5 60E-01
T2	Surface Soil	PEST	4,4' DDE	ug/kg dw	9	3	33%	3	0 92	0 89	Normal	2 40E-01	3 80E-01	4 80E-01	5 91E-01	1 38E+00	5 91E-01	4 80E-01
T2	Surface Soil	PEST	4,4' DDT	ug/kg dw	9	5	56%	9	0 54	0 92	Lognormal	1 40E-01	2 62E+00	1 40E+01	5 30E+00	1 71E+01	1 71E+01	1 40E+01
T2	Surface Soil	VOA	Acetone	ug/kg	9	6	67%	9	0 88	0 80	Normal	2 90E+01	2 17E+02	4 50E+02	3 19E+02	1 24E+03	3 19E+02	3 19E+02
T2	Surface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 86	0 91	Lognormal	7 20E+03	1 21E+04	1 80E+04	1 44E+04	1 50E+04	1 50E+04	1 50E+04
T2	Surface Soil	METALS	Antimony	mg/kg dw	9	6	67%	9	0 98	0 92	Normal	6 70E-01	1 21E+00	1 70E+00	1 40E+00	1 48E+00	1 40E+00	1 40E+00
T2	Surface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 92	0 92	Lognormal	6 00E+00	7 94E+00	1 00E+01	8 83E+00	8 99E+00	8 99E+00	8 99E+00
T2	Surface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 89	0 90	Lognormal	1 60E+02	1 92E+02	2 30E+02	2 08E+02	2 10E+02	2 10E+02	2 10E+02
T2	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	4 60E+01	5 90E+01	7 20E+01	1 41E+02	NC	1 41E+02	7 20E+01
T2	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	9	2	22%	9	0 79	0 83	Lognormal	4 95E+01	5 64E+01	7 20E+01	6 05E+01	6 06E+01	6 06E+01	6 06E+01
T2	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	9	3	33%	3	0 92	0 97	Lognormal	3 20E+01	4 87E+01	7 20E+01	8 38E+01	2 40E+02	2 40E+02	7 20E+01
T2	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	9	1	11%	1	NC	NC	NC	4 00E+01	4 00E+01	4 00E+01	NC	NC	NC	4 00E+01
T2	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	5 30E+01	5 80E+01	6 30E+01	6 98E+01	NC	6 96E+01	6 30E+01
T2	Surface Soil	METALS	Beryllium	mg/kg dw	9	7	78%	9	0 94	0 94	Normal	3 60E-01	6 62E-01	1 10E+00	8 38E-01	9 25E-01	8 38E-01	8 38E-01
T2	Surface Soil	SVOA	bis(2 Ethylhexyl)phthalate	ug/kg dw	9	3	33%	3	0 83	0 85	Lognormal	5 70E+01	7 07E+01	9 40E+01	1 05E+02	1 50E+02	1 50E+02	9 40E+01
T2	Surface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 87	0 79	Normal	1 10E+00	2 28E+00	2 80E+00	2 62E+00	2 84E+00	2 62E+00	2 62E+00
T2	Surface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 80	0 85	Lognormal	3 50E+03	8 18E+03	1 60E+04	1 13E+04	1 39E+04	1 39E+04	1 39E+04
T2	Surface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 72	0 85	Lognormal	1 30E+01	2 13E+01	4 80E+01	2 80E+01	2 88E+01	2 88E+01	2 88E+01
T2	Surface Soil	SVOA	Chrysene	ug/kg dw	9	3	33%	3	0 96	0 91	Normal	2 90E+01	6 23E+01	8 90E+01	1 14E+02	1 61E+03	1 14E+02	8 90E+01
T2	Surface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 79	0 81	Lognormal	6 40E+00	7 76E+00	1 10E+01	8 78E+00	8 86E+00	8 86E+00	8 86E+00
T2	Surface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 96	0 98	Lognormal	5 30E+01	9 02E+01	1 40E+02	1 06E+02	1 10E+02	1 10E+02	1 10E+02
T2	Surface Soil	HERB	Dicamba	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	1 30E+00	2 20E+00	3 10E+00	7 88E+00	NC	7 88E+00	3 10E+00
T2	Surface Soil	PEST	Dieldrin	ug/kg dw	9	1	11%	1	NC	NC	NC	1 30E+00	1 30E+00	1 30E+00	NC	NC	NC	1 30E+00
T2	Surface Soil	SVOA	Di n butylphthalate	ug/kg dw	9	1	11%	9	0 80	0 81	Lognormal	9 50E+01	1 03E+02	1 20E+02	1 08E+02	NC	NC	1 20E+02
T2	Surface Soil	PEST	Endosulfan sulfate	ug/kg dw	9	3	33%	3	0 87	0 82	Normal	1 10E-01	3 30E-01	4 70E-01	6 55E-01	1 43E+02	6 55E-01	4 70E-01
T2	Surface Soil	PEST	Endrin ketone	ug/kg dw	9	4	44%	4	0 87	0 83	Normal	1 30E-01	5 95E-01	1 30E+00	1 26E+00	1 09E+03	1 26E+00	1 26E+00
T2	Surface Soil	SVOA	Fluoranthene	ug/kg dw	9	2	22%	9	0 66	0 70	Lognormal	9 50E+01	1 08E+02	1 50E+02	1 18E+02	1 18E+02	1 18E+02	1 18E+02
T2	Surface Soil	PEST	Gamma Chlordane	ug/kg dw	9	4	11%	1	NC	NC	NC	2 00E-01	2 00E-01	2 00E-01	NC	NC	NC	2 00E-01
T2	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	1 50E-01	1 70E-01	1 90E-01	2 98E-01	NC	2 98E-01	1 90E-01
T2	Surface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 81	0 83	Lognormal	1 50E+04	1 90E+04	2 50E+04	2 16E+04	2 20E+04	2 20E+04	2 20E+04
T2	Surface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 90	0 81	Normal	2 40E+01	6 47E+01	8 80E+01	7 72E+01	9 01E+01	7 72E+01	7 72E+01
T2	Surface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 79	0 90	Lognormal	3 40E+03	5 16E+03	9 50E+03	6 28E+03	6 42E+03	6 42E+03	6 42E+03
T2	Surface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 78	0 89	Lognormal	3 40E+02	5 56E+02	1 20E+03	7 24E+02	7 59E+02	7 59E+02	7 59E+02
T2	Surface Soil	HERB	MCPA	ug/kg dw	9	2	22%	9	0 50	0 58	Lognormal	1 10E+03	1 75E+03	5 50E+03	2 64E+03	2 62E+03	2 62E+03	2 62E+03
T2	Surface Soil	HERB	MCPP	ug/kg dw	9	1	11%	9	0 41	0 45	Lognormal	1 10E+03	1 91E+03	7 60E+03	3 23E+03	3 07E+03	3 07E+03	3 07E+03
T2	Surface Soil	METALS	Mercury	mg/kg dw	9	9	100%	9	0 96	0 93	Normal	4 50E-02	6 91E-02	9 40E-02	7 92E-02	8 27E-02	7 92E-02	7 92E-02
T2	Surface Soil	PEST	Methoxychlor	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	1 30E+00	4 30E+00	7 30E+00	2 32E+01	NC	NC	7 30E+00
T2	Surface Soil	VOA	Methylene chloride (Dichloromethane)	ug/kg dw	9	1	11%	1	NC	NC	NC	2 00E+00	2 00E+00	2 00E+00	NC	NC	NC	2 00E+00
T2	Surface Soil	METALS	Molybdenum	mg/kg dw	9	9	100%	9	0 93	0 95	Lognormal	4 60E-01	7 67E-01	1 30E+00	9 31E-01	9 92E-01	9 92E-01	9 92E-01
T2	Surface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 82	0 80	Normal	1 80E+01	2 18E+01	2 70E+01	2 41E+01	2 45E+01	2 41E+01	2 41E+01
T2	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	9	4	44%	4	0 79	0 79	Normal	2 33E+02	2 45E+02	2 51E+02	2 55E+02	NC	2 55E+02	2 51E+02
T2	Surface Soil	SVOA	Phenanthrene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	5 20E+01	5 65E+01	6 10E+01	6 49E+01	NC	NC	6 10E+01
T2	Surface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 91	0 94	Lognormal	1 70E+03	2 53E+03	3 80E+03	2 94E+03	3 02E+03	3 02E+03	3 02E+03
T2	Surface Soil	SVOA	Pyrene	ug/kg dw	9	2	22%	9	0 80	0 81	Lognormal	9 50E+01	1 03E+02	1 20E+02	1 08E+02	NC	NC	1 20E+02
T2	Surface Soil	METALS	Selenium	mg/kg dw	9	3	33%	9	0 62	0 59	Lognormal	4 95E-01	6 01E-01	1 00E+00	6 96E-01	6 94E-01	6 94E-01	6 94E-01
T2	Surface Soil	METALS	Silver	mg/kg dw	9	8	89%	8	0 93	0 92	Normal	2 30E-01	3 44E-01	4 60E-01	4 06E-01	4 29E-01	4 06E-01	4 06E-01
T2	Surface Soil	METALS	Thallium	mg/kg dw	9	4	44%	9	0 79	0 88	Lognormal	4 95E-01	7 21E-01	1 30E+00	8 86E-01	9 11E-01	9 11E-01	9 11E-01
T2	Surface Soil	VOA	Toluene	ug/kg dw	9	1	11%	8	0 95	0 95	Lognormal	2 60E+00	3 02E+00	3 40E+00	3 21E+00	NC	NC	3 40E+00
T2	Surface Soil	PCB	Total PCBs	ug/kg dw	9	8	89%	9	0 90	0 92	Lognormal	9 50E+00	6 68E+01	1 64E+02	1 02E+02	2 76E+02	2 76E+02	1 64E+02
T2	Surface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 59	0 76	Lognormal	2 40E+01	4 22E+01	1 20E+02	6 08E+01	6 13E+01	6 13E+01	6 13E+01
T2	Surface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 92	0 88	Normal	1 40E+02	2 46E+02	3 10E+02	2 80E+02	2 95E+02	2 80E+02	2 80E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T2 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T2	Surface Soil	DAS-T2-S1-0-0.5FT	4/18/00	0	0.5
T2	Surface Soil	DAS-T2-S2-0-0.5FT	4/18/00	0	0.5
T2	Surface Soil	DAS-T2-S3-0-0.5FT	4/18/00	0	0.5
T2	Surface Soil	UAS-T2-S1-0-0.5FT	11/12/99	0	0.5
T2	Surface Soil	UAS-T2-S2-0-0.5FT	11/12/99	0	0.5
T2	Surface Soil	UAS-T2-S3-0-0.5FT	11/12/99	0	0.5
T2	Surface Soil	UAS-T2-S4-0-0.5FT	11/12/99	0	0.5
T2	Surface Soil	UAS-T2-S5-0-0.5FT	11/12/99	0	0.5
T2	Surface Soil	UAS-T2-S6-0-0.5FT	11/12/99	0	0.5

Table
Site Concentration Selection
T1 Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T1	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	5	5	100%	5	0 80	0 90	Lognormal	2 21E-03	6 18E-03	1 31E-02	1 01E-02	1 87E-02	1 87E-02	1 31E-02
T1	Surface Soil	HERB	2,4-D	ug/kg dw	10	1	10%	1	NC	NC	NC	3 60E+00	3 60E+00	3 60E+00	NC	NC	NC	3 60E+00
T1	Surface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	2	20%	10	0 72	0 79	Lognormal	1 20E+01	1 81E+01	3 20E+01	2 18E+01	2 21E+01	2 21E+01	2 21E+01
T1	Surface Soil	VOA	2-Hexanone	ug/kg dw	10	1	10%	1	NC	NC	NC	6 60E+00	6 60E+00	6 60E+00	NC	NC	NC	6 60E+00
T1	Surface Soil	PEST	4,4'-DDE	ug/kg dw	10	7	70%	7	0 96	0 92	Normal	8 60E-02	3 04E-01	5 65E-01	4 27E 01	7 00E-01	4 27E-01	4 27E-01
T1	Surface Soil	PEST	4,4'-DDT	ug/kg dw	10	5	50%	5	0 91	0 86	Normal	1 20E-01	4 81E-01	9 33E-01	8 17E-01	5 01E+00	8 17E-01	8 17E-01
T1	Surface Soil	VOA	Acetone	ug/kg dw	10	5	50%	10	0 78	0 78	Lognormal	2 40E+01	1 79E+02	4 40E+02	2 81E+02	1 05E+03	1 05E+03	4 40E+02
T1	Surface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0 84	0 84	Normal	5 80E+03	9 69E+03	1 50E+04	1 20E+04	1 30E+04	1 20E+04	1 20E+04
T1	Surface Soil	METALS	Antimony	mg/kg dw	10	8	80%	10	0 91	0 89	Normal	9 00E-01	1 64E+00	2 60E+00	2 21E+00	2 43E+00	2 21E+00	2 21E+00
T1	Surface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0 93	0 90	Normal	5 75E+00	8 10E+00	1 00E+01	8 86E+00	9 03E+00	8 86E+00	8 86E+00
T1	Surface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0 94	0 92	Normal	1 20E+02	1 83E+02	2 40E+02	2 05E+02	2 11E+02	2 05E+02	2 05E+02
T1	Surface Soil	VOA	Benzene	ug/kg dw	10	1	10%	7	0 81	0 79	Normal	2 40E+00	2 83E+00	3 00E+00	2 99E+00	NC	2 99E+00	2 99E+00
T1	Surface Soil	METALS	Beryllium	mg/kg dw	10	10	100%	10	0 88	0 88	Normal	4 15E-01	6 30E-01	9 40E-01	7 39E-01	7 71E-01	7 39E-01	7 39E-01
T1	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	10	1	10%	10	0 81	0 87	Lognormal	9 00E+01	1 05E+02	1 60E+02	1 17E+02	1 18E+02	1 16E+02	1 16E+02
T1	Surface Soil	METALS	Cadmium	mg/kg dw	10	10	100%	10	0 91	0 94	Lognormal	1 70E+00	2 74E+00	4 60E+00	3 32E+00	3 49E+00	3 49E+00	3 49E+00
T1	Surface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0 89	0 91	Lognormal	4 20E+03	5 91E+03	8 70E+03	6 78E+03	6 94E+03	6 94E+03	6 94E+03
T1	Surface Soil	VOA	Carbon disulfide	ug/kg dw	10	1	10%	2	1 00	1 00	Normal	2 40E+00	2 50E+00	2 60E+00	3 13E+00	NC	3 13E+00	2 60E+00
T1	Surface Soil	VOA	Chlorobenzene	ug/kg dw	10	1	10%	10	0 88	0 92	Lognormal	2 40E+00	3 03E+00	4 00E+00	3 27E+00	3 28E+00	3 28E+00	3 28E+00
T1	Surface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0 67	0 83	Lognormal	1 10E+01	1 89E+01	4 90E+01	2 54E+01	2 59E+01	2 59E+01	2 59E+01
T1	Surface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0 95	0 94	Normal	4 95E+00	7 01E+00	9 20E+00	7 83E+00	8 01E+00	7 83E+00	7 83E+00
T1	Surface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0 85	0 89	Lognormal	7 30E+01	1 32E+02	2 30E+02	1 67E+02	1 81E+02	1 81E+02	1 81E+02
T1	Surface Soil	HERB	Dicamba	ug/kg dw	10	4	40%	4	0 74	0 81	Lognormal	1 70E+00	3 06E+00	6 35E+00	5 67E+00	2 30E+01	2 30E+01	6 35E+00
T1	Surface Soil	PEST	Dieldrin	ug/kg dw	10	3	30%	3	0 78	0 87	Lognormal	8 90E-02	5 76E-01	1 50E+00	1 93E+00	1 44E+09	1 44E+09	1 50E+00
T1	Surface Soil	PEST	Endosulfan sulfate	ug/kg dw	10	4	40%	4	0 83	0 82	Normal	9 30E-02	2 61E-01	4 50E-01	4 79E 01	1 02E+01	4 79E-01	4 50E-01
T1	Surface Soil	PEST	Endrin ketone	ug/kg dw	10	7	70%	7	0 92	0 98	Lognormal	1 20E-01	2 66E-01	4 90E-01	3 52E-01	4 13E-01	4 13E-01	4 13E-01
T1	Surface Soil	SVOA	Fluoranthene	ug/kg dw	10	1	10%	1	NC	NC	NC	6 60E+01	6 60E+01	6 60E+01	NC	NC	NC	6 60E+01
T1	Surface Soil	PEST	Heptachlor epoxide	ug/kg dw	10	6	60%	6	0 90	0 92	Lognormal	9 00E-02	2 60E-01	5 07E-01	3 95E-01	7 44E-01	7 44E-01	5 07E-01
T1	Surface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0 93	0 94	Lognormal	1 15E+04	1 60E+04	2 20E+04	1 81E+04	1 85E+04	1 85E+04	1 85E+04
T1	Surface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0 92	0 93	Lognormal	4 00E+01	7 29E+01	1 20E+02	8 83E+01	9 49E+01	9 49E+01	9 49E+01
T1	Surface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0 94	0 90	Normal	3 20E+03	4 40E+03	5 30E+03	4 73E+03	4 79E+03	4 73E+03	4 73E+03
T1	Surface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0 93	0 92	Normal	1 90E+02	3 65E+02	5 50E+02	4 36E+02	4 72E+02	4 36E+02	4 36E+02
T1	Surface Soil	HERB	MCPA	ug/kg dw	10	4	40%	10	0 71	0 77	Lognormal	1 10E+03	2 71E+03	7 40E+03	4 13E+03	5 38E+03	5 38E+03	5 38E+03
T1	Surface Soil	METALS	Mercury	mg/kg dw	10	10	100%	10	0 98	0 97	Lognormal	3 10E-02	6 25E-02	9 90E-02	7 51E-02	8 09E-02	8 09E-02	8 09E-02
T1	Surface Soil	PEST	Methoxychlor	ug/kg dw	10	5	50%	5	0 96	0 96	Normal	1 20E+00	2 06E+00	2 90E+00	2 72E+00	3 26E+00	2 72E+00	2 72E+00
T1	Surface Soil	VOA	Methylene chloride (Dichloromethane)	ug/kg dw	10	2	20%	3	0 75	0 75	Lognormal	1 80E+00	2 20E+00	2 40E+00	2 78E+00	3 19E+00	3 19E+00	2 40E+00
T1	Surface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0 80	0 87	Lognormal	3 50E-01	5 03E-01	8 60E-01	6 00E-01	6 10E-01	6 10E-01	6 10E-01
T1	Surface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0 95	0 94	Normal	1 40E+01	1 95E+01	2 50E+01	2 16E+01	2 21E+01	2 16E+01	2 16E+01
T1	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	10	9	90%	10	0 62	0 66	Lognormal	2 28E+02	2 96E+02	4 62E+02	3 51E+02	3 54E+02	3 54E+02	3 54E+02
T1	Surface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0 85	0 85	Lognormal	1 30E+03	2 00E+03	2 80E+03	2 36E+03	2 48E+03	2 48E+03	2 48E+03
T1	Surface Soil	METALS	Selenium	mg/kg dw	10	2	20%	10	0 80	0 81	Lognormal	5 50E-01	6 18E-01	8 10E-01	6 70E 01	6 72E 01	6 72E-01	6 72E-01
T1	Surface Soil	METALS	Silver	mg/kg dw	10	9	90%	10	0 86	0 86	Lognormal	2 70E-01	3 84E-01	5 90E-01	4 66E 01	4 87E 01	4 87E-01	4 87E-01
T1	Surface Soil	METALS	Thallium	mg/kg dw	10	4	40%	10	0 87	0 89	Lognormal	5 50E-01	6 84E-01	9 80E-01	7 68E-01	7 76E-01	7 76E-01	7 76E-01
T1	Surface Soil	VOA	Toluene	ug/kg dw	10	2	20%	8	0 87	0 86	Normal	2 30E+00	2 84E+00	3 20E+00	3 03E+00	3 06E+00	3 03E+00	3 03E+00
T1	Surface Soil	PCB	Total PCBs	ug/kg dw	10	10	100%	10	0 90	0 92	Lognormal	2 80E+01	1 01E+02	2 31E+02	1 34E+02	1 73E+02	1 73E+02	1 73E+02
T1	Surface Soil	VOA	Trichloroethene	ug/kg dw	10	3	30%	10	0 71	0 80	Lognormal	2 73E+00	3 52E+00	6 20E+00	4 11E+00	4 11E+00	4 11E+00	4 11E+00
T1	Surface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0 90	0 90	Normal	1 80E+01	2 84E+01	4 10E+01	3 32E+01	3 48E+01	3 32E+01	3 32E+01
T1	Surface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0 52	0 73	Lognormal	1 80E+02	3 88E+02	1 40E+03	5 97E+02	5 74E+02	5 74E+02	5 74E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T1 Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T1	Surface Soil	DAS-T1-S1-0-0.5FT	4/18/00	0	0.5
T1	Surface Soil	DAS-T1-S2-0-0.5FT	4/18/00	0	0.5
T1	Surface Soil	DAS-T1-S3-0-0.5FT	4/18/00	0	0.5
T1	Surface Soil	UAS-T1-S1-0-0.5FT	11/10/99	0	0.5
T1	Surface Soil	UAS-T1-S2-0-0.5FT	11/10/99	0	0.5
T1	Surface Soil	UAS-T1-S3-0-0.5FT	11/11/99	0	0.5
T1	Surface Soil	UAS-T1-S4-0-0.5FT	11/11/99	0	0.5
T1	Surface Soil	UAS-T1-S5-0-0.5FT	11/11/99	0	0.5
T1	Surface Soil	UAS-T1-S6-0-0.5FT	11/11/99	0	0.5
T1	Surface Soil	UAS-T1-S7-0-0.5FT	11/11/99	0	0.5

Table
Site Concentration Selection
Background Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
Background	Subsurface Soil	8280A	1998 Total TEQ w/ EMPC as NO	ug/kg dw	3	3	100%	3	0 85	0 97	Lognormal	1 60E-04	6 89E-04	1 55E-03	1 96E-03	1 88E+02	1 88E+02	1 55E-03
Background	Subsurface Soil	HERB	2,4,5-TP (Silvex)	ug/kg dw	3	1	33%	3	0 96	0 96	Normal	4 90E+00	5 40E+00	5 80E+00	6 17E+00	NC	6 17E+00	5 80E+00
Background	Subsurface Soil	VOA	Acetone	ug/kg dw	3	1	33%	1	NC	NC	NC	5 50E+00	5 50E+00	5 50E+00	NC	NC	NC	5 50E+00
Background	Subsurface Soil	METALS	Aluminum	mg/kg dw	3	3	100%	3	1 00	1 00	Lognormal	8 40E+03	1 01E+04	1 20E+04	1 32E+04	1 52E+04	1 52E+04	1 20E+04
Background	Subsurface Soil	METALS	Antimony	mg/kg dw	1	1	100%	1	NC	NC	NC	1 20E+00	1 20E+00	1 20E+00	NC	NC	NC	1 20E+00
Background	Subsurface Soil	METALS	Arsenic	mg/kg dw	3	3	100%	3	0 82	0 84	Lognormal	6 80E+00	8 70E+00	1 20E+01	1 35E+01	2 22E+01	2 22E+01	1 20E+01
Background	Subsurface Soil	METALS	Barium	mg/kg dw	3	3	100%	3	0 96	0 96	Normal	1 70E+02	1 87E+02	2 00E+02	2 12E+02	NC	2 12E+02	2 00E+02
Background	Subsurface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	3	1	33%	1	NC	NC	NC	2 60E+01	2 60E+01	2 60E+01	NC	NC	NC	2 60E+01
Background	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	3	1	33%	1	NC	NC	NC	3 40E+01	3 40E+01	3 40E+01	NC	NC	NC	3 40E+01
Background	Subsurface Soil	METALS	Beryllium	mg/kg dw	3	3	100%	3	0 88	0 86	Normal	5 00E-01	6 33E-01	7 20E-01	8 31E-01	1 00E+00	8 31E-01	7 20E-01
Background	Subsurface Soil	METALS	Cadmium	mg/kg dw	3	3	100%	3	0 85	0 99	Lognormal	1 10E-01	3 44E+00	8 90E+00	1 15E+01	3 63E+20	3 63E+20	8 90E+00
Background	Subsurface Soil	METALS	Calcium	mg/kg dw	3	3	100%	3	1 00	0 95	Normal	3 80E+03	8 07E+03	1 20E+04	1 50E+04	2 09E+05	1 50E+04	1 20E+04
Background	Subsurface Soil	METALS	Chromium	mg/kg dw	3	3	100%	3	0 75	0 75	Lognormal	1 30E+01	1 63E+01	1 80E+01	2 12E+01	2 52E+01	2 52E+01	1 80E+01
Background	Subsurface Soil	SVOA	Chrysene	ug/kg dw	3	1	33%	1	NC	NC	NC	4 20E+01	4 20E+01	4 20E+01	NC	NC	NC	4 20E+01
Background	Subsurface Soil	METALS	Cobalt	mg/kg dw	3	3	100%	3	0 95	0 98	Lognormal	6 40E+00	6 97E+00	7 70E+00	8 09E+00	NC	NC	7 70E+00
Background	Subsurface Soil	METALS	Copper	mg/kg dw	3	3	100%	3	0 88	1 00	Lognormal	1 10E+01	7 73E+01	1 80E+02	2 29E+02	8 06E+09	8 06E+09	1 80E+02
Background	Subsurface Soil	SVOA	Diethylphthalate	ug/kg dw	3	2	67%	3	0 83	0 81	Normal	6 30E+01	9 27E+01	1 10E+02	1 36E+02	2 37E+02	1 36E+02	1 10E+02
Background	Subsurface Soil	SVOA	Fluoranthene	ug/kg dw	3	1	33%	1	NC	NC	NC	4 20E+01	4 20E+01	4 20E+01	NC	NC	NC	4 20E+01
Background	Subsurface Soil	METALS	Iron	mg/kg dw	3	3	100%	3	0 75	0 75	Normal	1 40E+04	1 67E+04	1 80E+04	2 06E+04	2 27E+04	2 06E+04	1 80E+04
Background	Subsurface Soil	METALS	Lead	mg/kg dw	3	3	100%	3	0 92	0 99	Lognormal	8 50E+00	7 12E+01	1 60E+02	2 04E+02	5 77E+10	5 77E+10	1 60E+02
Background	Subsurface Soil	METALS	Magnesium	mg/kg dw	3	3	100%	3	0 89	0 86	Normal	3 10E+03	4 67E+03	5 70E+03	6 89E+03	1 33E+04	6 99E+03	5 70E+03
Background	Subsurface Soil	METALS	Manganese	mg/kg dw	3	3	100%	3	0 89	0 89	Normal	3 70E+02	4 00E+02	4 20E+02	4 45E+02	NC	4 45E+02	4 20E+02
Background	Subsurface Soil	HERB	MCPP[2-(4-chloro-2-methylphenoxy)-propan	ug/kg dw	3	2	67%	3	0 79	0 78	Normal	1 20E+03	2 37E+03	3 00E+03	4 07E+03	2 99E+04	4 07E+03	3 00E+03
Background	Subsurface Soil	METALS	Mercury	mg/kg dw	3	3	100%	3	0 94	0 99	Lognormal	4 10E-03	2 80E-02	6 00E-02	7 66E-02	8 46E+05	8 46E+05	6 00E-02
Background	Subsurface Soil	VOA	Methylene chloride ((Dichloromethane)	ug/kg dw	3	1	33%	1	NC	NC	NC	1 40E+00	1 40E+00	1 40E+00	NC	NC	NC	1 40E+00
Background	Subsurface Soil	METALS	Molybdenum	mg/kg dw	3	3	100%	3	0 84	0 89	Lognormal	5 00E-01	8 73E-01	1 50E+00	1 79E+00	2 07E+01	2 07E+01	1 50E+00
Background	Subsurface Soil	METALS	Nickel	mg/kg dw	3	3	100%	3	0 75	0 75	Normal	1 60E+01	1 87E+01	2 00E+01	2 28E+01	2 44E+01	2 28E+01	2 00E+01
Background	Subsurface Soil	METALS	Potassium	mg/kg dw	3	3	100%	3	0 89	0 88	Normal	1 80E+03	2 10E+03	2 30E+03	2 55E+03	2 76E+03	2 55E+03	2 30E+03
Background	Subsurface Soil	METALS	Silver	mg/kg dw	3	1	33%	3	0 75	0 75	Normal	5 50E-01	6 83E-01	9 80E-01	1 11E+00	2 03E+00	1 11E+00	9 80E-01
Background	Subsurface Soil	METALS	Sodium	mg/kg dw	3	1	33%	3	0 75	0 75	Lognormal	6 00E+01	1 77E+02	4 10E+02	5 17E+02	1 82E+07	1 82E+07	4 10E+02
Background	Subsurface Soil	METALS	Vanadium	mg/kg dw	3	3	100%	3	0 75	0 75	Normal	2 50E+01	2 80E+01	3 10E+01	3 48E+01	3 75E+01	3 48E+01	3 10E+01
Background	Subsurface Soil	METALS	Zinc	mg/kg dw	3	3	100%	3	0 88	0 99	Lognormal	4 20E+01	3 21E+02	7 70E+02	9 83E+02	1 67E+11	1 67E+11	7 70E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
Background Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
Background	Subsurface Soil	BS-EE-04-3-6FT	1/26/00	3	6
Background	Subsurface Soil	BS-EE-20-3-6FT	1/24/00	3	6
Background	Subsurface Soil	BS-EEG-108-3-6FT	1/27/00	3	6

Table
Site Concentration Selection
Background Surface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
Background	Surface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ppb	3	3	100%	3	0 77	0 87	Lognormal	4 72E-03	6 19E-02	1 72E-01	2 23E-01	9 55E+13	9 55E+13	1 72E-01
Background	Surface Soil	HERB	2,4,5-TP (Silvex)	ug/kg dw	3	3	100%	3	0 97	0 93	Normal	5 80E+00	8 68E+00	1 10E+01	1 31E+01	2 51E+01	1 31E+01	1 10E+01
Background	Surface Soil	VOA	2 Hexanone	ug/kg dw	3	1	33%	3	0 94	0 93	Normal	1 45E+01	1 65E+01	1 80E+01	1 95E+01	2 07E+01	1 95E+01	1 80E+01
Background	Surface Soil	PEST	4,4'-DDE	ug/kg dw	3	1	33%	3	0 76	0 78	Lognormal	2 00E+00	8 06E+00	2 00E+01	2 55E+01	7 22E+07	7 22E+07	2 00E+01
Background	Surface Soil	PEST	4,4'-DDT	ug/kg dw	3	1	33%	3	0 76	0 78	Lognormal	2 00E+00	7 06E+00	1 70E+01	2 16E+01	6 84E+06	6 84E+06	1 70E+01
Background	Surface Soil	METALS	Aluminum	mg/kg dw	3	3	100%	3	0 93	0 97	Lognormal	8 10E+03	1 27E+04	1 90E+04	2 22E+04	7 29E+04	7 29E+04	1 90E+04
Background	Surface Soil	SVOA	Anthracene	ug/kg dw	3	1	33%	1	NC	NC	NC	8 00E+01	8 00E+01	8 00E+01	NC	NC	NC	8 00E+01
Background	Surface Soil	METALS	Antimony	mg/kg dw	1	1	100%	1	NC	NC	NC	1 90E+00	1 90E+00	1 90E+00	NC	NC	NC	1 90E+00
Background	Surface Soil	METALS	Arsenic	mg/kg dw	3	3	100%	3	0 98	1 00	Lognormal	6 60E+00	9 57E+00	1 30E+01	1 50E+01	2 90E+01	2 90E+01	1 30E+01
Background	Surface Soil	METALS	Barium	mg/kg dw	3	3	100%	3	0 94	0 90	Normal	1 10E+02	1 82E+02	2 35E+02	2 90E+02	8 20E+02	2 90E+02	2 35E+02
Background	Surface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	3	2	67%	3	0 98	1 00	Lognormal	7 70E+01	1 20E+02	1 70E+02	1 99E+02	5 25E+02	5 25E+02	1 70E+02
Background	Surface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	3	2	67%	3	0 83	0 87	Lognormal	6 00E+01	9 33E+01	1 50E+02	1 76E+02	8 83E+02	8 83E+02	1 50E+02
Background	Surface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	3	2	67%	2	1 00	1 00	Lognormal	6 90E+01	8 95E+01	1 10E+02	2 19E+02	NC	NC	1 10E+02
Background	Surface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	3	2	67%	2	1 00	1 00	Lognormal	4 50E+01	6 35E+01	8 20E+01	1 80E+02	NC	NC	8 20E+01
Background	Surface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	3	2	67%	3	0 97	0 93	Normal	6 00E+01	1 04E+02	1 40E+02	1 73E+02	6 42E+02	1 73E+02	1 40E+02
Background	Surface Soil	METALS	Beryllium	mg/kg dw	3	3	100%	3	0 99	1 00	Lognormal	4 50E-01	7 53E-01	1 10E+00	1 30E+00	4 90E+00	4 90E+00	1 10E+00
Background	Surface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	3	2	67%	3	0 77	0 79	Lognormal	1 05E+02	1 61E+02	2 68E+02	3 17E+02	2 15E+03	2 15E+03	2 68E+02
Background	Surface Soil	METALS	Cadmium	mg/kg dw	3	3	100%	3	0 94	0 98	Lognormal	5 20E-01	4 32E+00	9 40E+00	1 20E+01	2 50E+09	2 50E+09	9 40E+00
Background	Surface Soil	METALS	Calcium	mg/kg dw	3	3	100%	3	0 80	0 89	Lognormal	4 00E+03	1 68E+04	4 00E+04	5 07E+04	1 95E+10	1 95E+10	4 00E+04
Background	Surface Soil	SVOA	Carbazole	ug/kg dw	3	1	33%	1	NC	NC	NC	3 20E+01	3 20E+01	3 20E+01	NC	NC	NC	3 20E+01
Background	Surface Soil	METALS	Chromium	mg/kg dw	3	3	100%	3	0 75	0 75	Lognormal	1 70E+01	1 97E+01	2 50E+01	2 75E+01	3 43E+01	3 43E+01	2 50E+01
Background	Surface Soil	SVOA	Chrysene	ug/kg dw	3	2	67%	3	0 86	0 90	Lognormal	9 70E+01	1 37E+02	2 00E+02	2 30E+02	5 42E+02	5 42E+02	2 00E+02
Background	Surface Soil	METALS	Cobalt	mg/kg dw	3	3	100%	3	0 98	1 00	Lognormal	5 50E+00	7 77E+00	1 04E+01	1 19E+01	2 09E+01	2 09E+01	1 04E+01
Background	Surface Soil	METALS	Copper	mg/kg dw	3	3	100%	3	0 97	1 00	Lognormal	3 50E+01	1 05E+02	1 90E+02	2 37E+02	8 98E+04	8 98E+04	1 90E+02
Background	Surface Soil	SVOA	Diethylphthalate	ug/kg dw	3	3	100%	3	0 75	0 75	Normal	6 00E+01	9 33E+01	1 10E+02	1 42E+02	3 03E+02	1 42E+02	1 10E+02
Background	Surface Soil	SVOA	Di-n-butylphthalate	ug/kg dw	3	2	67%	3	0 85	0 88	Lognormal	1 05E+02	1 56E+02	2 40E+02	2 80E+02	9 51E+02	9 51E+02	2 40E+02
Background	Surface Soil	SVOA	Fluoranthene	ug/kg dw	3	2	67%	3	0 93	0 99	Lognormal	1 13E+02	2 51E+02	4 40E+02	5 37E+02	2 04E+04	2 04E+04	4 40E+02
Background	Surface Soil	METALS	Iron	mg/kg dw	3	3	100%	3	0 89	0 92	Lognormal	1 50E+04	1 90E+04	2 50E+04	2 79E+04	3 95E+04	3 95E+04	2 50E+04
Background	Surface Soil	METALS	Lead	mg/kg dw	3	3	100%	3	0 98	1 00	Lognormal	2 40E+01	9 25E+01	1 80E+02	2 27E+02	1 38E+06	1 38E+06	1 80E+02
Background	Surface Soil	METALS	Magnesium	mg/kg dw	3	3	100%	3	0 88	0 97	Lognormal	3 20E+03	8 62E+03	1 70E+04	2 10E+04	7 47E+06	7 47E+06	1 70E+04
Background	Surface Soil	METALS	Manganese	mg/kg dw	3	3	100%	3	0 80	0 81	Lognormal	3 90E+02	4 42E+02	5 35E+02	5 78E+02	6 57E+02	6 57E+02	5 35E+02
Background	Surface Soil	HERB	MCPA[(4-chloro-2-methylphenoxy)-acetic a	ug/kg dw	3	3	100%	3	0 76	0 77	Lognormal	4 30E+03	7 25E+03	1 30E+04	1 58E+04	2 93E+05	2 93E+05	1 30E+04
Background	Surface Soil	HERB	MCPP[2-(4-chloro-2-methylphenoxy)-propan	ug/kg dw	3	3	100%	3	0 87	0 83	Normal	2 50E+03	4 98E+03	6 55E+03	8 65E+03	6 87E+04	8 65E+03	6 55E+03
Background	Surface Soil	METALS	Mercury	mg/kg dw	3	3	100%	3	0 99	1 00	Lognormal	4 40E-02	8 87E-02	1 40E-01	1 70E-01	2 06E+00	2 06E+00	1 40E-01
Background	Surface Soil	VOA	Methylene chloride (Dichloromethane)	ug/kg dw	3	2	67%	3	0 87	0 97	Lognormal	1 70E+00	5 69E+00	1 20E+01	1 50E+01	5 83E+04	5 83E+04	1 20E+01
Background	Surface Soil	METALS	Molybdenum	mg/kg dw	3	3	100%	3	0 94	0 97	Lognormal	7 20E-01	1 01E+00	1 40E+00	1 60E+00	3 02E+00	3 02E+00	1 40E+00
Background	Surface Soil	METALS	Nickel	mg/kg dw	3	3	100%	3	1 00	1 00	Normal	1 50E+01	2 13E+01	2 80E+01	3 23E+01	5 54E+01	3 23E+01	2 80E+01
Background	Surface Soil	SVOA	Pentachlorophenol	ug/kg dw	3	2	67%	3	0 85	0 89	Lognormal	2 55E+02	3 71E+02	5 61E+02	6 50E+02	1 80E+03	1 80E+03	5 61E+02
Background	Surface Soil	SVOA	Phenanthrene	ug/kg dw	3	2	67%	3	0 80	0 83	Lognormal	1 00E+02	1 68E+02	2 90E+02	3 47E+02	4 04E+03	4 04E+03	2 90E+02
Background	Surface Soil	METALS	Potassium	mg/kg dw	3	3	100%	3	1 00	0 99	Normal	1 30E+03	2 37E+03	3 50E+03	4 22E+03	2 40E+04	4 22E+03	3 50E+03
Background	Surface Soil	SVOA	Pyrene	ug/kg dw	3	2	67%	3	0 94	0 99	Lognormal	1 13E+02	2 18E+02	3 60E+02	4 33E+02	5 37E+03	5 37E+03	3 60E+02
Background	Surface Soil	METALS	Silver	mg/kg dw	3	2	67%	3	0 97	1 00	Lognormal	3 25E-01	8 75E-01	1 10E+00	1 34E+00	2 20E+01	2 20E+01	1 10E+00
Background	Surface Soil	METALS	Sodium	mg/kg dw	3	1	33%	3	0 77	0 82	Lognormal	5 00E+01	2 88E+02	7 50E+02	9 62E+02	3 67E+11	3 67E+11	7 50E+02
Background	Surface Soil	PCB	Total PCBs	ug/kg dw	3	2	67%	3	0 78	0 99	Lognormal	1 00E+01	6 00E+02	1 71E+03	2 22E+03	1 91E+30	1 91E+30	1 71E+03
Background	Surface Soil	METALS	Vanadium	mg/kg dw	3	3	100%	3	0 88	0 91	Lognormal	2 80E+01	3 45E+01	4 45E+01	4 93E+01	6 53E+01	6 53E+01	4 45E+01
Background	Surface Soil	METALS	Zinc	mg/kg dw	3	3	100%	3	0 95	0 99	Lognormal	8 20E+01	4 04E+02	8 20E+02	1 04E+03	1 23E+08	1 23E+08	8 20E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
Background Surface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
Background	Surface Soil	BS-EE-04-0-0.5FT	1/26/00	0	0.5
Background	Surface Soil	BS-EE-20-0-0.5FT	1/24/00	0	0.5
Background	Surface Soil	BS-EEG-108-0-0.5FT	1/27/00	0	0.5

Table
Site Concentration Selection
Combined Surface Water

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
Combined	Surface Water	8290	1998 Total TEQ w/ EMPC as ND	ug/l	6	6	100%	6	1	1	Lognormal	8 97E-07	2 66E-06	9 01E-06	5 24E-06	9 03E-06	9 03E-06	9 01E-06
Combined	Surface Water	VOA	Acetone	ug/l	6	3	50%	3	0 89	0 91	Lognormal	1 30E+01	1 50E+01	1 80E+01	1 95E+01	2 20E+01	2 20E+01	1 80E+01
Combined	Surface Water	PEST	alpha BHC	ug/l	6	2	33%	2	1 00	1 00	Lognormal	4 70E-04	7 35E-04	1 00E-03	2 41E-03	NC	NC	1 00E-03
Combined	Surface Water	METALS	Aluminum	mg/l	6	6	100%	6	1	1	Lognormal	3 90E-02	9 17E-01	3 40E+00	1 94E+00	9 35E+01	9 35E+01	3 40E+00
Combined	Surface Water	METALS	Arsenic	mg/l	6	5	83%	6	0 92	0 98	Lognormal	3 20E-03	8 00E-03	1 50E-02	1 18E-02	1 80E-02	1 80E-02	1 50E-02
Combined	Surface Water	METALS	Barium	mg/l	6	6	100%	6	0 77	0 86	Lognormal	4 50E-02	1 44E-01	3 20E-01	2 20E-01	3 49E-01	3 49E-01	3 20E-01
Combined	Surface Water	VOA	Benzene	ug/l	6	1	17%	6	0 50	0 50	Lognormal	6 00E-01	7 83E-01	1 70E+00	1 15E+00	1 26E+00	1 26E+00	1 26E+00
Combined	Surface Water	PEST	beta BHC	ug/l	6	3	50%	6	0 77	0 83	Lognormal	7 00E-03	1 04E-02	2 00E-02	1 46E-02	1 69E-02	1 69E-02	1 69E-02
Combined	Surface Water	METALS	Calcium	mg/l	6	6	100%	6	0 86	0 71	Lognormal	4 70E+01	5 82E+01	8 90E+01	7 08E+01	7 24E+01	7 24E+01	7 24E+01
Combined	Surface Water	METALS	Chromium	mg/l	6	1	17%	1	NC	NC	NC	4 10E-03	4 10E-03	4 10E-03	NC	NC	NC	4 10E-03
Combined	Surface Water	METALS	Cobalt	mg/l	6	1	17%	1	NC	NC	NC	1 50E-03	1 50E-03	1 50E-03	NC	NC	NC	1 50E-03
Combined	Surface Water	METALS	Copper	mg/l	6	6	100%	6	0 91	0 98	Lognormal	1 60E-03	5 23E-03	1 20E-02	8 46E-03	1 84E-02	1 84E-02	1 20E-02
Combined	Surface Water	PEST	delta-BHC	ug/l	6	2	33%	2	1 00	1 00	Normal	1 30E-04	1 17E-03	2 20E-03	7 70E-03	NC	7 70E-03	2 20E-03
Combined	Surface Water	PEST	Dieldrin	ug/l	6	1	17%	1	NC	NC	NC	1 00E-03	1 00E-03	1 00E-03	NC	NC	NC	1 00E-03
Combined	Surface Water	PEST	Endosulfan I	ug/l	6	2	33%	2	1 00	1 00	Normal	1 50E-03	1 95E-03	2 40E-03	4 79E-03	NC	4 79E-03	2 40E-03
Combined	Surface Water	PEST	Endosulfan sulfate	ug/l	6	1	17%	1	NC	NC	NC	3 20E-03	3 20E-03	3 20E-03	NC	NC	NC	3 20E-03
Combined	Surface Water	PEST	Endrin	ug/l	6	1	17%	1	NC	NC	NC	9 50E-04	9 50E-04	9 50E-04	NC	NC	NC	9 50E-04
Combined	Surface Water	PEST	Endrin aldehyde	ug/l	6	2	33%	2	1 00	1 00	Normal	1 60E-03	2 40E-03	3 20E-03	7 45E-03	NC	7 45E-03	3 20E-03
Combined	Surface Water	PEST	Endrin ketone	ug/l	6	1	17%	1	NC	NC	NC	2 70E-03	2 70E-03	2 70E-03	NC	NC	NC	2 70E-03
Combined	Surface Water	SVOA	Fluoranthene	ug/l	6	1	17%	1	NC	NC	NC	7 00E-01	7 00E-01	7 00E-01	NC	NC	NC	7 00E-01
Combined	Surface Water	OTHER	Fluoride	mg/l	6	6	100%	6	0 86	0 87	Lognormal	2 40E-01	2 58E-01	2 90E-01	2 73E-01	NC	NC	2 90E-01
Combined	Surface Water	PEST	gamma BHC (Lindane)	ug/l	6	2	33%	2	1 00	1 00	Lognormal	2 40E-03	3 10E-03	3 80E-03	7 52E-03	NC	NC	3 80E-03
Combined	Surface Water	OTHER	Hardness as CaCO3	mg/l	6	6	100%	6	0 84	0 87	Lognormal	2 20E+02	2 72E+02	3 50E+02	3 07E+02	3 12E+02	3 12E+02	3 12E+02
Combined	Surface Water	PEST	Heptachlor	ug/l	6	3	50%	3	0 99	0 99	Normal	2 20E-03	2 57E-03	2 90E-03	3 16E-03	3 45E-03	3 16E-03	2 90E-03
Combined	Surface Water	PEST	Heptachlor epoxide	ug/l	6	2	33%	2	1 00	1 00	Normal	9 00E-04	9 30E-04	9 60E-04	1 12E-03	NC	1 12E-03	9 60E-04
Combined	Surface Water	METALS	Iron	mg/l	6	6	100%	6	1	1	Lognormal	5 00E-01	2 28E+00	8 70E+00	4 89E+00	1 75E+01	1 75E+01	8 70E+00
Combined	Surface Water	METALS	Lead	mg/l	6	5	83%	6	0 57	0 73	Lognormal	2 00E-03	5 55E-03	2 00E-02	1 14E-02	2 30E-02	2 30E-02	2 00E-02
Combined	Surface Water	METALS	Magnesium	mg/l	6	6	100%	6	0 89	0 87	Normal	2 60E+01	3 05E+01	3 30E+01	3 26E+01	NC	3 26E+01	3 26E+01
Combined	Surface Water	METALS	Manganese	mg/l	6	6	100%	6	0 54	0 72	Lognormal	6 20E-02	3 87E-01	1 70E+00	9 17E-01	3 59E+00	3 59E+00	1 70E+00
Combined	Surface Water	METALS	Molybdenum	mg/l	6	3	50%	3	0 99	0 98	Normal	2 80E-03	3 43E-03	4 00E-03	4 45E-03	5 18E-03	4 45E-03	4 00E-03
Combined	Surface Water	METALS	Nickel	mg/l	6	6	100%	6	0 95	0 96	Lognormal	6 90E-03	1 26E-02	2 10E-02	1 88E-02	2 04E-02	2 04E-02	2 04E-02
Combined	Surface Water	OTHER	Ortho Phosphate P	mg/l	6	6	100%	6	0 69	0 93	Lognormal	6 30E-02	2 55E-01	8 30E-01	4 92E-01	1 27E+00	1 27E+00	8 30E-01
Combined	Surface Water	OTHER	pH (7 1 4 2) *	su	6	6	100%	6	0 97	0 98	Normal	7 40E+00	8 47E+00	9 70E+00	9 18E+00	9 27E+00	9 18E+00	9 18E+00
Combined	Surface Water	SVOA	Phenanthrene	ug/l	6	1	17%	1	NC	NC	NC	7 00E-01	7 00E-01	7 00E-01	NC	NC	NC	7 00E-01
Combined	Surface Water	METALS	Potassium	mg/l	6	6	100%	6	0 93	0 90	Normal	5 10E+00	6 58E+00	7 60E+00	7 28E+00	7 45E+00	7 28E+00	7 28E+00
Combined	Surface Water	METALS	Sodium	mg/l	6	6	100%	6	0 78	0 79	Lognormal	2 10E+01	2 18E+01	2 40E+01	2 28E+01	NC	NC	2 40E+01
Combined	Surface Water	OTHER	Suspended Solids	mg/l	6	5	83%	6	0 78	1 00	Lognormal	2 50E+00	4 58E+01	1 60E+02	9 46E+01	3 76E+03	3 76E+03	1 60E+02
Combined	Surface Water	OTHER	Total Dissolved Solids	mg/l	6	6	100%	6	0 86	0 90	Lognormal	2 80E+02	3 58E+02	4 80E+02	4 13E+02	4 22E+02	4 22E+02	4 22E+02
Combined	Surface Water	OTHER	Total Phosphorus	mg/l	6	6	100%	6	0 66	0 88	Lognormal	1 30E-01	3 72E-01	1 20E+00	7 11E-01	1 43E+00	1 43E+00	1 20E+00
Combined	Surface Water	METALS	Vanadium	mg/l	6	4	67%	6	0 84	0 90	Lognormal	3 00E-03	7 18E-03	1 40E-02	1 07E-02	1 55E-02	1 55E-02	1 40E-02
Combined	Surface Water	METALS	Zinc	mg/l	6	6	100%	6	0 97	0 99	Lognormal	7 30E-03	3 49E-02	7 50E-02	5 48E-02	1 48E-01	1 48E-01	7 50E-02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
Combined Surface Water

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
Combined	Surface Water	SW-BPL-S1	10/5/99		
Combined	Surface Water	SW-BPL-S2	10/6/99		
Combined	Surface Water	SW-BPL-S3	10/6/99		
Combined	Surface Water	SW-CSF-S1	10/7/99		
Combined	Surface Water	SW-CSF-S2	10/7/99		
Combined	Surface Water	SW-CSF-S3	10/7/99		

Table
Site Concentration Selection
Combined Sediment

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
Combined	Sediment	8290	1998 Total TEQ w/ EMPC as ND	ug/kg dw	6	6	100%	6	0 87	0 92	Lognormal	1 34E 02	1 19E 01	3 32E 01	2 21E 01	3 76E+00	3 76E+00	3 32E 01
Combined	Sediment	HERB	2 4 D	ug/kg dw	6	3	50%	4	0 82	0 89	Lognormal	8 80E+00	1 37E+01	2 30E+01	2 12E+01	3 64E+01	3 64E+01	2 30E+01
Combined	Sediment	PEST	4 4' DDD	ug/kg dw	6	1	17%	1	NC	NC	NC	3 80E+00	3 80E+00	3 80E+00	NC	NC	NC	3 80E+00
Combined	Sediment	PEST	4 4' DDE	ug/kg dw	6	6	100%	6	0 85	0 98	Lognormal	1 11E+00	4 68E+00	1 10E+01	7 89E+00	2 42E+01	2 42E+01	1 10E+01
Combined	Sediment	PEST	4 4' DDT	ug/kg dw	6	3	50%	3	0 81	0 86	Lognormal	1 14E+00	2 35E+00	4 50E+00	5 50E+00	3 98E+02	3 98E+02	4 50E+00
Combined	Sediment	PEST	Aldrin	ug/kg dw	6	1	17%	2	1 00	1 00	Normal	3 53E+00	3 81E+00	4 10E+00	5 63E+00	NC	5 63E+00	4 10E+00
Combined	Sediment	PEST	Alpha Chlordane	ug/kg dw	6	6	100%	6	0 90	0 93	Lognormal	4 75E 01	2 60E+00	5 30E+00	4 30E+00	1 97E+01	1 97E+01	5 30E+00
Combined	Sediment	METALS	Aluminum	mg/kg dw	6	6	100%	6	0 94	0 90	Normal	7 80E+03	1 33E+04	1 70E+04	1 61E+04	1 79E+04	1 61E+04	1 61E+04
Combined	Sediment	METALS	Antimony	mg/kg dw	5	4	80%	4	0 87	0 83	Normal	1 50E+00	2 21E+00	2 60E+00	2 79E+00	3 45E+00	2 79E+00	2 60E+00
Combined	Sediment	METALS	Arsenic	mg/kg dw	6	6	100%	6	0 93	0 86	Normal	8 00E+00	1 48E+01	1 90E+01	1 79E+01	2 05E+01	1 79E+01	1 79E+01
Combined	Sediment	METALS	Barium	mg/kg dw	6	6	100%	6	0 95	0 95	Normal	1 50E+02	2 86E+02	4 20E+02	3 68E+02	4 32E+02	3 68E+02	3 68E+02
Combined	Sediment	METALS	Beryllium	mg/kg dw	6	6	100%	6	0 91	0 89	Normal	5 30E 01	7 35E 01	8 90E 01	8 57E 01	9 05E 01	8 57E 01	8 57E 01
Combined	Sediment	METALS	Cadmium	mg/kg dw	6	6	100%	6	0 71	0 93	Lognormal	1 60E+00	1 24E+01	4 70E+01	2 69E+01	3 45E+02	3 45E+02	4 70E+01
Combined	Sediment	METALS	Calcium	mg/kg dw	6	6	100%	6	0 80	0 80	Lognormal	1 10E+04	1 31E+04	1 65E+04	1 52E+04	1 57E+04	1 57E+04	1 57E+04
Combined	Sediment	METALS	Chromium	mg/kg dw	6	6	100%	6	0 92	0 95	Lognormal	1 80E+01	2 53E+01	3 80E+01	3 17E+01	3 41E+01	3 41E+01	3 41E+01
Combined	Sediment	SVOA	Chrysene	ug/kg dw	6	1	17%	1	NC	NC	NC	7 40E+01	7 40E+01	7 40E+01	NC	NC	NC	7 40E+01
Combined	Sediment	METALS	Cobalt	mg/kg dw	6	6	100%	6	0 98	0 95	Normal	6 60E+00	9 38E+00	1 30E+01	1 16E+01	1 31E+01	1 16E+01	1 16E+01
Combined	Sediment	METALS	Copper	mg/kg dw	6	6	100%	6	0 87	0 94	Lognormal	3 60E+01	1 69E+02	4 10E+02	2 79E+02	1 12E+03	1 12E+03	4 10E+02
Combined	Sediment	PEST	delta BHC	ug/kg dw	6	1	17%	1	NC	NC	NC	3 40E 01	3 40E 01	3 40E 01	NC	NC	NC	3 40E 01
Combined	Sediment	PEST	Dieldrin	ug/kg dw	6	4	67%	5	0 74	0 86	Lognormal	2 55E 01	4 01E+00	9 30E+00	8 49E+00	4 31E+03	4 31E+03	9 30E+00
Combined	Sediment	PEST	Endosulfan I	ug/kg dw	6	6	100%	6	0 86	0 97	Lognormal	1 00E+00	2 54E+00	5 70E+00	3 94E+00	6 20E+00	6 20E+00	5 70E+00
Combined	Sediment	PEST	Endosulfan II	ug/kg dw	6	3	50%	4	0 94	0 83	Normal	1 80E+00	5 54E+00	8 10E+00	8 74E+00	8 82E+01	8 74E+00	8 10E+00
Combined	Sediment	PEST	Endosulfan sulfate	ug/kg dw	6	3	50%	3	0 98	1 00	Lognormal	1 40E+00	3 08E+00	4 97E+00	6 09E+00	1 34E+02	1 34E+02	4 97E+00
Combined	Sediment	PEST	Endrin	ug/kg dw	6	2	33%	2	NC	NC	NC	1 70E+00	1 70E+00	1 70E+00	1 70E+00	NC	1 70E+00	1 70E+00
Combined	Sediment	PEST	Endrin aldehyde	ug/kg dw	6	6	100%	6	0 83	0 93	Lognormal	1 20E+00	5 23E+00	1 40E+01	9 49E+00	4 01E+01	4 01E+01	1 40E+01
Combined	Sediment	PEST	Endrin ketone	ug/kg dw	6	4	67%	6	0 88	0 75	Normal	7 15E 01	6 70E+00	1 00E+01	9 76E+00	6 33E+01	9 76E+00	9 76E+00
Combined	Sediment	VOA	Ethylbenzene	ug/kg dw	6	1	17%	2	1 00	1 00	Normal	8 50E+00	9 75E+00	1 10E+01	1 76E+01	NC	1 76E+01	1 10E+01
Combined	Sediment	SVOA	Fluoranthene	ug/kg dw	6	2	33%	2	1 00	1 00	Normal	1 20E+02	1 25E+02	1 30E+02	1 57E+02	NC	1 57E+02	1 30E+02
Combined	Sediment	PEST	Gamma Chlordane	ug/kg dw	6	5	83%	6	0 84	1 00	Lognormal	7 35E 01	5 89E+00	1 70E+01	1 07E+01	6 00E+01	6 00E+01	1 70E+01
Combined	Sediment	PEST	gamma-BHC (Lindane)	ug/kg dw	6	1	17%	1	NC	NC	NC	2 43E+00	2 43E+00	2 43E+00	NC	NC	NC	2 43E+00
Combined	Sediment	PEST	Heptachlor	ug/kg dw	6	1	17%	1	NC	NC	NC	9 30E-01	9 30E-01	9 30E-01	NC	NC	NC	9 30E-01
Combined	Sediment	PEST	Heptachlor epoxide	ug/kg dw	6	3	50%	5	0 87	0 77	Normal	5 10E 01	3 60E+00	5 40E+00	5 58E+00	5 05E+01	5 58E+00	5 40E+00
Combined	Sediment	METALS	Iron	mg/kg dw	6	6	100%	6	0 98	0 94	Normal	1 40E+04	2 73E+04	3 80E+04	3 45E+04	4 08E+04	3 45E+04	3 45E+04
Combined	Sediment	METALS	Lead	mg/kg dw	6	6	100%	6	0 75	0 94	Lognormal	3 40E+01	1 14E+02	3 20E+02	2 01E+02	4 15E+02	4 15E+02	3 20E+02
Combined	Sediment	METALS	Magnesium	mg/kg dw	6	6	100%	6	0 99	1 00	Lognormal	3 60E+03	5 03E+03	6 60E+03	6 97E+03	6 29E+03	6 29E+03	6 29E+03
Combined	Sediment	METALS	Manganese	mg/kg dw	6	6	100%	6	0 92	0 91	Normal	1 70E+02	7 60E+02	1 40E+03	1 18E+03	4 02E+03	1 18E+03	1 18E+03
Combined	Sediment	METALS	Mercury	mg/kg dw	6	6	100%	6	0 78	0 94	Lognormal	1 01E 01	3 70E 01	1 10E+00	6 84E 01	2 06E+00	2 06E+00	1 10E+00
Combined	Sediment	PEST	Methoxychlor	ug/kg dw	6	3	50%	3	0 99	1 00	Lognormal	7 30E+00	1 51E+01	2 40E+01	2 93E+01	4 23E+02	4 23E+02	2 40E+01
Combined	Sediment	METALS	Molybdenum	mg/kg dw	6	6	100%	6	0 65	0 87	Lognormal	3 70E 01	1 16E+00	3 70E+00	2 19E+00	4 17E+00	4 17E+00	3 70E+00
Combined	Sediment	METALS	Nickel	mg/kg dw	6	6	100%	6	0 78	0 94	Lognormal	3 60E+01	1 34E+02	3 90E+02	2 45E+02	6 86E+02	6 86E+02	3 90E+02
Combined	Sediment	METALS	Potassium	mg/kg dw	6	6	100%	6	0 94	0 93	Normal	1 50E+03	2 18E+03	2 90E+03	2 64E+03	2 85E+03	2 64E+03	2 64E+03
Combined	Sediment	METALS	Silver	mg/kg dw	6	1	17%	1	NC	NC	NC	7 90E 01	7 90E 01	7 90E 01	NC	NC	NC	7 90E 01
Combined	Sediment	OTHER	Total Organic Carbon	mg/kg dw	6	6	100%	6	0 78	0 93	Lognormal	3 30E+04	6 43E+04	1 40E+05	9 66E+04	1 22E+05	1 22E+05	1 22E+05
Combined	Sediment	PCB	Total PCBs	ug/kg dw	43	20	47%	43	0 43	0 82	Lognormal	1 00E+01	4 02E+02	6 29E+03	6 63E+02	1 24E+03	1 24E+03	1 24E+03
Combined	Sediment	METALS	Vanadium	mg/kg dw	6	6	100%	6	0 97	0 96	Normal	2 50E+01	3 69E+01	5 10E+01	4 47E+01	4 81E+01	4 47E+01	4 47E+01
Combined	Sediment	METALS	Zinc	mg/kg dw	6	6	100%	6	0 79	0 93	Lognormal	2 50E+02	1 20E+03	3 70E+03	2 29E+03	1 14E+04	1 14E+04	3 70E+03

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
Combined Sediment

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
Combined	Sediment	BPL-ESED-S1-0.2FT	10/6/99	0	0.2
Combined	Sediment	BPL-ESED-S2-0.2FT	10/7/99	0	0.2
Combined	Sediment	BPL-ESED-S3-0.2FT	10/6/99	0	0.2
Combined	Sediment	FASED-BPL-S1-0-10IN	2/3/00	0	10
Combined	Sediment	FASED-BPL-S2-0-10IN	2/3/00	0	10
Combined	Sediment	FASED-BPL-S3-0-8IN	2/3/00	0	8
Combined	Sediment	FASED-BPL-S4-0-10IN	2/3/00	0	10
Combined	Sediment	FASED-BPL-S5-0-9IN	2/3/00	0	9
Combined	Sediment	FASED-BPL-S6-0-11IN	2/3/00	0	11
Combined	Sediment	FASED-BPL-S7-0-9IN	2/3/00	0	9
Combined	Sediment	FASED-BPL-S8-0-9IN	2/3/00	0	9
Combined	Sediment	FASED-CSF-S10-0-9IN	1/12/00	0	9
Combined	Sediment	FASED-CSF-S11W-0-10IN	1/12/00	0	10
Combined	Sediment	FASED-CSF-S12-0-15IN	1/12/00	0	15
Combined	Sediment	FASED-CSF-S13W-0-15IN	1/12/00	0	15
Combined	Sediment	FASED-CSF-S14W-0-15IN	1/12/00	0	15
Combined	Sediment	FASED-CSF-S15W-0-28IN	1/13/00	0	28
Combined	Sediment	FASED-CSF-S16-0-23IN	1/13/00	0	23
Combined	Sediment	FASED-CSF-S17W-0-16IN	1/13/00	0	16
Combined	Sediment	FASED-CSF-S18E-0-14IN	1/13/00	0	14
Combined	Sediment	FASED-CSF-S19-0-13IN	1/17/00	0	13
Combined	Sediment	FASED-CSF-S1E-0-8IN	1/11/00	0	8
Combined	Sediment	FASED-CSF-S2-0-7IN	1/11/00	0	7
Combined	Sediment	FASED-CSF-S20-0-12IN	1/17/00	0	12
Combined	Sediment	FASED-CSF-S21-0-13IN	1/17/00	0	13
Combined	Sediment	FASED-CSF-S22E-0-20IN	1/17/00	0	20
Combined	Sediment	FASED-CSF-S23-0-15IN	1/17/00	0	15
Combined	Sediment	FASED-CSF-S24W-0-13IN	1/17/00	0	13
Combined	Sediment	FASED-CSF-S25E-0-10IN	1/18/00	0	10
Combined	Sediment	FASED-CSF-S26W-0-13IN	1/18/00	0	13
Combined	Sediment	FASED-CSF-S27E-0-16IN	1/18/00	0	16
Combined	Sediment	FASED-CSF-S28-0-10IN	1/18/00	0	10
Combined	Sediment	FASED-CSF-S29W-0-10IN	1/18/00	0	10
Combined	Sediment	FASED-CSF-S3E-0-6IN	1/11/00	0	6
Combined	Sediment	FASED-CSF-S4-0-7IN	1/11/00	0	7
Combined	Sediment	FASED-CSF-S5W-0-10IN	1/11/00	0	10
Combined	Sediment	FASED-CSF-S6E-0-10IN	1/11/00	0	10
Combined	Sediment	FASED-CSF-S7E-0-11IN	1/11/00	0	11
Combined	Sediment	FASED-CSF-S8-0-15IN	1/12/00	0	15
Combined	Sediment	FASED-CSF-S9-0-11IN	1/12/00	0	11
Combined	Sediment	SED-CSF-S1-0.2FT	10/7/99	0	0.2
Combined	Sediment	SED-CSF-S2-0.2FT	10/7/99	0	0.2
Combined	Sediment	SED-CSF-S3-0.2FT	10/7/99	0	0.2

Table
Site Concentration Selection
T7 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(e)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T7	Subsurface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	1	1	100%	1	NC	NC	NC	2 00E-05	2 00E-05	2 00E-05	NC	NC	NC	2 00E-05
T7	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	7 00E+00	9 50E+00	1 20E+01	2 53E+01	NC	2 53E+01	1 20E+01
T7	Subsurface Soil	PEST	4,4' DDE	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	3 40E-01	1 02E+00	1 70E+00	5 31E+00	NC	NC	1 70E+00
T7	Subsurface Soil	VOA	Acetone	ug/kg dw	9	3	33%	9	0 69	0 78	Lognormal	2 70E+01	8 78E+01	3 10E+02	1 47E+02	2 27E+02	2 27E+02	2 27E+02
T7	Subsurface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 65	0 80	Lognormal	6 00E+03	9 26E+03	2 20E+04	1 23E+04	1 24E+04	1 24E+04	1 24E+04
T7	Subsurface Soil	METALS	Antimony	mg/kg dw	9	2	22%	2	1 00	1 00	Normal	5 60E-01	5 80E-01	6 00E-01	7 06E-01	NC	7 06E-01	6 00E-01
T7	Subsurface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 71	0 81	Lognormal	4 50E+00	5 99E+00	1 10E+01	7 23E+00	7 27E+00	7 27E+00	7 27E+00
T7	Subsurface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 79	0 82	Lognormal	1 70E+02	2 10E+02	2 90E+02	2 38E+02	2 40E+02	2 40E+02	2 40E+02
T7	Subsurface Soil	VOA	Benzene	ug/kg dw	9	2	22%	5	0 76	0 76	Lognormal	2 50E+00	2 98E+00	3 20E+00	3 28E+00	3 35E+00	3 35E+00	3 20E+00
T7	Subsurface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	3 60E+01	3 65E+01	3 70E+01	3 97E+01	NC	NC	3 70E+01
T7	Subsurface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	3 40E+01	3 60E+01	3 80E+01	4 86E+01	NC	4 86E+01	3 80E+01
T7	Subsurface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	2 80E+01	3 25E+01	3 70E+01	6 09E+01	NC	NC	3 70E+01
T7	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	3 50E+01	3 55E+01	3 60E+01	3 87E+01	NC	NC	3 60E+01
T7	Subsurface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	9	1	11%	1	NC	NC	NC	3 60E+01	3 60E+01	3 60E+01	NC	NC	NC	3 60E+01
T7	Subsurface Soil	METALS	Beryllium	mg/kg dw	9	3	33%	9	0 68	0 82	Lognormal	2 40E-01	4 33E-01	1 20E+00	6 21E-01	6 52E-01	6 52E-01	6 52E-01
T7	Subsurface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	9	7	78%	9	0 47	0 79	Lognormal	7 50E+01	1 08E+03	7 60E+03	2 61E+03	8 18E+03	8 18E+03	7 60E+03
T7	Subsurface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 61	0 72	Lognormal	2 65E-01	1 78E+00	7 90E+00	3 54E+00	1 04E+01	1 04E+01	7 90E+00
T7	Subsurface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 90	0 84	Normal	4 70E+03	1 20E+04	1 70E+04	1 48E+04	1 77E+04	1 48E+04	1 48E+04
T7	Subsurface Soil	VOA	Carbon disulfide	ug/kg dw	9	3	33%	9	0 81	0 89	Lognormal	2 70E+00	4 19E+00	7 80E+00	5 16E+00	5 30E+00	5 30E+00	5 30E+00
T7	Subsurface Soil	VOA	Chlorobenzene	ug/kg dw	9	2	22%	9	0 57	0 70	Lognormal	2 70E+00	4 10E+00	1 00E+01	5 50E+00	5 45E+00	5 45E+00	5 45E+00
T7	Subsurface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 65	0 78	Lognormal	1 10E+01	3 35E+01	1 30E+02	5 78E+01	8 37E+01	8 37E+01	8 37E+01
T7	Subsurface Soil	SVOA	Chrysene	ug/kg dw	9	2	22%	2	1 00	1 00	Normal	4 30E+01	4 55E+01	4 80E+01	6 13E+01	NC	6 13E+01	4 80E+01
T7	Subsurface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 71	0 79	Lognormal	5 10E+00	6 50E+00	1 10E+01	7 62E+00	7 63E+00	7 63E+00	7 63E+00
T7	Subsurface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 68	0 83	Lognormal	8 10E+00	1 96E+01	6 20E+01	3 05E+01	3 58E+01	3 56E+01	3 56E+01
T7	Subsurface Soil	SVOA	Di n-butylphthalate	ug/kg dw	9	6	67%	9	0 88	0 83	Normal	4 55E+01	8 91E+01	1 20E+02	1 06E+02	1 18E+02	1 06E+02	1 06E+02
T7	Subsurface Soil	PEST	Endosulfan sulfate	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	3 20E-01	4 45E-01	5 70E-01	1 23E+00	NC	NC	5 70E-01
T7	Subsurface Soil	SVOA	Fluoranthene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	7 80E+01	7 95E+01	8 10E+01	8 90E+01	NC	NC	8 10E+01
T7	Subsurface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 66	0 75	Lognormal	1 10E+04	1 39E+04	2 60E+04	1 69E+04	1 70E+04	1 70E+04	1 70E+04
T7	Subsurface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 68	0 80	Lognormal	9 00E+00	2 24E+01	7 70E+01	3 64E+01	4 71E+01	4 71E+01	4 71E+01
T7	Subsurface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 86	0 81	Normal	3 20E+03	5 87E+03	7 10E+03	6 69E+03	7 13E+03	6 69E+03	6 69E+03
T7	Subsurface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 92	0 94	Lognormal	1 50E+02	2 59E+02	4 00E+02	3 01E+02	3 13E+02	3 13E+02	3 13E+02
T7	Subsurface Soil	METALS	Mercury	mg/kg dw	9	8	89%	9	0 60	0 80	Lognormal	1 35E-02	6 20E-02	2 90E-01	1 19E-01	2 06E-01	2 06E-01	2 06E-01
T7	Subsurface Soil	METALS	Molybdenum	mg/kg dw	9	6	67%	9	0 85	0 91	Lognormal	3 30E-01	4 93E-01	7 65E-01	5 95E-01	6 19E-01	6 19E-01	6 19E-01
T7	Subsurface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 75	0 83	Lognormal	1 30E+01	2 07E+01	4 20E+01	2 70E+01	2 84E+01	2 84E+01	2 84E+01
T7	Subsurface Soil	SVOA	Pentachlorophenol	ug/kg dw	9	3	33%	9	0 84	0 85	Lognormal	2 36E+02	2 58E+02	3 01E+02	2 72E+02	NC	NC	3 01E+02
T7	Subsurface Soil	SVOA	Phenanthrene	ug/kg dw	9	2	22%	2	1 00	1 00	Lognormal	3 10E+01	3 65E+01	4 20E+01	7 12E+01	NC	NC	4 20E+01
T7	Subsurface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 67	0 80	Lognormal	1 30E+03	1 88E+03	4 00E+03	2 40E+03	2 41E+03	2 41E+03	2 41E+03
T7	Subsurface Soil	SVOA	Pyrene	ug/kg dw	9	1	11%	1	NC	NC	NC	6 00E+01	6 00E+01	6 00E+01	NC	NC	NC	6 00E+01
T7	Subsurface Soil	METALS	Sodium	mg/kg dw	9	3	33%	9	0 80	0 80	Lognormal	6 00E+01	1 18E+02	2 60E+02	1 57E+02	1 70E+02	1 70E+02	1 70E+02
T7	Subsurface Soil	METALS	Thallium	mg/kg dw	9	1	11%	9	0 82	0 84	Lognormal	5 00E-01	5 74E-01	7 20E-01	6 26E-01	6 30E-01	6 30E-01	6 30E-01
T7	Subsurface Soil	VOA	Toluene	ug/kg dw	9	1	11%	9	0 79	0 88	Lognormal	2 70E+00	3 49E+00	5 40E+00	3 99E+00	4 02E+00	4 02E+00	4 02E+00
T7	Subsurface Soil	PCB	Total PCBs	ug/kg dw	9	1	11%	1	NC	NC	NC	8 40E+00	8 40E+00	8 40E+00	NC	NC	NC	8 40E+00
T7	Subsurface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 64	0 74	Lognormal	1 90E+01	2 52E+01	5 00E+01	3 12E+01	3 11E+01	3 11E+01	3 11E+01
T7	Subsurface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 59	0 69	Lognormal	4 30E+01	3 79E+02	1 80E+03	7 84E+02	3 41E+03	3 41E+03	1 80E+03

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T7 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T7	Subsurface Soil	DAS-T7-S1-3-6FT	4/20/00	3	6
T7	Subsurface Soil	DAS-T7-S2-3-6FT	4/20/00	3	6
T7	Subsurface Soil	UAS-T7-S1-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S2-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S3-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S4-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S5-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S6-3-6FT	11/19/99	3	6
T7	Subsurface Soil	UAS-T7-S7-3-6FT	11/19/99	3	6

Table
Site Concentration Selection
T6 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T6	Subsurface Soil	8260A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	2	2	100%	2	1 00	1 00	Normal	6 10E-05	7 84E-04	1 51E-03	5 35E-03	NC	5 35E-03	1 51E-03
T6	Subsurface Soil	VOA	2 Hexanone	ug/kg dw	8	1	13%	1	NC	NC	NC	3 50E+00	3 50E+00	3 50E+00	NC	NC	NC	3 50E+00
T6	Subsurface Soil	SVOA	Acenaphthene	ug/kg dw	8	2	25%	8	0 83	0 77	Normal	4 10E+01	1 00E+02	1 60E+02	1 22E+02	1 39E+02	1 22E+02	1 22E+02
T6	Subsurface Soil	SVOA	Acenaphthylene	ug/kg dw	8	1	13%	1	NC	NC	NC	4 90E+01	4 90E+01	4 90E+01	NC	NC	NC	4 90E+01
T6	Subsurface Soil	VOA	Acetone	ug/kg dw	8	1	13%	7	0 91	0 94	Lognormal	2 40E+01	3 04E+01	4 00E+01	3 42E+01	3 46E+01	3 46E+01	3 46E+01
T6	Subsurface Soil	METALS	Aluminum	mg/kg dw	8	8	100%	8	0 92	0 94	Lognormal	5 50E+03	7 90E+03	1 20E+04	9 40E+03	9 82E+03	9 82E+03	9 82E+03
T6	Subsurface Soil	SVOA	Anthracene	ug/kg dw	8	3	38%	8	0 52	0 64	Lognormal	8 60E+01	1 26E+02	3 60E+02	1 90E+02	1 84E+02	1 84E+02	1 84E+02
T6	Subsurface Soil	METALS	Antimony	mg/kg dw	8	2	25%	8	0 51	0 57	Lognormal	1 05E+00	1 32E+00	2 60E+00	1 67E+00	1 66E+00	1 66E+00	1 66E+00
T6	Subsurface Soil	METALS	Arsenic	mg/kg dw	8	8	100%	8	0 80	0 84	Lognormal	5 50E+00	6 20E+00	7 80E+00	6 68E+00	6 69E+00	6 69E+00	6 69E+00
T6	Subsurface Soil	METALS	Barium	mg/kg dw	8	8	100%	8	0 90	0 91	Lognormal	1 80E+02	1 95E+02	2 20E+02	2 04E+02	NC	NC	2 20E+02
T6	Subsurface Soil	VOA	Benzene	ug/kg dw	8	1	13%	5	0 85	0 83	Normal	2 40E+00	2 77E+00	3 00E+00	2 98E+00	NC	2 98E+00	2 98E+00
T6	Subsurface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	8	4	50%	8	0 62	0 90	Lognormal	3 30E+01	2 25E+02	9 40E+02	4 25E+02	7 98E+02	7 98E+02	7 98E+02
T6	Subsurface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	8	2	25%	8	0 56	0 68	Lognormal	5 00E+01	1 85E+02	8 80E+02	3 80E+02	7 46E+02	7 46E+02	7 46E+02
T6	Subsurface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	8	3	38%	8	0 61	0 72	Lognormal	9 50E+01	1 93E+02	6 40E+02	3 19E+02	3 83E+02	3 83E+02	3 83E+02
T6	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	8	1	13%	8	0 44	0 48	Lognormal	9 50E+01	1 66E+02	6 30E+02	2 91E+02	3 01E+02	3 01E+02	3 01E+02
T6	Subsurface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	8	2	25%	8	0 49	0 61	Lognormal	9 50E+01	2 40E+02	1 10E+03	4 74E+02	5 92E+02	5 92E+02	5 92E+02
T6	Subsurface Soil	METALS	Beryllium	mg/kg dw	8	8	100%	8	0 94	0 94	Lognormal	3 80E-01	4 84E-01	6 30E-01	5 45E-01	5 58E-01	5 56E-01	5 56E-01
T6	Subsurface Soil	SVOA	bis(2 Ethylhexyl)phthalate	ug/kg dw	8	3	38%	8	0 56	0 63	Lognormal	9 50E+01	1 25E+02	2 70E+02	1 65E+02	1 65E+02	1 65E+02	1 65E+02
T6	Subsurface Soil	METALS	Cadmium	mg/kg dw	8	8	100%	8	0 93	0 90	Normal	2 30E-01	5 54E-01	9 60E-01	7 23E-01	9 06E-01	7 23E-01	7 23E-01
T6	Subsurface Soil	METALS	Calcium	mg/kg dw	8	8	100%	8	0 71	0 83	Lognormal	1 40E+04	2 60E+04	6 40E+04	3 72E+04	4 08E+04	4 08E+04	4 08E+04
T6	Subsurface Soil	SVOA	Carbazole	ug/kg dw	8	2	25%	8	0 82	0 76	Normal	3 60E+01	1 01E+02	1 70E+02	1 25E+02	1 50E+02	1 25E+02	1 25E+02
T6	Subsurface Soil	METALS	Chromium	mg/kg dw	8	8	100%	8	0 91	0 91	Lognormal	9 80E+00	1 44E+01	2 10E+01	1 72E+01	1 82E+01	1 82E+01	1 82E+01
T6	Subsurface Soil	SVOA	Chrysene	ug/kg dw	8	4	50%	8	0 60	0 88	Lognormal	4 20E+01	2 52E+02	1 10E+03	4 87E+02	6 81E+02	6 81E+02	6 81E+02
T6	Subsurface Soil	METALS	Cobalt	mg/kg dw	8	8	100%	8	0 85	0 88	Lognormal	5 10E+00	6 31E+00	8 60E+00	7 18E+00	7 29E+00	7 29E+00	7 29E+00
T6	Subsurface Soil	METALS	Copper	mg/kg dw	8	8	100%	8	0 78	0 85	Lognormal	9 40E+00	1 88E+01	3 50E+01	2 58E+01	3 01E+01	3 01E+01	3 01E+01
T6	Subsurface Soil	PEST	delta BHC	ug/kg dw	8	1	13%	1	NC	NC	NC	1 40E-01	1 40E-01	1 40E-01	NC	NC	NC	1 40E-01
T6	Subsurface Soil	SVOA	Dibenz(a,h)anthracene	ug/kg dw	8	2	25%	8	0 54	0 64	Lognormal	5 00E+01	8 46E+01	2 70E+02	1 36E+02	1 45E+02	1 45E+02	1 45E+02
T6	Subsurface Soil	SVOA	Dibenzofuran	ug/kg dw	8	1	13%	8	0 79	0 80	Lognormal	9 50E+01	1 02E+02	1 20E+02	1 08E+02	NC	NC	1 20E+02
T6	Subsurface Soil	PEST	Endosulfan sulfate	ug/kg dw	8	2	25%	2	1 00	1 00	Normal	4 20E-01	5 00E-01	5 80E-01	1 01E+00	NC	1 01E+00	5 80E-01
T6	Subsurface Soil	SVOA	Fluoranthene	ug/kg dw	8	4	50%	8	0 58	0 78	Lognormal	7 90E+01	4 97E+02	2 50E+03	1 06E+03	3 38E+03	3 38E+03	2 50E+03
T6	Subsurface Soil	SVOA	Fluorene	ug/kg dw	8	2	25%	8	0 75	0 64	Normal	3 60E+01	9 39E+01	1 30E+02	1 11E+02	1 32E+02	1 11E+02	1 11E+02
T6	Subsurface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	8	3	38%	8	0 49	0 56	Lognormal	9 50E+01	1 64E+02	5 70E+02	2 74E+02	2 88E+02	2 88E+02	2 88E+02
T6	Subsurface Soil	METALS	Iron	mg/kg dw	8	8	100%	8	0 88	0 89	Lognormal	1 20E+04	1 40E+04	1 60E+04	1 55E+04	1 56E+04	1 56E+04	1 56E+04
T6	Subsurface Soil	METALS	Lead	mg/kg dw	8	8	100%	8	0 78	0 84	Lognormal	8 00E+00	7 45E+01	2 40E+02	1 35E+02	1 18E+03	1 18E+03	2 40E+02
T6	Subsurface Soil	METALS	Magnesium	mg/kg dw	8	8	100%	8	0 94	0 92	Normal	4 80E+03	6 10E+03	6 90E+03	6 58E+03	6 66E+03	6 58E+03	6 58E+03
T6	Subsurface Soil	METALS	Manganese	mg/kg dw	8	8	100%	8	0 91	0 91	Lognormal	2 40E+02	3 21E+02	4 00E+02	3 62E+02	3 71E+02	3 71E+02	3 71E+02
T6	Subsurface Soil	HERB	MCPA[(4-chloro-2-methylphenoxy)-acetic a	ug/kg dw	8	1	13%	8	0 79	0 81	Lognormal	1 10E+03	1 19E+03	1 40E+03	1 26E+03	NC	NC	1 40E+03
T6	Subsurface Soil	HERB	MCPP	ug/kg dw	8	1	13%	8	0 47	0 50	Lognormal	1 10E+03	1 39E+03	3 00E+03	1 82E+03	1 81E+03	1 81E+03	1 81E+03
T6	Subsurface Soil	METALS	Mercury	mg/kg dw	8	6	75%	8	0 78	0 98	Lognormal	1 10E-02	5 86E-02	1 90E-01	9 73E-02	2 07E-01	2 07E-01	1 90E-01
T6	Subsurface Soil	METALS	Molybdenum	mg/kg dw	8	8	100%	8	0 87	0 93	Lognormal	2 70E-01	6 06E-01	1 10E+00	8 10E-01	9 50E-01	9 50E-01	9 50E-01
T6	Subsurface Soil	SVOA	Naphthalene	ug/kg dw	8	2	25%	2	1 00	1 00	Normal	4 10E+01	4 50E+01	4 90E+01	7 03E+01	NC	7 03E+01	4 90E+01
T6	Subsurface Soil	METALS	Nickel	mg/kg dw	8	8	100%	8	0 88	0 89	Lognormal	1 40E+01	1 71E+01	2 40E+01	1 94E+01	1 97E+01	1 97E+01	1 97E+01
T6	Subsurface Soil	SVOA	Pentachlorophenol	ug/kg dw	8	2	25%	5	0 88	0 88	Lognormal	2 42E+02	2 46E+02	2 51E+02	2 50E+02	NC	NC	2 51E+02
T6	Subsurface Soil	SVOA	Phenanthrene	ug/kg dw	8	4	50%	8	0 57	0 83	Lognormal	5 70E+01	3 82E+02	1 90E+03	8 02E+02	1 95E+03	1 95E+03	1 90E+03
T6	Subsurface Soil	METALS	Potassium	mg/kg dw	8	8	100%	8	0 84	0 87	Lognormal	1 20E+03	1 43E+03	2 00E+03	1 61E+03	1 63E+03	1 63E+03	1 63E+03
T6	Subsurface Soil	SVOA	Pyrene	ug/kg dw	8	3	38%	8	0 57	0 74	Lognormal	9 50E+01	4 59E+02	2 30E+03	9 70E+02	2 50E+03	2 50E+03	2 30E+03
T6	Subsurface Soil	METALS	Sodium	mg/kg dw	8	3	38%	8	0 89	0 84	Normal	6 50E+01	1 06E+02	1 40E+02	1 25E+02	1 35E+02	1 25E+02	1 25E+02
T6	Subsurface Soil	VOA	Toluene	ug/kg dw	8	2	25%	8	0 70	0 79	Lognormal	2 40E+00	3 45E+00	6 60E+00	4 37E+00	4 47E+00	4 47E+00	4 47E+00
T6	Subsurface Soil	PCB	Total PCBs	ug/kg dw	8	1	13%	1	NC	NC	NC	4 30E+00	4 30E+00	4 30E+00	NC	NC	NC	4 30E+00
T6	Subsurface Soil	METALS	Vanadium	mg/kg dw	8	8	100%	8	0 92	0 93	Lognormal	1 80E+01	2 38E+01	3 30E+01	2 74E+01	2 82E+01	2 82E+01	2 82E+01
T6	Subsurface Soil	VOA	Xylenes, Total	ug/kg dw	8	1	13%	8	0 88	0 91	Lognormal	2 40E+00	3 22E+00	4 30E+00	3 67E+00	3 75E+00	3 75E+00	3 75E+00
T6	Subsurface Soil	METALS	Zinc	mg/kg dw	8	8	100%	8	0 90	0 93	Lognormal	3 70E+01	8 26E+01	1 60E+02	1 13E+02	1 41E+02	1 41E+02	1 41E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T6 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T6	Subsurface Soil	DAS-T6-S1-3-6FT	4/20/00	3	6
T6	Subsurface Soil	DAS-T6-S2-3-6FT	4/20/00	3	6
T6	Subsurface Soil	DAS-T6-S3-3-6FT	4/20/00	3	6
T6	Subsurface Soil	UAS-T6-S1-3-6FT	11/18/99	3	6
T6	Subsurface Soil	UAS-T6-S2-3-6FT	11/18/99	3	6
T6	Subsurface Soil	UAS-T6-S3-3-6FT	11/18/99	3	6
T6	Subsurface Soil	UAS-T6-S4-3-6FT	11/18/99	3	6
T6	Subsurface Soil	UAS-T6-S5-3-6FT	11/18/99	3	6

Table
Site Concentration Selection
T5 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T5	Subsurface Soil	8260A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	2	2	100%	2	1 00	1 00	Normal	7 00E-06	2 10E-05	3 50E-05	1 09E-04	NC	1 09E-04	3 50E-05
T5	Subsurface Soil	HERB	2,4-DB	ug/kg dw	9	1	11%	9	0 62	0 68	Lognormal	4 25E+00	4 98E+00	7 70E+00	5 61E+00	5 60E+00	5 60E+00	5 60E+00
T5	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	9	1	11%	1	NC	NC	NC	1 30E+01	1 30E+01	1 30E+01	NC	NC	NC	1 30E+01
T5	Subsurface Soil	VOA	Acetone	ug/kg dw	9	1	11%	9	0 44	0 52	Lognormal	2 63E+01	4 21E+01	1 40E+02	6 49E+01	6 23E+01	6 23E+01	6 23E+01
T5	Subsurface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 91	0 95	Lognormal	3 60E+03	5 96E+03	9 60E+03	7 21E+03	7 58E+03	7 58E+03	7 58E+03
T5	Subsurface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 97	0 98	Lognormal	3 50E+00	4 91E+00	6 40E+00	5 49E+00	5 60E+00	5 60E+00	5 60E+00
T5	Subsurface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 89	0 83	Normal	9 30E+01	1 70E+02	2 10E+02	1 94E+02	2 06E+02	1 94E+02	1 94E+02
T5	Subsurface Soil	VOA	Benzene	ug/kg dw	9	1	11%	1	NC	NC	NC	9 80E-01	9 80E-01	9 80E-01	NC	NC	NC	9 80E-01
T5	Subsurface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	9	1	11%	1	NC	NC	NC	7 50E+01	7 50E+01	7 50E+01	NC	NC	NC	7 50E+01
T5	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	9	1	11%	1	NC	NC	NC	3 00E+01	3 00E+01	3 00E+01	NC	NC	NC	3 00E+01
T5	Subsurface Soil	METALS	Beryllium	mg/kg dw	9	9	100%	9	0 84	0 86	Lognormal	2 80E-01	3 73E-01	5 60E-01	4 38E-01	4 51E-01	4 51E-01	4 51E-01
T5	Subsurface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	9	5	56%	9	0 91	0 87	Normal	6 50E+01	9 87E+01	1 20E+02	1 09E+02	1 12E+02	1 09E+02	1 09E+02
T5	Subsurface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 91	0 91	Lognormal	8 40E-02	2 24E-01	3 40E-01	2 83E-01	3 36E-01	3 36E-01	3 36E-01
T5	Subsurface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 91	0 75	Normal	3 50E+03	1 38E+04	1 90E+04	1 68E+04	2 22E+04	1 68E+04	1 68E+04
T5	Subsurface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 93	0 96	Lognormal	7 30E+00	1 20E+01	2 00E+01	1 45E+01	1 53E+01	1 53E+01	1 53E+01
T5	Subsurface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 92	0 93	Lognormal	3 90E+00	5 03E+00	6 10E+00	5 51E+00	5 57E+00	5 57E+00	5 57E+00
T5	Subsurface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 81	0 85	Lognormal	5 70E+00	9 20E+00	1 60E+01	1 17E+01	1 26E+01	1 26E+01	1 26E+01
T5	Subsurface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	9	1	11%	9	0 57	0 63	Lognormal	4 65E+01	5 52E+01	9 45E+01	6 45E+01	6 41E+01	6 41E+01	6 41E+01
T5	Subsurface Soil	SVOA	Di-n-octylphthalate	ug/kg dw	9	1	11%	9	0 86	0 88	Lognormal	9 00E+01	9 86E+01	1 18E+02	1 04E+02	NC	NC	1 18E+02
T5	Subsurface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	9	1	11%	9	0 91	0 92	Lognormal	9 00E+01	9 81E+01	1 13E+02	1 03E+02	NC	NC	1 13E+02
T5	Subsurface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 91	0 94	Lognormal	8 50E+03	1 10E+04	1 50E+04	1 24E+04	1 26E+04	1 26E+04	1 26E+04
T5	Subsurface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 84	0 86	Lognormal	6 20E+00	8 11E+00	1 10E+01	9 31E+00	9 53E+00	9 53E+00	9 53E+00
T5	Subsurface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 95	0 87	Normal	2 60E+03	5 47E+03	7 40E+03	6 36E+03	6 94E+03	6 36E+03	6 36E+03
T5	Subsurface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 96	0 95	Normal	1 40E+02	2 39E+02	3 20E+02	2 77E+02	2 92E+02	2 77E+02	2 77E+02
T5	Subsurface Soil	HERB	MCPA	ug/kg dw	9	1	11%	9	0 58	0 68	Lognormal	1 00E+03	1 24E+03	2 30E+03	1 50E+03	1 48E+03	1 48E+03	1 48E+03
T5	Subsurface Soil	HERB	MCPP	ug/kg dw	9	2	22%	9	0 61	0 65	Lognormal	1 00E+03	1 49E+03	2 90E+03	1 99E+03	2 09E+03	2 09E+03	2 09E+03
T5	Subsurface Soil	METALS	Mercury	mg/kg dw	9	9	100%	9	0 63	0 84	Lognormal	1 00E-02	2 43E-02	8 60E-02	3 93E-02	4 49E-02	4 49E-02	4 49E-02
T5	Subsurface Soil	METALS	Molybdenum	mg/kg dw	9	8	89%	8	0 93	0 84	Lognormal	1 70E-01	2 97E-01	4 50E-01	3 59E-01	3 88E-01	3 88E-01	3 88E-01
T5	Subsurface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 81	0 81	Normal	1 20E+01	1 39E+01	1 70E+01	1 52E+01	1 53E+01	1 52E+01	1 52E+01
T5	Subsurface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 87	0 90	Lognormal	9 30E+02	1 23E+03	1 80E+03	1 42E+03	1 45E+03	1 45E+03	1 45E+03
T5	Subsurface Soil	METALS	Sodium	mg/kg dw	9	3	33%	9	0 86	0 91	Lognormal	4 40E+01	8 23E+01	1 60E+02	1 07E+02	1 17E+02	1 17E+02	1 17E+02
T5	Subsurface Soil	VOA	Toluene	ug/kg dw	9	1	11%	1	NC	NC	NC	1 80E+00	1 80E+00	1 80E+00	NC	NC	NC	1 80E+00
T5	Subsurface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 88	0 92	Lognormal	1 30E+01	1 88E+01	2 60E+01	2 15E+01	2 21E+01	2 21E+01	2 21E+01
T5	Subsurface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 83	0 87	Lognormal	3 10E+01	3 98E+01	5 60E+01	4 58E+01	4 66E+01	4 66E+01	4 66E+01

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T5 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T5	Subsurface Soil	DAS-T5-S1-3-6FT	4/19/00	3	6
T5	Subsurface Soil	DAS-T5-S2-3-6FT	4/19/00	3	6
T5	Subsurface Soil	DAS-T5-S3-3-6FT	4/19/00	3	6
T5	Subsurface Soil	UAS-T5-S1-3-6FT	11/17/99	3	6
T5	Subsurface Soil	UAS-T5-S2-3-6FT	11/17/99	3	6
T5	Subsurface Soil	UAS-T5-S3-3-6FT	11/17/99	3	6
T5	Subsurface Soil	UAS-T5-S4-3-6FT	11/17/99	3	6
T5	Subsurface Soil	UAS-T5-S5-3-6FT	11/17/99	3	6
T5	Subsurface Soil	UAS-T5-S6-3-6FT	11/17/99	3	6

Table
Site Concentration Selection
T4 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T4	Subsurface Soil	HERB	2,4,5 TP (Silvex)	ug/kg dw	10	1	10%	1	NC	NC	NC	1 50E+00	1 50E+00	1 50E+00	NC	NC	NC	1 50E+00
T4	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	1	10%	1	NC	NC	NC	5 70E+00	5 70E+00	5 70E+00	NC	NC	NC	5 70E+00
T4	Subsurface Soil	SVOA	2-Methylnaphthalene	ug/kg dw	10	1	10%	10	0 72	0 79	Lognormal	9 00E+01	1 07E+02	1 60E+02	1 18E+02	1 18E+02	1 18E+02	1 18E+02
T4	Subsurface Soil	SVOA	Acenaphthene	ug/kg dw	10	1	10%	10	0 39	0 47	Lognormal	9 00E+01	1 91E+02	1 00E+03	3 55E+02	3 10E+02	3 10E+02	3 10E+02
T4	Subsurface Soil	SVOA	Acenaphthylene	ug/kg dw	10	1	10%	10	0 40	0 49	Lognormal	9 00E+01	1 63E+02	7 20E+02	2 76E+02	2 47E+02	2 47E+02	2 47E+02
T4	Subsurface Soil	VOA	Acetone	ug/kg dw	10	5	50%	10	0 60	0 85	Lognormal	7 20E+00	5 16E+01	2 20E+02	8 79E+01	1 18E+02	1 18E+02	1 18E+02
T4	Subsurface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0 94	0 92	Normal	3 30E+03	6 17E+03	9 00E+03	7 32E+03	7 88E+03	7 32E+03	7 32E+03
T4	Subsurface Soil	SVOA	Anthracene	ug/kg dw	10	2	20%	10	0 37	0 50	Lognormal	5 80E+01	6 27E+02	5 40E+03	1 60E+03	1 64E+03	1 64E+03	1 64E+03
T4	Subsurface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0 89	0 89	Lognormal	3 30E+00	4 82E+00	6 00E+00	5 38E+00	5 51E+00	5 51E+00	5 51E+00
T4	Subsurface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0 92	0 89	Normal	8 75E+01	1 55E+02	2 10E+02	1 80E+02	1 92E+02	1 80E+02	1 80E+02
T4	Subsurface Soil	SVOA	Benzo(a)anthracene	ug/kg dw	10	4	40%	10	0 37	0 59	Lognormal	3 30E+01	1 28E+03	1 20E+04	3 46E+03	5 90E+03	5 90E+03	5 90E+03
T4	Subsurface Soil	SVOA	Benzo(a)pyrene	ug/kg dw	10	1	10%	10	0 37	0 42	Lognormal	4 73E+01	6 09E+02	5 60E+03	1 63E+03	1 92E+03	1 92E+03	1 92E+03
T4	Subsurface Soil	SVOA	Benzo(b)fluoranthene	ug/kg dw	10	1	10%	10	0 37	0 42	Lognormal	9 00E+01	1 07E+03	9 80E+03	2 85E+03	3 30E+03	3 30E+03	3 30E+03
T4	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	10	2	20%	10	0 68	0 76	Lognormal	1 05E+01	1 09E+02	3 30E+02	1 57E+02	2 69E+02	2 69E+02	2 69E+02
T4	Subsurface Soil	SVOA	Benzo(k)fluoranthene	ug/kg dw	10	1	10%	10	0 37	0 42	Lognormal	9 00E+01	7 21E+02	6 30E+03	1 88E+03	1 87E+03	1 87E+03	1 87E+03
T4	Subsurface Soil	METALS	Beryllium	mg/kg dw	10	10	100%	10	0 93	0 91	Normal	1 95E-01	3 72E-01	5 00E-01	4 33E-01	4 61E-01	4 33E-01	4 33E-01
T4	Subsurface Soil	PEST	beta BHC	ug/kg dw	10	1	10%	1	NC	NC	NC	2 00E-01	2 00E-01	2 00E-01	NC	NC	NC	2 00E-01
T4	Subsurface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	10	2	20%	10	0 37	0 51	Lognormal	7 00E+01	9 65E+02	8 70E+03	2 54E+03	2 99E+03	2 99E+03	2 99E+03
T4	Subsurface Soil	METALS	Cadmium	mg/kg dw	10	7	70%	10	0 69	0 92	Lognormal	1 30E 01	3 33E 01	1 00E+00	4 78E 01	5 08E 01	5 08E 01	5 08E 01
T4	Subsurface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0 50	0 81	Lognormal	6 45E+03	2 43E+04	1 30E+05	4 61E+04	4 96E+04	4 96E+04	4 96E+04
T4	Subsurface Soil	SVOA	Carbazole	ug/kg dw	10	1	10%	10	0 40	0 48	Lognormal	9 00E+01	1 73E+02	8 20E+02	3 04E+02	2 69E+02	2 69E+02	2 69E+02
T4	Subsurface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0 97	0 98	Lognormal	8 10E+00	1 22E+01	1 70E+01	1 38E+01	1 41E+01	1 41E+01	1 41E+01
T4	Subsurface Soil	SVOA	Chrysene	ug/kg dw	10	4	40%	10	0 37	0 56	Lognormal	3 90E+01	1 18E+03	1 10E+04	3 18E+03	4 80E+03	4 80E+03	4 80E+03
T4	Subsurface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0 92	0 92	Lognormal	4 20E+00	5 06E+00	6 10E+00	5 47E+00	5 51E+00	5 51E+00	5 51E+00
T4	Subsurface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0 83	0 98	Lognormal	3 70E+00	1 18E+01	3 00E+01	1 61E+01	1 87E+01	1 87E+01	1 87E+01
T4	Subsurface Soil	PEST	delta BHC	ug/kg dw	10	2	20%	2	1 00	1 00	Lognormal	1 20E 01	1 75E-01	2 30E 01	5 22E 01	NC	NC	2 30E 01
T4	Subsurface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	10	1	10%	10	0 37	0 44	Lognormal	4 73E+01	2 39E+02	1 90E+03	5 77E+02	5 21E+02	5 21E+02	5 21E+02
T4	Subsurface Soil	SVOA	Dibenzofuran	ug/kg dw	10	1	10%	10	0 39	0 46	Lognormal	9 00E+01	2 01E+02	1 10E+03	3 64E+02	3 33E+02	3 33E+02	3 33E+02
T4	Subsurface Soil	PEST	Dieldrin	ug/kg dw	10	1	10%	1	NC	NC	NC	1 30E+00	1 30E+00	1 30E+00	NC	NC	NC	1 30E+00
T4	Subsurface Soil	PEST	Endosulfan sulfate	ug/kg dw	10	1	10%	1	NC	NC	NC	1 00E+00	1 00E+00	1 00E+00	NC	NC	NC	1 00E+00
T4	Subsurface Soil	PEST	Endrin ketone	ug/kg dw	10	1	10%	1	NC	NC	NC	2 90E-01	2 90E-01	2 90E-01	NC	NC	NC	2 90E-01
T4	Subsurface Soil	SVOA	Fluoranthene	ug/kg dw	10	3	30%	10	0 37	0 50	Lognormal	5 40E+01	2 39E+03	2 30E+04	6 59E+03	1 24E+04	1 24E+04	1 24E+04
T4	Subsurface Soil	SVOA	Fluorene	ug/kg dw	10	1	10%	10	0 38	0 45	Lognormal	9 00E+01	2 81E+02	2 00E+03	6 39E+02	5 50E+02	5 50E+02	5 50E+02
T4	Subsurface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	10	1	10%	10	0 37	0 43	Lognormal	9 00E+01	4 41E+02	3 50E+03	1 06E+03	9 58E+02	9 58E+02	9 58E+02
T4	Subsurface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0 96	0 97	Lognormal	7 85E+03	1 13E+04	1 60E+04	1 29E+04	1 32E+04	1 32E+04	1 32E+04
T4	Subsurface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0 51	0 68	Lognormal	6 40E+00	2 36E+01	1 30E+02	4 61E+01	5 62E+01	5 62E+01	5 62E+01
T4	Subsurface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0 95	0 96	Lognormal	2 90E+03	6 15E+03	1 10E+04	7 59E+03	8 33E+03	8 33E+03	8 33E+03
T4	Subsurface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0 92	0 89	Normal	1 35E+02	2 59E+02	3 55E+02	3 06E+02	3 32E+02	3 06E+02	3 06E+02
T4	Subsurface Soil	METALS	Mercury	mg/kg dw	10	8	80%	10	0 88	0 96	Lognormal	5 30E 03	1 54E-02	3 90E 02	2 17E 02	2 69E 02	2 69E 02	2 69E 02
T4	Subsurface Soil	PEST	Methoxychlor	ug/kg dw	10	1	10%	1	NC	NC	NC	7 60E+00	7 60E+00	7 60E+00	NC	NC	NC	7 60E+00
T4	Subsurface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0 93	0 96	Lognormal	1 70E-01	4 07E-01	7 60E-01	5 13E-01	5 79E-01	5 79E-01	5 79E-01
T4	Subsurface Soil	SVOA	Naphthalene	ug/kg dw	10	1	10%	1	NC	NC	NC	6 40E+01	6 40E+01	6 40E+01	NC	NC	NC	6 40E+01
T4	Subsurface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0 91	0 83	Lognormal	1 20E+01	1 43E+01	1 80E+01	1 54E+01	1 54E+01	1 54E+01	1 54E+01
T4	Subsurface Soil	SVOA	Pentachlorophenol	ug/kg dw	10	5	50%	10	0 71	0 77	Lognormal	2 23E+02	3 05E+02	5 53E+02	3 67E+02	3 70E+02	3 70E+02	3 70E+02
T4	Subsurface Soil	SVOA	Phenanthrene	ug/kg dw	10	3	30%	10	0 37	0 53	Lognormal	3 60E+01	1 48E+03	1 40E+04	4 03E+03	6 57E+03	6 57E+03	6 57E+03
T4	Subsurface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0 92	0 90	Normal	6 35E+02	1 24E+03	1 70E+03	1 48E+03	1 58E+03	1 48E+03	1 48E+03
T4	Subsurface Soil	SVOA	Pyrene	ug/kg dw	10	3	30%	10	0 37	0 48	Lognormal	5 60E+01	1 89E+03	1 80E+04	5 17E+03	8 35E+03	8 35E+03	8 35E+03
T4	Subsurface Soil	METALS	Sodium	mg/kg dw	10	4	40%	10	0 61	0 85	Lognormal	5 00E+01	1 17E+02	3 60E+02	1 72E+02	1 77E+02	1 77E+02	1 77E+02
T4	Subsurface Soil	VOA	Toluene	ug/kg dw	10	1	10%	10	0 79	0 85	Lognormal	2 45E+00	3 13E+00	4 80E+00	3 53E+00	3 54E+00	3 54E+00	3 54E+00
T4	Subsurface Soil	PCB	Total PCBs	ug/kg dw	10	5	50%	10	0 57	0 63	Lognormal	8 55E+00	1 83E+01	5 39E+01	2 85E+01	3 17E+01	3 17E+01	3 17E+01
T4	Subsurface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0 92	0 97	Normal	1 20E+01	1 93E+01	2 60E+01	2 22E+01	2 32E+01	2 22E+01	2 22E+01
T4	Subsurface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0 62	0 79	Lognormal	2 65E+01	5 81E+01	1 90E+02	8 72E+01	9 04E+01	9 04E+01	9 04E+01

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T4 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T4	Subsurface Soil	DAS-T4-S1-3-6FT	4/19/00	3	6
T4	Subsurface Soil	DAS-T4-S2-3-6FT	4/20/00	3	6
T4	Subsurface Soil	DAS-T4-S3-3-6FT	4/20/00	3	6
T4	Subsurface Soil	UAS-T4-S1-3-6FT	11/17/99	3	6
T4	Subsurface Soil	UAS-T4-S2-3-6FT	11/17/99	3	6
T4	Subsurface Soil	UAS-T4-S3-3-6FT	11/17/99	3	6
T4	Subsurface Soil	UAS-T4-S4-3-6FT	11/17/99	3	6
T4	Subsurface Soil	UAS-T4-S5-3-6FT	11/16/99	3	6
T4	Subsurface Soil	UAS-T4-S6-3-6FT	11/16/99	3	6
T4	Subsurface Soil	UAS-T4-S7-3-6FT	11/17/99	3	6

Table
Site Concentration Selection
T3 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T3	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	1	10%	10	0 68	0 71	Lognormal	1 50E+01	1 67E+01	2 40E+01	1 84E+01	1 84E+01	1 84E+01	1 84E+01
T3	Subsurface Soil	VOA	Acetone	ug/kg dw	10	1	10%	10	0 41	0 47	Lognormal	2 95E+01	4 65E+01	1 80E+02	7 37E+01	6 71E+01	6 71E+01	6 71E+01
T3	Subsurface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0 91	0 93	Lognormal	2 10E+03	7 35E+03	1 40E+04	9 55E+03	1 18E+04	1 18E+04	1 18E+04
T3	Subsurface Soil	METALS	Antimony	mg/kg dw	10	4	40%	4	0 94	0 94	Normal	6 70E-01	7 91E-01	9 15E-01	9 09E-01	9 52E-01	9 09E-01	9 09E-01
T3	Subsurface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0 98	0 86	Normal	1 90E+00	5 35E+00	8 50E+00	6 38E+00	7 27E+00	6 38E+00	6 38E+00
T3	Subsurface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0 78	0 60	Normal	4 50E+01	1 84E+02	2 50E+02	2 15E+02	2 73E+02	2 15E+02	2 15E+02
T3	Subsurface Soil	SVOA	Benzo(g,h,i)perylene	ug/kg dw	10	4	40%	10	0 87	0 83	Normal	5 30E+01	9 23E+01	1 10E+02	1 04E+02	1 08E+02	1 04E+02	1 04E+02
T3	Subsurface Soil	METALS	Beryllium	mg/kg dw	10	5	50%	10	0 86	0 96	Lognormal	1 20E-01	3 97E-01	8 80E-01	5 35E-01	6 31E-01	6 31E-01	6 31E-01
T3	Subsurface Soil	SVOA	bis(2 Ethylhexyl)phthalate	ug/kg dw	10	4	40%	10	0 89	0 84	Normal	5 70E+01	9 70E+01	1 20E+02	1 08E+02	1 13E+02	1 08E+02	1 08E+02
T3	Subsurface Soil	METALS	Cadmium	mg/kg dw	10	9	90%	10	0 77	0 88	Lognormal	1 50E-01	2 93E-01	5 70E-01	3 82E-01	4 10E-01	4 10E-01	4 10E-01
T3	Subsurface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0 95	0 80	Normal	2 40E+03	1 26E+04	1 90E+04	1 56E+04	2 20E+04	1 56E+04	1 56E+04
T3	Subsurface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0 88	0 93	Lognormal	5 60E+00	1 20E+01	2 10E+01	1 49E+01	1 62E+01	1 62E+01	1 62E+01
T3	Subsurface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0 95	0 88	Normal	2 80E+00	5 82E+00	8 10E+00	6 72E+00	7 20E+00	6 72E+00	6 72E+00
T3	Subsurface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0 95	0 87	Normal	2 80E+00	1 16E+01	1 90E+01	1 48E+01	2 01E+01	1 48E+01	1 48E+01
T3	Subsurface Soil	SVOA	Dibenzo(a,h)anthracene	ug/kg dw	10	1	10%	10	0 72	0 80	Lognormal	4 65E+01	5 74E+01	8 70E+01	6 39E+01	6 38E+01	6 38E+01	6 38E+01
T3	Subsurface Soil	SVOA	Indeno(1,2,3-cd)pyrene	ug/kg dw	10	1	10%	2	1 00	1 00	Normal	9 00E+01	9 10E+01	9 20E+01	9 73E+01	NC	9 73E+01	9 20E+01
T3	Subsurface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0 93	0 88	Normal	5 00E+03	1 27E+04	1 90E+04	1 52E+04	1 69E+04	1 52E+04	1 52E+04
T3	Subsurface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0 96	0 97	Lognormal	4 50E+00	9 70E+00	1 70E+01	1 18E+01	1 29E+01	1 29E+01	1 29E+01
T3	Subsurface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0 86	0 69	Normal	1 70E+03	5 82E+03	7 70E+03	6 81E+03	8 18E+03	6 81E+03	6 81E+03
T3	Subsurface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0 94	0 92	Normal	9 20E+01	2 89E+02	5 50E+02	3 60E+02	4 18E+02	3 60E+02	3 60E+02
T3	Subsurface Soil	METALS	Mercury	mg/kg dw	10	10	100%	10	0 75	0 93	Lognormal	2 90E-03	2 41E-02	7 80E-02	3 61E-02	5 88E-02	5 88E-02	5 88E-02
T3	Subsurface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0 89	0 94	Lognormal	2 50E-01	5 29E-01	9 50E-01	6 75E-01	7 52E-01	7 52E-01	7 52E-01
T3	Subsurface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0 98	0 94	Normal	7 40E+00	1 50E+01	2 20E+01	1 75E+01	1 87E+01	1 75E+01	1 75E+01
T3	Subsurface Soil	SVOA	Pentachlorophenol	ug/kg dw	10	2	20%	7	0 94	0 83	Normal	2 25E+02	2 50E+02	2 76E+02	2 62E+02	NC	2 62E+02	2 62E+02
T3	Subsurface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0 91	0 90	Normal	4 90E+02	1 57E+03	2 70E+03	1 98E+03	2 40E+03	1 98E+03	1 98E+03
T3	Subsurface Soil	METALS	Sodium	mg/kg dw	10	3	30%	10	0 90	0 93	Lognormal	2 40E+01	8 74E+01	1 60E+02	1 14E+02	1 39E+02	1 39E+02	1 39E+02
T3	Subsurface Soil	PCB	Total PCBs	ug/kg dw	10	1	10%	3	0 75	0 75	Lognormal	9 00E+00	9 17E+00	9 50E+00	9 65E+00	NC	NC	9 50E+00
T3	Subsurface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0 85	0 94	Normal	7 70E+00	2 16E+01	3 80E+01	2 67E+01	3 04E+01	2 67E+01	2 67E+01
T3	Subsurface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0 59	0 86	Lognormal	2 40E+01	8 73E+01	2 60E+02	1 08E+02	1 14E+02	1 14E+02	1 14E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T3 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T3	Subsurface Soil	DAS-T3-S1-3-6FT	4/19/00	3	6
T3	Subsurface Soil	DAS-T3-S2-3-6FT	4/19/00	3	6
T3	Subsurface Soil	DAS-T3-S3-3-6FT	4/19/00	3	6
T3	Subsurface Soil	UAS-T3-S1-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S2-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S3-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S4-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S5-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S6-3-6FT	11/15/99	3	6
T3	Subsurface Soil	UAS-T3-S7-3-6FT	11/15/99	3	6

Table
Site Concentration Selection
T2 Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T2	Subsurface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	2	2	100%	2	1 00	1 00	Normal	5 00E 02	5 75E 02	6 50E 02	1 05E 01	NC	1 05E 01	6 50E 02
T2	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	9	1	11%	9	0 90	0 91	Lognormal	1 30E+01	1 70E+01	2 33E+01	1 92E+01	1 98E+01	1 98E+01	1 98E+01
T2	Subsurface Soil	VOA	Acetone	ug/kg dw	9	2	22%	9	0 58	0 72	Lognormal	2 60E+01	3 98E+01	1 07E+02	5 57E+01	5 57E+01	5 57E+01	5 57E+01
T2	Subsurface Soil	METALS	Aluminum	mg/kg dw	9	9	100%	9	0 90	0 95	Lognormal	2 80E+03	5 61E+03	1 10E+04	7 17E+03	7 94E+03	7 94E+03	7 94E+03
T2	Subsurface Soil	METALS	Antimony	mg/kg dw	9	1	11%	1	NC	NC	NC	6 70E-01	6 70E-01	6 70E-01	NC	NC	NC	6 70E-01
T2	Subsurface Soil	METALS	Arsenic	mg/kg dw	9	9	100%	9	0 92	0 95	Lognormal	3 40E+00	4 67E+00	7 00E+00	5 37E+00	5 49E+00	5 49E+00	5 49E+00
T2	Subsurface Soil	METALS	Barium	mg/kg dw	9	9	100%	9	0 94	0 93	Normal	9 95E+01	1 63E+02	2 20E+02	1 90E+02	2 00E+02	1 90E+02	1 90E+02
T2	Subsurface Soil	METALS	Beryllium	mg/kg dw	9	4	44%	9	0 81	0 82	Lognormal	1 85E-01	2 63E-01	3 70E-01	3 12E-01	3 26E-01	3 26E-01	3 26E-01
T2	Subsurface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	9	5	56%	9	0 94	0 96	Lognormal	4 50E+01	9 23E+01	1 60E+02	1 14E+02	1 24E+02	1 24E+02	1 24E+02
T2	Subsurface Soil	METALS	Cadmium	mg/kg dw	9	9	100%	9	0 91	0 94	Lognormal	1 10E-01	2 01E-01	3 20E-01	2 47E-01	2 66E-01	2 66E-01	2 66E-01
T2	Subsurface Soil	METALS	Calcium	mg/kg dw	9	9	100%	9	0 82	0 79	Normal	4 90E+03	1 18E+04	1 50E+04	1 41E+04	1 65E+04	1 41E+04	1 41E+04
T2	Subsurface Soil	METALS	Chromium	mg/kg dw	9	9	100%	9	0 94	0 87	Lognormal	6 05E+00	9 81E+00	1 50E+01	1 13E+01	1 18E+01	1 18F+01	1 18E+01
T2	Subsurface Soil	METALS	Cobalt	mg/kg dw	9	9	100%	9	0 80	0 88	Lognormal	4 00E+00	5 21E+00	8 30E+00	6 03E+00	6 08E+00	6 08E+00	6 08E+00
T2	Subsurface Soil	METALS	Copper	mg/kg dw	9	9	100%	9	0 95	0 97	Lognormal	3 70E+00	8 64E+00	1 60E+01	1 11E+01	1 30E+01	1 30E+01	1 30E+01
T2	Subsurface Soil	PEST	Dieldrin	ug/kg dw	9	1	11%	1	NC	NC	NC	4 10E-01	4 10E-01	4 10E-01	NC	NC	NC	4 10E-01
T2	Subsurface Soil	METALS	Iron	mg/kg dw	9	9	100%	9	0 89	0 94	Lognormal	7 75E+03	1 05E+04	1 60E+04	1 20E+04	1 22E+04	1 22E+04	1 22E+04
T2	Subsurface Soil	METALS	Lead	mg/kg dw	9	9	100%	9	0 89	0 84	Lognormal	5 25E+00	7 82E+00	1 20E+01	9 25E+00	9 57E+00	9 57E+00	9 57E+00
T2	Subsurface Soil	METALS	Magnesium	mg/kg dw	9	9	100%	9	0 91	0 88	Normal	3 25E+03	5 19E+03	8 80E+03	5 97E+03	6 29E+03	5 97E+03	5 97E+03
T2	Subsurface Soil	METALS	Manganese	mg/kg dw	9	9	100%	9	0 82	0 93	Lognormal	1 40E+02	2 37E+02	4 80E+02	3 02E+02	3 15E+02	3 15E+02	3 15E+02
T2	Subsurface Soil	METALS	Mercury	mg/kg dw	9	6	67%	9	0 76	0 92	Lognormal	5 80E 03	1 24E 02	2 90E 02	1 66E 02	1 77E 02	1 77E 02	1 77E 02
T2	Subsurface Soil	METALS	Molybdenum	mg/kg dw	9	9	100%	9	0 92	0 90	Normal	1 60E 01	4 59E 01	7 70E 01	6 01E 01	7 90E 01	6 01E 01	6 01E 01
T2	Subsurface Soil	METALS	Nickel	mg/kg dw	9	9	100%	9	0 82	0 87	Lognormal	1 00E+01	1 28E+01	2 00E+01	1 48E+01	1 50E+01	1 50E+01	1 50E+01
T2	Subsurface Soil	METALS	Potassium	mg/kg dw	9	9	100%	9	0 91	0 93	Lognormal	5 80E+02	1 18E+03	2 00E+03	1 48E+03	1 63E+03	1 63E+03	1 63E+03
T2	Subsurface Soil	METALS	Selenium	mg/kg dw	9	1	11%	2	1 00	1 00	Lognormal	5 00E-01	5 05E-01	5 10E-01	5 37E-01	NC	NC	5 10E-01
T2	Subsurface Soil	METALS	Thallium	mg/kg dw	9	1	11%	7	0 74	0 73	Normal	5 00E-01	5 38E-01	5 65E-01	5 57E-01	NC	5 57E-01	5 57E-01
T2	Subsurface Soil	METALS	Vanadium	mg/kg dw	9	9	100%	9	0 93	0 96	Lognormal	1 15E+01	1 77E+01	2 80E+01	2 10E+01	2 18E+01	2 18E+01	2 18E+01
T2	Subsurface Soil	METALS	Zinc	mg/kg dw	9	9	100%	9	0 93	0 96	Lognormal	2 35E+01	3 69E+01	5 70E+01	4 38E+01	4 58E+01	4 58E+01	4 58E+01

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T2 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T2	Subsurface Soil	DAS-T2-S1-3-6FT	4/18/00	3	6
T2	Subsurface Soil	DAS-T2-S2-3-6FT	4/18/00	3	6
T2	Subsurface Soil	DAS-T2-S3-3-6FT	4/18/00	3	6
T2	Subsurface Soil	UAS-T2-S1-3-6FT	11/12/99	3	6
T2	Subsurface Soil	UAS-T2-S2-3-6FT	11/12/99	3	6
T2	Subsurface Soil	UAS-T2-S3-3-6FT	11/12/99	3	6
T2	Subsurface Soil	UAS-T2-S4-3-6FT	11/12/99	3	6
T2	Subsurface Soil	UAS-T2-S5-3-6FT	11/12/99	3	6
T2	Subsurface Soil	UAS-T2-S6-3-6FT	11/12/99	3	6

Table
Site Concentration Selection
Tt Subsurface Soil

Area	Medium	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Shapiro-Wilke's Test for Normality(a)			Summary Statistics			95% Upper Confidence Limit			Site Concentration (c)
									Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
T1	Subsurface Soil	8280A	1998 Total TEQ w/ EMPC as ND	ug/kg dw	3	3	100%	3	0.75	0.75	Lognormal	1.00E-05	1.33E-05	2.00E-05	2.31E-05	5.98E-05	5.98E-05	2.00E-05
T1	Subsurface Soil	VOA	2-Butanone (MEK)	ug/kg dw	10	1	10%	10	0.83	0.88	Lognormal	1.20E+01	1.71E+01	2.50E+01	1.96E+01	1.98E+01	1.98E+01	1.98E+01
T1	Subsurface Soil	PEST	4,4'-DDD	ug/kg dw	10	1	10%	1	NC	NC	NC	5.30E-01	5.30E-01	5.30E-01	NC	NC	NC	5.30E-01
T1	Subsurface Soil	PEST	4,4'-DDE	ug/kg dw	10	2	20%	2	[illegible]	1.00	Lognormal	1.40E-01	1.80E-01	2.20E-01	4.33E-01	NC	NC	2.20E-01
T1	Subsurface Soil	PEST	4,4'-DDT	ug/kg dw	10	1	10%	1	[illegible]	NC	NC	2.70E-01	2.70E-01	2.70E-01	NC	NC	NC	2.70E-01
T1	Subsurface Soil	VOA	Acetone	ug/kg dw	10	1	10%	10	0.45	0.60	Lognormal	2.40E+01	5.34E+01	2.40E+02	9.18E+01	8.42E+01	8.42E+01	8.42E+01
T1	Subsurface Soil	PEST	Alpha Chlordane	ug/kg dw	10	1	10%	1	NC	NC	NC	5.80E-01	5.80E-01	5.80E-01	NC	NC	NC	5.80E-01
T1	Subsurface Soil	METALS	Aluminum	mg/kg dw	10	10	100%	10	0.82	0.94	Lognormal	3.50E+03	7.38E+03	1.70E+04	9.78E+03	1.07E+04	1.07E+04	1.07E+04
T1	Subsurface Soil	METALS	Antimony	mg/kg dw	10	5	50%	5	0.92	0.93	Lognormal	5.60E-01	6.86E-01	8.40E-01	7.83E-01	8.01E-01	8.01E-01	8.01E-01
T1	Subsurface Soil	METALS	Arsenic	mg/kg dw	10	10	100%	10	0.89	0.93	Lognormal	3.80E+00	5.82E+00	8.70E+00	6.83E+00	7.07E+00	7.07E+00	7.07E+00
T1	Subsurface Soil	METALS	Barium	mg/kg dw	10	10	100%	10	0.93	0.95	Lognormal	1.20E+02	1.85E+02	2.60E+02	2.13E+02	2.20E+02	2.20E+02	2.20E+02
T1	Subsurface Soil	METALS	Beryllium	mg/kg dw	10	10	100%	10	0.86	0.93	Lognormal	2.40E-01	4.59E-01	9.30E-01	5.86E-01	6.32E-01	6.32E-01	6.32E-01
T1	Subsurface Soil	SVOA	bis(2-Ethylhexyl)phthalate	ug/kg dw	10	2	20%	10	0.88	0.91	Lognormal	6.90E+01	1.02E+02	1.50E+02	1.14E+02	1.16E+02	1.16E+02	1.16E+02
T1	Subsurface Soil	METALS	Cadmium	mg/kg dw	10	9	90%	10	0.95	0.96	Lognormal	1.00E-01	2.78E-01	5.30E-01	3.57E-01	4.24E-01	4.24E-01	4.24E-01
T1	Subsurface Soil	METALS	Calcium	mg/kg dw	10	10	100%	10	0.92	0.90	Normal	8.20E+03	1.29E+04	1.80E+04	1.52E+04	1.52E+04	1.52E+04	1.52E+04
T1	Subsurface Soil	METALS	Chromium	mg/kg dw	10	10	100%	10	0.84	0.95	Lognormal	6.50E+00	1.25E+01	2.50E+01	1.57E+01	1.65E+01	1.65E+01	1.65E+01
T1	Subsurface Soil	METALS	Cobalt	mg/kg dw	10	10	100%	10	0.77	0.86	Lognormal	4.10E+00	5.98E+00	1.10E+01	7.22E+00	7.33E+00	7.33E+00	7.33E+00
T1	Subsurface Soil	METALS	Copper	mg/kg dw	10	10	100%	10	0.96	0.94	Normal	4.00E+00	1.29E+01	2.40E+01	1.66E+01	2.10E+01	1.66E+01	1.66E+01
T1	Subsurface Soil	HERB	Dicamba	ug/kg dw	10	1	10%	1	NC	NC	NC	1.30E+00	1.30E+00	1.30E+00	NC	NC	NC	1.30E+00
T1	Subsurface Soil	PEST	Dieldrin	ug/kg dw	10	2	20%	2	1.00	1.00	Lognormal	1.20E-01	6.60E-01	1.20E+00	4.07E+00	NC	NC	1.20E+00
T1	Subsurface Soil	PEST	Endrin ketone	ug/kg dw	10	2	20%	2	1.00	1.00	Lognormal	1.80E-01	2.25E-01	2.70E-01	5.09E-01	NC	NC	2.70E-01
T1	Subsurface Soil	PEST	Heptachlor	ug/kg dw	10	1	10%	1	NC	NC	NC	2.60E-01	2.60E-01	2.60E-01	NC	NC	NC	2.60E-01
T1	Subsurface Soil	PEST	Heptachlor epoxide	ug/kg dw	10	3	30%	3	0.99	0.90	Normal	5.70E-02	3.26E-01	5.70E-01	7.60E-01	3.78E+05	7.60E-01	5.70E-01
T1	Subsurface Soil	METALS	Iron	mg/kg dw	10	10	100%	10	0.84	0.91	Lognormal	8.30E+03	1.28E+04	2.20E+04	1.54E+04	1.58E+04	1.58E+04	1.58E+04
T1	Subsurface Soil	METALS	Lead	mg/kg dw	10	10	100%	10	0.94	0.85	Lognormal	5.40E+00	9.53E+00	1.50E+01	1.14E+01	1.22E+01	1.22E+01	1.22E+01
T1	Subsurface Soil	METALS	Magnesium	mg/kg dw	10	10	100%	10	0.92	0.92	Lognormal	4.10E+03	5.90E+03	8.30E+03	6.78E+03	6.99E+03	6.99E+03	6.99E+03
T1	Subsurface Soil	METALS	Manganese	mg/kg dw	10	10	100%	10	0.72	0.89	Lognormal	1.70E+02	3.57E+02	9.80E+02	4.98E+02	5.29E+02	5.29E+02	5.29E+02
T1	Subsurface Soil	HERB	MCPA[(4-chloro-2-methylphenoxy)-acetic a	ug/kg dw	10	1	10%	10	0.72	0.77	Lognormal	1.10E+03	1.24E+03	1.70E+03	1.34E+03	1.34E+03	1.34E+03	1.34E+03
T1	Subsurface Soil	METALS	Mercury	mg/kg dw	10	7	70%	10	0.81	0.97	Lognormal	4.40E-03	2.18E-02	7.00E-02	3.34E-02	5.20E-02	5.20E-02	5.20E-02
T1	Subsurface Soil	PEST	Methoxychlor	ug/kg dw	10	2	20%	2	1.00	1.00	Normal	1.60E+00	2.10E+00	2.60E+00	5.26E+00	NC	5.26E+00	2.60E+00
T1	Subsurface Soil	VOA	Methylene chloride (Dichloromethane)	ug/kg dw	10	1	10%	2	NC	NC	NC	2.40E+00	2.40E+00	2.40E+00	2.40E+00	NC	2.40E+00	2.40E+00
T1	Subsurface Soil	METALS	Molybdenum	mg/kg dw	10	10	100%	10	0.93	0.97	Lognormal	2.00E-01	3.98E-01	7.60E-01	4.97E-01	5.40E-01	5.40E-01	5.40E-01
T1	Subsurface Soil	METALS	Nickel	mg/kg dw	10	10	100%	10	0.73	0.82	Lognormal	1.10E+01	1.63E+01	3.30E+01	2.02E+01	2.04E+01	2.04E+01	2.04E+01
T1	Subsurface Soil	METALS	Potassium	mg/kg dw	10	10	100%	10	0.86	0.93	Lognormal	7.50E+02	1.42E+03	2.70E+03	1.80E+03	1.95E+03	1.95E+03	1.95E+03
T1	Subsurface Soil	PCB	Total PCBs	ug/kg dw	10	3	30%	10	0.68	0.75	Lognormal	9.00E+00	1.10E+01	1.90E+01	1.27E+01	1.27E+01	1.27E+01	1.27E+01
T1	Subsurface Soil	VOA	Trichloroethene	ug/kg dw	10	3	30%	10	0.65	0.73	Lognormal	2.60E+00	3.70E+00	7.40E+00	4.54E+00	4.53E+00	4.53E+00	4.53E+00
T1	Subsurface Soil	METALS	Vanadium	mg/kg dw	10	10	100%	10	0.84	0.94	Lognormal	1.20E+01	2.24E+01	4.50E+01	2.83E+01	2.97E+01	2.97E+01	2.97E+01
T1	Subsurface Soil	METALS	Zinc	mg/kg dw	10	10	100%	10	0.58	0.85	Lognormal	2.50E+01	6.52E+01	2.50E+02	1.04E+02	1.08E+02	1.08E+02	1.08E+02

TABLE
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
T1 Subsurface Soil

Area	Medium	Sample	Date Collected	Beginning Depth (ft)	Ending Depth (ft)
T1	Subsurface Soil	DAS-T1-S1-3-6FT	4/18/00	3	6
T1	Subsurface Soil	DAS-T1-S2-3-6FT	4/18/00	3	6
T1	Subsurface Soil	DAS-T1-S3-3-6FT	4/18/00	3	6
T1	Subsurface Soil	UAS-T1-S1-3-6FT	11/10/99	3	6
T1	Subsurface Soil	UAS-T1-S2-3-6FT	11/10/99	3	6
T1	Subsurface Soil	UAS-T1-S3-3-6FT	11/11/99	3	6
T1	Subsurface Soil	UAS-T1-S4-3-6FT	11/11/99	3	6
T1	Subsurface Soil	UAS-T1-S5-3-6FT	11/11/99	3	6
T1	Subsurface Soil	UAS-T1-S6-3-6FT	11/11/99	3	6
T1	Subsurface Soil	UAS-T1-S7-3-6FT	11/11/99	3	6

Definitions and Footnotes for Summary Statistics Tables

UCL - Upper Confidence Limit.

(a) - The results of the Shapiro-Wilke test for normality indicates whether the data set is more likely to be normally distributed or lognormally distributed. The data set is considered to be normally distributed if the test result is higher in the column labeled "NORMAL". The data set is considered to be lognormally distributed if the test result is higher in the column labeled "LOGNORMAL".

(b) - 95% UCL is selected based on whether the data set is normally or lognormally distributed. The UCL based on the t-statistic is chosen for a normal distribution, and the UCL based on the H-statistic is chosen if the data are lognormally distributed. Where there are greater than 50 samples, the distribution is assumed to be lognormal.

(c) - Site Concentration is the lower of the selected 95% UCL and the Maximum Detected Concentration. Where there are fewer than 8 samples, the maximum detected concentration is selected as the site concentration.

APPENDIX C

SCREENING VALUES

APPENDIX C
SCREENING VALUES

This appendix presents the screening values used to identify constituents of potential concern (COPC) in each area/medium evaluated in the risk assessment. The Tier 1 lookup tables in the Illinois Tiered Approach to Corrective Action Objectives (TACO) program (IEPA, 1998) serve as the basis for the screening values presented in this appendix. The sources and selection of the screening values are discussed in detail in the text in Section 3.0. The screening value tables include the following:

- Table C-1 Residential Soil - Direct Contact Screening Values
- Table C-2 Industrial Soil - Direct Contact Screening Values
- Table C-3 Soil to Groundwater Standards
- Table C-4 Groundwater and Surface Water Standards
- Table C-5 Screening Criteria for Constituents Detected in Air
- Table C-6 Fish Tissue Standards
- Table C-7 Calculation of TACO Tier 1 Standards for Beryllium

The as-published TACO values are presented in Appendix (Workplan) B of Appendix A of this report.

The TACO Values Used for Screening Groundwater and Surface Water

The following rationale for the development of the TACO Groundwater Remediation Objectives was provided via e-mail correspondence with Thomas Hornshaw of the Illinois Environmental Protection Agency (IEPA). All of the Class I standards except lead and copper (one-half the drinking water Action Level), iron, manganese, and fluoride (existing standards), and chloride, sulfate, and dissolved solids (95th percentile) were from MCLs. In development of the Class II Groundwater Remediation Objectives, two different approaches were used, one for organic chemicals and one for inorganics. For the organic chemicals, the intent was to assure that the level of a contaminant in groundwater would not be so high that the groundwater could not be returned to potable quality using routine water treatment procedures (primarily activated carbon and air stripping). A review of the Federal Register notices announcing the various Final Maximum Contaminant Levels for drinking water was conducted in order to determine the potential for removal and the removal efficiency for those chemicals for which the Agency was proposing Class I standards. IEPA determined that for all but a few chemicals (ethylbenzene, toluene, xylene) the removal efficiency was at least 80%; therefore, the Class II standard was set at 5 times the Class I standard (i.e., 80% removal of the chemical by routine treatment methods would result in a final water concentration at or below the Class I standard). For the three chemicals noted above, the Class II standard was set at a lesser multiple of the Class I standard, based on the removal efficiency reported in the Federal Register

Notice. The IEPA has amended the original groundwater standard rule by adding several chemicals; the review of these chemicals' treatment potentials found at least 90% removal efficiency for all added organics, therefore, the Class II standards for these chemicals were set at 10 times the Class I standard.

Regarding the inorganics, the intent was to assure that the concentration in groundwater would not be so high that the water could not be safely used for agricultural purposes (crop irrigation and livestock watering). A search for upper limits on water concentrations which are acceptable for long-term agricultural use was conducted for the chemicals for which Class I standards were being proposed. For most chemicals, the appropriate concentration was found in USEPA's Water Quality Criteria 1972 (the "Blue Book"). Exceptions included cyanide (for which the Agency developed the equivalent of the Blue Book concentration after reviewing relevant papers in the scientific literature), fluoride and iron (for which pre-existing standards were incorporated into the proposal), and chloride, sulfate, and total dissolved solids (for which the 95th percentile of state-wide monitoring data was the proposed concentration).

The TACO Tier I criteria for Class II groundwater are also used to select COPCs for surface water for the recreational receptor scenarios that involve wading or swimming, and for groundwater for the construction worker scenario that involves excavation into the water table. There are no other state or federal screening criteria to use for these scenarios. The use of the Class II criteria is conservative based on the following:

- The Class II criteria are generally only 5- to 10-fold higher than the Class I (drinking water) criteria.
- The drinking water ingestion rate is assumed by regulatory programs (USEPA, 1989 and IEPA, 1998) to be 2 liters or 2000 mL per day.
- The incidental ingestion of surface or groundwater while swimming is assumed to be 50 ml per event, which is 1/40th of the drinking water ingestion rate (assuming daily swimming).
- Incidental ingestion of surface water while wading is assumed to be 10 ml/day, which is 1/200th of the drinking water ingestion rate (assuming daily wading).
- Incidental ingestion of surface water during construction activities is assumed to be 5 ml/day, which is 1/400th of the drinking water ingestion rate (assuming daily excavation below the water table)
- Therefore, screening criteria 40-fold higher than drinking water standards (and up to 400-fold higher for the construction worker) could have been used and still have been protective of these receptors.
- As the Class II criteria are generally 5- to 50-fold higher than drinking water criteria, their use as screening criteria for these scenarios is appropriate.

Calculation of TACO Tier 1 Standards for Beryllium

The USEPA updated its Integrated Risk Information System (IRIS) (USEPA, 2000) file for beryllium on 4/3/2000. The dose-response values changed significantly for beryllium. The most significant change is that beryllium is no longer considered carcinogenic by the oral route of exposure. Therefore, TACO Tier 1 objectives for Residential and Industrial Soil - Direct Contact were recalculated for beryllium using these current dose-response values, and following the TACO Section 742, Appendix C, Table A: SSL Equations and Table B: SSL Parameters guidance. Table C-7 here presents the equations, parameters, and calculations used to provide the updated TACO values for beryllium.

References

IEPA. 1998. Tiered Approach to Corrective Action Objectives. Title 35, Subtitle G, Chapter I, Subchapter J, Part 742. As amended June 8, 1998. Illinois Environmental Protection Agency.

USEPA. 2000. USEPA. 2000. Integrated Risk Information System (IRIS).

[URL: http://www.epa.gov/ngispgm3/iris/]

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)		
			Ingestion	Inhalation	Selected (Lowest) Value
83-32-9	Acenaphthene	ug/kg	4700000	ND	4700000
67-64-1	Acetone	ug/kg	7800000	100000000	7800000
15972-60-8	Alachlor	ug/kg	8000	ND	8000
116-06-3	Aldicarb	ug/kg	78000	ND	78000
309-00-2	Aldrin	ug/kg	40	3000	40
120-12-7	Anthracene	ug/kg	23000000	ND	23000000
1912-24-9	Atrazine	ug/kg	2700000	ND	2700000
71-43-2	Benzene	ug/kg	22000	800	800
56-55-3	Benzo(a)anthracene	ug/kg	900	ND	900
205-99-2	Benzo(b)fluoranthene	ug/kg	900	ND	900
207-08-9	Benzo(k)fluroanthene	ug/kg	9000	ND	9000
50-32-8	Benzo(a)pyrene	ug/kg	90	ND	90
111-44-4	Bis(2-chloroethyl)ether	ug/kg	600	200	200
117-81-7	Bis(2-ethylhexyl)phthalate	ug/kg	46000	31000000	46000
75-27-4	Bromodichloromethane	ug/kg	10000	3000000	10000
75-25-2	Bromoform	ug/kg	81000	53000	53000
71-36-3	Butanol	ug/kg	7800000	10000000	7800000
85-68-7	Butyl benzyl phthalate	ug/kg	16000000	930000	930000
86-74-8	Carbazole	ug/kg	32000	ND	32000
1563-66-2	Carbofuran	ug/kg	390000	ND	390000
75-15-0	Carbon disulfide	ug/kg	7800000	720000	720000
56-23-5	Carbon tetrachloride	ug/kg	5000	300	300
57-74-9	Chlordane	ug/kg	500	20000	500
106-47-8	4-Chloroaniline (p-Chloroaniline)	ug/kg	310000	ND	310000
108-90-7	Chlorobenzene (Monochlorobenzene)	ug/kg	1600000	130000	130000
124-48-1	Chlorodibromomethane	ug/kg	1600000	1300000	1300000
67-66-3	Chloroform	ug/kg	100000	300	300
218-01-9	Chrysene	ug/kg	88000	ND	88000
94-75-7	24-D	ug/kg	780000	ND	780000
75-99-0	Dalapon	ug/kg	2300000	ND	2300000
72-54-8	DDD	ug/kg	3000	ND	3000
72-55-9	DDE	ug/kg	2000	ND	2000
50-29-3	DDT	ug/kg	2000	ND	2000
53-70-3	Dibenzo(ah)anthracene	ug/kg	90	ND	90
96-12-8	12-Dibromo-3 chloropropane	ug/kg	460	11000	460
106-93-4	12-Dibromoethane (Ethylene dibromide)	ug/kg	7.5	170	7.5
84-74-2	Di-n-butyl phthalate	ug/kg	7800000	2300000	2300000
95-50-1	12-Dichlorobenzene (o - Dichlorobenzene)	ug/kg	7000000	560000	560000
106-46-7	14-Dichlorobenzene (p - Dichlorobenzene)	ug/kg	ND	ND	NA
91-94-1	33'-Dichlorobenzidine	ug/kg	1000	ND	1000
75-34-3	11-Dichloroethane	ug/kg	7800000	1300000	1300000
107-06-2	12-Dichloroethane (Ethylene dichloride)	ug/kg	7000	400	400
75-35-4	11-Dichloroethylene	ug/kg	700000	1500000	700000
156-59-2	cis-12-Dichloroethylene	ug/kg	780000	1200000	780000
156-60-5	trans-12 Dichloroethylene	ug/kg	1600000	3100000	1600000
78-87-5	12-Dichloropropane	ug/kg	9000	15000	9000
542-75-6	13-Dichloropropene	ug/kg	4000	100	100
60-57-1	Dieldrin	ug/kg	40	1000	40
84-66-2	Diethyl phthalate	ug/kg	63000000	2000000	2000000
105-67-9	24-Dimethylphenol	ug/kg	1600000	ND	1600000
121-14-2	24-Dinitrotoluene	ug/kg	900	ND	900
606-20-2	26-Dinitrotoluene	ug/kg	900	ND	900
117-84-0	Di-n-octyl phthalate	ug/kg	1600000	10000000	1600000
115-29-7	Endosulfan	ug/kg	470000	ND	470000
145-73-3	Endothall	ug/kg	1600000	ND	1600000
72-20-8	Endrin	ug/kg	23000	ND	23000

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)		
			Ingestion	Inhalation	Selected (Lowest) Value
100-41-4	Ethylbenzene	ug/kg	7800000	400000	400000
206-44-0	Fluoranthene	ug/kg	3100000	ND	3100000
86-73-7	Fluorene	ug/kg	3100000	ND	3100000
76-44-8	Heptachlor	ug/kg	100	100	100
1024-57-3	Heptachlor epoxide	ug/kg	70	5000	70
118-74-1	Hexachlorobenzene	ug/kg	400	1000	400
319-84-6	alpha-HCH (alpha-BHC)	ug/kg	100	800	100
58-89-9	gamma-HCH (Lindane)	ug/kg	500	ND	500
77-47-4	Hexachlorocyclopentadiene	ug/kg	550000	10000	10000
67-72-1	Hexachloroethane	ug/kg	78000	ND	78000
193-39-5	Indeno(123-cd)pyrene	ug/kg	900	ND	900
78-59-1	Isophorone	ug/kg	15600000	4600000	4600000
72-43-5	Methoxychlor	ug/kg	390000	ND	390000
74-83-9	Methyl bromide (Bromomethane)	ug/kg	110000	10000	10000
75-09-2	Methylene chloride (Dichloromethane)	ug/kg	85000	13000	13000
95-48-7	2-Methylphenol (o - Cresol)	ug/kg	3900000	ND	3900000
91-20-3	Naphthalene	ug/kg	3100000	ND	3100000
98-95-3	Nitrobenzene	ug/kg	39000	92000	39000
86-30-6	N-Nitrosodiphenylamine	ug/kg	130000	ND	130000
621-64-7	N-Nitrosodi-n propylamine	ug/kg	90	ND	90
108-95-2	Phenol	ug/kg	47000000	ND	47000000
1918-02-1	Picloram	ug/kg	5500000	ND	5500000
1336-36-3	Polychlorinated biphenyls (PCBs)	ug/kg	1000	ND	1000
129-00-0	Pyrene	ug/kg	2300000	ND	2300000
122-34-9	Simazine	ug/kg	390000	ND	390000
100-42-5	Styrene	ug/kg	16000000	1500000	1500000
27-18-4	Tetrachloroethylene (Perchloroethylene)	ug/kg	12000	11000	11000
108-88-3	Toluene	ug/kg	16000000	650000	650000
8001-35-2	Toxaphene	ug/kg	600	89000	600
120-82-1	124-Trichlorobenzene	ug/kg	780000	3200000	780000
71-55-6	111-Trichloroethane	ug/kg	ND	1200000	1200000
79-00-5	112-Trichloroethane	ug/kg	310000	1800000	310000
79-01-6	Trichloroethylene	ug/kg	58000	5000	5000
108-05-4	Vinyl acetate	ug/kg	78000000	1000000	1000000
75-01-4	Vinyl chloride	ug/kg	300	30	30
108-38-3	m-Xylene	ug/kg	160000000	420000	420000
95-47-6	o-Xylene	ug/kg	160000000	410000	410000
106-42-3	p-Xylene	ug/kg	160000000	460000	460000
1330-20-7	Xylenes (total)	ug/kg	160000000	410000	410000
	Ionizable Organics				
65-85-0	Benzoic Acid	ug/kg	310000000	ND	310000000
95-57-8	2-Chlorophenol	ug/kg	390000	53000000	390000
120-83-2	24-Dichlorophenol	ug/kg	230000	ND	230000
51-28-5	24-Dinitrophenol	ug/kg	160000	ND	160000
88-85-7	Dinoseb	ug/kg	78000	ND	78000
87-86-5	Pentachlorophenol	ug/kg	3000	ND	3000
93-72-1	245-TP (Silvex)	ug/kg	630000	ND	630000
95-95-4	245-Trichlorophenol	ug/kg	7800000	ND	7800000
88-06-2	246 Trichlorophenol	ug/kg	58000	200000	58000

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)			
			Ingestion	Inhalation	Selected (Lowest) Value	
	Inorganics					
7440-36-0	Antimony	mg/kg	31	ND	31	
7440-38-2	Arsenic	mg/kg	0.4	750	0.4	
7440-39-3	Barium	mg/kg	5500	690000	5500	
7440-41-7	Beryllium	mg/kg	156 (n)	1340 (n)	156 (n)	
7440-42-8	Boron	mg/kg	7000	ND	7000	
7440-43-9	Cadmium	mg/kg	78	1800	78	
16887-00-6	Chloride	mg/kg	ND	ND	NA	
7440-47-3	Chromium total	mg/kg	390	270	270	
16065-83-1	Chromium ion trivalent	mg/kg	78000	ND	78000	
18540-29-9	Chromium (+6)	mg/kg	390	270	270	
7440-48-4	Cobalt	mg/kg	4700	ND	4700	
7440-50-8	Copper	mg/kg	2900	ND	2900	
57-12-5	Cyanide	mg/kg	1600	ND	1600	
7782-41-4	Fluoride	mg/kg	4700	ND	4700	
15438-31-0	Iron	mg/kg	ND	ND	NA	
7439-92-1	Lead	mg/kg	400	ND	400	
7439-96-5	Manganese	mg/kg	3700	69000	3700	
7439-97-6	Mercury	mg/kg	23	10	10	
7440-02-0	Nickel	mg/kg	1600	13000	1600	
14797-55-8	Nitrate as Np	mg/kg	130000	ND	130000	
7782-49-2	Selenium	mg/kg	390	ND	390	
7440-22-4	Silver	mg/kg	390	ND	390	
14808-79-8	Sulfate	mg/kg	ND	ND	NA	
7440-28-0	Thallium	mg/kg	6.3	ND	6.3	
7440-62-2	Vanadium	mg/kg	550	ND	550	
7440-66-6	Zinc	mg/kg	23000	ND	23000	
	Constituents Lacking TACO Standards					
93-76-5	2,4,5-T	ug/kg	--	--	610000	(j)
94-82-6	2,4-DB	ug/kg	--	--	490000	(j)
78-93-3	2-Butanone (MEK)	ug/kg	--	--	7300000	(j)
591-78-6	2-Hexanone	ug/kg	--	--	790000	(k)
91-57-6	2-Methylnaphthalene	ug/kg	--	--	3100000	(h)
88-74-4	2-Nitroaniline	ug/kg	--	--	3500	(j)
208-96-8	Acenaphthylene	ug/kg	--	--	4700000	(b)
5103-71-9	Alpha Chlordane	ug/kg	--	--	500	(e)
7429-90-5	Aluminum	mg/kg	--	--	76000	(j)
191-24-2	Benzo(g,h,i)perylene	ug/kg	--	--	2300000	(i)
319-85-7	beta-BHC	ug/kg	--	--	100	(c)
57-74-9	Chlordane	ug/kg	--	--	500	(e)
319-86-8	delta-BHC	ug/kg	--	--	100	(c)
132-64-9	Dibenzofuran	ug/kg	--	--	290000	(j)
1918-00-9	Dicamba	ug/kg	--	--	1800000	(j)
120-36-5	Dichloroprop	ug/kg	--	--	NA	(l)
1746-01-6	Dioxin	ug/kg	--	--	1	(m)
959-98-8	Endosulfan I	ug/kg	--	--	470000	(f)
33213-65-9	Endosulfan II	ug/kg	--	--	470000	(f)
1031-07-8	Endosulfan sulfate	ug/kg	--	--	470000	(f)
7421-93-4	Endrin aldehyde	ug/kg	--	--	23000	(g)

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)			
			Ingestion	Inhalation	Selected (Lowest) Value	
53494-70-5	Endrin ketone	ug/kg	–	–	23000	(g)
5103-74-2	Gamma Chlordane	ug/kg	–	–	500	(e)
94-74-6	MCPA	ug/kg	–	–	31000	(j)
7085-19-0	MCPP	ug/kg	–	–	61000	(j)
7439-98-7	Molybdenum	ug/kg	–	–	390	(j)
85-01-8	Phenanthrene	ug/kg	–	–	23000000	(d)

Notes:
CAS - Chemical Abstracts Service.
NA - Not Available.
ND - Not Determined.
TACO - Illinois Tiered Approach to Corrective Action.
(a) - Title 35, Subtitle G, Chapter I, Part 742 Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 values from Appendix B, Table A.
(b) - No TACO value available. Therefore, the TACO value for acenapthene has been used due to structural similarity.
(c) - No TACO value available. Therefore, the TACO value for alpha-HCH has been used due to structural similarity.
(d) - No TACO value available. Therefore, the TACO value for anthracene has been used due to structural similarity.
(e) - No TACO value available. Therefore, the TACO value for chlordane has been used due to structural similarity.
(f) - No TACO value available. Therefore, the TACO value for endosulfan has been used due to structural similarity.
(g) - No TACO value available. Therefore, the TACO value for endrin has been used due to structural similarity.
(h) - No TACO value available. Therefore, the TACO value for naphthalene has been used due to structural similarity.
(i) - No TACO value available. Therefore, the TACO value for pyrene has been used due to structural similarity.
(j) - No TACO value, and no appropriate structural surrogate. Therefore, Region IX Preliminary Remediation Goal (PRG), October 1, 1999, used.
(k) - No TACO value, and no appropriate structural surrogate. Therefore, PRG for methyl-isobutyl-ketone
(l) - No TACO value, PRG value, appropriate surrogate, or dose response value available.
(m) - Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April 13, 1998.
(n) - Values for beryllium re-calculated based on new dose-response information from US EPA (Integrated Risk Information System, IRIS, 10/2000) using TACO SSL methodology as presented in Appendix C Tables A and B.

Table C-2
Industrial Soil Direct-Contact Screening Values
Sauget Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)					
			Industrial-Commercial			Construction Worker		
			Ingestion	Inhalation	Selected (b)	Ingestion	Inhalation	Selected (b)
83-32-9	Acenaphthene	ug/kg	1.20E+08	ND	1.20E+08	1.20E+08	ND	1.20E+08
67-64-1	Acetone	ug/kg	2.00E+08	1.00E+08	1.00E+08	2.00E+08	1.00E+08	1.00E+08
15972-60-8	Alachlor	ug/kg	7.20E+04	ND	7.20E+04	1.60E+06	ND	1.60E+06
116-06-3	Aldicarb	ug/kg	2.00E+06	ND	2.00E+06	2.00E+05	ND	2.00E+05
309-00-2	Aldrin	ug/kg	3.00E+02	6.60E+03	3.00E+02	6.10E+03	9.30E+03	6.10E+03
120-12-7	Anthracene	ug/kg	6.10E+08	ND	6.10E+08	6.10E+08	ND	6.10E+08
1912-24-9	Atrazine	ug/kg	7.20E+07	ND	7.20E+07	7.10E+06	ND	7.10E+06
71-43-2	Benzene	ug/kg	2.00E+05	1.50E+03	1.50E+03	4.30E+06	2.10E+03	2.10E+03
56-55-3	Benzo(a)anthracene	ug/kg	8.00E+03	ND	8.00E+03	1.70E+05	ND	1.70E+05
205-99-2	Benzo(b)fluoranthene	ug/kg	8.00E+03	ND	8.00E+03	1.70E+05	ND	1.70E+05
207-08-9	Benzo(k)fluroanthene	ug/kg	7.80E+04	ND	7.80E+04	1.70E+06	ND	1.70E+06
50-32-8	Benzo(a)pyrene	ug/kg	8.00E+02	ND	8.00E+02	1.70E+04	ND	1.70E+04
111-44-4	Bis(2-chloroethyl)ether	ug/kg	5.00E+03	4.70E+02	4.70E+02	7.50E+04	6.60E+02	6.60E+02
117-81-7	Bis(2-ethylhexyl)phthalate	ug/kg	4.10E+05	3.10E+07	4.10E+05	4.10E+06	3.10E+07	4.10E+06
75-27-4	Bromodichloromethane	ug/kg	9.20E+04	3.00E+06	9.20E+04	2.00E+06	3.00E+06	2.00E+06
75-25-2	Bromoform	ug/kg	7.20E+05	1.00E+05	1.00E+05	1.60E+07	1.40E+05	1.40E+05
71-36-3	Butanol	ug/kg	2.00E+08	1.00E+07	1.00E+07	2.00E+08	1.00E+07	1.00E+07
85-68-7	Butyl benzyl phthalate	ug/kg	4.10E+08	9.30E+05	9.30E+05	4.10E+08	9.30E+05	9.30E+05
86-74-8	Carbazole	ug/kg	2.90E+05	ND	2.90E+05	6.20E+06	ND	6.20E+06
1563-66-2	Carbofuran	ug/kg	1.00E+07	ND	1.00E+07	1.00E+06	ND	1.00E+06
75-15-0	Carbon disulfide	ug/kg	2.00E+08	7.20E+05	7.20E+05	2.00E+07	9.00E+03	9.00E+03
56-23-5	Carbon tetrachloride	ug/kg	4.40E+04	6.40E+02	6.40E+02	4.10E+05	9.00E+02	9.00E+02
57-74-9	Chlordane	ug/kg	4.00E+03	3.80E+04	4.00E+03	1.20E+04	5.30E+04	1.20E+04
106-47-8	4-Chloroaniline (p-Chloroaniline)	ug/kg	8.20E+06	ND	8.20E+06	8.20E+05	ND	8.20E+05
108-90-7	Chlorobenzene (Monochlorobenzene)	ug/kg	4.10E+07	2.10E+05	2.10E+05	4.10E+06	1.30E+03	1.30E+03
124-48-1	Chlorodibromomethane	ug/kg	4.10E+07	1.30E+06	1.30E+06	4.10E+07	1.30E+06	1.30E+06
67-66-3	Chloroform	ug/kg	9.40E+05	5.40E+02	5.40E+02	2.00E+06	7.60E+02	7.60E+02
218-01-9	Chrysene	ug/kg	7.80E+05	ND	7.80E+05	1.70E+07	ND	1.70E+07
94-75-7	24-D	ug/kg	2.00E+07	ND	2.00E+07	2.00E+06	ND	2.00E+06
75-99-0	Dalapon	ug/kg	6.10E+07	ND	6.10E+07	6.10E+06	ND	6.10E+06
72-54-8	DDD	ug/kg	2.40E+04	ND	2.40E+04	5.20E+05	ND	5.20E+05
72-55-9	DDE	ug/kg	1.70E+04	ND	1.70E+04	3.70E+05	ND	3.70E+05
50-29-3	DDT	ug/kg	1.70E+04	1.50E+06	1.70E+04	1.00E+05	2.10E+06	1.00E+05
53-70-3	Dibenzo(ah)anthracene	ug/kg	8.00E+02	ND	8.00E+02	1.70E+04	ND	1.70E+04
96-12-8	12-Dibromo-3 chloropropane	ug/kg	4.00E+03	1.70E+04	4.00E+03	8.90E+04	1.10E+02	1.10E+02
106-93-4	12-Dibromoethane (Ethylene dibromide)	ug/kg	7.00E+01	3.20E+02	7.00E+01	1.50E+03	4.50E+02	4.50E+02
84-74-2	Di-n-butyl phthalate	ug/kg	2.00E+08	2.30E+06	2.30E+06	2.00E+08	2.30E+06	2.30E+06
95-50-1	12-Dichlorobenzene (o - Dichlorobenzene)	ug/kg	1.80E+08	5.60E+05	5.60E+05	1.80E+07	3.10E+05	3.10E+05
106-46-7	14-Dichlorobenzene (p - Dichlorobenzene)	ug/kg	ND	1.70E+07	1.70E+07	ND	3.40E+05	3.40E+05
91-94-1	33'-Dichlorobenzidine	ug/kg	1.30E+04	ND	1.30E+04	2.80E+05	ND	2.80E+05

Table C-2
Industrial Soil Direct-Contact Screening Values
Sauget Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)					
			Industrial-Commercial			Construction Worker		
			Ingestion	Inhalation	Selected (b)	Ingestion	Inhalation	Selected (b)
75-34-3	11-Dichloroethane	ug/kg	2.00E+08	1.70E+06	1.70E+06	2.00E+08	1.30E+05	1.30E+05
107-06-2	12-Dichloroethane (Ethylene dichloride)	ug/kg	6.30E+04	7.00E+02	7.00E+02	1.40E+06	9.90E+02	9.90E+02
75-35-4	11-Dichloroethylene	ug/kg	1.80E+07	1.50E+06	1.50E+06	1.80E+06	1.50E+06	1.50E+06
156-59-2	cis-12-Dichloroethylene	ug/kg	2.00E+07	1.20E+06	1.20E+06	2.00E+07	1.20E+06	1.20E+06
156-60-5	trans-12 Dichloroethylene	ug/kg	4.10E+07	3.10E+06	3.10E+06	4.10E+07	3.10E+06	3.10E+06
78-87-5	12-Dichloropropane	ug/kg	8.40E+04	2.30E+04	2.30E+04	1.80E+06	5.00E+02	5.00E+02
542-75-6	13-Dichloropropene	ug/kg	3.30E+04	2.30E+02	2.30E+02	6.10E+05	3.30E+02	3.30E+02
60-57-1	Dieldrin	ug/kg	4.00E+02	2.20E+03	4.00E+02	7.80E+03	3.10E+03	3.10E+03
84-66-2	Diethyl phthalate	ug/kg	1.00E+09	2.00E+06	2.00E+06	1.00E+09	2.00E+06	2.00E+06
105-67-9	24-Dimethylphenol	ug/kg	4.10E+07	ND	4.10E+07	4.10E+07	ND	4.10E+07
121-14-2	24-Dinitrotoluene	ug/kg	8.40E+03	ND	8.40E+03	1.80E+05	ND	1.80E+05
606-20-2	26-Dinitrotoluene	ug/kg	8.40E+03	ND	8.40E+03	1.80E+05	ND	1.80E+05
117-84-0	Di-n-octyl phthalate	ug/kg	4.10E+07	1.00E+07	1.00E+07	4.10E+06	1.00E+07	4.10E+06
115-29-7	Endosulfan	ug/kg	1.20E+07	ND	1.20E+07	1.20E+06	ND	1.20E+06
145-73-3	Endothall	ug/kg	4.10E+07	ND	4.10E+07	4.10E+06	ND	4.10E+06
72-20-8	Endrin	ug/kg	6.10E+05	ND	6.10E+05	6.10E+04	ND	6.10E+04
100-41-4	Ethylbenzene	ug/kg	2.00E+08	4.00E+05	4.00E+05	2.00E+07	5.80E+04	5.80E+04
206-44-0	Fluoranthene	ug/kg	8.20E+07	ND	8.20E+07	8.20E+07	ND	8.20E+07
86-73-7	Fluorene	ug/kg	8.20E+07	ND	8.20E+07	8.20E+07	ND	8.20E+07
76-44-8	Heptachlor	ug/kg	1.00E+03	1.10E+04	1.00E+03	2.80E+04	1.60E+04	1.60E+04
1024-57-3	Heptachlor epoxide	ug/kg	6.00E+02	9.20E+03	6.00E+02	2.70E+03	1.30E+04	2.70E+03
118-74-1	Hexachlorobenzene	ug/kg	4.00E+03	1.80E+03	1.80E+03	7.80E+04	2.60E+03	2.60E+03
319-84-6	alpha-HCH (alpha-BHC)	ug/kg	9.00E+02	1.50E+03	9.00E+02	2.00E+04	2.10E+03	2.10E+03
58-89-9	gamma-HCH (Lindane)	ug/kg	4.00E+03	ND	4.00E+03	9.60E+04	ND	9.60E+04
77-47-4	Hexachlorocyclopentadiene	ug/kg	1.40E+07	1.60E+04	1.60E+04	1.40E+07	1.10E+03	1.10E+03
67-72-1	Hexachloroethane	ug/kg	2.00E+06	ND	2.00E+06	2.00E+06	ND	2.00E+06
193-39-5	Indeno(123-cd)pyrene	ug/kg	8.00E+03	ND	8.00E+03	1.70E+05	ND	1.70E+05
78-59-1	Isophorone	ug/kg	4.10E+08	4.60E+06	4.60E+06	4.10E+08	4.60E+06	4.60E+06
72-43-5	Methoxychlor	ug/kg	1.00E+07	ND	1.00E+07	1.00E+06	ND	1.00E+06
74-83-9	Methyl bromide (Bromomethane)	ug/kg	2.90E+06	1.50E+04	1.50E+04	1.00E+06	3.90E+03	3.90E+03
75-09-2	Methylene chloride (Dichloromethane)	ug/kg	7.60E+05	2.40E+04	2.40E+04	1.20E+07	3.40E+04	3.40E+04
95-48-7	2-Methylphenol (o - Cresol)	ug/kg	1.00E+08	ND	1.00E+08	1.00E+08	ND	1.00E+08
91-20-3	Naphthalene	ug/kg	1.20E+06	ND	1.20E+06	8.20E+06	ND	8.20E+06
98-95-3	Nitrobenzene	ug/kg	8.00E+02	ND	8.00E+02	1.00E+06	9.40E+03	9.40E+03
86-30-6	N-Nitrosodiphenylamine	ug/kg	8.20E+07	ND	8.20E+07	2.50E+07	ND	2.50E+07
621-64-7	N-Nitrosodi-n propylamine	ug/kg	1.00E+06	1.40E+05	1.40E+05	1.80E+04	ND	1.80E+04
108-95-2	Phenol	ug/kg	1.00E+09	ND	1.00E+09	1.20E+08	ND	1.20E+08
1918-02-1	Picloram	ug/kg	1.40E+08	ND	1.40E+08	1.40E+07	ND	1.40E+07
1336-36-3	Polychlorinated biphenyls (PCBs)	ug/kg	1.00E+03	ND	1.00E+03	ND	ND	1.00E+03
129-00-0	Pyrene	ug/kg	6.10E+07	ND	6.10E+07	6.10E+07	ND	6.10E+07

Table C-2
Industrial Soil Direct-Contact Screening Values
Saugot Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)					
			Industrial-Commercial			Construction Worker		
			Ingestion	Inhalation	Selected (b)	Ingestion	Inhalation	Selected (b)
122-34-9	Simazine	ug/kg	1.00E+07	ND	1.00E+07	1.00E+06	ND	1.00E+06
100-42-5	Styrene	ug/kg	4.10E+08	1.50E+06	1.50E+06	4.10E+07	4.30E+05	4.30E+05
127-18-4	Tetrachloroethylene (Perchloroethylene)	ug/kg	1.10E+05	2.00E+04	2.00E+04	2.40E+06	2.80E+04	2.80E+04
108-88-3	Toluene	ug/kg	4.10E+08	6.50E+05	6.50E+05	4.10E+08	4.20E+04	4.20E+04
8001-35-2	Toxaphene	ug/kg	5.20E+03	1.70E+05	5.20E+03	1.10E+05	2.40E+05	1.10E+05
120-82-1	124-Trichlorobenzene	ug/kg	2.00E+07	3.20E+06	3.20E+06	2.00E+06	9.20E+05	9.20E+05
71-55-6	111-Trichloroethane	ug/kg	ND	1.20E+06	1.20E+06	ND	1.20E+06	1.20E+06
79-00-5	112-Trichloroethane	ug/kg	8.20E+06	1.80E+06	1.80E+06	8.20E+06	1.80E+06	1.80E+06
79-01-6	Trichloroethylene	ug/kg	5.20E+05	8.90E+03	8.90E+03	1.20E+06	1.20E+04	1.20E+04
108-05-4	Vinyl acetate	ug/kg	1.00E+09	1.60E+06	1.60E+06	2.00E+08	1.00E+04	1.00E+04
75-01-4	Vinyl chloride	ug/kg	3.00E+03	6.00E+01	6.00E+01	6.50E+04	8.00E+01	8.00E+01
108-38-3	m-Xylene	ug/kg	1.00E+09	4.20E+05	4.20E+05	4.10E+08	4.20E+05	4.20E+05
95-47-6	o-Xylene	ug/kg	1.00E+09	4.10E+05	4.10E+05	4.10E+08	4.10E+05	4.10E+05
106-42-3	p-Xylene	ug/kg	1.00E+09	4.60E+05	4.60E+05	4.10E+08	4.60E+05	4.60E+05
1330-20-7	Xylenes (total)	ug/kg	1.00E+09	4.10E+05	4.10E+05	4.10E+08	4.10E+05	4.10E+05
	Ionizable Organics							
65-85-0	Benzoic Acid	ug/kg	1.00E+09	ND	1.00E+09	8.20E+08	ND	8.20E+08
95-57-8	2-Chlorophenol	ug/kg	1.00E+07	5.30E+07	1.00E+07	1.00E+07	5.30E+07	1.00E+07
120-83-2	24-Dichlorophenol	ug/kg	6.10E+06	ND	6.10E+06	6.10E+05	ND	6.10E+05
51-28-5	24-Dinitrophenol	ug/kg	4.10E+06	ND	4.10E+06	4.10E+05	ND	4.10E+05
88-85-7	Dinoseb	ug/kg	2.00E+06	ND	2.00E+06	2.00E+05	ND	2.00E+05
87-86-5	Pentachlorophenol	ug/kg	2.40E+04	ND	2.40E+04	5.20E+05	ND	5.20E+05
93-72-1	245-TP (Silvex)	ug/kg	1.60E+07	ND	1.60E+07	1.60E+06	ND	1.60E+06
95-95-4	245-Trichlorophenol	ug/kg	2.00E+08	ND	2.00E+08	2.00E+08	ND	2.00E+08
88-06-2	246 Trichlorophenol	ug/kg	5.20E+05	3.90E+05	3.90E+05	1.10E+07	5.40E+05	5.40E+05
	Inorganics							
7440-36-0	Antimony	mg/kg	8.20E+02	ND	8.20E+02	8.20E+01	ND	8.20E+01
7440-38-2	Arsenic	mg/kg	3.00E+00	1.20E+03	3.00E+00	6.10E+01	2.50E+04	6.10E+01
7440-39-3	Barium	mg/kg	1.40E+05	9.10E+05	1.40E+05	1.40E+04	8.70E+05	1.40E+04
7440-41-7	Beryllium	mg/kg	4.09E+03 (o)	2.11E+03 (o)	2.11E+03 (o)	4.08E+02 (o)	3.47E+03 (o)	4.08E+02 (o)
7440-42-8	Boron	mg/kg	1.80E+05	1.00E+06	1.80E+05	1.80E+04	1.00E+06	1.80E+04
7440-43-9	Cadmium	mg/kg	2.00E+03	2.80E+03	2.00E+03	2.00E+02	5.90E+04	2.00E+02
16887-00-6	Chloride	mg/kg	ND	ND	NA	ND	ND	NA
7440-47-3	Chromium total	mg/kg	1.00E+04	4.20E+02	4.20E+02	4.10E+03	8.80E+03	4.10E+03
16065-83-1	Chromium ion trivalent	mg/kg	1.00E+06	ND	1.00E+06	3.30E+05	ND	3.30E+05
18540-29-9	Chromium (+6)	mg/kg	1.00E+04	4.20E+02	4.20E+02	4.10E+03	8.80E+03	4.10E+03
7440-48-4	Cobalt	mg/kg	1.20E+05	ND	1.20E+05	1.20E+04	ND	1.20E+04
7440-50-8	Copper	mg/kg	8.20E+04	ND	8.20E+04	8.20E+03	ND	8.20E+03
57-12-5	Cyanide	mg/kg	4.10E+04	ND	4.10E+04	4.10E+03	ND	4.10E+03
7782-41-4	Fluoride	mg/kg	1.20E+05	ND	1.20E+05	1.20E+04	ND	1.20E+04

Table C-2
Industrial Soil Direct-Contact Screening Values
Saugel Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)							
			Industrial-Commercial				Construction Worker			
			Ingestion	Inhalation	Selected (b)		Ingestion	Inhalation	Selected (b)	
15438-31-0	Iron	mg/kg	ND	ND	NA		ND	ND	NA	
7439-92-1	Lead (p)	mg/kg	7.50E+02	ND	7.50E+02		7.50E+02	ND	7.50E+02	
7439-96-5	Manganese	mg/kg	9.60E+04	9.10E+04	9.10E+04		9.60E+03	8.70E+03	8.70E+03	
7439-97-6	Mercury	mg/kg	6.10E+02	5.40E+05	6.10E+02		6.10E+01	5.20E+04	6.10E+01	
7440-02-0	Nickel	mg/kg	4.10E+04	2.10E+04	2.10E+04		4.10E+03	4.40E+05	4.10E+03	
14797-55-8	Nitrate as Np	mg/kg	1.00E+06	ND	1.00E+06		3.30E+05	ND	3.30E+05	
7782-49-2	Selenium	mg/kg	1.00E+04	ND	1.00E+04		1.00E+03	ND	1.00E+03	
7440-22-4	Silver	mg/kg	1.00E+04	ND	1.00E+04		1.00E+03	ND	1.00E+03	
14808-79-8	Sulfate	mg/kg	ND	ND	NA		ND	ND	NA	
7440-28-0	Thallium	mg/kg	1.60E+02	ND	1.60E+02		1.60E+02	ND	1.60E+02	
7440-62-2	Vanadium	mg/kg	1.40E+04	ND	1.40E+04		1.40E+03	ND	1.40E+03	
7440-66-6	Zinc	mg/kg	6.10E+05	ND	6.10E+05		6.10E+04	ND	6.10E+04	
	Constituents Lacking TACO Standards									
93-76-5	2,4,5-T	ug/kg	--	--	8.80E+06	(k)	ug/kg		8.80E+06	(k)
94-82-6	2,4-DB	ug/kg	--	--	7.00E+06	(k)	ug/kg		7.00E+06	(k)
78-93-3	2-Butanone (MEK)	ug/kg	--	--	2.80E+07	(k)	ug/kg		2.80E+07	(k)
591-78-6	2-Hexanone	ug/kg	--	--	2.90E+06	(l)	ug/kg		2.90E+06	(l)
91-57-6	2-Methylnaphthalene	ug/kg	--	--	8.20E+07	(l)	ug/kg		8.20E+06	(l)
88-74-4	2-Nitroaniline	ug/kg	--	--	5.00E+04	(k)	ug/kg		5.00E+04	(k)
208-96-8	Acenaphthylene	ug/kg	--	--	1.20E+08	(c)	ug/kg		1.20E+08	(c)
5103-71-9	Alpha Chlordane	ug/kg	--	--	4.00E+03	(f)	ug/kg		1.20E+04	(f)
7429-90-5	Aluminum	ug/kg	--	--	1.00E+05	(k)	mg/kg		1.00E+05	(k)
191-24-2	Benzo(g,h,i)perylene	ug/kg	--	--	6.10E+07	(j)	ug/kg		6.10E+07	(j)
319-85-7	beta-BHC	ug/kg	--	--	9.00E+02	(d)	ug/kg		2.10E+03	(d)
57-74-9	Chlordane	ug/kg	--	--	4.00E+03	(f)	ug/kg		1.20E+04	(f)
319-86-8	delta-BHC	ug/kg	--	--	9.00E+02	(d)	ug/kg		2.10E+03	(d)
132-64-9	Dibenzofuran	ug/kg	--	--	5.10E+06	(k)	ug/kg		5.10E+06	(k)
1918-00-9	Dicamba	ug/kg	--	--	2.60E+07	(k)	ug/kg		2.60E+07	(k)
120-36-5	Dichloroprop	ug/kg	--	--	NA	(n)			NA	(n)
1746-01-6	Dioxin	ug/kg	--	--	1.00E+00	(m)	ug/kg		1.00E+00	(m)
959-98-8	Endosulfan I	ug/kg	--	--	1.20E+07	(g)	ug/kg		1.20E+06	(g)
33213-65-9	Endosulfan II	ug/kg	--	--	1.20E+07	(g)	ug/kg		1.20E+06	(g)
1031-07-8	Endosulfan sulfate	ug/kg	--	--	1.20E+07	(g)	ug/kg		1.20E+06	(g)
7421-93-4	Endrin aldehyde	ug/kg	--	--	6.10E+05	(h)	ug/kg		6.10E+04	(h)
53494-70-5	Endrin ketone	ug/kg	--	--	6.10E+05	(h)	ug/kg		6.10E+04	(h)
5103-74-2	Gamma Chlordane	ug/kg	--	--	4.00E+03	(l)	ug/kg		1.20E+04	(l)

Table C-2
Industrial Soil Direct-Contact Screening Values
Saugat Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	Units	Exposure Route-Specific Values for Soils (a)							
			Industrial-Commercial				Construction Worker			
			Ingestion	Inhalation	Selected (b)		Ingestion	Inhalation	Selected (b)	
94-74-6	MCPA	ug/kg	--	--	4.40E+05	(k)	ug/kg		4.40E+05	(k)
7085-19-0	MCPP	ug/kg	--	--	8.80E+05	(k)	ug/kg		8.80E+05	(k)
7439-98-7	Molybdenum	ug/kg	--	--	1.00E+04	(k)	mg/kg		1.00E+04	(k)
85-01-8	Phenanthrene	ug/kg	--	--	6.10E+08	(e)	ug/kg		6.10E+08	(e)

Notes:
CAS - Chemical Abstracts Service.
NA - Not Available.
ND - Not Determined.
TACO - Illinois Tiered Approach to Corrective Action.
(a) - Title 35, Subtitle G, Chapter I, Part 742 Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 values from Appendix B, Table A.
(b) - Selected value is the lower of the ingestion and inhalation Tier 1 standards.
(c) - No TACO value available. Therefore, the TACO value for acenapthene has been used due to structural similarity.
(d) - No TACO value available. Therefore, the TACO value for alpha-HCH has been used due to structural similarity.
(e) - No TACO value available. Therefore, the TACO value for anthracene has been used due to structural similarity.
(f) - No TACO value available. Therefore, the TACO value for chlordane has been used due to structural similarity.
(g) - No TACO value available. Therefore, the TACO value for endosulfan has been used due to structural similarity.
(h) - No TACO value available. Therefore, the TACO value for endrin has been used due to structural similarity.
(i) - No TACO value available. Therefore, the TACO value for naphthalene has been used due to structural similarity.
(j) - No TACO value available. Therefore, the TACO value for pyrene has been used due to structural similarity.
(k) - No TACO value, and no appropriate structural surrogate. Therefore, Region IX Preliminary Remediation Goal (PRG), October 1, 1999, used.
(l) - No TACO value, and no appropriate structural surrogate. Therefore, PRG for methyl-isobutyl-ketone
(m) - Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April 13, 1998.
(n) - *No TACO value, PRG value, appropriate surrogate, or dose response value available.*
(o) - Values for beryllium re-calculated based on new dose-response information from US EPA (Integrated Risk Information System, IRIS, 10/2000) using TACO SSL methodology as presented in Appendix C Tables A and B.
(p) - Value for lead provided in the USEPA Region 9 PRG Table, November 1, 2000, used as this value is specific to industrial exposure scenarios.

CAS Number	Constituent	Units	Class II (a)
83-32-9	Acenaphthene	ug/kg	2900000
67-64-1	Acetone	ug/kg	16000
15972-60-8	Alachlor	ug/kg	200
116-06-3	Aldicarb	ug/kg	70
309-00-2	Aldrin	ug/kg	2500
120-12-7	Anthracene	ug/kg	59000000
1912-24-9	Atrazine	ug/kg	330
71-43-2	Benzene	ug/kg	170
56-55-3	Benzo(a)anthracene	ug/kg	8000
205-99-2	Benzo(b)fluoranthene	ug/kg	25000
207-08-9	Benzo(k)fluroanthene	ug/kg	250000
50-32-8	Benzo(a)pyrene	ug/kg	82000
111-44-4	Bis(2-chloroethyl)ether	ug/kg	0.4
117-81-7	Bis(2-ethylhexyl)phthalate	ug/kg	31000000
75-27-4	Bromodichloromethane	ug/kg	600
75-25-2	Bromoform	ug/kg	800
71-36-3	Butanol	ug/kg	17000
85-68-7	Butyl benzyl phthalate	ug/kg	930000
86-74-8	Carbazole	ug/kg	2800
1563-66-2	Carbofuran	ug/kg	1100
75-15-0	Carbon disulfide	ug/kg	160000
56-23-5	Carbon tetrachloride	ug/kg	330
57-74-9	Chlordane	ug/kg	48000
106-47-8	4-Chloroaniline (p-Chloroaniline)	ug/kg	700
108-90-7	Chlorobenzene (Monochlorobenzene)	ug/kg	6500
124-48-1	Chlorodibromomethane	ug/kg	400
67-66-3	Chloroform	ug/kg	2900
218-01-9	Chrysene	ug/kg	800000
94-75-7	24-D	ug/kg	7700
75-99-0	Dalapon	ug/kg	8500
72-54-8	DDD	ug/kg	80000
72-55-9	DDE	ug/kg	270000
50-29-3	DDT	ug/kg	160000
53-70-3	Dibenzo(ah)anthracene	ug/kg	7600
96-12-8	12-Dibromo-3 chloropropane	ug/kg	2
106-93-4	12-Dibromoethane (Ethylene dibromide)	ug/kg	4
84-74-2	Di-n-butyl phthalate	ug/kg	2300000
95-50-1	12-Dichlorobenzene (o - Dichlorobenzene)	ug/kg	43000
106-46-7	14-Dichlorobenzene (p - Dichlorobenzene)	ug/kg	11000
91-94-1	33'-Dichlorobenzidine	ug/kg	33
75-34-3	11-Dichloroethane	ug/kg	110000
107-06-2	12-Dichloroethane (Ethylene dichloride)	ug/kg	100
75-35-4	11-Dichloroethylene	ug/kg	300
156-59-2	cis-12-Dichloroethylene	ug/kg	1100
156-60-5	trans-12 Dichloroethylene	ug/kg	3400
78-87-5	12-Dichloropropane	ug/kg	150
542-75-6	13-Dichloropropene	ug/kg	20
60-57-1	Dieldrin	ug/kg	20
84-66-2	Diethyl phthalate	ug/kg	470000
105-67-9	24-Dimethylphenol	ug/kg	9000
121-14-2	24-Dinitrotoluene	ug/kg	0.8
606-20-2	26-Dinitrotoluene	ug/kg	0.7
117-84-0	Di-n-octyl phthalate	ug/kg	10000000
115-29-7	Endosulfan	ug/kg	90000
145-73-3	Endothall	ug/kg	400

CAS Number	Constituent	Units	Class II (a)	
72-20-8	Endrin	ug/kg	5000	
100-41-4	Ethylbenzene	ug/kg	19000	
206-44-0	Fluoranthene	ug/kg	21000000	
86-73-7	Fluorene	ug/kg	2800000	
76-44-8	Heptachlor	ug/kg	110000	
1024-57-3	Heptachlor epoxide	ug/kg	3300	
118-74-1	Hexachlorobenzene	ug/kg	11000	
319-84-6	alpha-HCH (alpha-BHC)	ug/kg	3	
58-89-9	gamma-HCH (Lindane)	ug/kg	47	
77-47-4	Hexachlorocyclopentadiene	ug/kg	2200000	
67-72-1	Hexachloroethane	ug/kg	2600	
193-39-5	Indeno(123-cd)pyrene	ug/kg	69000	
78-59-1	Isophorone	ug/kg	8000	
72-43-5	Methoxychlor	ug/kg	780000	
74-83-9	Methyl bromide (Bromomethane)	ug/kg	1200	
75-09-2	Methylene chloride (Dichloromethane)	ug/kg	200	
95-48-7	2-Methylphenol (o - Cresol)	ug/kg	15000	
91-20-3	Naphthalene	ug/kg	420000	
98-95-3	Nitrobenzene	ug/kg	100	
86-30-6	N-Nitrosodiphenylamine	ug/kg	5600	
621-64-7	N-Nitrosodi-n propylamine	ug/kg	0.05	
108-95-2	Phenol	ug/kg	100000	
1918-02-1	Picloram	ug/kg	20000	
1336-36-3	Polychlorinated biphenyls (PCBs)	ug/kg	NA	
129-00-0	Pyrene	ug/kg	21000000	
122-34-9	Simazine	ug/kg	370	
100-42-5	Styrene	ug/kg	18000	
127-18-4	Tetrachloroethylene (Perchloroethylene)	ug/kg	300	
108-88-3	Toluene	ug/kg	29000	
8001-35-2	Toxaphene	ug/kg	150000	
120-82-1	124-Trichlorobenzene	ug/kg	53000	
71-55-6	111-Trichloroethane	ug/kg	9600	
79-00-5	112-Trichloroethane	ug/kg	300	
79-01-6	Trichloroethylene	ug/kg	300	
108-05-4	Vinyl acetate	ug/kg	170000	
75-01-4	Vinyl chloride	ug/kg	70	
108-38-3	m-Xylene	ug/kg	210000	
95-47-6	o-Xylene	ug/kg	190000	
106-42-3	p-Xylene	ug/kg	200000	
1330-20-7	Xylenes (total)	ug/kg	150000	
	Ionizable Organics			
65-85-0	Benzoic Acid	ug/kg	400000	(j)
95-57-8	2-Chlorophenol	ug/kg	3100	(j)
120-83-2	24-Dichlorophenol	ug/kg	690	(j)
51-28-5	24-Dinitrophenol	ug/kg	200	
88-85-7	Dinoseb	ug/kg	2500	(j)
87-86-5	Pentachlorophenol	ug/kg	100	(j)
93-72-1	245-TP (Silvex)	ug/kg	55000	(j)
95-95-4	245-Trichlorophenol	ug/kg	64000	(j)
88-06-2	246 Trichlorophenol	ug/kg	70	(j)

CAS Number	Constituent	Units	Class II (a)	
	Inorganics			
7440-36-0	Antimony	mg/kg	20	(j)
7440-38-2	Arsenic	mg/kg	100	(j)
7440-39-3	Barium	mg/kg	260	(j)
7440-41-7	Beryllium	mg/kg	140	(j)
7440-42-8	Boron	mg/kg	NA	(k)
7440-43-9	Cadmium	mg/kg	10	(j)
16887-00-6	Chloride	mg/kg	NA	(k)
7440-47-3	Chromium total	mg/kg	NA	(k)
16065-83-1	Chromium ion trivalent	mg/kg	NA	(k)
18540-29-9	Chromium (+6)	mg/kg	ND	(j)
7440-48-4	Cobalt	mg/kg	NA	(k)
7440-50-8	Copper	mg/kg	330	(j)
57-12-5	Cyanide	mg/kg	120	(j)
7782-41-4	Fluoride	mg/kg	NA	(k)
15438-31-0	Iron	mg/kg	NA	(k)
7439-92-1	Lead	mg/kg	NA	(k)
7439-96-5	Manganese	mg/kg	NA	(k)
7439-97-6	Mercury	mg/kg	0.05	(j)
7440-02-0	Nickel	mg/kg	400	(j)
14797-55-8	Nitrate as Np	mg/kg	NA	(k)
7782-49-2	Selenium	mg/kg	2.4	(j)
7440-22-4	Silver	mg/kg	NA	(k)
14808-79-8	Sulfate	mg/kg	NA	(k)
7440-28-0	Thallium	mg/kg	16	(j)
7440-62-2	Vanadium	mg/kg	NA	(k)
7440-66-6	Zinc	mg/kg	2000	(j)
	Constituents Lacking Standards			
91-57-6	2-Methylnaphthalene	ug/kg	420000	(h)
208-96-8	Acenaphthylene	ug/kg	2900000	(b)
5103-71-9	Alpha Chlordane	ug/kg	48000	(e)
191-24-2	Benzo(g,h,i)perylene	ug/kg	21000000	(i)
319-85-7	beta-BHC	ug/kg	3	(c)
57-74-9	Chlordane	ug/kg	48000	(e)
319-86-8	delta-BHC	ug/kg	3	(c)
959-98-8	Endosulfan I	ug/kg	90000	(f)
33213-65-9	Endosulfan II	ug/kg	90000	(f)
1031-07-8	Endosulfan sulfate	ug/kg	90000	(f)
7421-93-4	Endrin aldehyde	ug/kg	5000	(g)
53494-70-5	Endrin ketone	ug/kg	5000	(g)
5103-74-2	Gamma Chlordane	ug/kg	48000	(e)
85-01-8	Phenanthrene	ug/kg	59000000	(d)

Notes:
CAS - Chemical Abstracts Service.
NA - Not Available.
ND - Not Determined.
TACO - Illinois Tiered Approach to Corrective Action.
(a) - Title 35, Subtitle G, Chapter I, Part 742 Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 values from Appendix B, Table A.
(b) - No TACO value available. Therefore, the TACO value for acenapthene has been used due to structural similarity.
(c) - No TACO value available. Therefore, the TACO value for alpha-HCH has been used due to structural similarity.
(d) - No TACO value available. Therefore, the TACO value for anthracene has been used due to structural similarity.
(e) - No TACO value available. Therefore, the TACO value for chlordane has been used due to structural similarity.
(f) - No TACO value available. Therefore, the TACO value for endosulfan has been used due to structural similarity.
(g) - No TACO value available. Therefore, the TACO value for endrin has been used due to structural similarity.
(h) - No TACO value available. Therefore, the TACO value for naphthalene has been used due to structural similarity.
(i) - No TACO value available. Therefore, the TACO value for pyrene has been used due to structural similarity.
(j) - Lowest pH specific value from TACO Appendix B, Table D.
(k) - No pH specific value listed in TACO Appendix B, Table D.

CAS Number	Constituent	Class II (ug/L) (a)
71-55-6	1,1,1-Trichloroethane	1000
79-00-5	1,1,2-Trichloroethane	50
75-34-3	1,1-Dichloroethane	3500
75-35-4	1,1-Dichloroethylene	35
120-82-1	1,2,4-Trichlorobenzene	700
96-12-8	1,2-Dibromo-3-chloropropane	0.2
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.5
95-50-1	1,2-Dichlorobenzene (o – Dichlorobenzene)	1500
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	25
78-87-5	1,2-Dichloropropane	25
542-75-6	1,3-Dichloropropene	5
106-46-7	1,4-Dichlorobenzene (p - Dichlorobenzene)	375
93-72-1	2,4,5-TP (Silvex)	250
95-95-4	2,4,5-Trichlorophenol	3500
88-06-2	2,4,6 Trichlorophenol	32
94-75-7	2,4-D	350
120-83-2	2,4-Dichlorophenol	21
105-67-9	2,4-Dimethylphenol	140
51-28-5	2,4-Dinitrophenol	14
121-14-2	2,4-Dinitrotoluene	0.02
606-20-2	2,6-Dinitrotoluene	0.1
95-57-8	2-Chlorophenol	175
95-48-7	2-Methylphenol (o - Cresol)	350
91-94-1	3,3'-Dichlorobenzidine	100
106-47-8	4-Chloroaniline (p-Chloroaniline)	28
83-32-9	Acenaphthene	2100
67-64-1	Acetone	700
15972-60-8	Alachlor	10
116-06-3	Aldicarb	15
309-00-2	Aldrin	0.2
319-84-6	alpha-HCH (alpha-BHC)	0.15
120-12-7	Anthracene	10500
1912-24-9	Atrazine	15
71-43-2	Benzene	25
56-55-3	Benzo(a)anthracene	0.65
50-32-8	Benzo(a)pyrene	2
205-99-2	Benzo(b)fluoranthene	0.9
207-08-9	Benzo(k)fluroanthene	0.85
65-85-0	Benzoic Acid	28000
111-44-4	Bis(2-chloroethyl)ether	10
117-81-7	Bis(2-ethylhexyl)phthalate	60
75-27-4	Bromodichloromethane	0.02
75-25-2	Bromoform	0.2
71-36-3	Butanol	700
85-68-7	Butyl benzyl phthalate	7000
1563-66-2	Carbofuran	200
75-15-0	Carbon disulfide	3500
56-23-5	Carbon tetrachloride	25
57-74-9	Chlordane	10
108-90-7	Chlorobenzene (Monochlorobenzene)	500
124-48-1	Chlorodibromomethane	140
67-66-3	Chloroform	0.1
218-01-9	Chrysene	7.5

CAS Number	Constituent	Class II (ug/L) (a)
156-59-2	cis-1,2-Dichloroethylene	200
75-99-0	Dalapon	2000
72-54-8	DDD	0.55
72-55-9	DDE	0.2
50-29-3	DDT	0.6
53-70-3	Dibenzo(a,h)anthracene	1.5
60-57-1	Dieldrin	0.1
84-66-2	Diethyl phthalate	5600
84-74-2	Di-n-butyl phthalate	3500
117-84-0	Di-n-octyl phthalate	700
88-85-7	Dinoseb	70
115-29-7	Endosulfan	210
145-73-3	Endothall	100
72-20-8	Endrin	10
100-41-4	Ethylbenzene	1000
206-44-0	Fluoranthene	1400
86-73-7	Fluorene	1400
58-89-9	gamma-HCH (Lindane)	1
76-44-8	Heptachlor	2
1024-57-3	Heptachlor epoxide	1
118-74-1	Hexachlorobenzene	0.3
77-47-4	Hexachlorocyclopentadiene	500
67-72-1	Hexachloroethane	35
193-39-5	Indeno(1,2,3-c,d)pyrene	2.15
78-59-1	Isophorone	1400
72-43-5	Methoxychlor	200
74-83-9	Methyl bromide (Bromomethane)	49
75-09-2	Methylene chloride (Dichloromethane)	50
91-20-3	Naphthalene	39
98-95-3	Nitrobenzene	3.5
621-64-7	N-Nitrosodi-n-propylamine	10
122-39-4	N-Nitrosodiphenylamine	50
87-86-5	Pentachlorophenol	5
108-95-2	Phenol	100
1918-02-1	Picloram	5000
1336-36-3	Polychlorinated biphenyls (PCBs)	2.5
129-00-0	Pyrene	1050
122-34-9	Simazine	40
100-42-5	Styrene	500
127-18-4	Tetrachloroethylene (Perchloroethylene)	25
108-88-3	Toluene	2500
8001-35-2	Toxaphene	15
156-60-5	trans-1,2-Dichloroethylene	500
79-01-6	Trichloroethylene	25
108-05-4	Vinyl acetate	7000
75-01-4	Vinyl chloride	10
1330-20-7	Xylenes (total)	10000

CAS Number	Constituent	Class II (ug/L) (a)	
	Inorganics		
7440-36-0	Antimony	24	
7440-38-2	Arsenic	200	
7440-39-3	Barium	2000	
7440-41-7	Beryllium	500	
7440-42-8	Boron	2000	
7440-43-9	Cadmium	50	
16887-00-6	Chloride	200000	
18540-29-9	Chromium, ion, hexavalent	NA	
7440-47-3	Chromium, total	1000	
7440-48-4	Cobalt	1000	
7440-50-8	Copper	650	
57-12-5	Cyanide	600	
7782-41-4	Fluoride	4000	
7439-89-6	Iron	5000	
7439-92-1	Lead	100	
7439-96-5	Manganese	10000	
7439-97-6	Mercury	10	
7440-02-0	Nickel	2000	
14797-55-8	Nitrate as N	100000	
7782-49-2	Selenium	50	
7440-22-4	Silver	50	
14808-79-8	Sulfate	400000	
7440-28-0	Thallium	20	
7440-62-2	Vanadium	49	
7440-66-6	Zinc	10000	
	Constituents Lacking TACO Standards		
79-34-5	1,1,2,2-Tetrachloroethane	0.055	(n)
541-73-1	1,3-Dichlorobenzene	1500	(b)
93-76-5	2,4,5-T	360	(n)
94-82-6	2,4-DB	290	(n)
91-58-7	2-Chloronaphthalene	490	(n)
91-57-6	2-Methylnaphthalene	39	(c)
88-74-4	2-Nitroaniline	2.1	(n)
106-44-5	3-Methylphenol/4-Methylphenol	350	(d)
108-10-1	4-Methyl-2-pentanone (MIBK)	160	(n)
100-01-6	4-Nitroaniline	2.1	(n)
5103-71-9	Alpha Chlordane	10	(e)
7429-90-5	Aluminum	36000	(n)
191-24-2	Benzo(g,h,i)perylene	1050	(f)
319-85-7	beta-BHC	0.15	(g)
86-74-8	Carbazole	3.4	(n)
540-59-0	Cis/Trans-1,2-Dichloroethene	200	(h)
319-86-8	delta-BHC	0.15	(g)
132-64-9	Dibenzofuran	24	(n)
1918-00-9	Dicamba	1100	(n)
120-36-5	Dichloroprop	NA	(l)
131-11-3	Dimethylphthalate	360000	(n)
1746-01-6	Dioxin	0.00003	(m)
959-98-8	Endosulfan I	210	(i)
33213-65-9	Endosulfan II	210	(i)
7421-93-4	Endrin aldehyde	10	(j)
53494-70-5	Endrin ketone	10	(j)

CAS Number	Constituent	Class II (ug/L) (a)	
5103-74-2	Gamma Chlordane	10	(e)
93-65-2	MCPP	36	(n)
7439-98-7	Molybdenum	180	(n)
85-01-8	Phenanthrene	10500	(k)

Notes:
CAS - Chemical Abstracts Service.
NA - Not Available.
ND - Not Determined.
TACO - Illinois Tiered Approach to Corrective Action.
(a) - Title 35, Subtitle G, Chapter I, Part 742 Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 values from Appendix B, Table E.
(b) - No TACO value available. Therefore, the TACO value for 1,2-dichlorobenzene has been used due to structural similarity.
(c) - No TACO value available. Therefore, the TACO value for naphthalene has been used due to structural similarity.
(d) - No TACO value available. Therefore, the TACO value for 2-methylphenol has been used due to structural similarity.
TACO - Illinois Tiered Approach to Corrective Action.
(f) - No TACO value available. Therefore, the TACO value for pyrene has been used due to structural similarity.
(g) - No TACO value available. Therefore, the TACO value for alpha-HCH has been used due to structural similarity.
(h) - TACO value for cis-1,2-dichloroethylene.
(i) - No TACO value available. Therefore, the TACO value for endosulfan has been used due to structural similarity.
(j) - No TACO value available. Therefore, the TACO value for endrin has been used due to structural similarity.
(k) - No TACO value available. Therefore, the TACO value for anthracene has been used due to structural similarity.
(l) - No TACO value, PRG value, appropriate surrogate, or dose response value available.
(m) - Drinking Water Standards and Health Adivories. Office of Water, EPA 822-B00-001, Summer 2000. Maximum Contaminant Level (MCL).
(n) - No TACO value, and no appropriate structural surrogate. Therefore, Region IX Preliminary Remediation Goal (PRG), October 1, 1999, used.

Table C-5
Screening Criteria for Constituents Detected in Air
Sauget Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Number	Constituent	PRG (ug/m3) (a)	
71-55-6	1,1,1-Trichloroethane	1000	
75-35-4	1,1-Dichloroethene	0.038	
78-93-3	2-Butanone	1000	
108-10-1	4-Methyl-2-pentanone	83	
67-64-1	Acetone	370	
100-41-4	Ethylbenzene	1100	
98-82-8	Isopropylbenzene	400	
1330-20-7	m&p-Xylene	730	
75-09-2	Methylene chloride	4.1	
104-51-8	n-Butylbenzene	36.5	
95-47-6	o-Xylene	730	
99-87-6	p-Isopropyltoluene	730	(b)
135-98-8	s-Butylbenzene	36.5	
100-42-5	Styrene	1100	
98-06-6	t-Butylbenzene	36.5	
127-18-4	Tetrachloroethene	3.3	
108-88-3	Toluene	400	
79-01-6	Trichloroethene	1.1	

Notes:
CAS - Chemical Abstracts Service.
PRG - Preliminary Remediation Goal.
(a) - U.S. EPA Region IX Preliminary Remediation Goal (PRG), October 1, 1998.
(b)- No PRG value available. Therefore, the PRG value for xylenes has been used due to structural similarity.

Table C-6
Fish Tissue Standards
Sauget Area 1 EE/CA and RI/FS
Human Health Risk Assessment

CAS Numl	Constituent	RBC (mg/kg) (a)	
72-55-9	4,4'-DDE	0.009	
7440-38-2	Arsenic	0.002	
117-81-7	bis(2-Ethylhexyl)phthalate	0.23	
7440-47-3	Chromium	2028	(b)
7440-50-8	Copper	54	
84-74-2	Di-n-butylphthalate	135	
1746-01-6	Dioxin	0.000025	(c)
5103-74-2	Gamma Chlordane	0.009	(d)
7439-97-6	Mercury	0.14	(e)
7440-66-6	Zinc	406	

Notes:
CAS - Chemical Abstracts Service.
RBC - Risk-Based Concentration.
(a) - U.S. EPA Region III Risk-Based Concentration (RBC) Table, October 5, 2000. Value for fish tissue.
(b) - Value for Chromium III.
(c) - Food and Drug Administration (FDA) Action Level; as reported in: USEPA. 1984. Ambient Water Quality Criteria Document for 2,3,7,8-Tetrachlorodibenzo-p-dioxin. EPA 440/5-84-007. Cordel, Frank. 1981. The Use of Epidemiology in The Regulation of Dioxins in The Food Supply. Regulatory Toxicology and Pharmacology 1:379-387.
(d) - Value for Chlordane.
(e) - Value for Methyl Mercury.

TABLE C-7
CALCULATIONS OF TIER 1 TACO STANDARDS FOR BERYLLIUM
USE OF CURRENT USEPA DOSE-RESPONSE VALUES
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

PARAMETER	RESIDENTIAL		INDUSTRIAL/ COMMERCIAL	CONSTRUCTION WORKER
	Noncarcinogen	Carcinogen		
AT ing (yr)	6.00	--	25.00	0.115
AT inh (yr)	30.00	--	25.00	0.115
ATc (yr)	--	70.00	70.00	70.00
BW (kg)	15.00	70.00	70.00	70.00
CONV(KG/MG)	1.00E-06	1.00E-06	1.00E-06	1.00E-06
CONV(UG/MG)	1.00E+03	1.00E+03	1.00E+03	1.00E+03
ED ing(yr)	6.00	--	25.00	1.00
ED inh(yr)	30.00	30.00	25.00	1.00
EF (d/yr)	350.00	350.00	250.00	30.00
IRsoil (mg/d)	200.00	--	50.00	480.00
PEF (m^3/kg)	1.32E+09	1.32E+09	1.24E+09	--
PEF' (m^3/kg)	--	--	--	1.24E+08
RfC (mg/m^3)	2.00E-05	--	2.00E-05	2.00E-05
RfDo (mg/(kg-d))	2.00E-03	--	2.00E-03	2.00E-03
THQ	1.00	--	1.00	1.00
TR	--	1.00E-06	1.00E-06	1.00E-06
URF (ug/m3)^-1	--	2.40E-03	2.40E-03	2.40E-03
YR(d/yr)	365.00	365.00	365.00	365.00
INGESTION: NONCARCINOGENIC	1.56E+02	--	4.09E+03	4.08E+02
INHALATION NONCARCINOGENIC	2.75E+04	--	3.62E+04	3.47E+03
CARCINOGENIC	--	1.34E+03	2.11E+03	4.40E+04

-- = Not Applicable
TACO - Tiered Approach to Corrective Action Objectives. Part 742, Subchapter F, Chapter I, Subtitle G, Title 35 of the Illinois Regulations, effective June 8, 1998.

EQUATION FOR SOIL INGESTION EXPOSURE ROUTE
NONCARCINOGENIC (MG/KG):

$$\frac{THQ * BW * AT\ ing * YR}{(1/\ RfDo) * CONV\ (kg/mg) * EF * ED\ ing * IRsoil}$$

EQUATION FOR INHALATION EXPOSURE ROUTE

NONCARCINOGENIC (MG/KG):
RESIDENTIAL, INDUSTRIAL/COMMERCIAL

$$\frac{THQ * AT\ inh * YR}{EF * ED\ inh * (1/RfC) * (1/PEF)}$$

CONSTRUCTION WORKER

$$\frac{THQ * AT\ inh * YR}{EF * ED\ inh * (1/RfC) * (1/PEF')}$$

CARCINOGENIC (MG/KG):
RESIDENTIAL, INDUSTRIAL/COMMERCIAL

$$\frac{TR * ATc * YR}{URF * CONV(UG/MG) * EF * ED\ inh * (1/PEF)}$$

CONSTRUCTION WORKER

$$\frac{TR * ATc * YR}{URF * CONV(UG/MG) * EF * ED\ inh * (1/PEF')}$$

APPENDIX D

BACKGROUND CALCULATIONS

APPENDIX D
BACKGROUND CALCULATIONS

This appendix presents the concentrations to be used as background for constituents detected in background samples collected for:

- Table D-1 Subsurface Soil
- Table D-2 Surface Soil
- Table D-3 Sediment
- Table D-4 Surface Water
- Table D-5 Groundwater

Background is calculated as described in the USEPA-approved workplan for the Human Health Risk Assessment for Sauget Area 1 (presented in Appendix A), following USEPA Region 4 (2000) guidance. The background concentration is defined as two times the arithmetic mean site-specific background concentration.

Background calculations for fish tissue are presented in Appendix I, with the fish tissue screening table. Background data for air are presented in Appendix J.

The background locations for soil and groundwater are those identified by USEPA or its contractors in previous investigations. A review of the background data for the soil samples indicates that organic constituent concentrations from location EE-20 may not be representative of background, although the inorganic concentrations are similar to those from the other background locations. Since arsenic is the only constituent eliminated as a COPC based solely on the comparison to background, the use of this sample's results has not affected the outcome of the risk assessment.

Reference

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

TABLE D-1
SUMMARY STATISTICS AND CALCULATION OF BACKGROUND CONCENTRATIONS - SUBSURFACE SOIL
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Units	Frequency of Detection			Summary Statistics			Calculated Background Concentration (a)
		Total # Samples (b)	# Detects	% Detected	Minimum	Average	Maximum	
2,4,5-TP (Silvex)	ug/kg	3	1	33%	4.90E+00	5.40E+00	5.80E+00	1.08E+01
Acetone	ug/kg	3	1	33%	5.50E+00	5.50E+00	5.50E+00	1.10E+01
Aluminum	mg/kg	3	3	100%	8.40E+03	1.01E+04	1.20E+04	2.03E+04
Antimony	mg/kg	1	1	100%	1.20E+00	1.20E+00	1.20E+00	2.40E+00
Arsenic	mg/kg	3	3	100%	6.80E+00	8.70E+00	1.20E+01	1.74E+01
Barium	mg/kg	3	3	100%	1.70E+02	1.87E+02	2.00E+02	3.73E+02
Benzo(a)anthracene	ug/kg	3	1	33%	2.60E+01	2.60E+01	2.60E+01	5.20E+01
Benzo(g,h,i)perylene	ug/kg	3	1	33%	3.40E+01	3.40E+01	3.40E+01	6.80E+01
Beryllium	mg/kg	3	3	100%	5.00E-01	6.33E-01	7.20E-01	1.27E+00
Cadmium	mg/kg	3	3	100%	1.10E-01	3.44E+00	8.90E+00	6.87E+00
Calcium	mg/kg	3	3	100%	3.80E+03	8.07E+03	1.20E+04	1.61E+04
Chromium	mg/kg	3	3	100%	1.30E+01	1.63E+01	1.80E+01	3.27E+01
Chrysene	ug/kg	3	1	33%	4.20E+01	4.20E+01	4.20E+01	8.40E+01
Cobalt	mg/kg	3	3	100%	6.40E+00	6.97E+00	7.70E+00	1.39E+01
Copper	mg/kg	3	3	100%	1.10E+01	7.73E+01	1.80E+02	1.55E+02
Diethylphthalate	ug/kg	3	2	67%	6.30E+01	9.27E+01	1.10E+02	1.85E+02
Fluoranthene	ug/kg	3	1	33%	4.20E+01	4.20E+01	4.20E+01	8.40E+01
Iron	mg/kg	3	3	100%	1.40E+04	1.67E+04	1.80E+04	3.33E+04
Lead	mg/kg	3	3	100%	8.50E+00	7.12E+01	1.60E+02	1.42E+02
Magnesium	mg/kg	3	3	100%	3.10E+03	4.67E+03	5.70E+03	9.33E+03
Manganese	mg/kg	3	3	100%	3.70E+02	4.00E+02	4.20E+02	8.00E+02
MCPP	ug/kg	3	2	67%	1.20E+03	2.37E+03	3.00E+03	4.73E+03
Mercury	mg/kg	3	3	100%	4.10E-03	2.80E-02	6.00E-02	5.61E-02
Methylene chloride	ug/kg	3	1	33%	1.40E+00	1.40E+00	1.40E+00	2.80E+00
Molybdenum	mg/kg	3	3	100%	5.00E-01	8.73E-01	1.50E+00	1.75E+00
Nickel	mg/kg	3	3	100%	1.60E+01	1.87E+01	2.00E+01	3.73E+01
Potassium	mg/kg	3	3	100%	1.80E+03	2.10E+03	2.30E+03	4.20E+03
Silver	mg/kg	3	1	33%	5.50E-01	6.93E-01	9.80E-01	1.39E+00
Sodium	mg/kg	3	1	33%	6.00E+01	1.77E+02	4.10E+02	3.53E+02
Total 2,3,7,8-TCDD-TEQ	ug/kg	3	3	100%	1.60E-04	6.89E-04	1.55E-03	1.38E-03
Vanadium	mg/kg	3	3	100%	2.50E+01	2.90E+01	3.10E+01	5.80E+01
Zinc	mg/kg	3	3	100%	4.20E+01	3.21E+02	7.70E+02	6.41E+02

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples (U.S. EPA, Region 4, 2000.)
(b) - Samples BS-EE-04-3-6FT, BS-EE-20-3-6FT, and BS-EEG-108-3-6FT.

Constituent	Units	Frequency of Detection			Summary Statistics			Calculated Background Concentration (a)
		Total # Samples (c)	# Detects	% Detected	Minimum	Average	Maximum	
2,4,5-TP (Silvex)	ug/kg	3	3	100%	5.80E+00	8.68E+00	1.10E+01	1.74E+01
2-Hexanone	ug/kg	3	1	33%	1.45E+01	1.65E+01	1.80E+01	3.30E+01
4,4'-DDE	ug/kg	3	1	33%	2.00E+00	8.06E+00	2.00E+01	1.61E+01
4,4'-DDT	ug/kg	3	1	33%	2.00E+00	7.06E+00	1.70E+01	1.41E+01
Aluminum	mg/kg	3	3	100%	8.10E+03	1.27E+04	1.90E+04	2.54E+04
Anthracene	ug/kg	3	1	33%	8.00E+01	8.00E+01	8.00E+01	1.60E+02
Antimony	mg/kg	1	1	100%	1.90E+00	1.90E+00	1.90E+00	3.80E+00
Arsenic	mg/kg	3	3	100%	6.60E+00	9.57E+00	1.30E+01	1.91E+01
Barium	mg/kg	3	3	100%	1.10E+02	1.82E+02	2.35E+02	3.63E+02
Benzo(a)anthracene	ug/kg	3	2	67%	7.70E+01	1.20E+02	1.70E+02	2.40E+02
Benzo(a)pyrene	ug/kg	3	2	67%	6.00E+01	9.33E+01	1.50E+02	1.87E+02
Benzo(b)fluoranthene	ug/kg	3	2	67%	6.90E+01	8.95E+01	1.10E+02	1.79E+02
Benzo(g,h,i)perylene	ug/kg	3	2	67%	4.50E+01	6.35E+01	8.20E+01	1.27E+02
Benzo(k)fluoranthene	ug/kg	3	2	67%	6.00E+01	1.04E+02	1.40E+02	2.08E+02
Beryllium	mg/kg	3	3	100%	4.50E-01	7.53E-01	1.10E+00	1.51E+00
bis(2-Ethylhexyl)phthalate	ug/kg	3	2	67%	1.05E+02	1.61E+02	2.68E+02	3.22E+02
Cadmium	mg/kg	3	3	100%	5.20E-01	4.32E+00	9.40E+00	8.65E+00
Calcium	mg/kg	3	3	100%	4.00E+03	1.68E+04	4.00E+04	3.35E+04
Carbazole	ug/kg	3	1	33%	3.20E+01	3.20E+01	3.20E+01	6.40E+01
Chromium	mg/kg	3	3	100%	1.70E+01	1.97E+01	2.50E+01	3.93E+01
Chrysene	ug/kg	3	2	67%	9.70E+01	1.37E+02	2.00E+02	2.73E+02
Cobalt	mg/kg	3	3	100%	5.50E+00	7.77E+00	1.04E+01	1.55E+01
Copper	mg/kg	3	3	100%	3.50E+01	1.05E+02	1.90E+02	2.09E+02
Diethylphthalate	ug/kg	3	3	100%	6.00E+01	9.33E+01	1.10E+02	1.87E+02
Di-n-butylphthalate	ug/kg	3	2	67%	1.05E+02	1.56E+02	2.40E+02	3.12E+02
Fluoranthene	ug/kg	3	2	67%	1.13E+02	2.51E+02	4.40E+02	5.02E+02
Iron	mg/kg	3	3	100%	1.50E+04	1.90E+04	2.50E+04	3.80E+04
Lead	mg/kg	3	3	100%	2.40E+01	9.25E+01	1.80E+02	1.85E+02
Magnesium	mg/kg	3	3	100%	3.20E+03	8.62E+03	1.70E+04	1.72E+04
Manganese	mg/kg	3	3	100%	3.90E+02	4.42E+02	5.35E+02	8.83E+02
MCPA	ug/kg	3	3	100%	4.30E+03	7.25E+03	1.30E+04	1.45E+04
MCPP	ug/kg	3	3	100%	2.50E+03	4.98E+03	6.55E+03	9.97E+03
Mercury	mg/kg	3	3	100%	4.40E-02	8.87E-02	1.40E-01	1.77E-01
Methylene chloride	ug/kg	3	2	67%	1.70E+00	5.69E+00	1.20E+01	1.14E+01
Molybdenum	mg/kg	3	3	100%	7.20E-01	1.01E+00	1.40E+00	2.02E+00
Nickel	mg/kg	3	3	100%	1.50E+01	2.13E+01	2.80E+01	4.27E+01
Pentachlorophenol	ug/kg	3	2	67%	2.55E+02	3.71E+02	5.61E+02	(b)
Phenanthrene	ug/kg	3	2	67%	1.00E+02	1.68E+02	2.90E+02	3.35E+02
Potassium	mg/kg	3	3	100%	1.30E+03	2.37E+03	3.50E+03	4.73E+03
Pyrene	ug/kg	3	2	67%	1.13E+02	2.18E+02	3.60E+02	4.35E+02
Silver	mg/kg	3	2	67%	3.25E-01	6.75E-01	1.10E+00	1.35E+00
Sodium	mg/kg	3	1	33%	5.00E+01	2.88E+02	7.50E+02	5.77E+02
Total 2,3,7,8-TCDD-TEQ	ug/kg	3	3	100%	4.72E-03	6.19E-02	1.72E-01	1.24E-01
Total PCBs	ug/kg	3	2	67%	1.00E+01	6.00E+02	1.71E+03	(b)
Vanadium	mg/kg	3	3	100%	2.80E+01	3.45E+01	4.45E+01	6.90E+01
Zinc	mg/kg	3	3	100%	8.20E+01	4.04E+02	8.20E+02	8.08E+02

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples (U.S. EPA, Region 4, 2000.)
(b) - Background concentration not calculated.
(c) - Samples BS-EE-04-0-0.5FT, BS-EE-20-0-0.5FT, and BS-EEG-108-0-0.5FT.

TABLE D-3
SUMMARY STATISTICS AND CALCULATION OF BACKGROUND CONCENTRATIONS - SEDIMENT
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Units	Frequency of Detection			Summary Statistics			Calculated Background Concentration (a)
		Total # Samples (b)	# Detects	% Detected	Minimum	Average	Maximum	
2,4-D	ug/kg	4	1	25%	8.50E+00	1.01E+01	1.20E+01	2.03E+01
2-Butanone (MEK)	ug/kg	4	3	75%	1.40E+01	2.49E+01	4.00E+01	4.99E+01
Acetone	ug/kg	4	3	75%	4.75E+01	7.78E+01	1.60E+02	1.56E+02
Aluminum	mg/kg	4	4	100%	1.20E+04	1.45E+04	1.90E+04	2.90E+04
Antimony	mg/kg	3	2	67%	1.30E+00	1.38E+00	1.45E+00	2.75E+00
Arsenic	mg/kg	4	4	100%	6.70E+00	7.18E+00	8.00E+00	1.44E+01
Barium	mg/kg	4	4	100%	1.65E+02	2.06E+02	2.30E+02	4.13E+02
Beryllium	mg/kg	4	4	100%	6.20E-01	7.80E-01	1.00E+00	1.56E+00
Cadmium	mg/kg	4	4	100%	2.90E-01	4.15E-01	6.50E-01	8.30E-01
Calcium	mg/kg	4	4	100%	1.20E+04	1.35E+04	1.80E+04	2.70E+04
Chromium	mg/kg	4	4	100%	1.70E+01	2.00E+01	2.50E+01	4.00E+01
Cobalt	mg/kg	4	4	100%	7.10E+00	8.60E+00	1.00E+01	1.72E+01
Copper	mg/kg	4	4	100%	1.60E+01	1.90E+01	2.30E+01	3.80E+01
Iron	mg/kg	4	4	100%	1.75E+04	2.06E+04	2.40E+04	4.13E+04
Lead	mg/kg	4	4	100%	1.65E+01	2.19E+01	2.60E+01	4.38E+01
Magnesium	mg/kg	4	4	100%	3.25E+03	5.14E+03	6.50E+03	1.03E+04
Manganese	mg/kg	4	4	100%	5.70E+02	7.08E+02	7.70E+02	1.42E+03
Mercury	mg/kg	4	4	100%	4.00E-02	4.80E-02	6.30E-02	9.60E-02
Molybdenum	mg/kg	4	4	100%	3.70E-01	4.45E-01	5.30E-01	8.90E-01
Nickel	mg/kg	4	4	100%	1.75E+01	2.14E+01	2.60E+01	4.28E+01
Pentachlorophenol	ug/kg	4	1	25%	3.76E+02	3.76E+02	3.76E+02	7.52E+02
Potassium	mg/kg	4	4	100%	1.60E+03	2.10E+03	2.60E+03	4.20E+03
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	4	100%	5.38E-03	6.22E-03	7.60E-03	1.24E-02
Total Organic Carbon	mg/kg	4	4	100%	1.20E+04	1.70E+04	2.30E+04	3.40E+04
Vanadium	mg/kg	4	4	100%	2.95E+01	3.49E+01	4.40E+01	6.98E+01
Zinc	mg/kg	4	4	100%	5.90E+01	8.30E+01	9.60E+01	1.66E+02

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples (U.S. EPA, Region 4, 2000.)
(b) - Samples SED-RA1-S1-0.2FT, SED-RA1-S2-0.2FT, SED-RA2-S1-0.2FT and SED-RA2-S2-0.2FT.

TABLE D-4
SUMMARY STATISTICS AND CALCULATION OF BACKGROUND CONCENTRATIONS - SURFACE WATER
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Frequency of Detection			Summary Statistics (ug/L)			Calculated Background Concentration (ug/L)(a)
	Total # Samples (b)	# Detects	% Detected	Minimum	Mean	Maximum	
3,3'-Dichlorobenzidine	4	1	25%	5.00E+00	5.00E+00	5.00E+00	1.00E+01
4,4'-DDE	4	1	25%	1.50E-03	1.50E-03	1.50E-03	3.00E-03
4,4'-DDT	4	1	25%	5.70E-03	5.70E-03	5.70E-03	1.14E-02
Acetone	4	1	25%	2.50E+01	2.51E+01	2.55E+01	5.03E+01
Aldrin	4	2	50%	2.40E-03	3.20E-03	4.00E-03	6.40E-03
Alpha Chlordane	4	2	50%	1.90E-03	7.45E-03	1.30E-02	1.49E-02
alpha-BHC	4	1	25%	1.55E-03	1.55E-03	1.55E-03	3.10E-03
Aluminum	4	4	100%	9.40E+03	1.32E+04	1.95E+04	2.65E+04
Arsenic	4	4	100%	9.30E+00	1.46E+01	1.70E+01	2.92E+01
Barium	4	4	100%	3.20E+02	3.59E+02	4.10E+02	7.18E+02
Beryllium	4	2	50%	6.65E-01	7.48E-01	8.30E-01	1.50E+00
beta-BHC	4	4	100%	4.80E-03	1.08E-02	1.50E-02	2.15E-02
Calcium	4	4	100%	5.00E+04	5.86E+04	7.20E+04	1.17E+05
Chromium	4	4	100%	1.10E+01	1.54E+01	2.25E+01	3.08E+01
Cobalt	4	4	100%	4.70E+00	5.70E+00	7.60E+00	1.14E+01
Copper	4	4	100%	9.70E+00	1.23E+01	1.85E+01	2.46E+01
delta-BHC	4	4	100%	6.00E-03	6.25E-03	7.00E-03	1.25E-02
Dieldrin	4	2	50%	2.10E-03	2.85E-03	3.60E-03	5.70E-03
Endosulfan I	4	4	100%	1.70E-03	6.98E-03	1.35E-02	1.40E-02
Endosulfan II	4	1	25%	9.60E-05	9.60E-05	9.60E-05	1.92E-04
Endosulfan sulfate	4	3	75%	2.80E-03	4.63E-03	7.00E-03	9.27E-03
Endrin	4	2	50%	4.80E-04	2.94E-03	5.40E-03	5.88E-03
Endrin aldehyde	4	1	25%	2.62E-02	2.62E-02	2.62E-02	5.23E-02
Endrin ketone	4	2	50%	4.70E-03	7.85E-03	1.10E-02	1.57E-02
Gamma Chlordane	4	2	50%	8.20E-04	1.96E-03	3.10E-03	3.92E-03
gamma-BHC (Lindane)	4	4	100%	1.00E-03	5.25E-03	6.80E-03	1.05E-02
Heptachlor	4	1	25%	3.50E-03	3.50E-03	3.50E-03	7.00E-03
Heptachlor epoxide	4	4	100%	4.70E-03	5.93E-03	8.20E-03	1.19E-02
Iron	4	4	100%	1.10E+04	1.64E+04	2.55E+04	3.28E+04
Lead	4	4	100%	2.00E+01	2.58E+01	3.20E+01	5.15E+01
Magnesium	4	4	100%	2.30E+04	2.68E+04	3.50E+04	5.35E+04
Manganese	4	4	100%	1.50E+03	1.98E+03	2.90E+03	3.95E+03
Molybdenum	4	4	100%	3.20E+00	5.36E+00	6.55E+00	1.07E+01
Nickel	4	4	100%	1.30E+01	1.74E+01	2.45E+01	3.48E+01
Potassium	4	4	100%	7.00E+03	8.50E+03	1.10E+04	1.70E+04
Sodium	4	4	100%	1.60E+04	1.90E+04	2.30E+04	3.80E+04
Total 2,3,6,7-TCDD TEQ	4	4	100%	4.78E-06	1.34E-05	1.88E-05	2.67E-05
Vanadium	4	4	100%	3.10E+01	4.24E+01	5.25E+01	8.48E+01
Zinc	4	4	100%	4.20E+01	7.59E+01	1.30E+02	1.52E+02

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples (U.S. EPA, Region 4, 2000.)
(b) - Samples SW-RA1-S1, SW-RA1-S2, SW-RA2-S1, and SW-RA2-S2.

TABLE D-5
SUMMARY STATISTICS AND CALCULATION OF BACKGROUND CONCENTRATIONS - GROUNDWATER
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Frequency of Detection			Summary Statistics (ug/L)			Calculated Background
	Total # Samples (b)	# Detects	% Detected	Minimum	Mean	Maximum	Concentration (ug/L)(a)
2,4,5-T	3	1	33%	2.10E-01	2.10E-01	2.10E-01	4.20E-01
2,4,5-TP (Silvex)	3	1	33%	1.60E-01	1.60E-01	1.60E-01	3.20E-01
Arsenic	3	1	33%	5.00E+00	5.85E+00	7.55E+00	1.17E+01
Barium	3	3	100%	1.10E+02	3.08E+02	5.45E+02	6.17E+02
Calcium	3	3	100%	1.00E+05	2.13E+05	3.30E+05	4.27E+05
Carbon disulfide	3	1	33%	2.50E+00	4.25E+00	7.75E+00	8.50E+00
Chromium	3	2	67%	5.00E+00	5.23E+01	1.25E+02	1.05E+02
Cobalt	3	1	33%	5.00E+00	5.72E+00	7.15E+00	1.14E+01
delta-BHC	3	1	33%	6.00E-03	6.25E-03	6.75E-03	1.25E-02
Dibenzofuran	3	1	33%	3.60E-01	3.60E-01	3.60E-01	7.20E-01
Diethylphthalate	3	1	33%	3.50E-01	3.50E-01	3.50E-01	7.00E-01
Endosulfan sulfate	3	1	33%	2.55E-02	2.55E-02	2.55E-02	5.10E-02
Endrin ketone	3	1	33%	2.61E-02	2.61E-02	2.61E-02	5.21E-02
Fluorene	3	1	33%	2.40E-01	2.40E-01	2.40E-01	4.80E-01
gamma-BHC (Lindane)	3	1	33%	5.06E-03	5.06E-03	5.06E-03	1.01E-02
Heptachlor	3	2	67%	1.30E-02	1.30E-02	1.30E-02	2.60E-02
Heptachlor epoxide	3	1	33%	1.33E-02	1.33E-02	1.33E-02	2.66E-02
Iron	3	3	100%	7.30E+01	1.10E+04	3.20E+04	2.20E+04
Magnesium	3	3	100%	2.30E+04	4.62E+04	6.20E+04	9.23E+04
Manganese	3	3	100%	7.40E+01	8.75E+02	1.35E+03	1.75E+03
Nickel	3	3	100%	7.00E+00	6.49E+01	1.75E+02	1.30E+02
N-Nitrosodiphenylamine	3	1	33%	2.50E-01	2.50E-01	2.50E-01	5.00E-01
Potassium	3	3	100%	2.50E+03	6.15E+04	1.70E+05	1.23E+05
Sodium	3	3	100%	8.50E+03	6.52E+04	1.00E+05	1.30E+05
Total 2,3,6,7-TCDD TEQ	3	3	100%	3.88E-08	2.51E-07	3.74E-07	5.02E-07

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples (U.S. EPA, Region 4, 2000.)
(b) - Samples UGGW-EE-04, UGGW-EE-20, and UGGW-EEG-108.

TABLE D-6
COMPARISON OF TRANSECT SURFACE SOIL DATA TO BACKGROUND LEVELS OF PAHS IN NEW ENGLAND SOILS
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	TACO Tier I Residential Soil Value (a) (mg/kg)	Transect 3		Transect 4		Transect 5		Transect 6		Transect 7		Range in New England Soils (b)			
		Average (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	95% UCL (mg/kg)
Benzo(a)anthracene	0.9	--	--	0.703	0.430	--	--	0.606	4.200	0.342	1.900	0.048	15.000	1.319	1.858
Benzo(a)pyrene	0.09	0.137	0.860	0.591	3.500	0.138	0.600	0.504	3.600	0.374	2.100	0.040	13.000	1.323	1.816
Benzo(b)fluoranthene	0.9	0.164	0.970	0.598	3.500	--	--	0.634	4.400	0.406	2.200	0.049	12.000	1.435	1.973
Dibenzo(a,h)anthracene	0.09	0.071	0.250	0.131	0.810	0.099	0.320	0.118	0.600	0.103	0.410	0.020	2.900	0.388	0.521
Indeno(1,2,3-cd)pyrene	0.9	--	--	0.355	2.000	--	--	0.220	1.100	0.240	1.100	0.093	6.000	0.987	1.293

Notes:
-- This PAH not a constituent of potential concern in this transect.
PAH - Polycyclic Aromatic Hydrocarbon.
TACO - Illinois Tiered Approach to Corrective Action Objectives.
(a) - See Table C-1 for references.
(b) - Background Levels of Polycyclic Aromatic Hydrocarbons (PAH) and Selected Metals in New England Urban Soils. L.J.N. Bradley, B.H. Magee, S.L. Allen. Journal of Soil Contamination, 3(4):349-361. 1994. Paper is included at the end of this appendix (D).

Journal of Soil Contamination, 3(4):349–361 (1994)

Background Levels of Polycyclic Aromatic Hydrocarbons (PAH) and Selected Metals in New England Urban Soils

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ABSTRACT: Polycyclic aromatic hydrocarbons (PAH) are byproducts of combustion and are ubiquitous in the urban environment. They are also present in industrial chemical wastes, such as coal tar, petroleum refinery sludges, waste oils and fuels, and wood-treating residues. Thus, PAHs are chemicals of concern at many waste sites. Risk assessment methods will yield risk-based cleanup levels for PAHs that range from 0.1 to 0.7 mg/kg. Given their universal presence in the urban environment, it is important to compare risk-based cleanup levels with typical urban background levels before utilizing unrealistically low cleanup targets. However, little data exist on PAH levels in urban, nonindustrial soils. In this study, 60 samples of surficial soils from urban locations in three New England cities were analyzed for PAH compounds. In addition, all samples were analyzed for total petroleum hydrocarbons (TPH) and seven metals. The upper 95% confidence interval on the mean was 3 mg/kg for benzo(*a*)pyrene toxic equivalents, 12 mg/kg for total potentially carcinogenic PAH, and 25 mg/kg for total PAH. The upper 95% confidence interval was 373 mg/kg for TPH, which exceeds the target level of 100 mg/kg used by many state regulatory agencies. Metal concentrations were similar to published background levels for all metals except lead. The upper 95% confidence interval for lead was 737 mg/kg in Boston, 463 mg/kg in Providence, and 378 mg/kg in Springfield.

KEY WORDS: background, PAH, metals, urban, anthropogenic, soil.

I. INTRODUCTION

Polycyclic aromatic hydrocarbons (PAHs) are byproducts of combustion and are naturally occurring chemicals in the environment. Forest fires and volcanoes are major natural sources of PAHs, but there are anthropogenic sources as well due to burning of fossil fuels, including automobile and industrial emissions. PAHs are chemicals of concern in many waste site investigations that are undertaken pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and state

1058-8337/94/$.50
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hazardous waste programs. Risk assessments performed according to federal guidance for former manufactured gas plant sites, wood treating facilities, petroleum refineries, and other sites generally conclude that PAHs pose unreasonable risks to human health and that remedial actions must be taken to reduce risks to acceptable levels. The majority of the risk posed by PAHs is generally due to benzo(*a*)pyrene and the other PAHs that have been shown to cause cancer in laboratory animals after repeated dosings. The U.S. EPA (1993a) currently identifies seven PAHs as "probable human (B2) carcinogens": benzo(*a*)pyrene, benzo(*a*)anthracene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, dibenz(*a,h*)anthracene, and indeno(1,2,3-c,d)pyrene.

Because of the very health-protective assumptions used in regulatory risk assessments, very low risk-based clean-up levels for PAHs are derived for such sites. In Michigan, residential soil cleanup levels of 0.33 mg/kg for each carcinogenic PAH have been set (MDNR, 1993). In New Jersey, proposed residential soil clean-up levels are 0.66 mg/kg for benzo(*a*)pyrene (New Jersey *Register*, 1992). The use of standard CERCLA risk assessment guidance (U.S. EPA, 1993b) results in the derivation of a risk-based cleanup level for benzo(*a*)pyrene of 0.1 mg/kg.

All of these risk-based soil cleanup levels are below the urban, nonindustrial background soil concentrations presently reported in the literature. However, the availability of such data is very limited. Blumer (1961) reports that benzo(*a*)pyrene concentrations in Cape Cod, MA, soils range from 0.04 to 1.3 mg/kg. Menzie et al. (1992) report that urban background soil levels of total carcinogenic PAH range from 0.06 to 5.8 mg/kg. Butler et al. (1984) report that total PAH levels in soils alongside roadways in England range from 4 to 20 mg/kg, and potentially carcinogenic PAH range from 0.8 to 11.5 mg/kg. Blumer et al. (1977) report that total PAH levels in soils in a Swiss town range from 6 to 300 mg/kg.

It is very difficult to compare the data from these studies to the results of site risk assessments due to the limited dataset and the nonuniformity of the PAH compounds evaluated. Clearly, more data are required from nonindustrial urban locations to define the urban background level for PAH and to critically evaluate the role of risk assessment in setting remedial goals for PAH in soils. Accordingly, we have collected 60 samples of surficial soils from urban locations in three New England cities and analyzed them for all 17 PAH compounds present on the EPA's Target Compound List, which is used in the Superfund program. In addition, all samples were analyzed for total petroleum hydrocarbons (TPH) and for seven metals: arsenic, barium, cadmium, chromium, lead, mercury, and selenium.

II. METHODS

A. Sample Collection

Samples of surficial soils from urban locations in three New England cities were collected: Boston, MA; Providence, RI; and Springfield, MA. Twenty independent

samples and duplicates of two samples were collected in each city. The samples were collected on July 21, 22, and 23, 1992, respectively. The samples were taken at a depth of 0 to 6 in. in areas considered to be not directly affected by industrial sites. Generally, the locations were along roads and sidewalks, and in parks and open lots. Each location was characterized in writing, including a soil description, and photographically documented. The samples were collected following standard environmental sampling protocols (U.S. EPA, 1986).

B. **Sample Analysis**

Chemical analysis of the samples was performed by AnalytiKEM, Inc. (Cherry Hill, NJ). The samples were analyzed by GC-MS for the 17 PAH compounds present on the EPA's Target Compound List using the methods required by EPA Method 8270 for the analysis of semivolatile compounds. In addition, the samples were analyzed for the eight RCRA metals, total petroleum hydrocarbons (TPH; EPA Method 418.1), and total solids. The complete analyte list is given in Table 1.

C. **Data Validation**

Validation of the data received from AnalytiKEM was performed according to U.S. EPA (1991) guidelines. The data were reviewed for completeness, holding times, GC-MS tuning and system performance, initial and continuing calibrations, laboratory method blank analysis, surrogate recoveries, matrix spike and matrix spike duplicate analysis, field duplication precision, and compound quantitation and detection limits.

D. **Data Analysis**

The analytical data were summarized in accordance with U.S. EPA (1989) risk assessment guidance. If a compound was detected at least once in surface soil, one half the sample quantitation limit (SQL) was used as a proxy concentration for all samples reported as "below detection limit" in the estimation of exposure point concentrations. However, if a compound was not detected in any sample, that compound was omitted from further consideration. In addition, when a proxy concentration (i.e., one half the detection limit) was greater than the highest actual detected value for a compound in any sample, that concentration was considered to be an aberration and was omitted from the database. This is consistent with U.S. EPA (1989) guidance, which recognizes that high sample quantitation limits can lead to unrealistic concentration estimates.

TABLE 1
Chemical Analyses of Urban Soils

Semivolatile Organics, EPA Target Compound List
Naphthalene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
Fluoranthene
Pyrene
Benzo(*a*)anthracene
Chrysene
Benzo(*b*)fluoranthene
Benzo(*k*)fluoranthene
Benzo(*a*)pyrene
Indeno(1,2,3-cd)pyrene
Dibenzo(*a,h*)anthracene
Benzo(*g,h,i*)perylene
2-Methylnaphthalene
Metals
Arsenic, total
Barium, total
Cadmium, total
Chromium, total
Lead, total
Mercury, total
Selenium, total
Silver, total
Other
Total petroleum hydrocarbons
Solids

A slightly different method of analysis was used to evaluate PAH. Because PAH are generally found in groups, it was conservatively assumed that if one PAH was detected in a sample, other compounds in that class might also be present in that sample. Therefore, if one PAH was detected in a sample, all undetected PAH were assigned a proxy concentration equal to one half the SQL. If a sample had no detected PAH, no PAH were assumed to be present in the sample, and a concentration of zero was used for all nondetects.

Summary statistics (minimum, maximum, arithmetic mean, upper 95% confidence limit on the arithmetic mean, and frequency of detection) were generated for each compound for each city and for all three cities combined.

The data for PAH were summarized in several different ways. Of the 17 PAH analyzed in each sample, seven are considered to be probable human carcinogens (Group B2) by the U.S. EPA (1993a). The U.S. EPA has derived a cancer slope factor, which is a measure of the carcinogenic potency of a compound, only for benzo(*a*)pyrene (B(*a*)P) (U.S. EPA, 1993a). Review of the literature indicates that not all PAH are equally potent with respect to tumor induction. Several researchers have proposed toxic equivalency schemes that relate the tumorigenic potency of each PAH to that of B(*a*)P (ICF-Clement Associates, 1988; Woo, 1989). B(*a*)P toxic equivalency factors (B(*a*)P-TEFs) can be used to adjust either the B(*a*)P dose-response value to provide a compound-specific dose-response value, or the concentration of each PAH in a sample to be expressed in terms of B(*a*)P toxic equivalents (B(*a*)P-TE). The latter method was used here. B(*a*)P-TE were calculated using the B(*a*)P toxic equivalency factors recommended for use by the U.S. EPA (1993c), as shown in Table 2. For each sample, PAH concentrations were reported for each of the 17 PAH on the analyte list, for total PAH (tPAH), for total carcinogenic PAH (cPAH), and for B(*a*)P-TE, and these values were used to generate the summary statistics for each group of samples.

III. RESULTS

Analysis of the laboratory results for the PAH indicates that quality control criteria were acceptable. The data were analyzed to determine if any statistically significant differences existed between the datasets for the three cities. A Hartley test for homogeneity of variances (Mendenhall, 1979) and a one-factor analysis of variance to test for equality of the means (Mendenhall, 1979) indicated no statistically significant differences. The results indicate that the PAH data can be pooled and treated as one dataset for further statistical analyses.

TABLE 2
Benzo(*a*)Pyrene Toxic Equivalent Factors (BAP-TEF)

Compound	EPA TEF
Benzo(*a*)pyrene	1.0
Benz(*a*)anthracene	0.1
Benzo(*b*)fluoranthene	0.1
Benzo(*k*)fluoranthene	0.1
Chrysene	0.001
Dibenzo(*a,h*)anthracene	1.0
Indeno(1,2,3-c,d)pyrene	0.1

The results of the PAH analyses are presented in Table 3 for all cities combined. A summary of the PAH results by city and for all cities combined is presented in Table 4, which reports for each: tPAH, total cPAH, and total B(*a*)P-TE. The arithmetic mean and the upper 95% confidence limit concentration are reported for each. Table 4 provides a summary of the data by city, and the results are graphically presented in Figure 1.

Table 5 presents a summary of the metals, TPH, and solids data by city. A Hartley test for homogeneity of variances and a one-factor analysis of variance to test for equality of the means indicated that the metals and TPH data from the three cities cannot be combined. This is due to the fact that the concentrations in each city are not normally distributed and did not have equal variances. The concentrations of the metals are compared to the arithmetic mean concentrations in the eastern U.S. (ATSDR, 1992) in Table 5. Most notably, lead concentrations are much higher than background concentrations. This is most likely due to the effects of automobile exhaust.

In order to determine if sample location significantly affected PAH concentration results, individual samples were classified based on the sample location's

TABLE 3
Summary Statistics for PAH — All Areas Combined

Compound	Minimum detect (mg/kg)	Maximum detect (mg/kg)	Arithmetic mean	Upper 95% interval (mg/kg)	Frequency of detection[a]	
2-Methylnaphthalene	0.017	0.64	0.151	0.173	19	62
Acenaphthene	0.024	0.34	0.201	0.306	30	62
Acenaphthylene	0.018	1.10	0.173	0.208	24	62
Anthracene	0.029	5.70	0.351	0.535	54	62
Benzo(*a*)anthracene	0.048	15.00	1.319	1.858	58	62
Benzo(*a*)pyrene	0.040	13.00	1.323	1.816	57	62
Benzo(*b*)fluoranthene	0.049	12.00	1.435	1.973	55	62
Benzo(*g,h,i*)perylene	0.200	5.90	0.891	1.195	36	62
Benzo(*k*)fluoranthene	0.043	25.00	1.681	2.522	59	62
Chrysene	0.038	21.00	1.841	2.693	60	62
Dibenzo(*a,h*)anthracene	0.020	2.90	0.388	0.521	32	62
Fluoranthene	0.110	39.00	3.047	4.444	60	62
Fluorene	0.022	3.30	0.214	0.317	35	62
Indeno(1,2,3-c,d)pyrene	0.093	6.00	0.987	1.293	43	62
Naphthalene	0.018	0.66	0.125	0.149	35	62
Phenanthrene	0.071	36.00	1.838	2.982	61	62
Pyrene	0.082	11.00	2.398	2.945	61	62
Total BAP-TE	0.257	21.31	2.437	3.324	62	62
Total carcinogenic PAH	0.680	77.70	8.973	12.423	62	62
Total PAH	2.292	166.65	18.361	24.819	62	62

[a] Frequency of detection = number detected: number samples.

TABLE 4
Background PAH Concentrations in Urban Surface Soils[a]

Compound	Boston (n = 20)		Providence (n = 20)		Springfield (n = 20)		All cities (n = 60)	
	Arithmetic mean (ppm)	Upper 95% CI (ppm)	Arithmetic mean (ppm)	Upper 95% CI (ppm)	Arithmetic mean (ppm)	Upper 95% CI (ppm)	Arithmetic mean (ppm)	Upper 95% CI (ppm)
Total B(*a*)P-TE	2.4	4.6	2.1	2.9	2.8	4.5	2.4	3.3
Total cPAH	8.4	16.0	7.8	11.0	10.6	18.3	9.0	12.4
Total PAH	18.7	35.9	16.8	23.5	19.1	29.9	18.4	24.8
TPH	474.9	652.6	267.4	338.2	184.4	233.3	306.2	372.8

[a] 0 to 6 in.

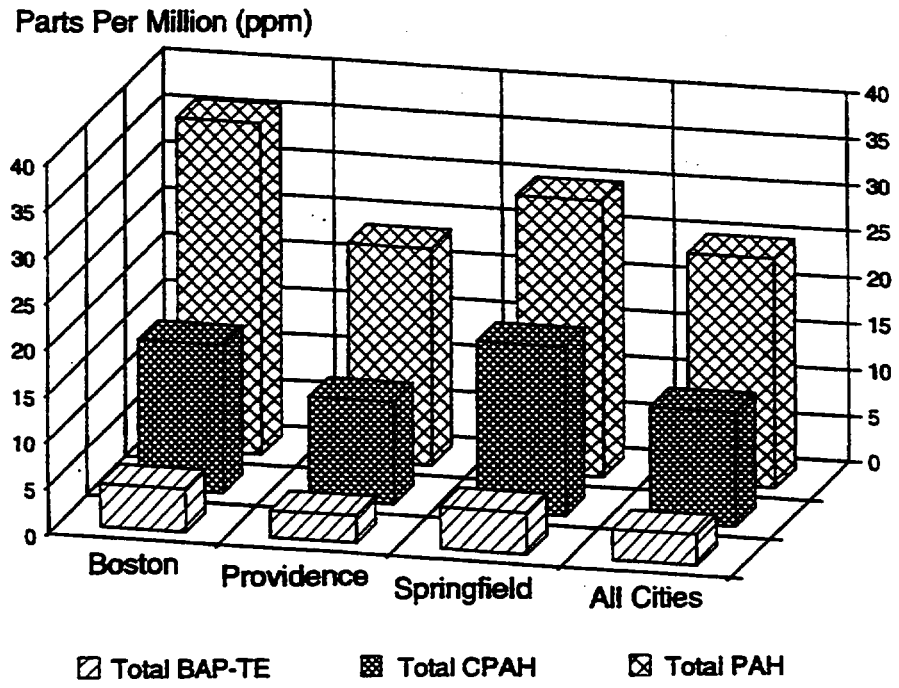

FIGURE 1. Background concentrations of PAH in urban soils. Data presented are the upper 95% confidence interval on the arithmetic mean. Data are presented numerically in Table 4.

proximity to asphalt pavement, based on both written and photographic documentation of sample location. Generally, samples collected within 4 to 6 ft of a road were considered to be near pavement. Of the 60 separate locations, 42 were considered to be near pavement and 18 were not. When tested for equality of variance and means as above, the two populations were determined to be significantly different. The mean total PAH concentration near pavement was 22 ppm compared to 8 ppm not near pavement. These results are shown in Table 6.

Similar analyses were performed to see if TPH or total organic carbon concentrations could be used as surrogates for PAH concentrations. The results showed that there is no correlation between PAH and TPH concentrations, nor between PAH and total organic carbon concentrations (data not shown).

The highest total PAH concentration detected was 166 mg/kg, taken from a street corner in Boston. The next highest PAH concentration was 109 mg/kg, taken at the base of a telephone pole. Four of the 60 samples were taken at the bases of telephone poles, with widely varying results. The total PAH concentrations in the other three locations were 62, 4, and 45 mg/kg.

TABLE 5
Summary Statistics for Metals, TPH, and Soils by City

Compound	Boston (n = 20)		Providence (n = 20)		Springfield (n = 20)		Arithmetic mean in U.S. soils[a] (mg/kg)
	Arithmetic mean (mg/kg)	Upper 95% interval (mg/kg)	Arithmetic mean (mg/kg)	Upper 95% interval (mg/kg)	Arithmetic mean (mg/kg)	Upper 95% interval (mg/kg)	
Arsenic, total	4.20	5.59	3.53	4.27	5.63	9.23	7.4
Barium, total	53.95	66.25	45.29	59.43	45.17	51.03	420
Cadmium, total	1.55	2.79	ND	ND	ND	ND	0.25[b]
Chromium, total	23.00	27.69	12.08	14.35	12.62	14.45	52
Lead, total	398.70	737.44	305.76	462.98	261.69	377.76	17
Mercury, total	0.29	0.39	0.19	0.24	0.20	0.25	0.12
Selenium, total	0.51	0.57	0.39	0.48	0.53	0.55	0.45
Total petroleum hydrocarbons	474.90	652.62	267.43	338.19	184.38	233.27	—
Total solids	90%	93%	93%	95%	90%	92%	—

[a] ATSDR. 1992. *Public Health Assessment Guidance Manual.* PB92-147164. U.S. Department of Health and Human Services.
[b] ATSDR. 1991. *Toxicological Profile for Cadmium.* PB92-147164. Draft. U.S. Department of Health and Human Services.

TABLE 6
Comparison of Background PAH Concentrations in Urban Soils: The Effects of Proximity to Pavement

Compound	Near pavement		Not near pavement		Results of statistical analysis					
					Test for homogeneity of variances			Test of equality of means		
	Arithmetic mean (ppm)	Standard deviation	Arithmetic mean (ppm)	Standard deviation	Sample F-statistics	Associated degrees of freedom	Statistically significant at 0.05 level of significance	Sample Student's t	Associated degrees of freedom	Statistically significant at 0.05 level of significance
Total B(*a*)P-TE	2.9	4.2	1.1	0.92	21.3	41, 17	Yes	2.69	50	Yes
Total PAH	21.9	30.7	8.3	7.2	18.4	41, 17	Yes	2.69	50	Yes

IV. CONCLUSION

In this study, 20 surface soil samples were collected from each of three New England cities and analyzed for PAH, TPH, and metals. The results of the statistical analyses described in the previous section show that, with respect to PAH, the three datasets are not significantly different and can be considered as one dataset representative of urban environments. The samples were taken in typical urban areas but not near known industrial sites. Therefore, these data are considered to be representative of the generalized effects of urban activities.

It is clear from the results presented here that common regulatory target cleanup levels for cPAH and B(*a*)P-TE (0.1 to 0.66 mg/kg) are much below the background concentrations of these compounds in urban surface soils (upper 95% confidence interval of 3.3 and 12.4 mg/kg for total B(*a*)P-TE and total cPAH, respectively). Figure 2 graphically compares the "bright line" target cleanup level for B(*a*)P of 0.1 mg/kg with the total B(*a*)P-TE (upper 95% confidence interval on the arithmetic mean) measured in urban environments.

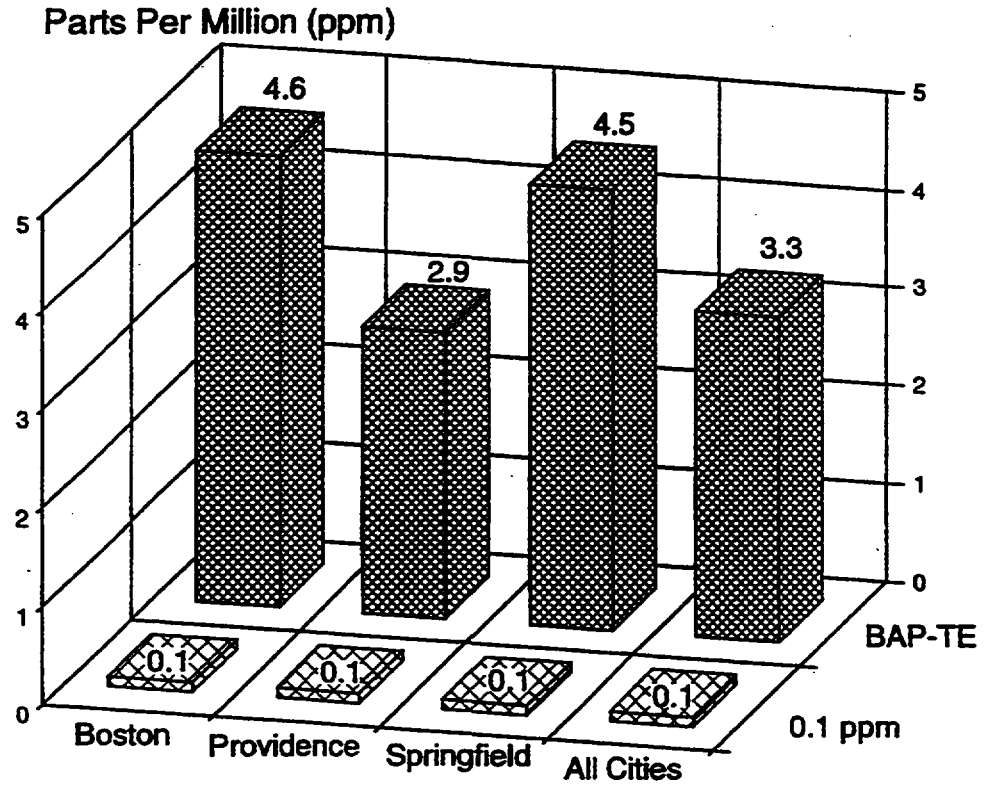

FIGURE 2. Comparison of B(*a*)P-TE with U.S. EPA Region III[4] risk-based concentration for B(*a*)P. B(*a*)P data presented are the upper 95% confidence interval on the arithmetic mean.

Upper 95% confidence intervals are compared because this is the statistic preferred by EPA and many states for risk assessment. Moreover, the State of Massachusetts defines its background concentrations of metals based on the upper 95% confidence limit on the arithmetic mean concentration (Massachusetts Department of Environmental Protection, 1992). For all cities combined, the background level of B(*a*)P-TE of 3.3 mg/kg is approximately ten times greater than the target cleanup level of 0.33 mg/kg and approximately 30 times higher than the target cleanup level of 0.1 mg/kg. For those regulatory situations in which the use of B(*a*)P-TEFs in determining site risk is not allowed, the background level of cPAH is approximately 40 to 100 times greater than these target cleanup levels.

An analysis of the data comparing samples taken near pavement with those determined to be not near pavement indicated that those samples designated near pavement had significantly higher, approximately threefold higher, PAH concentrations for both total PAH and total B(*a*)P-TE. This is most likely due to the presence of diesel and automobile exhaust particles, perhaps influenced by the presence of asphalt and runoff of vehicular oil from the roads.

Total petroleum hydrocarbons (TPH) were also found at consistently high levels in each city. The commonly applied regulatory cleanup level for TPH is 100 mg/kg. This cleanup level is not risk based and is three times lower than the background concentration of TPH found in this study (arithmetic mean of 306 mg/kg and upper 95% confidence interval on the mean of 373 mg/kg).

It is incumbent upon the regulatory agencies to recognize that substantial background levels of PAH and TPH exist in our urban environments and to acknowledge this information in the development of realistic target cleanup levels. The use of these background data in setting more realistic target cleanup levels may result in better allocation of remedial and regulatory dollars in site investigations.

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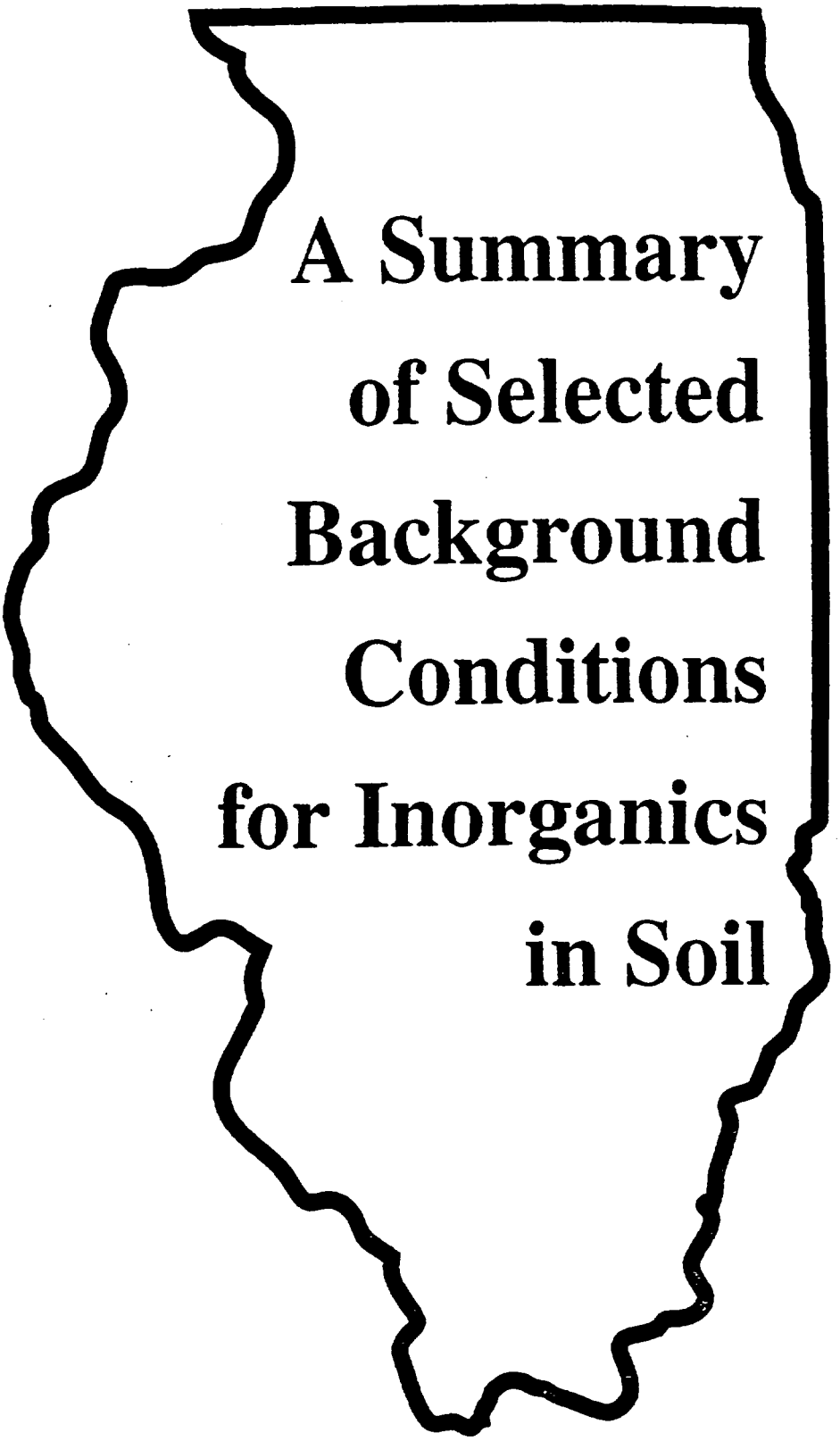
August 1994

IEPA/ENV/94-161



A Summary of Selected Background Conditions for Inorganics in Soil

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TECHNICAL REPORT

A SUMMARY OF SELECTED BACKGROUND CONDITIONS FOR INORGANICS IN SOIL

Office of Chemical Safety
Illinois Environmental Protection Agency
August 1994

ACKNOWLEDGEMENTS

The Illinois EPA wishes to acknowledge the individual contributions that were essential for the successful completion of this technical report. Roger Kanerva, Environmental Policy Advisor to the Director, was instrumental in ensuring support for the project and provided project management and technical review. Gary King, Deputy Director of the Bureau of Land, provided important initial support of the project and provided the Office of Chemical Safety with access to Bureau of Land files. Tom Crause and the Preliminary Assessment/Site Investigation Unit routinely provided background data from ongoing site investigations. James Patrick O'Brien, Manager of the Office of Chemical Safety, provided project management and technical review. Tom Hornshaw, Manager of the Toxicity Assessment Unit, provided ideas and technical review. Connie Sullinger, Environmental Toxicologist, was responsible for reviewing BOL files, creating a database for the information collected, conducting the summary statistics, and preparing the final report. Peggy Ford, Office Coordinator for the Office of Chemical Safety, typed the final report.

A special thanks to the following individuals who collected additional background soil samples for this report: From the Office of Chemical Safety's Emergency Response Unit--Dennis Ahlberg, Ralph Foster, Scott Owens, Chuck Brutlag, David Hertzing, Mark Johnson, Ed Osowski, and Tom Powell. From the Bureau of Water's Marion Regional Office--David Brown.

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Introduction

The Office of Chemical Safety has completed a summary of selected background conditions for inorganic chemicals in surface soils in Illinois. The objectives of this project were as follows:

(1) to ascertain a reasonable indication of statewide background concentrations in soil of selected inorganic chemicals of public health and ecological interest;

(2) to support the Agency's efforts in determining the presence of elevated levels of lead in soil by determining the levels of lead present in selected background soils across the state; and

(3) to utilize, to the extent possible, existing site-specific studies and background data which represents a major data resource already existing within Agency files.

Technical Approach

The first step of this project involved the review of existing Agency files in order to obtain data on background concentrations in soil. The results were obtained from samples taken in areas, judged by the field staff taking the samples, to be undisturbed and unimpacted by site-related activities. No efforts were made to investigate these results relative to the potential for past sources of atmospheric deposition (e.g., smelter, leaded gasoline, etc.) or previous site activities at the background sample location. Certain areas of the state have likely been impacted by anthropogenic sources and therefore represent conditions

that may vary from naturally occurring levels. Sample results were obtained from Preliminary Assessment/Site Investigations performed since 1986 plus sample results from State and Federal Superfund site investigations in Illinois.

The second step in the process of generating this technical report involved the collection of additional samples. Surface soil samples were obtained by Agency staff from those counties in the State for which data were lacking. These samples were specifically taken from areas expected to represent naturally occurring background.

The current database includes 275 data points from sample locations in all 102 counties in Illinois. Since some of these sites required varying degrees of investigation, certain samples do not include the complete list of analytical parameters. As a result, each inorganic may have a different number of data points. The minimum concentrations, maximum concentrations, mean concentrations, and median concentrations were calculated for each of the inorganic parameters. Values which were reported as less than the detection limit were included in the summary statistics by using one-half of the detection limit. If upon analysis of these data, it could be concluded that the background sample had been impacted by site-related activities then the sample was not used in the summary data.

Data used in this report are laboratory analytical values for total metals determined by USEPA SW-846 methods. These methods convert all of each metal tested to a soluble ion that can be detected. Since the original ionic speciation of the metals are not known, conclusions regarding mobility, exposure, assimilations, and toxicity cannot be directly inferred.

It should be noted that uncertainties inherent in a report of this type include those due to variation in sampling procedures, variation in sampling depth, the use of one-half the detection limit for non-detects, differences in

analytical techniques between laboratories, and the impact of anthropogenic sources on the concentrations existing at the sample location. Furthermore, we wish to emphasize that the samples were not collected randomly nor in accordance with an a priori experimental design. Due to resource constraints, the majority of data used pre-existed this study. Consequently, this study is not and should not be characterized as having a totally unbiased scientific basis.

Results

Figure 1 shows the survey locations across the State. Table 1, 2, and 3 include an overall summary of the ranges, means, and medians calculated for the inorganic parameters. This overall data set includes samples from urban and rural locations.

Statewide Data -- Table 1 includes a summary of data obtained for the entire state. It should be noted that the statewide summary statistics should be used in conjunction with Tables 2 and 3. These breakouts of urban vs. rural counties indicate that certain inorganic parameters such as lead, zinc, and cadmium are generally higher in the urban environment.

Urban Data -- Table 2 includes data for counties within metropolitan statistical areas (MSAs) and Table 3 includes data for counties outside MSAs. MSAs are geographic areas consisting of a large population nucleus - a census-defined "urbanized area" - together with adjacent communities that have a high degree of economic and social integration with that nucleus. In MSAs with a population of one million or more, primary metropolitan statistical areas (PMSAs) may be identified. When PMSAs are defined, the MSA of which they are component part is redesignated a consolidated metropolitan statistical area (CMSA). Figure 2 shows the MSAs, PMSAs, and CMSA for Illinois.

The following inorganic constituents were detected in certain locations in the state at levels above the ranges for natural soils from the scientific literature: cadmium, lead, barium, mercury, thallium, and zinc.

Cadmium -- Those locations in the state where there is the greatest diversion from background levels published in the scientific literature for cadmium were in the counties of St. Clair and Lake. In St. Clair County, the levels of cadmium detected were highest in Sauget and Fairmont City where the levels detected were 7.3 mg/kg and 8.2 mg/kg, respectively. In Lake County, the highest level of cadmium was 7.4 mg/kg which was obtained from a background site in Waukegan.

Lead -- The highest levels of total lead identified during the survey were found in the counties of Cook and Lake. Two of the three highest detections for lead were in Chicago where the concentrations reported were 346 mg/kg and 647 mg/kg. The second highest concentration of lead detected was 384 mg/kg and was obtained in the City of Waukegan in Lake County.

Data Utilization

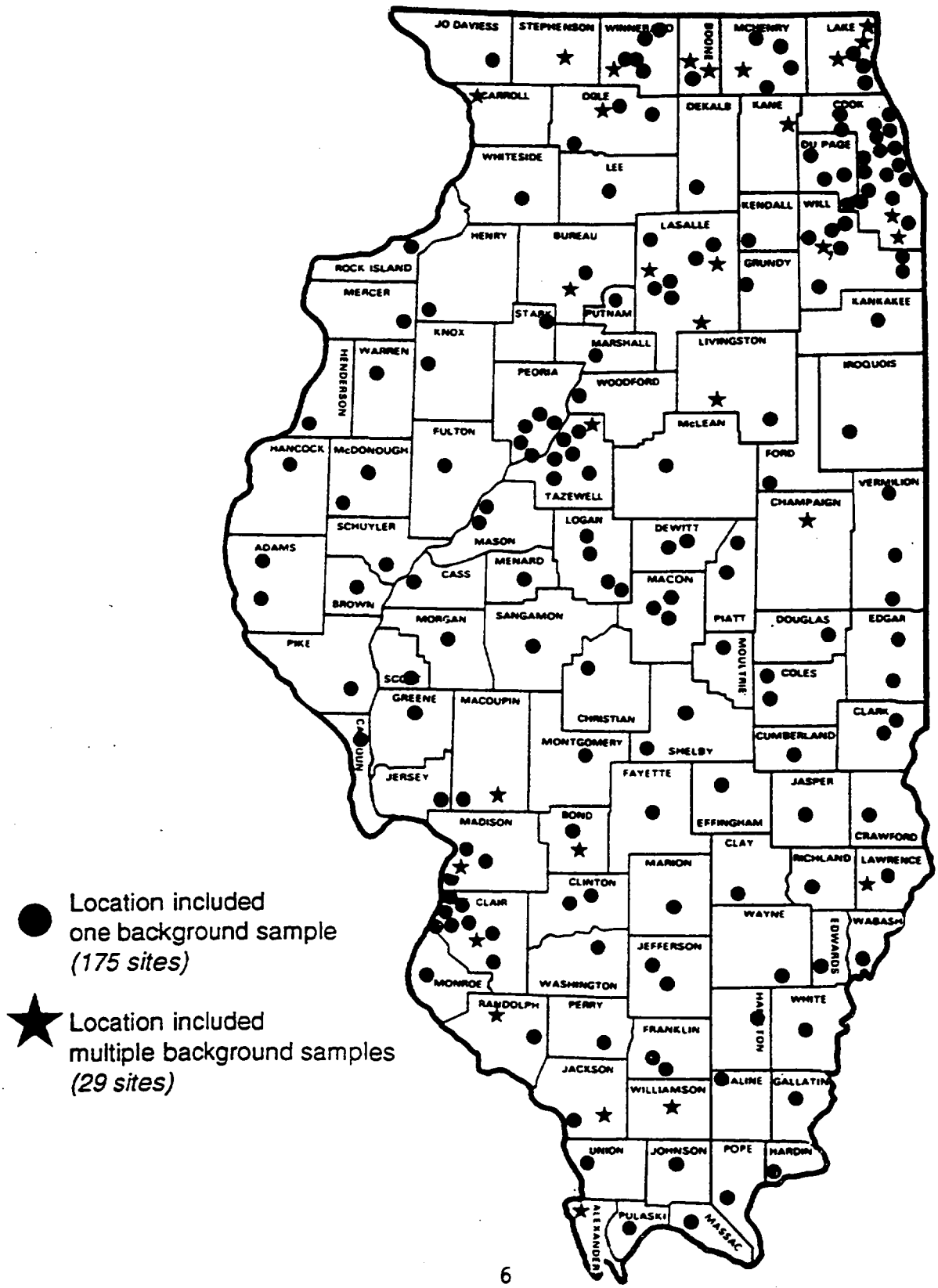
These data can be used by programs in the Agency to evaluate the plausible validity of any site-specific background data collected for various cleanup sites across the state. These data, however, are not meant to replace the collection of site-specific background data for sites.

A second use for these data is as a general screening check for determining the potential presence of inorganic contamination at a site. These data appear to present a reasonable indication of background conditions in Illinois and can be used to compare with site data. Doing so could identify any inorganic

contaminants which may be present in concentrations above what could be viewed as the "normal" range.

Figure 1

Sample Locations for Selected Background Samples for Inorganics in Soil

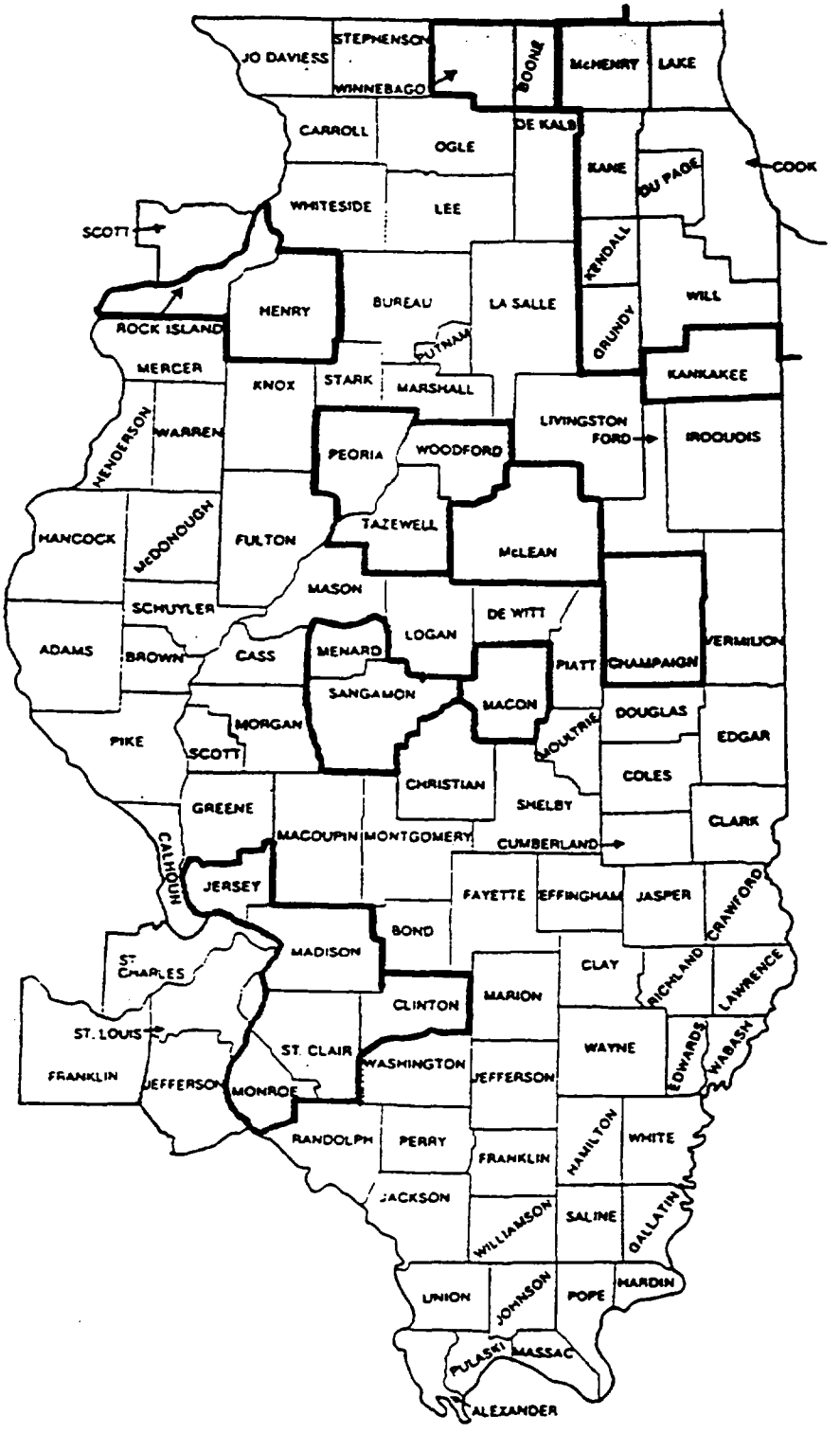


● Location included one background sample *(175 sites)*

★ Location included multiple background samples *(29 sites)*

FIGURE 2

Illinois Consolidated Metropolitan Statistical Areas, Primary Metropolitan Statistical Areas, Metropolitan Statistical Areas, and Counties



Aurora-Elgin, IL PMSA
Kane & Kendall Counties, IL
Bloomington-Normal, IL MSA
McLean County, IL
Champaign-Urbana-Rantoul, IL MSA
Champaign County, IL
Chicago, IL PMSA
Cook, DuPage, & McHenry Counties, IL
Chicago-Gary-Lake Cnty, IL-IN-WI CMSA
Aurora-Elgin, IL PMSA
Chicago, IL PMSA
Gary-Hammond, IN PMSA (Lake & Porter Cntys., IN)
Joliet, IL PMSA
Kenosha, WI PMSA (Kenosha Cnty., WI)
Lake County, IL PMSA
Davenport-Rock Island-Moline, IA-IL MSA
Henry & Rock Island Counties, IL (Scott Cnty, IA)
Decatur, IL MSA
Macon County, IL
Joliet, IL PMSA
Grundy & Will Counties, IL
Kankakee, IL MSA
Kankakee County, IL
Lake County, IL PMSA
Lake County, IL
Peoria, IL MSA
Peoria, Tazewell, & Woodford Counties, IL
Rockford, IL MSA
Boone & Winnebago Counties, IL
St. Louis, MO-IL MSA
Clinton, Jersey, Madison, Monroe, & St. Clair Counties, IL
Franklin, Jefferson, St. Charles, & St. Louis Cntys., MO;
St. Louis City, MO)
Springfield, IL MSA
Menard & Sangamon Counties, IL

Source: Illinois Statistical Abstract. 1991.

TABLE 2.

Summary Information for Total Concentrations of
Inorganic Chemicals in Background Soils in Illinois (mg/kg)

Counties **WITHIN** Metropolitan Statistical Areas

Parameter	Number of Data Points	Range	Mean	Median
Aluminum	103	1388 - 37200	10148	9500
Antimony	67	0.24 - 8	4.2	4.0
Arsenic	114	1.1 - 24	7.4	7.2
Barium	109	ND (<5) - 1720	133	110
Beryllium	99	0.05 - 9.9	0.73	0.59
Cadmium	104	ND (<2.5) - 8.2	1.3	0.6
Calcium	103	813 - 130000	20783	9300
Chromium	114	ND (<2.14) - 151	21.2	16.2
Cobalt	103	2.1 - 23	8.8	8.9
Copper	107	ND (<2.93) - 156	28.9	19.6
Cyanide	81	ND (<0.07) - 2.7	0.64	0.51
Iron	105	5000 - 80000	17607	15900
Lead	119	4.7 - 647	71.1	36.0
Magnesium	103	541 - 74500	10872	4820

TABLE 2. - CONTINUED

Parameter	Number of Data Points	Range	Mean	Median
Manganese	105	155 - 5590	742	636
Mercury	87	0.02 - 0.99	0.12	0.06
Nickel	105	ND (<3.1) - 135	20.9	18.0
Potassium	105	270 - 5820	1560	1268
Selenium	85	ND (<0.12) - 2.6	0.58	0.48
Silver	91	ND (<0.32) - 5.6	0.97	0.55
Sodium	97	20.2 - 1290	208	130
Sulfate	15	17.6 - 240	85.8	85.5
Sulfide	11	ND (<1.00) - 10.1	3.9	3.1
Thallium	78	0.02 - 1.6	0.46	0.32
Vanadium	103	ND (<2.5) - 80	25.0	25.2
Zinc	106	23 - 798	137.9	95.0

TABLE 3.

Summary Information for Total Concentrations of
Inorganic Chemicals in Background Soils in Illinois (mg/kg)

Counties **OUTSIDE** Metropolitan Statistical Areas

Parameter	Number of Data Points	Range	Mean	Median
Aluminum	110	2640 - 23300	10105	9200
Antimony	75	0.18 - 8.6	3.2	3.3
Arsenic	120	0.35 - 22.4	5.9	5.2
Barium	142	22.4 - 253	127	122
Beryllium	114	ND (<0.02) - 8.8	0.65	0.56
Cadmium	139	ND (<0.2) - 5.2	0.73	0.50
Calcium	110	630 - 184000	12379	5525
Chromium	147	4.3 - 37	14.3	13.0
Cobalt	111	0.9 - 32	8.9	8.4
Copper	147	1 - 42	13.0	12.0
Cyanide	77	ND (<0.06) - 1.2	0.46	0.50
Iron	141	3200 - 29100	15134	15000
Lead	148	ND (<7.44) - 270	31.5	20.9
Magnesium	111	476 - 24100	3853	2700

TABLE 3. - CONTINUED

Parameter	Number of Data Points	Range	Mean	Median
Manganese	139	61.5 - 3710	784	630
Mercury	113	ND (<0.01) - 1.67	0.10	0.05
Nickel	147	ND (<5) - 34.6	13.9	13.0
Potassium	135	280 - 5600	1210	1100
Selenium	115	ND (<0.1) - 1.7	0.44	0.37
Silver	142	ND (<0.06) - 5.9	0.76	0.50
Sodium	108	14.1 - 7600	222.8	130.0
Sulfate	13	10 - 260	103	110
Sulfide	7	ND (<1) - 8.8	3.4	2.9
Thallium	105	0.05 - 2.8	0.50	0.42
Vanadium	111	6 - 47	25.0	25.0
Zinc	140	ND (<5.5) - 400	76.3	60.2

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APPENDIX E

COPC SELECTION FOR SOILS AND SEDIMENT FOR RESIDENTIAL SCENARIOS

APPENDIX E
COPC SELECTION FOR SOILS AND SEDIMENT FOR RESIDENTIAL SCENARIOS

This appendix presents the screening tables for identifying COPCs for areas evaluated under a residential scenario. COPCs for surface soil for each transect, for Fill Area N, and for sediment for the combined CS-F and Borrow Pit Lake (BPL) area are identified using the "Residential Soil – Direct Contact Screening Values" presented in Appendix C Table C-1. The screening tables present:

- The frequency of detection and the arithmetic mean and maximum detected concentrations as presented in Appendix B;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 Residential Soil – Direct Contact screening values; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The information in the last column of each table pertains to the short-term risk assessment, and will be discussed in Section 7.0 of the text.

The screening tables are presented in the following order:

- Sediment – CS-F and BPL
- Surface soil – Transect 1
- Surface soil – Transect 2
- Surface soil – Transect 3
- Surface soil – Transect 4
- Surface soil – Transect 5
- Surface soil – Transect 6
- Surface soil – Transect 7
- Surface soil – Fill Area N

The screening results for soils are summarized in Section 3.3.1 of the text, and the screening results for sediments are summarized in Section 3.3.3 of the text.

Sediment - Creek Segment F and BPL

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Sediment Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	6	100%	1.19E-01	3.32E-01	No	1.24E-02	Yes	No	1.00E+00	No	No	<Tier I	No
2,4-D	ug/kg	6	50%	1.37E+01	2.30E+01	No	2.03E+01	Yes	No	7.80E+05	No	No	<Tier I	No
4,4'-DDD	ug/kg	6	17%	3.80E+00	3.80E+00	No	ND	--	No	3.00E+03	No	No	<Tier I	No
4,4'-DDE	ug/kg	6	100%	4.58E+00	1.10E+01	No	ND	--	No	2.00E+03	No	No	<Tier I	No
4,4'-DDT	ug/kg	6	50%	2.35E+00	4.50E+00	No	ND	--	No	2.00E+03	No	No	<Tier I	No
Aldrin	ug/kg	6	17%	3.81E+00	4.10E+00	No	ND	--	No	4.00E+01	No	No	<Tier I	No
Alpha Chlordane	ug/kg	6	100%	2.60E+00	5.30E+00	No	ND	--	No	5.00E+02	No	No	<Tier I	No
Aluminum	mg/kg	6	100%	1.33E+04	1.70E+04	No	2.90E+04	No	Yes	7.60E+04	No	No	<Tier I	No
Antimony	mg/kg	5	80%	2.21E+00	2.60E+00	No	2.75E+00	No	Yes	3.10E+01	No	No	<Tier I	No
Arsenic	mg/kg	6	100%	1.48E+01	1.90E+01	No	1.44E+01	Yes	No	4.00E-01	Yes	Yes	>Tier I	No
Barium	mg/kg	6	100%	2.86E+02	4.20E+02	No	4.13E+02	Yes	No	5.50E+03	No	No	<Tier I	No
Beryllium	mg/kg	6	100%	7.35E-01	8.90E-01	No	1.56E+00	No	Yes	1.56E+02	No	No	<Tier I	No
Cadmium	mg/kg	6	100%	1.24E+01	4.70E+01	No	8.30E-01	Yes	No	7.80E+01	No	No	<Tier I	No
Calcium	mg/kg	6	100%	1.31E+04	1.65E+04	Yes	2.70E+04	No	Yes	NA	No	No	EN	--
Chromium	mg/kg	6	100%	2.53E+01	3.80E+01	No	4.00E+01	No	Yes	2.70E+02	No	No	<Tier I	No
Chrysene	ug/kg	6	17%	7.40E+01	7.40E+01	No	ND	--	No	8.80E+04	No	No	<Tier I	No
Cobalt	mg/kg	6	100%	9.38E+00	1.30E+01	No	1.72E+01	No	Yes	4.70E+03	No	No	<Tier I	No
Copper	mg/kg	6	100%	1.59E+02	4.10E+02	No	3.80E+01	Yes	No	2.90E+03	No	No	<Tier I	No
delta-BHC	ug/kg	6	17%	3.40E-01	3.40E-01	No	ND	--	No	1.00E+02	No	No	<Tier I	No
Dieldrin	ug/kg	6	67%	4.01E+00	9.30E+00	No	ND	--	No	4.00E+01	No	No	<Tier I	No
Endosulfan I	ug/kg	6	100%	2.54E+00	5.70E+00	No	ND	--	No	4.70E+05	No	No	<Tier I	No
Endosulfan II	ug/kg	6	50%	5.54E+00	8.10E+00	No	ND	--	No	4.70E+05	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	6	50%	3.08E+00	4.97E+00	No	ND	--	No	4.70E+05	No	No	<Tier I	No
Endrin	ug/kg	6	33%	1.70E+00	1.70E+00	No	ND	--	No	2.30E+04	No	No	<Tier I	No
Endrin aldehyde	ug/kg	6	100%	5.23E+00	1.40E+01	No	ND	--	No	2.30E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	6	67%	6.70E+00	1.00E+01	No	ND	--	No	2.30E+04	No	No	<Tier I	No
Ethylbenzene	ug/kg	6	17%	9.75E+00	1.10E+01	No	ND	--	No	4.00E+05	No	No	<Tier I	No
Fluoranthene	ug/kg	6	33%	1.25E+02	1.30E+02	No	ND	--	No	3.10E+06	No	No	<Tier I	No
Gamma Chlordane	ug/kg	6	83%	5.89E+00	1.70E+01	No	ND	--	No	5.00E+02	No	No	<Tier I	No
gamma-BHC (Lindane)	ug/kg	6	17%	2.43E+00	2.43E+00	No	ND	--	No	5.00E+02	No	No	<Tier I	No
Heptachlor	ug/kg	6	17%	9.30E-01	9.30E-01	No	ND	--	No	1.00E+02	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	6	50%	3.60E+00	5.40E+00	No	ND	--	No	7.00E+01	No	No	<Tier I	No
Iron	mg/kg	6	100%	2.73E+04	3.80E+04	Yes	4.13E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	6	100%	1.14E+02	3.20E+02	No	4.38E+01	Yes	No	4.00E+02	No	No	<Tier I	No
Magnesium	mg/kg	6	100%	5.03E+03	6.80E+03	Yes	1.03E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	6	100%	7.50E+02	1.40E+03	No	1.42E+03	No	Yes	3.70E+03	No	No	<Tier I	No
Mercury	mg/kg	6	100%	3.70E-01	1.10E+00	No	9.60E-02	Yes	No	1.00E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	6	50%	1.51E+01	2.40E+01	No	ND	--	No	3.90E+05	No	No	<Tier I	No
Molybdenum	mg/kg	6	100%	1.16E+00	3.70E+00	No	8.90E-01	Yes	No	3.90E+02	No	No	<Tier I	No
Nickel	mg/kg	6	100%	1.34E+02	3.90E+02	No	4.28E+01	Yes	No	1.60E+03	No	No	<Tier I	No
Potassium	mg/kg	6	100%	2.18E+03	2.90E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN	--
Silver	mg/kg	6	17%	7.90E-01	7.90E-01	No	ND	--	No	3.90E+02	No	No	<Tier I	No
Total PCBs	ug/kg	43	47%	4.02E+02	6.29E+03	No	ND	--	No	1.00E+03	Yes	Yes	>Tier I	No
Vanadium	mg/kg	6	100%	3.69E+01	5.10E+01	No	6.98E+01	No	Yes	5.50E+02	No	No	<Tier I	No
Zinc	mg/kg	6	100%	1.20E+03	3.70E+03	No	1.66E+02	Yes	No	2.30E+04	No	No	<Tier I	No

Surface Soil - Residential TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	5	100%	6.16E-03	1.31E-02	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2,4-D	ug/kg	10	10%	3.60E+00	3.60E+00	No	ND	--	No	7.80E+05	No	No	<DC	No
2-Butanone (MEK)	ug/kg	10	20%	1.81E+01	3.20E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
2-Hexanone	ug/kg	10	10%	6.60E+00	6.60E+00	No	3.30E+01	No	Yes	7.90E+05	No	No	<DC	No
4,4'-DDE	ug/kg	10	70%	3.04E-01	5.65E-01	No	1.61E+01	No	Yes	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	10	50%	4.81E-01	9.33E-01	No	1.41E+01	No	Yes	2.00E+03	No	No	<DC	No
Acetone	ug/kg	10	50%	1.79E+02	4.40E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Aluminum	mg/kg	10	100%	9.89E+03	1.50E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Antimony	mg/kg	10	80%	1.84E+00	2.60E+00	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	10	100%	8.10E+00	1.00E+01	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	10	100%	1.83E+02	2.40E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzene	ug/kg	10	10%	2.83E+00	3.00E+00	No	ND	--	No	8.00E+02	No	No	<DC	No
Beryllium	mg/kg	10	100%	6.30E-01	9.40E-01	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	1.05E+02	1.60E+02	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Cadmium	mg/kg	10	100%	2.74E+00	4.80E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	10	100%	5.91E+03	8.70E+03	Yes	3.35E+04	No	Yes	NA	No	No	EN	--
Carbon disulfide	ug/kg	10	10%	2.50E+00	2.60E+00	No	ND	--	No	7.20E+05	No	No	<DC	No
Chlorobenzene	ugkg	10	10%	3.03E+00	4.00E+00	No	ND	--	No	1.30E+05	No	No	<DC	No
Chromium	mg/kg	10	100%	1.89E+01	4.90E+01	No	3.93E+01	Yes	No	2.70E+02	No	No	<DC	No
Cobalt	mg/kg	10	100%	7.01E+00	9.20E+00	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	10	100%	1.32E+02	2.30E+02	No	2.09E+02	Yes	No	2.90E+03	No	No	<DC	No
Dicamba	ug/kg	10	40%	3.06E+00	6.35E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	10	30%	5.76E-01	1.50E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Endosulfan sulfate	ug/kg	10	40%	2.61E-01	4.50E-01	No	ND	--	No	4.70E+05	No	No	<DC	No
Endrin ketone	ug/kg	10	70%	2.66E-01	4.90E-01	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	10	10%	6.60E+01	6.60E+01	No	5.02E+02	No	Yes	3.10E+06	No	No	<DC	No
Heptachlor epoxide	ug/kg	10	60%	2.60E-01	5.07E-01	No	ND	--	No	7.00E+01	No	No	<DC	No
Iron	mg/kg	10	100%	1.60E+04	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	10	100%	7.29E+01	1.20E+02	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	10	100%	4.40E+03	5.30E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	10	100%	3.65E+02	5.50E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
MCPA	ug/kg	10	40%	2.71E+03	7.40E+03	No	1.45E+04	No	Yes	3.10E+04	No	No	<DC	No
Mercury	mg/kg	10	100%	6.25E-02	9.90E-02	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	10	50%	2.06E+00	2.90E+00	No	ND	--	No	3.90E+05	No	No	<DC	No
Methylene chloride	ug/kg	10	20%	2.20E+00	2.40E+00	No	1.14E+01	No	Yes	1.30E+04	No	No	<DC	No
Molybdenum	mg/kg	10	100%	5.03E-01	8.60E-01	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	10	100%	1.95E+01	2.50E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	10	90%	2.96E+02	4.82E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Potassium	mg/kg	10	100%	2.00E+03	2.80E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Selenium	mg/kg	10	20%	6.18E-01	8.10E-01	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	10	90%	3.94E-01	5.90E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	10	40%	6.84E-01	9.80E-01	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	10	20%	2.84E+00	3.20E+00	No	ND	--	No	6.50E+05	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total PCBs	ug/kg	10	100%	1.01E+02	2.31E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Trichloroethene	ug/kg	10	30%	3.52E+00	6.20E+00	No	ND	--	No	5.00E+03	No	No	<DC	No
Vanadium	mg/kg	10	100%	2.84E+01	4.10E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	10	100%	3.88E+02	1.40E+03	No	8.08E+02	Yes	No	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	100%	5.87E-03	9.94E-03	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2-Butanone (MEK)	ug/kg	9	67%	2.19E+01	3.40E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
2-Hexanone	ug/kg	9	11%	4.80E+00	4.80E+00	No	3.30E+01	No	Yes	7.90E+05	No	No	<DC	No
4,4'-DDD	ug/kg	9	11%	5.60E-01	5.60E-01	No	ND	--	No	3.00E+03	No	No	<DC	No
4,4'-DDE	ug/kg	9	33%	3.80E-01	4.80E-01	No	1.61E+01	No	Yes	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	9	56%	2.62E+00	1.40E+01	No	1.41E+01	No	Yes	2.00E+03	No	No	<DC	No
Acetone	ug/kg	9	67%	2.17E+02	4.50E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Aluminum	mg/kg	9	100%	1.21E+04	1.80E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Antimony	mg/kg	9	67%	1.21E+00	1.70E+00	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	9	100%	7.94E+00	1.00E+01	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	9	100%	1.92E+02	2.30E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzo(a)anthracene	ug/kg	9	22%	5.90E+01	7.20E+01	No	2.40E+02	No	Yes	9.00E+02	No	No	<DC	No
Benzo(a)pyrene	ug/kg	9	22%	5.64E+01	7.20E+01	No	1.87E+02	No	Yes	9.00E+01	No	No	<DC	No
Benzo(b)fluoranthene	ug/kg	9	33%	4.87E+01	7.20E+01	No	1.79E+02	No	Yes	9.00E+02	No	No	<DC	No
Benzo(g,h,i)perylene	ug/kg	9	11%	4.00E+01	4.00E+01	No	1.27E+02	No	Yes	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	9	22%	5.80E+01	6.30E+01	No	2.08E+02	No	Yes	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	9	78%	6.82E-01	1.10E+00	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	33%	7.07E+01	9.40E+01	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Cadmium	mg/kg	9	100%	2.28E+00	2.80E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	9	100%	8.18E+03	1.60E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN	--
Chromium	mg/kg	9	100%	2.13E+01	4.80E+01	No	3.93E+01	Yes	No	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	9	33%	6.23E+01	8.90E+01	No	2.73E+02	No	Yes	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	9	100%	7.76E+00	1.10E+01	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	9	100%	9.02E+01	1.40E+02	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
Dicamba	ug/kg	9	22%	2.20E+00	3.10E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Di-n-butylphthalate	ug/kg	9	11%	1.03E+02	1.20E+02	No	3.12E+02	No	Yes	2.30E+06	No	No	<DC	No
Endosulfan sulfate	ug/kg	9	33%	3.30E-01	4.70E-01	No	ND	--	No	4.70E+05	No	No	<DC	No
Endrin ketone	ug/kg	9	44%	5.95E-01	1.30E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	9	22%	1.08E+02	1.50E+02	No	5.02E+02	No	Yes	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	9	11%	2.00E-01	2.00E-01	No	ND	--	No	5.00E+02	No	No	<DC	No
Heptachlor epoxide	ug/kg	9	22%	1.70E-01	1.90E-01	No	ND	--	No	7.00E+01	No	No	<DC	No
Iron	mg/kg	9	100%	1.90E+04	2.50E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	9	100%	6.47E+01	8.80E+01	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	9	100%	5.16E+03	9.50E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	9	100%	5.56E+02	1.20E+03	No	8.83E+02	Yes	No	3.70E+03	No	No	<DC	No
MCPA	ug/kg	9	22%	1.75E+03	5.50E+03	No	1.45E+04	No	Yes	3.10E+04	No	No	<DC	No
MCPP	ug/kg	9	11%	1.91E+03	7.60E+03	No	9.97E+03	No	Yes	6.10E+04	No	No	<DC	No
Mercury	mg/kg	9	100%	6.91E-02	9.40E-02	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	9	22%	4.30E+00	7.30E+00	No	ND	--	No	3.90E+05	No	No	<DC	No
Methylene chloride	ug/kg	9	11%	2.00E+00	2.00E+00	No	1.14E+01	No	Yes	1.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Molybdenum	mg/kg	9	100%	7.67E-01	1.30E+00	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	9	100%	2.18E+01	2.70E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	9	44%	2.45E+02	2.51E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	9	22%	5.65E+01	6.10E+01	No	3.35E+02	No	Yes	2.30E+07	No	No	<DC	No
Potassium	mg/kg	9	100%	2.53E+03	3.80E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	9	22%	1.03E+02	1.20E+02	No	4.35E+02	No	Yes	2.30E+06	No	No	<DC	No
Selenium	mg/kg	9	33%	6.01E-01	1.00E+00	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	9	89%	3.44E-01	4.80E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	9	44%	7.21E-01	1.30E+00	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	9	11%	3.02E+00	3.40E+00	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	9	89%	6.68E+01	1.64E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	9	100%	4.22E+01	1.20E+02	No	6.90E+01	Yes	No	5.50E+02	No	No	<DC	No
Zinc	mg/kg	9	100%	2.46E+02	3.10E+02	No	8.08E+02	No	Yes	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	100%	3.07E-03	3.66E-03	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2,4-DB	ug/kg	10	10%	8.89E+00	4.10E+01	No	ND	--	No	4.90E+05	No	No	<DC	No
2-Butanone (MEK)	ug/kg	10	60%	2.77E+01	4.70E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
2-Hexanone	ug/kg	10	10%	6.90E+00	6.90E+00	No	3.30E+01	No	Yes	7.90E+05	No	No	<DC	No
4,4'-DDE	ug/kg	10	50%	6.22E-01	1.70E+00	No	1.61E+01	No	Yes	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	10	40%	1.21E+00	1.80E+00	No	1.41E+01	No	Yes	2.00E+03	No	No	<DC	No
Acetone	ug/kg	10	60%	3.08E+02	6.70E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Alpha Chlordane	ug/kg	10	20%	1.48E+00	5.80E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Aluminum	mg/kg	10	100%	9.46E+03	1.70E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	10	20%	3.85E+01	5.10E+01	No	1.60E+02	No	Yes	2.30E+07	No	No	<DC	No
Antimony	mg/kg	10	40%	1.20E+00	1.90E+00	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	10	100%	6.64E+00	9.70E+00	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	10	100%	1.65E+02	2.20E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzene	ug/kg	10	10%	2.10E+00	2.10E+00	No	ND	--	No	8.00E+02	No	No	<DC	No
Benzo(a)anthracene	ug/kg	10	50%	1.20E+02	4.80E+02	No	2.40E+02	Yes	No	9.00E+02	No	No	<DC	No
Benzo(a)pyrene	ug/kg	10	40%	1.37E+02	8.60E+02	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	10	60%	1.64E+02	9.70E+02	No	1.79E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(g,h,i)perylene	ug/kg	10	50%	1.54E+02	8.30E+02	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	10	40%	1.78E+02	1.00E+03	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	10	90%	5.87E-01	1.10E+00	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
beta-BHC	ug/kg	10	10%	3.38E-01	7.50E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	40%	1.31E+02	4.30E+02	No	3.22E+02	Yes	No	4.60E+04	No	No	<DC	No
Cadmium	mg/kg	10	100%	2.34E+00	3.80E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	10	100%	3.27E+04	2.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN	--
Carbazole	ug/kg	10	10%	8.80E+01	8.80E+01	No	6.40E+01	Yes	No	3.20E+04	No	No	<DC	No
Chromium	mg/kg	10	100%	1.59E+01	2.30E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	10	70%	1.63E+02	9.80E+02	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	10	100%	6.50E+00	1.00E+01	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	10	100%	6.56E+01	7.90E+01	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	7.15E+01	2.50E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dicamba	ug/kg	10	20%	8.80E+00	2.30E+01	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	10	40%	9.28E-01	1.08E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Endrin ketone	ug/kg	10	20%	4.60E-01	7.50E-01	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	10	60%	2.49E+02	1.50E+03	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	10	30%	1.40E+00	5.10E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	1.59E+02	6.90E+02	No	ND	--	No	9.00E+02	No	No	<DC	No
Iron	mg/kg	10	100%	1.45E+04	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	10	100%	5.45E+01	9.00E+01	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	10	100%	6.25E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN	--
Manganese	mg/kg	10	100%	3.79E+02	6.10E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
MCPA	ug/kg	10	20%	1.54E+03	4.00E+03	No	1.45E+04	No	Yes	3.10E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
MCPP	ug/kg	10	20%	2.25E+03	7.70E+03	No	9.97E+03	No	Yes	6.10E+04	No	No	<DC	No
Mercury	mg/kg	10	100%	6.27E-02	9.30E-02	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	10	10%	2.60E+00	2.60E+00	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	10	100%	7.38E-01	1.40E+00	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	10	100%	1.86E+01	2.60E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	10	20%	2.97E+02	7.40E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	10	40%	1.33E+02	5.30E+02	No	3.35E+02	Yes	No	2.30E+07	No	No	<DC	No
Potassium	mg/kg	10	100%	2.18E+03	3.70E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	10	30%	2.39E+02	1.40E+03	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	10	20%	8.30E-01	3.20E+00	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	10	40%	2.98E-01	3.80E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	10	30%	6.93E-01	1.40E+00	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	10	30%	3.17E+00	5.30E+00	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	10	90%	6.29E+01	1.16E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	10	100%	2.68E+01	4.20E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	10	100%	2.70E+02	4.60E+02	No	8.08E+02	No	Yes	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	5	100%	4.71E-03	7.42E-03	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2,4-DB	ug/kg	10	10%	7.68E+00	3.50E+01	No	ND	--	No	4.90E+05	No	No	<DC	No
2-Butanone (MEK)	ug/kg	10	10%	1.50E+01	2.45E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
2-Methylnaphthalene	ug/kg	10	20%	6.68E+01	7.20E+01	No	ND	--	No	3.10E+06	No	No	<DC	No
4,4'-DDE	ug/kg	10	40%	1.08E+00	1.50E+00	No	1.61E+01	No	Yes	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	10	50%	1.74E+00	3.00E+00	No	1.41E+01	No	Yes	2.00E+03	No	No	<DC	No
Acenaphthene	ug/kg	10	50%	2.11E+02	1.20E+03	No	ND	--	No	4.70E+06	No	No	<DC	No
Acenaphthylene	ug/kg	10	30%	4.93E+01	7.50E+01	No	ND	--	No	4.70E+06	No	No	<DC	No
Acetone	ug/kg	10	20%	9.68E+01	4.60E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Alpha Chlordane	ug/kg	10	40%	1.32E+00	3.10E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Aluminum	mg/kg	10	100%	9.40E+03	1.40E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	10	60%	3.65E+02	2.30E+03	No	1.60E+02	Yes	No	2.30E+07	No	No	<DC	No
Antimony	mg/kg	10	10%	6.50E-01	6.50E-01	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	10	100%	6.76E+00	1.00E+01	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	10	100%	2.65E+02	1.20E+03	No	3.63E+02	Yes	No	5.50E+03	No	No	<DC	No
Benzo(a)anthracene	ug/kg	10	80%	7.03E+02	4.30E+03	No	2.40E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(a)pyrene	ug/kg	10	50%	5.91E+02	3.50E+03	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	10	50%	5.98E+02	3.50E+03	No	1.79E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(g,h,i)perylene	ug/kg	10	40%	3.93E+02	2.20E+03	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	10	50%	5.42E+02	3.30E+03	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	10	100%	5.83E-01	8.60E-01	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
beta-BHC	ug/kg	10	40%	4.41E-01	1.30E+00	No	ND	--	No	1.00E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	6.60E+01	6.60E+01	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Cadmium	mg/kg	10	100%	1.62E+00	3.20E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	10	100%	5.13E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN	--
Carbazole	ug/kg	10	50%	1.88E+02	1.00E+03	No	6.40E+01	Yes	No	3.20E+04	No	No	<DC	No
Chromium	mg/kg	10	100%	1.76E+01	2.90E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	10	90%	7.10E+02	4.40E+03	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	10	100%	6.40E+00	1.00E+01	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	10	100%	6.51E+01	1.80E+02	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
delta-BHC	ug/kg	10	40%	1.64E-01	2.40E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	1.31E+02	8.10E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dibenzofuran	ug/kg	10	30%	1.63E+02	7.70E+02	No	ND	--	No	2.90E+05	No	No	<DC	No
Dicamba	ug/kg	10	20%	1.63E+00	1.75E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	10	60%	2.84E+00	1.00E+01	No	ND	--	No	4.00E+01	No	No	<DC	No
Endosulfan sulfate	ug/kg	10	20%	1.20E-01	1.40E-01	No	ND	--	No	4.70E+05	No	No	<DC	No
Endrin ketone	ug/kg	10	40%	1.90E+00	4.00E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	10	90%	1.58E+03	1.00E+04	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No
Fluorene	ug/kg	10	40%	2.33E+02	1.40E+03	No	ND	--	No	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	10	40%	1.83E+00	6.60E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Heptachlor	ug/kg	10	20%	4.90E-01	6.40E-01	No	ND	--	No	1.00E+02	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Heptachlor epoxide	ug/kg	10	30%	1.01E+00	2.30E+00	No	ND	--	No	7.00E+01	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	40%	3.55E+02	2.00E+03	No	ND	--	No	9.00E+02	Yes	Yes	>DC	No
Iron	mg/kg	10	100%	1.54E+04	2.10E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	10	100%	1.00E+02	2.60E+02	No	1.85E+02	Yes	No	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	10	100%	7.63E+03	2.10E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN	--
Manganese	mg/kg	10	100%	4.14E+02	6.10E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
MCPA	ug/kg	10	30%	1.57E+03	3.70E+03	No	1.45E+04	No	Yes	3.10E+04	No	No	<DC	No
Mercury	mg/kg	10	100%	1.22E-01	5.70E-01	No	1.77E-01	Yes	No	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	10	50%	6.20E+00	9.70E+00	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	10	100%	1.02E+00	2.30E+00	No	2.02E+00	Yes	No	3.90E+02	No	No	<DC	No
Naphthalene	ug/kg	10	20%	6.00E+01	7.90E+01	No	ND	--	No	3.10E+06	No	No	<DC	No
Nickel	mg/kg	10	100%	1.82E+01	2.40E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	10	100%	2.89E+02	5.03E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	10	70%	1.35E+03	9.20E+03	No	3.35E+02	Yes	No	2.30E+07	No	No	<DC	No
Potassium	mg/kg	10	100%	1.84E+03	2.60E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	10	70%	1.35E+03	8.50E+03	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	10	10%	5.79E-01	8.80E-01	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	10	30%	3.25E-01	4.45E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	10	30%	6.64E-01	1.10E+00	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	10	10%	2.86E+00	4.50E+00	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	10	50%	3.21E+01	5.80E+01	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	10	100%	2.58E+01	3.50E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	10	100%	2.22E+02	5.50E+02	No	8.08E+02	No	Yes	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	100%	7.87E-03	2.18E-02	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2,4-DB	ug/kg	9	22%	8.15E+00	2.30E+01	No	ND	--	No	4.90E+05	No	No	<DC	No
2-Butanone (MEK)	ug/kg	9	56%	1.83E+01	3.40E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
4,4'-DDD	ug/kg	9	11%	6.73E+00	3.60E+01	No	ND	--	No	3.00E+03	No	No	<DC	No
4,4'-DDE	ug/kg	9	33%	3.15E+00	8.30E+00	No	1.61E+01	No	Yes	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	9	33%	1.67E+01	1.10E+02	No	1.41E+01	Yes	No	2.00E+03	No	No	<DC	No
Acenaphthylene	ug/kg	9	11%	3.40E+01	3.40E+01	No	ND	--	No	4.70E+06	No	No	<DC	No
Acetone	ug/kg	9	56%	1.37E+02	4.60E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Aldrin	ug/kg	9	11%	3.96E+00	2.30E+01	No	ND	--	No	4.00E+01	No	No	<DC	No
Alpha Chlordane	ug/kg	9	33%	8.12E+00	5.40E+01	No	ND	--	No	5.00E+02	No	No	<DC	No
Aluminum	mg/kg	9	100%	8.37E+03	1.10E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	9	11%	8.90E+01	8.90E+01	No	1.60E+02	No	Yes	2.30E+07	No	No	<DC	No
Antimony	mg/kg	9	33%	7.18E-01	9.05E-01	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	9	100%	6.33E+00	7.60E+00	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	9	100%	1.74E+02	1.90E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzene	ug/kg	9	11%	1.80E+00	1.80E+00	No	ND	--	No	8.00E+02	No	No	<DC	No
Benzo(a)anthracene	ug/kg	9	67%	1.21E+02	4.60E+02	No	2.40E+02	Yes	No	9.00E+02	No	No	<DC	No
Benzo(a)pyrene	ug/kg	9	44%	1.38E+02	6.00E+02	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	9	67%	1.78E+02	7.80E+02	No	1.79E+02	Yes	No	9.00E+02	No	No	<DC	No
Benzo(g,h,i)perylene	ug/kg	9	44%	1.58E+02	4.30E+02	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	9	44%	1.59E+02	6.00E+02	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	9	100%	5.29E-01	6.60E-01	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
beta-BHC	ug/kg	9	11%	1.00E-01	1.00E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	1.06E+02	1.80E+02	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Butylbenzylphthalate	ug/kg	9	11%	1.22E+02	3.40E+02	No	ND	--	No	9.30E+05	No	No	<DC	No
Cadmium	mg/kg	9	100%	3.42E+00	8.40E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	9	100%	9.93E+03	2.05E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN	--
Carbazole	ug/kg	9	11%	7.10E+01	7.10E+01	No	6.40E+01	Yes	No	3.20E+04	No	No	<DC	No
Chromium	mg/kg	9	100%	1.46E+01	1.85E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	9	67%	1.70E+02	7.10E+02	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	9	100%	5.99E+00	6.90E+00	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	9	100%	5.42E+01	8.45E+01	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	9	44%	9.86E+01	3.20E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dicamba	ug/kg	9	22%	2.10E+00	2.90E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	9	22%	1.58E+01	1.20E+02	No	ND	--	No	4.00E+01	Yes	Yes	>DC	No
Diethylphthalate	ug/kg	9	11%	3.90E+01	3.90E+01	No	1.87E+02	No	Yes	2.00E+06	No	No	<DC	No
Di-n-butylphthalate	ug/kg	9	22%	3.35E+01	3.50E+01	No	3.12E+02	No	Yes	2.30E+06	No	No	<DC	No
Endrin	ug/kg	9	11%	2.62E+00	6.10E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Endrin aldehyde	ug/kg	9	22%	2.29E+00	5.06E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Endrin ketone	ug/kg	9	11%	2.47E+00	4.95E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	9	56%	2.43E+02	1.10E+03	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Gamma Chlordane	ug/kg	9	22%	1.77E+01	7.80E+01	No	ND	--	No	5.00E+02	No	No	<DC	No
Heptachlor	ug/kg	9	11%	1.15E+01	9.10E+01	No	ND	--	No	1.00E+02	No	No	<DC	No
Heptachlor epoxide	ug/kg	9	22%	4.94E+00	3.00E+01	No	ND	--	No	7.00E+01	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	9	56%	1.71E+02	4.50E+02	No	ND	--	No	9.00E+02	No	No	<DC	No
Iron	mg/kg	9	100%	1.39E+04	1.60E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	9	100%	8.03E+01	1.70E+02	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	9	100%	4.13E+03	5.00E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	9	100%	3.48E+02	4.00E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
MCPA	ug/kg	9	22%	1.58E+03	4.40E+03	No	1.45E+04	No	Yes	3.10E+04	No	No	<DC	No
MCPP	ug/kg	9	67%	2.95E+03	6.80E+03	No	9.97E+03	No	Yes	6.10E+04	No	No	<DC	No
Mercury	mg/kg	9	100%	6.97E-02	1.15E-01	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	9	33%	1.47E+01	3.80E+01	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	9	100%	4.64E-01	7.80E-01	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	9	100%	1.68E+01	1.90E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	9	33%	2.34E+02	2.41E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	9	67%	1.01E+02	3.60E+02	No	3.35E+02	Yes	No	2.30E+07	No	No	<DC	No
Potassium	mg/kg	9	100%	1.76E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	9	56%	1.99E+02	8.10E+02	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	9	11%	4.80E-01	4.80E-01	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	9	33%	5.01E-01	6.00E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Toluene	ug/kg	9	11%	2.70E+00	2.80E+00	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	9	78%	6.67E+01	1.65E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	9	100%	2.43E+01	2.90E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	9	100%	3.74E+02	9.80E+02	No	8.08E+02	Yes	No	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	100%	6.37E-03	1.32E-02	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
4,4'-DDD	ug/kg	8	25%	2.93E+00	6.40E+00	No	ND	--	No	3.00E+03	No	No	<DC	No
4,4'-DDE	ug/kg	8	75%	5.35E+00	1.80E+01	No	1.61E+01	Yes	No	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	8	38%	3.56E+01	1.40E+02	No	1.41E+01	Yes	No	2.00E+03	No	No	<DC	No
Acenaphthene	ug/kg	8	25%	1.26E+02	4.20E+02	No	ND	--	No	4.70E+06	No	No	<DC	No
Acetone	ug/kg	8	38%	1.05E+02	4.20E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Alpha Chlordane	ug/kg	8	25%	4.52E+00	1.70E+01	No	ND	--	No	5.00E+02	No	No	<DC	No
alpha-BHC	ug/kg	8	13%	2.20E-01	2.20E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
Aluminum	mg/kg	8	100%	7.98E+03	9.70E+03	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	8	38%	2.43E+02	1.40E+03	No	1.60E+02	Yes	No	2.30E+07	No	No	<DC	No
Antimony	mg/kg	8	50%	6.88E-01	7.70E-01	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	8	100%	6.01E+00	9.20E+00	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	8	100%	1.50E+02	2.00E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzo(a)anthracene	ug/kg	8	88%	6.06E+02	4.20E+03	No	2.40E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(a)pyrene	ug/kg	8	25%	5.04E+02	3.60E+03	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	8	88%	6.34E+02	4.40E+03	No	1.79E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(g,h,i)perylene	ug/kg	8	13%	2.48E+02	1.30E+03	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	8	25%	5.03E+02	3.40E+03	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	8	88%	4.90E-01	8.60E-01	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
beta-BHC	ug/kg	8	13%	1.34E+00	3.80E+00	No	ND	--	No	1.00E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	8	25%	1.19E+02	3.60E+02	No	3.22E+02	Yes	No	4.60E+04	No	No	<DC	No
Butylbenzylphthalate	ug/kg	8	13%	5.70E+01	5.70E+01	No	ND	--	No	9.30E+05	No	No	<DC	No
Cadmium	mg/kg	8	100%	1.50E+00	4.00E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	8	100%	6.26E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN	--
Carbazole	ug/kg	8	13%	1.91E+02	8.60E+02	No	6.40E+01	Yes	No	3.20E+04	No	No	<DC	No
Chromium	mg/kg	8	100%	1.44E+01	1.80E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	8	88%	7.12E+02	4.90E+03	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	8	100%	5.96E+00	9.20E+00	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	8	100%	2.93E+01	5.60E+01	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
delta-BHC	ug/kg	8	13%	1.20E-01	1.20E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	8	38%	1.18E+02	6.00E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dibenzofuran	ug/kg	8	13%	1.12E+02	2.30E+02	No	ND	--	No	2.90E+05	No	No	<DC	No
Dicamba	ug/kg	8	25%	2.35E+00	3.00E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	8	13%	1.80E+00	1.80E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Endosulfan sulfate	ug/kg	8	38%	1.14E+00	1.90E+00	No	ND	--	No	4.70E+05	No	No	<DC	No
Endrin	ug/kg	8	13%	1.99E+00	2.20E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Endrin aldehyde	ug/kg	8	13%	7.50E-01	7.50E-01	No	ND	--	No	2.30E+04	No	No	<DC	No
Endrin ketone	ug/kg	8	25%	4.50E-01	6.70E-01	No	ND	--	No	2.30E+04	No	No	<DC	No
Fluoranthene	ug/kg	8	88%	1.38E+03	9.80E+03	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No
Fluorene	ug/kg	8	13%	1.56E+02	5.80E+02	No	ND	--	No	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	8	25%	4.70E+00	1.80E+01	No	ND	--	No	5.00E+02	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
gamma-BHC (Lindane)	ug/kg	8	13%	1.30E-01	1.30E-01	No	ND	--	No	5.00E+02	No	No	<DC	No
Heptachlor	ug/kg	8	13%	1.78E+00	4.10E+00	No	ND	--	No	1.00E+02	No	No	<DC	No
Heptachlor epoxide	ug/kg	8	13%	1.80E-01	1.80E-01	No	ND	--	No	7.00E+01	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	8	50%	2.20E+02	1.10E+03	No	ND	--	No	9.00E+02	Yes	Yes	>DC	No
Iron	mg/kg	8	100%	1.36E+04	1.90E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	8	100%	5.54E+01	1.10E+02	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	8	100%	8.71E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN	--
Manganese	mg/kg	8	100%	3.85E+02	6.60E+02	No	8.63E+02	No	Yes	3.70E+03	No	No	<DC	No
MCPP	ug/kg	8	13%	1.55E+03	4.50E+03	No	9.97E+03	No	Yes	6.10E+04	No	No	<DC	No
Mercury	mg/kg	8	100%	5.73E-02	8.60E-02	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	8	38%	3.60E+00	5.50E+00	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	8	100%	8.40E-01	3.20E+00	No	2.02E+00	Yes	No	3.90E+02	No	No	<DC	No
Nickel	mg/kg	8	100%	1.73E+01	2.30E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	8	63%	2.40E+02	2.49E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	8	75%	9.75E+02	7.10E+03	No	3.35E+02	Yes	No	2.30E+07	No	No	<DC	No
Potassium	mg/kg	8	100%	1.78E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	8	75%	1.11E+03	7.70E+03	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	8	13%	5.66E-01	6.80E-01	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	8	13%	2.90E-01	2.90E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	8	25%	6.19E-01	9.70E-01	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	8	13%	2.20E+00	2.20E+00	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	8	75%	8.31E+01	3.85E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	8	100%	2.54E+01	3.30E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	8	100%	1.56E+02	3.50E+02	No	8.08E+02	No	Yes	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	3	100%	2.80E-03	5.23E-03	No	1.24E-01	No	Yes	1.00E+00	No	No	<DC	No
2-Butanone (MEK)	ug/kg	9	33%	1.84E+01	3.70E+01	No	ND	--	No	7.30E+06	No	No	<DC	No
2-Methylnaphthalene	ug/kg	9	11%	6.50E+01	6.50E+01	No	ND	--	No	3.10E+06	No	No	<DC	No
4,4'-DDD	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	3.00E+03	No	No	<DC	No
4,4'-DDE	ug/kg	9	78%	9.80E+00	5.40E+01	No	1.61E+01	Yes	No	2.00E+03	No	No	<DC	No
4,4'-DDT	ug/kg	9	67%	7.71E+00	2.90E+01	No	1.41E+01	Yes	No	2.00E+03	No	No	<DC	No
Acenaphthene	ug/kg	9	22%	9.77E+01	1.60E+02	No	ND	--	No	4.70E+06	No	No	<DC	No
Acetone	ug/kg	9	56%	1.85E+02	5.00E+02	No	ND	--	No	7.80E+06	No	No	<DC	No
Alpha Chlordane	ug/kg	9	22%	2.40E+00	1.10E+01	No	ND	--	No	5.00E+02	No	No	<DC	No
Aluminum	mg/kg	9	100%	8.33E+03	1.20E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	9	33%	1.18E+02	3.60E+02	No	1.60E+02	Yes	No	2.30E+07	No	No	<DC	No
Antimony	mg/kg	9	11%	5.23E-01	7.30E-01	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	9	100%	9.99E+00	3.40E+01	No	1.91E+01	Yes	No	4.00E-01	Yes	Yes	>DC	No
Barium	mg/kg	9	100%	1.67E+02	2.00E+02	No	3.63E+02	No	Yes	5.50E+03	No	No	<DC	No
Benzene	ug/kg	9	22%	3.14E+00	4.80E+00	No	ND	--	No	8.00E+02	No	No	<DC	No
Benzo(a)anthracene	ug/kg	9	100%	3.42E+02	1.90E+03	No	2.40E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(a)pyrene	ug/kg	9	100%	3.74E+02	2.10E+03	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	9	100%	4.06E+02	2.20E+03	No	1.79E+02	Yes	No	9.00E+02	Yes	Yes	>DC	No
Benzo(g,h,i)perylene	ug/kg	9	100%	2.29E+02	1.10E+03	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	9	100%	3.54E+02	2.10E+03	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
Beryllium	mg/kg	9	33%	4.23E-01	8.25E-01	No	1.51E+00	No	Yes	1.56E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	7.18E+01	9.10E+01	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Butylbenzylphthalate	ug/kg	9	11%	5.80E+01	5.80E+01	No	ND	--	No	9.30E+05	No	No	<DC	No
Cadmium	mg/kg	9	100%	3.12E+00	6.10E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	9	100%	1.46E+04	3.80E+04	Yes	3.35E+04	Yes	Yes	NA	No	No	EN	--
Carbazole	ug/kg	9	33%	1.16E+02	3.10E+02	No	6.40E+01	Yes	No	3.20E+04	No	No	<DC	No
Carbon disulfide	ug/kg	9	22%	3.17E+00	4.30E+00	No	ND	--	No	7.20E+05	No	No	<DC	No
Chromium	mg/kg	9	100%	1.53E+01	2.00E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	9	100%	4.86E+02	2.60E+03	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	9	100%	6.63E+00	7.80E+00	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	9	100%	4.29E+01	1.30E+02	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
delta-BHC	ug/kg	9	11%	1.80E-01	1.80E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	9	33%	1.03E+02	4.10E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dibenzofuran	ug/kg	9	11%	5.20E+01	5.20E+01	No	ND	--	No	2.90E+05	No	No	<DC	No
Dicamba	ug/kg	9	11%	2.65E+00	2.65E+00	No	ND	--	No	1.80E+06	No	No	<DC	No
Dieldrin	ug/kg	9	22%	1.81E+00	3.00E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Di-n-butylphthalate	ug/kg	9	78%	8.86E+01	1.70E+02	No	3.12E+02	No	Yes	2.30E+06	No	No	<DC	No
Endosulfan II	ug/kg	9	11%	1.00E+00	1.00E+00	No	ND	--	No	4.70E+05	No	No	<DC	No
Endrin	ug/kg	9	22%	2.50E-01	4.00E-01	No	ND	--	No	2.30E+04	No	No	<DC	No
Endrin ketone	ug/kg	9	44%	1.40E+00	1.90E+00	No	ND	--	No	2.30E+04	No	No	<DC	No
Ethylbenzene	ug/kg	9	11%	2.75E+00	3.00E+00	No	ND	--	No	4.00E+05	No	No	<DC	No

Surface Soil - Residential TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Fluoranthene	ug/kg	9	100%	9.66E+02	5.60E+03	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No
Fluorene	ug/kg	9	22%	9.51E+01	1.40E+02	No	ND	--	No	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	9	44%	1.97E+00	1.00E+01	No	ND	--	No	5.00E+02	No	No	<DC	No
gamma-BHC (Lindane)	ug/kg	9	11%	8.70E-02	8.70E-02	No	ND	--	No	5.00E+02	No	No	<DC	No
Heptachlor epoxide	ug/kg	9	22%	4.40E-01	6.20E-01	No	ND	--	No	7.00E+01	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	9	44%	2.40E+02	1.10E+03	No	ND	--	No	9.00E+02	Yes	Yes	>DC	No
Iron	mg/kg	9	100%	1.47E+04	1.75E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	9	100%	6.46E+01	1.50E+02	No	1.85E+02	No	Yes	4.00E+02	No	No	<DC	No
Magnesium	mg/kg	9	100%	5.66E+03	1.10E+04	Yes	1.72E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	9	100%	3.45E+02	4.35E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
Mercury	mg/kg	9	100%	8.51E-02	1.60E-01	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	9	56%	6.82E+00	1.00E+01	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	9	89%	7.93E-01	1.80E+00	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	9	100%	2.17E+01	5.50E+01	No	4.27E+01	Yes	No	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	9	33%	2.41E+02	2.51E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	9	100%	5.09E+02	2.90E+03	No	3.35E+02	Yes	No	2.30E+07	No	No	<DC	No
Potassium	mg/kg	9	100%	2.02E+03	2.85E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	9	100%	6.86E+02	3.90E+03	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	9	67%	6.93E-01	1.10E+00	No	ND	--	No	3.90E+02	No	No	<DC	No
Silver	mg/kg	9	44%	3.65E-01	4.40E-01	No	1.35E+00	No	Yes	3.90E+02	No	No	<DC	No
Thallium	mg/kg	9	11%	5.72E-01	8.50E-01	No	ND	--	No	6.30E+00	No	No	<DC	No
Toluene	ug/kg	9	44%	4.68E+00	1.20E+01	No	ND	--	No	6.50E+05	No	No	<DC	No
Total PCBs	ug/kg	9	89%	3.52E+01	9.00E+01	No	See notes	--	No	1.00E+03	No	No	<DC	No
Trichloroethene	ug/kg	9	11%	2.56E+00	2.60E+00	No	ND	--	No	5.00E+03	No	No	<DC	No
Vanadium	mg/kg	9	100%	2.47E+01	3.25E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Xylenes, Total	ug/kg	9	11%	3.18E+00	4.20E+00	No	ND	--	No	4.10E+05	No	No	<DC	No
Zinc	mg/kg	9	100%	3.84E+02	8.70E+02	No	8.08E+02	Yes	No	2.30E+04	No	No	<DC	No

Surface Soil - Residential TACO Screen
Fill Area N

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Residential Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD-TEQ	ug/kg	4	100%	9.76E-02	3.45E-01	No	1.24E-01	Yes	No	1.00E+00	No	No	<DC	No
4,4'-DDT	ug/kg	4	25%	2.02E+00	2.70E+00	No	1.41E+01	No	Yes	2.00E+03	No	No	<DC	No
Aldrin	ug/kg	4	25%	1.03E+00	1.28E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Alpha Chlordane	ug/kg	4	25%	9.67E-01	1.10E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Aluminum	mg/kg	4	100%	8.75E+03	1.10E+04	No	2.54E+04	No	Yes	7.60E+04	No	No	<DC	No
Anthracene	ug/kg	4	75%	4.70E+01	5.80E+01	No	1.60E+02	No	Yes	2.30E+07	No	No	<DC	No
Antimony	mg/kg	4	25%	7.10E-01	7.10E-01	No	3.80E+00	No	Yes	3.10E+01	No	No	<DC	No
Arsenic	mg/kg	4	100%	6.33E+00	7.30E+00	No	1.91E+01	No	Yes	4.00E-01	Yes	No	<BK	No
Barium	mg/kg	4	100%	5.93E+02	1.20E+03	No	3.63E+02	Yes	No	5.50E+03	No	No	<DC	No
Benzo(a)anthracene	ug/kg	4	100%	1.68E+02	2.70E+02	No	2.40E+02	Yes	No	9.00E+02	No	No	<DC	No
Benzo(a)pyrene	ug/kg	4	100%	1.87E+02	3.30E+02	No	1.87E+02	Yes	No	9.00E+01	Yes	Yes	>DC	No
Benzo(b)fluoranthene	ug/kg	4	100%	1.65E+02	3.20E+02	No	1.79E+02	Yes	No	9.00E+02	No	No	<DC	No
Benzo(g,h,i)perylene	ug/kg	4	25%	1.44E+02	3.00E+02	No	1.27E+02	Yes	No	2.30E+06	No	No	<DC	No
Benzo(k)fluoranthene	ug/kg	4	100%	2.18E+02	3.60E+02	No	2.08E+02	Yes	No	9.00E+03	No	No	<DC	No
beta-BHC	ug/kg	4	25%	2.93E-01	3.38E-01	No	ND	--	No	1.00E+02	No	No	<DC	No
bis(2-Ethylhexyl)phthalate	ug/kg	4	25%	1.01E+02	1.30E+02	No	3.22E+02	No	Yes	4.60E+04	No	No	<DC	No
Cadmium	mg/kg	4	100%	8.46E-01	1.50E+00	No	8.65E+00	No	Yes	7.80E+01	No	No	<DC	No
Calcium	mg/kg	4	100%	5.73E+04	1.09E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN	--
Chromium	mg/kg	4	100%	1.65E+01	1.80E+01	No	3.93E+01	No	Yes	2.70E+02	No	No	<DC	No
Chrysene	ug/kg	4	100%	2.00E+02	3.10E+02	No	2.73E+02	Yes	No	8.80E+04	No	No	<DC	No
Cobalt	mg/kg	4	100%	5.84E+00	6.15E+00	No	1.55E+01	No	Yes	4.70E+03	No	No	<DC	No
Copper	mg/kg	4	100%	5.01E+01	1.10E+02	No	2.09E+02	No	Yes	2.90E+03	No	No	<DC	No
Dibenzo(a,h)anthracene	ug/kg	4	50%	7.25E+01	1.10E+02	No	ND	--	No	9.00E+01	Yes	Yes	>DC	No
Dieldrin	ug/kg	4	25%	1.89E+00	2.13E+00	No	ND	--	No	4.00E+01	No	No	<DC	No
Fluoranthene	ug/kg	4	100%	3.93E+02	6.10E+02	No	5.02E+02	Yes	No	3.10E+06	No	No	<DC	No
Gamma Chlordane	ug/kg	4	25%	1.38E+00	1.85E+00	No	ND	--	No	5.00E+02	No	No	<DC	No
Indeno(1,2,3-cd)pyrene	ug/kg	4	75%	1.44E+02	2.50E+02	No	ND	--	No	9.00E+02	No	No	<DC	No
Iron	mg/kg	4	100%	1.43E+04	1.50E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	--
Lead	mg/kg	4	100%	1.38E+02	4.10E+02	No	1.85E+02	Yes	No	4.00E+02	Yes	No	Avg<DC	No
Magnesium	mg/kg	4	100%	7.18E+03	1.15E+04	Yes	1.72E+04	No	Yes	NA	No	No	EN	--
Manganese	mg/kg	4	100%	3.74E+02	4.10E+02	No	8.83E+02	No	Yes	3.70E+03	No	No	<DC	No
Mercury	mg/kg	4	100%	6.78E-02	9.50E-02	No	1.77E-01	No	Yes	1.00E+01	No	No	<DC	No
Methoxychlor	ug/kg	4	25%	2.06E+01	5.50E+01	No	ND	--	No	3.90E+05	No	No	<DC	No
Molybdenum	mg/kg	4	100%	1.03E+00	1.45E+00	No	2.02E+00	No	Yes	3.90E+02	No	No	<DC	No
Nickel	mg/kg	4	100%	1.61E+01	1.70E+01	No	4.27E+01	No	Yes	1.60E+03	No	No	<DC	No
Pentachlorophenol	ug/kg	4	100%	3.07E+02	4.74E+02	No	See notes	--	No	3.00E+03	No	No	<DC	No
Phenanthrene	ug/kg	4	100%	1.76E+02	2.60E+02	No	3.35E+02	No	Yes	2.30E+07	No	No	<DC	No
Potassium	mg/kg	4	100%	1.40E+03	1.60E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN	--
Pyrene	ug/kg	4	100%	3.41E+02	5.50E+02	No	4.35E+02	Yes	No	2.30E+06	No	No	<DC	No
Selenium	mg/kg	4	25%	5.69E-01	6.80E-01	No	ND	--	No	3.90E+02	No	No	<DC	No
Total PCBs	ug/kg	4	25%	5.13E+01	1.78E+02	No	See notes	--	No	1.00E+03	No	No	<DC	No
Vanadium	mg/kg	4	100%	2.38E+01	2.90E+01	No	6.90E+01	No	Yes	5.50E+02	No	No	<DC	No
Zinc	mg/kg	4	100%	1.49E+02	2.50E+02	No	8.08E+02	No	Yes	2.30E+04	No	No	<DC	No

APPENDIX F

COPC SELECTION FOR SOILS FOR INDUSTRIAL SCENARIOS

APPENDIX F
COPC SELECTION FOR SOILS FOR INDUSTRIAL SCENARIOS

This appendix presents the screening tables for identifying COPCs for areas evaluated under an industrial scenario. COPCs for surface soil for each transect, for subsurface soil for each transect, and for surface soil for each fill area (excluding Fill Area M, which is included in the sediment removal action) are identified using the "Industrial Soil – Direct Contact Screening Values" presented in Appendix C Table C-2. The screening tables present:

- The frequency of detection and the arithmetic mean and maximum detected concentrations as presented in Appendix B;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 Industrial Soil – Direct Contact screening values for both the industrial worker scenario and the construction worker scenario; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The information in the last column of each table pertains to the short-term risk assessment, and will be discussed in Section 7.0 of the text.

The screening tables are presented in the following order:

- Surface soil – Transect 1
- Surface soil – Transect 2
- Surface soil – Transect 3
- Surface soil – Transect 4
- Surface soil – Transect 5
- Surface soil – Transect 6
- Surface soil – Transect 7

- Subsurface soil – Transect 1
- Subsurface soil – Transect 2
- Subsurface soil – Transect 3
- Subsurface soil – Transect 4

- Subsurface soil – Transect 5
- Subsurface soil – Transect 6
- Subsurface soil – Transect 7
- Surface soil – Fill Area G
- Surface soil – Fill Area H
- Surface soil – Fill Area I
- Surface soil – Fill Area L
- Surface soil – Fill Area N

The screening results are summarized in Section 3.3.1 of the text.

Surface Soil - Industrial TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	5	100%	0.0061612	1.31E-02	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2,4-D	ug/kg	10	10%	3.60	3.60E+00	No	ND	--	No	2.00E+07	No	2.00E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	10	20%	18.0500	3.20E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
2-Hexanone	ug/kg	10	10%	6.6000	6.60E+00	No	3.30E+01	No	Yes	2.90E+06	No	2.90E+06	No	No	<Tier I	No
4,4'-DDE	ug/kg	10	70%	0.3044	5.65E-01	No	1.61E+01	No	Yes	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	10	50%	0.4805	9.33E-01	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acetone	ug/kg	10	50%	178.93	4.40E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	9885.0000	1.50E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	10	80%	1.8350	2.60E+00	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	8.0950	1.00E+01	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	182.50	2.40E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	10	10%	2.8321	3.00E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Beryllium	mg/kg	10	100%	0.63	9.40E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	105.00	1.60E+02	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	100%	2.74	4.80E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	5910.0000	8.70E+03	Yes	3.35E+04	No	Yes	NA	No	NA	No	No	EN	--
Carbon disulfide	ug/kg	10	10%	2.50	2.60E+00	No	ND	--	No	7.20E+05	No	9.00E+03	No	No	<Tier I	No
Chlorobenzene	ug/kg	10	10%	3.0250	4.00E+00	No	ND	--	No	2.10E+05	No	1.30E+03	No	No	<Tier I	No
Chromium	mg/kg	10	100%	18.8500	4.90E+01	No	3.93E+01	Yes	No	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	7.01	9.20E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	131.80	2.30E+02	No	2.09E+02	Yes	No	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dicamba	ug/kg	10	40%	3.06	6.35E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	10	30%	0.5763	1.50E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	10	40%	0.2608	4.50E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin ketone	ug/kg	10	70%	0.27	4.90E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	10	10%	66.0000	6.60E+01	No	5.02E+02	No	Yes	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	10	60%	0.2595	5.07E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Iron	mg/kg	10	100%	15950	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	72.85	1.20E+02	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	4400.00	5.30E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	365.00	5.50E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	10	40%	2710.00	7.40E+03	No	1.45E+04	No	Yes	4.40E+05	No	4.40E+05	No	No	<Tier I	No
Mercury	mg/kg	10	100%	0.06	9.90E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	10	50%	2.06	2.90E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Methylene chloride	ug/kg	10	20%	2.2000	2.40E+00	No	1.14E+01	No	Yes	2.40E+04	No	3.40E+04	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	0.50	8.60E-01	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	10	100%	19.45	2.50E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	10	90%	295.93	4.82E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Potassium	mg/kg	10	100%	2000.0000	2.80E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Selenium	mg/kg	10	20%	0.62	8.10E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	10	90%	0.3935	5.90E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	10	40%	0.68	9.80E-01	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	10	20%	2.8417	3.20E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	10	100%	101.2300	2.31E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Trichloroethene	ug/kg	10	30%	3.5200	6.20E+00	No	ND	--	No	8.90E+03	No	1.20E+04	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	28.35	4.10E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	388.0000	1.40E+03	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

F-4

Surface Soil - Industrial TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	5.87E-03	9.94E-03	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Hexanone	ug/kg	9	11%	4.80E+00	4.80E+00	No	3.30E+01	No	Yes	2.90E+06	No	2.90E+06	No	No	<Tier I	No
4,4'-DDD	ug/kg	9	11%	5.60E-01	5.60E-01	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	9	33%	3.80E-01	4.80E-01	No	1.61E+01	No	Yes	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	9	56%	2.62E+00	1.40E+01	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	1.21E+04	1.80E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	9	67%	1.21E+00	1.70E+00	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	7.94E+00	1.00E+01	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	9	100%	1.92E+02	2.30E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	9	22%	5.90E+01	7.20E+01	No	2.40E+02	No	Yes	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	9	22%	5.64E+01	7.20E+01	No	1.87E+02	No	Yes	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	9	33%	4.87E+01	7.20E+01	No	1.79E+02	No	Yes	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	9	11%	4.00E+01	4.00E+01	No	1.27E+02	No	Yes	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	9	22%	5.80E+01	6.30E+01	No	2.08E+02	No	Yes	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	9	78%	6.82E-01	1.10E+00	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	33%	7.07E+01	9.40E+01	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	2.28E+00	2.80E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	8.18E+03	1.60E+04	Yes	3.35E+04	No	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	9	100%	2.13E+01	4.80E+01	No	3.93E+01	Yes	No	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	9	33%	6.23E+01	8.90E+01	No	2.73E+02	No	Yes	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	7.76E+00	1.10E+01	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	9.02E+01	1.40E+02	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dicamba	ug/kg	9	22%	2.20E+00	3.10E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Di-n-butylphthalate	ug/kg	9	11%	1.03E+02	1.20E+02	No	3.12E+02	No	Yes	2.30E+06	No	2.30E+06	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	9	33%	3.30E-01	4.70E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin ketone	ug/kg	9	44%	5.95E-01	1.30E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	9	22%	1.08E+02	1.50E+02	No	5.02E+02	No	Yes	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	9	11%	2.00E-01	2.00E-01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	9	22%	1.70E-01	1.90E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.90E+04	2.50E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	6.47E+01	8.60E+01	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	9	100%	5.16E+03	9.50E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	5.56E+02	1.20E+03	No	8.83E+02	Yes	No	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	9	22%	1.75E+03	5.50E+03	No	1.45E+04	No	Yes	4.40E+05	No	4.40E+05	No	No	<Tier I	No
MCPP	ug/kg	9	11%	1.91E+03	7.60E+03	No	9.97E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	9	100%	6.91E-02	9.40E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	9	22%	4.30E+00	7.30E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Methylene chloride	ug/kg	9	11%	2.00E+00	2.00E+00	No	1.14E+01	No	Yes	2.40E+04	No	3.40E+04	No	No	<Tier I	No
Molybdenum	mg/kg	9	100%	7.67E-01	1.30E+00	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	2.18E+01	2.70E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	9	44%	2.45E+02	2.51E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	9	22%	5.65E+01	6.10E+01	No	3.35E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	9	100%	2.53E+03	3.80E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	9	22%	1.03E+02	1.20E+02	No	4.35E+02	No	Yes	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	9	33%	6.01E-01	1.00E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	9	89%	3.44E-01	4.80E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	9	44%	7.21E-01	1.30E+00	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	9	11%	3.02E+00	3.40E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	9	89%	6.68E+01	1.64E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	4.22E+01	1.20E+02	No	6.90E+01	Yes	No	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	9	100%	2.46E+02	3.10E+02	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.07E-03	3.66E-03	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2,4-DB	ug/kg	10	10%	8.89E+00	4.10E+01	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	10	60%	2.77E+01	4.70E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
2-Hexanone	ug/kg	10	10%	6.90E+00	6.90E+00	No	3.30E+01	No	Yes	2.90E+06	No	2.90E+06	No	No	<Tier I	No
4,4'-DDE	ug/kg	10	50%	6.22E-01	1.70E+00	No	1.61E+01	No	Yes	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	10	40%	1.21E+00	1.80E+00	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acetone	ug/kg	10	60%	3.08E+02	6.70E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Alpha Chlordane	ug/kg	10	20%	1.48E+00	5.80E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	9.46E+03	1.70E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	10	20%	3.85E+01	5.10E+01	No	1.60E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	10	40%	1.20E+00	1.90E+00	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	6.64E+00	9.70E+00	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	1.65E+02	2.20E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	10	10%	2.10E+00	2.10E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	10	50%	1.20E+02	4.80E+02	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	10	40%	1.37E+02	8.60E+02	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	10	60%	1.64E+02	9.70E+02	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	10	50%	1.54E+02	8.30E+02	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	10	40%	1.78E+02	1.00E+03	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	10	90%	5.87E-01	1.10E+00	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	10	10%	3.38E-01	7.50E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	40%	1.31E+02	4.30E+02	No	3.22E+02	Yes	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	100%	2.34E+00	3.80E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	3.27E+04	2.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	10	10%	8.80E+01	8.80E+01	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	10	100%	1.59E+01	2.30E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	10	70%	1.63E+02	9.80E+02	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	6.50E+00	1.00E+01	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	6.56E+01	7.90E+01	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	7.15E+01	2.50E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dicamba	ug/kg	10	20%	8.80E+00	2.30E+01	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	10	40%	9.28E-01	1.08E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endrin ketone	ug/kg	10	20%	4.60E-01	7.50E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	10	60%	2.49E+02	1.50E+03	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	10	30%	1.40E+00	5.10E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	1.59E+02	6.90E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	10	100%	1.45E+04	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	5.45E+01	9.00E+01	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	6.25E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	3.79E+02	6.10E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	10	20%	1.54E+03	4.00E+03	No	1.45E+04	No	Yes	4.40E+05	No	4.40E+05	No	No	<Tier I	No
MCPP	ug/kg	10	20%	2.25E+03	7.70E+03	No	9.97E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	10	100%	6.27E-02	9.30E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	10	10%	2.60E+00	2.60E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	7.38E-01	1.40E+00	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	10	100%	1.86E+01	2.60E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	10	20%	2.97E+02	7.40E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	10	40%	1.33E+02	5.30E+02	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	10	100%	2.18E+03	3.70E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--

Surface Soil - Industrial TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Pyrene	ug/kg	10	30%	2.39E+02	1.40E+03	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	10	20%	8.30E-01	3.20E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	10	40%	2.98E-01	3.80E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	10	30%	6.93E-01	1.40E+00	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	10	30%	3.17E+00	5.30E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	10	90%	6.29E+01	1.16E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	2.68E+01	4.20E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	2.70E+02	4.60E+02	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

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Surface Soil - Industrial TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	5	100%	4.71E-03	7.42E-03	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2,4-DB	ug/kg	10	10%	7.68E+00	3.50E+01	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	10	10%	1.50E+01	2.45E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
2-Methylnaphthalene	ug/kg	10	20%	6.68E+01	7.20E+01	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
4,4'-DDE	ug/kg	10	40%	1.08E+00	1.50E+00	No	1.61E+01	No	Yes	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	10	50%	1.74E+00	3.00E+00	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acenaphthene	ug/kg	10	50%	2.11E+02	1.20E+03	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acenaphthylene	ug/kg	10	30%	4.93E+01	7.50E+01	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	10	20%	9.68E+01	4.60E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Alpha Chlordane	ug/kg	10	40%	1.32E+00	3.10E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	9.40E+03	1.40E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	10	60%	3.65E+02	2.30E+03	No	1.60E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	10	10%	6.50E-01	6.50E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	6.76E+00	1.00E+01	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	2.65E+02	1.20E+03	No	3.63E+02	Yes	No	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	10	80%	7.03E+02	4.30E+03	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	10	50%	5.91E+02	3.50E+03	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	10	50%	5.98E+02	3.50E+03	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	10	40%	3.93E+02	2.20E+03	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	10	50%	5.42E+02	3.30E+03	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	10	100%	5.83E-01	8.60E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	10	40%	4.41E-01	1.30E+00	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	6.60E+01	6.60E+01	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	100%	1.62E+00	3.20E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	5.13E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	*ug/kg*	*10*	*50%*	*1.88E+02*	*1.00E+03*	*No*	*6.40E+01*	*Yes*	*No*	*2.90E+05*	*No*	*6.20E+06*	*No*	*No*	*<Tier I*	*No*
Chromium	mg/kg	10	100%	1.76E+01	2.90E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	10	90%	7.10E+02	4.40E+03	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	6.40E+00	1.00E+01	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	6.51E+01	1.80E+02	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	10	40%	1.64E-01	2.40E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	1.31E+02	8.10E+02	No	ND	--	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Dibenzofuran	ug/kg	10	30%	1.63E+02	7.70E+02	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dicamba	ug/kg	10	20%	1.63E+00	1.75E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	10	60%	2.84E+00	1.00E+01	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	10	20%	1.20E-01	1.40E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin ketone	ug/kg	10	40%	1.90E+00	4.00E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	10	90%	1.58E+03	1.00E+04	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	10	40%	2.33E+02	1.40E+03	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	10	40%	1.83E+00	6.60E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor	ug/kg	10	20%	4.90E-01	6.40E-01	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	10	30%	1.01E+00	2.30E+00	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	40%	3.55E+02	2.00E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	10	100%	1.54E+04	2.10E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	1.00E+02	2.60E+02	No	1.85E+02	Yes	No	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	7.63E+03	2.10E+04	Yes	1.72E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	4.14E+02	6.10E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	10	30%	1.57E+03	3.70E+03	No	1.45E+04	No	Yes	4.40E+05	No	4.40E+05	No	No	<Tier I	No
Mercury	mg/kg	10	100%	1.22E-01	5.70E-01	No	1.77E-01	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Methoxychlor	ug/kg	10	50%	6.20E+00	9.70E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	1.02E+00	2.30E+00	No	2.02E+00	Yes	No	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Naphthalene	ug/kg	10	20%	6.00E+01	7.90E+01	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
Nickel	mg/kg	10	100%	1.82E+01	2.40E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	10	100%	2.89E+02	5.03E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	10	70%	1.35E+03	9.20E+03	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	10	100%	1.84E+03	2.60E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	10	70%	1.35E+03	8.50E+03	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	10	10%	5.79E-01	8.80E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	10	30%	3.25E-01	4.45E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	10	30%	6.64E-01	1.10E+00	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	10	10%	2.86E+00	4.50E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	10	50%	3.21E+01	5.80E+01	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	2.58E+01	3.50E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	2.22E+02	5.50E+02	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

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Surface Soil - Industrial TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	7.87E-03	2.18E-02	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2,4-DB	ug/kg	9	22%	8.15E+00	2.30E+01	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	9	56%	1.83E+01	3.40E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
4,4'-DDD	ug/kg	9	11%	6.73E+00	3.60E+01	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	9	33%	3.15E+00	8.30E+00	No	1.61E+01	No	Yes	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	9	33%	1.67E+01	1.10E+02	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acenaphthylene	ug/kg	9	11%	3.40E+01	3.40E+01	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	9	56%	1.37E+02	4.60E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aldrin	ug/kg	9	11%	3.96E+00	2.30E+01	No	ND	--	No	3.00E+02	No	6.10E+03	No	No	<Tier I	No
Alpha Chlordane	ug/kg	9	33%	8.12E+00	5.40E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	8.37E+03	1.10E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	9	11%	8.90E+01	8.90E+01	No	1.60E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	9	33%	7.18E-01	9.05E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	6.33E+00	7.60E+00	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	9	100%	1.74E+02	1.90E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	9	11%	1.80E+00	1.80E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	9	67%	1.21E+02	4.60E+02	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	9	44%	1.38E+02	6.00E+02	No	1.87E+02	Yes	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	9	67%	1.78E+02	7.80E+02	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	9	44%	1.58E+02	4.30E+02	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	9	44%	1.59E+02	6.00E+02	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	9	100%	5.29E-01	6.60E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	9	11%	1.00E-01	1.00E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	1.08E+02	1.80E+02	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Butylbenzylphthalate	ug/kg	9	11%	1.22E+02	3.40E+02	No	ND	--	No	9.30E+05	No	9.30E+05	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	3.42E+00	8.40E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	9.93E+03	2.05E+04	Yes	3.35E+04	No	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	9	11%	7.10E+01	7.10E+01	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	9	100%	1.46E+01	1.85E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	9	67%	1.70E+02	7.10E+02	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	5.99E+00	6.90E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	5.42E+01	8.45E+01	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	9	44%	9.86E+01	3.20E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dicamba	ug/kg	9	22%	2.10E+00	2.90E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	9	22%	1.58E+01	1.20E+02	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Diethylphthalate	ug/kg	9	11%	3.90E+01	3.90E+01	No	1.87E+02	No	Yes	2.00E+06	No	2.00E+06	No	No	<Tier I	No
Di-n-butylphthalate	ug/kg	9	22%	3.35E+01	3.50E+01	No	3.12E+02	No	Yes	2.30E+06	No	2.30E+06	No	No	<Tier I	No
Endrin	ug/kg	9	11%	2.62E+00	6.10E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin aldehyde	ug/kg	9	22%	2.29E+00	5.06E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	9	11%	2.47E+00	4.95E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	9	56%	2.43E+02	1.10E+03	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	9	22%	1.77E+01	7.80E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor	ug/kg	9	11%	1.15E+01	9.10E+01	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	9	22%	4.94E+00	3.00E+01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	9	56%	1.71E+02	4.50E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.39E+04	1.60E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	8.03E+01	1.70E+02	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	9	100%	4.13E+03	5.00E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	3.48E+02	4.00E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
MCPA	ug/kg	9	22%	1.58E+03	4.40E+03	No	1.45E+04	No	Yes	4.40E+05	No	4.40E+05	No	No	<Tier I	No
MCPP	ug/kg	9	67%	2.95E+03	6.80E+03	No	9.97E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	9	100%	6.97E-02	1.15E-01	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	9	33%	1.47E+01	3.80E+01	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	9	100%	4.64E-01	7.80E-01	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	1.68E+01	1.90E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	9	33%	2.34E+02	2.41E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	9	67%	1.01E+02	3.60E+02	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	9	100%	1.76E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	9	56%	1.99E+02	8.10E+02	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	9	11%	4.80E-01	4.80E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	9	33%	5.01E-01	6.00E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Toluene	ug/kg	9	11%	2.70E+00	2.80E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	9	78%	6.67E+01	1.65E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	2.43E+01	2.90E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	9	100%	3.74E+02	9.80E+02	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	6.37E-03	1.32E-02	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
4,4'-DDD	ug/kg	8	25%	2.93E+00	6.40E+00	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	8	75%	5.35E+00	1.80E+01	No	1.61E+01	Yes	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	8	38%	3.56E+01	1.40E+02	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acenaphthene	ug/kg	8	25%	1.26E+02	4.20E+02	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	8	38%	1.05E+02	4.20E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Alpha Chlordane	ug/kg	8	25%	4.52E+00	1.70E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
alpha-BHC	ug/kg	8	13%	2.20E-01	2.20E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Aluminum	mg/kg	8	100%	7.98E+03	9.70E+03	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	8	38%	2.43E+02	1.40E+03	No	1.60E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	8	50%	6.88E-01	7.70E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	8	100%	6.01E+00	9.20E+00	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	8	100%	1.50E+02	2.00E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	8	88%	6.06E+02	4.20E+03	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	8	25%	5.04E+02	3.60E+03	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCInd	No
Benzo(b)fluoranthene	ug/kg	8	88%	6.34E+02	4.40E+03	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	8	13%	2.48E+02	1.30E+03	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	8	25%	5.03E+02	3.40E+03	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	8	88%	4.90E-01	8.60E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	8	13%	1.34E+00	3.80E+00	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	8	25%	1.19E+02	3.60E+02	No	3.22E+02	Yes	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Butylbenzylphthalate	ug/kg	8	13%	5.70E+01	5.70E+01	No	ND	--	No	9.30E+05	No	9.30E+05	No	No	<Tier I	No
Cadmium	mg/kg	8	100%	1.50E+00	4.00E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	8	100%	6.26E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	8	13%	1.91E+02	8.60E+02	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	8	100%	1.44E+01	1.80E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	8	88%	7.12E+02	4.90E+03	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	8	100%	5.96E+00	9.20E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	8	100%	2.93E+01	5.60E+01	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	8	13%	1.20E-01	1.20E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	8	38%	1.18E+02	6.00E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dibenzofuran	ug/kg	8	13%	1.12E+02	2.30E+02	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dicamba	ug/kg	8	25%	2.35E+00	3.00E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	8	13%	1.80E+00	1.80E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	8	38%	1.14E+00	1.90E+00	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin	ug/kg	8	13%	1.99E+00	2.20E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin aldehyde	ug/kg	8	13%	7.50E-01	7.50E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	8	25%	4.50E-01	6.70E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	8	88%	1.38E+03	9.80E+03	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	8	13%	1.56E+02	5.80E+02	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	8	25%	4.70E+00	1.80E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
gamma-BHC (Lindane)	ug/kg	8	13%	1.30E-01	1.30E-01	No	ND	--	No	4.00E+03	No	9.60E+04	No	No	<Tier I	No
Heptachlor	ug/kg	8	13%	1.78E+00	4.10E+00	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	8	13%	1.80E-01	1.80E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	8	50%	2.20E+02	1.10E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	8	100%	1.36E+04	1.90E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	8	100%	5.54E+01	1.10E+02	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	8	100%	8.71E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	8	100%	3.85E+02	6.60E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
MCPP	ug/kg	8	13%	1.55E+03	4.50E+03	No	9.97E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	8	100%	5.73E-02	8.60E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	8	38%	3.60E+00	5.50E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	8	100%	8.40E-01	3.20E+00	No	2.02E+00	Yes	No	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	8	100%	1.73E+01	2.30E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	8	63%	2.40E+02	2.49E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	8	75%	9.75E+02	7.10E+03	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	8	100%	1.78E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	8	75%	1.11E+03	7.70E+03	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	8	13%	5.66E-01	6.80E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	8	13%	2.90E-01	2.90E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	8	25%	6.19E-01	9.70E-01	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	8	13%	2.20E+00	2.20E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	8	75%	8.31E+01	3.85E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	8	100%	2.54E+01	3.30E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	8	100%	1.56E+02	3.50E+02	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	3	100%	2.80E-03	5.23E-03	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	9	33%	1.84E+01	3.70E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
2-Methylnaphthalene	ug/kg	9	11%	6.50E+01	6.50E+01	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
4,4'-DDD	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	9	78%	9.80E+00	5.40E+01	No	1.61E+01	Yes	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	9	67%	7.71E+00	2.90E+01	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acenaphthene	ug/kg	9	22%	9.77E+01	1.60E+02	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	9	56%	1.85E+02	5.00E+02	No	ND	--	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Alpha Chlordane	ug/kg	9	22%	2.40E+00	1.10E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	8.33E+03	1.20E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	9	33%	1.18E+02	3.60E+02	No	1.60E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	9	11%	5.23E-01	7.30E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	9.99E+00	3.40E+01	No	1.91E+01	Yes	No	3.00E+00	Yes	6.10E+01	No	Yes	>DCind	No
Barium	mg/kg	9	100%	1.67E+02	2.00E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	9	22%	3.14E+00	4.80E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	9	100%	3.42E+02	1.90E+03	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	9	100%	3.74E+02	2.10E+03	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	9	100%	4.06E+02	2.20E+03	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	9	100%	2.29E+02	1.10E+03	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	9	100%	3.54E+02	2.10E+03	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	9	33%	4.23E-01	8.25E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	7.18E+01	9.10E+01	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Butylbenzylphthalate	ug/kg	9	11%	5.80E+01	5.80E+01	No	ND	--	No	9.30E+05	No	9.30E+05	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	3.12E+00	6.10E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	1.46E+04	3.80E+04	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	9	33%	1.16E+02	3.10E+02	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Carbon disulfide	ug/kg	9	22%	3.17E+00	4.30E+00	No	ND	--	No	7.20E+05	No	9.00E+03	No	No	<Tier I	No
Chromium	mg/kg	9	100%	1.53E+01	2.00E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	9	100%	4.86E+02	2.60E+03	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	6.63E+00	7.80E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	4.29E+01	1.30E+02	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	9	11%	1.80E-01	1.80E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	9	33%	1.03E+02	4.10E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dibenzofuran	ug/kg	9	11%	5.20E+01	5.20E+01	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dicamba	ug/kg	9	11%	2.65E+00	2.65E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	9	22%	1.81E+00	3.00E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Di-n-butylphthalate	ug/kg	9	78%	8.86E+01	1.70E+02	No	3.12E+02	No	Yes	2.30E+06	No	2.30E+06	No	No	<Tier I	No
Endosulfan II	ug/kg	9	11%	1.00E+00	1.00E+00	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin	ug/kg	9	22%	2.50E-01	4.00E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	9	44%	1.40E+00	1.90E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Ethylbenzene	ug/kg	9	11%	2.75E+00	3.00E+00	No	ND	--	No	4.00E+05	No	5.80E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	9	100%	9.66E+02	5.60E+03	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	9	22%	9.51E+01	1.40E+02	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	9	44%	1.97E+00	1.00E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
gamma-BHC (Lindane)	ug/kg	9	11%	8.70E-02	8.70E-02	No	ND	--	No	4.00E+03	No	9.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	9	22%	4.40E-01	6.20E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	9	44%	2.40E+02	1.10E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.47E+04	1.75E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	6.46E+01	1.50E+02	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No

Surface Soil - Industrial TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Magnesium	mg/kg	9	100%	5.66E+03	1.10E+04	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	3.45E+02	4.35E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	9	100%	8.51E-02	1.60E-01	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	9	56%	6.82E+00	1.00E+01	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	9	89%	7.93E-01	1.80E+00	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	2.17E+01	5.50E+01	No	4.27E+01	Yes	No	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	9	33%	2.41E+02	2.51E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	9	100%	5.09E+02	2.90E+03	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	9	100%	2.02E+03	2.85E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	9	100%	6.86E+02	3.90E+03	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	9	67%	6.93E-01	1.10E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	9	44%	3.65E-01	4.40E-01	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	9	11%	5.72E-01	8.50E-01	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	9	44%	4.68E+00	1.20E+01	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	9	89%	3.52E+01	9.00E+01	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Trichloroethene	ug/kg	9	11%	2.56E+00	2.60E+00	No	ND	--	No	8.90E+03	No	1.20E+04	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	2.47E+01	3.25E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Xylenes, Total	ug/kg	9	11%	3.18E+00	4.20E+00	No	ND	--	No	4.10E+05	No	4.10E+05	No	No	<Tier I	No
Zinc	mg/kg	9	100%	3.84E+02	8.70E+02	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	3	100%	1.33E-05	2.00E-05	No	1.38E-03	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	10	10%	1.71E+01	2.50E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
4,4'-DDD	ug/kg	10	10%	5.30E-01	5.30E-01	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	10	20%	1.80E-01	2.20E-01	No	ND	--	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	10	10%	2.70E-01	2.70E-01	No	ND	--	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acetone	ug/kg	10	10%	5.34E+01	2.40E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Alpha Chlordane	ug/kg	10	10%	5.80E-01	5.80E-01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	7.36E+03	1.70E+04	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	10	50%	6.86E-01	8.40E-01	No	2.40E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	5.82E+00	8.70E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	1.85E+02	2.60E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Beryllium	mg/kg	10	100%	4.59E-01	9.30E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	20%	1.02E+02	1.50E+02	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	90%	2.78E-01	5.30E-01	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	1.29E+04	1.80E+04	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	10	100%	1.25E+01	2.50E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	5.98E+00	1.10E+01	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	1.29E+01	2.40E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dicamba	ug/kg	10	10%	1.30E+00	1.30E+00	No	ND	--	No	2.60E+07	No	2.60E+07	No	No	<Tier I	No
Dieldrin	ug/kg	10	20%	6.60E-01	1.20E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endrin ketone	ug/kg	10	20%	2.25E-01	2.70E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Heptachlor	ug/kg	10	10%	2.60E-01	2.60E-01	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	10	30%	3.26E-01	5.70E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Iron	mg/kg	10	100%	1.28E+04	2.20E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	9.53E+00	1.50E+01	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	5.90E+03	8.30E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	3.57E+02	9.80E+02	No	8.00E+02	Yes	No	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	10	10%	1.24E+03	1.70E+03	No	ND	--	No	4.40E+05	No	4.40E+05	No	No	<Tier I	No
Mercury	mg/kg	10	70%	2.18E-02	7.00E-02	No	5.61E-02	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	10	20%	2.10E+00	2.60E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Methylene chloride	ug/kg	10	10%	2.40E+00	2.40E+00	No	2.80E+00	No	Yes	2.40E+04	No	3.40E+04	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	3.98E-01	7.60E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	10	100%	1.63E+01	3.30E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Potassium	mg/kg	10	100%	1.42E+03	2.70E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Total PCBs	ug/kg	10	30%	1.10E+01	1.90E+01	No	ND	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Trichloroethene	ug/kg	10	30%	3.70E+00	7.40E+00	No	ND	--	No	6.90E+03	No	1.20E+04	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	2.24E+01	4.50E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	6.52E+01	2.50E+02	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	5.75E-02	6.50E-02	No	1.38E-03	Yes	No	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	9	11%	1.70E+01	2.33E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
Acetone	ug/kg	9	22%	3.98E+01	1.07E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	5.61E+03	1.10E+04	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	9	11%	6.70E-01	6.70E-01	No	2.40E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	4.67E+00	7.00E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	9	100%	1.63E+02	2.20E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Beryllium	mg/kg	9	44%	2.63E-01	3.70E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	56%	9.23E+01	1.60E+02	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	2.01E-01	3.20E-01	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	1.16E+04	1.50E+04	Yes	1.61E+04	No	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	9	100%	9.61E+00	1.50E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	5.21E+00	8.30E+00	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	8.64E+00	1.60E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dieldrin	ug/kg	9	11%	4.10E-01	4.10E-01	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.05E+04	1.60E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	7.82E+00	1.20E+01	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	9	100%	5.19E+03	6.80E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	2.37E+02	4.80E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	9	67%	1.24E-02	2.90E-02	No	5.61E-02	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Molybdenum	mg/kg	9	100%	4.59E-01	7.70E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	1.28E+01	2.00E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Potassium	mg/kg	9	100%	1.16E+03	2.00E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Selenium	mg/kg	9	11%	5.05E-01	5.10E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Thallium	mg/kg	9	11%	5.38E-01	5.65E-01	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	1.77E+01	2.80E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	9	100%	3.69E+01	5.70E+01	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
2-Butanone (MEK)	ug/kg	10	10%	1.67E+01	2.40E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
Acetone	ug/kg	10	10%	4.65E+01	1.80E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	7.35E+03	1.40E+04	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	10	40%	7.91E-01	9.15E-01	No	2.40E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	5.35E+00	8.50E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	1.84E+02	2.50E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	10	40%	9.23E+01	1.10E+02	No	6.80E+01	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Beryllium	mg/kg	10	50%	3.97E-01	8.90E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	40%	9.70E+01	1.20E+02	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	90%	2.93E-01	5.70E-01	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	1.26E+04	1.90E+04	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	10	100%	1.20E+01	2.10E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	5.82E+00	8.10E+00	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	1.16E+01	1.90E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	5.74E+01	8.70E+01	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	9.10E+01	9.20E+01	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	10	100%	1.27E+04	1.90E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	9.70E+00	1.70E+01	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	5.82E+03	7.70E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	2.89E+02	5.50E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	10	100%	2.41E-02	7.80E-02	No	5.61E-02	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	5.29E-01	9.50E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	10	100%	1.50E+01	2.20E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	10	20%	2.50E+02	2.76E+02	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Potassium	mg/kg	10	100%	1.57E+03	2.70E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Sodium	mg/kg	10	30%	8.74E+01	1.60E+02	Yes	3.53E+02	No	Yes	NA	No	NA	No	No	EN	--
Total PCBs	ug/kg	10	10%	9.17E+00	9.50E+00	No	ND	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	2.16E+01	3.80E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	6.73E+01	2.60E+02	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
2,4,5-TP (Silvex)	ug/kg	10	10%	1.50E+00	1.50E+00	No	1.08E+01	No	Yes	1.60E+07	No	1.60E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	10	10%	5.70E+00	5.70E+00	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
2-Methylnaphthalene	ug/kg	10	10%	1.07E+02	1.60E+02	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
Acenaphthene	ug/kg	10	10%	1.91E+02	1.00E+03	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acenaphthylene	ug/kg	10	10%	1.63E+02	7.20E+02	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	10	50%	5.16E+01	2.20E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	10	100%	6.17E+03	9.00E+03	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	10	20%	6.27E+02	5.40E+03	No	ND	--	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Arsenic	mg/kg	10	100%	4.82E+00	6.00E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	10	100%	1.55E+02	2.10E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	10	40%	1.28E+03	1.20E+04	No	5.20E+01	Yes	No	8.00E+03	Yes	1.70E+05	No	Yes	>DCind	No
Benzo(a)pyrene	ug/kg	10	10%	6.09E+02	5.60E+03	No	ND	--	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	10	10%	1.07E+03	9.80E+03	No	ND	--	No	8.00E+03	Yes	1.70E+05	No	Yes	>DCind	No
Benzo(g,h,i)perylene	ug/kg	10	20%	1.09E+02	3.30E+02	No	6.80E+01	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	10	10%	7.21E+02	6.30E+03	No	ND	--	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	10	100%	3.72E-01	5.00E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	10	10%	2.00E-01	2.00E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	10	20%	9.65E+02	8.70E+03	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	10	70%	3.33E-01	1.00E+00	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	10	100%	2.43E+04	1.30E+05	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	10	10%	1.73E+02	8.20E+02	No	ND	--	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	10	100%	1.22E+01	1.70E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	10	40%	1.18E+03	1.10E+04	No	8.40E+01	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	10	100%	5.06E+00	6.10E+00	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	10	100%	1.16E+01	3.00E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	10	20%	1.75E-01	2.30E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	10	10%	2.39E+02	1.90E+03	No	ND	--	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Dibenzofuran	ug/kg	10	10%	2.01E+02	1.10E+03	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dieldrin	ug/kg	10	10%	1.30E+00	1.30E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	10	10%	1.00E+00	1.00E+00	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin ketone	ug/kg	10	10%	2.90E-01	2.90E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	10	30%	2.39E+03	2.30E+04	No	8.40E+01	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	10	10%	2.91E+02	2.00E+03	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	4.41E+02	3.50E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	10	100%	1.13E+04	1.60E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	10	100%	2.36E+01	1.30E+02	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	10	100%	6.15E+03	1.10E+04	Yes	9.33E+03	Yes	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	10	100%	2.59E+02	3.55E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	10	80%	1.54E-02	3.90E-02	No	5.61E-02	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	10	10%	7.60E+00	7.60E+00	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	10	100%	4.07E-01	7.60E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Naphthalene	ug/kg	10	10%	6.40E+01	6.40E+01	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
Nickel	mg/kg	10	100%	1.43E+01	1.80E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	10	50%	3.05E+02	5.53E+02	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	10	30%	1.48E+03	1.40E+04	No	ND	--	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	10	100%	1.24E+03	1.70E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	10	30%	1.89E+03	1.80E+04	No	ND	--	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Sodium	mg/kg	10	40%	1.17E+02	3.80E+02	Yes	3.53E+02	Yes	Yes	NA	No	NA	No	No	EN	--
Toluene	ug/kg	10	10%	3.13E+00	4.80E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total PCBs	ug/kg	10	50%	1.83E+01	5.39E+01	No	ND	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	10	100%	1.93E+01	2.60E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	10	100%	5.81E+01	1.90E+02	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	2.10E-05	3.50E-05	No	1.38E-03	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2,4-DB	ug/kg	9	11%	4.96E+00	7.70E+00	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	9	11%	1.30E+01	1.30E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
Acetone	ug/kg	9	11%	4.21E+01	1.40E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	5.96E+03	9.60E+03	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	4.91E+00	6.40E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	9	100%	1.70E+02	2.10E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	9	11%	9.80E-01	9.80E-01	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	9	11%	7.50E+01	7.50E+01	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	9	11%	3.00E+01	3.00E+01	No	6.80E+01	No	Yes	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Beryllium	mg/kg	9	100%	3.73E-01	5.60E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	56%	9.87E+01	1.20E+02	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	2.24E-01	3.40E-01	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	1.38E+04	1.90E+04	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	9	100%	1.20E+01	2.00E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	5.03E+00	6.10E+00	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	9.20E+00	1.60E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	9	11%	5.52E+01	9.45E+01	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Di-n-octylphthalate	ug/kg	9	11%	9.86E+01	1.18E+02	No	ND	--	No	1.00E+07	No	4.10E+06	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	9	11%	9.81E+01	1.13E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.10E+04	1.50E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	8.11E+00	1.10E+01	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	9	100%	5.47E+03	7.40E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	2.39E+02	3.20E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	9	11%	1.24E+03	2.30E+03	No	ND	--	No	4.40E+05	No	4.40E+05	No	No	<Tier I	No
MCPP	ug/kg	9	22%	1.49E+03	2.90E+03	No	4.73E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	9	100%	2.43E-02	8.60E-02	No	5.61E-02	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Molybdenum	mg/kg	9	89%	2.97E-01	4.50E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	1.39E+01	1.70E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Potassium	mg/kg	9	100%	1.23E+03	1.80E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Sodium	mg/kg	9	33%	8.23E+01	1.60E+02	Yes	3.53E+02	No	Yes	NA	No	NA	No	No	EN	--
Toluene	ug/kg	9	11%	1.80E+00	1.80E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	1.86E+01	2.60E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	9	100%	3.98E+01	5.60E+01	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	7.84E-04	1.51E-03	No	1.38E-03	Yes	No	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Hexanone	ug/kg	8	13%	3.50E+00	3.50E+00	No	ND	--	No	2.90E+06	No	2.90E+06	No	No	<Tier I	No
Acenaphthene	ug/kg	8	25%	1.00E+02	1.60E+02	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acenaphthylene	ug/kg	8	13%	4.90E+01	4.90E+01	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Acetone	ug/kg	8	13%	3.04E+01	4.00E+01	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	8	100%	7.90E+03	1.20E+04	No	2.03E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	8	38%	1.26E+02	3.60E+02	No	ND	--	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	8	25%	1.32E+00	2.60E+00	No	2.40E+00	Yes	No	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	8	100%	6.20E+00	7.80E+00	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	8	100%	1.95E+02	2.20E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	8	13%	2.77E+00	3.00E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	8	50%	2.25E+02	9.40E+02	No	5.20E+01	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	8	25%	1.85E+02	8.80E+02	No	ND	--	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	8	38%	1.93E+02	6.40E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	8	13%	1.66E+02	6.30E+02	No	6.80E+01	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	8	25%	2.40E+02	1.10E+03	No	ND	--	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	8	100%	4.84E-01	6.30E-01	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	8	38%	1.25E+02	2.70E+02	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	8	100%	5.54E-01	9.60E-01	No	6.87E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	8	100%	2.60E+04	6.40E+04	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	8	25%	1.01E+02	1.70E+02	No	ND	--	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	8	100%	1.44E+01	2.10E+01	No	3.27E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	8	50%	2.52E+02	1.10E+03	No	8.40E+01	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	8	100%	6.31E+00	8.60E+00	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	8	100%	1.88E+01	3.50E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	8	13%	1.40E-01	1.40E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	8	25%	8.46E+01	2.70E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dibenzofuran	ug/kg	8	13%	1.02E+02	1.20E+02	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	8	25%	5.00E-01	5.60E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Fluoranthene	ug/kg	8	50%	4.97E+02	2.50E+03	No	8.40E+01	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	8	25%	9.39E+01	1.30E+02	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	8	38%	1.64E+02	5.70E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	8	100%	1.40E+04	1.80E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	8	100%	7.45E+01	2.40E+02	No	1.42E+02	Yes	No	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	8	100%	6.10E+03	6.90E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	8	100%	3.21E+02	4.00E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
MCPA	ug/kg	8	13%	1.19E+03	1.40E+03	No	ND	--	No	4.40E+05	No	4.40E+05	No	No	<Tier I	No
MCPP	ug/kg	8	13%	1.39E+03	3.00E+03	No	4.73E+03	No	Yes	8.80E+05	No	8.80E+05	No	No	<Tier I	No
Mercury	mg/kg	8	75%	5.86E-02	1.90E-01	No	5.61E-02	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Molybdenum	mg/kg	8	100%	6.06E-01	1.10E+00	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Naphthalene	ug/kg	8	25%	4.50E+01	4.90E+01	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
Nickel	mg/kg	8	100%	1.71E+01	2.40E+01	No	3.73E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	8	25%	2.46E+02	2.51E+02	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	8	50%	3.82E+02	1.90E+03	No	ND	--	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	8	100%	1.43E+03	2.00E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	8	38%	4.59E+02	2.30E+03	No	ND	--	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Sodium	mg/kg	8	38%	1.06E+02	1.40E+02	Yes	3.53E+02	No	Yes	NA	No	NA	No	No	EN	--
Toluene	ug/kg	8	25%	3.45E+00	6.60E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	8	13%	4.30E+00	4.30E+00	No	ND	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Vanadium	mg/kg	8	100%	2.38E+01	3.30E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Xylenes, Total	ug/kg	8	13%	3.22E+00	4.30E+00	No	ND	--	No	4.10E+05	No	4.10E+05	No	No	<Tier I	No
Zinc	mg/kg	8	100%	8.26E+01	1.60E+02	No	6.41E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Suburface Soil - Industrial TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	1	100%	2.00E-05	2.00E-05	No	1.38E-03	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Butanone (MEK)	ug/kg	9	22%	9.50E+00	1.20E+01	No	ND	--	No	2.80E+07	No	2.80E+07	No	No	<Tier I	No
4,4'-DDE	ug/kg	9	22%	1.02E+00	1.70E+00	No	ND	--	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
Acetone	ug/kg	9	33%	8.78E+01	3.10E+02	No	1.10E+01	Yes	No	1.00E+08	No	1.00E+08	No	No	<Tier I	No
Aluminum	mg/kg	9	100%	9.26E+03	2.20E+04	No	2.03E+04	Yes	No	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	9	22%	5.80E-01	6.00E-01	No	2.40E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	9	100%	5.99E+00	1.10E+01	No	1.74E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	9	100%	2.10E+02	2.90E+02	No	3.73E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzene	ug/kg	9	22%	2.96E+00	3.20E+00	No	ND	--	No	1.50E+03	No	2.10E+03	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	9	22%	3.65E+01	3.70E+01	No	5.20E+01	No	Yes	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	9	22%	3.60E+01	3.80E+01	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	9	22%	3.25E+01	3.70E+01	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	9	22%	3.55E+01	3.60E+01	No	6.80E+01	No	Yes	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	9	11%	3.60E+01	3.60E+01	No	ND	--	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	9	33%	4.33E-01	1.20E+00	No	1.27E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	9	78%	1.08E+03	7.60E+03	No	ND	--	No	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	9	100%	1.78E+00	7.90E+00	No	6.87E+00	Yes	No	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	9	100%	1.20E+04	1.70E+04	Yes	1.61E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbon disulfide	ug/kg	9	33%	4.19E+00	7.80E+00	No	ND	--	No	7.20E+05	No	9.00E+03	No	No	<Tier I	No
Chlorobenzene	ug/kg	9	22%	4.10E+00	1.00E+01	No	ND	--	No	2.10E+05	No	1.30E+03	No	No	<Tier I	No
Chromium	mg/kg	9	100%	3.35E+01	1.30E+02	No	3.27E+01	Yes	No	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	9	22%	4.55E+01	4.80E+01	No	8.40E+01	No	Yes	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	9	100%	6.50E+00	1.10E+01	No	1.39E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	9	100%	1.96E+01	6.20E+01	No	1.55E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Di-n-butylphthalate	ug/kg	9	67%	8.91E+01	1.20E+02	No	ND	--	No	2.30E+06	No	2.30E+06	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	9	22%	4.45E-01	5.70E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Fluoranthene	ug/kg	9	22%	7.95E+01	8.10E+01	No	8.40E+01	No	Yes	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Iron	mg/kg	9	100%	1.39E+04	2.60E+04	Yes	3.33E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	9	100%	2.24E+01	7.70E+01	No	1.42E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	9	100%	5.87E+03	7.10E+03	Yes	9.33E+03	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	9	100%	2.59E+02	4.00E+02	No	8.00E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	9	89%	6.20E-02	2.90E-01	No	5.61E-02	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Molybdenum	mg/kg	9	67%	4.93E-01	7.85E-01	No	1.75E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	9	100%	2.07E+01	4.20E+01	No	3.73E+01	Yes	No	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	9	33%	2.58E+02	3.01E+02	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	9	22%	3.65E+01	4.20E+01	No	ND	--	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	9	100%	1.88E+03	4.00E+03	Yes	4.20E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	9	11%	6.00E+01	6.00E+01	No	ND	--	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Sodium	mg/kg	9	33%	1.18E+02	2.60E+02	Yes	3.53E+02	No	Yes	NA	No	NA	No	No	EN	--
Thallium	mg/kg	9	11%	5.74E-01	7.20E-01	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	9	11%	3.49E+00	5.40E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	9	11%	8.40E+00	8.40E+00	No	ND	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	9	100%	2.52E+01	5.00E+01	No	5.80E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	9	100%	3.79E+02	1.80E+03	No	6.41E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area G

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.05E-03	8.35E-03	No	1.24E-01	No	Yes	1.00E+00	No	1.00E+00	No	No	<Tier I	No
4,4'-DDT	ug/kg	4	75%	1.15E-01	1.60E-01	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Alpha Chlordane	ug/kg	4	50%	1.90E-01	2.60E-01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	4	100%	1.30E+04	1.50E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	4	50%	6.85E-01	7.20E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	4	100%	7.19E+00	8.05E+00	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	4	100%	1.17E+02	1.40E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Beryllium	mg/kg	4	100%	5.89E-01	6.40E-01	No	1.51E+00	No	Yes	2.11E+03	No	4.08E+02	No	No	<Tier I	No
Cadmium	mg/kg	4	100%	2.60E-01	3.90E-01	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	4	100%	9.73E+03	1.40E+04	Yes	3.35E+04	No	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	4	100%	1.93E+01	2.20E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Cobalt	mg/kg	4	100%	7.33E+00	8.60E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	4	100%	1.83E+02	2.90E+02	No	2.09E+02	Yes	No	8.20E+04	No	8.20E+03	No	No	<Tier I	No
delta-BHC	ug/kg	4	75%	1.03E-01	1.82E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
Dieldrin	ug/kg	4	25%	6.20E-02	6.20E-02	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endosulfan I	ug/kg	4	25%	2.20E-01	2.20E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endosulfan II	ug/kg	4	25%	3.40E-01	3.40E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	4	50%	1.50E-01	1.80E-01	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin	ug/kg	4	50%	1.48E-01	1.55E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin aldehyde	ug/kg	4	50%	3.95E-01	6.70E-01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	4	50%	9.10E-01	1.03E+00	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Gamma Chlordane	ug/kg	4	75%	2.02E-01	3.10E-01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	4	25%	2.20E-01	2.20E-01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Iron	mg/kg	4	100%	1.84E+04	2.00E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	4	100%	1.36E+01	1.60E+01	No	1.85E+02	No	Yes	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	4	100%	4.09E+03	4.95E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	4	100%	5.44E+02	7.40E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	4	100%	2.45E-02	2.90E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	4	25%	9.40E-01	9.40E-01	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	4	100%	5.19E-01	7.80E-01	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	4	100%	1.89E+01	2.15E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Potassium	mg/kg	4	100%	1.45E+03	1.70E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Total PCBs	ug/kg	4	50%	1.81E+01	4.65E+01	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	4	100%	3.58E+01	4.00E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	4	100%	6.09E+01	6.95E+01	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area H

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	5.33E-01	1.29E+00	No	1.24E-01	Yes	No	1.00E+00	Yes	1.00E+00	Yes	Yes	>Tier I	No
2,4-DB	ug/kg	4	50%	6.74E+00	9.70E+00	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2-Hexanone	ug/kg	4	25%	5.70E+00	5.70E+00	No	3.30E+01	No	Yes	2.90E+06	No	2.90E+06	No	No	<Tier I	No
4,4'-DDE	ug/kg	4	75%	3.44E+01	8.60E+01	No	1.61E+01	Yes	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	4	75%	4.51E+01	1.10E+02	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Aldrin	ug/kg	4	50%	8.21E+00	2.10E+01	No	ND	--	No	3.00E+02	No	6.10E+03	No	No	<Tier I	No
Aluminum	mg/kg	4	100%	7.95E+03	1.40E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Antimony	mg/kg	4	100%	1.57E+00	2.30E+00	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	4	100%	2.28E+01	6.40E+01	No	1.91E+01	Yes	No	3.00E+00	Yes	6.10E+01	Yes	Yes	>Tier I	No
Barium	mg/kg	4	100%	1.12E+02	1.20E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	4	75%	1.04E+02	1.30E+02	No	2.40E+02	No	Yes	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	4	75%	9.93E+01	1.40E+02	No	1.87E+02	No	Yes	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	4	75%	1.13E+02	1.40E+02	No	1.79E+02	No	Yes	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	4	25%	1.61E+02	3.70E+02	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	4	75%	9.68E+01	1.30E+02	No	2.08E+02	No	Yes	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	4	100%	1.52E+00	3.80E+00	No	1.51E+00	Yes	No	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	4	50%	1.04E+02	1.20E+02	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	4	100%	9.03E+00	2.20E+01	No	8.65E+00	Yes	No	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	4	100%	1.76E+04	4.20E+04	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbon disulfide	ug/kg	4	25%	3.42E+00	4.30E+00	No	ND	--	No	7.20E+05	No	9.00E+03	No	No	<Tier I	No
Chromium	mg/kg	4	100%	1.95E+01	2.30E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	4	75%	1.58E+02	3.00E+02	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	4	100%	1.00E+01	2.00E+01	No	1.55E+01	Yes	No	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	4	100%	3.75E+02	4.80E+02	No	2.09E+02	Yes	No	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Endosulfan II	ug/kg	4	25%	3.57E+00	7.20E+00	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin ketone	ug/kg	4	75%	2.50E+01	8.20E+01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	4	75%	1.70E+02	2.40E+02	No	5.02E+02	No	Yes	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	4	50%	1.47E+01	3.00E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor	ug/kg	4	25%	1.28E+00	2.00E+00	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	4	75%	1.64E+01	4.40E+01	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	4	50%	9.18E+01	1.00E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	4	100%	1.63E+04	1.80E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	4	100%	1.46E+02	2.30E+02	No	1.85E+02	Yes	No	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	4	100%	2.02E+03	2.50E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	4	100%	4.37E+02	7.20E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	4	100%	2.84E-01	7.70E-01	No	1.77E-01	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	4	50%	4.54E+01	1.30E+02	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	4	100%	4.95E+00	1.10E+01	No	2.02E+00	Yes	No	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	4	100%	3.40E+01	7.00E+01	No	4.27E+01	Yes	No	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	4	25%	2.32E+02	2.41E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	4	25%	9.63E+01	1.10E+02	No	3.35E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	4	100%	1.16E+03	1.60E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	4	75%	1.58E+02	1.90E+02	No	4.35E+02	No	Yes	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	4	75%	1.58E+00	4.70E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	4	75%	1.39E+00	2.70E+00	No	1.35E+00	Yes	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Sodium	mg/kg	4	100%	2.48E+02	3.90E+02	Yes	5.77E+02	No	Yes	NA	No	NA	No	No	EN	--
Tetrachloroethene	ug/kg	4	25%	6.73E+00	1.70E+01	No	ND	--	No	2.00E+04	No	2.80E+04	No	No	<Tier I	No
Thallium	mg/kg	4	25%	1.01E+00	2.50E+00	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Total PCBs	ug/kg	4	75%	6.60E+02	1.52E+03	No	See notes	--	No	1.00E+03	Yes	1.00E+03	Yes	Yes	>Tier I	No
Vanadium	mg/kg	4	100%	3.00E+01	4.50E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	4	100%	1.28E+03	3.60E+03	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area I

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
1,2,4-Trichlorobenzene	ug/kg	4	25%	1.11E+02	1.80E+02	No	ND	--	No	3.20E+06	No	9.20E+05	No	No	<Tier I	No
1,4-Dichlorobenzene	ug/kg	4	25%	4.60E+01	4.60E+01	No	ND	--	No	1.70E+07	No	3.40E+05	No	No	<Tier I	No
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.34E+00	1.27E+01	No	1.24E-01	Yes	No	1.00E+00	Yes	1.00E+00	Yes	Yes	>Tier I	No
2,4-DB	ug/kg	4	25%	1.27E+01	2.91E+01	No	ND	--	No	7.00E+06	No	7.00E+06	No	No	<Tier I	No
2,4-Dichlorophenol	ug/kg	4	25%	8.20E+01	8.20E+01	No	ND	--	No	6.10E+06	No	6.10E+05	No	No	<Tier I	No
2-Nitroaniline	ug/kg	4	25%	1.60E+02	1.60E+02	No	ND	--	No	5.00E+04	No	5.00E+04	No	No	<Tier I	No
4,4'-DDD	ug/kg	3	100%	6.69E+01	2.00E+02	No	ND	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
4,4'-DDE	ug/kg	3	100%	1.03E+02	3.00E+02	No	1.61E+01	Yes	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	3	67%	1.57E+02	4.60E+02	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
4-Chloroaniline	ug/kg	4	50%	4.64E+03	1.80E+04	No	ND	--	No	8.20E+06	No	8.20E+05	No	No	<Tier I	No
Aldrin	ug/kg	3	100%	8.48E+01	2.50E+02	No	ND	--	No	3.00E+02	No	6.10E+03	No	No	<Tier I	No
Alpha Chlordane	ug/kg	3	33%	2.65E+00	2.65E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	4	100%	5.64E+03	8.00E+03	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	4	50%	2.36E+02	7.30E+02	No	1.60E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	4	100%	6.06E+00	8.40E+00	No	3.80E+00	Yes	No	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	4	100%	7.79E+00	1.20E+01	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	4	100%	2.81E+02	7.40E+02	No	3.63E+02	Yes	No	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	4	75%	6.53E+02	2.20E+03	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	4	75%	6.29E+02	2.20E+03	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	4	75%	8.14E+02	2.80E+03	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	4	75%	4.86E+02	1.60E+03	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	4	75%	3.10E+02	9.60E+02	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	4	100%	9.10E-01	1.70E+00	No	1.51E+00	Yes	No	2.11E+03	No	4.08E+02	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	4	25%	8.75E+01	8.75E+01	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	4	100%	1.12E+01	3.10E+01	No	8.65E+00	Yes	No	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	4	100%	1.57E+05	2.35E+05	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	4	25%	1.48E+02	3.20E+02	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	4	100%	3.33E+01	6.50E+01	No	3.93E+01	Yes	No	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	4	75%	6.62E+02	2.20E+03	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	4	100%	1.21E+01	3.30E+01	No	1.55E+01	Yes	No	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	4	100%	6.66E+03	1.30E+04	No	2.09E+02	Yes	No	8.20E+04	No	8.20E+03	Yes	Yes	>DCcw	No
Dibenzo(a,h)anthracene	ug/kg	4	50%	1.23E+02	3.60E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dibenzofuran	ug/kg	4	25%	9.25E+01	1.00E+02	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dieldrin	ug/kg	3	100%	7.04E+01	2.00E+02	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Di-n-butylphthalate	ug/kg	4	25%	5.20E+01	5.20E+01	No	3.12E+02	No	Yes	2.30E+06	No	2.30E+06	No	No	<Tier I	No
Endosulfan I	ug/kg	3	100%	8.88E+01	2.60E+02	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endosulfan II	ug/kg	3	100%	2.06E+02	6.00E+02	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endosulfan sulfate	ug/kg	3	33%	8.65E+00	8.80E+00	No	ND	--	No	1.20E+07	No	1.20E+06	No	No	<Tier I	No
Endrin	ug/kg	3	100%	8.22E+01	2.40E+02	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin aldehyde	ug/kg	3	100%	5.15E+02	1.50E+03	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Endrin ketone	ug/kg	3	100%	2.42E+02	7.00E+02	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	4	100%	1.66E+03	6.00E+03	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	4	25%	1.25E+02	2.30E+02	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	3	100%	1.32E+02	3.80E+02	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor	ug/kg	3	67%	2.48E+01	6.90E+01	No	ND	--	No	1.00E+03	No	1.60E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	3	100%	4.85E+01	1.40E+02	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Hexachlorobenzene	ug/kg	4	25%	5.48E+01	1.10E+02	No	ND	--	No	1.80E+03	No	2.60E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	4	50%	4.84E+02	1.60E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	4	100%	1.08E+04	1.60E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--

Surface Soil Industrial TACO Screen
Fill Area I

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Lead	mg/kg	4	100%	6.95E+02	1.50E+03	No	1.85E+02	Yes	No	7.50E+02	Yes	7.50E+02	Yes	No	Avg<Tier I	No
Magnesium	mg/kg	4	100%	1.24E+04	1.90E+04	Yes	1.72E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	4	100%	2.03E+02	3.00E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	4	100%	6.04E-01	2.00E+00	No	1.77E-01	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	3	100%	1.03E+03	3.00E+03	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	4	100%	5.86E+00	8.50E+00	No	2.02E+00	Yes	No	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	4	100%	3.54E+01	6.50E+01	No	4.27E+01	Yes	No	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	4	100%	6.34E+02	1.65E+03	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	4	100%	8.80E+02	3.30E+03	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	4	100%	1.24E+03	1.50E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	4	100%	1.35E+03	4.70E+03	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	4	75%	1.10E+00	1.60E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	4	100%	8.71E+00	1.90E+01	No	1.35E+00	Yes	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Sodium	mg/kg	4	100%	6.35E+02	8.70E+02	Yes	5.77E+02	Yes	Yes	NA	No	NA	No	No	EN	--
Toluene	ug/kg	4	25%	2.89E+00	3.30E+00	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	4	75%	3.13E+04	1.21E+05	No	See notes	--	No	1.00E+03	Yes	1.00E+03	Yes	Yes	>Tier I	No
Vanadium	mg/kg	4	100%	1.87E+01	2.60E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	4	100%	1.43E+03	2.80E+03	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area L

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.60E-01	8.21E-01	No	1.24E-01	Yes	No	1.00E+00	No	1.00E+00	No	No	<Tier I	No
2-Methylnaphthalene	ug/kg	4	25%	1.04E+02	1.40E+02	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
4,4'-DDE	ug/kg	4	75%	1.10E+01	2.00E+01	No	1.61E+01	Yes	No	1.70E+04	No	3.70E+05	No	No	<Tier I	No
4,4'-DDT	ug/kg	4	25%	8.95E+00	1.60E+01	No	1.41E+01	Yes	No	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Acenaphthene	ug/kg	4	50%	4.81E+02	1.60E+03	No	ND	--	No	1.20E+08	No	1.20E+08	No	No	<Tier I	No
Aldrin	ug/kg	4	25%	3.83E+00	5.50E+00	No	ND	--	No	3.00E+02	No	6.10E+03	No	No	<Tier I	No
Aluminum	mg/kg	4	100%	5.75E+03	7.60E+03	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	4	75%	1.05E+03	3.60E+03	No	1.60E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	4	100%	3.28E+00	5.40E+00	No	3.80E+00	Yes	No	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	4	100%	3.33E+01	3.70E+01	No	1.91E+01	Yes	No	3.00E+00	Yes	6.10E+01	No	Yes	>DCind	No
Barium	mg/kg	4	100%	1.71E+02	2.50E+02	No	3.63E+02	No	Yes	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	4	75%	2.56E+03	7.80E+03	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	4	75%	2.30E+03	7.00E+03	No	1.87E+02	Yes	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Benzo(b)fluoranthene	ug/kg	4	75%	2.19E+03	6.60E+03	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	4	75%	1.33E+03	3.80E+03	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	4	75%	2.29E+03	6.80E+03	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
Beryllium	mg/kg	4	100%	1.48E+00	1.60E+00	No	1.51E+00	Yes	No	2.11E+03	No	4.08E+02	No	No	<Tier I	No
beta-BHC	ug/kg	4	25%	1.66E+00	3.70E+00	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	4	50%	1.90E+02	3.10E+02	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	4	100%	5.60E+00	1.00E+01	No	8.65E+00	Yes	No	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	4	100%	2.00E+04	2.90E+04	Yes	3.35E+04	No	Yes	NA	No	NA	No	No	EN	--
Carbazole	ug/kg	4	75%	4.80E+02	1.50E+03	No	6.40E+01	Yes	No	2.90E+05	No	6.20E+06	No	No	<Tier I	No
Chromium	mg/kg	4	100%	4.53E+01	7.90E+01	No	3.93E+01	Yes	No	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	4	75%	2.64E+03	7.80E+03	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	4	100%	1.38E+01	1.70E+01	No	1.55E+01	Yes	No	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	4	100%	1.76E+03	4.70E+03	No	2.09E+02	Yes	No	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Cyanide, Total	mg/kg	4	25%	6.05E-01	1.60E+00	No	ND	--	No	4.10E+04	No	4.10E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	4	50%	4.55E+02	1.30E+03	No	ND	--	No	8.00E+02	Yes	1.70E+04	No	Yes	>DCind	No
Dibenzofuran	ug/kg	4	25%	2.56E+02	7.50E+02	No	ND	--	No	5.10E+06	No	5.10E+06	No	No	<Tier I	No
Dieldrin	ug/kg	4	25%	7.83E+00	1.20E+01	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Endrin ketone	ug/kg	4	75%	1.23E+01	2.80E+01	No	ND	--	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No
Fluoranthene	ug/kg	4	75%	5.77E+03	1.80E+04	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Fluorene	ug/kg	4	50%	4.21E+02	1.40E+03	No	ND	--	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	4	75%	1.15E+01	2.10E+01	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Heptachlor epoxide	ug/kg	4	75%	5.85E+00	9.20E+00	No	ND	--	No	6.00E+02	No	2.70E+03	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	4	75%	1.58E+03	4.80E+03	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	4	100%	2.30E+04	3.20E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	4	100%	3.69E+02	9.40E+02	No	1.85E+02	Yes	No	7.50E+02	Yes	7.50E+02	Yes	No	Avg<Tier I	No
Magnesium	mg/kg	4	100%	2.49E+03	4.20E+03	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	4	100%	3.51E+02	6.50E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	4	100%	3.22E-01	5.60E-01	No	1.77E-01	Yes	No	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	4	50%	2.63E+01	4.60E+01	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	4	100%	1.45E+01	2.30E+01	No	2.02E+00	Yes	No	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Naphthalene	ug/kg	4	25%	1.49E+02	3.20E+02	No	ND	--	No	8.20E+07	No	8.20E+06	No	No	<Tier I	No
Nickel	mg/kg	4	100%	4.68E+01	5.50E+01	No	4.27E+01	Yes	No	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	4	25%	2.38E+02	2.40E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	4	75%	3.62E+03	1.20E+04	No	3.35E+02	Yes	No	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	4	100%	1.09E+03	1.70E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	4	75%	4.27E+03	1.30E+04	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area L

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Selenium	mg/kg	4	100%	3.08E+00	4.30E+00	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Silver	mg/kg	4	75%	8.13E-01	1.20E+00	No	1.35E+00	No	Yes	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Sodium	mg/kg	4	100%	3.45E+02	5.40E+02	Yes	5.77E+02	No	Yes	NA	No	NA	No	No	EN	--
Thallium	mg/kg	4	100%	1.85E+00	2.10E+00	No	ND	--	No	1.60E+02	No	1.60E+02	No	No	<Tier I	No
Toluene	ug/kg	4	25%	6.08E+00	1.30E+01	No	ND	--	No	6.50E+05	No	4.20E+04	No	No	<Tier I	No
Total PCBs	ug/kg	4	50%	4.90E+02	1.17E+03	No	See notes	--	No	1.00E+03	Yes	1.00E+03	Yes	Yes	>Tier I	No
Vanadium	mg/kg	4	100%	4.43E+01	4.90E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	4	100%	5.10E+02	8.70E+02	No	8.08E+02	Yes	No	6.10E+05	No	6.10E+04	No	No	<Tier I	No

Surface Soil Industrial TACO Screen
Fill Area N

Constituent	Units	Number of Samples Analyzed	FOD	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Industrial Direct Contact (DC) Concentration	Is Max>DC?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>DC?	COPC?	Reason	Is Avg>100x DC?
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	9.76E-02	3.45E-01	No	1.24E-01	Yes	No	1.00E+00	No	1.00E+00	No	No	<Tier I	No
4,4'-DDT	ug/kg	4	25%	2.02E+00	2.70E+00	No	1.41E+01	No	Yes	1.70E+04	No	1.00E+05	No	No	<Tier I	No
Aldrin	ug/kg	4	25%	1.03E+00	1.28E+00	No	ND	--	No	3.00E+02	No	6.10E+03	No	No	<Tier I	No
Alpha Chlordane	ug/kg	4	25%	9.67E-01	1.10E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Aluminum	mg/kg	4	100%	8.75E+03	1.10E+04	No	2.54E+04	No	Yes	1.00E+05	No	1.00E+05	No	No	<Tier I	No
Anthracene	ug/kg	4	75%	4.70E+01	5.80E+01	No	1.60E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Antimony	mg/kg	4	25%	7.10E-01	7.10E-01	No	3.80E+00	No	Yes	8.20E+02	No	8.20E+01	No	No	<Tier I	No
Arsenic	mg/kg	4	100%	6.33E+00	7.30E+00	No	1.91E+01	No	Yes	3.00E+00	Yes	6.10E+01	No	No	<BK	No
Barium	mg/kg	4	100%	5.93E+02	1.20E+03	No	3.63E+02	Yes	No	1.40E+05	No	1.40E+04	No	No	<Tier I	No
Benzo(a)anthracene	ug/kg	4	100%	1.68E+02	2.70E+02	No	2.40E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(a)pyrene	ug/kg	4	100%	1.87E+02	3.30E+02	No	1.87E+02	Yes	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Benzo(b)fluoranthene	ug/kg	4	100%	1.65E+02	3.20E+02	No	1.79E+02	Yes	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Benzo(g,h,i)perylene	ug/kg	4	25%	1.44E+02	3.00E+02	No	1.27E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Benzo(k)fluoranthene	ug/kg	4	100%	2.18E+02	3.60E+02	No	2.08E+02	Yes	No	7.80E+04	No	1.70E+06	No	No	<Tier I	No
beta-BHC	ug/kg	4	25%	2.93E-01	3.38E-01	No	ND	--	No	9.00E+02	No	2.10E+03	No	No	<Tier I	No
bis(2-Ethylhexyl)phthalate	ug/kg	4	25%	1.01E+02	1.30E+02	No	3.22E+02	No	Yes	4.10E+05	No	4.10E+06	No	No	<Tier I	No
Cadmium	mg/kg	4	100%	8.46E-01	1.50E+00	No	8.65E+00	No	Yes	2.00E+03	No	2.00E+02	No	No	<Tier I	No
Calcium	mg/kg	4	100%	5.73E+04	1.09E+05	Yes	3.35E+04	Yes	Yes	NA	No	NA	No	No	EN	--
Chromium	mg/kg	4	100%	1.65E+01	1.80E+01	No	3.93E+01	No	Yes	4.20E+02	No	4.10E+03	No	No	<Tier I	No
Chrysene	ug/kg	4	100%	2.00E+02	3.10E+02	No	2.73E+02	Yes	No	7.80E+05	No	1.70E+07	No	No	<Tier I	No
Cobalt	mg/kg	4	100%	5.84E+00	6.15E+00	No	1.55E+01	No	Yes	1.20E+05	No	1.20E+04	No	No	<Tier I	No
Copper	mg/kg	4	100%	5.01E+01	1.10E+02	No	2.09E+02	No	Yes	8.20E+04	No	8.20E+03	No	No	<Tier I	No
Dibenzo(a,h)anthracene	ug/kg	4	50%	7.25E+01	1.10E+02	No	ND	--	No	8.00E+02	No	1.70E+04	No	No	<Tier I	No
Dieldrin	ug/kg	4	25%	1.89E+00	2.13E+00	No	ND	--	No	4.00E+02	No	3.10E+03	No	No	<Tier I	No
Fluoranthene	ug/kg	4	100%	3.93E+02	6.10E+02	No	5.02E+02	Yes	No	8.20E+07	No	8.20E+07	No	No	<Tier I	No
Gamma Chlordane	ug/kg	4	25%	1.38E+00	1.85E+00	No	ND	--	No	4.00E+03	No	1.20E+04	No	No	<Tier I	No
Indeno(1,2,3-cd)pyrene	ug/kg	4	75%	1.44E+02	2.50E+02	No	ND	--	No	8.00E+03	No	1.70E+05	No	No	<Tier I	No
Iron	mg/kg	4	100%	1.43E+04	1.50E+04	Yes	3.80E+04	No	Yes	NA	No	NA	No	No	EN	--
Lead	mg/kg	4	100%	1.38E+02	4.10E+02	No	1.85E+02	Yes	No	7.50E+02	No	7.50E+02	No	No	<Tier I	No
Magnesium	mg/kg	4	100%	7.18E+03	1.15E+04	Yes	1.72E+04	No	Yes	NA	No	NA	No	No	EN	--
Manganese	mg/kg	4	100%	3.74E+02	4.10E+02	No	8.83E+02	No	Yes	9.10E+04	No	8.70E+03	No	No	<Tier I	No
Mercury	mg/kg	4	100%	6.78E-02	9.50E-02	No	1.77E-01	No	Yes	6.10E+02	No	6.10E+01	No	No	<Tier I	No
Methoxychlor	ug/kg	4	25%	2.06E+01	5.50E+01	No	ND	--	No	1.00E+07	No	1.00E+06	No	No	<Tier I	No
Molybdenum	mg/kg	4	100%	1.03E+00	1.45E+00	No	2.02E+00	No	Yes	1.00E+04	No	1.00E+04	No	No	<Tier I	No
Nickel	mg/kg	4	100%	1.61E+01	1.70E+01	No	4.27E+01	No	Yes	2.10E+04	No	4.10E+03	No	No	<Tier I	No
Pentachlorophenol	ug/kg	4	100%	3.07E+02	4.74E+02	No	See notes	--	No	2.40E+04	No	5.20E+05	No	No	<Tier I	No
Phenanthrene	ug/kg	4	100%	1.76E+02	2.60E+02	No	3.35E+02	No	Yes	6.10E+08	No	6.10E+08	No	No	<Tier I	No
Potassium	mg/kg	4	100%	1.40E+03	1.60E+03	Yes	4.73E+03	No	Yes	NA	No	NA	No	No	EN	--
Pyrene	ug/kg	4	100%	3.41E+02	5.50E+02	No	4.35E+02	Yes	No	6.10E+07	No	6.10E+07	No	No	<Tier I	No
Selenium	mg/kg	4	25%	5.69E-01	6.80E-01	No	ND	--	No	1.00E+04	No	1.00E+03	No	No	<Tier I	No
Total PCBs	ug/kg	4	25%	5.13E+01	1.78E+02	No	See notes	--	No	1.00E+03	No	1.00E+03	No	No	<Tier I	No
Vanadium	mg/kg	4	100%	2.38E+01	2.90E+01	No	6.90E+01	No	Yes	1.40E+04	No	1.40E+03	No	No	<Tier I	No
Zinc	mg/kg	4	100%	1.49E+02	2.50E+02	No	8.08E+02	No	Yes	6.10E+05	No	6.10E+04	No	No	<Tier I	No

APPENDIX G

COPC SELECTION FOR THE SOIL TO GROUNDWATER PATHWAY

APPENDIX G
COPC SELECTION FOR THE SOIL TO GROUNDWATER PATHWAY

This appendix presents the screening tables for identifying COPCs for the soil to groundwater pathway. COPCs for surface soil for each transect, for subsurface soil for each transect, and for surface soil for each fill area (excluding Fill Area M, which is included in the sediment removal action) are identified using the "Soil to Groundwater Standards" presented in Appendix C Table C-3. The screening tables present:

- The frequency of detection and the arithmetic mean and maximum detected concentrations as presented in Appendix B;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 soil to groundwater screening values; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The screening tables are presented in the following order:

- Surface soil – Transect 1
- Surface soil – Transect 2
- Surface soil – Transect 3
- Surface soil – Transect 4
- Surface soil – Transect 5
- Surface soil – Transect 6
- Surface soil – Transect 7

- Subsurface soil – Transect 1
- Subsurface soil – Transect 2
- Subsurface soil – Transect 3
- Subsurface soil – Transect 4
- Subsurface soil – Transect 5
- Subsurface soil – Transect 6
- Subsurface soil – Transect 7

- Surface soil – Fill Area G
- Surface soil – Fill Area H
- Surface soil – Fill Area I
- Surface soil – Fill Area L
- Surface soil – Fill Area N

For metals and ionizable organics, the soil to groundwater pathway screening values are pH dependent. The screening conducted in the above tables used the lowest screening value available, regardless of pH. In Tables G-2, G-3 and G-4 that follow the tables listed above, constituents that failed the initial soil to groundwater screen for transect surface soil, transect subsurface soil, and fill area surface soil are then compared to area-specific pH-specific soil to groundwater pathway screening values, where available. Many of the initial COPCs were screened out based on this site-specific screening step.

The screening results are summarized in Section 3.3.1 of the text.

As shown in Table G-1, TACO Tier 1 soil to groundwater screening values were not available for the following 23 constituents:

- 2,4-DB
- 2-Butanone (MEK)
- 2-Hexanone
- 2-Nitroaniline
- Aluminum
- Calcium
- Chromium
- Cobalt
- Dibenzofuran
- Dicamba
- Iron
- Lead
- Magnesium
- Manganese
- MCPA

- MCPP
- Molybdenum
- Potassium
- Silver
- Sodium
- Total 2,3,7,8-TCDD TEQ
- Total PCBs
- Vanadium

Of these, the following 5 are essential nutrients:

- Calcium
- Iron
- Magnesium
- Potassium
- Sodium

USEPA provides soil screening levels (SSLs) (USEPA, 1996a, b; as referenced in Section 8 of the HHRA report) for the soil to groundwater pathway for the following 5 constituents (followed by the SSL value for a DAF of 20):

- Chromium III (any value protective of underlying groundwater)
- Chromium VI (38 mg/kg)

  Although soil concentrations exceed the hexavalent chromium screening value in Transect 1 surface soil, Transect 2 surface soil, Transect 7 subsurface soil , Site I surface soil and Site L surface soil, there is no reason to believe that hexavalent chromium is present at the site. Therefore, chromium is not identified as a COPC for the soil to groundwater pathway.

- Lead (no soil to groundwater SSL - direct contact evaluation appropriate for this constituent)
- Silver (32 mg/kg)

  There are no exceedances of the SSL for silver.

- Total PCBs (no soil to groundwater SSL - direct contact evaluation appropriate for this constituent)

- Vanadium (6,000 mg/kg)

  There are no exceedances of the SSL for vanadium.

The purpose of the soil to groundwater screen is to identify where soils may serve as a source of constituents to underlying groundwater. The Sauget Area 1 Sites have been in place for many years, and have not seen recent disposal activity. Therefore, it they are serving as a source of constituents to underlying groundwater, those constituents should be detectable in groundwater at levels of concern. Therefore, the list of groundwater COPCs was compared to the list of remaining constituents lacking soil to groundwater screening values to determine if significant leaching has occurred. The following constituents were not identified as COPCs in groundwater. Therefore, they are eliminated from further consideration in the soil-to-groundwater pathway:

- 2,4-DB
- 2-Butanone (MEK)
- 2-Hexanone
- Aluminum
- Cobalt
- Dibenzofuran
- Dicamba
- Manganese
- MCPA
- MCPP

Therefore, the following 3 constituents are detected in soil and identified as a COPC in groundwater:

- 2-Nitroaniline
- Molybdenum
- Total 2,3,7,8-TCDD TEQ

2-Nitroaniline was detected in one soil sample in Site I, and was not identified as a COPC for soil. It was identified as a groundwater COPC in one well in Site H, but was not detected in Site H soil. Therefore, 2-nitroaniline is not identified as a soil to groundwater COPC.

Molybdenum was identified as a groundwater COPC in one well in Site G. Although it was detected in soil samples from Site G, all concentrations were below background. Therefore, molybdenum is not identified as a soil to groundwater COPC.

Total 2,3,7,8-TCDD TEQ was identified as a direct contact COPC in Site H and Site I soils. Total 2,3,7,8-TCDD TEQ was also identified as groundwater COPC in sample locations in Site G, Site H and Site I. Given the limited mobility of dioxins in the soil environment, there is the strong potential that the observance of dioxin in groundwater at these Sites is due to its presence in fill material that is saturated with groundwater rather than due to transport from the soil to groundwater. Therefore, Total 2,3,7,8-TCDD TEQ is not identified as a soil to groundwater COPC.

Table G-1
Evaluation of Constituents Lacking Soil to Groundwater Criteria
Sauget Area 1 - EE/CA and RI/FS
Human Health Risk Assessment

Constituents Without Soil to Groundwater Pathway Survey Values	Eliminated from further consideration based on:			
	Essential Nutrient Status	Comparison to USEPA SSLs	Not a COPC in Groundwater	See Text for Explanation
2,4-DB			X	
2-Butanone (MEK)			X	
2-Hexanone			X	
2-Nitroaniline				X
Aluminum			X	
Calcium	X			
Chromium		X		
Cobalt			X	
Dibenzofuran			X	
Dicamba			X	
Iron	X			
Lead		X		
Magnesium	X			
Manganese			X	
MCPA			X	
MCPP			X	
Molybdenum				X
Potassium	X			
Silver		X		
Sodium	X			
Total 2,3,7,8-TCDD TEQ				X
Total PCBS		X		
Vanadium		X		

Notes:
SSL - Soil Screening Levels
COPC - Constituent of Potential Concern

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	5	100%	6.16E-03	1.31E-02	No	ND	--	No	NA	No	No	NA
2,4-D	ug/kg	10	10%	3.60E+00	3.60E+00	No	ND	--	No	7.70E+03	No	No	<SGW
2-Butanone (MEK)	ug/kg	10	20%	1.81E+01	3.20E+01	No	ND	--	No	NA	No	No	NA
2-Hexanone	ug/kg	10	10%	6.60E+00	6.60E+00	No	3.30E+01	No	Yes	NA	No	No	<BK
4,4'-DDE	ug/kg	10	70%	3.04E-01	5.65E-01	No	1.61E+01	No	Yes	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	10	50%	4.81E-01	9.33E-01	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Acetone	ug/kg	10	50%	1.79E+02	4.40E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	9.89E+03	1.50E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	10	80%	1.84E+00	2.60E+00	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	10	100%	8.10E+00	1.00E+01	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	1.83E+02	2.40E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	10	10%	2.83E+00	3.00E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Beryllium	mg/kg	10	100%	6.30E-01	9.40E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	1.05E+02	1.60E+02	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	100%	2.74E+00	4.80E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	5.91E+03	8.70E+03	Yes	3.35E+04	No	Yes	NA	No	No	EN
Carbon disulfide	ug/kg	10	10%	2.50E+00	2.60E+00	No	ND	--	No	1.60E+05	No	No	<SGW
Chlorobenzene	ugkg	10	10%	3.03E+00	4.00E+00	No	ND	--	No	6.50E+03	No	No	<SGW
Chromium	mg/kg	10	100%	1.89E+01	4.90E+01	No	3.93E+01	Yes	No	NA	No	No	NA
Cobalt	mg/kg	10	100%	7.01E+00	9.20E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	1.32E+02	2.30E+02	No	2.09E+02	Yes	No	3.30E+02	No	No	<SGW
Dicamba	ug/kg	10	40%	3.06E+00	6.35E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	10	30%	5.76E-01	1.50E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Endosulfan sulfate	ug/kg	10	40%	2.61E-01	4.50E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin ketone	ug/kg	10	70%	2.66E-01	4.90E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	10	10%	6.60E+01	6.60E+01	No	5.02E+02	No	Yes	2.10E+07	No	No	<SGW
Heptachlor epoxide	ug/kg	10	60%	2.60E-01	5.07E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Iron	mg/kg	10	100%	1.60E+04	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	7.29E+01	1.20E+02	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	10	100%	4.40E+03	5.30E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	10	100%	3.65E+02	5.50E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
MCPA	ug/kg	10	40%	2.71E+03	7.40E+03	No	1.45E+04	No	Yes	NA	No	No	<BK
Mercury	mg/kg	10	100%	6.25E-02	9.90E-02	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK
Methoxychlor	ug/kg	10	50%	2.06E+00	2.90E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Methylene chloride (Dichlorome	ug/kg	10	20%	2.20E+00	2.40E+00	No	1.14E+01	No	Yes	2.00E+02	No	No	<SGW
Molybdenum	mg/kg	10	100%	5.03E-01	8.60E-01	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	10	100%	1.95E+01	2.50E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	10	90%	2.96E+02	4.82E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Potassium	mg/kg	10	100%	2.00E+03	2.80E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Selenium	mg/kg	10	20%	6.18E-01	8.10E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	10	90%	3.94E-01	5.90E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Thallium	mg/kg	10	40%	6.84E-01	9.80E-01	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	10	20%	2.84E+00	3.20E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	10	100%	1.01E+02	2.31E+02	No	See notes	--	No	NA	No	No	NA
Trichloroethene	ug/kg	10	30%	3.52E+00	6.20E+00	No	ND	--	No	3.00E+02	No	No	<SGW
Vanadium	mg/kg	10	100%	2.84E+01	4.10E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	10	100%	3.88E+02	1.40E+03	No	8.08E+02	Yes	No	2.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	5.87E-03	9.94E-03	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	67%	2.19E+01	3.40E+01	No	ND	--	No	NA	No	No	NA
2-Hexanone	ug/kg	9	11%	4.80E+00	4.80E+00	No	3.30E+01	No	Yes	NA	No	No	<BK
4,4'-DDD	ug/kg	9	11%	5.60E-01	5.60E-01	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	9	33%	3.80E-01	4.80E-01	No	1.61E+01	No	Yes	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	9	56%	2.62E+00	1.40E+01	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Acetone	ug/kg	9	67%	2.17E+02	4.50E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	1.21E+04	1.80E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	9	67%	1.21E+00	1.70E+00	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	9	100%	7.94E+00	1.00E+01	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	1.92E+02	2.30E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	9	22%	5.90E+01	7.20E+01	No	2.40E+02	No	Yes	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	9	22%	5.64E+01	7.20E+01	No	1.87E+02	No	Yes	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	9	33%	4.87E+01	7.20E+01	No	1.79E+02	No	Yes	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	9	11%	4.00E+01	4.00E+01	No	1.27E+02	No	Yes	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	9	22%	5.80E+01	6.30E+01	No	2.08E+02	No	Yes	2.50E+05	No	No	<SGW
Beryllium	mg/kg	9	78%	6.82E-01	1.10E+00	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	33%	7.07E+01	9.40E+01	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	9	100%	2.28E+00	2.80E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	8.18E+03	1.60E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN
Chromium	mg/kg	9	100%	2.13E+01	4.80E+01	No	3.93E+01	Yes	No	NA	No	No	NA
Chrysene	ug/kg	9	33%	6.23E+01	8.90E+01	No	2.73E+02	No	Yes	8.00E+05	No	No	<SGW
Cobalt	mg/kg	9	100%	7.76E+00	1.10E+01	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	9.02E+01	1.40E+02	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
Dicamba	ug/kg	9	22%	2.20E+00	3.10E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Di-n-butylphthalate	ug/kg	9	11%	1.03E+02	1.20E+02	No	3.12E+02	No	Yes	2.30E+06	No	No	<SGW
Endosulfan sulfate	ug/kg	9	33%	3.30E-01	4.70E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin ketone	ug/kg	9	44%	5.95E-01	1.30E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	9	22%	1.08E+02	1.50E+02	No	5.02E+02	No	Yes	2.10E+07	No	No	<SGW
Gamma Chlordane	ug/kg	9	11%	2.00E-01	2.00E-01	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor epoxide	ug/kg	9	22%	1.70E-01	1.90E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Iron	mg/kg	9	100%	1.90E+04	2.50E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	6.47E+01	8.80E+01	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	5.18E+03	9.50E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	5.56E+02	1.20E+03	No	8.83E+02	Yes	No	NA	No	No	NA
MCPA	ug/kg	9	22%	1.75E+03	5.50E+03	No	1.45E+04	No	Yes	NA	No	No	<BK
MCPP	ug/kg	9	11%	1.91E+03	7.60E+03	No	9.97E+03	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	100%	6.91E-02	9.40E-02	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Methoxychlor	ug/kg	9	22%	4.30E+00	7.30E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Methylene chloride (Dichlorome	ug/kg	9	11%	2.00E+00	2.00E+00	No	1.14E+01	No	Yes	2.00E+02	No	No	<SGW
Molybdenum	mg/kg	9	100%	7.67E-01	1.30E+00	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	2.18E+01	2.70E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	9	44%	2.45E+02	2.51E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	9	22%	5.65E+01	6.10E+01	No	3.35E+02	No	Yes	5.90E+07	No	No	<SGW
Potassium	mg/kg	9	100%	2.53E+03	3.80E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	9	22%	1.03E+02	1.20E+02	No	4.35E+02	No	Yes	2.10E+07	No	No	<SGW
Selenium	mg/kg	9	33%	6.01E-01	1.00E+00	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	9	89%	3.44E-01	4.80E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Thallium	mg/kg	9	44%	7.21E-01	1.30E+00	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	9	11%	3.02E+00	3.40E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	9	89%	6.68E+01	1.64E+02	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	9	100%	4.22E+01	1.20E+02	No	6.90E+01	Yes	No	NA	No	No	NA
Zinc	mg/kg	9	100%	2.46E+02	3.10E+02	No	8.08E+02	No	Yes	2.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.07E-03	3.66E-03	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	10	10%	8.89E+00	4.10E+01	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	10	60%	2.77E+01	4.70E+01	No	ND	--	No	NA	No	No	NA
2-Hexanone	ug/kg	10	10%	6.90E+00	6.90E+00	No	3.30E+01	No	Yes	NA	No	No	<BK
4,4'-DDE	ug/kg	10	50%	6.22E-01	1.70E+00	No	1.61E+01	No	Yes	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	10	40%	1.21E+00	1.80E+00	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Acetone	ug/kg	10	60%	3.08E+02	6.70E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Alpha Chlordane	ug/kg	10	20%	1.48E+00	5.80E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	9.46E+03	1.70E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	10	20%	3.85E+01	5.10E+01	No	1.60E+02	No	Yes	5.90E+07	No	No	<SGW
Antimony	mg/kg	10	40%	1.20E+00	1.90E+00	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	10	100%	6.64E+00	9.70E+00	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	1.65E+02	2.20E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	10	10%	2.10E+00	2.10E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	10	50%	1.20E+02	4.80E+02	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	10	40%	1.37E+02	8.60E+02	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	10	60%	1.64E+02	9.70E+02	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	10	50%	1.54E+02	8.30E+02	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	10	40%	1.78E+02	1.00E+03	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	10	90%	5.87E-01	1.10E+00	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	10	10%	3.38E-01	7.50E-01	No	ND	--	No	3.00E+00	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	40%	1.31E+02	4.30E+02	No	3.22E+02	Yes	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	100%	2.34E+00	3.80E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	3.27E+04	2.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	10	10%	8.80E+01	8.80E+01	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	10	100%	1.59E+01	2.30E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	10	70%	1.63E+02	9.80E+02	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	10	100%	6.50E+00	1.00E+01	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	6.56E+01	7.90E+01	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	10	10%	7.15E+01	2.50E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dicamba	ug/kg	10	20%	8.80E+00	2.30E+01	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	10	40%	9.28E-01	1.08E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Endrin ketone	ug/kg	10	20%	4.60E-01	7.50E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	10	60%	2.49E+02	1.50E+03	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Gamma Chlordane	ug/kg	10	30%	1.40E+00	5.10E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	1.59E+02	6.90E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	10	100%	1.45E+04	2.20E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	5.45E+01	9.00E+01	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	10	100%	6.25E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 3

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason	
Manganese	mg/kg	10	100%	3.79E+02	6.10E+02	No	8.83E+02	No	Yes	NA	No	No		<BK
MCPA	ug/kg	10	20%	1.54E+03	4.00E+03	No	1.45E+04	No	Yes	NA	No	No		<BK
MCPP	ug/kg	10	20%	2.25E+03	7.70E+03	No	9.97E+03	No	Yes	NA	No	No		<BK
Mercury	mg/kg	10	100%	6.27E-02	9.30E-02	No	1.77E-01	No	Yes	5.00E-02	Yes	No		<BK
Methoxychlor	ug/kg	10	10%	2.60E+00	2.60E+00	No	ND	--	No	7.80E+05	No	No		<SGW
Molybdenum	mg/kg	10	100%	7.38E-01	1.40E+00	No	2.02E+00	No	Yes	NA	No	No		<BK
Nickel	mg/kg	10	100%	1.86E+01	2.60E+01	No	4.27E+01	No	Yes	4.00E+02	No	No		<SGW
Pentachlorophenol	ug/kg	10	20%	2.97E+02	7.40E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW	
Phenanthrene	ug/kg	10	40%	1.33E+02	5.30E+02	No	3.35E+02	Yes	No	5.90E+07	No	No		<SGW
Potassium	mg/kg	10	100%	2.18E+03	3.70E+03	Yes	4.73E+03	No	Yes	NA	No	No		EN
Pyrene	ug/kg	10	30%	2.39E+02	1.40E+03	No	4.35E+02	Yes	No	2.10E+07	No	No		<SGW
Selenium	mg/kg	10	20%	8.30E-01	3.20E+00	No	ND	--	No	2.40E+00	Yes	Yes	>SGW	
Silver	mg/kg	10	40%	2.98E-01	3.80E-01	No	1.35E+00	No	Yes	NA	No	No		<BK
Thallium	mg/kg	10	30%	6.93E-01	1.40E+00	No	ND	--	No	1.60E+01	No	No		<SGW
Toluene	ug/kg	10	30%	3.17E+00	5.30E+00	No	ND	--	No	2.90E+04	No	No		<SGW
Total PCBs	ug/kg	10	90%	6.29E+01	1.16E+02	No	See notes	--	No	NA	No	No		NA
Vanadium	mg/kg	10	100%	2.68E+01	4.20E+01	No	6.90E+01	No	Yes	NA	No	No		<BK
Zinc	mg/kg	10	100%	2.70E+02	4.60E+02	No	8.08E+02	No	Yes	2.00E+03	No	No		<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	5	100%	4.71E-03	7.42E-03	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	10	10%	7.68E+00	3.50E+01	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	10	10%	1.50E+01	2.45E+01	No	ND	--	No	NA	No	No	NA
2-Methylnaphthalene	ug/kg	10	20%	6.68E+01	7.20E+01	No	ND	--	No	4.20E+05	No	No	<SGW
4,4'-DDE	ug/kg	10	40%	1.08E+00	1.50E+00	No	1.61E+01	No	Yes	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	10	50%	1.74E+00	3.00E+00	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Acenaphthene	ug/kg	10	50%	2.11E+02	1.20E+03	No	ND	--	No	2.90E+06	No	No	<SGW
Acenaphthylene	ug/kg	10	30%	4.93E+01	7.50E+01	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	10	20%	9.68E+01	4.60E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Alpha Chlordane	ug/kg	10	40%	1.32E+00	3.10E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	9.40E+03	1.40E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	10	60%	3.65E+02	2.30E+03	No	1.60E+02	Yes	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	10	10%	6.50E-01	6.50E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	10	100%	6.76E+00	1.00E+01	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	2.65E+02	1.20E+03	No	3.63E+02	Yes	No	2.60E+02	Yes	Yes	>SGW
Benzo(a)anthracene	ug/kg	10	80%	7.03E+02	4.30E+03	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	10	50%	5.91E+02	3.50E+03	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	10	50%	5.98E+02	3.50E+03	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	10	40%	3.93E+02	2.20E+03	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	10	50%	5.42E+02	3.30E+03	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	10	100%	5.83E-01	8.60E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	10	40%	4.41E-01	1.30E+00	No	ND	--	No	3.00E+00	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	10%	6.60E+01	6.60E+01	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	100%	1.62E+00	3.20E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	5.13E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	10	50%	1.88E+02	1.00E+03	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	10	100%	1.76E+01	2.90E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	10	90%	7.10E+02	4.40E+03	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	10	100%	6.40E+00	1.00E+01	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	6.51E+01	1.80E+02	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	10	40%	1.64E-01	2.40E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	10	10%	1.31E+02	8.10E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	10	30%	1.63E+02	7.70E+02	No	ND	--	No	NA	No	No	NA
Dicamba	ug/kg	10	20%	1.63E+00	1.75E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	10	60%	2.84E+00	1.00E+01	No	ND	--	No	2.00E+01	No	No	<SGW
Endosulfan sulfate	ug/kg	10	20%	1.20E-01	1.40E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin ketone	ug/kg	10	40%	1.90E+00	4.00E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	10	90%	1.58E+03	1.00E+04	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	10	40%	2.33E+02	1.40E+03	No	ND	--	No	2.80E+06	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Gamma Chlordane	ug/kg	10	40%	1.83E+00	6.60E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor	ug/kg	10	20%	4.90E-01	6.40E-01	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	10	30%	1.01E+00	2.30E+00	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	10	40%	3.55E+02	2.00E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	10	100%	1.54E+04	2.10E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	1.00E+02	2.60E+02	No	1.85E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	10	100%	7.63E+03	2.10E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN
Manganese	mg/kg	10	100%	4.14E+02	6.10E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
MCPA[(4-chloro-2-methylpheno	ug/kg	10	30%	1.57E+03	3.70E+03	No	1.45E+04	No	Yes	NA	No	No	<BK
Mercury	mg/kg	10	100%	1.22E-01	5.70E-01	No	1.77E-01	Yes	No	5.00E-02	Yes	Yes	>SGW
Methoxychlor	ug/kg	10	50%	6.20E+00	9.70E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	10	100%	1.02E+00	2.30E+00	No	2.02E+00	Yes	No	NA	No	No	NA
Naphthalene	ug/kg	10	20%	6.00E+01	7.90E+01	No	ND	--	No	4.20E+05	No	No	<SGW
Nickel	mg/kg	10	100%	1.82E+01	2.40E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	10	100%	2.89E+02	5.03E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	10	70%	1.35E+03	9.20E+03	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	10	100%	1.84E+03	2.60E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	10	70%	1.35E+03	8.50E+03	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	10	10%	5.79E-01	8.80E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	10	30%	3.25E-01	4.45E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Thallium	mg/kg	10	30%	6.64E-01	1.10E+00	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	10	10%	2.86E+00	4.50E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	10	50%	3.21E+01	5.80E+01	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	10	100%	2.58E+01	3.50E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	10	100%	2.22E+02	5.50E+02	No	8.08E+02	No	Yes	2.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	7.87E-03	2.18E-02	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	9	22%	8.15E+00	2.30E+01	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	56%	1.83E+01	3.40E+01	No	ND	--	No	NA	No	No	NA
4,4'-DDD	ug/kg	9	11%	6.73E+00	3.60E+01	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	9	33%	3.15E+00	8.30E+00	No	1.61E+01	No	Yes	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	9	33%	1.67E+01	1.10E+02	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
Acenaphthylene	ug/kg	9	11%	3.40E+01	3.40E+01	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	9	56%	1.37E+02	4.60E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Aldrin	ug/kg	9	11%	3.98E+00	2.30E+01	No	ND	--	No	2.50E+03	No	No	<SGW
Alpha Chlordane	ug/kg	9	33%	8.12E+00	5.40E+01	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	8.37E+03	1.10E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	9	11%	8.90E+01	8.90E+01	No	1.60E+02	No	Yes	5.90E+07	No	No	<SGW
Antimony	mg/kg	9	33%	7.18E-01	9.05E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	9	100%	6.33E+00	7.60E+00	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	1.74E+02	1.90E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	9	11%	1.80E+00	1.80E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	9	67%	1.21E+02	4.60E+02	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	9	44%	1.38E+02	6.00E+02	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	9	67%	1.78E+02	7.80E+02	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	9	44%	1.58E+02	4.30E+02	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	9	44%	1.59E+02	6.00E+02	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	9	100%	5.29E-01	6.60E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	9	11%	1.00E-01	1.00E-01	No	ND	--	No	3.00E+00	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	1.06E+02	1.80E+02	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Butylbenzylphthalate	ug/kg	9	11%	1.22E+02	3.40E+02	No	ND	--	No	9.30E+05	No	No	<SGW
Cadmium	mg/kg	9	100%	3.42E+00	8.40E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	9.93E+03	2.05E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN
Carbazole	ug/kg	9	11%	7.10E+01	7.10E+01	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	9	100%	1.46E+01	1.85E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	9	67%	1.70E+02	7.10E+02	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	9	100%	5.99E+00	6.90E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	5.42E+01	8.45E+01	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	9	44%	9.86E+01	3.20E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dicamba	ug/kg	9	22%	2.10E+00	2.90E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	9	22%	1.58E+01	1.20E+02	No	ND	--	No	2.00E+01	Yes	Yes	>SGW
Diethylphthalate	ug/kg	9	11%	3.90E+01	3.90E+01	No	1.87E+02	No	Yes	4.70E+05	No	No	<SGW
Di-n-butylphthalate	ug/kg	9	22%	3.35E+01	3.50E+01	No	3.12E+02	No	Yes	2.30E+06	No	No	<SGW
Endrin	ug/kg	9	11%	2.62E+00	6.10E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin aldehyde	ug/kg	9	22%	2.29E+00	5.06E+00	No	ND	--	No	5.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Endrin ketone	ug/kg	9	11%	2.47E+00	4.95E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	9	56%	2.43E+02	1.10E+03	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Gamma Chlordane	ug/kg	9	22%	1.77E+01	7.80E+01	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor	ug/kg	9	11%	1.15E+01	9.10E+01	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	9	22%	4.94E+00	3.00E+01	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	9	56%	1.71E+02	4.50E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	9	100%	1.39E+04	1.60E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	8.03E+01	1.70E+02	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	4.13E+03	5.00E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	3.48E+02	4.00E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
MCPA	ug/kg	9	22%	1.58E+03	4.40E+03	No	1.45E+04	No	Yes	NA	No	No	<BK
MCPP	ug/kg	9	67%	2.95E+03	6.80E+03	No	9.97E+03	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	100%	6.97E-02	1.15E-01	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK
Methoxychlor	ug/kg	9	33%	1.47E+01	3.80E+01	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	9	100%	4.64E-01	7.80E-01	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	1.68E+01	1.90E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	9	33%	2.34E+02	2.41E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	9	67%	1.01E+02	3.60E+02	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	9	100%	1.76E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	9	56%	1.99E+02	8.10E+02	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	9	11%	4.80E-01	4.80E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	9	33%	5.01E-01	6.00E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Toluene	ug/kg	9	11%	2.70E+00	2.80E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	9	78%	6.67E+01	1.65E+02	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	9	100%	2.43E+01	2.90E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	9	100%	3.74E+02	9.80E+02	No	8.08E+02	Yes	No	2.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	6.37E-03	1.32E-02	No	ND	--	No	NA	No	No	NA
4,4'-DDD	ug/kg	8	25%	2.93E+00	6.40E+00	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	8	75%	5.35E+00	1.80E+01	No	1.61E+01	Yes	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	8	38%	3.58E+01	1.40E+02	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
Acenaphthene	ug/kg	8	25%	1.26E+02	4.20E+02	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	8	38%	1.05E+02	4.20E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Alpha Chlordane	ug/kg	8	25%	4.52E+00	1.70E+01	No	ND	--	No	4.80E+04	No	No	<SGW
alpha-BHC	ug/kg	8	13%	2.20E-01	2.20E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Aluminum	mg/kg	8	100%	7.98E+03	9.70E+03	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	8	38%	2.43E+02	1.40E+03	No	1.60E+02	Yes	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	8	50%	6.88E-01	7.70E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	8	100%	6.01E+00	9.20E+00	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	8	100%	1.50E+02	2.00E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	8	88%	6.06E+02	4.20E+03	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	8	25%	5.04E+02	3.60E+03	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	8	88%	6.34E+02	4.40E+03	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	8	13%	2.48E+02	1.30E+03	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	8	25%	5.03E+02	3.40E+03	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	8	88%	4.90E-01	8.60E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	8	13%	1.34E+00	3.80E+00	No	ND	--	No	3.00E+00	Yes	Yes	>SGW
bis(2-Ethylhexyl)phthalate	ug/kg	8	25%	1.19E+02	3.60E+02	No	3.22E+02	Yes	No	3.10E+07	No	No	<SGW
Butylbenzylphthalate	ug/kg	8	13%	5.70E+01	5.70E+01	No	ND	--	No	9.30E+05	No	No	<SGW
Cadmium	mg/kg	8	100%	1.50E+00	4.00E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	8	100%	6.26E+04	1.50E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	8	13%	1.91E+02	8.60E+02	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	8	100%	1.44E+01	1.80E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	8	88%	7.12E+02	4.90E+03	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	8	100%	5.96E+00	9.20E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	8	100%	2.93E+01	5.60E+01	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	8	13%	1.20E-01	1.20E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	8	38%	1.18E+02	6.00E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	8	13%	1.12E+02	2.30E+02	No	ND	--	No	NA	No	No	NA
Dicamba	ug/kg	8	25%	2.35E+00	3.00E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	8	13%	1.80E+00	1.80E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Endosulfan sulfate	ug/kg	8	38%	1.14E+00	1.90E+00	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin	ug/kg	8	13%	1.99E+00	2.20E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin aldehyde	ug/kg	8	13%	7.50E-01	7.50E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin ketone	ug/kg	8	25%	4.50E-01	6.70E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	8	88%	1.38E+03	9.80E+03	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Fluorene	ug/kg	8	13%	1.56E+02	5.80E+02	No	ND	--	No	2.80E+06	No	No	<SGW
Gamma Chlordane	ug/kg	8	25%	4.70E+00	1.80E+01	No	ND	--	No	4.80E+04	No	No	<SGW
gamma-BHC (Lindane)	ug/kg	8	13%	1.30E-01	1.30E-01	No	ND	--	No	4.70E+01	No	No	<SGW
Heptachlor	ug/kg	8	13%	1.78E+00	4.10E+00	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	8	13%	1.80E-01	1.80E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	8	50%	2.20E+02	1.10E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	8	100%	1.36E+04	1.90E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	8	100%	5.54E+01	1.10E+02	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	8	100%	8.71E+03	1.80E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN
Manganese	mg/kg	8	100%	3.85E+02	6.60E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
MCPP	ug/kg	8	13%	1.55E+03	4.50E+03	No	9.97E+03	No	Yes	NA	No	No	<BK
Mercury	mg/kg	8	100%	5.73E-02	8.60E-02	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK
Methoxychlor	ug/kg	8	38%	3.60E+00	5.50E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	8	100%	8.40E-01	3.20E+00	No	2.02E+00	Yes	No	NA	No	No	NA
Nickel	mg/kg	8	100%	1.73E+01	2.30E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	8	63%	2.40E+02	2.49E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	8	75%	9.75E+02	7.10E+03	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	8	100%	1.78E+03	2.40E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	8	75%	1.11E+03	7.70E+03	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	8	13%	5.66E-01	6.80E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	8	13%	2.90E-01	2.90E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Thallium	mg/kg	8	25%	6.19E-01	9.70E-01	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	8	13%	2.20E+00	2.20E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	8	75%	8.31E+01	3.85E+02	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	8	100%	2.54E+01	3.30E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	8	100%	1.56E+02	3.50E+02	No	8.08E+02	No	Yes	2.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	3	100%	2.80E-03	5.23E-03	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	33%	1.84E+01	3.70E+01	No	ND	--	No	NA	No	No	NA
2-Methylnaphthalene	ug/kg	9	11%	6.50E+01	6.50E+01	No	ND	--	No	4.20E+05	No	No	<SGW
4,4'-DDD	ug/kg	9	11%	1.30E+00	1.30E+00	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	9	78%	9.80E+00	5.40E+01	No	1.61E+01	Yes	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	9	67%	7.71E+00	2.90E+01	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
Acenaphthene	ug/kg	9	22%	9.77E+01	1.60E+02	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	9	56%	1.85E+02	5.00E+02	No	ND	--	No	1.60E+04	No	No	<SGW
Alpha Chlordane	ug/kg	9	22%	2.40E+00	1.10E+01	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	8.33E+03	1.20E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	9	33%	1.18E+02	3.60E+02	No	1.60E+02	Yes	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	9	11%	5.23E-01	7.30E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	9	100%	9.99E+00	3.40E+01	No	1.91E+01	Yes	No	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	1.67E+02	2.00E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	9	22%	3.14E+00	4.80E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	9	100%	3.42E+02	1.90E+03	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	9	100%	3.74E+02	2.10E+03	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	9	100%	4.08E+02	2.20E+03	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	9	100%	2.29E+02	1.10E+03	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	9	100%	3.54E+02	2.10E+03	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	9	33%	4.23E-01	8.25E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	44%	7.18E+01	9.10E+01	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Butylbenzylphthalate	ug/kg	9	11%	5.80E+01	5.80E+01	No	ND	--	No	9.30E+05	No	No	<SGW
Cadmium	mg/kg	9	100%	3.12E+00	6.10E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	1.46E+04	3.80E+04	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	9	33%	1.16E+02	3.10E+02	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Carbon disulfide	ug/kg	9	22%	3.17E+00	4.30E+00	No	ND	--	No	1.60E+05	No	No	<SGW
Chromium	mg/kg	9	100%	1.53E+01	2.00E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	9	100%	4.86E+02	2.60E+03	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	9	100%	6.63E+00	7.80E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	4.29E+01	1.30E+02	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	9	11%	1.80E-01	1.80E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	9	33%	1.03E+02	4.10E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	9	11%	5.20E+01	5.20E+01	No	ND	--	No	NA	No	No	NA
Dicamba	ug/kg	9	11%	2.65E+00	2.65E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	9	22%	1.81E+00	3.00E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Di-n-butylphthalate	ug/kg	9	78%	8.86E+01	1.70E+02	No	3.12E+02	No	Yes	2.30E+06	No	No	<SGW
Endosulfan II	ug/kg	9	11%	1.00E+00	1.00E+00	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin	ug/kg	9	22%	2.50E-01	4.00E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin ketone	ug/kg	9	44%	1.40E+00	1.90E+00	No	ND	--	No	5.00E+03	No	No	<SGW

Surface Soil - Soil-to-Groundwater TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Ethylbenzene	ug/kg	9	11%	2.75E+00	3.00E+00	No	ND	--	No	1.90E+04	No	No	<SGW
Fluoranthene	ug/kg	9	100%	9.66E+02	5.60E+03	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	9	22%	9.51E+01	1.40E+02	No	ND	--	No	2.80E+06	No	No	<SGW
Gamma Chlordane	ug/kg	9	44%	1.97E+00	1.00E+01	No	ND	--	No	4.80E+04	No	No	<SGW
gamma-BHC (Lindane)	ug/kg	9	11%	8.70E-02	8.70E-02	No	ND	--	No	4.70E+01	No	No	<SGW
Heptachlor epoxide	ug/kg	9	22%	4.40E-01	6.20E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	9	44%	2.40E+02	1.10E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	9	100%	1.47E+04	1.75E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	6.46E+01	1.50E+02	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	5.66E+03	1.10E+04	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	3.45E+02	4.35E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	100%	8.51E-02	1.60E-01	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK
Methoxychlor	ug/kg	9	56%	6.82E+00	1.00E+01	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	9	89%	7.93E-01	1.80E+00	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	2.17E+01	5.50E+01	No	4.27E+01	Yes	No	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	9	33%	2.41E+02	2.51E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	9	100%	5.09E+02	2.90E+03	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	9	100%	2.02E+03	2.85E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	9	100%	6.86E+02	3.90E+03	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	9	67%	6.93E-01	1.10E+00	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	9	44%	3.65E-01	4.40E-01	No	1.35E+00	No	Yes	NA	No	No	<BK
Thallium	mg/kg	9	11%	5.72E-01	8.50E-01	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	9	44%	4.68E+00	1.20E+01	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	9	89%	3.52E+01	9.00E+01	No	See notes	--	No	NA	No	No	NA
Trichloroethene	ug/kg	9	11%	2.56E+00	2.60E+00	No	ND	--	No	3.00E+02	No	No	<SGW
Vanadium	mg/kg	9	100%	2.47E+01	3.25E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Xylenes, Total	ug/kg	9	11%	3.18E+00	4.20E+00	No	ND	--	No	1.50E+05	No	No	<SGW
Zinc	mg/kg	9	100%	3.64E+02	8.70E+02	No	8.08E+02	Yes	No	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 1

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	3	100%	1.33E-05	2.00E-05	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	10	10%	1.71E+01	2.50E+01	No	ND	--	No	NA	No	No	NA
4,4'-DDD	ug/kg	10	10%	5.30E-01	5.30E-01	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	10	20%	1.80E-01	2.20E-01	No	ND	--	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	10	10%	2.70E-01	2.70E-01	No	ND	--	No	1.60E+05	No	No	<SGW
Acetone	ug/kg	10	10%	5.34E+01	2.40E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Alpha Chlordane	ug/kg	10	10%	5.80E-01	5.80E-01	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	7.36E+03	1.70E+04	No	2.03E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	10	50%	6.86E-01	8.40E-01	No	2.40E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	10	100%	5.82E+00	8.70E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	1.85E+02	2.60E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Beryllium	mg/kg	10	100%	4.59E-01	9.30E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	20%	1.02E+02	1.50E+02	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	90%	2.78E-01	5.30E-01	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	1.29E+04	1.80E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Chromium	mg/kg	10	100%	1.25E+01	2.50E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Cobalt	mg/kg	10	100%	5.98E+00	1.10E+01	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	1.29E+01	2.40E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
Dicamba	ug/kg	10	10%	1.30E+00	1.30E+00	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	10	20%	6.60E-01	1.20E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Endrin ketone	ug/kg	10	20%	2.25E-01	2.70E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Heptachlor	ug/kg	10	10%	2.60E-01	2.60E-01	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	10	30%	3.26E-01	5.70E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Iron	mg/kg	10	100%	1.28E+04	2.20E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	9.53E+00	1.50E+01	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	10	100%	5.90E+03	8.30E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	10	100%	3.57E+02	9.80E+02	No	8.00E+02	Yes	No	NA	No	No	NA
MCPA[(4-chloro-2-methylphenox	ug/kg	10	10%	1.24E+03	1.70E+03	No	ND	--	No	NA	No	No	NA
Mercury	mg/kg	10	70%	2.18E-02	7.00E-02	No	5.61E-02	Yes	No	5.00E-02	Yes	Yes	>SGW
Methoxychlor	ug/kg	10	20%	2.10E+00	2.60E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Methylene chloride (Dichloromet	ug/kg	10	10%	2.40E+00	2.40E+00	No	2.80E+00	No	Yes	2.00E+02	No	No	<SGW
Molybdenum	mg/kg	10	100%	3.98E-01	7.60E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	10	100%	1.63E+01	3.30E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Potassium	mg/kg	10	100%	1.42E+03	2.70E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Total PCBs	ug/kg	10	30%	1.10E+01	1.90E+01	No	ND	--	No	NA	No	No	NA
Trichloroethene	ug/kg	10	30%	3.70E+00	7.40E+00	No	ND	--	No	3.00E+02	No	No	<SGW
Vanadium	mg/kg	10	100%	2.24E+01	4.50E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	10	100%	6.52E+01	2.50E+02	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 2

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	5.75E-02	6.50E-02	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	11%	1.70E+01	2.33E+01	No	ND	--	No	NA	No	No	NA
Acetone	ug/kg	9	22%	3.98E+01	1.07E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	5.61E+03	1.10E+04	No	2.03E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	9	11%	6.70E-01	6.70E-01	No	2.40E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	9	100%	4.67E+00	7.00E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	1.63E+02	2.20E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Beryllium	mg/kg	9	44%	2.63E-01	3.70E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	56%	9.23E+01	1.60E+02	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	9	100%	2.01E-01	3.20E-01	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	1.16E+04	1.50E+04	Yes	1.61E+04	No	Yes	NA	No	No	EN
Chromium	mg/kg	9	100%	9.61E+00	1.50E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Cobalt	mg/kg	9	100%	5.21E+00	8.30E+00	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	8.64E+00	1.60E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
Dieldrin	ug/kg	9	11%	4.10E-01	4.10E-01	No	ND	--	No	2.00E+01	No	No	<SGW
Iron	mg/kg	9	100%	1.05E+04	1.60E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	7.82E+00	1.20E+01	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	5.19E+03	6.80E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	2.37E+02	4.80E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	67%	1.24E-02	2.90E-02	No	5.61E-02	No	Yes	5.00E-02	No	No	<SGW
Molybdenum	mg/kg	9	100%	4.59E-01	7.70E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	1.28E+01	2.00E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Potassium	mg/kg	9	100%	1.16E+03	2.00E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Selenium	mg/kg	9	11%	5.05E-01	5.10E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Thallium	mg/kg	9	11%	5.38E-01	5.65E-01	No	ND	--	No	1.60E+01	No	No	<SGW
Vanadium	mg/kg	9	100%	1.77E+01	2.80E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	9	100%	3.69E+01	5.70E+01	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
2-Butanone (MEK)	ug/kg	10	10%	1.67E+01	2.40E+01	No	ND	--	No	NA	No	No	NA
Acetone	ug/kg	10	10%	4.65E+01	1.80E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	7.35E+03	1.40E+04	No	2.03E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	10	40%	7.91E-01	9.15E-01	No	2.40E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	10	100%	5.35E+00	8.50E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	1.84E+02	2.50E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	10	40%	9.23E+01	1.10E+02	No	6.80E+01	Yes	No	2.10E+07	No	No	<SGW
Beryllium	mg/kg	10	50%	3.97E-01	8.90E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	40%	9.70E+01	1.20E+02	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	90%	2.93E-01	5.70E-01	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	1.26E+04	1.90E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Chromium	mg/kg	10	100%	1.20E+01	2.10E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Cobalt	mg/kg	10	100%	5.82E+00	8.10E+00	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	1.16E+01	1.90E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	10	10%	5.74E+01	8.70E+01	No	ND	--	No	7.60E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	9.10E+01	9.20E+01	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	10	100%	1.27E+04	1.90E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	9.70E+00	1.70E+01	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	10	100%	5.82E+03	7.70E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	10	100%	2.89E+02	5.50E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	10	100%	2.41E-02	7.80E-02	No	5.61E-02	Yes	No	5.00E-02	Yes	Yes	>SGW
Molybdenum	mg/kg	10	100%	5.29E-01	9.50E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	10	100%	1.50E+01	2.20E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	10	20%	2.50E+02	2.76E+02	No	ND	--	No	1.00E+02	Yes	Yes	>SGW
Potassium	mg/kg	10	100%	1.57E+03	2.70E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Sodium	mg/kg	10	30%	8.74E+01	1.60E+02	Yes	3.53E+02	No	Yes	NA	No	No	EN
Total PCBs	ug/kg	10	10%	9.17E+00	9.50E+00	No	ND	--	No	NA	No	No	NA
Vanadium	mg/kg	10	100%	2.16E+01	3.80E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	10	100%	6.73E+01	2.60E+02	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
2,4,5-TP (Silvex)	ug/kg	10	10%	1.50E+00	1.50E+00	No	1.08E+01	No	Yes	5.50E+04	No	No	<SGW
2-Butanone (MEK)	ug/kg	10	10%	5.70E+00	5.70E+00	No	ND	--	No	NA	No	No	NA
2-Methylnaphthalene	ug/kg	10	10%	1.07E+02	1.60E+02	No	ND	--	No	4.20E+05	No	No	<SGW
Acenaphthene	ug/kg	10	10%	1.91E+02	1.00E+03	No	ND	--	No	2.90E+06	No	No	<SGW
Acenaphthylene	ug/kg	10	10%	1.63E+02	7.20E+02	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	10	50%	5.16E+01	2.20E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	10	100%	6.17E+03	9.00E+03	No	2.03E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	10	20%	6.27E+02	5.40E+03	No	ND	--	No	5.90E+07	No	No	<SGW
Arsenic	mg/kg	10	100%	4.82E+00	6.00E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	10	100%	1.55E+02	2.10E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	10	40%	1.28E+03	1.20E+04	No	5.20E+01	Yes	No	8.00E+03	Yes	Yes	>SGW
Benzo(a)pyrene	ug/kg	10	10%	6.09E+02	5.60E+03	No	ND	--	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	10	10%	1.07E+03	9.80E+03	No	ND	--	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	10	20%	1.09E+02	3.30E+02	No	6.80E+01	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	10	10%	7.21E+02	6.30E+03	No	ND	--	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	10	100%	3.72E-01	5.00E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	10	10%	2.00E-01	2.00E-01	No	ND	--	No	3.00E+00	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	10	20%	9.65E+02	8.70E+03	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	10	70%	3.33E-01	1.00E+00	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	10	100%	2.43E+04	1.30E+05	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	10	10%	1.73E+02	8.20E+02	No	ND	--	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	10	100%	1.22E+01	1.70E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	10	40%	1.18E+03	1.10E+04	No	8.40E+01	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	10	100%	5.08E+00	6.10E+00	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	10	100%	1.16E+01	3.00E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	10	20%	1.75E-01	2.30E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	10	10%	2.39E+02	1.90E+03	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	10	10%	2.01E+02	1.10E+03	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	10	10%	1.30E+00	1.30E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Endosulfan sulfate	ug/kg	10	10%	1.00E+00	1.00E+00	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin ketone	ug/kg	10	10%	2.90E-01	2.90E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	10	30%	2.39E+03	2.30E+04	No	8.40E+01	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	10	10%	2.91E+02	2.00E+03	No	ND	--	No	2.80E+06	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	10	10%	4.41E+02	3.50E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	10	100%	1.13E+04	1.60E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	10	100%	2.36E+01	1.30E+02	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	10	100%	6.15E+03	1.10E+04	Yes	9.33E+03	Yes	Yes	NA	No	No	EN
Manganese	mg/kg	10	100%	2.59E+02	3.55E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	10	80%	1.54E-02	3.90E-02	No	5.61E-02	No	Yes	5.00E-02	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 4

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Methoxychlor	ug/kg	10	10%	7.60E+00	7.60E+00	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	10	100%	4.07E-01	7.60E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Naphthalene	ug/kg	10	10%	6.40E+01	6.40E+01	No	ND	--	No	4.20E+05	No	No	<SGW
Nickel	mg/kg	10	100%	1.43E+01	1.80E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	10	50%	3.05E+02	5.53E+02	No	ND	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	10	30%	1.48E+03	1.40E+04	No	ND	--	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	10	100%	1.24E+03	1.70E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	10	30%	1.89E+03	1.80E+04	No	ND	--	No	2.10E+07	No	No	<SGW
Sodium	mg/kg	10	40%	1.17E+02	3.80E+02	Yes	3.53E+02	Yes	Yes	NA	No	No	EN
Toluene	ug/kg	10	10%	3.13E+00	4.80E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	10	50%	1.83E+01	5.39E+01	No	ND	--	No	NA	No	No	NA
Vanadium	mg/kg	10	100%	1.93E+01	2.60E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	10	100%	5.81E+01	1.90E+02	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 5

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	2.10E-05	3.50E-05	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	9	11%	4.96E+00	7.70E+00	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	11%	1.30E+01	1.30E+01	No	ND	--	No	NA	No	No	NA
Acetone	ug/kg	9	11%	4.21E+01	1.40E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	5.96E+03	9.60E+03	No	2.03E+04	No	Yes	NA	No	No	<BK
Arsenic	mg/kg	9	100%	4.91E+00	6.40E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	1.70E+02	2.10E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	9	11%	9.80E-01	9.80E-01	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	9	11%	7.50E+01	7.50E+01	No	ND	--	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	9	11%	3.00E+01	3.00E+01	No	6.80E+01	No	Yes	2.10E+07	No	No	<SGW
Beryllium	mg/kg	9	100%	3.73E-01	5.60E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	56%	9.87E+01	1.20E+02	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	9	100%	2.24E-01	3.40E-01	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	1.38E+04	1.90E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Chromium	mg/kg	9	100%	1.20E+01	2.00E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Cobalt	mg/kg	9	100%	5.03E+00	6.10E+00	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	9.20E+00	1.60E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	9	11%	5.52E+01	9.45E+01	No	ND	--	No	7.60E+03	No	No	<SGW
Di-n-octylphthalate	ug/kg	9	11%	9.86E+01	1.18E+02	No	ND	--	No	1.00E+07	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	9	11%	9.81E+01	1.13E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	9	100%	1.10E+04	1.50E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	8.11E+00	1.10E+01	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	5.47E+03	7.40E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	2.39E+02	3.20E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
MCPA	ug/kg	9	11%	1.24E+03	2.30E+03	No	ND	--	No	NA	No	No	NA
MCPP	ug/kg	9	22%	1.49E+03	2.90E+03	No	4.73E+03	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	100%	2.43E-02	8.60E-02	No	5.61E-02	Yes	No	5.00E-02	Yes	Yes	>SGW
Molybdenum	mg/kg	9	89%	2.97E-01	4.50E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	1.39E+01	1.70E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Potassium	mg/kg	9	100%	1.23E+03	1.80E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Sodium	mg/kg	9	33%	8.23E+01	1.60E+02	Yes	3.53E+02	No	Yes	NA	No	No	EN
Toluene	ug/kg	9	11%	1.80E+00	1.80E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Vanadium	mg/kg	9	100%	1.86E+01	2.60E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	9	100%	3.98E+01	5.60E+01	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	2	100%	7.84E-04	1.51E-03	No	ND	--	No	NA	No	No	NA
2-Hexanone	ug/kg	8	13%	3.50E+00	3.50E+00	No	ND	--	No	NA	No	No	NA
Acenaphthene	ug/kg	8	25%	1.00E+02	1.60E+02	No	ND	--	No	2.90E+06	No	No	<SGW
Acenaphthylene	ug/kg	8	13%	4.90E+01	4.90E+01	No	ND	--	No	2.90E+06	No	No	<SGW
Acetone	ug/kg	8	13%	3.04E+01	4.00E+01	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	8	100%	7.90E+03	1.20E+04	No	2.03E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	8	38%	1.26E+02	3.60E+02	No	ND	--	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	8	25%	1.32E+00	2.60E+00	No	2.40E+00	Yes	No	2.00E+01	No	No	<SGW
Arsenic	mg/kg	8	100%	6.20E+00	7.80E+00	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	8	100%	1.95E+02	2.20E+02	No	3.73E+02	No	Yes	2.60E+02	No	No	<SGW
Benzene	ug/kg	8	13%	2.77E+00	3.00E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	8	50%	2.25E+02	9.40E+02	No	5.20E+01	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	8	25%	1.85E+02	8.80E+02	No	ND	--	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	8	38%	1.93E+02	6.40E+02	No	ND	--	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	8	13%	1.66E+02	6.30E+02	No	6.80E+01	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	8	25%	2.40E+02	1.10E+03	No	ND	--	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	8	100%	4.84E-01	6.30E-01	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	8	38%	1.25E+02	2.70E+02	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	8	100%	5.54E-01	9.60E-01	No	6.87E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	8	100%	2.60E+04	6.40E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	8	25%	1.01E+02	1.70E+02	No	ND	--	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	8	100%	1.44E+01	2.10E+01	No	3.27E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	8	50%	2.52E+02	1.10E+03	No	8.40E+01	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	8	100%	6.31E+00	8.60E+00	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	8	100%	1.88E+01	3.50E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	8	13%	1.40E-01	1.40E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	8	25%	8.46E+01	2.70E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	8	13%	1.02E+02	1.20E+02	No	ND	--	No	NA	No	No	NA
Endosulfan sulfate	ug/kg	8	25%	5.00E-01	5.80E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Fluoranthene	ug/kg	8	50%	4.97E+02	2.50E+03	No	8.40E+01	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	8	25%	9.39E+01	1.30E+02	No	ND	--	No	2.80E+06	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	8	38%	1.64E+02	5.70E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	8	100%	1.40E+04	1.80E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	8	100%	7.45E+01	2.40E+02	No	1.42E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	8	100%	6.10E+03	6.90E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	8	100%	3.21E+02	4.00E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
MCPA[(4-chloro-2-methylpheno	ug/kg	8	13%	1.19E+03	1.40E+03	No	ND	--	No	NA	No	No	NA
MCPP	ug/kg	8	13%	1.39E+03	3.00E+03	No	4.73E+03	No	Yes	NA	No	No	<BK
Mercury	mg/kg	8	75%	5.86E-02	1.90E-01	No	5.61E-02	Yes	No	5.00E-02	Yes	Yes	>SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 6

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Molybdenum	mg/kg	8	100%	6.06E-01	1.10E+00	No	1.75E+00	No	Yes	NA	No	No	<BK
Naphthalene	ug/kg	8	25%	4.50E+01	4.90E+01	No	ND	--	No	4.20E+05	No	No	<SGW
Nickel	mg/kg	8	100%	1.71E+01	2.40E+01	No	3.73E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	8	25%	2.46E+02	2.51E+02	No	ND	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	8	50%	3.62E+02	1.90E+03	No	ND	--	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	8	100%	1.43E+03	2.00E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	8	38%	4.59E+02	2.30E+03	No	ND	--	No	2.10E+07	No	No	<SGW
Sodium	mg/kg	8	38%	1.06E+02	1.40E+02	Yes	3.53E+02	No	Yes	NA	No	No	EN
Toluene	ug/kg	8	25%	3.45E+00	6.60E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	8	13%	4.30E+00	4.30E+00	No	ND	--	No	NA	No	No	NA
Vanadium	mg/kg	8	100%	2.38E+01	3.30E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Xylenes, Total	ug/kg	8	13%	3.22E+00	4.30E+00	No	ND	--	No	1.50E+05	No	No	<SGW
Zinc	mg/kg	8	100%	8.26E+01	1.60E+02	No	6.41E+02	No	Yes	2.00E+03	No	No	<SGW

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	1	100%	2.00E-05	2.00E-05	No	ND	--	No	NA	No	No	NA
2-Butanone (MEK)	ug/kg	9	22%	9.50E+00	1.20E+01	No	ND	--	No	NA	No	No	NA
4,4'-DDE	ug/kg	9	22%	1.02E+00	1.70E+00	No	ND	--	No	2.70E+05	No	No	<SGW
Acetone	ug/kg	9	33%	8.78E+01	3.10E+02	No	1.10E+01	Yes	No	1.60E+04	No	No	<SGW
Aluminum	mg/kg	9	100%	9.26E+03	2.20E+04	No	2.03E+04	Yes	No	NA	No	No	NA
Antimony	mg/kg	9	22%	5.80E-01	6.00E-01	No	2.40E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	9	100%	5.99E+00	1.10E+01	No	1.74E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	9	100%	2.10E+02	2.90E+02	No	3.73E+02	No	Yes	2.60E+02	Yes	No	<BK
Benzene	ug/kg	9	22%	2.96E+00	3.20E+00	No	ND	--	No	1.70E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	9	22%	3.65E+01	3.70E+01	No	5.20E+01	No	Yes	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	9	22%	3.60E+01	3.80E+01	No	ND	--	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	9	22%	3.25E+01	3.70E+01	No	ND	--	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	9	22%	3.55E+01	3.60E+01	No	6.80E+01	No	Yes	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	9	11%	3.60E+01	3.60E+01	No	ND	--	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	9	33%	4.33E-01	1.20E+00	No	1.27E+00	No	Yes	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	9	78%	1.08E+03	7.60E+03	No	ND	--	No	3.10E+07	No	No	<SGW
Cadmium	mg/kg	9	100%	1.78E+00	7.90E+00	No	6.87E+00	Yes	No	1.00E+01	No	No	<SGW
Calcium	mg/kg	9	100%	1.20E+04	1.70E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Carbon disulfide	ug/kg	9	33%	4.19E+00	7.80E+00	No	ND	--	No	1.60E+05	No	No	<SGW
Chlorobenzene	ug/kg	9	22%	4.10E+00	1.00E+01	No	ND	--	No	6.50E+03	No	No	<SGW
Chromium	mg/kg	9	100%	3.35E+01	1.30E+02	No	3.27E+01	Yes	No	NA	No	No	NA
Chrysene	ug/kg	9	22%	4.55E+01	4.80E+01	No	8.40E+01	No	Yes	8.00E+05	No	No	<SGW
Cobalt	mg/kg	9	100%	6.50E+00	1.10E+01	No	1.39E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	9	100%	1.96E+01	6.20E+01	No	1.55E+02	No	Yes	3.30E+02	No	No	<SGW
Di-n-butylphthalate	ug/kg	9	67%	8.91E+01	1.20E+02	No	ND	--	No	2.30E+06	No	No	<SGW
Endosulfan sulfate	ug/kg	9	22%	4.45E-01	5.70E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Fluoranthene	ug/kg	9	22%	7.95E+01	8.10E+01	No	8.40E+01	No	Yes	2.10E+07	No	No	<SGW
Iron	mg/kg	9	100%	1.39E+04	2.60E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	9	100%	2.24E+01	7.70E+01	No	1.42E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	9	100%	5.87E+03	7.10E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	9	100%	2.59E+02	4.00E+02	No	8.00E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	9	89%	6.20E-02	2.90E-01	No	5.61E-02	Yes	No	5.00E-02	Yes	Yes	>SGW
Molybdenum	mg/kg	9	67%	4.93E-01	7.85E-01	No	1.75E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	9	100%	2.07E+01	4.20E+01	No	3.73E+01	Yes	No	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	9	33%	2.58E+02	3.01E+02	No	ND	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	9	22%	3.65E+01	4.20E+01	No	ND	--	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	9	100%	1.88E+03	4.00E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	9	11%	6.00E+01	6.00E+01	No	ND	--	No	2.10E+07	No	No	<SGW
Sodium	mg/kg	9	33%	1.18E+02	2.60E+02	Yes	3.53E+02	No	Yes	NA	No	No	EN

Suburface Soil - Soil-to-Groundwater TACO Screen
Transect 7

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Thallium	mg/kg	9	11%	5.74E-01	7.20E-01	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	9	11%	3.49E+00	5.40E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	9	11%	8.40E+00	8.40E+00	No	ND	--	No	NA	No	No	NA
Vanadium	mg/kg	9	100%	2.52E+01	5.00E+01	No	5.80E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	9	100%	3.79E+02	1.80E+03	No	6.41E+02	Yes	No	2.00E+03	No	No	<SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area G

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.05E-03	8.35E-03	No	ND	--	No	NA	No	No	NA
4,4'-DDT	ug/kg	4	75%	1.15E-01	1.60E-01	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Alpha Chlordane	ug/kg	4	50%	1.90E-01	2.60E-01	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	4	100%	1.30E+04	1.50E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	4	50%	6.85E-01	7.20E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	4	100%	7.19E+00	8.05E+00	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	4	100%	1.17E+02	1.40E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Beryllium	mg/kg	4	100%	5.89E-01	6.40E-01	No	1.51E+00	No	Yes	1.40E+02	No	No	<SGW
Cadmium	mg/kg	4	100%	2.60E-01	3.90E-01	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	4	100%	9.73E+03	1.40E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN
Chromium	mg/kg	4	100%	1.93E+01	2.20E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Cobalt	mg/kg	4	100%	7.33E+00	8.60E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	4	100%	1.83E+02	2.90E+02	No	2.09E+02	Yes	No	3.30E+02	No	No	<SGW
delta-BHC	ug/kg	4	75%	1.03E-01	1.82E-01	No	ND	--	No	3.00E+00	No	No	<SGW
Dieldrin	ug/kg	4	25%	6.20E-02	6.20E-02	No	ND	--	No	2.00E+01	No	No	<SGW
Endosulfan I	ug/kg	4	25%	2.20E-01	2.20E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endosulfan II	ug/kg	4	25%	3.40E-01	3.40E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endosulfan sulfate	ug/kg	4	50%	1.50E-01	1.80E-01	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin	ug/kg	4	50%	1.48E-01	1.55E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin aldehyde	ug/kg	4	50%	3.95E-01	6.70E-01	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin ketone	ug/kg	4	50%	9.10E-01	1.03E+00	No	ND	--	No	5.00E+03	No	No	<SGW
Gamma Chlordane	ug/kg	4	75%	2.02E-01	3.10E-01	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor epoxide	ug/kg	4	25%	2.20E-01	2.20E-01	No	ND	--	No	3.30E+03	No	No	<SGW
Iron	mg/kg	4	100%	1.84E+04	2.00E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	4	100%	1.36E+01	1.60E+01	No	1.85E+02	No	Yes	NA	No	No	<BK
Magnesium	mg/kg	4	100%	4.09E+03	4.95E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	4	100%	5.44E+02	7.40E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	4	100%	2.45E-02	2.90E-02	No	1.77E-01	No	Yes	5.00E-02	No	No	<SGW
Methoxychlor	ug/kg	4	25%	9.40E-01	9.40E-01	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	4	100%	5.19E-01	7.80E-01	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	4	100%	1.89E+01	2.15E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Potassium	mg/kg	4	100%	1.45E+03	1.70E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Total PCBs	ug/kg	4	50%	1.81E+01	4.65E+01	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	4	100%	3.58E+01	4.00E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	4	100%	6.09E+01	6.95E+01	No	8.08E+02	No	Yes	2.00E+03	No	No	<SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area H

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	5.33E-01	1.29E+00	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	4	50%	6.74E+00	9.70E+00	No	ND	--	No	NA	No	No	NA
2-Hexanone	ug/kg	4	25%	5.70E+00	5.70E+00	No	3.30E+01	No	Yes	NA	No	No	<BK
4,4'-DDE	ug/kg	4	75%	3.44E+01	8.60E+01	No	1.61E+01	Yes	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	4	75%	4.51E+01	1.10E+02	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
Aldrin	ug/kg	4	50%	8.21E+00	2.10E+01	No	ND	--	No	2.50E+03	No	No	<SGW
Aluminum	mg/kg	4	100%	7.95E+03	1.40E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Antimony	mg/kg	4	100%	1.57E+00	2.30E+00	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	4	100%	2.28E+01	6.40E+01	No	1.91E+01	Yes	No	1.00E+02	No	No	<SGW
Barium	mg/kg	4	100%	1.12E+02	1.20E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	4	75%	1.04E+02	1.30E+02	No	2.40E+02	No	Yes	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	4	75%	9.93E+01	1.40E+02	No	1.87E+02	No	Yes	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	4	75%	1.13E+02	1.40E+02	No	1.79E+02	No	Yes	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	4	25%	1.61E+02	3.70E+02	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	4	75%	9.68E+01	1.30E+02	No	2.08E+02	No	Yes	2.50E+05	No	No	<SGW
Beryllium	mg/kg	4	100%	1.52E+00	3.80E+00	No	1.51E+00	Yes	No	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	4	50%	1.04E+02	1.20E+02	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	4	100%	9.03E+00	2.20E+01	No	8.65E+00	Yes	No	1.00E+01	Yes	Yes	>SGW
Calcium	mg/kg	4	100%	1.76E+04	4.20E+04	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbon disulfide	ug/kg	4	25%	3.42E+00	4.30E+00	No	ND	--	No	1.60E+05	No	No	<SGW
Chromium	mg/kg	4	100%	1.95E+01	2.30E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	4	75%	1.58E+02	3.00E+02	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	4	100%	1.00E+01	2.00E+01	No	1.55E+01	Yes	No	NA	No	No	NA
Copper	mg/kg	4	100%	3.75E+02	4.80E+02	No	2.09E+02	Yes	No	3.30E+02	Yes	Yes	>SGW
Endosulfan II	ug/kg	4	25%	3.57E+00	7.20E+00	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin ketone	ug/kg	4	75%	2.50E+01	8.20E+01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	4	75%	1.70E+02	2.40E+02	No	5.02E+02	No	Yes	2.10E+07	No	No	<SGW
Gamma Chlordane	ug/kg	4	50%	1.47E+01	3.00E+01	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor	ug/kg	4	25%	1.28E+00	2.00E+00	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	4	75%	1.64E+01	4.40E+01	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	4	50%	9.18E+01	1.00E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	4	100%	1.63E+04	1.80E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	4	100%	1.46E+02	2.30E+02	No	1.85E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	4	100%	2.02E+03	2.50E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	4	100%	4.37E+02	7.20E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	4	100%	2.84E-01	7.70E-01	No	1.77E-01	Yes	No	5.00E-02	Yes	Yes	>SGW
Methoxychlor	ug/kg	4	50%	4.54E+01	1.30E+02	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	4	100%	4.95E+00	1.10E+01	No	2.02E+00	Yes	No	NA	No	No	NA
Nickel	mg/kg	4	100%	3.40E+01	7.00E+01	No	4.27E+01	Yes	No	4.00E+02	No	No	<SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area H

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason	
Pentachlorophenol	ug/kg	4	25%	2.32E+02	2.41E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW	
Phenanthrene	ug/kg	4	25%	9.63E+01	1.10E+02	No	3.35E+02	No	Yes	5.90E+07	No	No		<SGW
Potassium	mg/kg	4	100%	1.16E+03	1.60E+03	Yes	4.73E+03	No	Yes	NA	No	No		EN
Pyrene	ug/kg	4	75%	1.58E+02	1.90E+02	No	4.35E+02	No	Yes	2.10E+07	No	No		<SGW
Selenium	mg/kg	4	75%	1.58E+00	4.70E+00	No	ND	--	No	2.40E+00	Yes	Yes	>SGW	
Silver	mg/kg	4	75%	1.39E+00	2.70E+00	No	1.35E+00	Yes	No	NA	No	No		NA
Sodium	mg/kg	4	100%	2.48E+02	3.90E+02	Yes	5.77E+02	No	Yes	NA	No	No		EN
Tetrachloroethene	ug/kg	4	25%	6.73E+00	1.70E+01	No	ND	--	No	3.00E+02	No	No		<SGW
Thallium	mg/kg	4	25%	1.01E+00	2.50E+00	No	ND	--	No	1.60E+01	No	No		<SGW
Total PCBs	ug/kg	4	75%	6.60E+02	1.52E+03	No	See notes	--	No	NA	No	No		NA
Vanadium	mg/kg	4	100%	3.00E+01	4.50E+01	No	6.90E+01	No	Yes	NA	No	No		<BK
Zinc	mg/kg	4	100%	1.28E+03	3.60E+03	No	8.08E+02	Yes	No	2.00E+03	Yes	Yes	>SGW	

Fill Area - Soil-to-Groundwater TACO Screen
Area I

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
1,2,4-Trichlorobenzene	ug/kg	4	25%	1.11E+02	1.80E+02	No	ND	--	No	5.30E+04	No	No	<SGW
1,4-Dichlorobenzene	ug/kg	4	25%	4.60E+01	4.60E+01	No	ND	--	No	1.10E+04	No	No	<SGW
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.34E+00	1.27E+01	No	ND	--	No	NA	No	No	NA
2,4-DB	ug/kg	4	25%	1.27E+01	2.91E+01	No	ND	--	No	NA	No	No	NA
2,4-Dichlorophenol	ug/kg	4	25%	8.20E+01	8.20E+01	No	ND	--	No	6.90E+02	No	No	<SGW
2-Nitroaniline	ug/kg	4	25%	1.60E+02	1.60E+02	No	ND	--	No	NA	No	No	NA
4,4'-DDD	ug/kg	3	100%	6.69E+01	2.00E+02	No	ND	--	No	8.00E+04	No	No	<SGW
4,4'-DDE	ug/kg	3	100%	1.03E+02	3.00E+02	No	1.61E+01	Yes	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	3	67%	1.57E+02	4.60E+02	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
4-Chloroaniline	ug/kg	4	50%	4.64E+03	1.80E+04	No	ND	--	No	7.00E+02	Yes	Yes	>SGW
Aldrin	ug/kg	3	100%	8.48E+01	2.50E+02	No	ND	--	No	2.50E+03	No	No	<SGW
Alpha Chlordane	ug/kg	3	33%	2.65E+00	2.65E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	4	100%	5.64E+03	8.00E+03	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	4	50%	2.36E+02	7.30E+02	No	1.60E+02	Yes	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	4	100%	6.06E+00	8.40E+00	No	3.80E+00	Yes	No	2.00E+01	No	No	<SGW
Arsenic	mg/kg	4	100%	7.79E+00	1.20E+01	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	4	100%	2.81E+02	7.40E+02	No	3.63E+02	Yes	No	2.60E+02	Yes	Yes	>SGW
Benzo(a)anthracene	ug/kg	4	75%	6.53E+02	2.20E+03	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	4	75%	6.29E+02	2.20E+03	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	4	75%	8.14E+02	2.80E+03	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	4	75%	4.86E+02	1.60E+03	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	4	75%	3.10E+02	9.60E+02	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	4	100%	9.10E-01	1.70E+00	No	1.51E+00	Yes	No	1.40E+02	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	4	25%	8.75E+01	8.75E+01	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	4	100%	1.12E+01	3.10E+01	No	8.65E+00	Yes	No	1.00E+01	Yes	Yes	>SGW
Calcium	mg/kg	4	100%	1.57E+05	2.35E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Carbazole	ug/kg	4	25%	1.48E+02	3.20E+02	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	4	100%	3.33E+01	6.50E+01	No	3.93E+01	Yes	No	NA	No	No	NA
Chrysene	ug/kg	4	75%	6.62E+02	2.20E+03	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	4	100%	1.21E+01	3.30E+01	No	1.55E+01	Yes	No	NA	No	No	NA
Copper	mg/kg	4	100%	6.66E+03	1.30E+04	No	2.09E+02	Yes	No	3.30E+02	Yes	Yes	>SGW
Dibenzo(a,h)anthracene	ug/kg	4	50%	1.23E+02	3.60E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	4	25%	9.25E+01	1.00E+02	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	3	100%	7.04E+01	2.00E+02	No	ND	--	No	2.00E+01	Yes	Yes	>SGW
Di-n-butylphthalate	ug/kg	4	25%	5.20E+01	5.20E+01	No	3.12E+02	No	Yes	2.30E+06	No	No	<SGW
Endosulfan I	ug/kg	3	100%	8.88E+01	2.60E+02	No	ND	--	No	9.00E+04	No	No	<SGW
Endosulfan II	ug/kg	3	100%	2.06E+02	6.00E+02	No	ND	--	No	9.00E+04	No	No	<SGW
Endosulfan sulfate	ug/kg	3	33%	8.65E+00	8.80E+00	No	ND	--	No	9.00E+04	No	No	<SGW
Endrin	ug/kg	3	100%	8.22E+01	2.40E+02	No	ND	--	No	5.00E+03	No	No	<SGW
Endrin aldehyde	ug/kg	3	100%	5.15E+02	1.50E+03	No	ND	--	No	5.00E+03	No	No	<SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area I

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Endrin ketone	ug/kg	3	100%	2.42E+02	7.00E+02	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	4	100%	1.66E+03	6.00E+03	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	4	25%	1.25E+02	2.30E+02	No	ND	--	No	2.80E+06	No	No	<SGW
Gamma Chlordane	ug/kg	3	100%	1.32E+02	3.80E+02	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor	ug/kg	3	67%	2.48E+01	6.90E+01	No	ND	--	No	1.10E+05	No	No	<SGW
Heptachlor epoxide	ug/kg	3	100%	4.85E+01	1.40E+02	No	ND	--	No	3.30E+03	No	No	<SGW
Hexachlorobenzene	ug/kg	4	25%	5.48E+01	1.10E+02	No	ND	--	No	1.10E+04	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	4	50%	4.84E+02	1.60E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	4	100%	1.08E+04	1.60E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	4	100%	6.95E+02	1.50E+03	No	1.85E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	4	100%	1.24E+04	1.90E+04	Yes	1.72E+04	Yes	Yes	NA	No	No	EN
Manganese	mg/kg	4	100%	2.03E+02	3.00E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	4	100%	6.04E-01	2.00E+00	No	1.77E-01	Yes	No	5.00E-02	Yes	Yes	>SGW
Methoxychlor	ug/kg	3	100%	1.03E+03	3.00E+03	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	4	100%	5.86E+00	8.50E+00	No	2.02E+00	Yes	No	NA	No	No	NA
Nickel	mg/kg	4	100%	3.54E+01	6.50E+01	No	4.27E+01	Yes	No	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	4	100%	6.34E+02	1.65E+03	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	4	100%	8.80E+02	3.30E+03	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	4	100%	1.24E+03	1.50E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	4	100%	1.35E+03	4.70E+03	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	4	75%	1.10E+00	1.60E+00	No	ND	--	No	2.40E+00	No	No	<SGW
Silver	mg/kg	4	100%	8.71E+00	1.90E+01	No	1.35E+00	Yes	No	NA	No	No	NA
Sodium	mg/kg	4	100%	6.35E+02	8.70E+02	Yes	5.77E+02	Yes	Yes	NA	No	No	EN
Toluene	ug/kg	4	25%	2.89E+00	3.30E+00	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	4	75%	3.13E+04	1.21E+05	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	4	100%	1.87E+01	2.60E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	4	100%	1.43E+03	2.80E+03	No	8.08E+02	Yes	No	2.00E+03	Yes	Yes	>SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area L

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	3.60E-01	8.21E-01	No	ND	--	No	NA	No	No	NA
2-Methylnaphthalene	ug/kg	4	25%	1.04E+02	1.40E+02	No	ND	--	No	4.20E+05	No	No	<SGW
4,4'-DDE	ug/kg	4	75%	1.10E+01	2.00E+01	No	1.61E+01	Yes	No	2.70E+05	No	No	<SGW
4,4'-DDT	ug/kg	4	25%	8.95E+00	1.60E+01	No	1.41E+01	Yes	No	1.60E+05	No	No	<SGW
Acenaphthene	ug/kg	4	50%	4.81E+02	1.60E+03	No	ND	--	No	2.90E+06	No	No	<SGW
Aldrin	ug/kg	4	25%	3.83E+00	5.50E+00	No	ND	--	No	2.50E+03	No	No	<SGW
Aluminum	mg/kg	4	100%	5.75E+03	7.60E+03	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	4	75%	1.05E+03	3.60E+03	No	1.60E+02	Yes	No	5.90E+07	No	No	<SGW
Antimony	mg/kg	4	100%	3.28E+00	5.40E+00	No	3.80E+00	Yes	No	2.00E+01	No	No	<SGW
Arsenic	mg/kg	4	100%	3.33E+01	3.70E+01	No	1.91E+01	Yes	No	1.00E+02	No	No	<SGW
Barium	mg/kg	4	100%	1.71E+02	2.50E+02	No	3.63E+02	No	Yes	2.60E+02	No	No	<SGW
Benzo(a)anthracene	ug/kg	4	75%	2.56E+03	7.80E+03	No	2.40E+02	Yes	No	8.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	4	75%	2.30E+03	7.00E+03	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	4	75%	2.19E+03	6.60E+03	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	4	75%	1.33E+03	3.80E+03	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	4	75%	2.29E+03	6.80E+03	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
Beryllium	mg/kg	4	100%	1.48E+00	1.60E+00	No	1.51E+00	Yes	No	1.40E+02	No	No	<SGW
beta-BHC	ug/kg	4	25%	1.66E+00	3.70E+00	No	ND	--	No	3.00E+00	Yes	Yes	>SGW
bis(2-Ethylhexyl)phthalate	ug/kg	4	50%	1.90E+02	3.10E+02	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	4	100%	5.60E+00	1.00E+01	No	8.65E+00	Yes	No	1.00E+01	No	No	<SGW
Calcium	mg/kg	4	100%	2.00E+04	2.90E+04	Yes	3.35E+04	No	Yes	NA	No	No	EN
Carbazole	ug/kg	4	75%	4.80E+02	1.50E+03	No	6.40E+01	Yes	No	2.80E+03	No	No	<SGW
Chromium	mg/kg	4	100%	4.53E+01	7.90E+01	No	3.93E+01	Yes	No	NA	No	No	NA
Chrysene	ug/kg	4	75%	2.64E+03	7.80E+03	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	4	100%	1.38E+01	1.70E+01	No	1.55E+01	Yes	No	NA	No	No	NA
Copper	mg/kg	4	100%	1.76E+03	4.70E+03	No	2.09E+02	Yes	No	3.30E+02	Yes	Yes	>SGW
Cyanide, Total	mg/kg	4	25%	6.05E-01	1.60E+00	No	ND	--	No	1.20E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	4	50%	4.55E+02	1.30E+03	No	ND	--	No	7.60E+03	No	No	<SGW
Dibenzofuran	ug/kg	4	25%	2.56E+02	7.50E+02	No	ND	--	No	NA	No	No	NA
Dieldrin	ug/kg	4	25%	7.83E+00	1.20E+01	No	ND	--	No	2.00E+01	No	No	<SGW
Endrin ketone	ug/kg	4	75%	1.23E+01	2.80E+01	No	ND	--	No	5.00E+03	No	No	<SGW
Fluoranthene	ug/kg	4	75%	5.77E+03	1.80E+04	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Fluorene	ug/kg	4	50%	4.21E+02	1.40E+03	No	ND	--	No	2.80E+06	No	No	<SGW
Gamma Chlordane	ug/kg	4	75%	1.15E+01	2.10E+01	No	ND	--	No	4.80E+04	No	No	<SGW
Heptachlor epoxide	ug/kg	4	75%	5.85E+00	9.20E+00	No	ND	--	No	3.30E+03	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	4	75%	1.58E+03	4.80E+03	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	4	100%	2.30E+04	3.20E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	4	100%	3.69E+02	9.40E+02	No	1.85E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	4	100%	2.49E+03	4.20E+03	Yes	1.72E+04	No	Yes	NA	No	No	EN

Fill Area - Soil-to-Groundwater TACO Screen
Area L

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Manganese	mg/kg	4	100%	3.51E+02	6.50E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	4	100%	3.22E-01	5.60E-01	No	1.77E-01	Yes	No	5.00E-02	Yes	Yes	>SGW
Methoxychlor	ug/kg	4	50%	2.63E+01	4.60E+01	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	4	100%	1.45E+01	2.30E+01	No	2.02E+00	Yes	No	NA	No	No	NA
Naphthalene	ug/kg	4	25%	1.49E+02	3.20E+02	No	ND	--	No	4.20E+05	No	No	<SGW
Nickel	mg/kg	4	100%	4.68E+01	5.50E+01	No	4.27E+01	Yes	No	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	4	25%	2.38E+02	2.40E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	4	75%	3.62E+03	1.20E+04	No	3.35E+02	Yes	No	5.90E+07	No	No	<SGW
Potassium	mg/kg	4	100%	1.09E+03	1.70E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	4	75%	4.27E+03	1.30E+04	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	4	100%	3.08E+00	4.30E+00	No	ND	--	No	2.40E+00	Yes	Yes	>SGW
Silver	mg/kg	4	75%	8.13E-01	1.20E+00	No	1.35E+00	No	Yes	NA	No	No	<BK
Sodium	mg/kg	4	100%	3.45E+02	5.40E+02	Yes	5.77E+02	No	Yes	NA	No	No	EN
Thallium	mg/kg	4	100%	1.85E+00	2.10E+00	No	ND	--	No	1.60E+01	No	No	<SGW
Toluene	ug/kg	4	25%	6.08E+00	1.30E+01	No	ND	--	No	2.90E+04	No	No	<SGW
Total PCBs	ug/kg	4	50%	4.90E+02	1.17E+03	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	4	100%	4.43E+01	4.90E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	4	100%	5.10E+02	8.70E+02	No	8.08E+02	Yes	No	2.00E+03	No	No	<SGW

Fill Area - Soil-to-Groundwater TACO Screen
Area N

Constituent	Units	Number of Samples Analyzed	Frequency of Detection	Average (Avg)	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Surface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Soil-to-groundwater (SGW) Concentration	Is Max>SGW?	COPC?	Reason
Total 2,3,7,8-TCDD TEQ	ug/kg	4	100%	9.76E-02	3.45E-01	No	ND	--	No	NA	No	No	NA
4,4'-DDT	ug/kg	4	25%	2.02E+00	2.70E+00	No	1.41E+01	No	Yes	1.60E+05	No	No	<SGW
Aldrin	ug/kg	4	25%	1.03E+00	1.28E+00	No	ND	--	No	2.50E+03	No	No	<SGW
Alpha Chlordane	ug/kg	4	25%	9.67E-01	1.10E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Aluminum	mg/kg	4	100%	8.75E+03	1.10E+04	No	2.54E+04	No	Yes	NA	No	No	<BK
Anthracene	ug/kg	4	75%	4.70E+01	5.80E+01	No	1.60E+02	No	Yes	5.90E+07	No	No	<SGW
Antimony	mg/kg	4	25%	7.10E-01	7.10E-01	No	3.80E+00	No	Yes	2.00E+01	No	No	<SGW
Arsenic	mg/kg	4	100%	6.33E+00	7.30E+00	No	1.91E+01	No	Yes	1.00E+02	No	No	<SGW
Barium	mg/kg	4	100%	5.93E+02	1.20E+03	No	3.63E+02	Yes	No	2.60E+02	Yes	Yes	>SGW
Benzo(a)anthracene	ug/kg	4	100%	1.68E+02	2.70E+02	No	2.40E+02	Yes	No	6.00E+03	No	No	<SGW
Benzo(a)pyrene	ug/kg	4	100%	1.87E+02	3.30E+02	No	1.87E+02	Yes	No	8.20E+04	No	No	<SGW
Benzo(b)fluoranthene	ug/kg	4	100%	1.65E+02	3.20E+02	No	1.79E+02	Yes	No	2.50E+04	No	No	<SGW
Benzo(g,h,i)perylene	ug/kg	4	25%	1.44E+02	3.00E+02	No	1.27E+02	Yes	No	2.10E+07	No	No	<SGW
Benzo(k)fluoranthene	ug/kg	4	100%	2.18E+02	3.60E+02	No	2.08E+02	Yes	No	2.50E+05	No	No	<SGW
beta-BHC	ug/kg	4	25%	2.93E-01	3.38E-01	No	ND	--	No	3.00E+00	No	No	<SGW
bis(2-Ethylhexyl)phthalate	ug/kg	4	25%	1.01E+02	1.30E+02	No	3.22E+02	No	Yes	3.10E+07	No	No	<SGW
Cadmium	mg/kg	4	100%	8.46E-01	1.50E+00	No	8.65E+00	No	Yes	1.00E+01	No	No	<SGW
Calcium	mg/kg	4	100%	5.73E+04	1.09E+05	Yes	3.35E+04	Yes	Yes	NA	No	No	EN
Chromium	mg/kg	4	100%	1.65E+01	1.80E+01	No	3.93E+01	No	Yes	NA	No	No	<BK
Chrysene	ug/kg	4	100%	2.00E+02	3.10E+02	No	2.73E+02	Yes	No	8.00E+05	No	No	<SGW
Cobalt	mg/kg	4	100%	5.84E+00	6.15E+00	No	1.55E+01	No	Yes	NA	No	No	<BK
Copper	mg/kg	4	100%	5.01E+01	1.10E+02	No	2.09E+02	No	Yes	3.30E+02	No	No	<SGW
Dibenzo(a,h)anthracene	ug/kg	4	50%	7.25E+01	1.10E+02	No	ND	--	No	7.60E+03	No	No	<SGW
Dieldrin	ug/kg	4	25%	1.89E+00	2.13E+00	No	ND	--	No	2.00E+01	No	No	<SGW
Fluoranthene	ug/kg	4	100%	3.93E+02	6.10E+02	No	5.02E+02	Yes	No	2.10E+07	No	No	<SGW
Gamma Chlordane	ug/kg	4	25%	1.38E+00	1.85E+00	No	ND	--	No	4.80E+04	No	No	<SGW
Indeno(1,2,3-cd)pyrene	ug/kg	4	75%	1.44E+02	2.60E+02	No	ND	--	No	6.90E+04	No	No	<SGW
Iron	mg/kg	4	100%	1.43E+04	1.50E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	4	100%	1.38E+02	4.10E+02	No	1.85E+02	Yes	No	NA	No	No	NA
Magnesium	mg/kg	4	100%	7.18E+03	1.15E+04	Yes	1.72E+04	No	Yes	NA	No	No	EN
Manganese	mg/kg	4	100%	3.74E+02	4.10E+02	No	8.83E+02	No	Yes	NA	No	No	<BK
Mercury	mg/kg	4	100%	6.78E-02	9.50E-02	No	1.77E-01	No	Yes	5.00E-02	Yes	No	<BK
Methoxychlor	ug/kg	4	25%	2.08E+01	5.50E+01	No	ND	--	No	7.80E+05	No	No	<SGW
Molybdenum	mg/kg	4	100%	1.03E+00	1.45E+00	No	2.02E+00	No	Yes	NA	No	No	<BK
Nickel	mg/kg	4	100%	1.61E+01	1.70E+01	No	4.27E+01	No	Yes	4.00E+02	No	No	<SGW
Pentachlorophenol	ug/kg	4	100%	3.07E+02	4.74E+02	No	See notes	--	No	1.00E+02	Yes	Yes	>SGW
Phenanthrene	ug/kg	4	100%	1.76E+02	2.60E+02	No	3.35E+02	No	Yes	5.90E+07	No	No	<SGW
Potassium	mg/kg	4	100%	1.40E+03	1.60E+03	Yes	4.73E+03	No	Yes	NA	No	No	EN
Pyrene	ug/kg	4	100%	3.41E+02	5.50E+02	No	4.35E+02	Yes	No	2.10E+07	No	No	<SGW
Selenium	mg/kg	4	25%	5.69E-01	6.80E-01	No	ND	--	No	2.40E+00	No	No	<SGW
Total PCBs	ug/kg	4	25%	5.13E+01	1.78E+02	No	See notes	--	No	NA	No	No	NA
Vanadium	mg/kg	4	100%	2.38E+01	2.90E+01	No	6.90E+01	No	Yes	NA	No	No	<BK
Zinc	mg/kg	4	100%	1.49E+02	2.50E+02	No	6.08E+02	No	Yes	2.00E+03	No	No	<SGW

Table G-2
Soil-to-Groundwater Screen -pH Evaluation
Fill Areas
Sauget Area 1 - EE/CA and RI/FA
Human Health Risk Assessment

Constituent	Fill Area H pH = 7-7.6			Fill Area I pH = 7.7-8.4			Fill Area L pH = 7.5-7.9			Fill Area N pH = 7.8-7.9		
	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)
4-Chloroaniline	--	NA	--	1.80E+01	NA	Yes	--	NA	--	--	NA	--
Barium	--	1.70E+03	--	7.40E+02	1.80E+03	No	--	1.80E+03	--	1.20E+03	2.10E+03	No
Beta-BHC	--	NA	--	--	NA	--	3.70E-03	NA	Yes	--	NA	--
Cadmium	2.20E+01	1.10E+02	No	3.10E+01	5.90E+02	No	--	5.90E+02	--	--	4.30E+03	--
Copper	4.80E+02	2.00E+05	No	1.30E+04	3.30E+05	No	4.70E+03	3.30E+05	No	--	3.30E+05	--
Dieldrin	--	NA	--	2.00E-01	NA	Yes	--	NA	--	--	NA	--
Mercury	7.70E-01	1.60E+01	No	2.00E+00	3.20E+01	No	5.60E-01	3.20E+01	No	--	4.00E+01	--
Pentachlorophenol	2.41E-01	1.10E-01	Yes	1.65E+00	1.00E-01	Yes	2.40E-01	1.00E-01	Yes	4.70E-01	1.00E-01	Yes
Selenium	4.70E+00	3.30E+00	Yes	--	2.40E+00	--	4.30E+00	2.40E+00	Yes	--	2.40E+00	--
Zinc	3.60E+03	1.50E+04	No	2.80E+03	3.20E+04	No	--	3.20E+04	--	--	1.10E+05	--

Notes:
-- Not a constituent of potential concern in this area/medium.
Conc. - Concentration.
COPC - Constituent of Potential Concern.
NA - Not available.
SGW (pH) - pH- specific Soil-to-Groundwater TACO Tier 1 Value.
(a) - Maximum detected concentration in this area/medium (includes all constituents identified as potential COPC after the SGW screen).
(b) - TACO Tier I Appendix B Table D values - pH specific Soil Remediation Objectives for Inorganics and Ionizable Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater). Where pH range overlaps table ranges, the lower table value is used.
(c) - Constituent is identified as a COPC if Conc. >SGW (pH) or if no SGW (pH) value available.

Table G 3
Soil to Groundwater Screen pH Evaluation
Transects - Surface Soil
Saugel Area 1 - EE/CA and RI/F A
Human Health Risk Assessment

Constituent	Transect 1 pH = 7.0-8.2			Transect 2 pH = 6.3-7.7			Transect 3 pH = 4.9-7.6			Transect 4 pH = 6.9-8.5			Transect 5 pH =6.7-8.1			Transect 6 pH = 7.7-8.0			Transect 7 pH = 7.4-8.1		
	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)
Barium	--	1.70E+03	--	--	1.50E+03	--	--	4.90E+02	--	1.20E+03	1.70E+03	No	--	1.60E+03	--	--	1.60E+03	--	--	1.60E+03	--
Benzo(a)anthracene	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--
Beta BHC	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--	3.80E-03	NA	Yes	--	NA	--
Dieldrin	--	NA	--	--	NA	--	--	NA	--	--	NA	--	1.20E-01	NA	Yes	--	NA	--	--	NA	--
Mercury	--	1.60E+01	--	--	4.40E+00	--	--	6.00E-02	--	5.70E-01	1.60E+01	No	--	1.00E+01	--	--	3.20E+01	--	--	3.20E+01	--
Pentachlorophenol	4.60E-01	1.00E-01	Yes	2.50E-01	1.10E-01	Yes	7.40E-01	1.00E-01	Yes	5.00E-01	1.00E-01	Yes	2.40E-01	1.00E-01	Yes	2.50E-01	1.00E-01	Yes	2.50E-01	1.00E-01	Yes
Selenium	--	2.40E+00	--	--	3.30E+00	--	3.20E+00	2.40E+00	Yes	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--

Notes
-- Not a constituent of potential concern in this area/medium
Conc - Concentration
COPC - Constituent of Potential Concern
NA - Not available
SGW (pH) - pH- specific Soil-to Groundwater TACO Tier 1 Value.
(a) - Maximum detected concentration in this area/medium (includes all constituents identified as potential COPC after the SGW screen).
(b) - TACO Tier I Appendix B Table D values - pH specific Soil Remediation Objectives for Inorganics and Ionizable Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater). Where pH range overlaps table ranges, the lower table value is used.
(c) - Constituent is identified as a COPC if Conc >SGW (pH) or if no SGW (pH) value available

Table G-4
Soil-to-Groundwater Screen -pH Evaluation
Transects - Subsurface Soil
Sauget Area 1 - EE/CA and RI/FA
Human Health Risk Assessment

Constituent	Transect 1 pH = 7.6-8.3			Transect 3 pH = 7.6-8.0			Transect 4 pH = 7.75-8.5			Transect 5 pH = 7.9-8.3			Transect 6 pH = 8.0-9.0			Transect 7 pH = 7.6-8.4		
	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)	Conc. (a)	SGW (pH) (b)	COPC? (c)
Barium	--	1.80E+03	--	--	1.80E+03	--	--	2.10E+03	--	--	2.10E+03	--	--	2.10E+03	--	--	1.80E+03	--
Benzo(a)anthracene	--	NA	--	--	NA	--	1.20E+01	NA	Yes	--	NA	--	--	NA	--	--	NA	--
Beta-BHC	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--
Dieldrin	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--	--	NA	--
Mercury	7.00E-02	3.20E+01	No	7.80E-02	3.20E+01	No	--	4.00E+01	--	8.60E-02	4.00E+01	No	1.90E-01	4.00E+01	No	2.00E-01	3.20E+01	No
Pentachlorophenol	--	1.00E-01	--	2.80E-01	1.00E-01	Yes	5.50E-01	1.00E-01	Yes	--	1.00E-01	--	2.50E-01	1.00E-01	Yes	3.00E-01	1.00E-01	Yes
Selenium	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--	--	2.40E+00	--

Notes:
-- Not a constituent of potential concern in this area/medium
Conc. - Concentration
COPC - Constituent of Potential Concern
NA - Not available
SGW (pH) - pH- specific Soil-to-Groundwater TACO Tier 1 Value.
(a) - Maximum detected concentration in this area/medium (includes all constituents identified as potential COPC after the SGW screen).
(b) - TACO Tier I Appendix B Table D values - pH specific Soil Remediation Objectives for Inorganics and Ionizable Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater). Where pH range overlaps table ranges, the lower table value is used.
(c) - Constituent is identified as a COPC if Conc. >SGW (pH) or if no SGW (pH) value available.

APPENDIX H

COPC SELECTION FOR GROUNDWATER

APPENDIX H
COPC SELECTION FOR GROUNDWATER

This appendix presents the screening tables for identifying COPCs for groundwater. COPCs are identified on a well-by-well basis using the "Groundwater and Surface Water Standards" presented in Appendix C Table C-4. The screening tables present:

- The frequency of detection and the arithmetic mean and maximum detected concentrations;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 groundwater screening values; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The information in the last column of each table pertains to the short-term risk assessment, and will be discussed in Section 7.0 of the text.

The screening tables are presented in the following order (well screening interval or sample identification, which includes a sample depth designator, is provided where more than one sample was included in the analysis):

Fill Area G

AA-GHL-S1	(AA-GHL-S1-12-16FT, AA-GHL-S1-22-26FT)
AA-GHL-S2	(AA-GHL-S2-12-16FT, AA-GHL-S2-22-26FT)
AA-GHL-S3	(AA-GHL-S3-20-24FT)
AA-SW-S1	(AA-SW-S1-14-16FT. AA-SW-S1-24-26FT)
EEG-101	(18-23FT)
EEG-102	(16.5-21.5FT)
EEG-104	(19-24FT)
EEG-106	(18-23 FT)
EEG-107	(23-28 FT)
EEG-112	(12-26FT)
EE-05	(18-23 FT)

Fill Area H

EEG-110	(18-23FT)
EE-01	(28-33 FT)
EE-02	(18-23 FT)
EE-03	(27-32 FT)

Fill Area I

AA-I-S1	(AA-I-S1-17-21FT, AA-I-S1-27-31FT)
AA-I-S2	(AA-I-S2-16-20FT, AA-I-S2-26-30FT)
AA-I-S3	(AA-I-S3-24-28FT)
EE-12	(28-33 FT)
EE-13	(23-29 FT)
EE-14	(32.5-37.5 FT)
EE-15	(24-29 FT)

Fill Area L

EEG-103	(16.5-21.5FT)
EEG-105	(no construction log)
EEG-109	(17-22 FT)
EEG-111	(no construction log)
AA-SW-S2	(AA-SW-S2-14-16FT, AA-SW-S2-22-26FT)
AA-SW-S3	(AA-SW-S3-14-16FT, AA-SW-S3-22-26FT)

Residential Area Wells

SGW-S1	(SGW-S1-15FT, SGW-S1-20FT)
SGW-S2	(SGW-S2-15FT, SGW-S2-20FT)
DW-MCDO	Unknown
DW-SCHM	Unknown
DW-SETT	Unknown
DW-WRIG	Unknown

The screening results are summarized in Section 3.3.2 of the text.

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: AA-GHL-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	1.30E+00	1.30E+00	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	1.20E+00	1.20E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
Aluminum	2	1	1.38E+02	1.95E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Barium	2	2	1.18E+02	1.35E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.33E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	9.40E-01	9.40E-01	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Chromium	1	1	3.60E+00	3.60E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cis/Trans-1,2-Dichloroethene	1	1	7.10E-01	7.10E-01	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	1	1	3.50E+00	3.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	2.30E+00	2.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	2	1	1.90E-02	3.20E-02	No	1.25E-02	Yes	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
gamma-BHC (Lindane)	2	1	1.98E-02	3.00E-02	No	1.01E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	2	2	7.60E+02	7.70E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	2	2	2.75E+04	3.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	3.86E+02	7.30E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	1	1.05E+01	1.60E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.03E+01	1.15E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	1	1	2.95E-01	2.95E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	2	2	4.73E+03	6.25E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	1.33E+04	1.55E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Tetrachloroethene	2	2	1.02E+01	1.30E+01	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Toluene	1	1	6.85E-01	6.85E-01	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total PCBs	2	1	1.09E+00	1.18E+00	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Total TCDD-TEQ	1	1	3.93E-06	3.93E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Trichloroethene	2	2	1.20E+00	1.90E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No

H-5

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area G
Well AA-GHL-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	2	1	8.50E+02	1.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	3.80E+00	3.80E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	1.24E+02	1.60E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.25E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cis/Trans-1,2-Dichloroethene	2	2	1.23E+00	1.90E+00	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	2	2	3.60E+00	4.20E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Iron	2	2	1.49E+03	2.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	2	2	2.70E+04	3.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	7.10E+02	1.20E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	2	4.50E+00	4.50E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	9.50E+00	9.80E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	2	2	4.00E+03	5.00E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	7.75E+03	8.20E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Trichloroethene	2	2	1.20E+00	1.60E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Vanadium	1	1	4.00E+00	4.00E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	9.10E+00	9.10E+00	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

H-6

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: AA-GHL-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
bis(2-Ethylhexyl)phthalate	1	1	8.00E-01	8.00E-01	No	ND	--	No	6.00E+01	No	No	<Tier 1	6.00E+03	No
Calcium	1	1	1.70E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	5.80E+00	5.80E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Iron	1	1	2.00E+02	2.00E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	3.70E+04	3.70E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.50E+03	1.50E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	1.20E+01	1.20E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	1.20E+04	1.20E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.90E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total PCBs	1	1	1.23E+00	1.23E+00	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No

H-7

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: AA-SW-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Acetone	2	1	2.65E+01	2.80E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
Aluminum	2	1	2.45E+03	4.80E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	4.50E+00	4.50E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	2.40E+02	3.10E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.35E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	2	1	7.35E+00	9.70E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	2	2	2.65E+00	4.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Iron	2	2	4.91E+03	9.10E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	1	5.10E+00	7.70E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	3.60E+04	3.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	7.00E+02	7.80E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	1	5.10E+00	5.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.75E+01	2.30E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Phenanthrene	1	1	4.20E-01	4.20E-01	No	ND	--	No	1.05E+04	No	No	<Tier 1	1.05E+06	No
Potassium	2	2	5.75E+03	6.20E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	1.10E+04	1.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Vanadium	2	1	9.00E+00	1.30E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	2	1	2.30E+01	3.60E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

H-8

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-101

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
2,4,5-TP (Silvex)	1	1	1.40E-01	1.40E-01	No	3.20E-01	No	Yes	2.50E+02	No	No	<Tier 1	2.50E+04	No
4,4'-DDE	1	1	4.00E-03	4.00E-03	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
Aluminum	1	1	5.80E+02	5.80E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	2.10E+01	2.10E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.20E+05	1.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chromium	1	1	5.30E+00	5.30E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	4.40E+00	4.40E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.50E+00	1.50E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	8.20E-03	8.20E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Endosulfan I	1	1	1.60E-03	1.60E-03	No	ND	--	No	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endrin aldehyde	1	1	3.80E-03	3.80E-03	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Heptachlor	1	1	1.20E-03	1.20E-03	No	2.60E-02	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Iron	1	1	6.40E+03	6.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	2.50E+04	2.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	2.40E+03	2.40E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	5.20E+00	5.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	1	1	2.00E+01	2.00E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	4.00E+03	4.00E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.60E+04	1.60E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	6.46E-06	6.46E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No

H-9

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-102

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	1.00E+01	1.00E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,4-Dichlorobenzene	1	1	5.80E+01	5.80E+01	No	ND	--	No	3.75E+02	No	No	<Tier 1	3.75E+04	No
alpha-BHC	1	1	1.07E-05	1.07E-05	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Arsenic	1	1	2.80E+01	2.80E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	9.50E+01	9.50E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	8.40E+04	8.40E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	1.10E+01	1.10E+01	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Cobalt	1	1	5.00E+00	5.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Iron	1	1	6.50E+03	6.50E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	1.80E+04	1.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	8.30E+02	8.30E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	9.50E+00	9.50E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	1	1	1.70E+01	1.70E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	6.70E+03	6.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.80E+04	1.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	1.07E-05	1.07E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Zinc	1	1	1.90E+01	1.90E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-104

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
4,4'-DDE	1	1	3.90E-03	3.90E-03	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
alpha-BHC	1	1	8.00E-04	8.00E-04	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Aluminum	1	1	3.10E+01	3.10E+01	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Barium	1	1	1.60E+02	1.60E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	2.50E+00	2.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Dieldrin	1	1	2.60E-03	2.60E-03	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
Endosulfan II	1	1	6.90E-03	6.90E-03	No	ND	--	No	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endrin aldehyde	1	1	1.10E-02	1.10E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Endrin ketone	1	1	9.30E-03	9.30E-03	No	5.21E-02	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
gamma-BHC (Lindane)	1	1	9.00E-04	9.00E-04	No	1.01E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	1.00E+02	1.00E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	3.80E+04	3.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	7.20E+02	7.20E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	1.50E+01	1.50E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	4.50E+03	4.50E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.20E+04	1.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.40E-05	2.40E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Zinc	1	1	1.10E+01	1.10E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

H-11

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-106

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	4.70E+01	4.70E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	4.60E+00	4.60E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	3.30E+02	3.30E+02	No	ND	--	No	3.75E+02	No	No	<Tier 1	3.75E+04	No
2,4,6-Trichlorophenol	1	1	4.70E-01	4.70E-01	No	ND	--	No	3.20E+01	No	No	<Tier 1	3.20E+03	No
2,4-Dichlorophenol	1	1	1.10E+01	1.10E+01	No	ND	--	No	2.10E+01	No	No	<Tier 1	2.10E+03	No
2-Chlorophenol	1	1	2.30E+00	2.30E+00	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
alpha-BHC	1	1	8.30E+00	8.30E+00	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Arsenic	1	1	4.20E+01	4.20E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	9.30E+00	9.30E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
beta-BHC	1	1	3.60E-01	3.60E-01	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Calcium	1	1	2.80E+05	2.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	1.80E+02	1.80E+02	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
delta-BHC	1	1	1.30E-01	1.30E-01	No	1.25E-02	Yes	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Dinoseb	1	1	3.20E-01	3.20E-01	No	ND	--	No	7.00E+01	No	No	<Tier 1	7.00E+03	No
gamma-BHC (Lindane)	1	1	6.80E-02	6.80E-02	No	1.01E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	5.60E+04	5.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	1	1	3.00E+00	3.00E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	1	1	6.00E+04	6.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	2.10E+03	2.10E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Pentachlorophenol	1	1	6.70E-02	6.70E-02	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	1	1	1.40E+04	1.40E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.30E+05	2.30E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	1.03E-05	1.03E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-107

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	1.80E+02	1.80E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	3.00E+02	3.00E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	8.50E+02	8.50E+02	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-T	1	1	2.40E+01	2.40E+01	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1	3.60E+04	No
2,4-D	1	1	1.20E+02	1.20E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
2,4-Dichlorophenol	1	1	3.60E+03	3.60E+03	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1	2.10E+03	Yes
2-Chlorophenol	1	1	6.30E+02	6.30E+02	No	ND	--	No	1.75E+02	Yes	Yes	>Tier 1	1.75E+04	No
2-Methylphenol (o-cresol)	1	1	2.30E+02	2.30E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
3-Methylphenol/4-Methylphenol	1	1	2.40E+03	2.40E+03	No	ND	--	No	3.50E+02	Yes	Yes	>Tier 1	3.50E+04	No
4-Chloroaniline	1	1	2.30E+04	2.30E+04	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	Yes
4-Methyl-2-pentanone (MIBK)	1	1	1.30E+03	1.30E+03	No	ND	--	No	1.60E+02	Yes	Yes	>Tier 1	1.60E+04	No
Acetone	1	1	5.90E+02	5.90E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
alpha-BHC	1	1	6.00E+00	6.00E+00	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Aluminum	1	1	6.10E+02	6.10E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Antimony	1	1	8.60E+00	8.60E+00	No	ND	--	No	2.40E+01	No	No	<Tier 1	2.40E+03	No
Arsenic	1	1	1.40E+01	1.40E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	4.20E+02	4.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	3.70E+03	3.70E+03	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	Yes
Cadmium	1	1	2.60E+00	2.60E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Calcium	1	1	5.20E+05	5.20E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	4.30E+03	4.30E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chromium	1	1	2.20E+01	2.20E+01	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cis/Trans-1,2-Dichloroethene	1	1	1.90E+02	1.90E+02	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	1	1	1.40E+02	1.40E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.10E+01	1.10E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	1.70E+01	1.70E+01	No	1.25E-02	Yes	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	Yes
Dichloroprop	1	1	4.70E+01	4.70E+01	No	ND	--	No	NA	--	No	No D/R	NA	--
Ethylbenzene	1	1	3.20E+01	3.20E+01	No	ND	--	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Iron	1	1	2.70E+05	2.70E+05	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	1	1	2.40E+01	2.40E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	1	1	4.90E+04	4.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	6.10E+03	6.10E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	5.60E+01	5.60E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Naphthalene	1	1	2.10E+03	2.10E+03	No	ND	--	No	3.90E+01	Yes	Yes	>Tier 1	3.90E+03	No
Nickel	1	1	1.20E+02	1.20E+02	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	2	2	1.01E+03	2.00E+03	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1	5.00E+02	Yes
Phenol	1	1	1.40E+04	1.40E+04	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1	1.00E+04	Yes
Potassium	1	1	2.80E+04	2.80E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Selenium	1	1	5.00E+00	5.00E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Sodium	1	1	1.50E+05	1.50E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN	NA	--
Tetrachloroethene	1	1	1.70E+02	1.70E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Toluene	1	1	8.50E+03	8.50E+03	No	ND	--	No	2.50E+03	Yes	Yes	>Tier 1	2.50E+05	No
Total TCDD-TEQ	1	1	3.65E-03	3.65E-03	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	Yes
Trichloroethene	1	1	2.00E+02	2.00E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Vanadium	1	1	3.30E+02	3.30E+02	No	ND	--	No	4.90E+01	Yes	Yes	>Tier 1	4.90E+03	No
Vinyl chloride	1	1	4.10E+01	4.10E+01	No	ND	--	No	1.00E+01	Yes	Yes	>Tier 1	1.00E+03	No
Xylenes, Total	1	1	1.30E+02	1.30E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Zinc	1	1	1.30E+03	1.30E+03	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EEG-112

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
4-Chloroaniline	1	1	1.10E+00	1.10E+00	No	ND	--	No	2.80E+01	No	No	<Tier 1	2.80E+03	No
Arsenic	1	1	5.50E+01	5.50E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	3.40E+02	3.40E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	1.90E+00	1.90E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Calcium	1	1	1.00E+05	1.00E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	2.80E+00	2.80E+00	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Iron	1	1	2.70E+04	2.70E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	2.30E+04	2.30E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	3.10E+00	3.10E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Potassium	1	1	6.30E+03	6.30E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	5.80E+04	5.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	3.90E-06	3.90E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: G
Well: EE-05

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	1.60E+00	1.60E+00	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	5.70E+00	5.70E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	1	1	1.90E+00	1.90E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	1.60E+01	1.60E+01	No	ND	--	No	3.75E+02	No	No	<Tier 1	3.75E+04	No
2,4,5-TP (Silvex)	1	1	3.90E+02	3.90E+02	No	3.20E-01	Yes	No	2.50E+02	Yes	Yes	>Tier 1	2.50E+04	No
2,4-Dichlorophenol	1	1	3.10E+00	3.10E+00	No	ND	--	No	2.10E+01	No	No	<Tier 1	2.10E+03	No
2-Chlorophenol	1	1	3.80E+01	3.80E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
2-Methylphenol (o-cresol)	1	1	2.60E+01	2.60E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
3-Methylphenol/4-Methylphenol	1	1	1.30E+02	1.30E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4,4'-DDD	1	1	2.40E-02	2.40E-02	No	ND	--	No	5.50E-01	No	No	<Tier 1	5.50E+01	No
4,4'-DDE	1	1	1.40E-03	1.40E-03	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
4-Chloroaniline	1	1	1.60E+03	1.60E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
4-Nitroaniline	1	1	8.40E+00	8.40E+00	No	ND	--	No	2.10E+00	Yes	Yes	>Tier 1	2.10E+02	No
alpha-BHC	1	1	2.40E-02	2.40E-02	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Arsenic	1	1	4.50E+01	4.50E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	4.00E+02	4.00E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	1.10E+02	1.10E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Calcium	1	1	2.70E+05	2.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	6.20E+02	6.20E+02	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Cis/Trans-1,2-Dichloroethene	1	1	4.20E+01	4.20E+01	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	1	1	7.00E+00	7.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
delta-BHC	1	1	3.60E-01	3.60E-01	No	1.25E-02	Yes	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Dieldrin	1	1	2.00E-02	2.00E-02	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
Diethylphthalate	1	1	7.10E+00	7.10E+00	No	7.00E-01	Yes	No	5.60E+03	No	No	<Tier 1	5.60E+05	No
Endrin	1	1	2.40E-02	2.40E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Endrin aldehyde	1	1	9.20E-02	9.20E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Gamma Chlordane	1	1	8.00E-03	8.00E-03	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Heptachlor	1	1	2.60E-02	2.60E-02	No	2.60E-02	Yes	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Heptachlor epoxide	1	1	2.40E-02	2.40E-02	No	2.66E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	4.60E+04	4.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	5.20E+04	5.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Methoxychlor	1	1	6.90E-02	6.90E-02	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Molybdenum	1	1	4.50E+02	4.50E+02	No	ND	--	No	1.80E+02	Yes	Yes	>Tier 1	1.80E+04	No
Naphthalene	1	1	3.90E+02	3.90E+02	No	ND	--	No	3.90E+01	Yes	Yes	>Tier 1	3.90E+03	No
Nickel	1	1	5.90E+00	5.90E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Phenol	1	1	3.80E+02	3.80E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1	1.00E+04	No
Potassium	1	1	3.50E+03	3.50E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	5.90E+04	5.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Toluene	1	1	9.70E+02	9.70E+02	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total TCDD-TEQ	1	1	1.78E-04	1.78E-04	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	No
Trichloroethene	1	1	1.80E+01	1.80E+01	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Vanadium	1	1	3.70E+00	3.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: H
Well: EE-01

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,1,2,2-Tetrachloroethane	1	1	1.20E+01	1.20E+01	No	ND	--	No	5.50E-02	Yes	Yes	>Tier 1	5.50E+00	Yes
1,2,4-Trichlorobenzene	1	1	1.90E+01	1.90E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	7.20E+02	7.20E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	2.20E+03	2.20E+03	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-Trichlorophenol	1	1	6.20E+01	6.20E+01	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
2,4,6-Trichlorophenol	1	1	2.70E+02	2.70E+02	No	ND	--	No	3.20E+01	Yes	Yes	>Tier 1	3.20E+03	No
2-Chloronaphthalene	1	1	1.20E+01	1.20E+01	No	ND	--	No	4.90E+02	No	No	<Tier 1	4.90E+04	No
2-Chlorophenol	1	1	7.30E+01	7.30E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
2-Methylnaphthalene	1	1	8.00E+00	8.00E+00	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
2-Methylphenol (o-cresol)	1	1	3.00E+01	3.00E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
3-Methylphenol/4-Methylphenol	1	1	6.20E+01	6.20E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4-Chloroaniline	1	1	1.80E+03	1.80E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
Acenaphthene	1	1	2.20E+00	2.20E+00	No	ND	--	No	2.10E+03	No	No	<Tier 1	2.10E+05	No
Aluminum	1	1	3.00E+02	3.00E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	3.70E+01	3.70E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	5.70E+02	5.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	1.50E+03	1.50E+03	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Cadmium	1	1	2.20E+00	2.20E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Calcium	1	1	3.30E+05	3.30E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Carbazole	1	1	5.20E+00	5.20E+00	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1	3.40E+02	No
Chlorobenzene	1	1	1.20E+03	1.20E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chromium	1	1	4.20E+00	4.20E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	1.30E+02	1.30E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.80E+01	1.80E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Ethylbenzene	1	1	1.80E+03	1.80E+03	No	ND	--	No	1.00E+03	Yes	Yes	>Tier 1	1.00E+05	No
Fluorene	1	1	3.00E+01	3.00E+01	No	4.80E-01	Yes	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
Iron	1	1	7.70E+04	7.70E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	6.00E+04	6.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.60E+03	1.60E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Naphthalene	1	1	2.30E+03	2.30E+03	No	ND	--	No	3.90E+01	Yes	Yes	>Tier 1	3.90E+03	No
Nickel	1	1	6.70E+02	6.70E+02	No	1.30E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
N-Nitrosodiphenylamine	1	1	7.60E+00	7.60E+00	No	5.00E-01	Yes	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Pentachlorophenol	2	2	3.35E+03	4.30E+03	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1	5.00E+02	Yes
Phenanthrene	1	1	4.80E+00	4.80E+00	No	ND	--	No	1.05E+04	No	No	<Tier 1	1.05E+06	No
Phenol	1	1	7.20E+01	7.20E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Potassium	1	1	2.70E+04	2.70E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	5.10E+04	5.10E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Toluene	1	1	9.40E+01	9.40E+01	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total TCDD-TEQ	1	1	4.57E-05	4.57E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	No
Xylenes, Total	1	1	2.00E+02	2.00E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Zinc	1	1	4.80E+02	4.80E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area H
Well EE-02

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	3.15E+02	3.15E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	2.20E+02	2.20E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	1	1	5.45E+00	5.45E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	6.35E+02	6.35E+02	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-T	1	1	3.50E+01	3.50E+01	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1	3.60E+04	No
2,4,5-Trichlorophenol	1	1	1.90E+02	1.90E+02	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
2,4,6-Trichlorophenol	1	1	4.65E+02	4.65E+02	No	ND	--	No	3.20E+01	Yes	Yes	>Tier 1	3.20E+03	No
2,4-D	1	1	1.60E+02	1.60E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
2,4-Dichlorophenol	1	1	3.70E+02	3.70E+02	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1	2.10E+03	No
2-Chlorophenol	1	1	2.25E+01	2.25E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
2-Methylnaphthalene	1	1	1.80E+00	1.80E+00	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
2-Methylphenol (o-cresol)	1	1	2.80E+01	2.80E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
2-Nitroaniline	1	1	1.35E+01	1.35E+01	No	ND	--	No	2.10E+00	Yes	Yes	>Tier 1	2.10E+02	No
3-Methylphenol/4-Methylphenol	1	1	2.15E+02	2.15E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4-Chloroaniline	1	1	7.75E+02	7.75E+02	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
Acetone	1	1	4.90E+02	4.90E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
Alpha Chlordane	1	1	2.40E+00	2.40E+00	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
alpha-BHC	1	1	4.95E-01	4.95E-01	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Antimony	1	1	1.05E+02	1.05E+02	No	ND	--	No	2.40E+01	Yes	Yes	>Tier 1	2.40E+03	No
Arsenic	1	1	1.25E+03	1.25E+03	No	1.17E+01	Yes	No	2.00E+02	Yes	Yes	>Tier 1	2.00E+04	No
Barium	1	1	6.35E+01	6.35E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	2.25E+03	2.25E+03	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
bis(2-Ethylhexyl)phthalate	1	1	7.40E-01	7.40E-01	No	ND	--	No	6.00E+01	No	No	<Tier 1	6.00E+03	No
Calcium	1	1	7.20E+05	7.20E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN	NA	--
Carbazole	1	1	1.15E+00	1.15E+00	No	ND	--	No	3.40E+00	No	No	<Tier 1	3.40E+02	No
Chlorobenzene	1	1	4.35E+03	4.35E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chloroform	1	1	4.25E+02	4.25E+02	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	Yes
Chromium	1	1	3.00E+00	3.00E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	3.95E+01	3.95E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	6.30E+00	6.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Cyanide, Total	1	1	1.60E+01	1.60E+01	No	ND	--	No	6.00E+02	No	No	<Tier 1	6.00E+04	No
Diethylphthalate	1	1	2.10E+01	2.10E+01	No	7.00E-01	Yes	No	5.60E+03	No	No	<Tier 1	5.60E+05	No
Dimethylphthalate	1	1	3.65E+00	3.65E+00	No	ND	--	No	3.60E+05	No	No	<Tier 1	3.60E+07	No
Endrin	1	1	3.60E-01	3.60E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Fluorene	1	1	1.00E+00	1.00E+00	No	4.80E-01	Yes	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
Heptachlor epoxide	1	1	4.40E+00	4.40E+00	No	2.66E-02	Yes	No	1.00E+00	Yes	Yes	>Tier 1	1.00E+02	No
Iron	1	1	2.40E+04	2.40E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	3.95E+04	3.95E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	6.80E+03	6.80E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Mercury	1	1	9.00E-02	9.00E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Methoxychlor	1	1	3.60E-01	3.60E-01	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Molybdenum	1	1	5.45E+00	5.45E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Naphthalene	1	1	1.95E+02	1.95E+02	No	ND	--	No	3.90E+01	Yes	Yes	>Tier 1	3.90E+03	No
Nickel	1	1	4.30E+02	4.30E+02	No	1.30E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
Nitrobenzene	1	1	5.65E+01	5.65E+01	No	ND	--	No	3.50E+00	Yes	Yes	>Tier 1	3.50E+02	No
Pentachlorophenol	2	2	6.50E+02	6.70E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1	5.00E+02	Yes
Phenol	1	1	3.15E+02	3.15E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1	1.00E+04	No
Potassium	1	1	2.80E+04	2.80E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Selenium	1	1	7.15E+00	7.15E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Sodium	1	1	3.25E+04	3.25E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Thallium	1	1	5.05E+00	5.05E+00	No	ND	--	No	2.00E+01	No	No	<Tier 1	2.00E+03	No
Total TCDD-TEQ	1	1	2.31E-06	2.31E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Toluene	1	1	1.55E+03	1.55E+03	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Trichloroethene	1	1	4.95E+01	4.95E+01	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Vanadium	1	1	3.50E+00	3.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	6.05E+01	6.05E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: H
Well: EE-03

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2-Dichlorobenzene	1	1	2.20E+00	2.20E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	2.10E+01	2.10E+01	No	ND	--	No	3.75E+02	No	No	<Tier 1	3.75E+04	No
2,4-Dichlorophenol	1	1	7.50E-01	7.50E-01	No	ND	--	No	2.10E+01	No	No	<Tier 1	2.10E+03	No
Arsenic	1	1	2.80E+01	2.80E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	2.60E+05	2.60E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	1.40E+01	1.40E+01	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Iron	1	1	3.60E+04	3.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	7.90E+04	7.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.40E+03	1.40E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	5.40E+00	5.40E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	2	1	1.75E+00	3.00E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	1	1	1.20E+04	1.20E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	9.80E+04	9.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	5.02E-05	5.02E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: H
Well: EEG-110

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Arsenic	1	1	4.50E+00	4.50E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	1.20E+02	1.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Cadmium	1	1	2.10E+00	2.10E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Calcium	1	1	1.20E+05	1.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	1.90E+00	1.90E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
delta-BHC	1	1	1.60E-03	1.60E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Heptachlor	1	1	9.90E-03	9.90E-03	No	2.60E-02	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Iron	1	1	4.80E+02	4.80E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	2.10E+04	2.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.60E+03	1.60E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Methylene chloride	1	1	3.20E+00	3.20E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Molybdenum	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	1	1	1.50E+02	1.50E+02	No	1.30E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	3.60E+03	3.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.50E+04	1.50E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Zinc	1	1	5.40E+02	5.40E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: AA-I-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,1-Dichloroethane	2	1	6.05E+02	9.60E+02	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
1,1-Dichloroethene	1	1	3.20E+01	3.20E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1	3.50E+03	No
1,2-Dichlorobenzene	2	2	7.15E+01	1.30E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	2	1	5.75E+01	1.10E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	2	2	2.21E+03	4.40E+03	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-TP (Silvex)	2	2	7.25E-01	1.10E+00	No	3.20E-01	Yes	No	2.50E+02	No	No	<Tier 1	2.50E+04	No
2-Chlorophenol	2	1	5.25E+00	5.50E+00	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
4,4'-DDD	1	1	3.60E-03	3.60E-03	No	ND	--	No	5.50E-01	No	No	<Tier 1	5.50E+01	No
4,4'-DDT	1	1	2.20E-03	2.20E-03	No	ND	--	No	6.00E-01	No	No	<Tier 1	6.00E+01	No
4-Chloroaniline	2	2	3.25E+03	4.10E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	Yes
Aldrin	2	2	4.10E-03	5.50E-03	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
alpha-BHC	2	2	3.30E-02	5.40E-02	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Aluminum	2	2	7.65E+02	1.40E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	2	2	1.04E+02	1.40E+02	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	5.35E+02	7.60E+02	No	6.17E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	2	2	4.55E+02	6.20E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
beta-BHC	2	1	4.90E-02	9.10E-02	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
bis(2-Chloroethyl)ether	1	1	1.10E+00	1.10E+00	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
bis(2-Ethylhexyl)phthalate	1	1	6.90E-01	6.90E-01	No	ND	--	No	6.00E+01	No	No	<Tier 1	6.00E+03	No
Calcium	2	2	2.55E+05	3.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Carbazole	1	1	1.40E+00	1.40E+00	No	ND	--	No	3.40E+00	No	No	<Tier 1	3.40E+02	No
Chlorobenzene	2	2	5.15E+03	8.70E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chromium	1	1	3.10E+00	3.10E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cis/Trans-1,2-Dichloroethene	2	1	7.25E+02	1.20E+03	No	ND	--	No	2.00E+02	Yes	Yes	>Tier 1	2.00E+04	No
Cobalt	2	1	7.50E+00	1.00E+01	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
delta-BHC	2	2	6.80E-02	1.00E-01	No	1.25E-02	Yes	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Dicamba	1	1	1.40E-01	1.40E-01	No	ND	--	No	1.10E+03	No	No	<Tier 1	1.10E+05	No
Dieldrin	1	1	3.90E-03	3.90E-03	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
Dinoseb	1	1	2.70E-01	2.70E-01	No	ND	--	No	7.00E+01	No	No	<Tier 1	7.00E+03	No
Endosulfan II	1	1	1.00E-03	1.00E-03	No	ND	--	No	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endrin	1	1	2.70E-03	2.70E-03	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Endrin ketone	1	1	4.40E-03	4.40E-03	No	5.21E-02	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
Ethylbenzene	2	2	5.55E+02	8.70E+02	No	ND	--	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
gamma-BHC (Lindane)	2	1	3.93E-02	6.90E-02	No	1.01E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Heptachlor	2	2	2.60E-02	2.80E-02	No	2.60E-02	Yes	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Heptachlor epoxide	2	2	1.09E-02	1.40E-02	No	2.66E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	2	2	4.90E+04	6.50E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	1	2.65E+00	2.80E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	6.30E+04	7.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	2.55E+03	3.70E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	1	6.40E+00	7.80E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Naphthalene	1	1	4.20E+00	4.20E+00	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
Nickel	2	1	3.40E+01	4.80E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
N-Nitrosodiphenylamine	2	1	3.90E+00	5.30E+00	No	5.00E-01	Yes	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Pentachlorophenol	1	1	1.30E-01	1.30E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	2	2	1.14E+04	1.30E+04	Yes	1.23E+05	No	Yes	NA	--	No	BK	NA	--
Sodium	2	2	9.20E+04	1.30E+05	Yes	1.30E+05	No	Yes	NA	--	No	BK	NA	--
Toluene	1	1	1.80E+01	1.80E+01	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total PCBs	2	1	1.07E+00	1.13E+00	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Vanadium	1	1	4.50E+00	4.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Vinyl chloride	2	1	7.35E+02	9.70E+02	No	ND	--	No	1.00E+01	Yes	Yes	>Tier 1	1.00E+03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: AA-I-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,1-Dichloroethane	2	2	1.70E+02	1.80E+02	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
1,1-Dichloroethene	1	1	3.10E+01	3.10E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1	3.50E+03	No
1,2-Dichlorobenzene	2	1	7.25E+01	1.40E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	2	1	6.25E+01	1.20E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	2	2	2.15E+03	4.20E+03	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-TP (Silvex)	1	1	1.80E-01	1.80E-01	No	3.20E-01	No	Yes	2.50E+02	No	No	<Tier 1	2.50E+04	No
2,4-D	2	1	2.60E-01	2.70E-01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
2,4-Dichlorophenol	2	1	5.80E+00	6.60E+00	No	ND	--	No	2.10E+01	No	No	<Tier 1	2.10E+03	No
2-Chlorophenol	2	1	5.15E+00	5.30E+00	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
4-Chloroaniline	2	2	3.51E+02	6.80E+02	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
alpha-BHC	1	1	8.40E-03	8.40E-03	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Arsenic	2	1	2.30E+01	4.10E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	6.30E+01	7.90E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	2	2	6.13E+01	1.20E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Benzo(a)anthracene	1	1	5.90E-01	5.90E-01	No	ND	--	No	6.50E-01	No	No	<Tier 1	6.50E+01	No
Benzo(a)pyrene	1	1	9.80E-01	9.80E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Benzo(k)fluoranthene	1	1	1.20E+00	1.20E+00	No	ND	--	No	8.50E-01	Yes	Yes	>Tier 1	8.50E+01	No
Cadmium	2	1	3.63E+01	7.00E+01	No	ND	--	No	5.00E+01	Yes	Yes	>Tier 1	5.00E+03	No
Calcium	2	2	3.05E+05	3.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	2	2	1.68E+03	3.20E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chrysene	1	1	7.30E-01	7.30E-01	No	ND	--	No	7.50E+00	No	No	<Tier 1	7.50E+02	No
Cis/Trans-1,2-Dichloroethene	2	2	4.05E+02	5.10E+02	No	ND	--	No	2.00E+02	Yes	Yes	>Tier 1	2.00E+04	No
Cobalt	2	2	4.35E+01	4.70E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
delta-BHC	2	1	2.40E-02	4.20E-02	No	1.25E-02	Yes	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Dibenzo(a,h)anthracene	2	2	9.75E-01	1.10E+00	No	ND	--	No	1.50E+00	No	No	<Tier 1	1.50E+02	No
Ethylbenzene	2	1	1.11E+02	2.10E+02	No	ND	--	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Heptachlor	2	2	7.60E-03	8.30E-03	No	2.60E-02	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Iron	2	1	1.17E+04	2.30E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	2	2	5.80E+04	6.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	4.85E+03	7.40E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	2	3.00E+00	3.10E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	4.40E+03	7.80E+03	No	1.30E+02	Yes	No	2.00E+03	Yes	Yes	>Tier 1	2.00E+05	No
Potassium	2	2	1.20E+04	1.30E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	9.00E+04	1.20E+05	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Tetrachloroethene	1	1	7.40E+00	7.40E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Total TCDD-TEQ	1	1	1.88E-06	1.88E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Trichloroethene	2	1	1.04E+02	1.80E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Vanadium	1	1	2.70E+00	2.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Vinyl chloride	2	2	2.00E+02	2.40E+02	No	ND	--	No	1.00E+01	Yes	Yes	>Tier 1	1.00E+03	No
Zinc	2	2	1.83E+04	3.30E+04	No	ND	--	No	1.00E+04	Yes	Yes	>Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: AA-I-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Barium	1	1	3.30E+02	3.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzo(a)pyrene	1	1	4.50E-01	4.50E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Benzo(b)fluoranthene	1	1	3.00E-01	3.00E-01	No	ND	--	No	9.00E-01	No	No	<Tier 1	9.00E+01	No
Calcium	1	1	2.40E+05	2.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Heptachlor	1	1	9.20E-03	9.20E-03	No	2.60E-02	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Magnesium	1	1	3.30E+04	3.30E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	4.30E+02	4.30E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	1.10E+01	1.10E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Potassium	1	1	1.70E+05	1.70E+05	Yes	1.23E+05	Yes	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.80E+05	1.80E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.41E-06	2.41E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: EE-12

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	5.50E-01	5.50E-01	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	3.90E+00	3.90E+00	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	1	1	1.30E+01	1.30E+01	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	9.60E+01	9.60E+01	No	ND	--	No	3.75E+02	No	No	<Tier 1	3.75E+04	No
2,4,5-TP (Silvex)	1	1	4.50E-01	4.50E-01	No	3.20E-01	Yes	No	2.50E+02	No	No	<Tier 1	2.50E+04	No
2-Chlorophenol	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
2-Methylphenol (o-cresol)	1	1	3.90E-01	3.90E-01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
3-Methylphenol/4-Methylphenol	1	1	4.80E+00	4.80E+00	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4,4'-DDE	1	1	2.20E+00	2.20E+00	No	ND	--	No	2.00E-01	Yes	Yes	>Tier 1	2.00E+01	No
4-Chloroaniline	1	1	1.40E+03	1.40E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
alpha-BHC	1	1	2.40E+00	2.40E+00	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Aluminum	1	1	4.90E+03	4.90E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	9.70E+00	9.70E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	9.20E+02	9.20E+02	No	6.17E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	6.80E+02	6.80E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
bis(2-Ethylhexyl)phthalate	1	1	7.90E-01	7.90E-01	No	ND	--	No	6.00E+01	No	No	<Tier 1	6.00E+03	No
Cadmium	1	1	9.60E-01	9.60E-01	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Calcium	1	1	4.80E+05	4.80E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN	NA	--
Carbazole	1	1	3.50E+00	3.50E+00	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1	3.40E+02	No
Chlorobenzene	1	1	1.40E+03	1.40E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chromium	1	1	7.30E+00	7.30E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	2.80E+00	2.80E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.00E+01	1.00E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Di-n-butylphthalate	1	1	1.40E+00	1.40E+00	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
Endosulfan II	1	1	2.00E+00	2.00E+00	No	ND	--	No	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endrin ketone	1	1	1.80E+00	1.80E+00	No	5.21E-02	Yes	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Ethylbenzene	1	1	4.60E+00	4.60E+00	No	ND	--	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Fluoranthene	1	1	4.10E-01	4.10E-01	No	ND	--	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
Gamma Chlordane	1	1	3.50E+00	3.50E+00	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Heptachlor	1	1	2.50E+00	2.50E+00	No	2.60E-02	Yes	No	2.00E+00	Yes	Yes	>Tier 1	2.00E+02	No
Heptachlor epoxide	1	1	5.60E+00	5.60E+00	No	2.66E-02	Yes	No	1.00E+00	Yes	Yes	>Tier 1	1.00E+02	No
Iron	1	1	6.20E+04	6.20E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	1.10E+05	1.10E+05	Yes	9.23E+04	Yes	Yes	NA	--	No	EN	NA	--
Manganese	1	1	6.80E+03	6.80E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Mercury	1	1	1.30E-01	1.30E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Methoxychlor	1	1	2.80E+00	2.80E+00	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Naphthalene	1	1	6.50E+00	6.50E+00	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
Nickel	1	1	9.50E+00	9.50E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	1	1	6.70E-02	6.70E-02	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Phenol	1	1	1.90E+01	1.90E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Potassium	1	1	2.60E+04	2.60E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.40E+05	2.40E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN	NA	--
Toluene	1	1	5.00E+00	5.00E+00	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total TCDD-TEQ	1	1	3.05E-03	3.05E-03	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	Yes
Vanadium	1	1	2.20E+01	2.20E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Xylenes, Total	1	1	1.40E+01	1.40E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Zinc	1	1	1.20E+02	1.20E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: EE-13

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	1	1	1.50E+03	1.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Barium	1	1	1.70E+02	1.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chromium	1	1	2.50E+00	2.50E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	4.10E+00	4.10E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	3.80E+00	3.80E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	2.10E-02	2.10E-02	No	1.25E-02	Yes	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Iron	1	1	2.10E+03	2.10E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	3.10E+04	3.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	3.20E+02	3.20E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	1.10E+01	1.10E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	1	1	6.60E-02	6.60E-02	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	1	1	7.60E+03	7.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	3.70E+04	3.70E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	4.74E-05	4.74E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	No
Vanadium	1	1	5.00E+00	5.00E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: EE-14

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,2,4-Trichlorobenzene	1	1	5.10E+02	5.10E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1	7.00E+04	No
1,2-Dichlorobenzene	1	1	5.00E+02	5.00E+02	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	1	1	4.50E+01	4.50E+01	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	1.40E+04	1.40E+04	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2,4,5-Trichlorophenol	1	1	1.60E+00	1.60E+00	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
2,4,6-Trichlorophenol	1	1	1.50E+01	1.50E+01	No	ND	--	No	3.20E+01	No	No	<Tier 1	3.20E+03	No
2-Chlorophenol	1	1	2.70E+01	2.70E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
2-Methylnaphthalene	1	1	4.20E+00	4.20E+00	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
2-Methylphenol (o-cresol)	1	1	2.10E+01	2.10E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
3-Methylphenol/4-Methylphenol	1	1	1.10E+02	1.10E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4,4'-DDE	1	1	1.80E-01	1.80E-01	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
4-Chloroaniline	1	1	1.80E+03	1.80E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
alpha-BHC	1	1	1.10E+00	1.10E+00	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
Arsenic	1	1	1.60E+01	1.60E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	5.80E+02	5.80E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	7.50E+02	7.50E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
beta-BHC	1	1	1.00E+00	1.00E+00	No	ND	--	No	1.50E-01	Yes	Yes	>Tier 1	1.50E+01	No
bis(2-Ethylhexyl)phthalate	1	1	1.10E+00	1.10E+00	No	ND	--	No	6.00E+01	No	No	<Tier 1	6.00E+03	No
Butylbenzylphthalate	1	1	1.00E+01	1.00E+01	No	ND	--	No	7.00E+03	No	No	<Tier 1	7.00E+05	No
Calcium	1	1	1.90E+05	1.90E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Carbazole	1	1	2.60E+01	2.60E+01	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1	3.40E+02	No
Chlorobenzene	1	1	3.80E+03	3.80E+03	No	ND	--	No	5.00E+02	Yes	Yes	>Tier 1	5.00E+04	No
Chromium	1	1	7.60E+00	7.60E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cis/Trans-1,2-Dichloroethene	1	1	1.60E+02	1.60E+02	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	1	1	4.00E+00	4.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.90E+01	1.90E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Endrin ketone	1	1	1.10E-01	1.10E-01	No	5.21E-02	Yes	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Ethylbenzene	1	1	8.30E+01	8.30E+01	No	ND	--	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Gamma Chlordane	1	1	2.50E-01	2.50E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
gamma-BHC (Lindane)	1	1	4.00E-01	4.00E-01	No	1.01E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Heptachlor epoxide	1	1	6.80E-01	6.80E-01	No	2.66E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	6.40E+04	6.40E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	1	1	2.20E+01	2.20E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	1	1	4.90E+04	4.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.20E+03	1.20E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Mercury	1	1	1.80E-01	1.80E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Methoxychlor	1	1	2.20E-01	2.20E-01	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Naphthalene	1	1	3.60E+01	3.60E+01	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
Nickel	1	1	1.50E+02	1.50E+02	No	1.30E+02	Yes	No	2.00E+03	No	No	<Tier 1	2.00E+05	No
N-Nitrosodiphenylamine	1	1	2.30E+01	2.30E+01	No	5.00E-01	Yes	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Pentachlorophenol	2	2	3.30E+02	5.00E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1	5.00E+02	No
Phenol	1	1	1.70E+01	1.70E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Potassium	1	1	1.10E+04	1.10E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	8.80E+04	8.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Toluene	1	1	4.20E+01	4.20E+01	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total PCBs	1	1	5.88E+00	5.88E+00	No	ND	--	No	2.50E+00	Yes	Yes	>Tier 1	2.50E+02	No
Total TCDD-TEQ	1	1	7.69E-04	7.69E-04	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1	3.00E-03	No
Vanadium	1	1	5.70E+00	5.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	9.30E+01	9.30E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: I
Well: EE-15

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
1,1-Dichloroethane	1	1	1.10E+01	1.10E+01	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
1,2-Dichlorobenzene	1	1	2.40E+01	2.40E+01	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,3-Dichlorobenzene	1	1	1.10E+01	1.10E+01	No	ND	--	No	1.50E+03	No	No	<Tier 1	1.50E+05	No
1,4-Dichlorobenzene	1	1	4.30E+02	4.30E+02	No	ND	--	No	3.75E+02	Yes	Yes	>Tier 1	3.75E+04	No
2-Chlorophenol	1	1	3.15E+00	3.15E+00	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
4-Chloroaniline	1	1	7.25E+00	7.25E+00	No	ND	--	No	2.80E+01	No	No	<Tier 1	2.80E+03	No
Aluminum	1	1	4.25E+03	4.25E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	2.10E+01	2.10E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	2.55E+02	2.55E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	3.90E+00	3.90E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	1.95E+02	1.95E+02	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Chromium	1	1	8.10E+00	8.10E+00	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cis/Trans-1,2-Dichloroethene	1	1	6.40E+01	6.40E+01	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Cobalt	1	1	6.25E+00	6.25E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	8.45E+00	8.45E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
gamma-BHC (Lindane)	1	1	5.30E-03	5.30E-03	No	1.01E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	3.50E+04	3.50E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	4.05E+04	4.05E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.15E+03	1.15E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Mercury	1	1	1.10E-01	1.10E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Nickel	1	1	1.90E+01	1.90E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	6.15E+03	6.15E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	3.05E+04	3.05E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.95E-06	2.95E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Trichloroethene	1	1	6.55E-01	6.55E-01	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Vanadium	1	1	1.62E+01	1.62E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	2.71E+01	2.71E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: EEG-103

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	1	1	4.20E+01	4.20E+01	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	1.40E+01	1.40E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	1.70E+02	1.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	9.70E+04	9.70E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	1.90E+00	1.90E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.60E+00	1.60E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Iron	1	1	1.40E+03	1.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	2.10E+04	2.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	2.70E+02	2.70E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	7.90E+00	7.90E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	1	1	4.90E+00	4.90E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	4.10E+03	4.10E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.60E+04	1.60E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	3.58E-06	3.58E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: EEG-105

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
alpha-BHC	1	1	3.10E-03	3.10E-03	No	ND	--	No	1.50E-01	No	No	<Tier I	1.50E+01	No
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier I	2.00E+05	No
Calcium	1	1	8.60E+04	8.60E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	1.60E+00	1.60E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier I	1.00E+05	No
delta-BHC	1	1	1.20E-02	1.20E-02	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier I	1.50E+01	No
gamma-BHC (Lindane)	1	1	7.40E-03	7.40E-03	No	1.01E-02	No	Yes	1.00E+00	No	No	<Tier I	1.00E+02	No
Iron	1	1	2.80E+02	2.80E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Magnesium	1	1	1.50E+04	1.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	4.50E+02	4.50E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier I	1.00E+06	No
Molybdenum	1	1	5.70E+00	5.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier I	1.80E+04	No
Nickel	1	1	6.70E+00	6.70E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier I	2.00E+05	No
Pentachlorophenol	1	1	9.70E-02	9.70E-02	No	ND	--	No	5.00E+00	No	No	<Tier I	5.00E+02	No
Potassium	1	1	7.70E+03	7.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	1.90E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.90E-06	2.90E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier I	3.00E-03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: EEG-109

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
2,4,5-T	1	1	3.20E+00	3.20E+00	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1	3.60E+04	No
2,4-D	1	1	6.10E+00	6.10E+00	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
2,4-Dichlorophenol	1	1	2.60E+01	2.60E+01	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1	2.10E+03	No
2-Chlorophenol	1	1	2.10E+01	2.10E+01	No	ND	--	No	1.75E+02	No	No	<Tier 1	1.75E+04	No
3-Methylphenol/4-Methylphenol	1	1	5.50E+00	5.50E+00	No	ND	--	No	3.50E+02	No	No	<Tier 1	3.50E+04	No
4,4'-DDD	1	1	4.40E-02	4.40E-02	No	ND	--	No	5.50E-01	No	No	<Tier 1	5.50E+01	No
4-Chloroaniline	1	1	5.50E+01	5.50E+01	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1	2.80E+03	No
4-Methyl-2-pentanone (MIBK)	1	1	5.00E+01	5.00E+01	No	ND	--	No	1.60E+02	No	No	<Tier 1	1.60E+04	No
Alpha Chlordane	1	1	3.80E-02	3.80E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Aluminum	1	1	1.50E+03	1.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	4.30E+03	4.30E+03	No	1.17E+01	Yes	No	2.00E+02	Yes	Yes	>Tier 1	2.00E+04	No
Barium	1	1	2.10E+01	2.10E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	1	1	4.40E+01	4.40E+01	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1	2.50E+03	No
Calcium	1	1	5.30E+05	5.30E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN	NA	--
Chlorobenzene	1	1	2.60E+00	2.60E+00	No	ND	--	No	5.00E+02	No	No	<Tier 1	5.00E+04	No
Chloroform	1	1	7.60E+01	7.60E+01	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	Yes
Cobalt	1	1	2.20E+02	2.20E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	4.40E+01	4.40E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Dieldrin	1	1	2.90E-03	2.90E-03	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
Endrin ketone	1	1	9.40E-03	9.40E-03	No	5.21E-02	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
Gamma Chlordane	1	1	1.00E-02	1.00E-02	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
gamma-BHC (Lindane)	1	1	1.10E-02	1.10E-02	No	1.01E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	1	1	2.90E+05	2.90E+05	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	1.60E+05	1.60E+05	Yes	9.23E+04	Yes	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.00E+04	1.00E+04	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Methylene chloride	1	1	3.60E+00	3.60E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Naphthalene	1	1	2.80E+01	2.80E+01	No	ND	--	No	3.90E+01	No	No	<Tier 1	3.90E+03	No
Nickel	1	1	1.80E+05	1.80E+05	No	1.30E+02	Yes	No	2.00E+03	Yes	Yes	>Tier 1	2.00E+05	No
Pentachlorophenol	1	1	3.70E-01	3.70E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	1	1	2.90E+04	2.90E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	4.70E+04	4.70E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	3.16E-06	3.16E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Trichloroethene	1	1	1.60E+00	1.60E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Xylenes, Total	1	1	3.80E+00	3.80E+00	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Zinc	1	1	1.20E+03	1.20E+03	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: EEG-111

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	1	1	5.50E+03	5.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	4.20E+00	4.20E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	4.70E+02	4.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chromium	1	1	1.80E+01	1.80E+01	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	1	1	9.30E+00	9.30E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	9.40E+00	9.40E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	9.80E-03	9.80E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Iron	1	1	1.10E+04	1.10E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	2.90E+04	2.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	4.00E+02	4.00E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	1	1	2.40E+01	2.40E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Pentachlorophenol	1	1	1.30E-01	1.30E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1	5.00E+02	No
Potassium	1	1	5.80E+03	5.80E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.80E+04	2.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Vanadium	1	1	1.70E+01	1.70E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	3.70E+01	3.70E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: AA-SW-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	2	1	1.37E+03	2.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Barium	2	2	2.05E+02	2.10E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.30E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	2	1	6.15E+00	7.30E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	2.30E+00	2.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Iron	2	2	3.83E+03	6.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	1	2.55E+00	2.60E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	3.20E+04	3.60E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	7.15E+02	1.30E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	2	3.50E+00	3.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.39E+01	1.90E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	2	2	4.55E+03	5.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	5.65E+03	6.50E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total PCBs	2	2	1.17E+00	1.18E+00	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Total TCDD-TEQ	1	1	3.99E-06	3.99E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Vanadium	2	1	5.95E+00	6.90E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: L
Well: AA-SW-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Aluminum	2	2	2.55E+03	4.40E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	2	1	6.95E+00	8.90E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	2.40E+02	2.90E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.65E+05	1.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	2	2	6.90E+00	8.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	4.50E+00	4.50E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Di-n-butylphthalate	1	1	3.20E-01	3.20E-01	No	ND	--	No	3.50E+03	No	No	<Tier 1	3.50E+05	No
Iron	2	2	5.35E+03	8.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	1	2.60E+00	2.70E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	3.45E+04	4.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	1.18E+03	2.00E+03	No	1.75E+03	Yes	No	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	1	5.65E+00	6.30E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.80E+01	1.90E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	2	2	6.85E+03	7.10E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	7.25E+03	7.70E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total PCBs	2	2	1.17E+00	1.18E+00	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Total TCDD-TEQ	1	1	6.05E-06	6.05E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Trichloroethene	1	1	3.40E-01	3.40E-01	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
Vanadium	2	1	9.50E+00	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: SGW-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
4,4'-DDD	1	1	4.00E-03	4.00E-03	No	ND	--	No	5.50E-01	No	No	<Tier 1	5.50E+01	No
alpha-BHC	1	1	2.10E-03	2.10E-03	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Aluminum	2	2	2.35E+03	4.00E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	2	2	2.85E+01	4.40E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	3.95E+02	5.40E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	2	2	1.05E+05	1.30E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chromium	2	2	1.12E+01	1.60E+01	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	2	2	8.10E+00	1.20E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	2	2	6.55E+00	1.10E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Dieldrin	1	1	3.20E-03	3.20E-03	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
gamma-BHC (Lindane)	2	2	3.80E-03	4.10E-03	No	1.01E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Heptachlor epoxide	1	1	1.40E-03	1.40E-03	No	2.66E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	2	2	9.80E+03	1.20E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	2	9.20E+00	1.50E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	1.14E+04	1.40E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	1.28E+03	1.70E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Methoxychlor	1	1	5.40E-03	5.40E-03	No	ND	--	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Molybdenum	2	2	6.05E+00	9.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.85E+01	2.70E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	2	2	1.12E+04	1.60E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	1.40E+04	1.50E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Vanadium	2	2	8.90E+00	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	2	2	3.15E+01	5.10E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: SGW-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
2,4-DB	2	1	4.55E-01	6.60E-01	No	ND	--	No	2.90E+02	No	No	<Tier 1	2.90E+04	No
4,4'-DDE	1	1	2.00E-03	2.00E-03	No	ND	--	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
Aluminum	2	2	3.90E+03	4.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	1	1	4.70E+00	4.70E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	2	2	4.05E+02	4.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
beta-BHC	1	1	2.00E-03	2.00E-03	No	ND	--	No	1.50E-01	No	No	<Tier 1	1.50E+01	No
Calcium	2	2	1.55E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Chromium	2	2	1.01E+01	1.10E+01	No	1.05E+02	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	2	2	8.60E+00	1.00E+01	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	2	2	5.30E+00	5.90E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Gamma Chlordane	1	1	1.20E-03	1.20E-03	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
gamma-BHC (Lindane)	1	1	1.70E-03	1.70E-03	No	1.01E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	2	2	7.55E+03	8.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	2	2	4.60E+00	4.70E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	2	2	2.70E+04	2.70E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	2	2	7.75E+02	1.20E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	2	1	5.85E+00	6.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	2	2	1.90E+01	2.20E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	2	2	5.20E+03	5.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	2	2	1.85E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	2	2	1.36E-05	1.22E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Vanadium	2	2	1.25E+01	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	2	2	2.80E+01	3.00E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: DW-MCDO

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Arsenic	1	1	2.90E+01	2.90E+01	No	1.17E+01	Yes	No	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	2.65E+02	2.65E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.00E+05	1.00E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Carbon disulfide	1	1	7.25E+00	7.25E+00	No	6.50E+00	No	Yes	3.50E+03	No	No	<Tier 1	3.50E+05	No
Copper	1	1	1.85E+01	1.85E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	2.90E-03	2.90E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Fluoranthene	1	1	3.85E-01	3.85E-01	No	ND	--	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
Iron	1	1	1.01E+04	1.01E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	1	1	1.29E+02	1.29E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1	1.00E+04	No
Magnesium	1	1	2.20E+04	2.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	5.75E+02	5.75E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Phenanthrene	1	1	3.80E-01	3.80E-01	No	ND	--	No	1.05E+04	No	No	<Tier 1	1.05E+06	No
Potassium	1	1	4.05E+03	4.05E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	9.55E+03	9.55E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Toluene	1	1	6.35E-01	6.35E-01	No	ND	--	No	2.50E+03	No	No	<Tier 1	2.50E+05	No
Total TCDD-TEQ	1	1	3.45E-06	3.45E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Vanadium	1	1	2.50E+00	2.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	1	1	4.05E+03	4.05E+03	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: DW-SCHM

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Arsenic	1	1	6.40E+00	6.40E+00	No	1.17E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	1	1	2.20E+02	2.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.70E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Copper	1	1	2.80E+00	2.80E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Iron	1	1	1.70E+04	1.70E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Magnesium	1	1	3.90E+04	3.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.20E+03	1.20E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Potassium	1	1	6.80E+03	6.80E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.20E+04	2.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.05E-06	2.05E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Zinc	1	1	1.20E+02	1.20E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: DW-SETT

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Barium	1	1	1.80E+02	1.80E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Calcium	1	1	1.80E+05	1.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Carbon disulfide	1	1	1.50E+00	1.50E+00	No	6.50E+00	No	Yes	3.50E+03	No	No	<Tier 1	3.50E+05	No
Cobalt	1	1	3.00E+00	3.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	2.60E+00	2.60E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
Iron	1	1	2.40E+03	2.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Lead	1	1	2.70E+00	2.70E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	1	1	4.10E+04	4.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	8.60E+02	8.60E+02	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	6.20E+00	6.20E+00	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	5.70E+03	5.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.40E+04	2.40E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Zinc	1	1	7.50E+01	7.50E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

Table
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Area: RES
Well: DW-WRIG

	Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Cadmium	1	1	1.00E+00	1.00E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1	5.00E+03	No
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN	NA	--
Cobalt	1	1	4.10E+00	4.10E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	1	1	1.10E+00	1.10E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	1	1	4.00E-03	4.00E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Fluoranthene	1	1	3.60E-01	3.60E-01	No	ND	--	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
Iron	1	1	1.90E+03	1.90E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN	5.00E+05	No
Lead	1	1	1.50E+01	1.50E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	1	1	3.80E+04	3.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN	NA	--
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Nickel	1	1	5.30E+01	5.30E+01	No	1.30E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Potassium	1	1	5.70E+03	5.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN	NA	--
Sodium	1	1	2.90E+04	2.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN	NA	--
Total TCDD-TEQ	1	1	2.58E-06	2.58E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1	3.00E-03	No
Zinc	1	1	9.50E+02	9.50E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1	1.00E+06	No

APPENDIX I

COPC SELECTION FOR SURFACE WATER AND FISH TISSUE

APPENDIX I
COPC SELECTION FOR SURFACE WATER AND FISH TISSUE

This appendix presents the screening tables for identifying COPCs for surface water and fish tissue.

Surface Water

COPCs are identified for surface water using the "Groundwater and Surface Water Standards" presented in Appendix C Table C-4. The screening Table I-1 presents:

- The frequency of detection and the arithmetic mean and maximum detected concentrations;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 screening values; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The information in the last column of the table pertains to the short-term risk assessment, and will be discussed in Section 7.0 of the text.

The screening results are summarized in Section 3.3.4 of the text.

Fish Tissue

COPCs are identified for fish tissue using the "Fish Tissue Standards" presented in Appendix C Table C-6. Table I-2 presents the background calculation for fish tissue based on four composite fish tissue samples collected from two reference areas. The COPC selection for fish tissue was conducted on a sample-by-sample basis. The screening Table I-3 presents:

- The fish tissue concentration;
- Comparison to background;
- Comparison to the USEPA Region 3 Risk-Based Concentrations for fish tissue; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The screening results are summarized in Section 3.3.5 of the text.

TABLE I-1
COMPARISON OF SURFACE WATER DATA TO TACO TIER I STANDARDS
CREEK SEGMENT F AND BORROW PIT LAKE
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Summary Statistics					COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
Constituent	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX>BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (ug/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (ug/L)	Is Average> 100*Class II?
Total 2,3,6,7-TCDD TEQ	6	6	100%	2.68E-06	9.01E-06	No	2.67E-05	No	Yes	3.00E-05	No	No	<Tier 1	3.00E-03	No
Acetone	6	3	50%	1.50E+01	1.80E+01	No	5.03E+01	No	Yes	7.00E+02	No	No	<Tier 1	7.00E+04	No
alpha-BHC	6	2	33%	7.35E-04	1.00E-03	No	3.10E-03	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Aluminum	6	6	100%	9.17E+02	3.40E+03	No	2.65E+04	No	Yes	3.60E+04	No	No	<Tier 1	3.60E+06	No
Arsenic	6	5	83%	8.00E+00	1.50E+01	No	2.92E+01	No	Yes	2.00E+02	No	No	<Tier 1	2.00E+04	No
Barium	6	6	100%	1.44E+02	3.20E+02	No	7.18E+02	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Benzene	6	1	17%	7.83E-01	1.70E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1	2.50E+03	No
beta-BHC	6	3	50%	1.04E-02	2.00E-02	No	2.15E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Calcium	6	6	100%	5.82E+04	8.90E+04	Yes	1.17E+05	No	Yes	NA	No	No	EN	NA	--
Chromium	6	1	17%	4.10E+00	4.10E+00	No	3.08E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Cobalt	6	1	17%	1.50E+00	1.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1	1.00E+05	No
Copper	6	6	100%	5.23E+00	1.20E+01	No	2.46E+01	No	Yes	6.50E+02	No	No	<Tier 1	6.50E+04	No
delta-BHC	6	2	33%	1.17E-03	2.20E-03	No	1.25E-02	No	Yes	1.50E-01	No	No	<Tier 1	1.50E+01	No
Dieldrin	6	1	17%	1.00E-03	1.00E-03	No	5.70E-03	No	Yes	1.00E-01	No	No	<Tier 1	1.00E+01	No
Endosulfan I	6	2	33%	1.95E-03	2.40E-03	No	1.40E-02	No	Yes	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endosulfan sulfate	6	1	17%	3.20E-03	3.20E-03	No	9.27E-03	No	Yes	2.10E+02	No	No	<Tier 1	2.10E+04	No
Endrin	6	1	17%	9.50E-04	9.50E-04	No	5.88E-03	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
Endrin aldehyde	6	2	33%	2.40E-03	3.20E-03	No	5.23E-02	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
Endrin ketone	6	1	17%	2.70E-03	2.70E-03	No	1.57E-02	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
Fluoranthene	6	1	17%	7.00E-01	7.00E-01	No	ND	--	No	1.40E+03	No	No	<Tier 1	1.40E+05	No
gamma-BHC (Lindane)	6	2	33%	3.10E-03	3.80E-03	No	1.05E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Heptachlor	6	3	50%	2.57E-03	2.90E-03	No	7.00E-03	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Heptachlor epoxide	6	2	33%	9.30E-04	9.60E-04	No	1.19E-02	No	Yes	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron	6	6	100%	2.28E+03	6.70E+03	Yes	3.28E+04	No	Yes	5.00E+03	Yes	No	EN	5.00E+05	No
Lead	6	5	83%	5.55E+00	2.00E+01	No	5.15E+01	No	Yes	1.00E+02	No	No	<Tier 1	1.00E+04	No
Magnesium	6	6	100%	3.05E+04	3.30E+04	Yes	5.35E+04	No	Yes	NA	No	No	EN	NA	--
Manganese	6	6	100%	3.87E+02	1.70E+03	No	3.95E+03	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No
Molybdenum	6	3	50%	3.43E+00	4.00E+00	No	1.07E+01	No	Yes	1.80E+02	No	No	<Tier 1	1.80E+04	No
Nickel	6	6	100%	1.26E+01	2.10E+01	No	3.48E+01	No	Yes	2.00E+03	No	No	<Tier 1	2.00E+05	No
Phenanthrene	6	1	17%	7.00E-01	7.00E-01	No	ND	--	No	1.05E+04	No	No	<Tier 1	1.05E+06	No
Potassium	6	6	100%	6.58E+03	7.60E+03	Yes	1.70E+04	No	Yes	NA	No	No	EN	NA	--
Sodium	6	6	100%	2.18E+04	2.40E+04	Yes	3.80E+04	No	Yes	NA	No	No	EN	NA	--
Vanadium	6	4	67%	7.18E+00	1.40E+01	No	8.48E+01	No	Yes	4.90E+01	No	No	<Tier 1	4.90E+03	No
Zinc	6	6	100%	3.49E+01	7.50E+01	No	1.52E+02	No	Yes	1.00E+04	No	No	<Tier 1	1.00E+06	No

TABLE I-2
FISH FILLET - BACKGROUND
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	White Crappie Reference Samples (mg/kg)								White Crappie Background Concentrations (mg/kg) (a)
	WC REF1 COMP 1		WC REF1 COMP 2		WC REF2 COMP 1		WC REF2 COMP 2		
4,4'-DDE	1.20E-03		8.00E-04		--	(c)	--	(c)	2.00E-03
bis(2-Ethylhexyl)phthalate	8.40E-02		1.00E-01		9.50E-02		1.40E-01		2.10E-01
Chromium	2.10E-01	(b)	2.10E-01		2.50E-01	(b)	2.25E-01	(b)	4.48E-01
Copper	3.20E-01		2.30E-01		--	(c)	2.10E-01		5.07E-01
Heptachlor	1.30E-03		1.10E-03		1.80E-03		7.00E-04	(b)	2.45E-03
Mercury	3.70E-02		5.20E-02		5.20E-02		4.10E-02		9.10E-02
Pentachlorophenol	--	(c)	--	(c)	3.80E-03		--	(c)	7.60E-03
Selenium	2.10E-01	(b)	2.25E-01	(b)	7.30E-01		2.25E-01	(b)	6.95E-01
Total 2,3,7,8-TCDD TEQ	6.50E-07		1.34E-06		8.12E-07		5.36E-07		1.67E-06
Zinc	7.10E+00		7.00E+00		6.40E+00		5.40E+00		1.30E+01

Notes:
(a) - Background as defined in the Human Health Risk Assessment Workplan for Sauget Area 1 is two times the average concentration in the background or reference samples.
(b) - One-half the detection limit.
(c) - One-half the detection limit is greater than the maximum detected concentration and therefore is not used in the calculation (U.S.EPA, 1989).

TABLE I-3
COMPARISON OF FISH FILLET DATA TO REGION III RBCS FOR FISH TISSUE
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Sample Number (e,f)	Constituent	Concentration (mg/kg)	Qualifier	Background (mg/kg)	Is Concentration > Background?	RBC (a) (mg/kg)	Is Concentration > RBC?	COPC?	Reason
WB BP FILLET 2	4,4'-DDE	9.20E-03	J	ND	--	9.28E-03	No	No	<RBC
	Gamma Chlordane	4.70E-03	J	ND	--	9.01E-03 (d)	No	No	<RBC
WC BP COMP 1	Arsenic	4.50E-01	J	ND	--	2.10E-03	Yes	Yes	>RBC
	Copper	2.50E-01	J	5.07E-01	No	5.41E+01	No	No	<BK/RBC
	Di-n-butylphthalate	2.70E-02	J	ND	--	1.35E+02	No	No	<RBC
	Total 2,3,7,8-TCDD TEQ	2.40E-05		1.67E-06	Yes	2.50E-05 (g)	No	No	<RBC
	Zinc	7.90E+00	J	1.30E+01	No	4.06E+02	No	No	<BK/RBC
WC BP COMP 2	bis(2-Ethylhexyl)phthalate	1.30E-01	J	2.10E-01	No	2.25E-01	No	No	<BK/RBC
	Chromium	2.20E-01	J	4.48E-01	No	2.03E+03 (b)	No	No	<BK/RBC
	Copper	5.70E-01	J	5.07E-01	Yes	5.41E+01	No	No	<RBC
	Total 2,3,7,8-TCDD TEQ	9.52E-07		1.67E-06	No	2.50E-05 (g)	No	No	<BK/RBC
	Zinc	7.10E+00	J	1.30E+01	No	4.06E+02	No	No	<BK/RBC
WC BP COMP 3	Total 2,3,7,8-TCDD TEQ	6.93E-07		1.67E-06	No	2.50E-05 (g)	No	No	<BK/RBC
	bis(2-Ethylhexyl)phthalate	1.00E-01	J	2.10E-01	No	2.25E-01	No	No	<BK/RBC
	Mercury	2.70E-02	J	9.10E-02	No	1.35E-01 (c)	No	No	<BK/RBC
	Zinc	9.20E+00	J	1.30E+01	No	4.06E+02	No	No	<BK/RBC

Notes:
COPC - Constituent of Potential Concern.
RBC - Risk-Based Concentration.
WB - White Bass (There was insufficient white crappie sample to submit for all constituent analyses; therefore, white bass fillet samples were submitted for pesticide (8151A) and herbicide (8081A) analyses only.)
WC - White Crappie.
(a) - USEPA Region III Risk-Based Concentration (RBC) Table, October 5, 2000. Value for fish tissue.
(b) - Value for Chromium III.
(c) - Value for Methyl Mercury.
(d) - Value for Chlordane.
(e) - Sample "WB BP Fillet 1" was non-detect for all constituents.
(f) - All samples were collected from Borrow Pit Lake.
(g) - Refer to Table C-6 for sources of screening values.

APPENDIX J

EVALUATION OF AMBIENT AIR MONITORING DATA

APPENDIX J
EVALUATION OF AMBIENT AIR MONITORING DATA

This appendix presents the upwind and downwind ambient air monitoring data collected at Sites G, H, I and L to determine the tendency of site constituents to enter the atmosphere and local wind patterns. At Site G, air samples were collected at two upwind and two downwind locations. At Sites H, I, and L, air samples were collected at one upwind and two downwind locations. Figure 3-7 of the main text identifies the ambient air sampling locations. Air samples were analyzed for VOCs, SVOCs, PCBs, dioxins, and metals. Table J-22 presents the volume of air collected for each sample. The results are discussed by analyte group below.

VOCs

Table J-1 presents the upwind or background air concentrations for VOCs for each site. Tables J-2 through J-5 present the comparison of each downwind sample concentration to upwind concentrations and to the PRGs for ambient air (USEPA, 1999a) for Sites G, H, I, and L, respectively. Comparisons are made on a sample-by-sample basis. As discussed in Section 3.3.6 of the report, 4-methyl-2-pentanone, acetone and methylene chloride are all common laboratory contaminants, however, review of the field blank data did not clearly indicate a problem with sample collection or analysis. Methylene chloride was identified as a COPC in all four sites. However, the numerical results are sporadic (see Table 3-7 and this appendix). For example, in each downwind sample pair, methylene chloride was detected at a high concentration in one sample, and not detected or detected at a much lower concentration in the second downwind sample. As samples were collected from all areas on the same day, such spikes would not be expected. Moreover, methylene chloride was not identified as a COPC in site soils or groundwater. Therefore, although it is not indicated by the sample blank evaluations, laboratory contamination seems to be the most likely source of methylene chloride in these samples.

SVOCs

Table J-6 presents the upwind or background air concentrations for SVOCs for each site. Tables J-7 through J-10 present the comparison of each downwind sample concentration to upwind concentrations and to the PRGs for ambient air (USEPA, 1999a) for Sites G, H, I, and L, respectively. Comparisons are made on a sample-by-sample basis. No COPCs were identified.

PCBs

PCBs were not detected in the air samples.

Dioxins

Table J-11 presents the upwind or background air concentrations for dioxins for each site. Table J-12 presents the comparison of each downwind sample concentration to upwind concentrations and to the PRGs for ambient air (USEPA, 1999a) for Sites G, H, I, and L. Comparisons are made on a sample-by-sample basis. None of the site downwind sample concentrations of dioxins exceed the PRG. Therefore, dioxin is not identified as a COPC in air based on this evaluation.

Metals

Table J-13 presents the upwind or background air concentrations for metals for each site. Tables J-14 through J-17 present the comparison of each downwind sample concentration to upwind concentrations and to the PRGs for ambient air (USEPA, 1999a) for Sites G, H, I, and L, respectively. Comparisons are made on a sample-by-sample basis. Cadmium in Site I is the only constituent identified as a COPC in this evaluation. Cadmium was not detected at the Site I downwind #1 location, and was detected above the PRG at the downwind #2 location. The PRG is a concentration in ambient air that is considered to be safe for daily, 24-hour per day exposures. It is calculated using an age-adjusted inhalation factor that accounts for exposure for 6 years as a child and 24 years as an adult. As noted in the main text of the report, the sites are industrial areas that are expected to remain industrial in the future. Therefore, the PRG for cadmium in ambient air of 0.001 ug/m^3 (which is based on a 1 x 10^{-6} target risk level) can be adjusted to account for an 8-hour workday and a 250 day work year by an adult. The resulting value is 0.0069 ug/m^3 at a 1 x 10^{-6} target risk level, and 0.069 ug/m^3 at a target risk level of 1 x 10^{-5}. The cadmium concentration detected at Site I is well below this latter value.

Short-Term Exposure Evaluation

Tables J-18 through J-21 present the short-term exposure evaluation for the ambient air monitoring data for VOCs, SVOCs, dioxins, and metals, respectively. As discussed in Section 7.0 of the main text of the report, the short-term evaluation consists of comparing the average concentration of each constituent to a concentration equal to 100 times the appropriate PRG or air standard. Methylene chloride in Sites G, I, and L is the only COPC identified in the short-term exposure evaluation. This result is discussed in more detail in Section 7.2.6 of the main text of the report.

TABLE J-1
UPWIND (BACKGROUND) AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	G			H	I	L
Location / Sample (a) / Constituent	UP#1 AIR-V-9 ug/m3	UP#2 AIR-V-10 ug/m3	Maximum ug/m3	UP#1 AIR-V-6 ug/m3	UP#1 AIR-V-3 ug/m3	UP#1 AIR-V-13 ug/m3
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	32.5733	ND	ND
2-Butanone	ND	ND	ND	ND	24.0175	ND
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	283.8428	ND
Ethylbenzene	2.7926	1.7878	2.7926	ND	ND	1.3086
Isopropylbenzene	ND	1.6687	1.6687	ND	1.4192	ND
m&p-Xylene	4.2553	2.503	4.2553	ND	1.4192	1.3086
Methylene chloride	152.9255	ND	152.9255	ND	300.2183	ND
n-Butylbenzene	ND	ND	ND	ND	ND	ND
o-Xylene	3.4575	2.1454	3.4575	ND	ND	1.3086
p-Isopropyltoluene	ND	ND	ND	ND	ND	ND
s-Butylbenzene	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND
t-Butylbenzene	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	4.8035	ND

Notes:
(a) - Sum of tube 1 and tube 2. One-half the detection limit was used for constituents reported as "Not Detected" if constituent was detected in one tube and not the other. If one-half the detection limit was greater than the detected concentration for a constituent, that detection limit was not used, in accordance with Risk Assessment Guidance for Superfund. (USEPA, 1989).

TABLE J-2
SITE G DOWNWIND AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample (a) Constituent	Comparison Values: Maximum Upwind ug/m3	Comparison Values: PRG (b) ug/m3	Downwind Location #1 (DW#1) Screen: DW#1 AIR-V-7 ug/m3	DW#1: Is DW #1 Conc> Upwind?	DW#1: Is DW #1 Conc> PRG?	DW #1 COPC?	Downwind Location #2 (DW#2) Screen: DW#2 AIR-V-8 ug/m3	DW#2: Is DW #2 Conc> Upwind?	DW#2: Is DW #2 Conc> PRG?	DW #2 COPC?	Site G COPC?
2-Butanone	ND	1000	16.81	ND	No	No, <PRG	ND	ND	ND	No, ND	No
4-Methyl-2-pentanone	ND	83	106.19	ND	Yes	Yes, >PRG/BK	ND	ND	ND	No, ND	Yes
Acetone	ND	370	761.06	ND	Yes	Yes, >PRG/BK	ND	ND	ND	No, ND	Yes
Ethylbenzene	2.79	1100	17.70	Yes	No	No, <PRG	1.45	No	No	No, <PRG/BK	No
Isopropylbenzene	1.67	400	22.12	Yes	No	No, <PRG	ND	ND	ND	No, ND	No
m&p-Xylene	4.26	730	19.47	Yes	No	No, <PRG	3.02	No	No	No, <PRG/BK	No
Methylene chloride	152.93	4.1	72.57	No	Yes	No, <BK	2424.43	Yes	Yes	Yes, >PRG/BK	Yes
n-Butylbenzene	ND	36.5	ND	ND	ND	No, ND	1.45	ND	No	No, <PRG	No
o-Xylene	3.46	730	17.70	Yes	No	No, <PRG	2.90	No	No	No, <PRG/BK	No
p-Isopropyltoluene	ND	730	8.85	ND	No	No, <PRG	ND	ND	ND	No, ND	No
Styrene	ND	1100	20.35	ND	No	No, <PRG	ND	ND	ND	No, ND	No
t-Butylbenzene	ND	36.5	9.38	ND	No	No, <PRG	ND	ND	ND	No, ND	No
Tetrachloroethene	ND	3.3	2.92	ND	No	No, <PRG	ND	ND	ND	No, ND	No
Toluene	ND	400	166.81	ND	No	No, <PRG	ND	ND	ND	No, ND	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - Sum of tube 1 and tube 2. One-half the detection limit was used for constituents reported as "Not Detected" if constituent was detected in one tube and not the other. If one-half the detection limit was greater than the detected concentration for a constituent, that detection limit was not used, in accordance with Risk Assessment Guidance for Superfund. (USEPA, 1989).
(b) - See Appendix C Table C-5 for references.

TABLE J-3
SITE H DOWNWIND AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample (a) Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site H COPC?
	Maximum Upwind ug/m3	PRG (b) ug/m3	DW#1 AIR-V-5 ug/m3	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-V-4 ug/m3	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	
1,1,1-Trichloroethane	ND	1000	11.87	ND	No	No, <PRG	ND	ND	ND	No, ND	No
1,1-Dichloroethene	32.57	0.038	27.47	No	Yes	Yes, >PRG, <BK	ND	ND	ND	No, ND	No
2-Butanone	ND	1000	ND	ND	ND	No, ND	24.68	ND	No	No, <PRG	No
Acetone	ND	370	ND	ND	ND	No, ND	24.03	ND	No	No, <PRG	No
Ethylbenzene	ND	1100	ND	ND	ND	No, ND	1.82	ND	No	No, <PRG	No
Isopropylbenzene	ND	400	ND	ND	ND	No, ND	2.34	ND	No	No, <PRG	No
m&p-Xylene	ND	730	ND	ND	ND	No, ND	2.21	ND	No	No, <PRG	No
Methylene chloride	ND	4.1	ND	ND	ND	No, ND	14.29	ND	Yes	Yes, >PRG/BK	Yes
o-Xylene	ND	730	ND	ND	ND	No, ND	2.73	ND	No	No, <PRG	No
s-Butylbenzene	ND	36.5	ND	ND	ND	No, ND	2.21	ND	No	No, <PRG	No
t-Butylbenzene	ND	36.5	ND	ND	ND	No, ND	0.71	ND	No	No, <PRG	No
Tetrachloroethene	ND	3.3	ND	ND	ND	No, ND	0.91	ND	No	No, <PRG	No
Trichloroethene	ND	1.1	ND	ND	ND	No, ND	6.69	ND	Yes	Yes, >PRG/BK	Yes

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - Sum of tube 1 and tube 2. One-half the detection limit was used for constituents reported as "Not Detected" if constituent was detected in one tube and not the other. If one-half the detection limit was greater than the detected concentration for a constituent, that detection limit was not used, in accordance with Risk Assessment Guidance for Superfund. (USEPA, 1989).
(b) - See Appendix C Table C-5 for references.

TABLE J-4
SITE I DOWNWIND AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				
Location Sample (a) Constituent	Maximum Upwind ug/m3	PRG (b) ug/m3	DW#1 Air-V-2 ug/m3	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 Air-V-1 ug/m3	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	Site I COPC?
Ethylbenzene	ND	1100	ND	ND	ND	No, ND	1.69	ND	No	No, <PRG	No
Methylene chloride	300.22	4.1	2100.15	Yes	Yes	Yes, >PRG/BK	18.87	No	Yes	No, <BK	Yes

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - Sum of tube 1 and tube 2. One-half the detection limit was used for constituents reported as "Not Detected" if constituent was detected in one tube and not the other. If one-half the detection limit was greater than the detected concentration for a constituent, that detection limit was not used, in accordance with Risk Assessment Guidance for Superfund. (USEPA, 1989).
(b) - See Appendix C Table C-5 for references.

TABLE J-5
SITE L DOWNWIND AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				
Location Sample (a) / Constituent	Maximum Upwind ug/m3	PRG (b) ug/m3	DW#1 AIR-V-11 ug/m3	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-V-12 ug/m3	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	Site L COPC?
2-Butanone	ND	1000	ND	ND	ND	No, ND	30.53	ND	No	No, <PRG	No
m&p-Xylene	1.31	730	0.58	No	No	No, <PRG/BK	ND	ND	ND	No, ND	No
Methylene chloride	ND	4.1	893.84	ND	Yes	Yes, >PRG	ND	ND	ND	No, ND	Yes
o-Xylene	1.31	730	ND	ND	ND	No, ND	1.83	Yes	No	No, <PRG	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - Sum of tube 1 and tube 2. One-half the detection limit was used for constituents reported as "Not Detected" if constituent was detected in one tube and not the other. If one-half the detection limit was greater than the detected concentration for a constituent, that detection limit was not used, in accordance with Risk Assessment Guidance for Superfund. (USEPA, 1989).
(b) - See Appendix C Table C-5 for references.

TABLE J-6
UPWIND (BACKGROUND) AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	G			H	I	L
Location	UP#1	UP#2		UP#1	UP#1	UP#1
Sample	AIR-S-9	AIR-S-10	Maximum	AIR-S-6	AIR-S-9	AIR-S-13
Constituent	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)
1,4-Dichlorobenzene	0.016	ND	0.016	0.049	0.085	ND
2-Methylnaphthalene	0.104	0.120	0.120	0.090	0.136	0.154
Acenaphthene	ND	0.020	0.020	0.021	ND	0.034
Benzyl alcohol	0.032	ND	0.032	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	0.070	0.070	0.052	ND	0.074
Dibenzofuran	0.020	0.022	0.022	0.021	ND	0.037
Diethylphthalate	0.049	ND	0.049	0.023	ND	0.024
Dimethylphthalate	0.049	0.053	0.053	0.043	0.039	0.031
Fluorene	0.017	ND	0.017	0.019	ND	0.029
Phenanthrene	0.018	0.027	0.027	0.040	0.033	ND
Phenol	ND	ND	ND	ND	ND	0.060

Notes:

TABLE J-7
SITE G DOWNWIND AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample / Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site G COPC?
	Maximum Upwind (ug/m3)	PRG (a) (ug/m3)	DW#1 AIR-S-7 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-S-8 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	
2-Methylnaphthalene	0.120	3.1	0.113	No	No	No, <PRG/BK	0.144	Yes	No	No, <PRG	No
Acenaphthene	0.020	220	0.018	No	No	No, <PRG/BK	0.024	Yes	No	No, <PRG	No
bis(2-Ethylhexyl)phthalate	0.070	0.48	0.063	No	No	No, <PRG/BK	0.082	Yes	No	No, <PRG	No
Dibenzofuran	0.022	15	0.019	No	No	No, <PRG/BK	0.025	Yes	No	No, <PRG	No
Diethylphthalate	0.049	2900	ND	ND	ND	No, ND	0.025	No	No	No, <PRG/BK	No
Dimethylphthalate	0.053	37000	0.046	No	No	No, <PRG/BK	0.032	No	No	No, <PRG/BK	No
Fluorene	0.01721	150	0.01722	Yes	No	No, <PRG	0.024	Yes	No	No, <PRG	No
Phenanthrene	0.0270	1100	0.0275	Yes	No	No, <PRG	0.032	Yes	No	No, <PRG	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - The value for anthacene is used to evaluate phenanthrene, and the value for naphthalene is used for 2-methylnaphthalene.

TABLE J-8
SITE H DOWNWIND AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample / Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site H COPC?
	Maximum Upwind (ug/m3)	PRG (a) (ug/m3)	DW#1 AIR-S-5 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-S-4 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	
1,4-Dichlorobenzene	0.049	0.31	0.041	No	No	No, <PRG/BK	0.064	Yes	No	No, <PRG	No
2-Methylnaphthalene	0.090	3.1	0.086	No	No	No, <PRG/BK	0.112	Yes	No	No, <PRG	No
Acenaphthene	0.021	220	0.018	No	No	No, <PRG/BK	0.022	Yes	No	No, <PRG	No
Dibenzofuran	0.0207	15	0.017	No	No	No, <PRG/BK	0.0213	Yes	No	No, <PRG	No
Dimethylphthalate	0.043	37000	0.033	No	No	No, <PRG/BK	0.073	Yes	No	No, <PRG	No
Fluorene	0.019	150	0.015	No	No	No, <PRG/BK	0.020	Yes	No	No, <PRG	No
Phenanthrene	0.040	1100	0.027	No	No	No, <PRG/BK	0.030	No	No	No, <PRG/BK	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - The value for anthacene is used to evaluate phenanthrene, and the value for naphthalene is used for 2-methylnaphthalene.

TABLE J-9
SITE I DOWNWIND AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location / Sample / Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site I COPC?
	Maximum Upwind (ug/m3)	PRG (b) (ug/m3)	DW#1 AIR-S-2 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-S-1 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	
1,2-Dichlorobenzene	ND	210	0.259	ND	No	No, <PRG	0.083	ND	No	No, <PRG	No
1,4-Dichlorobenzene	0.085	0.31	0.420	Yes	Yes	No (b)	0.286	Yes	No	No, <PRG	No
2-Methylnaphthalene	0.136	3.1	0.122	No	No	No, <PRG/BK	0.102	No	No	No, <PRG/BK	No
2-Nitroaniline	ND	0.21	0.029	ND	No	No, <PRG	ND	ND	ND	No, ND	No
Acenaphthene	ND	220	0.038	ND	No	No, <PRG	0.031	ND	No	No, <PRG	No
bis(2-Ethylhexyl)phthalate	ND	0.48	0.070	ND	No	No, <PRG	0.074	ND	No	No, <PRG	No
Dibenzofuran	ND	15	0.038	ND	No	No, <PRG	0.034	ND	No	No, <PRG	No
Dimethylphthalate	0.039	37000	0.033	No	No	No, <PRG/BK	0.058	Yes	No	No, <PRG	No
Fluorene	ND	150	0.033	ND	No	No, <PRG	0.026	ND	No	No, <PRG	No
Phenanthrene	0.033	1100	0.059	Yes	No	No, <PRG	0.043	Yes	No	No, <PRG	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - The value for anthacene is used to evaluate phenanthrene, and the value for naphthalene is used for 2-methylnaphthalene.
(b) - The USEPA Integrated Risk Information System (IRIS) file for 1,4-dichlorobenzene provides an inhalation reference concentration (RfC) of 800 ug/m3. The DW#1 AIR-S-2 concentration is below this value. The PRG value is based on withdrawn values that are no longer considered appropriate for 1,4-dichlorobenzene based on its mechanism of toxicity. Moreover, the measured concentration is less than the PRG adjusted to account for an industrial rather than a residential exposure scenario of 2.13 ug/m3.

TABLE J-10
SITE L DOWNWIND AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample / Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site L COPC?
	Maximum Upwind (ug/m3)	PRG (a) (ug/m3)	DW#1 AIR-S-11 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> PRG?	DW #1 COPC?	DW#2 AIR-S-12 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> PRG?	DW #2 COPC?	
1,4-Dichlorobenzene	ND	0.31	0.017	ND	No	No, <PRG	0.024	ND	No	No, <PRG	No
2-Methylnaphthalene	0.154	3.1	0.123	No	No	No, <PRG/BK	0.149	No	No	No, <PRG/BK	No
Acenaphthene	0.034	220	0.023	No	No	No, <PRG/BK	0.033	No	No	No, <PRG/BK	No
bis(2-Ethylhexyl)phthalate	0.074	0.48	ND	ND	ND	No, ND	0.078	Yes	No	No, <PRG	No
Dibenzofuran	0.0369	15	0.028	No	No	No, <PRG/BK	0.0372	Yes	No	No, <PRG	No
Diethylphthalate	0.024	2900	ND	ND	ND	No, ND	0.032	Yes	No	No, <PRG	No
Dimethylphthalate	0.031	37000	0.028	No	No	No, <PRG/BK	0.041	Yes	No	No, <PRG	No
Fluorene	0.029	150	0.023	No	No	No, <PRG/BK	0.030	Yes	No	No, <PRG	No
Phenanthrene	ND	1100	0.037	ND	No	No, <PRG	ND	ND	ND	No, ND	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - The value for anthacene is used to evaluate phenanthrene, and the value for naphthalene is used for 2-methylnaphthalene.

TABLE J-11
UPWIND (BACKGROUND) AIR CONCENTRATIONS - DIOXINS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	G			H	I	L
Location	UP#1	UP#2		UP#1	UP#1	UP#1
Sample (a) / Constituent	AIR-D-9 (ug/m3)	AIR-S-10 (ug/m3)	Maximum (ug/m3)	AIR-D-6 (ug/m3)	AIR-D-3 (ug/m3)	AIR-D-13 (ug/m3)
Total TCDD-TEQ	1.43E-08	5.74E-09	1.43E-08	8.66E-10	3.30E-08	1.40E-08

Notes:
TCDD-TEQ - 2,3,7,8-Tetrachloro-dibenzo-p-dioxin Toxic Equivalent.

TABLE J-12
SITE DOWNWIND AIR CONCENTRATIONS - DIOXINS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	Location	Sample	Maximum Upwind (ug/m3)	PRG (ug/m3)	Sample TCDD-TEQ Concentration (ug/m3)	Is Concentration >Upwind?	Is Concentration >PRG?	COPC?
G	DW#1	AIR-D-7	1.43E-08	4.50E-08	5.05E-10	No	No	No
G	DW#2	AIR-D-8	1.43E-08	4.50E-08	1.75E-08	Yes	No	No
H	DW#1	AIR-D-5	8.66E-10	4.50E-08	4.96E-09	Yes	No	No
H	DW#2	AIR-D-4	8.66E-10	4.50E-08	1.34E-08	Yes	No	No
I	DW#1	AIR-D-2	3.30E-08	4.50E-08	5.46E-09	No	No	No
I	DW#2	AIR-D-1	3.30E-08	4.50E-08	1.63E-08	No	No	No
L	DW#1	AIR-D-11	1.40E-08	4.50E-08	3.52E-08	Yes	No	No
L	DW#2	AIR-D-12	1.40E-08	4.50E-08	3.90E-08	Yes	No	No

Notes:
COPC - Constituent of Potential Concern.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
TCDD-TEQ - 2,3,7,8-Tetrachloro-dibenzo-p-dioxin Toxic Equivalent.

TABLE J-13
UPWIND (BACKGROUND) AIR CONCENTRATIONS - METALS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	G			H	I	L
Location	UP#1	UP#2		UP#1	UP#1	UP#1
Sample	AIR-M-9	AIR-M-10	Maximum	AIR-M-6	AIR-M-3	AIR-M-13
Constituent	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)
Aluminum	ND	0.980	0.980	ND	ND	ND
Cadmium	0.022	0.032	0.032	ND	ND	0.029
Calcium	0.561	0.511	0.561	ND	0.625	1.292
Copper	0.108	ND	0.108	0.750	0.313	ND
Iron	ND	ND	ND	ND	ND	0.500
Lead	0.233	0.307	0.307	0.023	0.022	0.300
Magnesium	0.056	0.068	0.068	ND	0.058	0.300
Manganese	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	0.006

Notes:
ND - Not Detected.

TABLE J-14
SITE G DOWNWIND AIR CONCENTRATIONS - METALS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site G COPC?
	Maximum Upwind (ug/m3)	Air Standard (ug/m3)	DW#1 AIR-M-7 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> Standard?	DW #1 COPC?	DW#2 AIR-M-8 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> Standard?	DW #2 COPC?	
Cadmium	0.032	0.001 (a)	0.029	No	Yes	No, <BK	0.027	No	Yes	No, <BK	No
Calcium	0.561	--	0.467	No	--	No, <BK, EN	ND	ND	--	No, ND	No
Copper	0.108	150 (b)	0.102	No	No	No, <BK/RBC	ND	ND	ND	No, ND	No
Lead	0.307	1.5 (c)	0.285	No	No	No, <BK/ NAAQS	0.272	No	No	No, <BK/NAAQS	No
Magnesium	0.068	--	0.047	No	--	No, <BK, EN	0.047	No	--	No, <BK,EN	No

Notes:
-- No air quality standard available.
COPC - Constituent of Potential Concern.
EN - Essential Nutrient.
NAAQS - National Ambient Air Quality Standard.
ND - Not Detected.
PRG -Preliminary Remediation Goal
RBC - Risk-Based Concentration.
(a) - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(b) - USEPA Region III Risk-Based Concentration Table, October 5, 2000.
(c) - USEPA 1991. Subchapter C - Air Programs. Part 50 - National Primary and Secondary Ambient Air Quality Standards. Code of Federal Regulations 50:693-697.

TABLE J-15
SITE H DOWNWIND AIR CONCENTRATIONS - METALS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site H COPC?
	Maximum Upwind (ug/m3)	Air Standard (ug/m3)	DW#1 AIR-M-5 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> Standard?	DW #1 COPC?	DW#2 AIR-M-4 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> Standard?	DW #2 COPC?	
Calcium	ND	--	0.542	ND	--	No, EN	0.914	ND	--	No, EN	No
Copper	0.750	150 (b)	0.583	No	No	No, <BK/RBC	0.336	No	No	No, <BK/RBC	No
Lead	0.023	1.5 (c)	0.027	Yes	No	No, <NAAQS	0.024	Yes	No	No, <NAAQS	No
Magnesium	ND	--	0.100	ND	--	No, EN	0.079	ND	--	No, EN	No
Manganese	ND	0.051 (a)	ND	ND	ND	No, ND	0.005	ND	No	No, <PRG	No

Notes:
-- No air quality standard available.
COPC - Constituent of Potential Concern.
EN - Essential Nutrient.
NAAQS - National Ambient Air Quality Standard.
ND - Not Detected.
PRG -Preliminary Remediation Goal
RBC - Risk-Based Concentration.
(a) - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(b) - USEPA Region III Risk-Based Concentration Table, October 5, 2000.
(c) - USEPA 1991. Subchapter C - Air Programs. Part 50 - National Primary and Secondary Ambient Air Quality Standards. Code of Federal Regulations 50:693-697.

TABLE J-16
SITE I DOWNWIND AIR CONCENTRATIONS - METALS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample Constituent	Comparison Values		Downwind Location #1 (DW#1) Screen				Downwind Location #2 (DW#2) Screen				Site I COPC?
	Maximum Upwind (ug/m3)	Air Standard (ug/m3)	DW#1 AIR-M-1 (ug/m3)	Is DW #1 Conc> Upwind?	Is DW #1 Conc> Standard?	DW #1 COPC?	DW#2 AIR-M-2 (ug/m3)	Is DW #2 Conc> Upwind?	Is DW #2 Conc> Standard?	DW #2 COPC?	
Cadmium	ND	0.001 (a)	ND	ND	ND	No, ND	0.021	ND	Yes	Yes, >PRG	Yes
Calcium	0.625	--	ND	ND	--	No, ND	0.500	No	--	No,<BK, EN	No
Copper	0.313	150 (b)	0.208	No	No	No, <BK/RBC	0.150	No	No	No,<BK/RBC	No
Lead	0.022	1.5 (c)	0.020	No	No	No, <BK/NAAQS	0.026	Yes	No	No, <NAAQS	No
Magnesium	0.058	--	0.058	No	--	No,=BK, EN	0.067	Yes	--	No, EN	No
Manganese	ND	0.051 (a)	0.006	ND	No	No,<PRG	0.006	ND	No	No,<PRG	No
Sodium	ND	--	0.542	ND	--	No, EN	ND	ND	--	No, ND	No

Notes:
-- No air quality standard available.
COPC - Constituent of Potential Concern.
EN - Essential Nutrient.
NAAQS - National Ambient Air Quality Standard.
ND - Not Detected.
PRG -Preliminary Remediation Goal
RBC - Risk-Based Concentration.
(a) - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(b) - USEPA Region III Risk-Based Concentration Table, October 5, 2000.
(c) - USEPA 1991. Subchapter C - Air Programs. Part 50 - National Primary and Secondary Ambient Air Quality Standards. Code of Federal Regulations 50:693-697.

TABLE J-17
SITE L DOWNWIND AIR CONCENTRATIONS - METALS
COMPARISON TO BACKGROUND AND SCREENING CRITERIA
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Location Sample Constituent	Comparison Values: Maximum Upwind (ug/m3)	Comparison Values: Air Standard (ug/m3)	Downwind Location #1 (DW#1) Screen: DW#1 AIR-M-11 (ug/m3)	DW#1 Is DW #1 Conc> Upwind?	DW#1 Is DW #1 Conc> Standard?	DW #1 COPC?	Downwind Location #2 (DW#2) Screen: DW#2 AIR-M-12 (ug/m3)	DW#2 Is DW #2 Conc> Upwind?	DW#2 Is DW #2 Conc> Standard?	DW #2 COPC?	Site L COPC?
Cadmium	0.029	0.001 (a)	0.027	No	Yes	No, <BK	0.028	No	Yes	No, <BK	No
Lead	0.300	1.5 (b)	0.268	No	No	No, <BK/NAAQS	0.281	No	No	No, <BK/NAAQS	No
Magnesium	0.300	--	0.068	No	--	No, <BK,EN	0.047	No	--	No, <BK, EN	No
Silver	*ND*	*18 (c)*	*0.036*	*ND*	*No*	No, <RBC	*ND*	*ND*	*ND*	*No, ND*	*No*
Sodium	ND	--	0.510	ND	--	No, EN	0.553	ND	--	No, EN	No

Notes:
-- No air quality standard available.
COPC - Constituent of Potential Concern.
EN - Essential Nutrient.
NAAQS - National Ambient Air Quality Standard.
ND - Not Detected.
PRG -Preliminary Remediation Goal
RBC - Risk-Based Concentration.
(a) - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(b) - USEPA 1991. Subchapter C - Air Programs. Part 50 - National Primary and Secondary Ambient Air Quality Standards. Code of Federal Regulations 50:693-697.
(c) - USEPA Region III Risk-Based Concentration Table, October 5, 2000.

TABLE J-18
SITE AVERAGE DOWNWIND AIR CONCENTRATIONS - VOLATILE ORGANIC COMPOUNDS
SHORT-TERM EXPOSURE EVALUATION
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Site 100 Times PRG (ug/m3)	G Avg (ug/m3)	G Is Avg>100 PRG?	H Avg (ug/m3)	H Is Avg>100 PRG?	I Avg (ug/m3)	I Is Avg>100 PRG?	L Avg (ug/m3)	L Is Avg>100 PRG?
1,1,1-Trichloroethane	100000	ND	--	5.93	No	ND	--	ND	--
1,1-Dichloroethene	3.8	ND	--	13.74	Yes	ND	--	ND	--
2-Butanone	100000	16.81	No	24.68	No	ND	--	30.53	No
4-Methyl-2-pentanone	8300	53.10	No	ND	--	ND	--	ND	--
Acetone	37000	380.53	No	24.03	No	ND	--	ND	--
Ethylbenzene	110000	6.38	No	1.82	No	1.69	No	ND	--
Isopropylbenzene	40000	11.06	No	2.34	No	ND	--	ND	--
m&p-Xylene	73000	5.62	No	2.21	No	ND	--	0.58	No
Methylene chloride	410	624.25	Yes	7.14	No	529.75	Yes	446.92	Yes
n-Butylbenzene	3650	1.45	No	ND	--	ND	--	ND	--
o-Xylene	73000	5.15	No	2.73	No	ND	--	1.83	No
p-Isopropyltoluene	73000	4.42	No	ND	--	ND	--	ND	--
s-Butylbenzene	3650	ND	--	2.21	No	ND	--	ND	--
Styrene	110000	10.18	No	ND	--	ND	--	ND	--
t-Butylbenzene	3650	4.69	No	0.71	No	ND	--	ND	--
Tetrachloroethene	330	2.92	No	0.91	No	ND	--	ND	--
Toluene	40000	83.41	No	ND	--	ND	--	ND	--
Trichloroethene	110	ND	--	3.34	No	ND	--	ND	--

Notes:
-- Not Applicable.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.

TABLE J-19
SITE AVERAGE DOWNWIND AIR CONCENTRATIONS - SEMIVOLATILE ORGANIC COMPOUNDS
SHORT-TERM EXPOSURE EVALUATION
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Site 100 Times PRG (a) (ug/m3)	G Avg (ug/m3)	G Is Avg>100 PRG?	H Avg (ug/m3)	H Is Avg>100 PRG?	I Avg (ug/m3)	I Is Avg>100 PRG?	L Avg (ug/m3)	L Is Avg>100 PRG?
1,2-Dichlorobenzene	21000	ND	ND	ND	ND	1.71E-01	No	ND	ND
1,4-Dichlorobenzene	31	ND	ND	5.26E-02	No	3.53E-01	No	2.07E-02	No
2-Methylnaphthalene	310	1.29E-01	No	9.92E-02	No	1.12E-01	--	1.36E-01	--
2-Nitroaniline	21	ND	ND	ND	ND	2.94E-02	No	ND	ND
Acenaphthene	22000	2.10E-02	No	2.02E-02	--	3.47E-02	No	2.82E-02	No
bis(2-Ethylhexyl)phthalate	48	7.27E-02	No	ND	ND	7.19E-02	No	4.72E-02	--
Dibenzofuran	1500	2.20E-02	No	1.94E-02	--	3.62E-02	No	3.26E-02	--
Diethylphthalate	290000	2.10E-02	--	ND	ND	ND	ND	2.46E-02	No
Dimethylphthalate	3700000	3.90E-02	--	5.27E-02	No	4.57E-02	No	3.43E-02	No
Fluorene	15000	2.05E-02	No	1.76E-02	--	2.94E-02	No	2.64E-02	--
Phenanthrene	110000	2.99E-02	No	2.88E-02	--	5.13E-02	No	2.68E-02	No

Notes:
--Not Applicable.
Avg - Average.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - The value for naphthalene is used to evaluate 2-methylnaphthalene, and the value for anthracene is used to evaluate phenanthrene.

TABLE J-20
SITE AVERAGE DOWNWIND AIR CONCENTRATIONS - DIOXINS
SHORT-TERM EXPOSURE EVALUATION
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Site 100 Times PRG (ug/m3)	G Avg (ug/m3)	G Is Avg>100 PRG?	H Avg (ug/m3)	H Is Avg>100 PRG?	I Avg (ug/m3)	I Is Avg>100 PRG?	L Avg (ug/m3)	L Is Avg>100 PRG?
Total TCDD-TEQ	4.50E-06	(a)	--	9.16E-09	No	(a)	--	3.89E-08	No

Notes:
-- Not Applicable.
ND - Not Detected.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
TCDD-TEQ - 2,3,7,8-Tetrachloro-dibenzo-p-dioxin toxic equivalent.
(a) - Average concentration is less than background. See Table J-11.

TABLE J-21
SITE AVERAGE DOWNWIND AIR CONCENTRATIONS - METALS
SHORT-TERM EXPOSURE EVALUATION
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Site 100 Times Standard and Basis (ug/m3)		G Avg (ug/m3)	G Is Avg>100 Standard?	H Avg (ug/m3)	H Is Avg>100 Standard?	I Avg (ug/m3)	I Is Avg>100 Standard?	L Avg (ug/m3)	L Is Avg>100 Standard?
Cadmium	0.1	PRG	(a)	(a)	ND	ND	1.56E-02	No	(a)	(a)
Calcium	--	EN	(a)	(a)	7.00E-01	--	(a)	(a)	ND	ND
Copper	15000	RBC	(a)	(a)	(a)	(a)	(a)	(a)	ND	ND
Lead	150	NAAQS	(a)	(a)	2.52E-02	No	2.33E-02	No	(a)	(a)
Magnesium	--	EN	(a)	(a)	8.50E-02	--	6.25E-02	--	(a)	(a)
Manganese	5.1	PRG	ND	ND	3.90E-03	No	6.00E-03	No	ND	ND
Silver	1800	RBC	ND	ND	ND	ND	ND	ND	2.85E-02	No
Sodium	--	EN	ND	ND	ND	ND	5.00E-01	--	5.32E-01	--

Notes:
-- No standard available.
Avg - Average.
EN - Essential Nutrient.
NAAQS - National Ambient Air Quality Standard. CFR 50:693-697.
ND - Not Detected.
RBC - USEAP Region III Risk-Based Concentration Table, October 5, 2000.
PRG - USEPA Region IX Preliminary Remediation Goal Table, October 1, 1999.
(a) - Average concentration is less than background. See Table J-13.

TABLE J-22
AIR SAMPLE VOLUMES
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	Location	Sample	Collection Date	Sample Type	Volume Sampled (m³)
G	DW#1	AIR-M-7	9/11/99	PM2.5	23.53
G	DW#2	AIR-M-8	9/11/99	PM2.5	23.51
G	UP#1	AIR-M-9	9/11/99	PM2.5	23.19
G	UP#2	AIR-M-10	9/11/99	PM2.5	23.47
G	DW#1	AIR-D-7	9/10/99	PUF	307
G	DW#1	AIR-P-7	9/11/99	PUF	314
G	DW#1	AIR-S-7	9/11/99	PUF	302
G	DW#2	AIR-D-8	9/10/99	PUF	305
G	DW#2	AIR-P-8	9/11/99	PUF	311
G	DW#2	AIR-S-8	9/11/99	PUF	291
G	UP#1	AIR-D-9	9/10/99	PUF	302
G	UP#1	AIR-P-9	9/11/99	PUF	315
G	UP#1	AIR-S-9	9/11/99	PUF	308
G	UP#2	AIR-D-10	9/10/99	PUF	291
G	UP#2	AIR-P-10	9/11/99	PUF	297
G	UP#2	AIR-S-10	9/11/99	PUF	300
G	DW#1	AIR-V-7 TUBE 1	9/10/99	TO-1	0.0113
G	DW#1	AIR-V-7 TUBE 2	9/10/99	TO-1	0.0113
G	DW#2	AIR-V-8 TUBE 1	9/10/99	TO-1	0.00827
G	DW#2	AIR-V-8 TUBE 2	9/10/99	TO-1	0.00827
G	UP#1	AIR-V-9 TUBE 1	9/11/99	TO-1	0.00752
G	UP#1	AIR-V-9 TUBE 2	9/11/99	TO-1	0.00752
G	UP#2	AIR-V-10 TUBE 1	9/11/99	TO-1	0.00839
G	UP#2	AIR-V-10 TUBE 2	9/11/99	TO-1	0.00839
H	DW#1	AIR-M-5	9/10/99	PM2.5	24
H	DW#2	AIR-M-4	9/10/99	PM2.5	24.083
H	UP#1	AIR-M-6	9/10/99	PM2.5	24
H	DW#1	AIR-D-5	9/10/99	PUF	321
H	DW#1	AIR-P-5	9/10/99	PUF	320
H	DW#1	AIR-S-5	9/10/99	PUF	338
H	DW#2	AIR-D-4	9/10/99	PUF	313
H	DW#2	AIR-P-4	9/10/99	PUF	314
H	DW#2	AIR-S-4	9/10/99	PUF	329
H	UP#1	AIR-D-6	9/10/99	PUF	305
H	UP#1	AIR-P-6	9/10/99	PUF	326
H	UP#1	AIR-S-6	9/10/99	PUF	324
H	DW#1	AIR-V-5 TUBE 1	9/10/99	TO-1	0.0091
H	DW#1	AIR-V-5 TUBE 2	9/10/99	TO-1	0.0091
H	DW#2	AIR-V-4 TUBE 1	9/10/99	TO-1	0.0154
H	DW#2	AIR-V-4 TUBE 2	9/10/99	TO-1	0.0154
H	UP#1	AIR-V-6 TUBE 1	9/10/99	TO-1	0.00921
H	UP#1	AIR-V-6 TUBE 2	9/10/99	TO-1	0.00921

TABLE J-22
AIR SAMPLE VOLUMES
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	Location	Sample	Collection Date	Sample Type	Volume Sampled (m^3)
I	DW#1	AIR-M-2	9/10/99	PM2.5	24
I	DW#2	AIR-M-1	9/10/99	PM2.5	24
I	UP#1	AIR-M-3	9/10/99	PM2.5	24
I	DW#1	AIR-D-2	9/10/99	PUF	323
I	DW#1	AIR-P-2	9/10/99	PUF	323
I	DW#1	AIR-S-2	9/10/99	PUF	286
I	DW#2	AIR-D-1	9/10/99	PUF	313
I	DW#2	AIR-P-1	9/10/99	PUF	321
I	DW#2	AIR-S-1	9/10/99	PUF	325
I	UP#1	AIR-D-3	9/10/99	PUF	321
I	UP#1	AIR-P-3	9/10/99	PUF	328
I	UP#1	AIR-S-3	9/10/99	PUF	331
I	DW#1	AIR-V-2 TUBE 1	9/10/99	TO-1	0.00669
I	DW#1	AIR-V-2 TUBE 2	9/10/99	TO-1	0.00669
I	DW#2	AIR-V-1 TUBE 1	9/10/99	TO-1	0.00652
I	DW#2	AIR-V-1 TUBE 2	9/10/99	TO-1	0.00652
I	UP#1	AIR-V-3 TUBE 1	9/10/99	TO-1	0.00916
I	UP#1	AIR-V-3 TUBE 2	9/10/99	TO-1	0.00916
L	DW#1	AIR-M-11	9/11/99	PM2.5	23.52
L	DW#2	AIR-M-12	9/11/99	PM2.5	23.51
L	UP#1	AIR-M-13	9/11/99	PM2.5	23.997
L	DW#1	AIR-D-11	9/10/99	PUF	304
L	DW#1	AIR-P-11	9/11/99	PUF	312
L	DW#1	AIR-S-11	9/11/99	PUF	300
L	DW#2	AIR-D-12	9/10/99	PUF	298
L	DW#2	AIR-P-12	9/11/99	PUF	309
L	DW#2	AIR-S-12	9/11/99	PUF	296
L	UP#1	AIR-D-13	9/10/99	PUF	304
L	UP#1	AIR-P-13	9/11/99	PUF	317
L	UP#1	AIR-S-13	9/11/99	PUF	298
L	DW#1	AIR-V-11 TUBE 1	9/11/99	TO-1	0.0146
L	DW#1	AIR-V-11 TUBE 2	9/11/99	TO-1	0.0146
L	DW#2	AIR-V-12 TUBE 1	9/11/99	TO-1	0.00819
L	DW#2	AIR-V-12 TUBE 2	9/11/99	TO-1	0.00819
L	UP#1	AIR-V-13 TUBE 1	9/11/99	TO-1	0.00917
L	UP#1	AIR-V-13 TUBE 2	9/11/99	TO-1	0.00917

APPENDIX K

CALCULATION OF INDOOR AIR VOC CONCENTRATIONS FROM GROUNDWATER

APPENDIX K
CALCULATION OF INDOOR AIR VOC CONCENTRATIONS FROM GROUNDWATER

For the groundwater-to-indoor air pathway, indoor air exposure point concentrations were predicted using the Johnson and Ettinger model (1991). The Johnson and Ettinger model considers both diffusion of compounds migrating from the subsurface and convection, which is driven by the pressure difference between the subsurface and the building. Equations and parameters required for the implementation of this model are provided in Johnson and Ettinger (1991) and in *User's Guide for the Johnson and Ettinger (1991) Model* (US EPA, 1997). The spreadsheet "GWSCREEN.XLS", available from the USEPA for implementation of the Johnson and Ettinger (1991) model was used in this risk assessment.

With the exceptions discussed below, parameters used in the model were the default parameters provided by USEPA (USEPA, 1997). Major assumptions used in modeling indoor air for the site are listed below:

- Of the 12 Soil Conservation Service (SCS) soil classifications available for use in the USEPA spreadsheet, silt loam was selected as most representative of site conditions.
- Depth below grade to bottom of enclosed space floor was selected to be 15 cm.
- The IEPA (1998) default for soil dry bulk density of 1.5 g/cm^3 was used.
- Depth below grade to water table varies from 14.5 ft below ground surface (bgs) to 17.7 ft bgs across the four fill areas of interest in this risk assessment (Fill Areas G, H, I, and L).

Modeling assumptions, inputs, and results are presented in the attached modeling printouts.

The modeling printouts are presented in the following order (identifiers for each run of the model are presented in the lower right hand corner of each page):

RME INDOOR AIR CONCENTRATIONS

- Fill Area G, EE-05:
  - Benzene
  - Chlorobenzene
  - Naphthalene
- Fill Area G, EEG-107:
  - 4-Methyl-2-pentanone
  - Benzene
  - Chlorobenzene

Naphthalene
Tetrachloroethene
Toluene
Trichloroethene
Vinyl Chloride

- Fill Area H, EE-01:
  1,1,2,2-Tetrachloroethene
  Benzene
  Chlorobenzene
  Ethylbenzene
  Naphthalene

- Fill Area H, EE-02:
  Benzene
  Chlorobenzene
  Chloroform
  Naphthalene
  Trichloroethene

- Fill Area I, AA-I-S1:
  Benzene
  Chlorobenzene
  Vinyl Chloride

- Fill Area I, AA-I-S2:
  Benzene
  Chlorobenzene
  Trichloroethene
  Vinyl Chloride

- Fill Area I, EE-12:
  Benzene
  Chlorobenzene

- Fill Area I, EE-14:
  Benzene
  Chlorobenzene

- Fill Area L, EEG-109:
  Benzene

Chloroform

MLE INDOOR AIR CONCENTRATIONS

- Fill Area G:

  4-Methyl-2-Pentanone
  Benzene
  Chlorobenzene
  Naphthalene
  Tetrachloroethene
  Toluene
  Trichloroethene
  Vinyl Chloride

- Fill Area H:

  1,1,2,2-Tetrachloroethene
  Benzene
  Chlorobenzene
  Chloroform
  Ethylbenzene
  Naphthalene
  Trichloroethene

- Fill Area I:

  Benzene
  Chlorobenzene
  Trichloroethene
  Vinyl Chloride

- Fill Area L:

  Benzene
  Chloroform

REFERENCES:

Johnson, P.C. and R.A. Ettinger. 1991. Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings. Environmental Science and Technology. 25:1445-1452.

USEPA. 1997. User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. U.S. Environmental Protection Agency Office of Emergency and Remedial Response. Toxics Integration Branch. Washington, D.C.

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	110	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	540	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_t (cm)	Vadose zone soil air-filled porosity, θ_o^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
525	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	2.07E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
525	15	1.27E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.50E-06	5.74E-02	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	620	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	540	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_t (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
525	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.13E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
525	15	4.12E+04	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.59E-06	1.89E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	390	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	540	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-05\Naphthalene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_t (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
525	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.26E-04

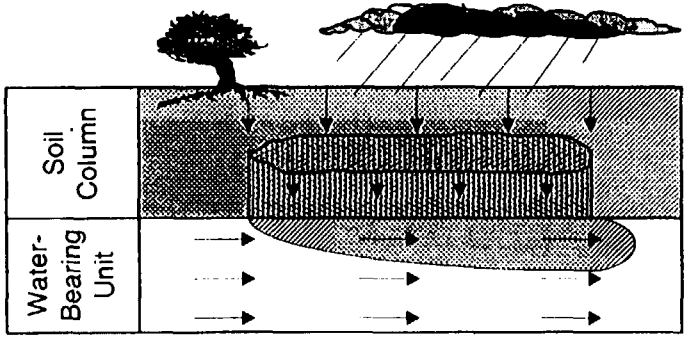
Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
525	15	2.56E+03	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	7.01E-06	1.79E-02	NA	1.4E-01

Site-Specific Soil Parameters

Site Name: Sauget Area 1 | Job ID: MIBK
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

1. Soil Source Zone Characteristics

	General Case Construction	
Hydrogeology		
Depth to water-bearing unit	491	(cm)
Capillary zone thickness	11	(cm)
Soil column thickness	480	(cm)
Affected Soil Zone		
Depth to top of affected soils		(cm)
Depth to base of affected soils		(cm)
Affected soil area		(cm^2)
Length of affected soil parallel to assumed wind direction		(cm)
Length of affected soil parallel to assumed GW flow direction		(cm)



2. Surface Soil Column

	Vadose Zone	Capillary Fringe	
Predominant USCS Soil Type			ults
or Calculate	or		
Total porosity	0.43		(-)
Volumetric water content	0.3	0.387	(-)
Volumetric air content	0.13	0.043	(-)
Dry bulk density	1.5		(kg/L)
Vertical hydraulic conductivity	8.6E-1		(cm/d)
Vapor permeability	1.0E-11		(cm^2)
Capillary zone thickness	1.1E+1		(cm)
Net Rainfall Infiltration			
Net infiltration estimate			(in/yr)
or NA	or		
Average annual precipitation			(in/yr)
Partitioning Parameters			
Fraction organic carbon	0.002		(-)
Soil/water pH	7.57		(-)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS

Exposure Concentration

Constituents of Concern	1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor Commercial	3) Exposure Medium Indoor Air: POE Conc (mg/m^3) (1) / (2) Commercial	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) Commercial	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Commercial
Methyl-2-pentanone, 4-	1.3E+0	3.1E+3	4.2E-4	6.8E-1	2.8E-4

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: MIBK

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	3700	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_f (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{le} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.95E-04

Diffusion *path* length, L_d (cm)	Convection *path* length, L_p (cm)	Source *vapor* conc., C_{source} ($\mu g/m^3$)	*Crack* radius, r_{crack} (cm)	Average *vapor flow rate* into bldg., Q_{soil} (cm^3/s)	Crack *effective diffusion* coefficient, D^{crack} (cm^2/s)	*Area of* crack, A_{crack} (cm^2)	Exponent of equivalent foundation *Peclet* number, exp(Pe') (unitless)	Infinite source indoor *attenuation* coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit *risk* factor, URF $(\mu g/m^3)^{-1}$	*Reference* conc., RfC (mg/m^3)
476	15	4.28E+05	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.62E-06	1.98E+00	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	4300	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.64E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.02E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	2.86E+05	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.73E-06	1.35E+00	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	2100	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.22E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	1.38E+04	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	7.34E-06	1.01E-01	NA	1.4E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
127184	170	Tetrachloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_I (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ls}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ls} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ls} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ls} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,553	7.83E-03	3.37E-01	1.75E-04	4.39E-04	2.33E-05	1.24E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	5.73E+04	0.10	8.35E-01	4.39E-04	3.84E+02	1.94E+32	3.30E-06	1.89E-01	5.8E-07	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108883	8500	Toluene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,154	2.92E-03	1.26E-01	1.75E-04	5.34E-04	3.66E-05	1.81E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{tot} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	1.07E+06	0.10	8.35E-01	5.34E-04	3.84E+02	3.39E+26	4.39E-06	4.70E+00	NA	4.0E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	200	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	16	8,657	4.79E-03	2.06E-01	1.76E-04	4.83E-04	2.93E-05	1.60E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	4.13E+04	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.84E-06	1.58E-01	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75014	41	Vinyl chloride (chloroethene)

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	491	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
476	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
6.63E+04	9.24E+05	4.16E-04	15	5,000	1.73E-02	7.46E-01	1.76E-04	6.43E-04	2.70E-05	1.50E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
476	15	3.06E+04	0.10	8.36E-01	6.43E-04	3.84E+02	1.11E+22	3.84E-06	1.17E-01	8.4E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79345	12	1,1,2,2-Tetrachloroethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-01\1,1,2,2-Tetrachloroethane.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	10,540	1.34E-04	5.77E-03	1.75E-04	5.65E-04	3.13E-04	5.01E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	6.92E+01	0.10	8.35E-01	5.65E-04	3.84E+02	1.22E+25	8.37E-06	5.79E-04	5.8E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	1500	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-01\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.82E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	1.74E+05	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.74E-06	8.23E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	1200	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-01\Chlorobenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	1.90E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	7.97E+04	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.88E-06	3.89E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
100414	1800	Ethylbenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_o^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	10,155	3.18E-03	1.37E-01	1.75E-04	4.60E-04	3.11E-05	1.44E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	2.46E+05	0.10	8.35E-01	4.60E-04	3.84E+02	6.13E+30	4.02E-06	9.90E-01	NA	1.0E+00

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	2300	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-01\Naphthalene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.17E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	1.51E+04	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	7.70E-06	1.16E-01	NA	1.4E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	2250	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_f (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.82E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	2.60E+05	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.74E-06	1.23E+00	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	4350	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-02\Chlorobenzene.xls\DATENTER

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	1.90E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	2.89E+05	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.88E-06	1.41E+00	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
67663	425	Chloroform

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-02\Chloroform.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	5.30E-05	2.31E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	3.41E+04	0.10	8.35E-01	6.43E-04	3.84E+02	1.12E+22	5.56E-06	1.89E-01	2.3E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	195	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-02\Naphthalene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.17E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	1.28E+03	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	7.70E-06	9.83E-03	NA	1.4E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	49.5	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	442	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-02\Trichloroethene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
427	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	2.93E-05	1.39E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
427	15	1.02E+04	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.93E-06	4.01E-02	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	620	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S1\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.99E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	7.18E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.58E-06	3.29E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	8700	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S1\Chlorobenzene.xls\DATENTER

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.05E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	5.78E+05	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.68E-06	2.71E+00	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75014	970	Vinyl chloride (chloroethene)

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S1\Vinyl Chloride.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	5,000	1.73E-02	7.46E-01	1.75E-04	6.43E-04	2.70E-05	1.54E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	7.24E+05	0.10	8.35E-01	6.43E-04	3.84E+02	1.11E+22	3.82E-06	2.76E+00	8.4E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	120	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S2\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.99E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	1.39E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.58E-06	6.37E-02	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	3200	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S2\Chlorobenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_f (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} ($atm\cdot m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.05E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	2.13E+05	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.68E-06	9.96E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	180	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	2.93E-05	1.53E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	3.71E+04	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.81E-06	1.41E-01	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75014	240	Vinyl chloride (chloroethene)

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

AA-I-S2\Vinyl Chloride.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_b (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	5,000	1.73E-02	7.46E-01	1.75E-04	6.43E-04	2.70E-05	1.54E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	1.79E+05	0.10	8.35E-01	6.43E-04	3.84E+02	1.11E+22	3.82E-06	6.83E-01	8.4E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	680	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-12\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.99E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	7.87E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.58E-06	3.61E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	1400	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-12\Chlorobenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.05E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	9.30E+04	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.68E-06	4.36E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	750	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EE-14\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.99E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	8.68E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.58E-06	3.98E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	3800	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	506	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
491	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
6.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.65E-04	4.66E-05	2.05E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
491	15	2.53E+05	0.10	8.35E-01	4.65E-04	3.84E+02	1.31E+31	4.68E-06	1.18E+00	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	44	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	466	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EEG-109\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
451	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.88E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
451	15	5.09E+03	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.68E-06	2.38E-02	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
67663	76	Chloroform

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	466	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

EEG-109\Chloroform.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
451	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	5.30E-05	2.40E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
451	15	6.09E+03	0.10	8.35E-01	6.43E-04	3.84E+02	1.12E+22	5.49E-06	3.34E-02	2.3E-05	NA

Site-Specific Soil Parameters

Site Name: Sauget Area 1 | Job ID: MLE Area G MIBK
Location: Sauget Illinois | Date: 1-Dec-00
Compl. By: Angela

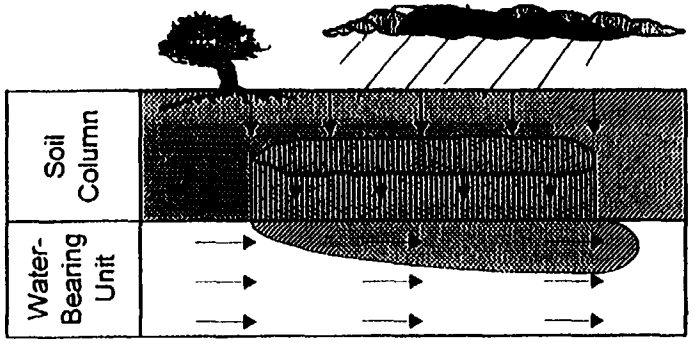
1. Soil Source Zone Characteristics

Hydrogeology

	General Case Construction	
Depth to water-bearing unit	530.8	(cm)
Capillary zone thickness	11	(cm)
Soil column thickness	519.8	(cm)

Affected Soil Zone

Depth to top of affected soils	0		(cm)
Depth to base of affected soils	0		(cm)
Affected soil area	0	0	(cm^2)
Length of affected soil parallel to assumed wind direction	0	0	(cm)
Length of affected soil parallel to assumed GW flow direction	0		(cm)



2. Surface Soil Column

	Vadose Zone	Capillary Fringe	
Predominant USCS Soil Type			ults
or Calculate	or		
Total porosity	0.43		(-)
Volumetric water content	0.3	0.387	(-)
Volumetric air content	0.13	0.043	(-)
Dry bulk density	1.5		(kg/L)
Vertical hydraulic conductivity	8.6E-1		(cm/d)
Vapor permeability	1.0E-11		(cm^2)
Capillary zone thickness	1.1E+1		(cm)

Net Rainfall Infiltration

Net infiltration estimate		(in/yr)
or NA	or	
Average annual precipitation		(in/yr)

Partitioning Parameters

Fraction organic carbon	0.002	(-)
Soil/water pH	7.57	(-)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor Commercial	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) Commercial	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) Commercial	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Commercial
Methyl-2-pentanone, 4-	1.4E-1	3.3E+3	4.2E-5	6.8E-1	2.9E-5

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Angela

Date Completed: 1-Dec-00
Job ID: MLE:Area G MIBK

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	347.8	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	2.05E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	4.03E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.53E-06	1.82E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	466.1	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\Chlorobenzene.xls\DATENTER

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_e (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.11E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	3.10E+04	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.61E-06	1.43E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	230.5	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\Naphthalene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.25E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	1.51E+03	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	7.07E-06	1.07E-02	NA	1.4E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
127184	20.5	Tetrachloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\Tetrachloroethene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_s (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,553	7.83E-03	3.37E-01	1.75E-04	4.39E-04	2.33E-05	1.31E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	6.91E+03	0.10	8.35E-01	4.39E-04	3.84E+02	1.94E+32	3.25E-06	2.24E-02	5.8E-07	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108883	862.8	Toluene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\toluene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_t (cm)	Vadose zone soil air-filled porosity, θ_c^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,is}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{is} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{is} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,154	2.92E-03	1.26E-01	1.75E-04	5.34E-04	3.66E-05	1.91E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., C_{o_bldg} ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	1.09E+05	0.10	8.35E-01	5.34E-04	3.84E+02	3.39E+26	4.30E-06	4.67E-01	NA	4.0E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	20.9	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

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SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	2.93E-05	1.59E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	4.31E+03	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.76E-06	1.62E-02	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75014	8.6	Vinyl chloride (chloroethene)

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	530.8	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area G\Vinyl Chloride.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
515.8	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	5,000	1.73E-02	7.46E-01	1.75E-04	6.43E-04	2.70E-05	1.60E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
515.8	15	6.41E+03	0.10	8.35E-01	6.43E-04	3.84E+02	1.11E+22	3.78E-06	2.43E-02	8.4E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79345	5.7	1,1,2,2-Tetrachloroethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\1,1,2,2-Tetrachloroethane.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_s (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	10,540	1.34E-04	5.77E-03	1.75E-04	5.65E-04	3.13E-04	5.23E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	3.29E+01	0.10	8.35E-01	5.65E-04	3.84E+02	1.22E+25	6.82E-06	2.24E-04	5.8E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	937.8	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_c^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	2.41E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	1.09E+05	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.18E-06	4.54E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	1391.6	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Chlorobenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_o^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.42E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	9.25E+04	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.19E-06	3.88E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
67663	120	Chloroform

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Chloroform.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	5.30E-05	3.03E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^i) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	9.62E+03	0.10	8.35E-01	6.43E-04	3.84E+02	1.12E+22	4.90E-06	4.72E-02	2.3E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
100414	498.1	Ethylbenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Ethylbenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_e (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}, (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	10,155	3.18E-03	1.37E-01	1.75E-04	4.60E-04	3.11E-05	1.93E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	6.81E+04	0.10	8.35E-01	4.60E-04	3.84E+02	6.13E+30	3.55E-06	2.42E-01	NA	1.0E+00

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
91203	626.3	Naphthalene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Naphthalene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_c^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_g (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	2.62E-04	4.35E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	4.10E+03	0.10	8.35E-01	4.70E-04	3.84E+02	1.40E+30	6.15E-06	2.52E-02	NA	1.4E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	19.8	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	693.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Fill Area H\Trichloroethene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_s (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
678.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	2.93E-05	1.89E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{outdoor}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
678.6	15	4.08E+03	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.49E-06	1.43E-02	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	278.8	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	716.5	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Area I\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
701.5	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	2.45E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
701.5	15	3.23E+04	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.13E-06	1.33E-01	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
108907	1744.3	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	716.5	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Area I\Chlorobenzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
701.5	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	9,803	1.54E-03	6.65E-02	1.75E-04	4.55E-04	4.66E-05	2.46E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
701.5	15	1.16E+05	0.10	8.35E-01	4.55E-04	3.84E+02	1.31E+31	4.14E-06	4.80E-01	NA	2.0E-02

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
79016	31.7	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	716.5	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Area I\Trichloroethylene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_t (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
701.5	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	2.93E-05	1.93E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
701.5	15	6.54E+03	0.10	8.35E-01	4.83E-04	3.84E+02	2.11E+29	3.46E-06	2.26E-02	1.7E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
75014	157.9	Vinyl chloride (chloroethene)

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	716.5	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_s (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
701.5	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	5,000	1.73E-02	7.46E-01	1.75E-04	6.43E-04	2.70E-05	2.00E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{o,ilong}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
701.5	15	1.18E+05	0.10	8.35E-01	6.43E-04	3.84E+02	1.11E+22	3.55E-06	4.18E-01	8.4E-05	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
71432	7.8	Benzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	472.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL	OR		1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Area L\Benzene.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_c^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
457.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,s}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm-m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	4.03E-05	1.90E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
457.6	15	9.03E+02	0.10	8.35E-01	5.42E-04	3.84E+02	1.43E+26	4.66E-06	4.21E-03	8.3E-06	NA

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
67663	14.8	Chloroform

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	472.6	SIL	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, $\rho_b{}^V$ (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)
SIL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

Area L\Chloroform.xls\DATENTER

INTERMEDIATE CALCULATIONS SHEET

Source-building separation, L_i (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
457.6	0.130	0.642	1.67E-09	0.519	8.65E-10	68.18	0.43	0.050	0.380	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{ts} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{ts} (unitless)	Vapor viscosity at ave. soil temperature, μ_{ts} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_t (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	5.30E-05	2.42E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	*Exponent of* equivalent foundation Peclet number, exp(Pe') (unitless)	*Infinite* source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
457.6	15	1.19E+03	0.10	8.35E-01	6.43E-04	3.84E+02	1.12E+22	5.47E-06	6.49E-03	2.3E-05	NA

APPENDIX L

CALCULATION OF EXCAVATION AIR VOC CONCENTRATIONS FROM STANDING WATER - EXCAVATION TRENCH

APPENDIX L
CALCULATION OF EXCAVATION AIR VOC CONCENTRATIONS FROM STANDING WATER - EXCAVATION TRENCH

Excavation trench air concentrations of a COPC resulting from volatilization from groundwater infiltrating an excavation trench can be predicted by use of the method recommended by USEPA (1987) for predicting volatilization from standing water.

Model to Predict Air Concentration

In this model, the air concentration of a COPC is estimated at the downwind boundary of the water. For the purposes of calculating this concentration, a rectangular box with the base corresponding to the water surface is considered. The height of the box, H_b, is the height to which the chemical emissions from the water surface are uniformly mixed with the air. L_b is the dimension of the box parallel to the direction of the wind. W_b is the width of the box perpendicular to the airflow. If U is the wind speed, then, by conservation of mass, the air concentration, C_a, of chemical within the box is given by:

$$C_a = \frac{Q}{H_b W_b U} \quad (1)$$

The diffusion height, H_b, above the water surface is approximately equal to 0.05 L_b (Jackson, 1976). With this substitution, the equation for the air concentration becomes:

$$C_a = \frac{Q}{0.05AU} \quad (2)$$

Where:

Q = chemical emission rate (g/s)

A = water surface area (m^2) (12 m^2; best professional judgement estimate of utility repair/installation trench)

U = wind speed (m/s) (2.25 m/s; default value USEPA, 1991)

The chemical emission rate, Q, can be expressed as follows:

$$Q = KAC_L \quad (3)$$

Where:

Q = chemical emission rate (g/s)

K = overall mass transfer coefficient (m/s)

A = water surface area (m^2) ($12m^2$; best professional judgement estimate of utility repair/installation trench)

C_L = chemical concentration in water (g/m^3)

With the substitution of equation (3) into equation (2), the equation for air concentration becomes:

$$Ca = \frac{KC_L}{0.05u} \quad (4)$$

As wind speed, u, and the chemical concentration in water, C_L, are known or can be measured, the chemical concentration in air is then a function of the overall mass transfer coefficient.

Mass Transfer Coefficient

The overall mass transfer coefficient, K, is given by:

$$\frac{1}{K} = \frac{1}{K_L} + \frac{1}{K_G K_{eq}} \quad (5)$$

Where:

K_L = Liquid phase mass transfer coefficient (m/s)

K_G = Gas phase mass transfer coefficient (m/s)

K_{eq} = Equilibrium mass transfer coefficient (unitless)

The equilibrium mass transfer coefficient is given by the following:

$$K_{eq} = \frac{H}{RT} \quad (6)$$

Where:

H = Henry's Law constant for the chemical (atm m^3/g-mol)

R = Universal Gas Constant (8.21×10^{-5} atm m^3/g-mol/°K)

T = Water Temperature (°K)

The Henry's Law constants are chemical-specific and were obtained from the RBCA Tool Kit for Chemical Releases software (GSI, 1999).

The liquid phase mass transfer coefficient is given by:

$$K_L = 2.78 \times 10^{-6} \left(\frac{D_w}{D_{ether}} \right)^{2/3} \quad (7)$$

Where:

D_w = Diffusivity of the compound in water (cm^2/s)

D_{ether} = Diffusivity of ether in water (8.5×10^{-6} cm^2/s; USEPA, 1987).

The diffusivity of each chemical in water was obtained from the RBCA Tool Kit for Chemical Releases software (GSI, 1999).

The gas phase mass transfer coefficient is given by:

$$K_G = 4.82 \times 10^{-3} U^{0.78} Sc_G^{-0.67} d_e^{-0.11} \quad (8)$$

Where:

U = wind speed (m/s)

Sc_G = Schmidt number = $\mu_G/(\rho_G D_a)$

μ_G = viscosity of air (1.81×10^{-4} g/cm-s)

ρ_G = density of air (1.2×10^{-3} g/cm^3)

D_a = diffusivity of the chemical in air (cm^2/s)

d_e = effective diameter (m) = $(4A/\pi)^{0.5}$

For each of the compounds the molecular diffusivity in air was obtained from the RBCA Tool Kit for Chemical Releases software (GSI, 1999).

Attenuation Factor

For the purpose of calculating the concentration in air from a given concentration in water, it is convenient to define an attenuation factor, α, which is given as the ratio of the ambient air concentration given in equation (4) to the concentration in water:

$$\alpha = \frac{C_a}{C_L} = \frac{K}{0.05U} \quad (9)$$

If the concentration in the water is given per liter and the air concentration is given per cubic meter, then the attenuation factor becomes:

$$\alpha(L/m^3) = \frac{20000K}{U} \quad (10)$$

where the mass transfer coefficient, K, is defined as above.

Model Application and Results

Table L-1 summarizes model inputs and intermediate steps in the modeling process. Tables L-2 and L-3 present the RME and MLE groundwater source concentrations utilized in predicting trench air concentrations. Tables L-4 and L-5 present the predicted RME and MLE trench air concentrations for volatile COPCs.

Uncertainty Analysis

It should be noted that the volatilization model described above does not consider the effect of one chemical in solution upon the volatilization of another. This effect should be minor, however, considering the low concentrations of these chemicals in water. Also, the assumption of a water temperature of 25°C is conservative considering the increase of the Henry's Law parameter with temperature.

References

GSI, 1999. RBCA Tool Kit for Chemical Releases Software. Groundwater Services, Inc. Houston, Texas.

USEPA. 1987. Hazardous Waste Treatment, Storage and Disposal Facilities (TDSF) – Air Emission Models. EPA-450/3-87-026. December 1987.

USEPA. 1991. Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). Interim. Office of Emergency and Remedial Response. U.S. Environmental Protection Agency.

Jackson, N.A. 1976. The Propagation of Modified Flow Downstream of a Change in Roughness. Quarterly Journal of the Royal Meteorological Society. 102:924.

TABLE L-1
MODEL SUMMARY FOR PREDICTION OF TRENCH AIR CONCENTRATION DUE TO VOLATILIZATION FROM EXPOSED GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

*** Input Parameters ***	
Water temperature (degK)	298.15
Viscosity of water (cp)	0.8904
Wetted area (m**2)	12
Wind speed (m/s)	2.25
*** Constants ***	
Gas const. (atm m**3/(mol degK))	8.21E-05
Diff. of ether in H2O (cm**2/s)	8.50E-06
Viscosity of air (g/(cm s))	1.81E-04
Density of air (g/cm**3)	1.20E-03
*** Calculated Parameter ***	
Effective diameter of source (m)	3.909

*** Chemical-Specific Parameters ***

		Molecular Weight (a)	Henry's Law Coefficient (atm*m**3/g-mole) (a)	Diffusivity in Air (cm**2/s) (a)	Diffusivity in Water (cm**2/s) (a)	Keq (b)	Kl (m/s) (b)	SCg (b)	Kg (m/s) (b)	K (m/s) (b)	Q (m3/s) (b)	Groundwater-to-Air Attenuation Factor (L/m3) (b)
1,1,2,2-Tetrachloroethane		168	2.00E-03	7.10E-02	7.90E-06	8.17E-02	2.65E-06	2.12E+00	4.71E-03	2.63E-06	3.16E-05	2.34E-02
4-Methyl-2-Pentanone		100.2	4.16E-04	7.35E-02	8.88E-06	1.70E-02	1.31E-05	2.05E+00	4.82E-03	1.13E-05	1.35E-04	1.00E-01
BENZENE		78.11	5.55E-03	8.80E-02	9.80E-06	2.27E-01	3.06E-06	1.71E+00	5.44E-03	3.05E-06	3.66E-05	2.71E-02
CHLOROBENZENE		112.56	3.70E-03	7.30E-02	8.70E-06	1.51E-01	2.82E-06	2.07E+00	4.80E-03	2.81E-06	3.37E-05	2.50E-02
CHLOROFORM		119.4	3.39E-03	1.04E-01	1.00E-05	1.38E-01	3.10E-06	1.45E+00	6.09E-03	3.09E-06	3.70E-05	2.74E-02
ETHYLBENZENE		106.17	7.88E-03	7.50E-02	7.80E-06	3.22E-01	2.63E-06	2.01E+00	4.69E-03	2.62E-06	3.14E-05	2.33E-02
NAPHTHALENE		128.17	4.83E-04	5.90E-02	7.50E-06	1.97E-02	2.56E-06	2.56E+00	4.16E-03	2.48E-06	2.98E-05	2.20E-02
TETRACHLOROETHENE		165.83	1.84E-02	7.20E-02	8.20E-06	7.52E-01	2.71E-06	2.09E+00	4.76E-03	2.71E-06	3.25E-05	2.41E-02
TOLUENE		92.4	6.30E-03	8.50E-02	9.40E-06	2.57E-01	2.97E-06	1.77E+00	5.32E-03	2.97E-06	3.56E-05	2.64E-02
TRICHLOROETHENE		131.4	1.00E-02	8.18E-02	1.05E-04	4.09E-01	1.49E-05	1.84E+00	5.18E-03	1.48E-05	1.77E-04	1.31E-01
VINYLCHLORIDE		62.5	8.60E-02	1.08E-01	1.23E-05	3.51E+00	3.56E-06	1.42E+00	6.17E-03	3.56E-06	4.27E-05	3.16E-02

Notes:
(a) GSI, 1999. RBCA Tool Kit for Chemical Releases software. Groundwater Services, Inc. Houston, Texas.
(b) Calculated
Keq = equilibrium coefficient
Kl = liquid phase mass transfer coefficient
SCg = Schmidt number
Kg = gas phase mass transfer coefficent
K = overall mass transfer coefficient
Q = emission factor

TABLE L-2
EXPOSURE POINT CONCENTRATIONS (RME) - GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Groundwater EPCs (mg/L)								
		Fill Area G		Fill Area H		Fill Area I				Fill Area L
		EE-05	EEG-107	EE-01	EE-02	AA-I-S1	AA-I-S2	EE-12	EE-14	EEG-109
1,1,2,2-Tetrachloroethane	79-34-5	--	--	1.20E-02	--	--	--	--	--	--
4-Methyl-2-pentanone	108-10-1	--	1.30E+00	--	--	--	--	--	--	--
Benzene	71-43-2	1.10E-01	3.70E+00	1.50E+00	2.25E+00	6.20E-01	1.20E-01	6.80E-01	7.50E-01	4.40E-02
Chlorobenzene	108-90-7	6.20E-01	4.30E+00	1.20E+00	4.35E+00	8.70E+00	3.20E+00	1.40E+00	3.80E+00	--
Chloroform	67-66-3	--	--	--	4.25E-01	--	--	--	--	7.60E-02
Ethylbenzene	100-41-4	--	--	1.80E+00	--	--	--	--	--	--
Naphthalene	91-20-3	3.90E-01	2.10E+00	2.30E+00	1.95E-01	--	--	--	--	--
Tetrachloroethene	127-18-4	--	1.70E-01	--	--	--	--	--	--	--
Toluene	108-88-3	--	8.50E+00	--	--	--	--	--	--	--
Trichloroethene	79-01-6	--	2.00E-01	--	4.95E-02	--	1.80E-01	--	--	--
Vinyl chloride	75-01-4	--	4.10E-02	--	--	9.70E-01	2.40E-01	--	--	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.

TABLE L-3
EXPOSURE POINT CONCENTRATIONS (MLE) - GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Groundwater EPCs (mg/L)									
		Fill Area G		Fill Area H		Fill Area I					Fill Area L
		EE-05	EEG-107	EE-01	EE-02	AA-I-S1	AA-I-S2	EE-12	EE-13	EE-14	EEG-109
1,1,2,2-Tetrachloroethane	79-34-5	--	--	1.20E-02	--	--	--	--	--	--	--
4-Methyl-2-pentanone	108-10-1	--	1.30E+00	--	--	--	--	--	--	--	--
Benzene	71-43-2	1.10E-01	3.70E+00	1.50E+00	2.25E+00	4.55E-01	6.13E-02	6.80E-01	--	7.50E-01	4.40E-02
Chlorobenzene	108-90-7	6.20E-01	4.30E+00	1.20E+00	4.35E+00	5.15E+00	1.66E+00	1.40E+00	--	3.80E+00	--
Chloroform	67-66-3	--	--	--	4.25E-01	--	--	--	--	--	7.60E-02
Ethylbenzene	100-41-4	--	--	1.80E+00	--	--	--	--	--	--	--
Naphthalene	91-20-3	3.90E-01	2.10E+00	2.30E+00	1.95E-01	--	--	--	--	--	--
Tetrachloroethene	127-18-4	--	1.70E-01	--	--	--	--	--	--	--	--
Toluene	108-88-3	--	8.50E+00	--	--	--	--	--	--	--	--
Trichloroethene	79-01-6	--	2.00E-01	--	4.95E-02	--	1.04E-01	--	--	--	--
Vinyl chloride	75-01-4	--	4.10E-02	--	--	7.35E-01	2.00E-01	--	--	--	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.

TABLE L-4
EXPOSURE POINT CONCENTRATIONS (RME) - EXCAVATION AIR, VOLATILIZATION FROM EXPOSED GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Fill Area Excavation Air EPCs (mg/m3) (a)								
		G		H		I				L
		EE-05	EEG-107	EE-01	EE-02	AA-I-S1	AA-I-S2	EE-12	EE-14	EEG-109
1,1,2,2-Tetrachloroethane	79-34-5	--	--	2.80E-04	--	--	--	--	--	--
4-Methyl-2-pentanone	108-10-1	--	1.30E-01	--	--	--	--	--	--	--
Benzene	71-43-2	2.98E-03	1.00E-01	4.07E-02	6.10E-02	1.68E-02	3.25E-03	1.84E-02	2.03E-02	1.19E-03
Chlorobenzene	108-90-7	1.55E-02	1.07E-01	3.00E-02	1.09E-01	2.17E-01	8.00E-02	3.50E-02	9.50E-02	--
Chloroform	67-66-3	--	--	--	1.17E-02	--	--	--	--	2.09E-03
Ethylbenzene	100-41-4	--	--	4.19E-02	--	--	--	--	--	--
Naphthalene	91-20-3	8.60E-03	4.63E-02	5.07E-02	4.30E-03	--	--	--	--	--
Tetrachloroethene	127-18-4	--	4.10E-03	--	--	--	--	--	--	--
Toluene	108-88-3	--	2.24E-01	--	--	--	--	--	--	--
Trichloroethene	79-01-6	--	2.62E-02	--	6.49E-03	--	2.36E-02	--	--	--
Vinyl chloride	75-01-4	--	1.30E-03	--	--	3.07E-02	7.59E-03	--	--	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.
(a) Concentration in groundwater (mg/L) x groundwater to air attenuation factor (L/m^3)

TABLE L-5
EXPOSURE POINT CONCENTRATIONS (MLE) - EXCAVATION AIR, VOLATILIZATION FROM GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Fill Area Excavation Air EPCs (mg/m3) (a)								
		G		H		I				L
		EE-05	EEG-107	EE-01	EE-02	AA-I-S1	AA-I-S2	EE-12	EE-14	EEG-109
1,1,2,2-Tetrachloroethane	79-34-5	--	--	2.80E-04	--	--	--	--	--	--
4-Methyl-2-pentanone	108-10-1	--	1.25E-01	--	--	--	--	--	--	--
Benzene	71-43-2	2.98E-03	1.00E-01	4.06E-02	6.09E-02	1.23E-02	1.66E-03	1.84E-02	2.03E-02	1.19E-03
Chlorobenzene	108-90-7	1.55E-02	1.07E-01	3.00E-02	1.09E-01	1.29E-01	4.14E-02	3.50E-02	9.49E-02	--
Chloroform	67-66-3	--	--	--	1.16E-02	--	--	--	--	2.08E-03
Ethylbenzene	100-41-4	--	--	4.19E-02	--	--	--	--	--	--
Naphthalene	91-20-3	8.51E-03	4.58E-02	5.02E-02	4.26E-03	--	--	--	--	--
Tetrachloroethene	127-18-4	--	4.10E-03	--	--	--	--	--	--	--
Toluene	108-88-3	--	2.24E-01	--	--	--	--	--	--	--
Trichloroethene	79-01-6	--	2.62E-02	--	6.48E-03	--	1.36E-02	--	--	--
Vinyl chloride	75-01-4	--	1.30E-03	--	--	2.32E-02	6.32E-03	--	--	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.
(a) Excavation air concentration (mg/l) = groundwater concentration (mg/l) x groundwater-to-air attenuation factor (l/m^3).

APPENDIX M

CALCULATION OF OUTDOOR AIR VOC CONCENTRATIONS FROM GROUNDWATER

APPENDIX M
CALCULATION OF OUTDOOR AIR VOC CONCENTRATIONS FROM GROUNDWATER

Ambient air concentrations resulting from migration of volatile constituents of potential concern (COPC) from underlying groundwater to outdoor air were predicted based on the method recommended by the American Society for Testing and Materials in ASTM PS-104 *Standard Provisional Guide for Risk-Based Corrective Action* (ASTM, 1998). Calculations were completed using the *RBCA Tool Kit for Chemical Releases* software designed by Groundwater Services, Inc. (1999) to implement the calculations recommended in ASTM PS-104. The goal of the approach recommended in ASTM PS-104 is to estimate potential impacts of volatile constituents migrating from groundwater to the outdoor air-breathing zone.

The approach recommend in ASTM PS-104 for predicting migration of COPC vapors from groundwater to ambient outdoor air is a simple one in which the relationship between outdoor air and dissolved groundwater concentrations is represented by a chemical-specific groundwater volatilization factor, and is dependent upon the following assumptions:

- The concentration of dissolved constituents in groundwater remains constant over time (i.e., serves as an infinite source of volatile constituents).
- The soil vapor concentrations of volatile constituents reach immediate equilibrium with the dissolved concentration of these same constituents in groundwater.
- There is no loss of constituent (through biodegradation, or other loss mechanism) as the volatile constituent migrates, via diffusion, to the ground surface.
- Air dispersion of volatile constituents within the breathing zone is predicted through the use of a box model resulting in steady, well mixed atmospheric dispersion of volatile constituents as they rise into the breathing zone.

Equations for the implementation of ASTM PS-104 are available in the American Society for Testing and Materials in ASTM PS-104 *Standard Provisional Guide for Risk-Based Corrective Action* (ASTM, 1998) and the *RBCA Tool Kit Chemical Releases Guidance Manual* developed by GSI (1998). Chemical-specific parameters selected by GSI for use in their *RBCA Tool Kit for Chemical Releases* software were utilized in this risk assessment.

- vadose zone thickness (cm) (site-specific, dependent on depth to groundwater and capillary zone thickness).

Based on similarities to limited site-specific data for the characterization of surface soil (summarized in Table M-1), several default parameters assumed to best describe site soil (sandy silt) (IEPA, 1998; and GSI, 1999) were selected for inclusion in this evaluation. They include:

- total soil porosity;
- volumetric water content of vadose zone;
- volumetric water content of capillary fringe;
- volumetric air content of vadose zone;
- volumetric air content capillary fringe;
- dry bulk density;
- vertical hydraulic conductivity;
- vapor permeability; and
- capillary zone thickness.

[Note: Soil type designations available in the Johnson and Ettinger Model (Appendix K) and the RBCA model are different. Based on consultation with soil scientists, silt loam was identified as the most appropriate soil classification for the Johnson and Ettinger model and sandy silt was identified as the most appropriate soil classification for the RBCA model.]

The modeling printouts are presented in the following order:

<u>RME OUTDOOR AIR CONCENTRATIONS</u>

- Fill Area G, EE-05
- Fill Area G, EEG-107
- Fill Area H, EE-01

- Fill Area L, EEG-109

MLE INDOOR AIR CONCENTRATIONS

- Fill Area G
- Fill Area H
- Fill Area I
- Fill Area L

REFERENCES:

ASTM, 1998. Standard Provisional Guidance for Risk Based Corrective Action. ASTM Designation: PS 104-98. American Society for Testing and Material. West Conshohocken, PA.

GSI, 1998. RBCA Tool Kit for Chemical Releases Guidance Manual. Groundwater Services, Inc. Houston, Texas.

GSI, 1999. RBCA Tool Kit for Chemical Releases Software. Groundwater Services, Inc. Houston, Texas.

IEPA, 1998. Tiered Approach to Corrective Action Objectives. Title 35, Subtitle G, Chapter I, Subchapter J, Part 742. As amended June 8, 1998. Illinois Environmental Protection Agency.

TABLE M-1
COMPARISON OF SOIL PARAMETERS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Parameter	Site-Specific Data for Surface Soil (a)				Values Used In Modeling	
	Fill Area G	Fill Area H	Fill Area I	Fill Area L		
Total Soil Porosity (unitless)	3.70E-01	4.30E-01	2.80E-01	4.30E-01	4.30E-01	(b)
Volumetric Water Content - Vadose Zone (unitless)	1.50E-01	5.20E-02	5.10E-02	5.30E-02	3.00E-01	(b)
Volumetric Water Content - Capillary Fringe (unitless)	NA	NA	NA	NA	3.87E-01	(c)
Volumetric Air Content - Vadose Zone (unitless)	2.20E-01	3.78E-01	2.29E-01	3.77E-01	1.30E-01	(b)
Volumetric Air Content - Capillary Fringe (unitless)	NA	NA	NA	NA	4.30E-02	(d)
Dry Bulk Density (kg/L)	1.69E+00	1.36E+00	1.93E+00	1.31E+00	1.50E+00	(b)
Vertical Hydraulic Conductivity (cm/d)	NA	NA	NA	NA	8.60E-01	(e)
Vapor Permeability (cm^2)	NA	NA	NA	NA	1.00E-11	(e)
Capillary Zone Thickness (cm)	NA	NA	NA	NA	1.10E+01	(e)
Depth to Groundwater (cm)	EE-05: 540 EEG-107: 491	442	506	466	SS	
Groundwater Plume Width at Source (cm)	9906	15240	42672	6096	SS	

Notes:
NA - Not Available
SS = Site-Specific
(a) Average of values by Fill Area in the Sauget Area 1 EE/CA and RI/FS Data Report.
(b) Default for Subsurface Soil (IEPA, 1998).
(c) Assumed to be 90% of total soil porosity.
(d) Assumed to be 10% of total soil porosity.
(e) Default for sandy silt (GSI, 1999).

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	8.5E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	1.5E+5			0.0E+0		
Benzene	1.1E-1	2.9E+4			3.8E-6		
Chlorobenzene	6.2E-1	4.9E+4			1.3E-5		
Chloroform	0.0E+0	3.8E+4			0.0E+0		
Ethylbenzene	0.0E+0	2.5E+4			0.0E+0		
Naphthalene	3.9E-1	3.3E+5			1.2E-6		
Tetrachloroethene	0.0E+0	1.2E+4			0.0E+0		
Toluene	0.0E+0	2.7E+4			0.0E+0		
Trichloroethene	0.0E+0	1.3E+4			0.0E+0		
Vinyl chloride	0.0E+0	1.9E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	7.9E+4			0.0E+0		
Methyl-2-pentanone, 4-	1.3E+0	1.4E+5			9.5E-6		
Benzene	3.7E+0	2.7E+4			1.4E-4		
Chlorobenzene	4.3E+0	4.5E+4			9.5E-5		
Chloroform	0.0E+0	3.6E+4			0.0E+0		
Ethylbenzene	0.0E+0	2.4E+4			0.0E+0		
Naphthalene	2.1E+0	3.0E+5			6.9E-6		
Tetrachloroethene	1.7E-1	1.1E+4			1.5E-5		
Toluene	8.5E+0	2.5E+4			3.4E-4		
Trichloroethene	2.0E-1	1.2E+4			1.7E-5		
Vinyl chloride	4.1E-2	1.8E+3			2.3E-5		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EEG-107

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	1.2E-2	4.7E+4			2.5E-7		
Methyl-2-pentanone, 4-	0.0E+0	8.0E+4			0.0E+0		
Benzene	1.5E+0	1.6E+4			9.1E-5		
Chlorobenzene	1.2E+0	2.7E+4			4.4E-5		
Chloroform	0.0E+0	2.1E+4			0.0E+0		
Ethylbenzene	1.8E+0	1.4E+4			1.2E-4		
Naphthalene	2.3E+0	1.8E+5			1.3E-5		
Tetrachloroethene	0.0E+0	7.0E+3			0.0E+0		
Toluene	0.0E+0	1.5E+4			0.0E+0		
Trichloroethene	0.0E+0	7.0E+3			0.0E+0		
Vinyl chloride	0.0E+0	1.1E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	4.7E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	8.0E+4			0.0E+0		
Benzene	2.3E+0	1.6E+4			1.4E-4		
Chlorobenzene	4.4E+0	2.7E+4			1.6E-4		
Chloroform	4.3E-1	2.1E+4			2.0E-5		
Ethylbenzene	0.0E+0	1.4E+4			0.0E+0		
Naphthalene	2.0E-1	1.8E+5			1.1E-6		
Tetrachloroethene	0.0E+0	7.0E+3			0.0E+0		
Toluene	0.0E+0	1.5E+4			0.0E+0		
Trichloroethene	5.0E-2	7.0E+3			7.0E-6		
Vinyl chloride	0.0E+0	1.1E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-02

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)
		Commercial	#VALUE!	#VALUE!	Commercial	#VALUE!	#VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.9E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	3.3E+4			0.0E+0		
Benzene	6.2E-1	6.4E+3			9.6E-5		
Chlorobenzene	8.7E+0	1.1E+4			8.1E-4		
Chloroform	0.0E+0	8.4E+3			0.0E+0		
Ethylbenzene	0.0E+0	5.6E+3			0.0E+0		
Naphthalene	0.0E+0	7.3E+4			0.0E+0		
Tetrachloroethene	0.0E+0	2.7E+3			0.0E+0		
Toluene	0.0E+0	6.0E+3			0.0E+0		
Trichloroethene	0.0E+0	2.8E+3			0.0E+0		
Vinyl chloride	9.7E-1	4.2E+2			2.3E-3		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: AA-I-S1

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.9E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	3.3E+4			0.0E+0		
Benzene	1.2E-1	6.4E+3			1.9E-5		
Chlorobenzene	3.2E+0	1.1E+4			3.0E-4		
Chloroform	0.0E+0	8.4E+3			0.0E+0		
Ethylbenzene	0.0E+0	5.6E+3			0.0E+0		
Naphthalene	0.0E+0	7.3E+4			0.0E+0		
Tetrachloroethene	0.0E+0	2.7E+3			0.0E+0		
Toluene	0.0E+0	6.0E+3			0.0E+0		
Trichloroethene	1.8E-1	2.8E+3			6.4E-5		
Vinyl chloride	2.4E-1	4.2E+2			5.7E-4		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: AA-I-S2

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-site (0 cm) Commercial	2) NAF Value (m^3/L) Receptor: Off-site 1 (0 cm) #VALUE!	2) NAF Value (m^3/L) Receptor: Off-site 2 (0 cm) #VALUE!	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-site (0 cm) Commercial	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-site 1 (0 cm) #VALUE!	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-site 2 (0 cm) #VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.9E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	3.3E+4			0.0E+0		
Benzene	6.8E-1	6.4E+3			1.1E-4		
Chlorobenzene	1.4E+0	1.1E+4			1.3E-4		
Chloroform	0.0E+0	8.4E+3			0.0E+0		
Ethylbenzene	0.0E+0	5.6E+3			0.0E+0		
Naphthalene	0.0E+0	7.3E+4			0.0E+0		
Tetrachloroethene	0.0E+0	2.7E+3			0.0E+0		
Toluene	0.0E+0	6.0E+3			0.0E+0		
Trichloroethene	0.0E+0	2.8E+3			0.0E+0		
Vinyl chloride	0.0E+0	4.2E+2			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-12

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!	On-site (0 cm) Commercial	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.9E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	3.3E+4			0.0E+0		
Benzene	7.5E-1	6.4E+3			1.2E-4		
Chlorobenzene	3.8E+0	1.1E+4			3.5E-4		
Chloroform	0.0E+0	8.4E+3			0.0E+0		
Ethylbenzene	0.0E+0	5.6E+3			0.0E+0		
Naphthalene	0.0E+0	7.3E+4			0.0E+0		
Tetrachloroethene	0.0E+0	2.7E+3			0.0E+0		
Toluene	0.0E+0	6.0E+3			0.0E+0		
Trichloroethene	0.0E+0	2.8E+3			0.0E+0		
Vinyl chloride	0.0E+0	4.2E+2			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-14

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-site (0 cm) Commercial	2) NAF Value (m^3/L) Receptor: Off-site 1 (0 cm) None	2) NAF Value (m^3/L) Receptor: Off-site 2 (0 cm) None	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-site (0 cm) Commercial	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-site 1 (0 cm) None	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.2E+5			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	2.1E+5			0.0E+0		
Benzene	4.4E-2	4.3E+4			1.0E-6		
Chlorobenzene	0.0E+0	7.1E+4			0.0E+0		
Chloroform	7.6E-2	5.6E+4			1.4E-6		
Ethylbenzene	0.0E+0	3.7E+4			0.0E+0		
Naphthalene	0.0E+0	4.7E+5			0.0E+0		
Tetrachloroethene	0.0E+0	1.8E+4			0.0E+0		
Toluene	0.0E+0	4.0E+4			0.0E+0		
Trichloroethene	0.0E+0	1.8E+4			0.0E+0		
Vinyl chloride	0.0E+0	2.8E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EEG-109

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	8.4E+4			0.0E+0		
Methyl-2-pentanone, 4-	1.4E-1	1.5E+5			9.4E-7		
Benzene	3.5E-1	2.9E+4			1.2E-5		
Chlorobenzene	4.7E-1	4.8E+4			9.7E-6		
Chloroform	0.0E+0	3.8E+4			0.0E+0		
Ethylbenzene	0.0E+0 *	2.5E+4			0.0E+0		
Naphthalene	2.3E-1	3.3E+5			7.0E-7		
Tetrachloroethene	2.1E-2	1.2E+4			1.7E-6		
Toluene	8.6E-1	2.7E+4			3.2E-5		
Trichloroethene	2.1E-2	1.3E+4			1.6E-6		
Vinyl chloride	8.6E-3	1.9E+3			4.6E-6		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Angela

Date Completed: 1-Dec-00
Job ID: MLE:Area G

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	5.7E-3	1.0E+5			5.5E-8		
Methyl-2-pentanone, 4-	0.0E+0	1.9E+5			0.0E+0		
Benzene	9.4E-1	3.5E+4			2.7E-5		
Chlorobenzene	1.4E+0	5.9E+4			2.4E-5		
Chloroform	1.2E-1	4.6E+4			2.6E-6		
Ethylbenzene	5.0E-1	3.0E+4			1.7E-5		
Naphthalene	6.3E-1	4.2E+5			1.5E-6		
Tetrachloroethene	0.0E+0	1.4E+4			0.0E+0		
Toluene	0.0E+0	3.2E+4			0.0E+0		
Trichloroethene	2.0E-2	1.6E+4			1.2E-6		
Vinyl chloride	0.0E+0	2.2E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Angela

Date Completed: 1-Dec-00
Job ID: MLE:Area H

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	1.1E+5			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	2.0E+5			0.0E+0		
Benzene	2.8E-1	3.5E+4			7.9E-6		
Chlorobenzene	1.7E+0	6.0E+4			2.9E-5		
Chloroform	0.0E+0	4.7E+4			0.0E+0		
Ethylbenzene	0.0E+0	3.1E+4			0.0E+0		
Naphthalene	0.0E+0	4.3E+5			0.0E+0		
Tetrachloroethene	0.0E+0	1.5E+4			0.0E+0		
Toluene	0.0E+0	3.3E+4			0.0E+0		
Trichloroethene	3.2E-2	1.7E+4			1.9E-6		
Vinyl chloride	1.6E-1	2.2E+3			7.1E-5		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Angela

Date Completed: 1-Dec-00
Job ID: MLE:Area I

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Commercial	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Tetrachloroethane, 1,1,2,2-	0.0E+0	7.6E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	1.3E+5			0.0E+0		
Benzene	7.8E-3	2.6E+4			3.0E-7		
Chlorobenzene	0.0E+0	4.4E+4			0.0E+0		
Chloroform	1.5E-2	3.5E+4			4.3E-7		
Ethylbenzene	0.0E+0	2.3E+4			0.0E+0		
Naphthalene	0.0E+0	2.9E+5			0.0E+0		
Tetrachloroethene	0.0E+0	1.1E+4			0.0E+0		
Toluene	0.0E+0	2.5E+4			0.0E+0		
Trichloroethene	0.0E+0	1.1E+4			0.0E+0		
Vinyl chloride	0.0E+0	1.8E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Angela

Date Completed: 1-Dec-00
Job ID: MLE:Area L

Main Screen

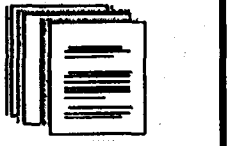
RBCA Tool Kit for Chemical Releases
Version 1.2 © 1999

1. Project Information

Site Name:	Sauget Area 1		
Location:	Sauget Illinois		
Compl. By:	Marcus		
Date:	15-Nov-00	Job ID:	EE-05

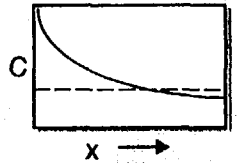
2. Which Type of RBCA Analysis? (?)

○ **Tier 1**



Generic Values
On-Site
Exposure

◉ **Tier 2**



Site-Specific Values
On- or Off-Site Exposure

3. Calculation Options (?)

Affects which input data are required

☑ ***Baseline Risks (Forward mode)***

☐ ***RBCA Cleanup Standards (Backward mode)***

4. RBCA Evaluation Process

Prepare Input Data

Data Complete? (■= yes, ■= no)

- ■□ Exposure Pathways
- ■□ Constituents of Concern (COCs)
- ■□ Transport Models
- ■□ Soil Parameters
- ■□ GW Parameters
- ■□ Air Parameters

Review Output

- Exposure Flowchart
- COC Chem. Parameters
- Input Data Summary
- User-Spec. COC Data...
- Transient Domenico Analysis...
- Baseline Risks...
- Cleanup Standards...

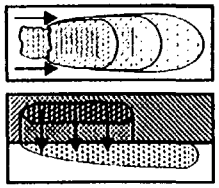
5. Commands and Options

New Site	Load Data...	Save Data As...	Quit
Print Sheet	Set Units	Custom Chem. Data...	*Help*

Exposure Pathway Identification

Site Name: Sauget Area 1
Location: Sauget Illinois
Compl. By: Marcus
Job ID: EE-05 Date: 15-Nov-00

1. Groundwater Exposure



Groundwater Ingestion/ Surface Water Impact

Receptor	None		
Type:	On-site	Off-site1	Off-site2

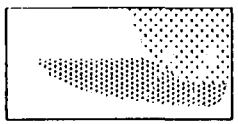
Source Media:

- ☐ Affected Groundwater
- ☐ Affected Soils Leaching to Groundwater

Distance to GW receptors

0	0	0	(cm)
On-site	Off-site1	Off-site2	
0	0	0	(cm)

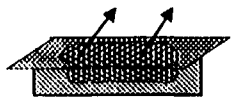
GW Discharge to Surface Water Exposure



- ☐ Swimming
- ☐ Fish Consumption
- ☐ Aquatic Life Protection

Enter ALP Criteria

2. Surface Soil Exposure

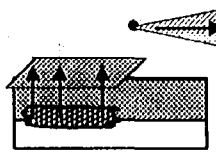


Direct Ingestion and Dermal Contact

Receptor	None	
Type:	On-site	No off-site receptors

Construction Worker ☐

3. Air Exposure

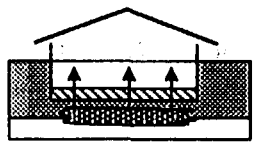


Volatilization and Particulates to Outdoor Air Inhalation

Receptor	Com.		
Type:	On-site	Off-site1	Off-site2
	0	0	0 (cm)

Construction worker ☐

- ☐ Affected Soils--Volatilization to Ambient Outdoor Air
- ☑ Affected Groundwater--Volatilization to Ambient Outdoor Air
- ☐ Affected Surface Soils--Particulates to Ambient Outdoor Air



Volatilization to Indoor Air Inhalation

Receptor	None	
Type:	On-site	No off-site receptors

- ☐ Affected Soils--Volatilization to Enclosed Space
- ☐ Affected Groundwater--Volatilization to Enclosed Space

4. Commands and Options

Main Screen | Print Sheet | Set Units | *Help*

■□ Exposure Factors & Target Risks | Exposure Flowchart

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

Commands and Options

Main Screen | Print Sheet | *Help*

Source Media Constituents of Concern (COCs)

Apply Raoult's Law ?

Selected COCs

COC Select: *Sort List:* ?

Add/Insert | Top | MoveUp
Delete | Bottom | MoveDown

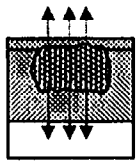
Representative COC Concentration ?

Selected COCs	Groundwater Source Zone		Soil Source Zone		Mole Fraction In Source Material
	Calculate / Enter Site Data		Calculate / Enter Site Data		
	(mg/L)	note	*(mg/kg)*	note	*(-)*
Tetrachloroethane, 1,1,2,2-	0.0E+0				
Methyl-2-pentanone, 4-	0.0E+0				
Benzene	1.1E-1				
Chlorobenzene	6.2E-1				
Chloroform	0.0E+0				
Ethylbenzene	0.0E+0				
Naphthalene	3.9E-1				
Tetrachloroethene	0.0E+0				
Toluene	0.0E+0				
Trichloroethene	0.0E+0				
Vinyl chloride	0.0E+0				

Transport Modeling Options

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

1. Vertical Transport, Surface Soil Column



Outdoor Air Volatilization Factors (?)

- ○ Surface soil volatilization model only
- ◉ Combination surface soil/Johnson & Ettinger models
  Thickness of surface soil zone [100] *(cm)*
- ○ User-specified VF from other model (Enter VF Values)

Indoor Air Volatilization Factors (?)

- ○ Johnson & Ettinger model
- ○ User-specified VF from other model (Enter VF Values)

Soil-to-Groundwater Leaching Factor

- ○ ASTM Model (?)
  - ☐ Apply Soil Attenuation Model (SAM)
  - ☐ Allow first-order biodecay (Enter Decay Rates)
- ○ User-specified LF from other model (Enter LF Values)

2. Lateral Air Dispersion Factor

wind (?)

	Off-site 1	Off-site 2	
○ 3-D Gaussian dispersion model			
○ User-Specified ADF	[1.00E+0]	[1.00E+0]	*(-)*

3. Groundwater Dilution Attenuation Factor

Calculate DAF using Domenico Model (?)

- ○ Domenico equation with dispersion only (no biodegradation)
- ○ Domenico equation first-order decay (Enter Decay Rates)
- ○ Modified Domenico equation using electron acceptor superposition (Enter Site Data)

(Enter Directly) Biodegradation Capacity [NC] *(mg/L)*

— or —

User-Specified DAF Values

- ○ DAF values from other model or site data (Enter DAF Values)

n o

4. Commands and Options

(Main Screen) (Print Sheet) (*Help*)

Site-Specific Soil Parameters

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

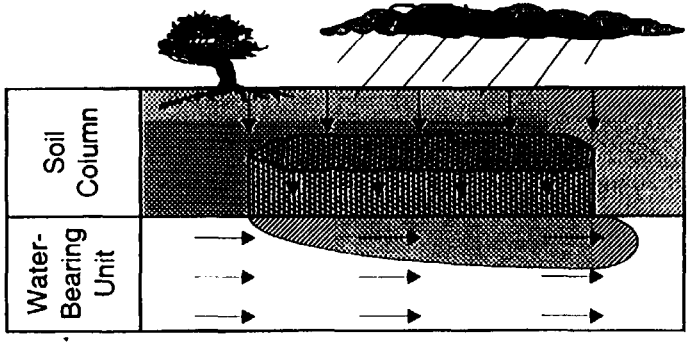
1. Soil Source Zone Characteristics (?)

Hydrogeology

	General Case Construction	
Depth to water-bearing unit	540	(cm)
Capillary zone thickness	11	(cm)
Soil column thickness	529	(cm)

Affected Soil Zone

Depth to top of affected soils		(cm)
Depth to base of affected soils		(cm)
Affected soil area		(cm^2)
Length of affected soil parallel to assumed wind direction		(cm)
Length of affected soil parallel to assumed GW flow direction		(cm)



2. Surface Soil Column

Predominant USCS Soil Type

Vadose Zone | Capillary Fringe | ults (?)

or (Calculate) or

Total porosity	0.43		(-)
Volumetric water content	0.3	0.387	(-)
Volumetric air content	0.13	0.043	(-)
Dry bulk density	1.5		(kg/L)
Vertical hydraulic conductivity	8.6E-1		(cm/d)
Vapor permeability	1.0E-11		(cm^2)
Capillary zone thickness	1.1E+1		(cm)

Net Rainfall Infiltration

Net infiltration estimate (in/yr)

or (NA) or

Average annual precipitation (in/yr)

Partitioning Parameters

Fraction organic carbon	0.002	(-)
Soil/water pH	7.57	(-)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | Help

Site-Specific Groundwater Parameters

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

1. Water-Bearing Unit

Hydrogeology

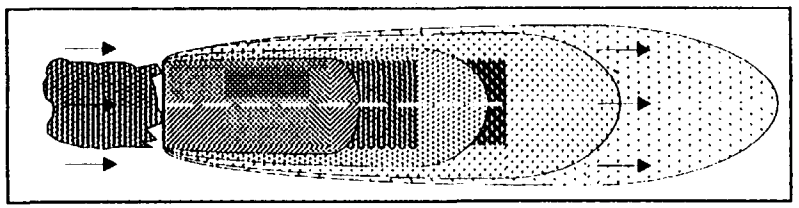
Groundwater Darcy velocity		(cm/d)
Groundwater seepage velocity		(cm/d)
or NA	or	
Hydraulic conductivity		(cm/d)
Hydraulic gradient		(-)
Effective porosity		(-)

Sorption

Fraction organic carbon--saturated zone		(-)
Groundwater pH		(-)

2. Groundwater Source Zone

Groundwater plume width at source	9906	(cm)
Plume (mixing zone) thickness at source		(cm)
or NA	or	
Saturated thickness		(cm)
Length of source zone		(cm)



3. Groundwater Dispersion

Model:

	GW Ingestion		Soil Leaching to GW		
	Off-site 1	Off-site 2	Off-site 1	Off-site 2	
Distance to GW receptors	0	0	0	0	(cm)
or NA	or		or		
Longitudinal dispersivity					(cm)
Transverse dispersivity					(cm)
Vertical dispersivity					(cm)

4. Groundwater Discharge to Surface Water

	Off-site 2	
Distance to GW/SW disharge point	NA	(cm)
Plume width at GW/SW discharge	0	(cm)
Plume thickness at GW/SW discharge	0	(cm)
Surface water flowrate at GW/SW discharge	0.0E+0	(cm^3/s)

5. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

Site-Specific Air Parameters

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus

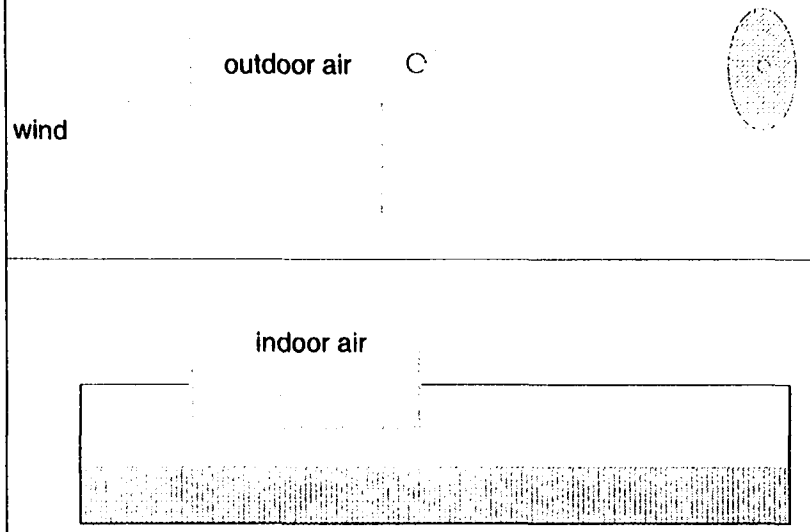
1. Outdoor Air Pathway

Dispersion in Air

	Off-site 1	Off-site 2	
Distance to offsite air receptor			(cm)
or (NA)		or	
Horizontal dispersivity			(cm)
Vertical dispersivity			(cm)

Air Source Zone

Air mixing zone height	200	(cm)
Ambient air velocity in mixing zone	225	(cm/s)
Areal particulate emission flux	6.9E-14	(g/cm^2/s)



2. Indoor Air Pathway

Building Parameters

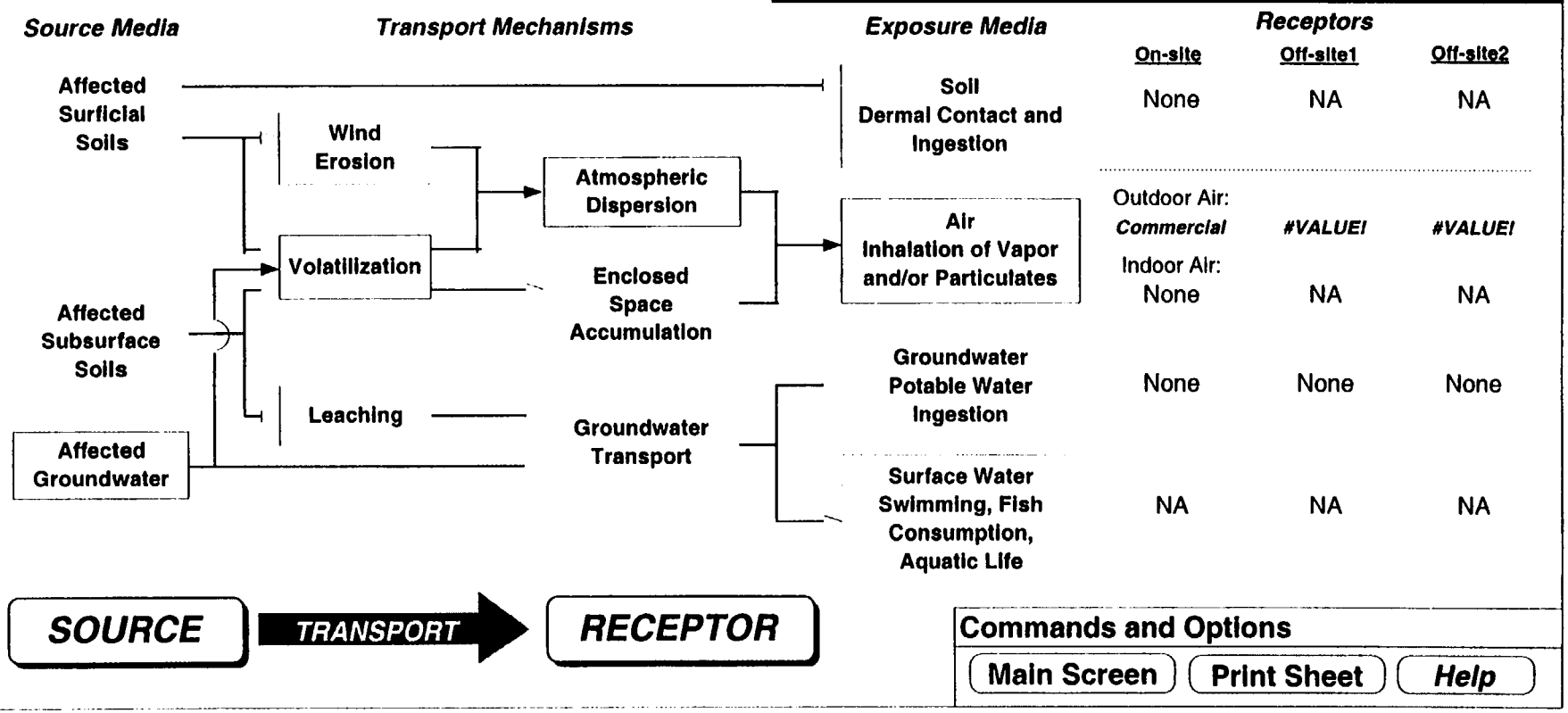
	Residential	Commercial	
Building volume/area ratio	200	300	(cm)
Foundation area	700000	700000	(cm^2)
Foundation perimeter	3400	3400	(cm)
Building air exchange rate	1.4E-4	2.3E-4	(1/s)
Depth to bottom of foundation slab	15	15	(cm)
Convective air flow through cracks	0.0E+0	0.0E+0	(cm^3/s)
Foundation thickness	15		(cm)
Foundation crack fraction	0.01		(-)
Volumetric water content of cracks	0.12		(-)
Volumetric air content of cracks	0.26		(-)
Indoor/Outdoor differential pressure	0		(g/cm/s^2)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | *Help*

Exposure Pathway Flowchart

Site Name: Sauget Area 1 | Job ID: EE-05
Location: Sauget Illinois | Date: 15-Nov-00
Compl. By: Marcus



Commands and Options

Main Screen | Print Sheet | Help

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients In air (cm2/s) Dair	ref	In water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg) partition		ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
Tetrachloroethane, 1,1,2,2-	79-34-5	C	168	4	7.10E-02	4	7.90E-06	4	0.00	Koc	4	2.00E-03	8.25E-02	4	6.50E+00	4	7.18E+02	4	-	-	-
Methyl-2-pentanone, 4-	108-10-1	O	100.2	5	7.35E-02	6	8.68E-05	7	-0.10	Koc	11	4.16E-04	1.72E-02	-	6.00E+00	5	1.90E+04	5	-	-	-
Benzene	71-43-2	A	78.1	PS	8.80E-02	PS	9.80E-06	PS	1.77	Koc	PS	5.55E-03	2.29E-01	PS	9.52E+01	PS	1.75E+03	PS	-	-	-
Chlorobenzene	108-90-7	AC	112.6	PS	7.30E-02	PS	8.70E-06	PS	2.34	Koc	PS	3.70E-03	1.53E-01	PS	1.18E+01	PS	4.72E+02	PS	-	-	-
Chloroform	67-66-3	C	119.4	4	1.04E-01	4	1.00E-05	4	1.93	Koc	4	3.39E-03	1.40E-01	4	2.08E+02	4	9.64E+03	4	-	-	-
Ethylbenzene	100-41-4	A	106.2	PS	7.50E-02	PS	7.80E-06	PS	2.56	Koc	PS	7.88E-03	3.25E-01	PS	1.00E+01	PS	1.69E+02	PS	-	-	-
Naphthalene	91-20-3	PAH	128.2	PS	5.90E-02	PS	7.50E-06	PS	3.30	Koc	PS	4.83E-04	1.99E-02	PS	2.30E-01	PS	3.10E+01	PS	-	-	-
Tetrachloroethene	127-18-4	C	165.83	PS	7.20E-02	PS	8.20E-06	PS	2.19	Koc	PS	1.84E-02	7.59E-01	PS	1.90E+01	PS	2.00E+02	PS	-	-	-
Toluene	108-88-3	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	Koc	A	6.30E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29	-	-	-
Trichloroethene	79-01-6	C	131.4	23	8.18E-02	6	1.05E-04	7	2.10	Koc	37	1.00E-02	4.14E-01	10	5.80E+01	23	1.00E+03	23	-	-	-
Vinyl chloride	75-01-4	C	62.5	4	1.06E-01	4	1.23E-05	4	1.70	Koc	38	8.60E-02	3.55E+00	4	2.66E+03	4	2.54E+03	4	-	-	-

Site Name: Sauget Area 1
Site Location: Sauget Illinois

Completed By: Marcus
Date Completed: 15-Nov-00

Job ID: EE-05

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_Inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_Inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
Tetrachloroethane, 1,1,2,2-	6.00E-02	R	-	-	7.00E-01	31	2.00E-01	R	2.86E-01	TX	5.80E-05	R	C	TRUE
Methyl-2-pentanone, 4-	8.00E-02	R	6.40E-02	TX	7.00E-02	R	-	-	-	-	-	-	-	FALSE
Benzene	3.00E-03	R	-	-	5.95E-03	R	2.90E-02	PS	2.99E-02	TX	8.29E-06	PS	A	TRUE
Chlorobenzene	2.00E-02	PS	6.20E-03	TX	2.00E-02	PS	-	-	-	-	-	-	D	FALSE
Chloroform	1.00E-02	R	-	-	3.00E-04	R	6.10E-03	R	3.05E-02	TX	2.30E-05	R	B2	TRUE
Ethylbenzene	1.00E-01	PS	9.70E-02	TX	1.00E+00	PS	-	-	-	-	-	-	D	FALSE
Naphthalene	4.00E-01	PS	3.56E-01	TX	1.40E+00	PS	-	-	-	-	-	-	D	FALSE
Tetrachloroethene	1.00E-02	PS	-	-	3.50E-02	PS	5.20E-02	PS	5.20E-02	TX	5.80E-07	PS	C-B2	TRUE
Toluene	2.00E-01	A,R	1.60E-01	TX	4.00E-01	A,R	-	-	-	-	-	-	D	FALSE
Trichloroethene	6.00E-03	R	-	-	2.10E-02	31	1.10E-02	R	7.33E-02	TX	1.71E-06	R	B2	TRUE
Vinyl chloride	-	-	-	-	-	-	1.90E+00	R	1.90E+00	TX	8.57E-05	R	A	TRUE

Site Name: Sauget Area 1

Site Location: Sauget Illinois

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
Tetrachloroethane, 1,1,2,2-	-	-	7.00E+00	NIOSH	-	-	8
Methyl-2-pentanone, 4-	-	-	2.05E+02	NIOSH	-	-	1
Benzene	5.00E-03	52 FR 25690	3.25E+00	PS	-	-	12.6
Chlorobenzene	1.00E-01	56 FR 3526 (30 Jan 91)	3.50E+02	PS	-	-	450
Chloroform	1.00E-01	56 FR 30266 (01 Jul 91)	9.78E+00	NIOSH	-	-	1
Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.35E+02	PS	-	-	1
Naphthalene	-	-	5.00E+01	PS	-	-	430
Tetrachloroethene	5.00E-03	56 FR 3526 (30 Jan 91)	6.80E+02	PS	-	-	49
Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	-	-	70
Trichloroethene	5.00E-03	52 FR 25690 (08 Jul 87)	2.69E+02	ACGIH	-	-	39
Vinyl chloride	2.00E-03	52 FR 25690 (08 Jul 87)	1.30E+01	ACGIH	-	-	1

Site Name: Sauget Area 1

Site Location: Sauget Illinois

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
Tetrachloroethane, 1,1,2,2-	0.5	0.009	0.92	2.2	0.025	4.4E-2	D	0.0005	S	0.005	S	45	45	H
Methyl-2-pentanone, 4-	0.5	-	-	-	-	-	-	0.005	S	0.05	S	14	14	H
Benzene	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.002	S	0.005	S	720	720	H
Chlorobenzene	0.5	0.041	0.43	1	0.069	1.5E-1	D	0.002	S	0.005	S	300	300	H
Chloroform	0.5	0.0089	0.47	1.1	0.0093	3.5E-2	D	0.0005	S	0.005	S	1800	1800	H
Ethylbenzene	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.002	S	0.005	S	228	228	H
Naphthalene	0.05	0.069	0.53	2.2	0.2	2.7E-1	D	0.01	32	0.01	32	258	258	H
Tetrachloroethene	0.5	0.048	0.9	4.3	0.25	2.2E-1	D	0.0005	S	-	-	720	720	H
Toluene	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.002	S	0.005	S	28	28	H
Trichloroethene	0.5	0.016	0.55	1.3	0.026	6.5E-2	D	0.001	S	0.005	S	1653	1653	H
Vinyl chloride	0.5	0.0073	0.21	0.51	0.0023	2.5E-2	D	0.002	S	0.01	S	2875	2875	H

Site Name: Sauget Area 1

Site Location: Sauget Illinois

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Sauget Area 1
Site Location: Sauget Illinois

Completed By: Marcus
Date Completed: 15-Nov-00

Job ID: EE-05

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6 yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		6100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	None	None
Soil Leaching to Groundwater Ingestion	None	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	None		
Outdoor Air:			
Particulates from Surface Soils	None	None	None
Volatilization from Soils	None	None	None
Volatilization from Groundwater	Commercial	#VALUE!	#VALUE!
Indoor Air:			
Volatilization from Subsurface Soils	None	NA	NA
Volatilization from Groundwater	None	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	NA	NA	(cm)
Soil leaching to groundwater receptor	NA	NA	NA	(cm)
Outdoor air inhalation receptor	0	NA	NA	(cm)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-5	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	NA
Soil leaching model	*NA*
Use soil attenuation model (SAM) for leachate?	NA
Air dilution factor	NA
Groundwater dilution-attenuation factor	NA

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	0.0E+0	NA	(cm^2)
W	Length of source-zone area parallel to wind	0.0E+0	NA	(cm)
W_{gw}	Length of source-zone area parallel to GW flow	NA		(cm)
U_{air}	Ambient air velocity in mixing zone	2.3E+2		(cm/s)
δ_{air}	Air mixing zone height	2.0E+2		(cm)
P_a	Areal particulate emission rate	NA		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	NA		(cm)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	*Capillary zone thickness*	1.1E+1			(cm)
h_v	Vadose zone thickness	5.3E+2			(cm)
ρ_s	Soil bulk density	1.5E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	2.0E-3			(-)
θ_T	Soil total porosity	4.3E-1			(-)
K_{vs}	Vertical hydraulic conductivity	8.6E-1			(cm/d)
k_v	Vapor permeability	1.0E-11			(cm^2)
L_{gw}	Depth to groundwater	5.4E+2			(cm)
L_s	Depth to top of affected soils	NA			(cm)
L_{base}	Depth to base of affected soils	NA			(cm)
L_{subs}	Thickness of affected soils	NA			(cm)
pH	Soil/groundwater pH	7.6E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.387	0.3	0.12	(-)
θ_a	Volumetric air content	0.043	0.13	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	NA	NA	(cm)
A_b	Foundation area	NA	NA	(cm^2)
X_{crk}	Foundation perimeter	NA	NA	(cm)
ER	Building air exchange rate	NA	NA	(1/s)
L_{crk}	*Foundation thickness*	NA	NA	(cm)
Z_{crk}	Depth to bottom of foundation slab	NA	NA	(cm)
η	Foundation crack fraction	NA	NA	(-)
dP	Indoor/outdoor differential pressure	NA	NA	(g/cm/s^2)
Q_s	Convective air flow through slab	NA	NA	(cm^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	NA	(cm)
I_f	Net groundwater infiltration rate	NA	(in/yr)
U_{gw}	Groundwater Darcy velocity	NA	(cm/d)
V_{gw}	Groundwater seepage velocity	NA	(cm/d)
K_s	Saturated hydraulic conductivity	NA	(cm/d)
I	Groundwater gradient	NA	(-)
S_w	Width of groundwater source zone	NA	(cm)
S_d	Depth of groundwater source zone	NA	(cm)
θ_{eff}	Effective porosity in water-bearing unit	NA	(-)
$f_{oc\,sat}$	Fraction organic carbon in water-bearing unit	NA	(-)
pH_{sat}	Groundwater pH	NA	(-)
	Biodegradation considered?	NA	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	NA	NA	NA	NA	(cm)
α_y	Transverse dispersivity	NA	NA	NA	NA	(cm)
α_z	*Vertical dispersivity*	NA	NA	NA	NA	(cm)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(cm)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(cm)
ADF	*Air dispersion factor*	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(cm^3/s)
W_{pl}	Width of GW plume at SW discharge	NA	(cm)
δ_{pl}	Thickness of GW plume at SW discharge	NA	(cm)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS (0 - 0 cm):
VAPOR AND DUST INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 cm)		Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)		Off-site 1 (0 cm)	Off-site 2 (0 cm)
		None	Construction Worker	None	None	None	Construction Worker	None	None
Tetrachloroethane, 1,1,2,2-									
Methyl-2-pentanone, 4-									
Benzene									
Chlorobenzene									
Chloroform									
Ethylbenzene									
Naphthalene									
Tetrachloroethene									
Toluene									
Trichloroethene									
Vinyl chloride									

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0 - 0 cm):

VAPOR AND DUST INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)			
	On-site (0 cm)		Off-site 1 (0 cm)	Off-site 2 (0 cm)	*On-site (0 cm)*		Off-site 1 (0 cm)	Off-site 2 (0 cm)
	None	Construction Worker	None	None	None	Construction Worker	None	None
Tetrachloroethane, 1,1,2,2-								
Methyl-2-pentanone, 4-								
Benzene								
Chlorobenzene								
Chloroform								
Ethylbenzene								
Naphthalene								
Tetrachloroethene								
Toluene								
Trichloroethene								
Vinyl chloride								

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS (100 - 0 cm):

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)
		None	None	None	None	None	None
Tetrachloroethane, 1,1,2,2-							
Methyl-2-pentanone, 4-							
Benzene							
Chlorobenzene							
Chloroform							
Ethylbenzene							
Naphthalene							
Tetrachloroethene							
Toluene							
Trichloroethene							
Vinyl chloride							

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (100 - 0 cm):

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)
	None	None	None	None	None	None
Tetrachloroethane, 1,1,2,2-						
Methyl-2-pentanone, 4-						
Benzene						
Chlorobenzene						
Chloroform						
Ethylbenzene						
Naphthalene						
Tetrachloroethene						
Toluene						
Trichloroethene						
Vinyl chloride						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)
		Commercial	#VALUE!	#VALUE!	Commercial	#VALUE!	#VALUE!
Tetrachloroethane, 1,1,2,2-	0.0E+0	8.5E+4			0.0E+0		
Methyl-2-pentanone, 4-	0.0E+0	1.5E+5			0.0E+0		
Benzene	1.1E-1	2.9E+4			3.8E-6		
Chlorobenzene	6.2E-1	4.9E+4			1.3E-5		
Chloroform	0.0E+0	3.8E+4			0.0E+0		
Ethylbenzene	0.0E+0	2.5E+4			0.0E+0		
Naphthalene	3.9E-1	3.3E+5			1.2E-6		
Tetrachloroethene	0.0E+0	1.2E+4			0.0E+0		
Toluene	0.0E+0	2.7E+4			0.0E+0		
Trichloroethene	0.0E+0	1.3E+4			0.0E+0		
Vinyl chloride	0.0E+0	1.9E+3			0.0E+0		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

GROUNDWATER: VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)
	Commercial	#VALUE!	#VALUE!	Commercial	#VALUE!	#VALUE!
Tetrachloroethane, 1,1,2,2-	2.4E-1			0.0E+0		
Methyl-2-pentanone, 4-	6.8E-1			0.0E+0		
Benzene	2.4E-1			9.3E-7		
Chlorobenzene	6.8E-1			8.7E-6		
Chloroform	2.4E-1			0.0E+0		
Ethylbenzene	6.8E-1			0.0E+0		
Naphthalene	6.8E-1			8.0E-7		
Tetrachloroethene	2.4E-1			0.0E+0		
Toluene	6.8E-1			0.0E+0		
Trichloroethene	2.4E-1			0.0E+0		
Vinyl chloride	2.4E-1			0.0E+0		

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

(Sum average expsosure concentrations from soil and groundwater routes.)

Constituents of Concern	On-site (0 cm) Commercial	On-site (0 cm) Construction Worker	Off-site 1 (0 cm) #VALUE!	Off-site 2 (0 cm) #VALUE!
Tetrachloroethane, 1,1,2,2-				
Methyl-2-pentanone, 4-				
Benzene	9.3E-7			
Chlorobenzene	8.7E-6			
Chloroform				
Ethylbenzene				
Naphthalene	8.0E-7			
Tetrachloroethene				
Toluene				
Trichloroethene				
Vinyl chloride				

Site Name: Sauget Area 1
Site Location: Sauget Illinois
Completed By: Marcus

Date Completed: 15-Nov-00
Job ID: EE-05

APPENDIX N

CALCULATION OF PRODUCE CONCENTRATIONS

APPENDIX N
CALCULATION OF PRODUCE CONCENTRATIONS

Constituents of potential concern (COPCs) in soil may enter plants through root uptake where they may accumulate in the below ground portion of the plants (e.g., root, tuber, bulb) and or be transported via transpiration to the above-ground shoots and fruits.

For above and below ground produce, plant COPC concentrations may be predicted from soil COPC concentrations through application of a model, recommended by the USEPA (1998) for conducting multipathway human health risk assessment at combustion facilities, which is dependent upon a simple soil-to-plant biotransfer factor (Br). The equation for implementing this model is:

Produce Concentration (mg/kg DW) = Cs x Br

Where:

C_s = Concentration of COPC in Soil (mg/kg) (in this risk assessment C_s = the surface soil exposure point concentration selected for evaluation of residential exposure scenarios)

Br = Plant-soil Bioconcentration Factor for Produce [(mg/kg DW Plant)/(mg/kg soil)] (plant-soil bioconcentration factors are available for both above and below ground produce)

COPCs in transect soils include arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and dieldrin. For organic constituents, root uptake factors are calculated as a function of log K_{ow}. The relationship between log K_{ow} and the root uptake factor is linear up to approximately a log K_{ow} of 4 (Travis and Arms, 1988). Above this value, the linear relationship no longer holds. For the organic COPCs identified in transect soils, the log K_{ow} values are as follows (USEPA, 1998):

benzo(a)anthracene	5.68
benzo(a)pyrene	6.13
benzo(b)fluoranthene	6.20
dibenzo(a,h)anthracene	6.55
Indeno(1,2,3-cd)pyrene	6.91
Dieldrin	5.27

These values are outside of the linear range, and there are no specific data in the literature for reliably quantifying plant uptake of these constituents.

For the limited data on PAHs that are in the literature, it is unclear what component of the plant concentration is due to soil uptake and what component is due to atmospheric depositions; PAHs are common in the environment due to the combustion of fossil fuels. Moreover, below-ground to above-ground constituent transfer within plants is dependent upon the process of transpiration. For organics with low solubilities, this is likely to be a negligible transfer process. Because all of this leads to great uncertainty in the plant uptake for high log K_{ow} organics, these constituents were not quantitatively evaluated in the produce pathway in the HHRA.

The attached modeling printouts, Tables N-1 and N-2, summarize the inputs and results for prediction of above and below ground produce concentrations used in evaluating the RME and MLE residential exposure scenarios.

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Travis, C.C. and A.D. Arms. 1988. Bioconcentration of Organics in Beef, Milk, and Vegetation. Health and Safety Research Division, Oak Ridge National Laboratory, Oak Ridge, TN. Env. Sci. Technol., Vol. 22, No. 3.

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TABLE N-1
EXPOSURE POINT CONCENTRATIONS (RME) - PRODUCE GROWN IN TRANSECT SOILS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Constituent Specific Inputs for Prediction of Produce Concentrations (a)			Transect 7 Predicted Produce Concentrations	
		Log Kow	Br_{ag}	$Br_{rootveg}$	Above Ground (mg/kg FW)	Below Ground (mg/kg FW)
Arsenic	7440-38-2	NA	6.33E-03	8.00E-03	1.42E-02	1.80E-02

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
FW - Fresh Weight
NA - Not Applicable.
RME - Reasonable Maximum Exposure.
(a) USEPA, 1998d. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Volume Two. Appendix A. United States Environmental Protection Agency. Solid Waste and Emergency Response. EPA530-D-98-001B. July 1998. Calculations discussed in Appendix N.
(b) USEPA, 1998. Methodology for Assessing Health Risks Associated with Multiple Pathways of Exposure to Combustor Emissions. USEPA National Center for Environmental Assessment. EPA600/R-98/137.
Above Ground Produce Concentration = $C_s \times Br_{ag} \times 0.15$, where vegetable moisture content is assumed to be an average 85% (b).
Below Ground Produce Concentration = $C_s \times Br_{rootveg} \times 0.15$, where vegetable moisture content is assumed to be an average 85% (b).
C_s = Concentration of constituent in soil.
Br_{ag} = Plant-soil bioconcentration factor for above ground produce.
$Br_{rootveg}$ = Plant-soil bioconcentration factor for below ground produce.

TABLE N-2
EXPOSURE POINT CONCENTRATIONS (MLE)- PRODUCE GROWN IN TRANSECT SOILS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Constituent Specific Inputs for Prediction of Produce Concentrations (a)			Transect 7 Predicted Produce Concentrations	
		Log Kow	Br_{ag}	$Br_{rootveg}$	Above Ground (mg/kg DW)	Below Ground (mg/kg DW)
Arsenic	7440-38-2	NA	6.33E-03	8.00E-03	9.49E-03	1.20E-02

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
FW - Fresh Weight.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.
NA - Not Applicable.
(a) USEPA, 1998d. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Volume Two. Appendix A. United States Environmental Protection Agency. Solid Waste and Emergency Response. EPA530-D-98-001B. July 1998. Calculations discussed in Appendix N.
(b) USEPA, 1998. Methodology for Assessing Health Risks Associated with Multiple Pathways of Exposure to Combustor Emissions. USEPA National Center for Environmental Assessment. EPA600/R-98/137.
Above Ground Produce Concentration = $C_s \times Br_{ag} \times 0.15$, where vegetable moisture content is assumed to be an average 85% (b).
Below Ground Produce Concentration = $C_s \times Br_{rootveg} \times 0.15$, where vegetable moisture content is assumed to be an average 85% (b).
C_s = Concentration of constituent in soil.
Br_{ag} = Plant-soil bioconcentration factor for above ground produce.
$Br_{rootveg}$ = Plant-soil bioconcentration factor for below ground produce.

APPENDIX O

ABSORPTION ADJUSTMENT FACTORS (AAFs)

APPENDIX O
ABSORPTION ADJUSTMENT FACTORS (AAFs)

Bioavailability is the measure of the degree to which a chemical may be systemically absorbed following exposure. In accordance with USEPA guidance (USEPA, 1989, 1992), absorption adjustment factors (AAFs) for bioavailability will be used in conducting this risk evaluation. To estimate the potential risk to human health that may be posed by the presence of constituents of potential concern (COPC) in various environmental media (such as soil, sediment, water or air), it is first necessary to estimate the human exposure dose of each chemical. The exposure dose is then combined with an estimate of the toxicity of the chemical to produce an estimate of risk posed to human health.

The estimate of toxicity of a chemical, termed the toxicity value, can be derived from human epidemiological data, but it is most often derived from experiments with laboratory animals. The toxicity value can be calculated based on the administered dose of the chemical (similar to the human exposure dose) or, when data are available, based on the absorbed dose, or internal dose, of the chemical.

In animals, as in humans, the administered dose of a chemical is not necessarily completely absorbed. Moreover, differences in absorption exist between laboratory animals and humans, as well as between different media and routes of exposure. Therefore, it is not always appropriate to directly apply a toxicity value to the human exposure dose. In many cases, a correction factor in the calculation of risk is needed to account for differences between absorption in the toxicity study and absorption likely to occur upon human exposure to a chemical. Without such a correction, the estimate of human health risk could be over- or under-estimated.

This correction factor is termed the absorption adjustment factor, or AAF. The AAF is used to adjust the human exposure dose so that it is expressed in the same terms as the doses used to generate the dose-response curve in the dose-response study. The AAF is the ratio between the estimated human absorption for the specific medium and route of exposure, and the known or estimated absorption for the laboratory study from which the dose-response value was derived.

$$\mathbf{AAFs} = \frac{\textbf{fraction absorbed in humans for the environmental exposure}}{\textbf{fraction absorbed in the dose - response study}}$$

The use of an AAF allows appropriate adjustments to be made to the administered dose of a chemical when the efficiency of absorption between environmental exposure and experimental exposure is known or expected to differ because of physiological effects and/or matrix or vehicle effects.

AAFs can have numerical values less than one or greater than one. When the toxicity curve is based on administered dose data, and if it is estimated that the fraction absorbed from the site-specific

exposure or medium is the same as the fraction absorbed in the laboratory study, then the AAF is 1.0. This does not mean that there is 100% absorption, only that the magnitude of absorption is the same in both cases. There are situations in which it is expected that the fraction absorbed from a site-related exposure would be higher than that in the laboratory study. There are also situations where the reverse could occur. Thus, use of AAFs provides more accurate and more realistic estimates of potential human health risk. In the absence of detailed toxicological information on a COPC, the following default AAF values are generally employed. A default AAF value of 0.01 is used for dermal exposure to organics, a value of 0.001 is used for dermal exposure to inorganics, and a value of 1.0 is employed for all other routes of exposure.

Dermal-Water AAFs

While most exposure scenarios in a risk assessment calculate an exposure dose, i.e., how much of a constituent is ingested or inhaled, the equation used to determine the dermal exposure to constituents in water calculates an absorbed dose through the use of a dermal permeability constant (see Section 5.3.3 and Table 5-42). Therefore, for the dermal-water pathway, the numerator of the AAF equation (presented above) is always 100%. Where the absorption value used in the denominator of the AAF equation is less than 100% (as is generally the case for many metals), the dermal-water AAF can have a value much greater than one.

Support for the Use of AAFs in Agency Guidance

The use of absorption factors is recommended by USEPA for use in risk assessment when the "medium of exposure in the site exposure assessment differs from the medium of exposure assumed by the toxicity value" (USEPA, 1989). In more recent guidance (USEPA, 1992), USEPA states:

> The applied dose, or the amount that reaches exchange boundaries of the skin, lung or gastrointestinal tract, may often be less than the potential dose if the material is only partly bioavailable. Where data on bioavailability are known, adjustments to the potential dose to convert it to applied dose and internal dose may be made.
>
> This may be done by adding a bioavailability factor (range: 0 to 1) to the dose equation. The bioavailability factor would then take into account the ability of the chemical to be extracted from the matrix, absorption through the exchange boundary, and any other losses between ingestion and contact with lung or gastrointestinal tract.

Oral Bioavailability of Chemicals in Soil

Oral bioavailability is a measure of the degree to which a chemical may be systemically absorbed following ingestion. Some chemicals are absorbed almost completely (100 percent bioavailability) when ingested in pure form. Other chemicals may pass through the body largely unabsorbed. In part,

the physical characteristics of the chemical affect the amount absorbed. In general, as the lipophilicity of a chemical increases, its absorption across the gastrointestinal tract increases.

In addition, the oral bioavailability or absorption of soil-bound chemicals is also dependent upon the rate at which chemicals dissociate from the soil or slag matrix in the gut. Soil-bound chemicals, particularly inorganics, are usually absorbed to a lesser degree than chemicals in pure form (Paustenbach, 1987; Goon et al., 1990, 1991; Sheehan et al., 1991; Sheppard et al., 1995, Magee et al., 1996). The reduced absorption is a result of hydrophobic attraction between the chemical and soil matrix. The greater the degree of affinity between a chemical and soil, the less likely that a soil-bound chemical will be absorbed upon ingestion. Absorption of the pure chemical in the gut is inherently evaluated in the USEPA reference doses and oral cancer slope factors as each is based on oral animal or human toxicity studies. Therefore, bioavailability, as used in this Risk Evaluation, refers to the "bioaccessibility" of the chemicals from the soil or slag matrix and represents the difference in absorption between chemicals in soil and chemicals in a pure (100 percent bioaccessible) form. Because the COPCs may be tightly bound in the slag and/or soil matrix at the site due to the process in which they were produced and "aging" of the chemicals over time, bioaccessibility may vary among the COPCs and is probably much less than 100%. However, due to the lack of site-specific data, the degree to which the COPCs are bioaccessible is uncertain.

The use of AAFs is particularly important when evaluating exposures to chemicals in soils. The bioavailability of chemicals in soils is reduced over time. This is caused by a series of physical and chemical processes that occur when a chemical initially contacts the soil. These processes result in the distribution of the chemical onto the surface of soil particles and sequestration of the chemical into the pores of the soil particles. With sufficient time (which varies by chemical and environmental medium), other processes (e.g., volatilization, biodegradation) remove the chemical from the surface of the soil particle such that the mass of the chemical that can be measured, using standard USEPA analytical techniques, resides primarily within the soil particle itself, and not on the surface. This process is termed "aging," and it results in the migration of the chemical into the interior of the soil particle so that less remains on the exterior surface. This sequestration or aging of the chemical that occurs over time results in reducing the "availability" of the chemical to be absorbed by living organisms. The process of aging reduces the accessibility of a chemical when ingested or dermally contacted by humans because the chemical is bound in the soil matrix and not extracted by stomach acid or skin moisture.

The specific mechanisms for sequestration of chemicals in soil are thought to include: (1) a rapid partitioning of hydrophobic molecules to the external surface of particulate matter in the soil (adsorption or binding to the soil) and (2) slow diffusion of molecules into micropores in the soil particles, remote from the surfaces of soil particles (aging).

Adsorption

Adsorption consists of the partitioning of chemicals from water (or free phase) to the solid organic phase in soil. The tendency for adsorption by a chemical onto soil particles to occur (expressed by the term K_d) is related to the hydrophobicity of the chemical (expressed by the term K_{oc}) and the fraction of organic carbon (f_{oc}) in the soil, as shown in the following equation:

$$K_d = K_{oc} * f_{oc}$$

High K_d and K_{oc} values, such as for PAHs and PCBs, indicate that the chemical is very hydrophobic and will strongly bind to organic matter in the soil.

Aging

In addition to decreased availability due to adsorption (a rapid process), availability of some persistent chemicals in soil decreases steadily over longer periods of time. This process known as aging has been the topic of numerous recent experimental studies and reviews (Alexander, 1995; Linz et al., 1997; Hatzinger and Alexander, 1995; White and Alexander, 1996). A recent review of over 268 technical papers (Linz et al., 1997) concluded the following regarding aging:

- For many persistent organic chemicals, there is a rapid initial phase of disappearance followed by a period in which loss of chemicals slows markedly, although the parent chemical is still present in the soil. Because the initial disappearance phase results from biodegradation, the subsequent decrease in rate of disappearance is thought to result from the sequestering of chemicals in soil such that they are generally unavailable to the micro-organisms that biodegrade them.

- When organic chemicals are added to soil containing naturally aged (and no longer biodegradable) chemicals, the freshly added chemicals are rapidly biodegraded.

- Chemicals that are aged are less readily extracted by solvents.

- Chemicals that are aged are less available to plants and animals.

- Chemicals that are aged are less toxic to plants and animals.

Alexander (1995) proposed that aging results from the slow diffusion of organic chemicals into micropores in soil particles. Organic chemicals bound to hydrophobic surfaces in micropores of soil particles are physically remote from the particle surface where partitioning between the organic and aqueous phase (and desorption of chemicals from soil) occurs. Desorption of organic chemicals from micropores back into the aqueous phase near the surface of the soil particle has been proposed to occur by slow diffusion and to follow a "tortuous path" of repeated sorption and desorption (Linz et al.,

1997). Therefore, desorption of aged/sequestered chemicals is likely "enormously retarded" relative to desorption of chemicals bound to the surface of soil particles (Linz et al., 1997).

Experimental evidence supports the conclusion that chemicals in micropores in aged soils are less available to microorganisms, plants or animals, and are relatively less toxic.

- Soil from a site (Newark soil) that was decontaminated and retreated with TCDD (not aged) then administered orally at a dose of 6 ug/kg, killed 19 of 20 guinea pigs, whereas aged Newark soil containing TCDD administered orally at a higher dose of 10 ug/kg, killed only 1 of 18 guinea pigs (Umbreit et al., 1988).

- PAHs were introduced into high organic content soils that had been sterilized to remove organisms that might degrade the PAHs. The soils were then aged for 0, 29 and 45 weeks, and a PAH degrading microorganism was introduced. After a further month, 60% of the PAHs were degraded in the unaged control, 45% in the 29-week soil, and 40% for the 45-week soil. The rates of degradation also decreased with increased aging, suggesting lower concentrations of PAHs available for metabolism, probably due to a decreased rate of transfer of the chemical from an unavailable to an available form. Chemical extraction tests indicated that adsorption of the PAHs to the soil was responsible for the reduction in its bioavailability to microorganisms (Hatzinger and Alexander, 1995).

These and other studies suggest that, for chemicals that have been immobilized in soil by the aging process, the total concentration of the chemical may be a very poor indicator of its toxicity. Primary factors promoting aging of a chemical in soil include (1) hydrophobicity of the chemical, (2) the length of time that the chemical has been present in the soil, and (3) the fraction organic content (f_{oc}) of the soil.

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The description of the AAFs used in this risk assessment are printed in the following order:

1,1,2,2-Tetrachloroethane
1,4-Dichlorobenzene
2,4,5-TP (Silvex)
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2-Chlorophenol
2-Nitroaniline

3-Methylphenol/4-Methylphenol
4,4-DDE
4-Chloroaniline
4-Methyl-2-pentanone
4-Nitroaniline
Acetone
alpha-BHC
Antimony
Arsenic
Benzene
beta-BHC
Cadmium
Carbazole
Chlorobenzene
Chloroform
Cis/Trans-1,2-Dichloroethene
Copper
delta-BHC
Dieldrin
Ethylbenzene
gamma-BHC
Heptachlor
Heptachlor epoxide
Lead
Molybdenum
Nickel
Nitrobenzene
Pentachlorophenol
Phenol
PAHs:
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene
- Naphthalene

Tetrachloroethene
Toluene
PCBs
Trichloroethene
Vanadium
Vinyl chloride

Zinc
Total 2,3,7,8-TCDD TEQ

AAFs FOR 1,1,2,2-TETRACHLOROETHANE

The oral CSF for 1,1,2,2-tetrachloroethane of 2E-01 $(mg/kg\text{-}day)^{-1}$ provided by IRIS (USEPA, 2000) is based on a gavage study in mice. Due to the lack of chemical-specific information in both mice and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1 for potential carcinogenic effects. An oral RfD has been provided by NCEA (as reported in the USEPA Region 9 PRG Table dated 10/1999) of 6E-02 mg/kg-day. Due to the lack of chemical-specific information, it is also assumed that the aforementioned AAFs for noncancer effects are also all equal to 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01 for both potential carcinogenic and noncarcinogenic effects.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.0 for both potential carcinogenic and noncarcinogenic effects.

The inhalation CSF for 1,1,2,2-tetrachloroethane is the same as and is based on the oral CSF of 2E-01 $(mg/kg\text{-}day)^{-1}$. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for 1,1,2,2-Tetrachloroethane

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

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AAFs FOR 1,2,4-TRICHLOROBENZENE

The oral RfD for 1,2,4-trichlorobenzene of 1E-02 mg/kg-day provided by IRIS (USEPA, 2000) is based on a gavage study in rats. Due to the lack of chemical-specific information in both rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (U.S. EPA, 1992) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.
The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation RfC provided by HEAST (USEPA, 1997) is 2E-01 mg/m^3 and corresponds to an inhalation RfD of 5.71E-02 mg/kg-day. The RfC is based on inhalation studies in rats, rabbits, dogs, and monkeys. Due to the lack of chemical-specific information, it is assumed that absorption is the same in these laboratory animals and humans. Therefore, the AAF (inhalation) is 1.

Summary of AAFs for 1,2,4-Trichlorobenzene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

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[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 1,4-DICHLOROBENZENE

The oral CSF for 1,4-dichlorobenzene of 2.4E-02 $(mg/kg\text{-}day)^{-1}$ provided by HEAST (USEPA, 1997) is based on an oral gavage study in mice. Due to the lack of chemical-specific information in both mice and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1 for potential carcinogenic effects. An oral RfD has been provided by NCEA (as reported in the USEPA Region 9 PRG Table dated 10/1999) of 3E-02 mg/kg-day. Due to the lack of chemical-specific information, it is also assumed that the aforementioned AAFs for noncancer effects are also all equal to 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01 for both potential carcinogenic and noncarcinogenic effects.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.0 for both potential carcinogenic and noncarcinogenic effects.

The inhalation RfC provided on IRIS (USEPA, 2000) for 1,4-dichlorobenzene is 8.0E-01 mg/m^3, and corresponds to an inhalation RfD of 2.3E-01 mg/kg-day. The RfC is based on an inhalation study in rats. Due to the lack of chemical-specific information, it is assumed that absorption of 1,4-dichlorobenzene is the same in rats and in humans. An inhalation CSF is provided by NCEA (as reported in the USEPA Region 9 PRG Table dated 10/1999) of 2.2E-02 $(mg/kg\text{-}day)^{-1}$. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1 for both potential carcinogenic and noncarcinogenic effects.

Summary of AAFs for 1,4-Dichlorobenzene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

USEPA. 1999. Region 9 Preliminary Remediation Goals (RGs) 1999. USEPA Region 9. San Francisco, CA. October 1, 1999. [URL: http://www.epa.gov/region09/waste/s-fund/prg/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR 2,4,5-TP (Silvex)

The oral RfD for 2,4,5-TP of 8E-03 mg/kg-day provided by IRIS (USEPA, 2000) is based on a dietary study in dogs. The IRIS file reports that 93% of a dose to rats was recovered in the urine; therefore, it is assumed here that absorption of 2,4,5-TP by the oral route of exposure is complete (i.e., 100%) in both dogs and humans. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.0.

Summary of AAFs for 2,4,5-TP (Silvex)

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 2,4,6-TRICHLOROPHENOL

The oral CSF for 2,4,6-trichlorophenol of 1.1E-02 $(mg/kg\text{-}day)^{-1}$ provided by IRIS (USEPA, 2000) is based on a dietary study in rats. Due to the lack of chemical-specific information in both rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for 2,4,6-trichlorophenol provided by IRIS (USEPA, 2000) is the same as and is based on the oral CSF of 1.1E-02 $(mg/kg\text{-}day)^{-1}$. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for 2,4,6-Trichlorophenol

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 2,4-DICHLOROPHENOL

The oral RfD for 2,4-dichlorophenol of 3E-03 mg/kg-day provided by IRIS (USEPA, 2000) is based on a drinking water study in rats. Due to the lack of chemical-specific information in both rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 2,4,6-Dichlorophenol

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 2-CHLOROPHENOL

The oral RfD for 2-chlorophenol of 5E-03 mg/kg-day provided by IRIS (USEPA, 2000) is based on a drinking water study in rats. Due to the lack of chemical-specific information in both rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 2-Chlorophenol

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 2-NITROANILINE AND 4-NITROANILINE

HEAST (USEPA, 1997) provides an inhalation RfC for 2-nitroaniline of 2E-04 mg/m^3 which corresponds to an inhalation RfD of 5.71E-05 mg/kg-day. The RfC is based on an inhalation study in rats. Due to the lack of chemical-specific information, it is assumed that absorption is the same in rats and humans, thus the AAF (inhalation) is 1.

Due to the lack of chemical-specific dose-response values for 4-nitroaniline, the dose-response value and AAFs for 2-nitroaniline will be used to evaluate this constituent.

Summary of AAFs for 2-Nitroaniline/4-Nitroaniline

Inhalation	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

AAFs FOR 3-METHYLPHENOL/4-METHYLPHENOL

The oral RfD for 3-methylphenol of 5E-02 mg/kg-day provided by IRIS (USEPA, 2000) is used to evaluate total 3- and 4-methylphenol. The RfD is based on a gavage study in rats. Due to the lack of chemical-specific information in both rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 3-Methylphenol/4- Methylphenol

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 4,4'-DDE

The oral CSF for 4,4'-DDE of 3.4E-01 $(mg/kg\text{-}day)^{-1}$ provided by IRIS (USEPA, 2000) is based on a dietary study in mice and hamsters. Due to the lack of chemical-specific information in mice and hamsters and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and hamsters for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 4,4'-DDE

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 4-CHLOROANILINE

The oral RfD for 4-chloroaniline of 4E-03 mg/kg-day provided by IRIS (USEPA, 2000) is based on a dietary study in rats. Due to the lack of chemical-specific information in rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 4-Chloroaniline

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR 4-METHYL-2-PENTANONE

The oral RfD for 4-methyl-2-pentanone (also known as methyl isobutyl ketone) is 8E-02 mg/kg-day (HEAST, 1997), and is based on an oral gavage study in rats. Due to the lack of chemical-specific information, it is assumed that absorption is the same in humans for drinking water, dietary, and soil ingestion exposures as in the dose-response study. Therefore, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation RfC of 8E-02 mg/m^3 provided in HEAST (USEPA, 1997) corresponds to an inhalation RfD of 2.29E-02 mg/kg-day. The RfC is based on an inhalation study in rats. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for 4-Methyl-2-Pentanone

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR ACETONE

The oral RfD for acetone (1E-01 mg/kg-day) provided in IRIS (USEPA, 2000) is based on a gavage study in rats. Absorption in the dose-response study is assumed to be 100%. Based on absorption information on other volatile organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil/sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1. A recommended default value (USEPA, 2000) for organics of 1% for dermal absorption from soil has been used. Thus, the AAF (dermal-soil) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study); thus the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for Acetone

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR ALDRIN

The oral CSF for aldrin of 1.7E+01 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on a dietary study in mice. The oral RfD for aldrin of 3E-05 mg/kg-day is based on a dietary study in rats. Due to the lack of chemical-specific information in both mice and rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (U.S. EPA, 1992) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.0.

Summary of AAFs for Aldrin

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR alpha-BHC

The oral CSF for alpha-BHC of 6.3E+0 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on a dietary study in mice. Due to the lack of chemical-specific information in both mice and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation unit risk factor of 1.8E-03 $(ug/m^3)^{-1}$ provided in IRIS corresponds to an inhalation CSF of 6.3E+0 $(mg/kg/day)^{-1}$ and is based on the mouse dietary study used to develop the oral CSF. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for alpha-BHC

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Integrated Risk Information System (IRIS). [URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR ANTIMONY

The USEPA oral RfD of 4E-04 mg/kg-day provided on IRIS (USEPA, 2000) is based on a drinking water study in rats using potassium antimony tartrate. Antimony is poorly absorbed across the gastrointestinal tract with one report of 15 percent absorption of ingested potassium antimony tartrate by rats (USEPA, 1990). It is assumed that the absorption of antimony in the diet and soil is the same as that in drinking water. Thus, the AAF (oral-diet), the AAF (oral-soil), and the AAF (oral-water) are all 1.

Dermal absorption of antimony is also reported to be poor, although specific estimates were not located (USEPA, 1990). A recommended default value for inorganics of 0.1 percent for the dermal absorption from soil (USEPA, 2000) has been used. Assuming that the gastrointestinal absorption of antimony from the drinking water study was 15 percent results in an AAF (dermal-soil) of 0.1%/15% = 0.007.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantifying risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, rather than adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For antimony, the AAF (dermal-water) is (100%)/(15%) = 6.7.

Summary of AAFs for Antimony

Oral-Water	1.0
Oral-Diet	1.0
Oral-Soil	1.0
Dermal-Soil	0.007
Dermal-Water	6.7

References

U.S. EPA. 1990. Drinking Water Criteria Document for Antimony. U.S. Environmental Protection Agency. Office of Drinking Water. April 1990.

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR ARSENIC

These AAFs are appropriate for use with the following dose-response values for arsenic:

- The oral reference dose (RfD) for arsenic, which is 3E-04 mg/kg-day (USEPA, 2000)
- The oral cancer slope factor (CSF) for arsenic, which is 1.5E+00 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000).
- The inhalation CSF for arsenic, which is 1.5E+01 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000).

Absorption in the Dose-Response Study

Both oral toxicity values for arsenic are based on epidemiological studies that characterized health effects in a large population of Taiwanese who consumed drinking water containing arsenic. The exact form of the ingested arsenic is unknown. For the purposes of the development of the AAFs, it has been assumed that the arsenic was a soluble inorganic arsenic salt (such as arsenic trioxide, As2O3, a smelting by-product). Several studies investigating the absorption of arsenic have been performed in humans and various animal species. Human studies are sufficiently extensive to strongly suggest that close to 100% of soluble inorganic arsenic in water is absorbed from the gastrointestinal tract. These human studies are reviewed in detail here.

One direct indication of absorption of an orally administered dose of a chemical is its urinary excretion. Several studies show that urinary excretion can account for the majority of an orally administered dose of arsenic. Buchet et al. (1981a) administered aqueous sodium arsenite (NaAsO2) as a single dose to three human volunteers. An average of 45% of the dose was excreted in the urine in four days. In a second study (Buchet et al., 1981b), four individuals given 125, 250, 500, or 1000 μg As/day orally for five days excreted 54, 73, 74, and 64% of the dose in urine, respectively, over 14 days. The average urinary excretion of arsenic for the four subjects was 66% of the administered dose. Crecelius (1977) reports that approximately 50% and 80% of orally administered aqueous arsenic was excreted in urine within 61 hours by a single individual in two experiments. The results of these studies represent the minimum amount of arsenic absorbed since the balance of the dose was not accounted for.

Data for human fecal excretion of arsenic do exist. Pomroy et al. (1980) gave 6 male subjects radiolabelled arsenic acid ($[^{74}As]H_3AsO_4$) in gelatin capsules followed by a glass of water. The presence of arsenic in the body, urine, and feces was measured using a whole body radiation counter. The authors report that for the six subjects the average total excretion over 7 days was $6.1 \pm 2.8\%$ in feces. It is not possible to determine how much of this arsenic was first absorbed and then excreted. The total recovery of arsenic (urine plus feces) was $68.4 \pm 4.0\%$ of the single oral dose. The remaining arsenic was reported to be present in the body tissues; virtually the entire dose could be accounted for. This suggests a minimum absorption of 94% (100% - 6%) of orally ingested arsenic.

A study by Bettley and O'Shea (1975) also reports excretion of arsenic in both urine and feces. Three subjects were exposed to 8.52 mg As (as 1.25 ml of Liq. Arsenicalis B.P.) in three portions 8 hours apart on one day. They found that at most 3.5% of the dose was excreted in feces over ten days. This suggests a minimum absorption of 96%. Urinary excretion averaged 52±4% of the exposure dose over 10 days (n=3). The remaining half of the dose was unaccounted for, although small amounts of arsenic were found in blood and hair.

In the Coulson study (Coulson et al., 1935), results from two humans each ingesting two forms of arsenic are reported. Less than 5% of an oral dose was excreted in feces whether the arsenic was taken as arsenic trioxide (As_2O_3) or as natural arsenic present in shrimp. The remainder of the dose, more than 95%, was recovered in urine in three experiments where total recoveries ranged from 74 to 115%. Based on the fecal excretion data from this study, it can be estimated that at least 95% of the ingested arsenic was absorbed. The fecal excretion data are consistent with those of Pomroy et al. (1980) and Bettley and O'Shea (1975).

Fecal excretion data from oral studies provide a minimum estimate of absorption, because it cannot be determined how much of the dose was first absorbed and then excreted into the feces. However, a study in humans injected intravenously with arsenic suggests that absorbed arsenic may be excreted, presumably from bile, into the feces. Mealy et al. (1959) administered radiolabelled arsenic by intravenous injection. Between 57% and 90% of the injected dose was recovered in urine in 10 days. Fecal excretion accounted for 1.3% of the dose after seventeen days in one individual. A second subject excreted 0.2% of the intravenous dose into the feces in one week. Both results indicate some excretion of arsenic into the feces. Virtually all of the remaining dose was recovered in the urine. Biliary excretion of arsenic has been demonstrated in rats, rabbits, and dogs (Klaassen, 1974; Gregus and Klaassen, 1986). This indicates that a portion of the arsenic found in feces in studies using oral dosing may have been first absorbed and then excreted.

The urinary excretion data from the oral studies discussed above provide minimum estimates of arsenic absorption ranging from 45% to 95%. The fecal excretion data suggest that, at a minimum, 95-96% of an orally administered dose of arsenic is absorbed. The study of intravenously administered arsenic suggest that biliary excretion can occur. Therefore, it can conservatively be concluded from the above studies that virtually 100% of an orally administered dose of soluble inorganic arsenic can be absorbed in humans.

Oral-Water AAF

The oral-water AAF for arsenic is defined as: (absorption of arsenic in humans from ingested water) / (absorption of arsenic in humans in the epidemiological study from ingested water). Since the route, matrix, and species are the same for the potential exposure in a risk assessment and the exposure in the dose-response study, the AAF is by definition 1.0. Moreover, the above results suggest that virtually all soluble inorganic arsenic administered orally in water can be absorbed from the gastrointestinal tract. Thus, it is assumed here that 100% of the arsenic was absorbed in the dose-

response studies, in which humans ingested arsenic as a component in drinking water, and in the exposure route of concern - human ingestion of drinking water. Therefore, the AAF can also be defined as (100%)/(100%) = 1.

Oral-Diet AAF

The AAF (oral-diet) for this chemical is defined as: (absorption in humans from ingested diet)/(absorption in humans from arsenic in water). Gastrointestinal absorption of arsenic from diet is assumed to be 100% in the absence of other information. Therefore, the AAF (oral-diet) is (100%)/(100%) = 1.

Oral-Soil AAF

The oral-soil AAF for arsenic is defined as: (absorption of arsenic in humans from ingested soil) / (absorption of arsenic in humans in the epidemiological study from ingested water).

An oral-soil AAF of 0.3 is recommended for arsenic in soil and dust in cases where site-specific information is not available. The 0.3 value is based on the high end of relative bioavailability estimates for arsenic ingested in soil and dust by *Cynomolgus* monkeys (Freeman et al., 1995).

The study was conducted to determine arsenic absorption from soil and house dust impacted by smelter activities near Anaconda, Montana. The Cynomolgus monkeys each received sequential treatments of iv sodium arsenate and three oral treatments: soil arsenic in capsules, house dust arsenic in capsules, and sodium arsenate solution administered by gavage. Absolute bioavailability values for arsenic administered in soil, dust, and solution were calculated based on (1) total urinary arsenic excretion and (2) blood arsenic levels, each normalized based on intravenous data. The bioavailability of arsenic in soil and dust relative to soluble arsenic in solution ranged from 10% to 30%, depending or whether urinary or blood values were used. Results from this study were used by USEPA to derive the oral-soil AAF of 0.183 and oral-dust AAF of 0.258 used in the risk assessment at the Anaconda Superfund site (Walker and Griffin, 1998).

Other Relevant Studies

Other studies of various forms of arsenic support the conclusion that arsenic in soil is poorly absorbed. At the Murray Smelter Superfund site in Utah, a site-specific relative bioavailability adjustment value for arsenic in soil of 0.26 was derived based on an immature swine study comparing absorption of arsenic in soil from the site to absorption of soluble sodium arsenate (Weis et al., 1996; USEPA,1997). In a similar swine study performed at the Ruston/North Tacoma Superfund site in Washington, the site-specific relative bioavailability adjustment value for arsenic in slag dust was 0.42 (USEPA, 1996). Groen et al. (1994) fed ore-containing soil or administered soluble arsenic iv, sequentially to beagle dogs. When compared to iv administration, bioavailability of arsenic from ore-containing soil was approximately 8%. In rabbits, the absorption of arsenic (primarily as Cu_3AsS_4) in soil from a site in

Anaconda, Montana was only 24%, while the absorption of a soluble form arsenic from water was 50% (Freeman et al., 1993). Rats fed soil containing mine waste absorbed only one tenth times as much arsenic as rats dosed with soluble arsenic (Yanez et al., 1993). Arsenic selenide, a highly insoluble form, was administered to humans as a fine powder and no increase in urinary arsenic was observed (Mappes, 1977). Thus, absorption in this study was probably low or negligible.

Derivation of the AAF (Oral-Soil) for Arsenic

An oral-soil AAF of 0.3 is recommended for arsenic in soil and dust in cases where site-specific information is not available. The 0.3 value is based on the high end of relative bioavailability estimates for arsenic ingested in soil and dust by *Cynomolgus* monkeys (Freeman et al., 1995). This study was selected to derive the oral-soil AAF for arsenic because, of the animals models studied thus far, the monkey is more physiologically and anatomically similar to humans than are rats, rabbits, swine, or dogs.

Dermal-Soil AAF

A recommended default value for inorganics of 0.1 percent for the dermal absorption of arsenic from soil (USEPA Region 4, 2000) has been used. Assuming that the gastrointestinal absorption of arsenic from drinking water is 100%, results in an AAF (dermal-soil) of 0.1%/100% = 0.001.

Dermal-Water AAF

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1 for both potential carcinogenic and noncarcinogenic effects.

Inhalation AAF

The inhalation unit risk for assessing carcinogenic effects of arsenic is 4.3E-03 $(\mu g/m^3)^{-1}$. This corresponds to an inhalation CSF of 15 $(mg/kg\text{-}day)^{-1}$, assuming a 70 kg adult breathes 20 m^3 air per day. The unit risk is based on human epidemiological studies, and it is assumed for the purposes of this report that inhalation absorption of arsenic in humans in the exposure scenarios is the same as that of humans in the dose-response study. It is assumed by USEPA that absorption of arsenic

adsorbed to respirable particles that are retained in the lung is 30%. Therefore, the AAF (inhalation) is (30%)/(30%) = 1.0 for carcinogenic effects.

Summary of Derived AAFs for Arsenic

Oral-Water	1
Oral-Diet	1
Oral-Soil	0.3
Dermal-Soil	0.001
Dermal-Water	1
Inhalation	1 (for carcinogenic effects)

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AAFs FOR BENZENE

The oral cancer slope factor range for benzene (0.015 to 0.055 $(mg/kg\text{-}day)^{-1}$) is based on inhalation data from an occupational epidemiological study. Therefore, it is assumed that 47% of an ingested dose will be absorbed, as determined below for an inhaled dose. Based on absorption information on other volatile organic compounds, it is assumed that absorption is the same in humans for inhalation and drinking water, diet, and soil or sediment ingestion exposures. The oral RfD for benzene of 3E-03 mg/kg-day provided by the NCEA is based on a drinking water study in mice. It is assumed that absorption in the dose-response study and absorption in humans is equivalent. Thus the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1 for potential carcinogenic and noncarcinogenic effects.

ENSR has used a recommended default value for organics of 1% for dermal absorption of benzene from soil and sediment (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%)/(47%) = 0.02 for both potential carcinogenic and noncarcinogenic effects.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For benzene, the AAF (dermal-water) is (100%)/(47%) = 2.13 for both potential carcinogenic and noncarcinogenic effects.

The inhalation CSF range for benzene of 0.0077 to 0.0273 $(mg/kg\text{-}day)^{-1}$ is based on epidemiological studies of humans exposed by inhalation (USEPA, 2000). Several studies in humans indicate that about 47% of an inhalation dose is absorbed, with a range between 28% to 60% (Owen, 1990). Since both the study used to derive the CSF and the exposure pathway of concern are inhalation of benzene by humans, the AAF (inhalation) for carcinogenic effects is 1.

The inhalation RfC of 6E-03 mg/m^3, which is equivalent to an inhalation RfD of 1.7E-3 mg/kg-day, provided by the NCEA is based on an inhalation study in mice. It is assumed that absorption of benzene in mice and humans is equivalent, thus the AAF (inhalation) for noncarcinogenic effects is 1.

Summary of AAFs for Benzene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.02
Dermal-water	2.13
Inhalation	1

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AAFs FOR beta-BHC

The oral CSF for beta-BHC of 1.8E+0 $(mg/kg\text{-}day)^{-1}$ provided by IRIS (USEPA, 2000) is based on a dietary study in mice. Due to the lack of chemical-specific information in both mice and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for beta-BHC of 1.8E+0 $(mg/kg\text{-}day)^{-1}$ provided by IRIS (USEPA, 2000) is based on the mouse dietary study used for the development of the oral CSF. Due to the lack of chemical-specific information, it is assumed that absorption is the same in mice and humans; therefore, the AAF (inhalation) is 1.

Summary of AAFs for beta-BHC

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

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AAFs FOR CADMIUM

These AAFs are appropriate for use with the following dose-response values for cadmium:

- The oral Reference Dose (RfD) for exposures to cadmium in food, which is 1.0E-3 mg/kg-day (USEPA, 2000)
- The oral Reference Dose (RfD) for exposures to cadmium in water, which is of 5E-04 mg/kg-day (USEPA, 2000)
- The inhalation cancer slope factor (CSF) for cadmium, which is 6.3 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000)

Absorption in the Dose-Response Study

The noncarcinogenic dose-response values for cadmium are based on a one-compartment toxicokinetic model that evaluated a large quantity of both human and animal toxicity data (Friberg et al., 1974; USEPA, 1985). The RfDs are based on the highest level of cadmium in the human renal cortex (i.e. the critical level) not associated with significant proteinuria (i.e. the critical effect). This critical level has been estimated to be 200 µg/gm wet weight human renal cortex. The toxicokinetic model assumes that 0.01% of the cadmium body burden is eliminated per day (USEPA, 1985). In deriving the RfDs for cadmium, USEPA assumed that absorption was different for cadmium ingested in food and water (the model itself does not provide estimates for absorption of cadmium ingested in water). Using a 5% absorption factor for drinking water exposure and a 2.5% absorption factor for dietary exposure, USEPA estimated that a daily intake of 0.005 and 0.01 mg/kg-day, respectively would be required to produce a concentration of 200 ug/gm wet weight in the renal cortex during a lifetime of exposure (USEPA, 2000). These values were divided by 10 to obtain the RfDs of 1E-03 (diet) and 5E-04 mg/kg-day (water). Because these absorption values were used by USEPA to derive the dose-response values for cadmium, they will also be used to determine the AAF values for cadmium.

It should be noted that USEPA (1993) performed a case study on cadmium to determine if there was adequate evidence to support the different media-specific (i.e., food and water) RfDs. In the study, information was used from 35 published studies where rats ingested cadmium in either rat chow or drinking water ad libitum for chronic durations and cadmium levels in the liver and/or kidney were subsequently measured. Based on the analysis, the bioavailability of cadmium ingested in food was not measurably different from that ingested in water in non-fasted rats (fed ad libitum). Instead, in this non-fasting scenario, total diet rather than the actual medium of exposure, appeared to be more of a determining factor for the uptake of cadmium from the GI tract. Based on these results, USEPA (1993) recommended that distinct RfDs for cadmium ingested in food and drinking water not be based on the assumption that the bioavailability of cadmium in drinking water is greater than that of cadmium in food (also published as Ruoff et al., 1994).

AAF (Oral-Water)

The AAF (oral-water) is defined for cadmium as: (absorption in humans from ingested water) / (absorption from water in the toxicokinetic model). Absorption of approximately 5% was assumed in the toxicokinetic model for cadmium administered orally in water. Therefore, since the toxicokinetic model is for the same route and matrix relevant to the human exposure of concern, the AAF is simply 1, or (5%)/(5%). This AAF is intended to be used with the RfD for water. As discussed above, USEPA (1993) concluded that, (1) in non-fasting scenarios, the absorption of cadmium ingested in water is likely the same as the absorption of cadmium ingested in the diet and (2) that distinct RfDs for cadmium ingested in food and drinking water should not be based on the assumption that the bioavailability of cadmium in drinking water is greater than that of cadmium in food (also published as Ruoff et al., 1994).

Therefore, using the RfD for cadmium ingested in water, with oral-water AAF of 1, may overestimate the toxicity of cadmium ingested in water.

AAF (Oral-Diet)

The AAF (oral-diet) is defined as: (absorption in humans from ingested diet)/(absorption from diet in the toxicokinetic model). Absorption of approximately 2.5% was assumed in the toxicokinetic model for absorption of cadmium from diet. Thus, since the toxicokinetic model is for the route and matrix relevant to human exposure, the AAF is simply 1. This AAF is intended to be used with the RfD for diet.

AAF (Oral-Soil)

The AAF (oral-soil) is defined for cadmium as: (absorption in humans from ingested soil) / (absorption from diet in the toxicokinetic model). The AAF (oral-soil) of 1 is derived below. This AAF is intended to be used with the RfD for diet.

Griffin et al. (1991) have studied the absorption of radiolabelled $^{109}CdCl_2$ present in an aqueous slurry with sand or clay soils. Crl:CD BR rats (4/sex/dose) were administered cadmium by IV (0.5 mg/kg), oral gavage of an aqueous solution (8 or 40 mg/kg), or oral gavage of an aqueous sandy-loam or clay-loam slurry (8 or 40 mg/kg). The cadmium containing soils were prepared by mixing a soil sample with an aqueous solution of $^{109}CdCl_2$, allowing the soil to dry, and then resuspending the soil in an aqueous slurry. Blood was collected at intervals up to 48 hours post-dosing and analyzed for ^{109}Cd by liquid scintillation counting. Absorption of cadmium was measured based on the area under the blood concentration vs. time curve (AUC), using either the IV group or the aqueous oral gavage group AUC as the comparative standard. The results of the Griffin et al. (1991) study are presented in Table 1.

Two points must be considered before evaluating the data in this experiment. First, the concentration of cadmium in soil that would support an 8 mg/kg-day dose in a 15 kg child assumed to ingest 200 mg

of soil per day would be 600,000 ppm. The concentration of cadmium in soil that would support this dose in a child assumed to exhibit pica behavior, i.e., ingest 10 g soil/day, would be 12,000 ppm. Likewise, a 40 mg/kg dose is equivalent to exposure by a pica child to soils that are 60,000 ppm cadmium. These high dose levels may have been required in the experiment based on detection limit constraints. However, soil concentrations of cadmium at Superfund sites are unlikely to be as high any either of these values. Therefore, only the results of the lower test groups will be considered in the development of the AAF.

Second, the method of preparation of cadmium-containing soils is unlikely to mimic the physical state of cadmium in weathered soils, where it would be expected to be present in complex mineralogical forms. However, since this is the only study available that evaluates cadmium absorption from soils, it must be considered.

From the data presented in Table 1, it is evident that absorption from both the sand- and clay-based soils was less than absorption of the same dose of cadmium when administered by oral gavage. The average relative absorption of cadmium from the soils (compared to the oral aqueous gavage data) is 41.5%. Thus, oral absorption of cadmium from soils is roughly half of that from an aqueous solution.

Table 1. Data from Griffin et al. (1991) for Cadmium

TEST GROUP	ROUTE OF EXPOSURE	DOSE (mg/kg)	ABSOLUTE ABSORPTION*	RELATIVE ABSORPTION**
1	IV	0.5	100	-
2	Oral/Water	8	0.95	100
3	Oral/Water	40	1.85	100
4	Oral/Sand	8	0.6	61.9
5	Oral/Sand	40	1.6	84.5
6	Oral/Clay	8	0.2	21.1
7	Oral/Clay	40	0.2	13.0

* Absolute absorption is relative to IV dose group data.
** Relative absorption is relative to aqueous oral gavage dose group data at the same dose.

A more recent study also indicates that oral absorption of cadmium from soils is roughly half of that from an aqueous solution in rats (Schilderman et al., 1997). Based on blood cadmium levels, bioavailability in rats ingesting cadmium chloride in soil was 43% of that in rats ingesting cadmium chloride in saline solution. The authors concluded that the soil matrix significantly reduced the absorption of cadmium from the gastrointestinal tract.

One must now attempt to use these data for human exposure assessment. The estimate of human oral absorption of cadmium comes from a toxicokinetic model that was based on many human and animal studies. In that model, the absorption of cadmium from food (2.5%) is estimated to be half of that from drinking water (5%) in humans. Although the absolute absorption values are not directly comparable between rats and humans, a comparison of absorption from soil and water can be made between the two species. Cadmium absorption from soil in rats is approximately half of that from water, as shown above. Assuming that the comparison of cadmium absorption from soil and water in rats can be extrapolated to humans, then it can be concluded that absorption in humans of cadmium from soil should be half that from water. In this case, human absorption of cadmium from water is 5%. Therefore, oral absorption of cadmium from soil would be 2.5%, which is equivalent to human absorption of cadmium from food. The AAF (oral-soil) is defined for cadmium as: (absorption in humans from ingested soil) / (absorption from diet in the toxicokinetic model). Therefore, the AAF for oral exposure to cadmium containing soils, to be used with the RfD for cadmium ingested in food, is:

AAF = (2.5%) / (2.5%) = 1.

A typical default assumption in the absence of data would be simply to assume that absorption from soil was the same as from diet. Therefore, using either approach gives similar results; thus the AAF (oral-soil) is 1.

The Griffin et al. (1991) study does suggest that site-specific information derived from the actual soils present could result in an AAF that is either lower or higher than that derived here. Such information could be obtained either from appropriate absorption studies in animals or from in vitro extraction experiments under conditions mimicking the stomach, i.e., pH 2.

AAF (Dermal-Soil)

The AAF (dermal-soil) is defined for this chemical as: (absorption in humans from dermal contact with soil) / (absorption from food in the toxicokinetic model). The AAF (dermal-soil) of 0.04 is derived below. This value is to be used with the RfD for diet.

A recommended default value for inorganics of 0.1 percent for the dermal absorption of cadmium from soil (USEPA, 2000) has been used. Assuming that the gastrointestinal absorption of cadmium from food is 2.5%, results in an AAF (dermal-soil) of 0.1%/2.5% = 0.04.

AAF (Dermal-Water)

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming or potable water when bathing. The methodology for quantitating risks posed by these exposure pathways uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. The dose-response value for cadmium, however, is based on administered dose. Thus, the AAF (dermal-water) is defined as: (100%) / (absorption from diet in the toxicokinetic model).

To derive the AAF (dermal-water), the absorption from food of 2.5% assumed in the toxicokinetic model is used. Accordingly, the AAF (dermal-water) is 100% / 2.5% = 40. This value is for use with the RfD for diet.

AAF (Inhalation)

The AAF (inhalation) is defined for potential carcinogenic effects as: (absorption in humans from inhaled materials)/(absorption in workers from inhaled materials). The inhalation AAF (carcinogenic) of 1.0 is derived below.

The inhalation unit risk for cadmium (1.8×10^{-3} $(\mu g/m^3)^{-1}$) is derived from a human occupational inhalation study. This corresponds to an inhalation CSF of 6.3 $(mg/kg/day)^{-1}$. It is assumed that absorption in humans from respirable soil particles retained in the lung is the same as absorption of cadmium by workers in the dose-response study. Thus, the AAF (inhalation) for carcinogenic effects is 1.

Summary of AAFs Derived for Cadmium

Oral-Water	1	(use with RfD-water: 0.0005 mg/kg-day)
Oral-Diet	1	(use with RfD-food: 0.001 mg/kg-day)
Oral-Soil	1	(use with RfD-food: 0.001 mg/kg-day)
Dermal-Soil	0.04	(use with RfD-food)
Dermal-Water	40	(use with RfD-food)
Inhalation	1	(carcinogenic - use with inhalation CSF: 6.3 $(mg/kg\text{-}day)^{-1}$)

References

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[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR CARBAZOLE

The oral CSF for carbazole of 2E-02 $(mg/kg\text{-}day)^{-1}$ provided in HEAST (USEPA, 1997) is based on a dietary study in mice. Due to the lack of chemical-specific information in both mice and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs Derived for Carbazole

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

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[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR CHLOROBENZENE

The oral RfD for chlorobenzene of 2.0E-02 mg/kg-day provided in IRIS (USEPA, 2000) is based on a study in which dogs were orally given capsules containing chlorobenzene. Limited information is available about the absorption of chlorobenzene. However, it is assumed that gastrointestinal absorption for this compound is complete. Furthermore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet and soil or sediment ingestion exposures. Thus the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

A recommended default value for organics of 1% absorption from dermal exposures to soil and sediment (USEPA, 2000) has been used. Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For chlorobenzene, the AAF (dermal-water) is 100%/100% = 1.

The inhalation RfD of 5.7E-03 mg/kg-day is based on a chronic inhalation reference concentration of 2.0E-02 mg/m^3 provided in HEAST (USEPA, 1997) derived from a 120-day intermittent inhalation study of rats. It is assumed that the absorption of inhaled chlorobenzene in humans in the environment is the same as in the dose-response study. Thus the AAF (inhalation) is 1.

Summary of AAFs for Chlorobenzene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs for CHLOROFORM

The oral CSF for chloroform (6.1E-03 $(mg/kg\text{-}day)^{-1}$) is based on a drinking water study in rats. The oral RfD (1E-02 mg/kg-day) is based on a feeding study in dogs with the chloroform in a toothpaste matrix. Both values are provided in IRIS (USEPA, 2000). ATSDR (1988) and USEPA (1984) both report that absorption of chloroform by the gastrointestinal tract is complete regardless of vehicle. Thus, in both cases absorption in the dose-response studies is assumed to be 100%, and the derived AAFs for oral and dermal exposure routes will be the same for evaluating both carcinogenic and noncarcinogenic effects. Therefore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, soil, and sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

ENSR has used a recommended default value for VOCs of 1% for dermal absorption from soil (USEPA, 2000). Thus, the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For chloroform, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for chloroform (8.1E-02 $(mg/kg\text{-}day)^{-1}$) provided in IRIS (USEPA, 2000) is based on a corn oil gavage study in mice. The CSF is defined in units of metabolized dose. Thus, the exposure dose of the risk assessment must be adjusted to a metabolized dose. In this case, the AAF is defined as the fraction of an inhalation exposure dose that is metabolized by humans. Adjusting the exposure dose by multiplying it by this AAF will yield an estimated human metabolized dose. This estimate can be multiplied by the cancer slope factor to yield an estimate of cancer risk.

Experimental data show that humans inhaling chloroform absorb and metabolize it differently than do rodents who receive it by gavage or by drinking water. First, although 100% absorption of chloroform in humans upon inhalation is assumed by USEPA (USEPA, 2000), the uptake of chloroform from inspired air in humans is less than 100%. Astrand and Gamberale (1978) measured the uptake of several fat soluble gases in 45 humans and found that the uptake of the gas into the body approaches zero as the alveolar concentration approaches the concentration in the inspired air. Morgan et al. (1970) found a similar result. In their experiments, they gave humans a single breath of radiolabelled chloroform, which was held for 20 seconds. Subjects were instructed to exhale twice before measurements were taken. Absorption would be expected to be high in such an experiment because

the blood chloroform and alveolar concentrations of chloroform were zero. Indeed, 5.5% of the dose was exhaled immediately and 94.5% was taken up. After one hour, 10% of the dose had been exhaled unchanged. Thus, the metabolized dose could have been no higher than 90% and was probably substantially lower due to fat storage.

Retention and metabolism of inhaled chloroform would be expected to be lower in cases of continuous or intermittent exposures, versus the single exposure as studied by Morgan et al. (1970). The net rate of absorption will be reduced as the concentration of chloroform builds up in the blood. This was also demonstrated with exposure of humans to methylene chloride at a constant concentration (Morgan et al., 1970). The concentration in the expired air increased rapidly during the first hour and then plateaued. Thus, after equilibrium had been attained, the rate of absorption was low.

Two studies are available that measured the amount of chloroform retained in the body after continuous exposures. Davidson et al. (1982) reported the results of Lehmann and Hasegawa who measured the retention of chloroform during anaesthetic exposures. The method of analysis was a measurement of chloride in inspired and expired air. The average reported retention was 64% of the administered dose at 20 minutes, which was reported to be an equilibrium value. Retention in this case is a measure of metabolism and storage. Thus, using retention as a surrogate for metabolism will overestimate metabolized dose.

Smith et al. (1973) presented similar data. They measured chloroform in arterial blood and venous blood by a gas chromatographic method. Davidson et al. (1982) calculated from these data that retention was 67%. The average of these two values (65.5%) can be taken as an estimate of the retention of chloroform in humans who are inhaling it continuously or intermittently.

As noted above, human experimental data indicates that approximately 66% of an inhaled dose is retained and therefore that a maximum of 66% of a continuously inhaled dose of chloroform is metabolized. Thus, the AAF (inhalation) for potential carcinogenic effects is 0.66 and exposure doses in risk assessments must be multiplied by 0.66 to convert the exposure dose into an appropriate estimate of the metabolized dose.

The NCEA provides an inhalation RfD for chloroform of 8.6E-05 mg/kg-day, as reported by USEPA Region 9 in its PRG tables (USEPA, 1999). Due to a lack of information on what the value is based on, it is assumed that the AAF (inhalation) for noncarcinogenic effects is 1.

Summary of AAFs for Chloroform

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01

Dermal-Water	1
Inhalation	0.66 (carcinogenic effects)
	1 (noncarcinogenic effects)

References

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[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR CIS-1,2-DICHLOROETHYLENE

The oral RfD for cis-1,2-dichloroethylene (1.0E-02 mg/kg-day) is based on an oral gavage study in rats as provided in HEAST (USEPA, 1997). Absorption in the dose-response study is assumed to be 100%. It is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral soil) are all 1.

A recommended default value has been used for VOCs of 1% for dermal absorption from soil (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For cis-1,2-dichloroethylene, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for cis-1,2-Dichloroethylene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR COPPER

The oral RfD for copper (3.7E-02 mg/kg-day) is converted from a drinking water standard of 1.3 mg/L, and is based on an oral study with copper sulfate in humans (USEPA, 1997). It is assumed that this was a dietary study and that the absorption from diet is the same as the absorption from drinking water. Thus, the AAF (oral-water) and the AAF (oral-diet) are both 1. It is also assumed that the gastrointestinal absorption from diet and soil is the same. Thus, the AAF (oral-soil) is 1.

The USEPA (USEPA, 2000) recommended default value of 0.1% for dermal absorption of inorganics was assumed for dermal absorption of copper. According to Weber et al. (1969) ingested copper salts are 60% absorbed in humans from the diet. Thus, the AAF (dermal-soil) is 0.1%/60% = 0.002.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For copper, the AAF (dermal-water) is (100%)/(60%) = 1.67.

Summary of AAFs for Copper

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.002
Dermal-water	1.67

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

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AAFs FOR gamma-BHC/delta-BHC

The oral RfD for gamma-BHC of 3E-04 mg/kg-day provided in IRIS (USEPA, 2000) is based on a dietary study in rats. The oral CSF of 1.3E+0 $(mg/kg\text{-}day)^{-1}$ is based on a dietary study in mice. Due to the lack of chemical-specific information in mice, rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for gamma-BHC/delta-BHC

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1

References

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). PB97-921199.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
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USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR DIELDRIN

The oral RfD for dieldrin of 5E-05 mg/kg-day is based on a dietary study in rats. The oral CSF for dieldrin of 1.6E+1 $(mg/kg\text{-}day)^{-1}$ is based on a dietary study in mice. Both values are provided in IRIS (USEPA, 2000). Due to the lack of chemical-specific information in mice, rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for dieldrin of 1.6E+1 $(mg/kg\text{-}day)^{-1}$ is based on the oral CSF. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Dieldrin

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR ETHYLBENZENE

The oral RfD for ethylbenzene (0.1 mg/kg-day) is based on an olive oil gavage study in rats (USEPA, 2000). It has been reported that rabbits orally administered ethylbenzene excreted between 72% and 92% of the administered dose as metabolites in urine (Owen, 1990). A study in rats found 84% recovery after a single oral dose (ATSDR, 1989). These studies represent minimum estimates of the absorbed dose, so it was assumed that 100% of the gavage dose administered in the dose-response study was absorbed. Furthermore, it was assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

A recommended default value for organics of 1% absorption from dermal exposures to soil and sediment has been used (USEPA, 2000). Thus, the AAF (dermal-soil/sediment) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For ethylbenzene, the AAF (dermal-water) is 100%/100% = 1.

The inhalation RfC for ethylbenzene is 1.0 mg/m^3 (IRIS) (USEPA, 2000), which is equivalent to 0.29 mg/kg-day assuming a 70 kg person breathes 20 m^3/day. This RfC is based upon an inhalation assay in rats and rabbits in which developmental toxicity was studied. Limited absorption information for human volunteers exposed by inhalation suggests that, on average, 64% of an inhaled dose is absorbed (USEPA, 1987). A study in rats suggests approximately 44% of a dose is absorbed (USEPA, 1987). However, due to serious limitations in both of these studies, it is assumed that absorption in humans, rats, and rabbits is similar. Therefore, the AAF (inhalation) is 1.

Summary of AAFs for Ethylbenzene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

References

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[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

AAFs FOR HEPTACHLOR

The oral RfD for heptachlor of 5E-04 mg/kg-day provided in IRIS (USEPA, 2000) is based on a dietary study in rats. The oral CSF of 4.5 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on a dietary study in mice. Due to the lack of chemical-specific information in mice, rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and rats for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF of 4.5 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on the oral CSF mouse dietary study. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Heptachlor

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR HEPTACHLOR EPOXIDE

The oral RfD for heptachlor epoxide of 1.3E-05 mg/kg-day provided in IRIS (USEPA, 2000) is based on a dietary study in dogs. The oral CSF of 9.1 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on a dietary study in mice. Due to the lack of chemical-specific information in mice, dogs and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and dogs for drinking water, diet, and soil ingestion exposures. Therefore, the AAF (oral-water), AAF (oral-diet), and the AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF of 9.1 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2000) is based on the oral CSF mouse dietary study. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Heptachlor

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR MOLYBDENUM

The oral RfD for molybdenum of 5E-03 mg/kg-day provided in IRIS (USEPA, 2000) is based on a 6-year to lifetime human dietary study, although effects of human ingestion of molybdenum in drinking water have also been studied. It is assumed that absorption of molybdenum is complete and does not differ significantly between drinking water, diet, and soil consumption. Therefore, the AAF (oral-water), AAF (oral-diet), and AAF (oral-soil) are all 1.

A recommended default value (USEPA, 2000) for inorganics of 0.1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil) is 0.1%/100% = 0.001.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for Molybdenum

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.001
Dermal-Water	1

References

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL: http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

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AAFs FOR NICKEL

These AAFs are appropriate for use with the following dose-response values for nickel:

- The oral Reference Dose (RfD) for soluble nickel salts, which is 2E-02 mg/kg-day (USEPA, 2000)
- The inhalation cancer slope factor (CSF) for nickel refinery dust, which is 8.4E-01 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000)

Absorption in the Dose-Response Study

The USEPA oral dose-response value for the noncarcinogenic effects of nickel (2E-02 mg/kg-day) is based on a dietary study of nickel sulfate in rats. The RfD is to be used with both subchronic and chronic exposures. The RfD is based on administered dose units. Unfortunately, no detailed studies exist that measure the absorption of nickel from dietary components in the rat or any other laboratory animal. The absorption data for nickel in laboratory animals are limited to absorption from drinking water. Data do exist for absorption of nickel in humans from both drinking water and the diet. Comparison of the absorption of nickel from drinking water between laboratory animals and humans reveals that percent absorption is very similar for both, and that virtually all of the absorbed nickel is rapidly eliminated in the urine (USEPA, 1993). Therefore, for the purposes of developing AAFs for nickel, it will be assumed that the percent absorption of nickel from the diet is the same for humans and laboratory animals, and that urinary excretion is an accurate measurement of the amount absorbed. The absorption of nickel in the diet is discussed below.

Absorption from Diet

USEPA (1993) evaluated three studies where nickel was ingested by humans in food, using a pharmacokinetic model based on rate of urinary excretion (Horak and Sunderman, 1983; McNeeley et al., 1972; Sunderman et al., 1989). Estimated bioavailability of nickel in food ranged from 1.0 to 1.8%. Two additional studies show similar results. Tedeschi and Sunderman (1957) and Nomoto and Sunderman (1970) indicate that human absorption of nickel from diet is 1-2%.

The average of this range (1.5%) is pooled with the USEPA (1993) estimates of 1.0, 1.2, and 1.8, to derive a mean of 1.3%, which is used here as an estimate of absorption of nickel from the diet for both humans and rats.

AAF (Oral-Water)

The AAF (oral-water) is defined as: (absorption of nickel in humans from ingested water) / (absorption of nickel in rats from diet).

In 1993, USEPA performed a case study to determine if there was adequate evidence to support the

derivation of a relative bioavailability factor for nickel in food and drinking water that could be used for assessing risks to the general population (USEPA, 1993). Eleven key studies on bioavailability of nickel ingested by humans as well as 8 studies on bioavailability of nickel administered to animals were evaluated using a pharmacokinetic model based on rate of urinary excretion. The conclusion of the case study was that, for non-fasting scenarios, there was no difference between the bioavailability of nickel ingested in water or in food (USEPA, 1993; Ruoff et al., 1994). Total diet, rather than the actual medium of exposure, appears to be more of a determining factor for the uptake of nickel from the GI tract. Therefore, for typical (non-fasting) human exposure scenarios, the bioavailability of nickel ingested in water is approximately equal to the bioavailability of nickel ingested in food. Therefore, the AAF (oral-water) is 1.

AAF (Oral-Diet)

The AAF (oral-diet) is defined as: (absorption in humans from ingested diet) / (absorption in rats from ingested diets). The AAF (oral-diet) of 1.0 is derived below.

Absorption in humans and rodents is assumed to be similar. USEPA (1993) evaluated three studies where nickel was ingested by humans in food, using a pharmacokinetic model based on rate of urinary excretion. Estimated bioavailability of nickel in food ranged from 1.0 to 1.8%.

Two additional studies show similar results. Tedeschi and Sunderman (1957) and Nomoto and Sunderman (1970) indicate that human absorption of nickel from diet is 1-2%. The average of this range (1.5%) is pooled with the USEPA (1993) estimates of 1.0, 1.2, and 1.8 to derive a mean estimate of 1.3%, which is used here as an estimate of the fractional absorption of nickel from diet. Thus, the AAF (oral-diet) is (1.3%)/(1.3%) = 1.

AAF (Oral-Soil)

The AAF (oral-soil) is defined as: (absorption in humans from ingested soil) / (absorption in rats from diet). It is likely that nickel absorption from ingested soil of some types would be less than its absorption from dietary components. However, no studies could be located in the scientific literature to test this hypothesis.

Griffin et al. (1991) have studied the absorption of radiolabelled $^{63}NiCl_2$ present in an aqueous slurry with sand or clay soils. Crl:CD BR rats (4/sex/dose) were administered nickel by iv (2.1 mg/kg), oral gavage of an aqueous solution (2.1 or 21 mg/kg), or oral gavage of an aqueous sandy-loam or clay-loam slurry (2.1 or 21 mg/kg). The nickel containing soils were prepared by mixing a soil sample with an aqueous solution of $^{63}NiCl_2$, allowing the soil to dry, and then resuspending the soil in an aqueous slurry. Blood was collected at intervals up to 48 hours post-dosing and analyzed for ^{63}Ni by liquid scintillation counting. Absorption of nickel was measured based on the area under the blood concentration vs. time curve (AUC), using either the iv group or the aqueous oral gavage group AUC as the comparative standard.

Two points must be considered before evaluating the data in this experiment. First, the concentration of nickel in soil that would support an 2.1 mg/kg-day dose in a 15 kg child assumed to exhibit pica behavior, i.e., ingest 10 g soil/day, would be 3,150 ppm. Likewise, a 21 mg/kg dose is equivalent to exposure to soils that are 31,500 ppm nickel. Because these concentrations span the upper end of the range of concentrations that could be encountered at USS Sites/Facilities, the results for both doses will be considered in the development of the AAF. Second, the method of preparation of nickel-containing soils is unlikely to mimic the physical state of nickel in weathered soils, where it would be expected to be present in complex mineralogical forms. However, since this is the only study available that evaluates nickel absorption from soils, it must be considered.

The results of the study are presented in Table 1. The average per cent absolute absorption for the sand-based soil was 2.95% and was 1.45% for the clay-based soil. The mean absorption for the four groups was 2.2% +/- 0.9%.

Table 1. Data from Griffin et al. (1991) for Nickel

TEST GROUP	ROUTE OF EXPOSURE	DOSE (mg/kg)	ABSOLUTE ABSORPTION*	RELATIVE ABSORPTION**
1	IV	2.1	100	-
2	Oral/Water	2.1	4.45	100
3	Oral/Water	21	5.2	100
4	Oral/Sand	2.1	2.8	65.1
5	Oral/Sand	21	3.1	61.1
6	Oral/Clay	2.1	1.1	26.6
7	Oral/Clay	21	1.8	40.4

* Absolute absorption is relative to iv dose group data.
** Relative absorption is relative to aqueous oral gavage dose group data at the same dose.

The AAF (oral-soil) is defined as the ratio of the absorption from soil to the absorption from diet. The absorption from soil (2.2% +/- 0.9%) is not significantly different from the estimate of the absorption from diet described above (1.3% +/- 0.4%). Thus, gastrointestinal absorption of nickel from soil in rats is the same as the absorption in rats from dietary components. Assuming that absorption of nickel is similar in humans and rodents, the estimate of the AAF (oral-soil) is 1.0.

AAF (Dermal-Soil)

The AAF (dermal-soil) is defined as: (absorption in humans from dermal contact with soil) / (absorption in rats from diet). A recommended default value for inorganics of 0.1 percent for the dermal absorption of nickel from soil (USEPA, 2000) has been used. Assuming that the gastrointestinal absorption of

nickel from the dietary study is as estimated by USEPA (1993), Tedeschi and Sunderman (1957), and Nomoto and Sunderman (1970) (e.g., 1.3%), an AAF (dermal-soil) of 0.1%/1.3% = 0.08 is calculated.

AAF (Dermal-Water)

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming or potable water when bathing. The methodology for quantitating risks posed by these exposure pathways uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. The dose-response value for nickel, however, is based on administered dose. The AAF is used to make an adjustment of the exposure dose by this pathway. Thus, the AAF (dermal-water) is defined as: (100%) / (absorption in rats from ingestion of nickel in diet).

This AAF is derived using the estimate of absorption from diet from Sunderman et al. (1989), Tedeschi and Sunderman (1957) and Nomoto and Sunderman (1970) (1.3%). As above, the gastrointestinal absorption in rats from diet is assumed to be the same as the gastrointestinal absorption in humans from diet. Accordingly, the AAF (dermal-water) is:

AAF (Dermal-Water) = (100%) / (1.3%) = 77.

Summary of AAFs for Nickel

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Water	77
Dermal-Soil	0.08

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USEPA. 2000. Integrated Risk Information System (IRIS). [URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR NITROBENZENE

The oral RfD for nitrobenzene of 5E-04 mg/kg-day provided in IRIS (USEPA, 2000) is based on an inhalation study in rats and mice. In the conversion to the oral RfD, USEPA assumed 80% of an inhaled dose was absorbed, thus the oral RfD represents an absorbed dose (i.e., 100% absorption). Due to the lack of chemical-specific information, it is assumed that absorption is complete in humans upon exposure to nitrobenzene in water, soil, and the diet. Therefore, the AAF (oral-water), AAF (oral-diet), AAF (oral-soil) are all 1.

A recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation RfC provided in HEAST (USEPA, 1997) for nitrobenzene of 2E-03 mg/m^3 corresponds to an inhalation RfD of 5.7E-04 mg/kg-day. It is based on an inhalation study in mice and rats. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Nitrobenzene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

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USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR PENTACHLOROPHENOL

The oral RfD for pentachlorophenol (PCP) (3E-02 mg/kg-day) is provided in IRIS (USEPA, 2000) and is based upon a dietary study in rats. The oral CSF, also provided in IRIS, is 1.2E-01 $(mg/kg\text{-}day)^{-1}$ and is based on a dietary study in mice. Limited studies of absorption have been carried out in several species including humans, rats, and monkeys. Rats and monkeys were given single oral doses in corn oil of 10 mg [^{14}C] PCP/kg and rats were also dosed with 100 mg/kg (Braun and Sauerhoff, 1976; Braun et al., 1977). Absorption was extensive in both species with greater than 90% recovery of the dose in urine, feces, expired air, and tissues. Kinetic analyses were also performed. Essentially complete absorption by rats dosed with PCP or sodium pentachlorophenate in water or food has also been reported (Meerman et al., 1983). Studies in humans indicate ready absorption following oral administration. Based upon these results, it is assumed that absorption in the dose-response study was 100%. Furthermore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

An assumed default value of 1% absorption for dermal exposures to volatile organics in soil and sediment (USEPA, 2000) has been used here. Thus, the AAF (dermal-soil) is (1%/100%)=0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For PCP, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for Pentachlorophenol

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

References

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USEPA. 2000. Integrated Risk Information System (IRIS).
[URL: http://www.epa.gov/ngispgm3/iris/]

AAFs FOR PHENOL

The oral RfD for phenol (6E-01 mg/kg-day) provided in IRIS (USEPA, 2000) is based on a drinking water gavage study in rats. Studies of absorption have been carried out in humans and other species. Phenol is absorbed readily by the oral route in humans (Capel et al., 1972) and in a variety of other mammalian species (ATSDR, 1989). Capel et al. (1972) reported values for urinary recovery of orally administered phenol in humans. Three subjects received a single oral dose of 0.01 mg/kg [^{14}C]phenol. Mean 24-hour urinary recovery of ^{14}C was 85-90% of the administered dose. In this same study, urinary recovery of orally administered [^{14}C]phenol was determined in 18 other mammalian species. Mean 24-hour recoveries of ^{14}C ranged from 95% in the rat to 31% in the squirrel monkey.

Absorption of phenol from the small intestine has been studied in the rat, and appears to be quite rapid in this species. Humphrey et al. (1980) administered ~40 mg/kg [^{14}C]phenol directly into the in situ isolated small intestine of the rat. Absorption kinetics were described as first-order; the apparent absorption half-time was 5.5 $\pm$ 0.05 minutes. In addition, Kao et al. (1979) injected solutions of [^{14}C]phenol into the intact small intestine of anesthetized rats. Two-hour urinary recoveries of ^{14}C were 77.9 $\pm$ 5.8% after a 25 mg/kg dose.

Based upon these results, it is assumed that absorption in the dose-response study was 100%. Furthermore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

Evidence of dermal absorption of phenol by humans has been reported (ATSDR, 1989). For instance, Pietrowski (1971) performed whole body skin exposures in human subjects. The subjects were exposed to phenol vapor at concentrations of 5, 10, and 25 mg/m^3 for 6 hours. It was concluded that percutaneous absorption is significant compared to inhalation when humans are exposed to phenol vapor.

Others have measured the absorption of pure phenol or phenol solution through skin (ATSDR, 1989). For instance, Baranowska-Dutkiewicz (1981) measured percutaneous absorption of phenol applied in solution (2.5, 5.0, or 10.0 g/L) directly to the forearm of volunteers. Approximately 13% of the applied dose was absorbed in 30 minutes. Such studies do not, however, yield information concerning the degree of dermal absorption of phenol that is adsorbed onto soil or sediment. Because phenol is volatile, much loss to the atmosphere would be expected during skin contact with phenol contaminated soil. Thus, a recommended default value (USEPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a constituent-specific permeability constant that estimates the rate at which

the constituent passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For phenol, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for Phenol

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

References

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AAFs FOR POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

The majority of the information presented below was derived from a paper entitled Absorption Adjustment Factor (AAF) Distributions for Polycyclic Aromatic Hydrocarbons (PAHs) (Magee et al., 1996). This paper is provided as an attachment to this section.

These AAFs are appropriate for use with the following dose-response values for PAH:

- The oral cancer slope factor (CSF) for benzo(a)pyrene (BAP) of 7.3 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000) and the adjusted CSF for the remaining potentially carcinogenic PAH (cPAH) using the following relative potency factors (USEPA, 1993):

PAH	Relative Potency Factor
Benzo(a)pyrene	1
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-cd)pyrene	0.1

- The inhalation CSF for BAP of 3.1 $(mg/kg\text{-}day)^{-1}$ (USEPA, 1999) and the adjusted CSF for the remaining potentially carcinogenic PAH using the relative potency factors listed above.

- The oral reference doses (RfDs) available from USEPA (2000) for the noncarcinogenic PAHs (ncPAHs): acenaphthene (0.06 mg/kg-day), anthracene (0.3 mg/kg-day), fluoranthene (0.04 mg/kg-day), fluorene (0.04 mg/kg-day), naphthalene (0.02 mg/kg-day) and pyrene (0.03 mg/kg-day).

- The inhalation reference concentration (RfC) available from USEPA (2000) for naphthalene of 3E-3 mg/m^3, which is equivalent to an RFD of 9E-04 mg/kg-day.

Absorption in the Dose-Response Studies

In the studies used to develop the CSF for BAP, BAP was administered in the diet. Corn oil gavage was used to administer doses in the RfD studies. The Magee et al. (1996) paper summarizes studies on the gastrointestinal absorption of PAHs, and develops a point estimate for gastrointestinal absorption in the dose-response studies of 92%, which is the average of 13 data points from six studies.

Oral-Soil AAF

cPAHs. An oral-soil AAF of 0.29 is used for cPAHs. This value is based on a review of six available studies of PAHs performed in vivo, as summarized in Magee et al. (1996). Three studies that evaluated gastrointestinal (oral) absorption of PAHs from a soil matrix (Goon et al., 1991; Rozett at al., 1996; and Weyand et al., 1996) were deemed appropriate for use for developing an oral-soil AAF. The Rozett et al. (1996) study evaluated the bioavailability of pyrene from aged soil from manufactured gas plant residue (coal tar). The oral AAFs based on this study range from 0.07 to 0.76, with an average of 0.26. Weyand et al. (1996) also evaluated the oral bioavailability of pyrene from manufactured gas plant residue. The oral AAFs based on this study range from 0.11 to 0.36, with an average of 0.23. The last study, Goon et al. (1991) evaluated the bioavailability of BAP adsorbed to "aged" soil (clay-based and sand-based soils). These aged soils were treated with BAP and allowed to age 1 to 30 days, and 6 months to 1 year. The oral AAF for clay-based soil is 0.37 and that for sand-based soils is 0.57. A probabilistic (Monte Carlo) analysis, using 12 estimates of the AAF from all three studies, results in a 50th percentile oral-soil AAF of 0.27, with an upper 90th percentile value of 0.57. The Magee et al. (1996) paper recommends the use of a point-estimate oral-soil AAF of 0.29, which is the arithmetic mean of the point estimates used to develop the distribution.

ncPAHs. Magee et al. (1996) states that the oral absorption of cPAH and ncPAH is similar, therefore, it is appropriate to use the value derived above, 0.29, for the risk evaluation for ncPAHs.

Dermal-Soil AAF

cPAHs. A dermal-soil AAF of 0.02 is used for cPAHs. This value is based on the data from two studies (Yang et al., 1989; Wester et al., 1990). Yang et al. (1989) evaluated the percutaneous absorption of BAP from petroleum crude-fortified soils in vivo in rats and in vitro using excised rat skin. Estimates of absorption were made at 24, 48, 72 and 96 hours. In vivo absorption ranged from 1.1% to 9.2%, and in vitro absorption ranged from 1.5% to 8.4%. Wester et al. (1990) evaluated the percutaneous absorption of BAP added to soil (unaged) in vivo in Rhesus monkeys and in vitro using human cadaver skin, both for 24-hour exposures. Absorption in monkey skin ranged from 10.8% to 18.0% with an average of 13.2%. Absorption in human skin ranged from 0.31% to 3.01% and averaged 1.45%. Because the 24+ hour exposures are not directly relevant to human health risk assessment the data points were adjusted to reflect a 12-hour exposure period assuming absorption is linear between 0 and 24 hours. A probabilistic (Monte Carlo) analysis, using the in vivo and in vitro 24-hour data points (four), adjusted for a 12-hour exposure, from both studies, results in a 50th percentile dermal-soil AAF of 0.02, and an upper 90th percentile value of 0.06. The Magee et al. (1996) paper recommends the use of a point-estimate dermal-soil AAF of 0.02, which is the arithmetic mean of the point estimates used to develop the distribution. It should be noted that one of the authors of the Wester et al. (1990) study, and a well recognized expert in dermatotoxicology, Dr. Howard I. Maibach, M.D., believes that human skin in vitro is a better model of human exposures than any in vivo animal model. If the human skin data were used alone, an AAF of 0.015 would result.

ncPAHs. Dermal absorption data for ncPAHs are summarized by Magee et al. (1996). Although the

dermal absorption efficiency of ncPAHs varies from 1x to 100x that of BAP, these data are from studies of ncPAHs applied in solution, not in a soil matrix. The authors have applied a uniform distribution for a standard USEPA default uncertainty factor of 10 that ranges from 1 to 10, to the distribution of dermal-soil AAF for cPAHs. A probabilistic (Monte Carlo) analysis results in a 50th percentile dermal-soil AAF of 0.09, and an upper 90th percentile value of 0.36. The Magee et al. (1996) paper recommends a point estimate value of 0.1 for the dermal-soil AAF for ncPAHs.

Oral-Water AAF

The oral-water AAF for ingestion of PAHs in water is derived from the study of Kawamura et al. (1988). Kawamura and co-workers studied the effects of various foods on the absorption of BAP in rats. The absorption ratio was defined as the ratio of the blood levels of BAP and its metabolites at 25 hours after oral dosing compared to the blood levels following an intravenous injection of the BAP. The "absorption ratio" in this study is an example of a relative bioavailability estimate, not a measure of absolute absorption, therefore, these values cannot be compared to the absorption information based on fecal excretion data presented in the Magee et al. (1996) paper. The absorption ratio for a suspension of BAP in water was found to be 25.7% in the Kawamura study. The absorption efficiency observed with solid foods such as cellulose, lignin, bread, rice flake, starch, potato flake, spinach, dried bonito, ovalbumin and soybean oil were observed to be very similar, varying from 20% to 29%, with a mean of 24.3%. The differences in absorption between the foodstuffs and water is not statistically different. BAP was also administered in two oil preparations in this experiment: triolein and soybean oil. The absorption ratios of 50.5% and 39.4%, respectively, were determined to be significantly different from the absorption ratios for the water and foodstuff preparations. The average of these two values is 45%. However, none of the studies reviewed in Magee et al. (1996) observed a difference between absolute absorption of BAP in food and oils (corn, peanut, and olive).

cPAHs. The oral CSF for BAP is derived from rodent feeding studies. Because of the similarity in absorption of BAP from water and food in the Kawamura study, an oral-water AAF of 1.0 is recommended for use in the risk assessment for cPAHs.

ncPAHs. The RfD dose-response studies are all based on corn oil gavage administration. The Kawamura study demonstrates that absorption in oils is greater than absorption in food, and the following AAF can be calculated from this study: 25.7% / 45% = 0.6. However, because this is the only study of several reviewed that observed a difference in absorption between foodstuffs and oils, it will be assumed here that absorption is the same from water, oils and foodstuffs. Therefore, an oral-water AAF of 1.0 is recommended for use in the risk assessment for ncPAHs.

Oral-Diet AAF

The oral CSF and RfDs for PAHs are based on dietary and corn oil gavage studies in mice and rats. Hecht and coworkers (Hecht et al., 1979) fed BAP to both humans and rats and measured the unchanged BAP in the feces to obtain an estimate of the amount of the chemical absorbed. Because

unchanged BAP in the feces can be due to absorbed material that is excreted unchanged in the bile, these studies reveal the minimum amount of BAP that was absorbed. It is known, however, that BAP is extensively metabolized. For rats, at least 87% of the BAP was absorbed for a low single dose in peanut oil (0.037 mg/kg) and at least 94% was absorbed for a high single dose in peanut oil (3.7 mg/kg). When rats were fed charcoal-broiled hamburger containing BAP, at least 89% was absorbed. In humans, a high percentage of BAP present in charcoal-broiled meat was also absorbed, because no unchanged BAP was detected in the feces. This study indicates that there is no difference in absorption between two dietary vehicles in rats. That is, absorption of BAP from peanut oil and meat was essentially the same. The results with rats and humans also indicates that there is no major difference in the gastrointestinal absorption of BAP between rats and humans. Therefore, the oral-diet AAF for both cPAHs and ncPAHs is 1.0, i.e., there are assumed to be no differences in absorption, not that absorption is 100%.

Dermal Water AAF

The Magee et al. (1996) paper summarizes studies on the gastrointestinal absorption of PAHs, and develops a point estimate for gastrointestinal absorption in the dose-response studies of 92%. The methodology used to evaluate dermal-water exposures calculates and absorbed dose (i.e., equivalent to 100% absorption). Thus gastrointestinal absorption of 92% is similar to the 100% dermal-water "absorption" for the PAHs. Therefore, a dermal-water AAF of 1 is recommended for use in the risk assessment for both cPAHs and ncPAHs.

Inhalation AAF

cPAHs.

The USEPA inhalation CSF for BaP of 3.1 $(mg/kg\text{-}day)^{-1}$ is a provisional value developed by the NCEA (USEPA, 1999); and the derivation of the value is not available. Due to a lack of information, it is assumed that the inhalation AAF is 1.

ncPAHs.

The RfC for naphthalene is based on an inhalation study in mice, where exposure occurred to a naphthalene aerosol. This study is likely to overestimate potential absorption and risk from exposure to naphthalene-containing soil particulates. However, due to lack of specific information, it is assumed that absorption in mice and humans is equivalent; therefore, the inhalation AAF is 1.

Summary of AAFs for PAHs

Oral-Water	cPAHs	1	ncPAHs	1
Oral-Diet	cPAHs	1	ncPAHs	1
Oral-Soil	cPAHs	0.29	ncPAHs	0.29

Dermal-Soil	cPAHs	0.02	ncPAHs	0.1
Inhalation	cPAHs	1	ncPAHs	1

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AAFs FOR POLYCHLORINATED BIPHENYLS (PCB)

The CSFs for PCBs range from 0.04 to 2.0 $(mg/kg\text{-}day)^{-1}$ (USEPA, 2000) and are based on the results from five chronic dietary studies in rats (Brunner et al., 1996; Kimbrough et al., 1975; NCI, 1978; Schaeffer et al., 1984; and Norback and Weltman, 1985). Table 1 presents the application of the CSFs to various exposure scenarios.

The current oral RfDs for Aroclor 1016 and Aroclor 1254 are 7.0E-5 mg/kg-day and 2.0E-5 mg/kg-day, respectively. The Aroclor 1016 value is based on critical effects observed in a reproductive bioassay in monkeys that were fed Aroclor 1016 in their diet (Barsottti and van Miller, 1984; Levin et al., 1988; Schantz et al., 1989, 1991). The Aroclor 1254 value is based on monkey clinical and immunologic studies in which the animals were fed gelatin capsules containing Aroclor 1254 in a glycerol: corn oil vehicle (Arnold et al., 1993a,b; Tryphonas et al., 1989, 1991a,b).

Absorption in the Dose-Response Study

Because all of the studies are based on dietary exposures, the AAFs developed below apply to both carcinogenic and non-carcinogenic effects of PCBs. In all of the dose-response studies, various Aroclors were administered in the diet. However, no information on the efficiency of gastrointestinal absorption in those studies was presented. The studies summarized below have been used in the development of AAFs for PCBs. The specific absorption values used in the calculation of the average absorption value are indicated by underlining below.

1. Allen et al. (1975) gave single oral doses of 2,5,2',5'-tetrachlorobiphenyl (18 mg/kg bw) to four adult rhesus monkeys by gastric intubation. PCBs were given in 2.5 ml of corn oil on an empty stomach. Unmetabolized PCBs were analyzed in the feces by gas chromatography (GC). Minimum gastrointestinal absorption was found to be 88%. PCBs found in the feces over specified post-dosing times were presumed to be unabsorbed material. Because PCB metabolites are known to be eliminated in the bile, the possibility exists that some of the PCBs present in the feces were absorbed and then eliminated. As such, only minimum absorption efficiencies can be determined from this and similar studies.

2. Allen et al. (1974) gave single oral doses of PCBs (Aroclor 1248) (1.5 or 3.0 g/kg bw) to two adult rhesus monkeys by gastric intubation. The vehicle was not specified but is presumed to be corn oil. Dosing was done on an empty stomach. Unmetabolized PCBs were analyzed for in feces by GC. Recovery was reported to be high. Minimum gastrointestinal absorption was reported to be 94%.

3. Albro and Fishbein (1972) gave single oral doses of 20 different PCB congeners (5-100 mg/kg bw) and the unabsorbed marker compound, squalene, to CD rats. The mixture was given by stomach tube to unfasted animals who were allowed food and water ad libitum. No vehicle was specified. Although this was not a diet study, per se, it is possible that dietary components

were present in the stomach at the same time as were the test compounds. Minimum gastrointestinal absorption was reported to be 90% for all congeners.

4. Tanabe et al. (1981) gave repeated oral doses of Kanechlors (300, 400, 500, 600) (c.30 mg/kg bw/day x 5 days) to Wistar rats. The dose was given in corn oil. Commercial diet was given ad libitum. No information on the animals' stomach contents was reported. Parent compounds were analyzed in the feces by GC/MS (mass spectrometry). Minimal gastrointestinal absorption was reported to be 85% for total PCB. Cl_5 to Cl_7 congeners had 75-90% absorption.

5. Berlin et al. (1975) gave a single oral dose of 2,4,5,2',5'-pentachlorobiphenyl (7 mg/kg bw) to three CBA mice. The PCBs were given as an aqueous emulsion. No information on the animal's stomach contents was given. Minimal gastrointestinal absorption was reported to be 93%.

6. Van Miller et al. (1975) gave single oral doses (50 mg) of tritiated 2,2',5,5'-tetrachlorobiphenyl to three male Sprague-Dawley rats. The PCB was given by gavage in corn oil. Animals were given food and water ad libitum for 14 days. Urine, feces, and various tissues were analyzed. Over 86% of the radioactivity was present in the excreta as metabolites at 14 days. Thus, minimum gastrointestinal absorption was 86%.

7. Fries et al. (1989) gave four groups of four male Sprague-Dawley rats radiolabeled 2,2',5,5'-tetrachlorobiphenyl in diet or in corn oil (by gavage) or 2,2',4,5,5'-pentachlorobiphenyl in diet or in corn oil (by gavage). The animals given the PCBs by gavage were fed unspiked diet ad libitum. PCBs were administered daily for five days. Rats were then fed unspiked diet for 10 days. Urine and feces were collected. At 15 days, animals were sacrificed, and samples of fat and liver tissue were taken for analysis. The dose of PCBs given was not reported. The amount absorbed was defined as the amount that did not appear in the feces as parent compound. The average absorption of the two congeners when given in a dietary matrix was 89% [(91% + 86%) / 2]. The average absorption of the two congeners when given by corn oil gavage was 88% [(95% + 81%) / 2].

The above seven studies, which involve both rodents and primates and various PCB mixtures and purified congeners, all show that PCBs are very effectively absorbed from the gastrointestinal tract. In the one study (Fries, et al., 1989) in which PCBs were administered by diet, the absorption was shown to be 89%. The other six studies involved the administration of PCBs in various vehicles by gavage. These studies are also relevant to the estimation of the absorption seen in the dose-response studies, because Fries et al. (1989) showed in their rat study that there was no difference in absorption between diet and corn oil gavage. Accordingly, the results from all seven studies were averaged to yield an estimate of 89% for the absorption in the dose-response study.

Oral-Diet AAF

An oral-diet AAF for ingestion of PCBs was derived for intake of dietary constituents. The dose-response studies were all rat dietary studies. There are no studies available on gastrointestinal absorption of PCBs from fish, vegetables, milk, meat, or other human dietary constituents. To be health protective, it is assumed that the absorption of PCBs in humans from various dietary constituents is the same as the dietary absorption that occurs in rats. Thus, the AAF (oral-diet) is 1.0.

Oral-Soil AAF

Fries et al. (1989) gave four groups of four male Sprague-Dawley rats radiolabeled 2,2',5,5'-tetrachlorobiphenyl in diet or in soil or 2,2',4,5,5'-pentachlorobiphenyl in diet or soil. ^{14}C-PCB soil was added to a standard rat diet in meal form at the rate of 5%. In the control experiment, ^{14}C-PCB in acetone was added to the feed. The PCB-soil was a Galestown sandy loam with a pH of 6.7 and which contained 67% sand, 22% silt, 11% clay, and 5% organic matter. Soils had been spilled with PCBs 8 years earlier and were stored at -5°C. At the time of the experiment, fractions passing through a 125 μm sieve were spiked with ^{14}C-PCB for quantitation.

PCBs were administered daily for five days. Rats were then fed unspiked diet for 10 days. Urine and feces were collected. At 15 days, animals were sacrificed, and samples of fat and liver tissue were taken for analysis. The dose of PCB was not reported. The amount absorbed was defined as the amount that did not appear in the feces as parent compound.

The ratio of the amount of PCB absorbed when present as a soil matrix to that absorbed when present as a component of diet is a direct estimate of the oral-soil AAF. From this experiment, AAF estimates are available for two PCB congeners. The oral-soil AAF for the tetrachlorobiphenyl is (80%)/(91%)=0.88, while the estimate for the pentachlorobiphenyl congener is (67%)/(86%)=0.78. These two estimates are averaged [(0.88+0.78)/2] to give an estimate of the AAF (oral-soil) for PCB mixtures of 0.83.

Oral-Water AAF

In the absence of studies of absorption upon ingestion of PCBs in drinking water, it is assumed that the absorption of PCBs in humans from ingestion of water is the same as the dietary absorption that occurred in rats in the dose-response studies. Thus, the AAF (oral-water) is 1.

Dermal-Soil AAF

To derive the AAF (dermal-soil) one needs a value for the efficiency of absorption of soil-bound PCBs through human skin and an estimate of the absorption efficiency from dietary constituents in the dose-response studies. As discussed above, the gastrointestinal absorption of PCBs by rats from diet is estimated to be 89%. As discussed below, dermal PCB absorption in human skin from a soil matrix

was determined by Roy et al. (1990) (as reported in USEPA, 1992).

In the study, dermal absorption of 3,3',4,4'-tetrachlorobiphenyl (TCB) was tested at a concentration of 1000 ppm in both low and high organic content soil for rat skin, both in vivo and in vitro, and human skin in vitro (n = 4 or 5). At 96 hours, the total fractional absorption in rats from low organic soil (at a soil application of 10 mg/cm2, and a soil concentration of 1000 ppm) was 50% +/- 11% in vivo and 32% +/- 3% in vitro. Results at intermediate time points were also given for the in vitro experiments.

Absorption was determined in the in vivo experiments by measuring the total amount of the chemical in urine, feces, and tissues. In the in vitro experiments, absorption was determined by measuring the amount of the chemical in the receptor fluid and adding to it the amount measured in the skin after washing. This unremovable material was scored as if it was systemically absorbed. The ratio of absorption in the rat in vivo to that in vitro was 1.6.

Human skin was tested in vitro. Tetrachlorobiphenyl at 1000 ppm was administered to human skin (at a soil application of 6 mg/cm2). At 24 hours, 1.33% +/- 0.47% of the dose was absorbed into the receptor fluid. At 96 hours, 7.36% +/- 2.42% was absorbed (including skin and receptor fluid).

USEPA (1992) has estimated the fractional absorption of TCB from low organic soil in humans in vivo by assuming that the in vivo/in vitro absorption ratio observed in the rat is valid for the human. In addition, the estimate reported above for the 24 hour period was made by adding the fraction of the chemical in the receptor fluid with the amount present in the skin after 96 hours. Thus, USEPA assumed that the fraction of the dose in the skin that could not be removed by washing was constant from 24 to 96 hours, which is reasonable. USEPA's estimate of fractional dermal absorption of PCBs at 1000 ppm in the live human from low organic soil is (1.6) x (1.33%) = 2.1%. USEPA also estimated the 24 hour fractional absorption in live humans from high organic soil to be 0.63%.

In developing its dermal absorption estimate for humans, USEPA considered the range of 0.6% for high organic soil to 2.1% for low organic soil and multiplied the lower estimate by 10 to arrive at its recommended default. In fact, 6% dermal absorption was not observed in any of the five human skin samples until exposure times reached 72 hours or greater. The USEPA's recommended default absorption rate of 6% is not used here, because it is not based on the scientific data.

To be health-protective, the absorption estimate for low organic soil of 2.1%, which may be encountered at various sites, is used for the AAF derivation. In addition, the upper 95% confidence limit of the estimate, which is 3.8%, is used as an additional degree of health-protectiveness. This estimate is an overestimate of the dermal absorption that would be expected at actual sites, because PCB concentrations in soils would, in most cases, be below 1000 ppm, and field measurements have shown that actual soil loadings on skin in humans are quite low (Kissel et al., 1996; USEPA, 1997). Absorption efficiency in such cases would be expected to be lower. In addition, exposure periods would in actuality be less than 24 hours before washing. The estimate of the AAF (dermal-soil) is derived as follows: (absorption of PCB from soil through human skin) / (absorption of PCB in dose-

response study) = (3.8%) / (89%) = 0.04.

The absorption efficiency determined above for tetrachlorobiphenyl in soil probably overestimates the dermal absorption efficiency of actual PCB mixtures that contain higher chlorinated congeners. These higher chlorinated species are more likely to have high binding coefficients with organic matter in soil, and they would be less likely to be absorbed through the skin from a soil matrix. However, it is health-protective to use the above data from the soil absorption study with tetrachlorobiphenyl to derive an AAF (dermal-soil) for use with all PCB mixtures.

Dermal-Water AAF

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(89%) = 1.1.

Inhalation AAF

In the absence of studies of absorption upon inhalation of PCBs, it is assumed that the AAF for this route of exposure is 1.

Summary of Derived AAFs for Polychlorinated Biphenyls (PCBs) for Potentially Carcinogenic and Noncarcinogenic Effects

AAF (oral-water)	1
AAF (oral-diet)	1
AAF (oral-soil)	0.83
AAF (dermal-soil)	0.04
AAF (inhalation)	1

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TABLE 1.
TIERS OF CANCER SLOPE FACTORS FOR ENVIRONMENTAL PCBs

HIGH RISK AND PERSISTENCE Upper-bound slope factor: 2.0 $(mg/kg\text{-}day)^{-1}$ Central-estimate slope factor: 1.0 $(mg/kg\text{-}day)^{-1}$
Criteria for use: - Food chain exposure - Sediment or soil ingestion - Dust or aerosol inhalation - Dermal exposure, if an absorption factor has been applied - Presence of dioxin-like, tumor-promoting, or persistent congeners - Early-life exposure (all pathways)
LOW RISK AND PERSISTENCE Upper-bound slope factor: 0.4 $(mg/kg\text{-}day)^{-1}$ Central-estimate slope factor: 0.3 $(mg/kg\text{-}day)^{-1}$
Criteria for use: - Ingestion of water-soluble congeners - Inhalation of evaporated congeners - Dermal exposure if no absorption factor has been applied
LOWEST RISK AND PERSISTENCE Upper-bound slope factor: 0.07 $(mg/kg\text{-}day)^{-1}$ Central-estimate slope factor: 0.04 $(mg/kg\text{-}day)^{-1}$
Criteria for use: Congener or isomer analyses verify that congeners with more than 4 chlorines comprise less than 0.5% of total PCBs.

TETRACHLOROETHENE

The oral RfD (1E-02 mg/kg-day) for tetrachloroethene (PCE) is provided in IRIS (USEPA, 2000) and is based on corn oil gavage studies in mice. The NCEA provides an oral CSF for PCE of 5.2E-02 $(mg/kg\text{-}day)^{-1}$ as cited in the USEPA Region 9 PRGs (USEPA, 1999), although they do not provide the basis for the value. The U.S. EPA (1985) reports that absorption of PCE by the gastrointestinal tract is complete regardless of vehicle. Thus, absorption in the dose-response study is assumed by ENSR to be 100%. Based on this information and other absorption information on other volatile organic compounds, it is has assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the oral-water AAF, the oral-diet AAF, and the oral-soil AAF are all 1.

A recommended default value for VOCs of 1% was assumed for dermal absorption of tetrachloroethylene from soil (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For PCE, the AAF (dermal-water) is (100%)/(100%) = 1.0.

The NCEA, as reported in the USEPA Region 9 PRG Table (USEPA, 1999) provides an inhalation RfD of 1.14E-01 mg/kg-day and an inhalation CSF of 2E-03 $(mg/kg\text{-}day)^{-1}$ for PCE. Due to the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Tetrachloroethene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

References

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AAFs FOR TOLUENE

The oral reference dose for toluene (2E-01 mg/kg-day) provided in IRIS (USEPA, 2000) is based on a 13 week rat gavage study. According to the USEPA (1984), the gastrointestinal absorption of toluene is 100%. Therefore, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil ingestion exposures. Thus, the AAFs (oral-water), (oral-diet), and (oral-soil/sediment) are all 1.

A recommended default value for organics of 1% for dermal absorption of toluene from soil (USEPA, 2000) has been used. Thus, the AAF (dermal-soil) is (1%/100%)=0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For toluene, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation RfC for toluene is 0.4 mg/m^3, which is equivalent to an inhalation RfD of 1.14E-01 mg/kg-day, assuming a 70 kg person breathes 20 m^3/day of air. This RfC is based upon an occupational inhalation study in humans. Since both the study used to derived the RfC and the exposure pathway of concern are inhalation of toluene by humans, the AAF (inhalation) is 1.

Summary of AAFs for Toluene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 1984. Health Effects Assessment for Toluene. PB86-134442.

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AAFs FOR TRICHLOROETHENE

Dose-response values for trichloroethylene (TCE) are provided by the NCEA, as reported in the USEPA Region 9 PRG Table (USEPA, 1999). The oral RfD of 6E-03 mg/kg-day is based on a mouse drinking water study.

The oral CSF for TCE (1.1E-02 $(mg/kg\text{-}day)^{-1}$) is based on four separate gavage studies in mice (USEPA, 1983, 1987). This value is expressed in terms of an administered dose after adjusting for metabolism. Trichloroethene is an uncharged, nonpolar and highly lipophilic compound and is consequently expected to readily cross the gastrointestinal mucosal barrier by passive diffusion. Studies in rats showed 90 to 95 percent recovery of labeled trichloroethene in expired air and urine, suggesting virtually complete absorption by the route (USEPA, 1983). It was assumed therefore that absorption in the dose-response studies is 100%.

AAF (Oral)

In man, absorption through the gastrointestinal mucosa is extensive, as documented by the numerous cases of poisoning by oral ingestion of large amounts of TCE reported over the years (USEPA, 1983). It is assumed that 100% oral absorption occurs through drinking water, diet, sediment and soil exposures. Thus the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1 (100%/100%).

AAF (Dermal)

A recommended default value for VOCs of 1% for dermal absorption of organics from soil has been used (USEPA, 2000). Thus, the AAF (dermal-soil) is 1%/100% = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantifying risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. The dose-response value, however, is based on an administered dose. The AAF (dermal-water) is defined as (100%)/(absorption from the dose-response study). Since a 100% absorption was assumed from the dose-response study, the AAF (dermal-water) is 1.

AAF (Inhalation)

The inhalation CSF for trichloroethene provided by NCEA as reported in the USEPA Region 9 PRG Tables is (6.0E-3 $(mg/kg\text{-}day)^{-1}$). Based on the lack of chemical-specific information, it is assumed that the AAF (inhalation) is 1.

Summary of AAFs for Trichloroethene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

References

USEPA. 1983. Health Assessment Document for Trichloroethylene. PB84-162882.

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AAFs FOR VANADIUM

The oral RfD of 7E-03 mg/kg-day provided by HEAST (USEPA, 1997) is based on a drinking water study in rats using vanadium sulfate. Vanadium is very poorly absorbed across the gastrointestinal tract with several investigators reporting between 0.1% and greater than 18% absorption of ingested vanadium given in different forms (USEPA, 1987). Based on these studies and absorption for other metals, absorption of 10% was assumed for vanadium. It is assumed that the absorption of vanadium in the diet, water, soil, and sediment is the same as that in the dose-response study. Thus, the AAF (oral-diet), the AAF (oral-soil), and the AAF (oral-water) are all 1.

Dermal absorption of vanadium is assumed to be poor, although specific estimates were not located (USEPA, 1987). A recommended default value for inorganics of 0.1% for the dermal absorption of inorganics from soil (USEPA, 2000) has been used. Assuming that the gastrointestinal absorption of vanadium from the drinking water study was 10%, results in a AAF (dermal-soil/sediment) of 0.1%/10% = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantifying risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make adjustment to the absorbed dermal dose, rather than adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For vanadium, the AAF (dermal-water) is 100%/10% = 10.

Summary of AAFs for Vanadium

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	10

References

USEPA. 1987. Health Effects Assessment for Vanadium and Compounds. Environmental Criteria and Assessment Office: Cincinnati, OH. PB 88-176383.

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AAFs FOR VINYL CHLORIDE

The oral RfD for vinyl chloride of 3E-03 mg/kg-day provided in IRIS (USEPA, 2000) is based on a dietary study in rats. The oral cancer slope factor for vinyl chloride is 7.2E-01 $(mg/kg\text{-}day)^{-1}$ for adult exposures. It is also based on a dietary study in rats. According to the ATSDR (1991), vinyl chloride absorption in the GI tract is rapid and virtually complete in rats. It is assumed that 100% absorption occurs in rats and humans for oral exposures to vinyl chloride in water, diet, and soils. Thus, the AAF (oral-water), AAF (oral-diet), and AAF (oral-soil) are all (100%)/(100%) = 1.

A recommended default value of 1% for organics was assumed for dermal absorption of vinyl chloride from soil and sediment (USEPA, 2000). Thus the AAF (dermal-soil) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For vinyl chloride, the AAF (dermal-water) is (100%)/(100%) = 1.0.

The inhalation cancer unit risk is 4.4E-06 $(\mu g/m^3)^{-1}$, as provided by IRIS (USEPA, 2000), and is equivalent to a CSF of 1.54E-02 $(mg/kg/day)^{-1}$. It is based on an inhalation study in rodents. Since exposure in the study used to derive the risk values and the human pathway of concern is inhalation, and since absorption was taken into account in the derivation of the risk values, the AAF (inhalation) for carcinogenic effects is 1. The inhalation RfC for vinyl chloride is 1E-01 mg/m^3 provided by IRIS (USEPA, 2000), which is equivalent to an inhalation RfD of 2.86E-02 mg/kg-day. It is based on the rat dietary study used to develop the oral RfD. It is assumed that absorption is complete via the diet and inhalation. Thus, the AAF (inhalation) for noncarcinogenic effects is 1.

Summary of AAFs for Vinyl Chloride

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

References

ATSDR. 1991. Toxicological Profile for Vinyl Chloride. Agency for Toxic Substances and Disease Registry, Atlanta, GA.

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AAFs FOR ZINC

The oral RfD for zinc (3.0E-01 mg/kg-day) provided by IRIS (USEPA, 2000) is based on a human study with zinc sulfate in the diet. Thus, the AAF (oral-diet) is 1. The mean absorption of zinc from diet in ten humans has been determined by Sandstrom et al. (1987) as 33% (22-46%). The absorption of zinc from drinking water was determined in humans by several workers: 56% (Dinsmore et al., 1985), 42% (Milman et al., 1983), 58% (Farah et al., 1984) and 55% (Valberg et al., 1985). The mean of these four values is 53%. Thus, the AAF (oral-water) is 53%/33% = 1.6. The gastrointestinal absorption of zinc from soil is assumed to be identical to that from diet. Thus, the AAF (oral-soil) is 1. A recommended default value of 0.1% (USEPA, 2000) for inorganics was assumed for dermal absorption of zinc from contact with soil. Thus, the AAF (dermal-soil) is 0.1%/33% = 0.003.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For zinc, the AAF (dermal-water) is 100%/33% = 3.03.

Summary of AAFs for Zinc

Oral-diet	1
Oral-water	1.6
Oral-soil	1
Dermal-soil	0.003
Dermal-water	3.03

References

Dinsmore, W., M.E. Callender, D. McMaster, S.J. Todd and A.H.G. Love. 1985. Zinc Absorption in Alcoholics Using Zinc-65. Digestion 32:238-242.

Farah, D.A., M.J. Hall, P.R. Mills and R.I. Russell. 1984. Effect of Wheat Bran on Zinc Absorption. Human Nutrition: Clinical Nutrition. 38C:433-441.

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Valberg, L.S., P.R. Flanagan, C.N. Ghent and M.J. Chamberlain. 1985. Zinc Absorption and Leukocyte Zinc in Alcoholic and Nonalcoholic Cirrhosis. Digestive Diseases and Sciences 30:329-333.

AAFs for 2,3,7,8-TCDD TEQ

The oral CSF for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) of 1.5E+05 $(mg/kg\text{-}day)^{-1}$ in HEAST (USEPA, 1997) is based on a dietary study in rats (Kociba et al., 1978). The diet was prepared by mixing (30 minutes) an acetone solution of TCDD with laboratory chow. The acetone was evaporated yielding a TCDD/diet mixture. TCDD concentration was 0.02 - 2 ppb (0.001 - 0.1 μg/kg-day). No absorption information is given in the Kociba et al. (1978) study.

Absorption in the Dose-Response Study

USEPA has summarized selected information on gastrointestinal absorption of 2,3,7,8-TCDD and related compounds in laboratory animals after a single oral exposure by gavage (USEPA, 2000). Doses ranged between 0.5 and 5000 ug/kg. This range is above the dose range used in the Kociba et al. (1978) study. The administered dose absorbed ranged from 2-90%. The single human study presented estimated 87% absorption from a 0.001 ug/kg 2,3,7,8-TCDD dose administered in corn oil. The average absorption estimated from the six reported studies of chlorinated dibenzodioxins (CDDs) administered at doses less than or equal to 50 ug/kg is 62%. USEPA (2000) notes that "gastrointestinal absorption of TCDD and related compounds is variable, incomplete, and congener– and vehicle-specific."

In a study by Fries and Marrow (1975), however, rats were given TCDD in their diet continuously for 42 days. The total observation period of the experiment was 70 days. Diets were prepared in a similar manner to that used by Kociba et al. (1978). Laboratory chow was mixed with a benzene solution of TCDD and the benzene was evaporated. Two dose levels were used, 7 ppb and 20 ppb, slightly above the dose level used in the Kociba et al. (1978) study. Absorption was reported to be 50-60%.

As the Fries and Marrow (1975) study directly measured absorption from the diet, and the study upon which the CSF for TCDD is based is a dietary study, the Fries and Marrow (1975) data will be used in the AAF determination. For the purposes of AAF derivation, 55% was used as the absorption efficiency in the dose-response study. This absorption estimate is consistent with the estimates of absorption for the single oral gavage studies.

AAF (Oral-Diet)

An AAF (oral-diet) for ingestion of TCDD equivalents was derived for intake of dietary constituents. The dose-response study is a study in which rats were dosed with TCDD in their diet (Kociba, 1978). There are no studies available on gastrointestinal absorption of TCDD by humans from fish, vegetables, milk or other dietary constituents. Using a single human volunteer, Poiger and Schlatter (1986) reported that a minimum of 85% of a dose of TCDD (1 ng/kg) in corn oil was absorbed. This study is not as relevant for AAF derivation, however, because absorption of TCDD from vegetable oil vehicles has been well-documented to exceed the absorption from dietary constituents (USEPA,

1985). Thus, it is assumed that the absorption of TCDD equivalents in humans from various dietary constituents is the same as the dietary absorption that occurred in rats in the Kociba (1978) study. Thus, the AAF (oral-diet) is 1.

AAF (Dermal-Soil)

To derive the AAF (dermal-soil) one needs a value for the efficiency of absorption of soil-bound TCDD through human skin and an estimate of the absorption efficiency from dietary constituents in the Kociba study. As discussed above, the gastrointestinal absorption of TCDD by rats from diet was found to be 55% by Fries and Marrow (1975). USEPA (1992) discusses and analyzes selected information on dermal absorption of TCDD from soil for in vivo and in vitro laboratory animal studies and in vitro studies of human skin specimens. The results of this discussion and analysis, are summarized below.

- The average percent TCDD absorbed from soil for in vivo rat data reported in USEPA (1991; as cited by USEPA, 1992) was 8.0%. USEPA (1992) adjusted this data for human in vivo dermal absorption, resulting in an estimated human dermal absorption of 2.5% of TCDD in soil.
- Dermal absorption of TCDD over 24 hours in rats in vivo ranged from 1.08% (estimated from data in Shu et al., 1988; as cited in USEPA, 1992) to 3.1% (estimated from data in Poiger and Schlatter, 1980; as cited in USEPA, 1992). Adjusting these data for human in vivo absorption, USEPA (1992) estimates that human dermal absorption of TCDD in soil over 24 hours may range from 0.2% to 1%.
- The impacts of high and low organic carbon content in soil on dermal absorption of TCDD was evaluated by Roy et al. (1990; as cited in USEPA, 1992) for both rats and humans. USEPA analysis of the data of Roy et al. estimates that human dermal absorption of TCDD in soil ranges from 0.13% of TCDD in high organic carbon soil to 0.95% of TCDD in low organic carbon soil.

The above discussion indicates that human dermal absorption of TCDD in soil may range from 0.13% to 2.5%. As a conservative measure, and because the Illinois Environmental Protection Agency (IEPA, 1998) default values for fraction organic carbon in soil are relatively low (0.6% in surface soil and 0.2% in subsurface soil), the high end of this range has been utilized in deriving the AAF (dermal-soil). Therefore, the AAF (dermal-soil) is (2.5%)/(55%) = 0.05.

AAF (Oral-Soil)

Data for the bioavailability of TCDD from soil have been summarized by the USEPA (2000). Studies indicate that intestinal absorption of TCDD from soil is approximately half that reported for TCDD administered in corn oil to guinea pigs and rats (McConnel, et al., 1984 and Lucier, et al., 1986; as reported in USEPA 2000). Estimates of bioavailability of TCDD in site soils (i.e., not laboratory

prepared soils) range from 0.5% to 43%. Assuming that absorption of TCDD from the diet (as prepared by Kociba et al., 1978) is similar to that from corn oil (i.e., 55% of TCDD in diet or corn oil would be absorbed following oral exposure) it can be inferred that approximately 27.5 % of TCDD in soil may be absorbed following oral exposure. As this absorption estimate more directly compares absorption of TCDD from soil to dietary exposures, it is used here for AAF derivation. Therefore, in this risk assessment, the AAF (oral-soil) is (27.5%)/(55%) = 0.5.

AAF (Dermal-Water)

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a constituent-specific permeability constant that estimates the rate at which the constituent passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For dioxin, the AAF (dermal-water) is (100%)/(55%) = 1.8.

AAF (Oral-Water)

ENSR assumes that the absorption of TCDD equivalents in humans from ingestion of water is the same as the dietary absorption that occurred in rats in the Kociba (1978) study. Thus, the AAF (oral-water) is 1.

AAF (Inhalation)

The USEPA has developed a unit risk for inhaled dioxin from the oral CSF. In so doing, USEPA assumed that 100% of the particles estimated to be retained in the lung are absorbed. It is assumed in this risk assessment that the absorption of TCDD from inhalation of air is the same as that assumed by the USEPA in developing the unit risk factor. Thus, the AAF (inhalation) is 1.

Summary of AAFs for TCDD

Oral-Water	1
Oral-Diet	1
Oral-Soil	0.5
Dermal-Soil	0.05
Dermal-Water	1.8

Inhalation 1

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APPENDIX P

RISK CALCULATION SPREADSHEETS

APPENDIX P
RISK CALCULATION SPREADSHEETS

Indoor Industrial Worker

- RME Indoor Air
- MLE Indoor Air

Outdoor Industrial Worker

- RME Surface Soil
- RME Outdoor Air (Particulates)
- RME Outdoor Air (VOC)
- MLE Surface Soil
- MLE Outdoor Air (Particulates)
- MLE Outdoor Air (VOC)

Construction Worker

- RME Soil
- RME Outdoor Air (Particulates)
- RME Groundwater
- RME Outdoor Air (Trench Air)
- MLE Soil
- MLE Outdoor Air (Particulates)
- MLE Groundwater
- MLE Outdoor Air (Trench Air)

Trespassing Teenager

- RME Surface Soil
- RME Outdoor Air (Particulates)
- RME Outdoor Air (VOC)
- MLE Surface Soil
- MLE Outdoor Air (Particulates)
- MLE Outdoor Air (VOC)

Recreational Teen

- RME Sediment
- MLE Sediment

Recreational Fisher

- RME Sediment
- RME Fish Tissue
- MLE Sediment
- MLE Fish Tissue

Resident

- RME-Surface Soil
- RME Outdoor Air (Particulates)
- RME Produce
- MLE-Surface Soil
- MLE Outdoor Air (Particulates)
- MLE Produce

Receptors Evaluated:	
Receptor 1:	RME Indoor Industrial Worker

ASSUMPTIONS FOR INDOOR WORKER -RME INHALATION OF INDOOR AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Indoor Industrial Worker	1.6	(m^3 air/hour)	
Body Weight	RME Indoor Industrial Worker	70	(kg)	
Exposure Time	RME Indoor Industrial Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Indoor Industrial Worker	250	(days)/365 (days) =	6.85E-01
Exposure Duration (cancer)	RME Indoor Industrial Worker	25	(yrs)/70(yrs) =	3.57E-01
Exposure Duration (noncancer)	RME Indoor Industrial Worker	25	(yrs)/25(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDinh Indoor Industrial Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	4.47E-02	4.47E-02	9.08E-03
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	4.47E-02	4.47E-02	3.44E-04
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	2.95E-02	2.95E-02	2.38E-03
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	4.47E-02	4.47E-02	8.95E-05
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	4.47E-02	4.47E-02	2.68E-04
Vinyl chloride	1.00E+00	1	1.54E-02	4.47E-02	4.47E-02	6.89E-04

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TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -RME

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	9.08E-03	--	NC	5.79E-07	5.26E-09	--	NC	--	NC
4-Methyl-2-pentanone	NC	4.20E-04	NC	--	NC	--	NC	--	NC
Benzene	3.44E-04	1.98E-03	6.82E-07	1.23E-03	4.24E-07	3.98E-04	1.37E-07	2.38E-05	8.20E-09
Chlorobenzene	NC	1.35E-03	NC	1.41E-03	NC	2.71E-03	NC	--	NC
Chloroform	2.38E-03	--	NC	1.89E-04	4.49E-07	--	NC	3.34E-05	7.94E-08
Ethylbenzene	NC	--	NC	9.90E-04	NC	--	NC	--	NC
Naphthalene	NC	1.01E-04	NC	1.16E-04	NC	--	NC	--	NC
Tetrachloroethene	8.95E-05	1.89E-04	1.69E-08	--	NC	--	NC	--	NC
Toluene	NC	4.70E-03	NC	--	NC	--	NC	--	NC
Trichloroethene	2.68E-04	1.58E-04	4.24E-08	4.01E-05	1.08E-08	1.41E-04	3.78E-08	--	NC
Vinyl chloride	6.89E-04	1.17E-04	8.06E-08	--	NC	2.76E-03	1.90E-06	--	NC
	Total:		**8.22E-07**		**8.89E-07**		**2.08E-06**		**8.76E-08**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Maximum indoor air EPC from this area.

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Industrial Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	1.25E-01	1.25E-01	5.48E+00
Benzene	1.00E+00	1	1.70E-03	1.25E-01	1.25E-01	7.37E+01
Chlorobenzene	1.00E+00	1	5.71E-03	1.25E-01	1.25E-01	2.19E+01
Chloroform	1.00E+00	1	8.60E-05	1.25E-01	1.25E-01	1.46E+03
Ethylbenzene	1.00E+00	1	2.86E-01	1.25E-01	1.25E-01	4.38E-01
Naphthalene	1.00E+00	1	8.57E-04	1.25E-01	1.25E-01	1.46E+02
Tetrachloroethene	1.00E+00	1	1.14E-01	1.25E-01	1.25E-01	1.10E+00
Toluene	1.00E+00	1	1.14E-01	1.25E-01	1.25E-01	1.10E+00
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	1.25E-01	1.25E-01	4.38E+00

TABLE
POTENTIAL HAZARD INDEX
NONCARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -RME

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	5.79E-07	NC	--	NC	--	NC
4-Methyl-2-pentanone	5.48E+00	4.20E-04	2.30E-03	--	NC	--	NC	--	NC
Benzene	7.37E+01	1.98E-03	1.46E-01	1.23E-03	9.06E-02	3.98E-04	2.93E-02	2.38E-05	1.75E-03
Chlorobenzene	2.19E+01	1.35E-03	2.96E-02	1.41E-03	3.09E-02	2.71E-03	5.94E-02	--	NC
Chloroform	1.46E+03	--	NC	1.89E-04	2.75E-01	--	NC	3.34E-05	4.86E-02
Ethylbenzene	4.38E-01	--	NC	9.90E-04	4.34E-04	--	NC	--	NC
Naphthalene	1.46E+02	1.01E-04	1.48E-02	1.16E-04	1.69E-02	--	NC	--	NC
Tetrachloroethene	1.10E+00	1.89E-04	2.08E-04	--	NC	--	NC	--	NC
Toluene	1.10E+00	4.70E-03	5.16E-03	--	NC	--	NC	--	NC
Trichloroethene	NC	1.58E-04	NC	4.01E-05	NC	1.41E-04	NC	--	NC
Vinyl chloride	4.38E+00	1.17E-04	5.13E-04	--	NC	2.76E-03	1.21E-02	--	NC
	Total HI:		**1.98E-01**		**4.14E-01**		**1.01E-01**		**5.04E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - Maximum indoor air EPC from this area.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Indoor Industrial Worker

ASSUMPTIONS FOR INDOOR WORKER -MLE INHALATION OF INDOOR AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Indoor Industrial Worker	1.0	(m^3 air/hour)	
Body Weight	MLE Indoor Industrial Worker	70	(kg)	
Exposure Time	MLE Indoor Industrial Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Indoor Industrial Worker	250	(days)/365 (days) =	6.85E-01
Exposure Duration (cancer)	MLE Indoor Industrial Worker	7	(yrs)/70(yrs) =	1.00E-01
Exposure Duration (noncancer)	MLE Indoor Industrial Worker	7	(yrs)/7(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDInh Indoor Industrial Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	7.83E-03	7.83E-03	1.59E-03
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	7.83E-03	7.83E-03	6.03E-05
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	5.17E-03	5.17E-03	4.16E-04
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	7.83E-03	7.83E-03	1.57E-05
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	7.83E-03	7.83E-03	4.70E-05
Vinyl chloride	1.00E+00	1	1.54E-02	7.83E-03	7.83E-03	1.21E-04

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -MLE

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	1.59E-03	--	NC	2.24E-07	3.56E-10	--	NC	--	NC
4-Methyl-2-pentanone	NC	4.20E-05	NC	--	NC	--	NC	--	NC
Benzene	6.03E-05	4.45E-04	2.68E-08	4.45E-04	2.68E-08	1.33E-04	8.02E-09	4.21E-06	2.54E-10
Chlorobenzene	NC	1.43E-04	NC	3.88E-04	NC	4.80E-04	NC	--	NC
Chloroform	4.16E-04	--	NC	4.72E-05	1.96E-08	--	NC	6.49E-06	2.70E-09
Ethylbenzene	NC	--	NC	2.42E-04	NC	--	NC	--	NC
Naphthalene	NC	1.07E-05	NC	2.52E-05	NC	--	NC	--	NC
Tetrachloroethene	1.57E-05	2.24E-05	3.51E-10	1.43E-05	2.24E-10	--	NC	--	NC
Toluene	NC	4.67E-04	NC	--	NC	--	NC	--	NC
Trichloroethene	4.70E-05	1.62E-05	7.61E-10	--	NC	2.26E-05	1.06E-09	--	NC
Vinyl chloride	1.21E-04	2.43E-05	2.93E-09	--	NC	4.18E-04	5.04E-08	--	NC
	Total:		**3.09E-08**		**4.70E-08**		**5.95E-08**		**2.95E-09**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Indoor air EPC calculated from average groundwater concentration in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Industrial Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	7.83E-02	7.83E-02	3.42E+00
Benzene	1.00E+00	1	1.70E-03	7.83E-02	7.83E-02	4.60E+01
Chlorobenzene	1.00E+00	1	5.71E-03	7.83E-02	7.83E-02	1.37E+01
Chloroform	1.00E+00	1	8.60E-05	7.83E-02	7.83E-02	9.10E+02
Ethylbenzene	1.00E+00	1	2.86E-01	7.83E-02	7.83E-02	2.74E-01
Naphthalene	1.00E+00	1	8.57E-04	7.83E-02	7.83E-02	9.13E+01
Tetrachloroethene	1.00E+00	1	1.14E-01	7.83E-02	7.83E-02	6.87E-01
Toluene	1.00E+00	1	1.14E-01	7.83E-02	7.83E-02	6.87E-01
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	7.83E-02	7.83E-02	2.74E+00

TABLE
POTENTIAL HAZARD INDEX
NONCARCINOGENIC ASSESSMENT
INHALATION OF
INDOOR AIR
INDOOR WORKER -MLE

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	2.24E-07	NC	--	NC	--	NC
4-Methyl-2-pentanone	3.42E+00	4.20E-05	1.44E-04	--	NC	--	NC	--	NC
Benzene	4.60E+01	4.45E-04	2.05E-02	4.45E-04	2.05E-02	1.33E-04	6.12E-03	4.21E-06	1.94E-04
Chlorobenzene	1.37E+01	1.43E-04	1.96E-03	3.88E-04	5.32E-03	4.80E-04	6.58E-03	--	NC
Chloroform	9.10E+02	--	NC	4.72E-05	4.30E-02	--	NC	6.49E-06	5.91E-03
Ethylbenzene	2.74E-01	--	NC	2.42E-04	6.62E-05	--	NC	--	NC
Naphthalene	9.13E+01	1.07E-05	9.77E-04	2.52E-05	2.30E-03	--	NC	--	NC
Tetrachloroethene	6.87E-01	2.24E-05	1.54E-05	1.43E-05	9.82E-06	--	NC	--	NC
Toluene	6.87E-01	4.67E-04	3.21E-04	--	NC	--	NC	--	NC
Trichloroethene	NC	1.62E-05	NC	--	NC	2.26E-05	NC	--	NC
Vinyl chloride	2.74E+00	2.43E-05	6.66E-05	--	NC	4.18E-04	1.15E-03	--	NC
	Total HI:		**2.40E-02**		**7.11E-02**		**1.38E-02**		**6.10E-03**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - Indoor air EPC calculated from average groundwater concentration in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Outdoor Worker

ASSUMPTIONS FOR OUTDOOR WORKER RME INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	*RME Outdoor Worker*	50	(mg soil/day)	
Soil on Skin	RME Outdoor Worker	0.02	(mg/cm^2)	
Skin Exposed	RME Outdoor Worker	3339	(cm^2)	
Body Weight	RME Outdoor Worker	70	(kg)	
Exposure Frequency	RME Outdoor Worker	190	(days)/365(days) =	5.21E-01
Exposure Duration (cancer)	RME Outdoor Worker	25	(years)/70(years) =	3.57E-01
Exposure Duration (noncancer)	RME Outdoor Worker	25	(yrs)/25(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER RME

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	3.98E-08	3.98E-08	1.77E-10	1.77E-10	5.98E-08	2.66E-10	6.00E-08
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	3.85E-08	3.85E-08	3.55E-09	3.55E-09	2.81E-08	2.59E-09	3.07E-08
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	3.85E-08	3.85E-08	3.55E-09	3.55E-09	2.81E-07	2.59E-08	3.07E-07
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	3.85E-08	3.85E-08	3.55E-09	3.55E-09	2.81E-08	2.59E-09	3.07E-08
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	3.85E-08	3.85E-08	3.55E-09	3.55E-09	2.81E-07	2.59E-08	3.07E-07
Dieldrin	1.00E+00	1	0.01	1.60E+01	1.33E-07	1.33E-07	1.77E-09	1.77E-09	2.12E-06	2.84E-08	2.15E-06
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	3.85E-08	3.85E-08	3.55E-09	3.55E-09	2.81E-08	2.59E-09	3.07E-08
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	6.64E-08	6.64E-08	8.87E-09	8.87E-09	9.96E-03	1.33E-03	1.13E-02
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	1.10E-07	1.10E-07	7.09E-09	7.09E-09	2.20E-07	1.42E-08	2.35E-07

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Transect 3		Transect 4		Transect 6		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	6.00E-08	--	NC	--	NC	--	NC	1.50E+01	8.99E-07	6.40E+01	3.84E-06	--	NC	3.70E+01	2.22E-06
Benzo(a)anthracene	3.07E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	3.07E-07	2.60E-01	7.98E-08	3.50E+00	1.07E-06	3.60E+00	1.11E-06	2.10E+00	6.45E-07	--	NC	2.20E+00	6.75E-07	7.00E+00	2.15E-06
Benzo(b)fluoranthene	3.07E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	1.30E+04	NC	--	NC
Dibenzo(a,h)anthracene	3.07E-07	--	NC	2.30E-01	7.06E-08	--	NC	--	NC	--	NC	--	NC	1.30E+00	3.99E-07
Dieldrin	2.15E-06	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	3.07E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	1.13E-02	--	NC	--	NC	--	NC	--	NC	1.30E-03	1.47E-05	1.20E-02	1.35E-04	--	NC
Total PCBs	2.35E-07	--	NC	--	NC	--	NC	--	NC	1.52E+00	3.57E-07	1.21E+02	2.85E-05	1.07E+00	2.51E-07
	Total:		7.98E-08		1.15E-06		1.11E-06		1.54E-06		1.89E-05		1.65E-04		5.02E-06

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER RME

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	1.12E-07	1.12E-07	4.97E-10	4.97E-10	3.72E-04	1.66E-06	3.73E-04
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	3.72E-07	3.72E-07	9.93E-10	9.93E-10	1.00E-05	2.68E-08	1.01E-05
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	3.72E-07	3.72E-07	4.97E-09	4.97E-09	7.44E-03	9.93E-05	7.54E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	3.09E-07	3.09E-07	1.99E-08	1.99E-08	1.54E-02	9.93E-04	1.64E-02

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (per mg/kg)	Transect 3 EPC (mg/kg)	Transect 3 HQ	Transect 4 EPC (mg/kg)	Transect 4 HQ	Transect 6 EPC (mg/kg)	Transect 6 HQ	Transect 7 EPC (mg/kg)	Transect 7 HQ	Fill Area H EPC (mg/kg)	Fill Area H HQ	Fill Area I EPC (mg/kg)	Fill Area I HQ	Fill Area L EPC (mg/kg)	Fill Area L HQ
Arsenic	3.73E-04	--	NC	--	NC	--	NC	1.50E+01	5.59E-03	6.40E+01	2.39E-02	--	NC	3.70E+01	1.38E-02
Benzo(a)anthracene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	NC	2.60E-01	NC	3.50E+00	NC	3.60E+00	NC	2.10E+00	NC	--	NC	2.20E+00	NC	7.00E+00	NC
Benzo(b)fluoranthene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	1.01E-05	--	NC	--	NC	--	NC	--	NC	--	NC	1.30E+04	1.31E-01	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	2.30E-01	NC	--	NC	--	NC	--	NC	--	NC	1.30E+00	NC
Dieldrin	7.54E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	--	NC	--	NC	1.30E-03	NC	1.20E-02	NC	--	NC
Total PCBs	1.64E-02	--	NC	--	NC	--	NC	--	NC	1.52E+00	2.50E-02	1.21E+02	1.99E+00	1.07E+00	1.76E-02
	Total HI:		**NC**		**NC**		**NC**		**5.59E-03**		**4.89E-02**		**2.12E+00**		**3.14E-02**

Notes:
-- Not a constituent of concern in this area/medium.
-- Not a constituent of concern in this area/medium.
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Outdoor Worker

ASSUMPTIONS FOR OUTDOOR WORKER - RME INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Outdoor Worker	1.6	(m^3 air/hour)	
Body Weight	RME Outdoor Worker	70	(kg)	
Exposure Time	RME Outdoor Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Outdoor Worker	190	(days)/365 (days) =	5.21E-01
Exposure Duration (cancer)	RME Outdoor Worker	25	(yrs)/70(yrs) =	3.57E-01
Exposure Duration (noncancer)	RME Outdoor Worker	25	(yrs)/25(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDInh RME Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	3.40E-02	3.40E-02	5.10E-01
Benzo(a)anthracene	1.00E+00	1	3.10E-01	3.40E-02	3.40E-02	1.05E-02
Benzo(a)pyrene	1.00E+00	1	3.10E+00	3.40E-02	3.40E-02	1.05E-01
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	3.40E-02	3.40E-02	1.05E-02
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	3.40E-02	3.40E-02	1.05E-01
Dieldrin	1.00E+00	1	1.61E+01	3.40E-02	3.40E-02	5.47E-01
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	3.40E-02	3.40E-02	1.05E-02
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	3.40E-02	3.40E-02	5.10E+03
Total PCBs	1.00E+00	1	2.00E+00	3.40E-02	3.40E-02	6.80E-02

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - RME

	Reference	Transect 3		Transect 4		Transect 6		Transect 7		Fill Area H		Fill Area I		Fill Area L	
Constituent	Risk (per mg/m3)	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	5.10E-01	--	NC	--	NC	--	NC	1.27E-08	6.45E-09	8.11E-08	4.13E-08	--	NC	3.13E-08	1.59E-08
Benzo(a)anthracene	1.05E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	1.05E-01	2.20E-10	2.32E-11	2.96E-09	3.12E-10	3.04E-09	3.21E-10	1.77E-09	1.87E-10	--	NC	3.64E-09	3.84E-10	5.91E-09	6.23E-10
Benzo(b)fluoranthene	1.05E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	2.15E-05	NC	--	NC
Dibenzo(a,h)anthracene	1.05E-01	--	NC	1.94E-10	2.05E-11	--	NC	--	NC	--	NC	--	NC	1.10E-09	1.16E-10
Dieldrin	5.47E-01	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	1.05E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	5.10E+03	--	NC	--	NC	--	NC	--	NC	1.65E-12	8.40E-09	1.99E-11	1.01E-07	--	NC
Total PCBs	6.80E-02	--	NC	--	NC	--	NC	--	NC	1.93E-09	1.31E-10	2.01E-07	1.37E-08	9.04E-10	6.15E-11
	Total:		**2.32E-11**		**3.32E-10**		**3.21E-10**		**6.64E-09**		**4.99E-08**		**1.15E-07**		**1.67E-08**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose E (mg/kg-day)	ADDinh Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Outdoor Industrial Worker

ASSUMPTIONS FOR OUTDOOR WORKER - RME INHALATION OF OUTDOOR AIR VOCs		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Outdoor Industrial Worker	1.6	(m^3 air/hour)	
Body Weight	RME Outdoor Industrial Worker	70	(kg)	
Exposure Time	RME Outdoor Industrial Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Outdoor Industrial Worker	190	(days)/365 (days) =	5.21E-01
Exposure Duration (cancer)	RME Outdoor Industrial Worker	25	(yrs)/70(yrs) =	3.57E-01
Exposure Duration (noncancer)	RME Outdoor Industrial Worker	25	(yrs)/25(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Outdoor Industrial Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	3.40E-02	3.40E-02	6.90E-03
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	3.40E-02	3.40E-02	2.62E-04
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	2.24E-02	2.24E-02	1.81E-03
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	3.40E-02	3.40E-02	6.80E-05
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	3.40E-02	3.40E-02	2.04E-04
Vinyl chloride	1.00E+00	1	1.54E-02	3.40E-02	3.40E-02	5.24E-04

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - RME

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethan	6.90E-03	--	NC	2.50E-07	1.73E-09	--	NC	--	NC
4-Methyl-2-pentanone	NC	9.50E-06	NC	--	NC	--	NC	--	NC
Benzene	2.62E-04	1.40E-04	3.66E-08	1.40E-04	3.66E-08	1.20E-04	3.14E-08	1.00E-06	2.62E-10
Chlorobenzene	NC	9.50E-05	NC	1.60E-04	NC	8.10E-04	NC	--	NC
Chloroform	1.81E-03	--	NC	2.50E-05	4.52E-08	--	NC	1.40E-06	2.53E-09
Ethylbenzene	NC	--	NC	1.20E-04	NC	--	NC	--	NC
Naphthalene	NC	6.90E-06	NC	1.30E-05	NC	--	NC	--	NC
Tetrachloroethene	6.80E-05	1.50E-05	1.02E-09	--	NC	--	NC	--	NC
Toluene	NC	3.40E-04	NC	--	NC	--	NC	--	NC
Trichloroethene	2.04E-04	1.70E-05	3.47E-09	7.00E-06	1.43E-09	6.40E-05	1.31E-08	--	NC
Vinyl chloride	5.24E-04	2.30E-05	1.20E-08	--	NC	2.30E-03	1.20E-06	--	NC
	Total:		**5.32E-08**		**8.50E-08**		**1.25E-06**		**2.79E-09**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Maximum outdoor air EPC from this area.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDInh Industrial Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	9.52E-02	9.52E-02	4.16E+00
Benzene	1.00E+00	1	1.70E-03	9.52E-02	9.52E-02	5.60E+01
Chlorobenzene	1.00E+00	1	5.71E-03	9.52E-02	9.52E-02	1.67E+01
Chloroform	1.00E+00	1	8.60E-05	9.52E-02	9.52E-02	1.11E+03
Ethylbenzene	1.00E+00	1	2.86E-01	9.52E-02	9.52E-02	3.33E-01
Naphthalene	1.00E+00	1	8.57E-04	9.52E-02	9.52E-02	1.11E+02
Tetrachloroethene	1.00E+00	1	1.14E-01	9.52E-02	9.52E-02	8.35E-01
Toluene	1.00E+00	1	1.14E-01	9.52E-02	9.52E-02	8.35E-01
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	9.52E-02	9.52E-02	3.33E+00

TABLE
POTENTIAL HAZARD INDEX
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - RME

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	2.50E-07	NC	--	NC	--	NC
4-Methyl-2-pentanone	4.16E+00	9.50E-06	3.96E-05	--	NC	--	NC	--	NC
Benzene	5.60E+01	1.40E-04	7.84E-03	1.40E-04	7.84E-03	1.20E-04	6.72E-03	1.00E-06	5.60E-05
Chlorobenzene	1.67E+01	9.50E-05	1.58E-03	1.60E-04	2.67E-03	8.10E-04	1.35E-02	--	NC
Chloroform	1.11E+03	--	NC	2.50E-05	2.77E-02	--	NC	1.40E-06	1.55E-03
Ethylbenzene	3.33E-01	--	NC	1.20E-04	3.99E-05	--	NC	--	NC
Naphthalene	1.11E+02	6.90E-06	7.66E-04	1.30E-05	1.44E-03	--	NC	--	NC
Tetrachloroethene	8.35E-01	1.50E-05	1.25E-05	--	NC	--	NC	--	NC
Toluene	8.35E-01	3.40E-04	2.84E-04	--	NC	--	NC	--	NC
Trichloroethene	NC	1.70E-05	NC	7.00E-06	NC	6.40E-05	NC	--	NC
Vinyl chloride	3.33E+00	2.30E-05	7.66E-05	--	NC	2.30E-03	7.66E-03	--	NC
	Total HI:		**1.06E-02**		**3.97E-02**		**2.79E-02**		**1.61E-03**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Maximum outdoor air EPC from this area.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Outdoor Worker

ASSUMPTIONS FOR OUTDOOR WORKER MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	MLE Outdoor Worker	30	(mg soil/day)	
Soil on Skin	MLE Outdoor Worker	0.02	(mg/cm^2)	
Skin Exposed	MLE Outdoor Worker	3339	(cm^2)	
Body Weight	MLE Outdoor Worker	70	(kg)	
Exposure Frequency	MLE Outdoor Worker	190	(days)/365(days) =	5.21E-01
Exposure Duration (cancer)	MLE Outdoor Worker	7	(years)/70(years) =	1.00E-01
Exposure Duration (noncancer)	MLE Outdoor Worker	7	(yrs)/7(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER MLE

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing MLE Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	6.69E-09	6.69E-09	4.97E-11	4.97E-11	1.00E-08	7.45E-11	1.01E-08
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	6.47E-09	6.47E-09	9.93E-10	9.93E-10	4.72E-09	7.25E-10	5.45E-09
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	6.47E-09	6.47E-09	9.93E-10	9.93E-10	4.72E-08	7.25E-09	5.45E-08
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	6.47E-09	6.47E-09	9.93E-10	9.93E-10	4.72E-09	7.25E-10	5.45E-09
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	6.47E-09	6.47E-09	9.93E-10	9.93E-10	4.72E-08	7.25E-09	5.45E-08
Dieldrin	1.00E+00	1	0.01	1.60E+01	2.23E-08	2.23E-08	4.97E-10	4.97E-10	3.57E-07	7.95E-09	3.65E-07
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	6.47E-09	6.47E-09	9.93E-10	9.93E-10	4.72E-09	7.25E-10	5.45E-09
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	1.12E-08	1.12E-08	2.48E-09	2.48E-09	1.67E-03	3.72E-04	2.05E-03
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	1.85E-08	1.85E-08	1.99E-09	1.99E-09	3.70E-08	3.97E-09	4.10E-08

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Transect 3		Transect 4		Transect 6		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	1.01E-08	--	NC	--	NC	--	NC	9.99E+00	1.01E-07	2.28E+01	2.31E-07	--	NC	3.33E+01	3.37E-07
Benzo(a)anthracene	5.45E-09	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	5.45E-08	1.37E-01	7.46E-09	5.90E-01	3.21E-08	5.04E-01	2.75E-08	3.74E-01	2.04E-08	--	NC	6.29E-01	3.43E-08	2.30E+00	1.25E-07
Benzo(b)fluoranthene	5.45E-09	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	6.66E+03	NC	--	NC
Dibenzo(a,h)anthracene	5.45E-08	--	NC	1.30E-01	7.08E-09	--	NC	--	NC	--	NC	--	NC	4.55E-01	2.48E-08
Dieldrin	3.65E-07	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	5.45E-09	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	2.05E-03	--	NC	--	NC	--	NC	--	NC	5.33E-04	1.09E-06	3.34E-03	6.83E-06	--	NC
Total PCBs	4.10E-08	--	NC	--	NC	--	NC	--	NC	6.60E-01	2.71E-08	3.13E+01	1.28E-06	4.90E-01	2.01E-08
	Total:		7.46E-09		3.92E-08		2.75E-08		1.21E-07		1.35E-06		6.15E-06		5.07E-07

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER MLE

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing MLE Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	6.69E-08	6.69E-08	4.97E-10	4.97E-10	2.23E-04	1.66E-06	2.25E-04
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	2.23E-07	2.23E-07	9.93E-10	9.93E-10	6.03E-06	2.68E-08	6.06E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	2.23E-07	2.23E-07	4.97E-09	4.97E-09	4.46E-03	9.93E-05	4.56E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	1.85E-07	1.85E-07	1.99E-08	1.99E-08	9.26E-03	9.93E-04	1.03E-02

TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
OUTDOOR WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference	Transect 3		Transect 4		Transect 6		Transect 7		Fill Area H		Fill Area I		Fill Area L	
	HQ (per mg/kg)	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	2.25E-04	--	NC	--	NC	--	NC	9.99E+00	2.25E-03	2.28E+01	5.12E-03	--	NC	3.33E+01	7.48E-03
Benzo(a)anthracene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	NC	1.37E-01	NC	5.90E-01	NC	5.04E-01	NC	3.74E-01	NC	--	NC	6.29E-01	NC	2.30E+00	NC
Benzo(b)fluoranthene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	6.06E-06	--	NC	--	NC	--	NC	--	NC	--	NC	6.66E+03	4.03E-02	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	1.30E-01	NC	--	NC	--	NC	--	NC	--	NC	4.55E-01	NC
Dieldrin	4.56E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	--	NC	--	NC	5.33E-04	NC	3.34E-03	NC	--	NC
Total PCBs	1.03E-02	--	NC	--	NC	--	NC	--	NC	6.60E-01	6.77E-03	3.13E+01	3.21E-01	4.90E-01	5.02E-03
	Total HI:		NC		NC		NC		2.25E-03		1.19E-02		3.61E-01		1.25E-02

Notes:
-- Not a constituent of concern in this area/medium.
-- Not a constituent of concern in this area/medium.
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Outdoor Worker

ASSUMPTIONS FOR OUTDOOR WORKER - MLE INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Outdoor Worker	1	(m^3 air/hour)	
Body Weight	MLE Outdoor Worker	70	(kg)	
Exposure Time	MLE Outdoor Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Outdoor Worker	190	(days)/365 (days) =	5.21E-01
Exposure Duration (cancer)	MLE Outdoor Worker	7	(yrs)/70(yrs) =	1.00E-01
Exposure Duration (noncancer)	MLE Outdoor Worker	7	(yrs)/7(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh MLE Outdoor Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	5.95E-03	5.95E-03	8.92E-02
Benzo(a)anthracene	1.00E+00	1	3.10E-01	5.95E-03	5.95E-03	1.84E-03
Benzo(a)pyrene	1.00E+00	1	3.10E+00	5.95E-03	5.95E-03	1.84E-02
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	5.95E-03	5.95E-03	1.84E-03
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	5.95E-03	5.95E-03	1.84E-02
Dieldrin	1.00E+00	1	1.61E+01	5.95E-03	5.95E-03	9.58E-02
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	5.95E-03	5.95E-03	1.84E-03
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	5.95E-03	5.95E-03	8.92E+02
Total PCBs	1.00E+00	1	2.00E+00	5.95E-03	5.95E-03	1.19E-02

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - MLE

Constituent	Reference Risk (per mg/m3)	Transect 3		Transect 4		Transect 6		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	8.92E-02	--	NC	--	NC	--	NC	8.44E-09	7.53E-10	2.89E-08	2.58E-09	--	NC	2.81E-08	2.51E-09
Benzo(a)anthracene	1.84E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	1.84E-02	1.16E-10	2.13E-12	4.99E-10	9.19E-12	4.26E-10	7.85E-12	3.16E-10	5.83E-12	--	NC	1.04E-09	1.92E-11	1.94E-09	3.58E-11
Benzo(b)fluoranthene	1.84E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	1.10E-05	NC	--	NC
Dibenzo(a,h)anthracene	1.84E-02	--	NC	1.10E-10	2.03E-12	--	NC	--	NC	--	NC	--	NC	3.84E-10	7.09E-12
Dieldrin	9.58E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	1.84E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	8.92E+02	--	NC	--	NC	--	NC	--	NC	6.75E-13	6.02E-10	5.53E-12	4.94E-09	--	NC
Total PCBs	1.19E-02	--	NC	--	NC	--	NC	--	NC	8.36E-10	9.95E-12	5.18E-08	6.17E-10	4.14E-10	4.93E-12
	Total:		2.13E-12		1.12E-11		7.85E-12		7.59E-10		3.19E-09		5.57E-09		2.58E-09

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
OUTDOOR WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose E (mg/kg-day)	ADDinh Outdoor Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Outdoor Industrial Worker

ASSUMPTIONS FOR OUTDOOR WORKER - MLE INHALATION OF OUTDOOR AIR VOCs		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Outdoor Industrial Worker	1.0	(m^3 air/hour)	
Body Weight	MLE Outdoor Industrial Worker	70	(kg)	
Exposure Time	MLE Outdoor Industrial Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Outdoor Industrial Worker	190	(days)/365 (days) =	5.21E-01
Exposure Duration (cancer)	MLE Outdoor Industrial Worker	7	(yrs)/70(yrs) =	1.00E-01
Exposure Duration (noncancer)	MLE Outdoor Industrial Worker	7	(yrs)/7(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDInh MLE Outdoor Industrial Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	5.95E-03	5.95E-03	1.21E-03
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	5.95E-03	5.95E-03	4.58E-05
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	3.93E-03	3.93E-03	3.16E-04
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	5.95E-03	5.95E-03	1.19E-05
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	5.95E-03	5.95E-03	3.57E-05
Vinyl chloride	1.00E+00	1	1.54E-02	5.95E-03	5.95E-03	9.16E-05

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - MLE

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethan	1.21E-03	--	NC	5.50E-06	6.64E-11	--	NC	--	NC
4-Methyl-2-pentanone	NC	9.40E-07	NC	--	NC	--	NC	--	NC
Benzene	4.58E-05	1.20E-05	5.50E-10	2.70E-05	1.24E-09	7.90E-06	3.62E-10	3.00E-07	1.37E-11
Chlorobenzene	NC	9.70E-06	NC	2.40E-05	NC	2.90E-05	NC	--	NC
Chloroform	3.16E-04	--	NC	2.60E-06	8.22E-10	--	NC	4.30E-07	1.36E-10
Ethylbenzene	NC	--	NC	1.70E-05	NC	--	NC	--	NC
Naphthalene	NC	7.00E-07	NC	1.50E-06	NC	--	NC	--	NC
Tetrachloroethene	1.19E-05	1.70E-06	2.02E-11	--	NC	--	NC	--	NC
Toluene	NC	3.20E-05	NC	1.20E-06	NC	--	NC	--	NC
Trichloroethene	3.57E-05	1.60E-06	5.71E-11	--	NC	1.90E-06	6.78E-11	--	NC
Vinyl chloride	9.16E-05	4.60E-06	4.21E-10	--	NC	7.10E-05	6.50E-09	--	NC
	Total:		**1.05E-09**		**2.13E-09**		**6.93E-09**		**1.50E-10**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Outdoor air EPC calculated based on average groundwater concentration in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Industrial Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	5.95E-02	5.95E-02	2.60E+00
Benzene	1.00E+00	1	1.70E-03	5.95E-02	5.95E-02	3.50E+01
Chlorobenzene	1.00E+00	1	5.71E-03	5.95E-02	5.95E-02	1.04E+01
Chloroform	1.00E+00	1	8.60E-05	5.95E-02	5.95E-02	6.92E+02
Ethylbenzene	1.00E+00	1	2.86E-01	5.95E-02	5.95E-02	2.08E-01
Naphthalene	1.00E+00	1	8.57E-04	5.95E-02	5.95E-02	6.94E+01
Tetrachloroethene	1.00E+00	1	1.14E-01	5.95E-02	5.95E-02	5.22E-01
Toluene	1.00E+00	1	1.14E-01	5.95E-02	5.95E-02	5.22E-01
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	5.95E-02	5.95E-02	2.08E+00

TABLE
POTENTIAL HAZARD INDEX
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR VOCs
OUTDOOR WORKER - MLE

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	5.50E-08	NC	--	NC	--	NC
4-Methyl-2-pentanone	2.60E+00	9.40E-07	2.45E-06	--	NC	--	NC	--	NC
Benzene	3.50E+01	1.20E-05	4.20E-04	2.70E-05	9.45E-04	7.90E-06	2.76E-04	3.00E-07	1.05E-05
Chlorobenzene	1.04E+01	9.70E-06	1.01E-04	2.40E-05	2.50E-04	2.90E-05	3.02E-04	--	NC
Chloroform	6.92E+02	--	NC	2.60E-06	1.80E-03	--	NC	4.30E-07	2.97E-04
Ethylbenzene	2.08E-01	--	NC	1.70E-05	3.54E-06	--	NC	--	NC
Naphthalene	6.94E+01	7.00E-07	4.86E-05	1.50E-06	1.04E-04	--	NC	--	NC
Tetrachloroethene	5.22E-01	1.70E-06	8.87E-07	--	NC	--	NC	--	NC
Toluene	5.22E-01	3.20E-05	1.67E-05	1.20E-06	6.26E-07	--	NC	--	NC
Trichloroethene	NC	1.60E-06	NC	--	NC	1.90E-06	NC	--	NC
Vinyl chloride	2.08E+00	4.60E-06	9.58E-06	--	NC	7.10E-05	1.48E-04	--	NC
	Total HI:		**5.99E-04**		**3.10E-03**		**7.26E-04**		**3.08E-04**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Outdoor air EPC calculated based on average groundwater concentration in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER RME INCIDENTIAL INGESTION AND DERMAL CONTACT SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	RME Construction Worker	100	(mg soil/day)	
Soil on Skin	RME Construction Worker	0.19	(mg/cm^2)	
Skin Exposed	RME Construction Worker	3339	(cm^2)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Frequency	RME Construction Worker	40	(days)/365(days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(years)/70(years) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	6.71E-10	6.71E-10	1.42E-11	1.42E-11	1.01E-09	2.13E-11	1.03E-09
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-10	2.07E-10	6.81E-10
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-09	2.07E-09	6.81E-09
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-10	2.07E-10	6.81E-10
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-09	2.07E-09	6.81E-09
Dieldrin	1.00E+00	1	0.01	1.60E+01	2.24E-09	2.24E-09	1.42E-10	1.42E-10	3.58E-08	2.27E-09	3.81E-08
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-10	2.07E-10	6.81E-10
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	1.12E-09	1.12E-09	7.09E-10	7.09E-10	1.68E-04	1.06E-04	2.74E-04
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	1.86E-09	1.86E-09	5.68E-10	5.68E-10	3.71E-09	1.14E-09	4.85E-09

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
	Risk (per mg/kg)	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	1.03E-09	--	NC	--	NC	--	NC	1.50E+01	1.54E-08	6.40E+01	6.58E-08	--	NC	3.70E+01	3.80E-08
Benzo(a)anthracene	6.81E-10	--	NC	5.90E+00	4.02E-09	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	6.81E-09	2.60E-01	1.77E-09	3.50E+00	2.38E-08	3.60E+00	2.45E-08	2.10E+00	1.43E-08	--	NC	2.20E+00	1.50E-08	7.00E+00	4.76E-08
Benzo(b)fluoranthene	6.81E-10	--	NC	3.30E+00	2.25E-09	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	1.30E+04	NC	--	NC
Dibenzo(a,h)anthracene	6.81E-09	--	NC	5.20E-01	3.54E-09	--	NC	--	NC	--	NC	--	NC	1.30E+00	8.85E-09
Dieldrin	3.81E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	6.81E-10	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	2.74E-04	--	NC	--	NC	--	NC	--	NC	1.30E-03	3.56E-07	1.20E-02	3.29E-06	--	NC
Total PCBs	4.85E-09	--	NC	--	NC	--	NC	--	NC	1.52E+00	7.37E-09	1.21E+02	5.88E-07	1.07E+00	5.19E-09
	Total:		1.77E-09		3.36E-08		2.45E-08		2.97E-08		4.30E-07		3.89E-06		9.97E-08

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing /E Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder /E Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	4.70E-08	4.70E-08	9.93E-10	9.93E-10	1.57E-04	3.31E-06	1.60E-04
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	1.57E-07	1.57E-07	1.99E-09	1.99E-09	4.23E-06	5.37E-08	4.28E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	1.57E-07	1.57E-07	9.93E-09	9.93E-09	3.13E-03	1.99E-04	3.33E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	1.30E-07	1.30E-07	3.97E-08	3.97E-08	6.50E-03	1.99E-03	8.48E-03

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HI (per mg/kg)	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	1.60E-04	--	NC	--	NC	--	NC	1.50E+01	2.39E-03	6.40E+01	1.02E-02	--	NC	3.70E+01	5.92E-03
Benzo(a)anthracene	NC	--	NC	5.90E+00	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	NC	2.60E-01	NC	3.50E+00	NC	3.60E+00	NC	2.10E+00	NC	--	NC	2.20E+00	NC	7.00E+00	NC
Benzo(b)fluoranthene	NC	--	NC	3.30E+00	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	4.28E-06	--	NC	--	NC	--	NC	--	NC	--	NC	1.30E+04	5.57E-02	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	5.20E-01	NC	--	NC	--	NC	--	NC	--	NC	1.30E+00	NC
Dieldrin	3.33E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	--	NC	--	NC	1.30E-03	NC	1.20E-02	NC	--	NC
Total PCBs	8.48E-03	--	NC	--	NC	--	NC	--	NC	1.52E+00	1.29E-02	1.21E+02	1.03E+00	1.07E+00	9.08E-03
	Total HI:		**NC**		**NC**		**NC**		**2.39E-03**		**2.31E-02**		**1.08E+00**		**1.50E-02**

Notes:
-- Not a constituent of concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - RME INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Construction Worker	2.5	(m^3 air/hour)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time	RME Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Construction Worker	40	(days)/365 (days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	4.47E-04	4.47E-04	6.71E-03
Benzo(a)anthracene	1.00E+00	1	3.10E-01	4.47E-04	4.47E-04	1.39E-04
Benzo(a)pyrene	1.00E+00	1	3.10E+00	4.47E-04	4.47E-04	1.39E-03
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	4.47E-04	4.47E-04	1.39E-04
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	4.47E-04	4.47E-04	1.39E-03
Dieldrin	1.00E+00	1	1.61E+01	4.47E-04	4.47E-04	7.20E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	4.47E-04	4.47E-04	1.39E-04
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	4.47E-04	4.47E-04	6.71E+01
Total PCBs	1.00E+00	1	2.00E+00	4.47E-04	4.47E-04	8.95E-04

TABLE
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Reference	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
	Risk (per mg/m3)	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	6.71E-03	--	NC	--	NC	--	NC	8.99E-07	6.03E-09	3.84E-06	2.58E-08	--	NC	2.22E-06	1.49E-08
Benzo(a)anthracene	1.39E-04	--	NC	3.54E-07	4.91E-11	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	1.39E-03	1.56E-08	2.16E-11	2.10E-07	2.91E-10	2.16E-07	3.00E-10	1.26E-07	1.75E-10	--	NC	1.32E-07	1.83E-10	4.20E-07	5.82E-10
Benzo(b)fluoranthene	1.39E-04	--	NC	1.98E-07	2.75E-11	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	7.80E-04	NC	--	NC
Dibenzo(a,h)anthracene	1.39E-03	--	NC	3.12E-08	4.33E-11	--	NC	--	NC	--	NC	--	NC	7.80E-08	1.08E-10
Dieldrin	7.20E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	1.39E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	6.71E+01	--	NC	--	NC	--	NC	--	NC	7.80E-11	5.23E-09	7.20E-10	4.83E-08	--	NC
Total PCBs	8.95E-04	--	NC	--	NC	--	NC	--	NC	9.12E-08	8.16E-11	7.28E-06	6.51E-09	6.42E-08	5.74E-11
	Total:		2.16E-11		4.11E-10		3.00E-10		6.21E-09		3.11E-08		5.50E-08		1.56E-08

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
(a) - Higher of the surface soil and subsurface soil EPC used.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDInh RME Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

Receptors Evaluated:	
Receptor 3:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER-RME INCIDENTAL INGESTION AND DERMAL CONTACT GROUNDWATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	RME Construction Worker	0.005	(l/day)	
Skin Exposed	RME Construction Worker	3339	(cm^2)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time (dermal route only)	RME Construction Worker	1	(hr/day)	
Exposure Frequency	RME Construction Worker	10	(days)/365 (days) =	2.74E-02
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/ 70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/ 1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor (dermal route only)		0.001	(l/cm^3)	

22-Dec-00

SAUGET AREA 1 - EE/CA AND RI/FS
RME
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,1,2,2-Tetrachloroethane	1.00E+00	1	1	9.00E-03	2.00E-01	2.80E-08	2.80E-08	1.68E-07	1.68E-07	5.59E-09	3.36E-08	3.92E-08
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	2.40E-02	2.80E-08	2.80E-08	1.16E-06	1.16E-06	6.71E-10	2.78E-08	2.85E-08
2,4,5-TP (Silvex)	1.00E+00	NA	NA	2.33E-03	NA	NA	NA	NA	NA	NA	NA	NC
2,4,6-Trichlorophenol	1.00E+00	1	1	5.00E-02	1.10E-02	2.80E-08	2.80E-08	9.33E-07	9.33E-07	3.08E-10	1.03E-08	1.06E-08
2,4-Dichlorophenol	1.00E+00	NA	NA	2.30E-02	NA	NA	NA	NA	NA	NA	NA	NC
2-Chlorophenol	1.00E+00	NA	NA	1.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
2-Nitroaniline	1.00E+00	NA	NA	5.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
3-Methylphenol/4-Methylphenol	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
4,4-DDE	1.00E+00	1	1	2.40E-01	3.40E-01	2.80E-08	2.80E-08	4.48E-06	4.48E-06	9.51E-09	1.52E-06	1.53E-06
4-Chloroaniline	1.00E+00	NA	NA	6.33E-03	NA	NA	NA	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	NA	NA	2.77E-03	NA	NA	NA	NA	NA	NA	NA	NC
4-Nitroaniline	1.00E+00	NA	NA	2.66E-03	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	1	1	1.63E-02	6.30E+00	2.80E-08	2.80E-08	3.04E-07	3.04E-07	1.76E-07	1.92E-06	2.09E-06
Antimony	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1	1.60E-04	1.50E+00	2.80E-08	2.80E-08	2.99E-09	2.99E-09	4.19E-08	4.48E-09	4.64E-08
Benzene	1.00E+00	1	2.13	2.10E-02	1.50E-02	2.80E-08	2.80E-08	8.35E-07	8.35E-07	4.19E-10	1.25E-08	1.29E-08
Benzo(k)fluoranthene	1.00E+00	1	1	1.20E+00	7.30E-02	2.80E-08	2.80E-08	2.24E-05	2.24E-05	2.04E-09	1.64E-06	1.64E-06
beta-BHC	*1.00E+00*	*1*	*1*	*1.60E-02*	*1.80E+00*	*2.80E-08*	*2.80E-08*	*2.99E-07*	*2.99E-07*	*5.03E-08*	*5.38E-07*	*5.88E-07*
Cadmium	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Carbazole	1.00E+00	1	1	7.97E-02	2.00E-02	2.80E-08	2.80E-08	1.49E-06	1.49E-06	5.59E-10	2.98E-08	3.03E-08
Chlorobenzene	1.00E+00	NA	NA	4.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	1	8.90E-03	6.10E-03	2.80E-08	2.80E-08	1.66E-07	1.66E-07	1.71E-10	1.01E-09	1.18E-09
Cis/Trans-1,2-Dichloroethene	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
delta-BHC	1.00E+00	NA	NA	1.60E-02	NA	NA	NA	NA	NA	NA	NA	NC
Ethylbenzene	1.00E+00	NA	NA	7.40E-02	NA	NA	NA	NA	NA	NA	NA	NC
Heptachlor	1.00E+00	1	1	1.10E-02	4.50E+00	2.80E-08	2.80E-08	2.05E-07	2.05E-07	1.26E-07	9.24E-07	1.05E-06
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	9.10E+00	2.80E-08	2.80E-08	2.05E-07	2.05E-07	2.54E-07	1.87E-06	2.12E-06
Molybdenum	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	6.90E-02	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	5.45E-05	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	NA	NA	6.96E-03	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	1	6.50E-01	1.20E-01	2.80E-08	2.80E-08	1.21E-05	1.21E-05	3.35E-09	1.46E-06	1.46E-06
Phenol	1.00E+00	NA	NA	5.50E-03	NA	NA	NA	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	1	4.80E-02	5.20E-02	2.80E-08	2.80E-08	8.96E-07	8.96E-07	1.45E-09	4.66E-08	4.81E-08
Toluene	1.00E+00	NA	NA	4.50E-02	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.8	1.40E+00	1.50E+05	2.80E-08	2.80E-08	4.70E-05	4.70E-05	4.19E-03	7.06E+00	7.06E+00
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E+00	2.80E-08	2.80E-08	1.46E-05	1.46E-05	5.59E-08	2.92E-05	2.92E-05
Trichloroethene	1.00E+00	1	1	1.60E-02	1.10E-02	2.80E-08	2.80E-08	2.99E-07	2.99E-07	3.08E-10	3.29E-09	3.59E-09
Vanadium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1	7.30E-03	7.20E-01	2.80E-08	2.80E-08	1.36E-07	1.36E-07	2.01E-08	9.81E-08	1.18E-07
Zinc	1.00E+00	NA	NA	6.00E-04	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- RME

	Reference	Fill Area G							Fill Area H						
	Risk	EE-05		EEG-106		EEG-107			EE-01		EE-02		EE-03		
Constituent	(per mg/L)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	Total	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	Total
1,1,2,2-Tetrachloroethane	3.92E-08	--	NC	--	NC	--	NC	NC	1.20E-02	1.57E-10	--	NC	--	NC	1.57E-10
1,4-Dichlorobenzene	2.85E-08	--	NC	--	NC	8.50E-01	8.06E-09	8.06E-09	2.20E+00	2.09E-08	6.35E-01	6.02E-09	--	NC	2.69E-08
2,4,5-TP (Silvex)	NC	3.90E-01	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
2,4,6-Trichlorophenol	1.06E-08	--	NC	--	NC	--	NC	NC	2.70E-01	9.52E-10	4.65E-01	1.64E-09	--	NC	2.59E-09
2,4-Dichlorophenol	NC	--	NC	--	NC	3.60E+00	NC	NC	--	NC	3.70E-01	NC	--	NC	NC
2-Chlorophenol	NC	--	NC	--	NC	6.30E-01	NC	NC	--	NC	--	NC	--	NC	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	NC	--	NC	1.35E-02	NC	--	NC	NC
3-Methylphenol/4-Methylphenol	NC	--	NC	--	NC	2.40E+00	NC	NC	--	NC	--	NC	--	NC	NC
4,4-DDE	1.53E-06	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
4-Chloroaniline	NC	1.60E+00	NC	--	NC	2.30E+01	NC	NC	1.80E+00	NC	7.75E-01	NC	--	NC	NC
4-Methyl-2-pentanone	NC	--	NC	--	NC	1.30E+00	NC	NC	--	NC	--	NC	--	NC	NC
4-Nitroaniline	NC	8.40E-03	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
alpha-BHC	2.09E-06	--	NC	8.30E-03	5.79E-09	6.00E-03	4.19E-09	9.98E-09	--	NC	4.95E-04	3.45E-10	--	NC	3.45E-10
Antimony	NC	--	NC	--	NC	--	NC	NC	--	NC	1.05E-01	NC	--	NC	NC
Arsenic	4.64E-08	--	NC	--	NC	--	NC	NC	--	NC	1.25E+00	1.93E-08	--	NC	1.93E-08
Benzene	1.29E-08	1.10E-01	4.75E-10	--	NC	3.70E+00	1.60E-08	1.64E-08	1.50E+00	6.47E-09	2.25E+00	9.71E-09	--	NC	1.62E-08
Benzo(k)fluoranthene	1.64E-06	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
beta-BHC	5.88E-07	--	NC	3.60E-04	7.06E-11	--	NC	7.06E-11	--	NC	--	NC	--	NC	NC
Cadmium	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Carbazole	3.03E-08	--	NC	--	NC	--	NC	NC	5.20E-03	5.26E-11	--	NC	--	NC	5.26E-11
Chlorobenzene	NC	6.20E-01	NC	--	NC	4.30E+00	NC	NC	1.20E+00	NC	4.35E+00	NC	--	NC	NC
Chloroform	1.18E-09	--	NC	--	NC	--	NC	NC	--	NC	4.25E-01	1.68E-10	--	NC	1.68E-10
Cis/Trans-1,2-Dichloroethene	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
delta-BHC	NC	3.60E-04	NC	--	NC	1.70E-02	NC	NC	--	NC	--	NC	--	NC	NC
Ethylbenzene	NC	--	NC	--	NC	--	NC	NC	1.80E+00	NC	--	NC	--	NC	NC
Heptachlor	1.05E-06	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Heptachlor epoxide	2.12E-06	--	NC	--	NC	--	NC	NC	--	NC	4.40E-03	3.11E-09	--	NC	3.11E-09
Molybdenum	NC	4.50E-01	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Naphthalene	NC	3.90E-01	NC	--	NC	2.10E+00	NC	NC	2.30E+00	NC	1.95E-01	NC	--	NC	NC
Nickel	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Nitrobenzene	NC	--	NC	--	NC	--	NC	NC	--	NC	5.65E-02	NC	--	NC	NC
Pentachlorophenol	1.46E-06	--	NC	--	NC	2.00E+00	9.73E-07	9.73E-07	4.30E+00	2.09E-06	6.70E-01	3.26E-07	--	NC	2.42E-06
Phenol	NC	3.80E-01	NC	--	NC	1.40E+01	NC	NC	--	NC	3.15E-01	NC	--	NC	NC
Tetrachloroethene	4.81E-08	--	NC	--	NC	1.70E-01	2.72E-09	2.72E-09	--	NC	--	NC	--	NC	NC
Toluene	NC	--	NC	--	NC	8.50E+00	NC	NC	--	NC	--	NC	--	NC	NC
Total 2,3,7,8-TCDD TEQ	7.06E+00	1.78E-07	4.19E-07	--	NC	3.60E-06	8.47E-06	8.89E-06	4.57E-08	1.08E-07	--	NC	5.02E-08	1.18E-07	2.26E-07
Total PCBs	2.92E-05	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Trichloroethene	3.59E-09	--	NC	--	NC	2.00E-01	2.40E-10	2.40E-10	--	NC	4.95E-02	5.93E-11	--	NC	5.93E-11
Vanadium	NC	--	NC	--	NC	3.30E-01	NC	NC	--	NC	--	NC	--	NC	NC
Vinyl chloride	1.18E-07	--	NC	--	NC	4.10E-02	1.62E-09	1.62E-09	--	NC	--	NC	--	NC	NC
Zinc	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
	Total:		4.19E-07		5.86E-09		9.46E-06	9.90E-06		2.23E-06		3.66E-07		1.18E-07	2.71E-06

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risks divided by the number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,1,2,2-Tetrachloroethane	1.00E+00	1	1	9.00E-03	6.00E-02	1.96E-06	1.96E-06	1.18E-05	1.18E-05	3.26E-05	1.96E-04	2.29E-04
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	3.00E-02	1.96E-06	1.96E-06	8.10E-05	8.10E-05	6.52E-05	2.70E-03	2.77E-03
2,4,5-TP (Silvex)	1.00E+00	1	1	2.33E-03	8.00E-03	1.96E-06	1.96E-06	3.04E-06	3.04E-06	2.45E-04	3.81E-04	6.25E-04
2,4,6-Trichlorophenol	1.00E+00	NA	NA	5.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	1	2.30E-02	3.00E-03	1.96E-06	1.96E-06	3.01E-05	3.01E-05	6.52E-04	1.00E-02	1.07E-02
2-Chlorophenol	1.00E+00	1	1	1.10E-02	5.00E-03	1.96E-06	1.96E-06	1.44E-05	1.44E-05	3.91E-04	2.88E-03	3.27E-03
2-Nitroaniline	1.00E+00	NA	NA	5.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
3-Methylphenol/4-Methylphenol	1.00E+00	1	1	1.00E-02	5.00E-02	1.96E-06	1.96E-06	1.31E-05	1.31E-05	3.91E-05	2.61E-04	3.01E-04
4,4-DDE	1.00E+00	NA	NA	2.40E-01	NA	NA	NA	NA	NA	NA	NA	NC
4-Chloroaniline	1.00E+00	1	1	6.33E-03	4.00E-03	1.96E-06	1.96E-06	8.27E-06	8.27E-06	4.89E-04	2.07E-03	2.56E-03
4-Methyl-2-pentanone	1.00E+00	1	1	2.77E-03	8.00E-02	1.96E-06	1.96E-06	3.62E-06	3.62E-06	2.45E-05	4.52E-05	6.97E-05
4-Nitroaniline	1.00E+00	NA	NA	2.66E-03	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	NA	NA	1.63E-02	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	1	6.7	1.60E-04	4.00E-04	1.96E-06	1.96E-06	1.40E-06	1.40E-06	4.89E-03	3.50E-03	8.39E-03
Arsenic	1.00E+00	1	1	1.60E-04	3.00E-04	1.96E-06	1.96E-06	2.09E-07	2.09E-07	6.52E-03	6.97E-04	7.22E-03
Benzene	1.00E+00	1	2.13	2.10E-02	3.00E-03	1.96E-06	1.96E-06	5.85E-05	5.85E-05	6.52E-04	1.95E-02	2.01E-02
Benzo(k)fluoranthene	1.00E+00	NA	NA	1.20E+00	NA	NA	NA	NA	NA	NA	NA	NC
beta-BHC	1.00E+00	NA	NA	1.60E-02	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	40	1.00E-03	5.00E-04	1.96E-06	1.96E-06	5.23E-05	5.23E-05	3.91E-03	1.05E-01	1.08E-01
Carbazole	1.00E+00	NA	NA	7.97E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	1	1	4.10E-02	2.00E-02	1.96E-06	1.96E-06	5.36E-05	5.36E-05	9.78E-05	2.68E-03	2.78E-03
Chloroform	1.00E+00	1	1	8.90E-03	1.00E-02	1.96E-06	1.96E-06	1.16E-05	1.16E-05	1.96E-04	1.16E-03	1.38E-03
Cis/Trans-1,2-Dichloroethene	1.00E+00	1	1	1.00E-02	1.00E-02	1.96E-06	1.96E-06	1.31E-05	1.31E-05	1.96E-04	1.31E-03	1.50E-03
delta-BHC	1.00E+00	1	1	1.60E-02	3.00E-04	1.96E-06	1.96E-06	2.09E-05	2.09E-05	6.52E-03	6.97E-02	7.62E-02
Ethylbenzene	1.00E+00	1	1	7.40E-02	1.00E-01	1.96E-06	1.96E-06	9.67E-05	9.67E-05	1.96E-05	9.67E-04	9.87E-04
Heptachlor	1.00E+00	1	1	1.10E-02	5.00E-04	1.96E-06	1.96E-06	1.44E-05	1.44E-05	3.91E-03	2.88E-02	3.27E-02
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	1.30E-05	1.96E-06	1.96E-06	1.44E-05	1.44E-05	1.51E-01	1.11E+00	1.26E+00
Molybdenum	1.00E+00	1	1	1.60E-04	5.00E-03	1.96E-06	1.96E-06	2.09E-07	2.09E-07	3.91E-04	4.18E-05	4.33E-04
Naphthalene	1.00E+00	1	1	6.90E-02	2.00E-02	1.96E-06	1.96E-06	9.02E-05	9.02E-05	9.78E-05	4.51E-03	4.61E-03
Nickel	1.00E+00	1	77	5.45E-05	2.00E-02	1.96E-06	1.96E-06	5.48E-06	5.48E-06	9.78E-05	2.74E-04	3.72E-04
Nitrobenzene	1.00E+00	1	1	6.96E-03	5.00E-04	1.96E-06	1.96E-06	9.10E-06	9.10E-06	3.91E-03	1.82E-02	2.21E-02
Pentachlorophenol	1.00E+00	1	1	6.50E-01	3.00E-02	1.96E-06	1.96E-06	8.49E-04	8.49E-04	6.52E-05	2.83E-02	2.84E-02
Phenol	1.00E+00	1	1	5.50E-03	6.00E-01	1.96E-06	1.96E-06	7.19E-06	7.19E-06	3.26E-06	1.20E-05	1.52E-05
Tetrachloroethene	1.00E+00	1	1	4.80E-02	1.00E-02	1.96E-06	1.96E-06	6.27E-05	6.27E-05	1.96E-04	6.27E-03	6.47E-03
Toluene	1.00E+00	1	1	4.50E-02	2.00E-01	1.96E-06	1.96E-06	5.88E-05	5.88E-05	9.78E-06	2.94E-04	3.04E-04
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	1.40E+00	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E-05	1.96E-06	1.96E-06	1.02E-03	1.02E-03	9.78E-02	5.10E+01	5.11E+01
Trichloroethene	1.00E+00	1	1	1.60E-02	6.00E-03	1.96E-06	1.96E-06	2.09E-05	2.09E-05	3.26E-04	3.48E-03	3.81E-03
Vanadium	1.00E+00	1	10	1.60E-04	7.00E-03	1.96E-06	1.96E-06	2.09E-06	2.09E-06	2.80E-04	2.99E-04	5.78E-04
Vinyl chloride	1.00E+00	1	1	7.30E-03	3.00E-03	1.96E-06	1.96E-06	9.54E-06	9.54E-06	6.52E-04	3.18E-03	3.83E-03
Zinc	1.00E+00	1.6	3.03	6.00E-04	3.00E-01	3.13E-06	3.13E-06	2.38E-06	2.38E-06	1.04E-05	7.92E-06	1.84E-05

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- RME

Constituent	Reference HQ (per mg/L)	Fill Area G							Fill Area H						
		EE-05		EEG-106		EEG-107			EE-01		EE-02		EE-03		
		EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total
1,1,2,2-Tetrachloroethane	2.29E-04	--	NC	--	NC	--	NC	NC	1.20E-02	9.15E-07	--	NC	--	NC	9.15E-07
1,4-Dichlorobenzene	2.77E-03	--	NC	--	NC	8.50E-01	7.84E-04	7.84E-04	2.20E+00	2.03E-03	6.35E-01	5.85E-04	--	NC	2.61E-03
2,4,5-TP (Silvex)	6.25E-04	3.90E-01	8.13E-05	--	NC	--	NC	8.13E-05	--	NC	--	NC	--	NC	NC
2,4,6-Trichlorophenol	NC	--	NC	--	NC	--	NC	NC	2.70E-01	NC	4.65E-01	NC	--	NC	NC
2,4-Dichlorophenol	1.07E-02	--	NC	--	NC	3.60E+00	1.28E-02	1.28E-02	--	NC	3.70E-01	1.32E-03	--	NC	1.32E-03
2-Chlorophenol	3.27E-03	--	NC	--	NC	6.30E-01	6.86E-04	6.86E-04	--	NC	--	NC	--	NC	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	NC	--	NC	1.35E-02	NC	--	NC	NC
3-Methylphenol/4-Methylphenol	3.01E-04	--	NC	--	NC	2.40E+00	2.40E-04	2.40E-04	--	NC	--	NC	--	NC	NC
4,4-DDE	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
4-Chloroaniline	2.56E-03	1.60E+00	1.36E-03	--	NC	2.30E+01	1.96E-02	2.10E-02	1.80E+00	1.53E-03	7.75E-01	6.61E-04	--	NC	2.20E-03
4-Methyl-2-pentanone	6.97E-05	--	NC	--	NC	1.30E+00	3.02E-05	3.02E-05	--	NC	--	NC	--	NC	NC
4-Nitroaniline	NC	8.40E-03	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
alpha-BHC	NC	--	NC	8.30E-03	NC	6.00E-03	NC	NC	--	NC	4.95E-04	NC	--	NC	NC
Antimony	8.39E-03	--	NC	--	NC	--	NC	NC	--	NC	1.05E-01	2.94E-04	--	NC	2.94E-04
Arsenic	7.22E-03	--	NC	--	NC	--	NC	NC	--	NC	1.25E+00	3.01E-03	--	NC	3.01E-03
Benzene	2.01E-02	1.10E-01	7.38E-04	--	NC	3.70E+00	2.48E-02	2.56E-02	1.50E+00	1.01E-02	2.25E+00	1.51E-02	--	NC	2.52E-02
Benzo(k)fluoranthene	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
beta-BHC	NC	--	NC	3.60E-04	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Cadmium	1.08E-01	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Carbazole	NC	--	NC	--	NC	--	NC	NC	5.20E-03	NC	--	NC	--	NC	NC
Chlorobenzene	2.78E-03	6.20E-01	5.74E-04	--	NC	4.30E+00	3.98E-03	4.55E-03	1.20E+00	1.11E-03	4.35E+00	4.03E-03	--	NC	5.14E-03
Chloroform	1.36E-03	--	NC	--	NC	--	NC	NC	--	NC	4.25E-01	1.92E-04	--	NC	1.92E-04
Cis/Trans-1,2-Dichloroethene	1.50E-03	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
delta-BHC	7.62E-02	3.60E-04	9.15E-06	--	NC	1.70E-02	4.32E-04	4.41E-04	--	NC	--	NC	--	NC	NC
Ethylbenzene	9.87E-04	--	NC	--	NC	--	NC	NC	1.80E+00	5.92E-04	--	NC	--	NC	5.92E-04
Heptachlor	3.27E-02	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Heptachlor epoxide	1.26E+00	--	NC	--	NC	--	NC	NC	--	NC	4.40E-03	1.84E-03	--	NC	1.84E-03
Molybdenum	4.33E-04	4.50E-01	6.50E-05	--	NC	--	NC	6.50E-05	--	NC	--	NC	--	NC	NC
Naphthalene	4.61E-03	3.90E-01	5.99E-04	--	NC	2.10E+00	3.22E-03	3.82E-03	2.30E+00	3.53E-03	1.95E-01	2.99E-04	--	NC	3.83E-03
Nickel	3.72E-04	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Nitrobenzene	2.21E-02	--	NC	--	NC	--	NC	NC	--	NC	5.65E-02	4.16E-04	--	NC	4.16E-04
Pentachlorophenol	2.84E-02	--	NC	--	NC	2.00E+00	1.89E-02	1.89E-02	4.30E+00	4.07E-02	6.70E-01	6.34E-03	--	NC	4.70E-02
Phenol	1.52E-05	3.80E-01	1.93E-06	--	NC	1.40E+01	7.11E-05	7.31E-05	--	NC	3.15E-01	1.60E-06	--	NC	1.60E-06
Tetrachloroethene	6.47E-03	--	NC	--	NC	1.70E-01	3.67E-04	3.67E-04	--	NC	--	NC	--	NC	NC
Toluene	3.04E-04	--	NC	--	NC	8.50E+00	8.61E-04	8.61E-04	--	NC	--	NC	--	NC	NC
Total 2,3,7,8-TCDD TEQ	NC	1.78E-07	NC	--	NC	3.60E-06	NC	NC	4.57E-08	NC	--	NC	5.02E-08	NC	NC
Total PCBs	5.11E+01	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Trichloroethene	3.81E-03	--	NC	--	NC	2.00E-01	2.54E-04	2.54E-04	--	NC	4.95E-02	6.29E-05	--	NC	6.29E-05
Vanadium	5.78E-04	--	NC	--	NC	3.30E-01	6.36E-05	6.36E-05	--	NC	--	NC	--	NC	NC
Vinyl chloride	3.83E-03	--	NC	--	NC	4.10E-02	5.24E-05	5.24E-05	--	NC	--	NC	--	NC	NC
Zinc	1.84E-05	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Total HI:			**3.43E-03**		**NC**		**8.72E-02**	**9.06E-02**		**5.95E-02**		**3.41E-02**		**NC**	**9.37E-02**

Notes:
-- Not a constituent of potential concern in this area/medium
EPC - Exposure Point Concentration.
HI - Hazard Index
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - HQ divided by the number of wells in this area

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- RME

Constituent	Reference HQ (per mg/L)	Fill Area I													Fill Area L	
		AA-I-S1		AA-I-S2		EE-12		EE-13		EE-14		EE-15			EE-109	
		EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total	EPC (mg/L)	HQ (a)
1,1,2,2-Tetrachloroethane	2.29E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
1,4-Dichlorobenzene	2.77E-03	4.40E+00	2.03E-03	4.20E+00	1.94E-03	--	NC	--	NC	1.40E+01	6.45E-03	4.30E-01	1.98E-04	1.06E-02	--	NC
2,4,5-TP (Silvex)	6.25E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4,6-Trichlorophenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4-Dichlorophenol	1.07E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	2.60E-02	2.77E-04
2-Chlorophenol	3.27E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
3-Methylphenol/4-Methylphenol	3.01E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4,4-DDE	NC	--	NC	--	NC	2.20E-03	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Chloroaniline	2.56E-03	4.10E+00	1.75E-03	6.80E-01	2.90E-04	1.40E+00	5.97E-04	--	NC	1.80E+00	7.67E-04	--	NC	3.40E-03	5.50E-02	1.41E-04
4-Methyl-2-pentanone	6.97E-05	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
alpha-BHC	NC	--	NC	--	NC	2.45E-03	NC	--	NC	1.10E-03	NC	--	NC	NC	--	NC
Antimony	8.39E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Arsenic	7.22E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	4.30E+00	3.10E-02
Benzene	2.01E-02	6.20E-01	2.08E-03	1.20E-01	4.03E-04	6.80E-01	2.28E-03	--	NC	7.50E-01	2.52E-03	--	NC	7.28E-03	4.40E-02	8.86E-04
Benzo(k)fluoranthene	NC	--	NC	1.20E-03	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
beta-BHC	NC	--	NC	--	NC	--	NC	--	NC	1.00E-03	NC	--	NC	NC	--	NC
Cadmium	1.08E-01	--	NC	7.00E-02	1.27E-03	--	NC	--	NC	--	NC	--	NC	1.27E-03	--	NC
Carbazole	NC	--	NC	--	NC	3.50E-03	NC	--	NC	2.60E-02	NC	--	NC	NC	--	NC
Chlorobenzene	2.78E-03	8.70E+00	4.03E-03	3.20E+00	1.48E-03	1.40E+00	6.48E-04	--	NC	3.80E+00	1.76E-03	--	NC	7.91E-03	--	NC
Chloroform	1.36E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	7.60E-02	1.03E-04
Cis/Trans-1,2-Dichloroethene	1.50E-03	1.20E+00	3.01E-04	5.10E-01	1.28E-04	--	NC	--	NC	--	NC	--	NC	4.28E-04	--	NC
delta-BHC	7.62E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Ethylbenzene	9.87E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Heptachlor	3.27E-02	--	NC	--	NC	2.50E-03	1.36E-05	--	NC	--	NC	--	NC	1.36E-05	--	NC
Heptachlor epoxide	1.26E+00	--	NC	--	NC	5.60E-03	1.17E-03	--	NC	--	NC	--	NC	1.17E-03	--	NC
Molybdenum	4.33E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	4.61E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Nickel	3.72E-04	--	NC	7.80E+00	4.84E-04	--	NC	--	NC	--	NC	--	NC	4.84E-04	1.80E+02	6.70E-02
Nitrobenzene	2.21E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Pentachlorophenol	2.84E-02	--	NC	--	NC	--	NC	--	NC	5.00E-01	2.37E-03	--	NC	2.37E-03	--	NC
Phenol	1.52E-05	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	6.47E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	3.04E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	3.05E-06	NC	4.74E-08	NC	7.69E-07	NC	--	NC	NC	--	NC
Total PCBs	5.11E+01	--	NC	--	NC	--	NC	--	NC	5.88E-03	5.01E-02	--	NC	5.01E-02	--	NC
Trichloroethene	3.81E-03	--	NC	1.80E-01	1.14E-04	--	NC	--	NC	--	NC	--	NC	1.14E-04	--	NC
Vanadium	5.78E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Vinyl chloride	3.83E-03	9.70E-01	6.20E-04	2.40E-01	1.53E-04	--	NC	--	NC	--	NC	--	NC	7.73E-04	--	NC
Zinc	1.84E-05	--	NC	3.30E+01	1.01E-04	--	NC	--	NC	--	NC	--	NC	1.01E-04	--	NC
Total HI:			**1.08E-02**		**6.36E-03**		**4.71E-03**		**NC**		**6.40E-02**		**1.98E-04**	**8.60E-02**		**9.94E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - HQ divided by the number of wells in this area

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - RME INHALATION OF TRENCH AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Construction Worker	2.5	(m^3 air/hour)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time	RME Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Construction Worker	40	(days)/365 (days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
RME

CARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	4.47E-04	4.47E-04	9.08E-05
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	4.47E-04	4.47E-04	3.44E-06
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	2.95E-04	2.95E-04	2.38E-05
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	4.47E-04	4.47E-04	8.95E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	4.47E-04	4.47E-04	2.68E-06
Vinyl chloride	1.00E+00	1	1.54E-02	4.47E-04	4.47E-04	6.89E-06

TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - RME
TRENCH AIR

Constituent	Reference Risk (per mg/m3)	Fill Area G					Fill Area H				
		EE-05		EEG-107		Total	EE-01		EE-02		Total
		EPC (mg/m3)	Risk (a)	EPC (mg/m3)	Risk (a)		EPC (mg/m3)	Risk (a)	EPC (mg/m3)	Risk (a)	
1,1,2,2-Tetrachloroethane	9.08E-05	--	NC	--	NC	NC	2.80E-04	1.27E-08	--	NC	1.27E-08
4-Methyl-2-pentanone	NC	--	NC	1.25E-01	NC	NC	--	NC	--	NC	NC
Benzene	3.44E-06	2.98E-03	5.13E-09	1.00E-01	1.73E-07	1.78E-07	4.06E-02	7.00E-08	6.09E-02	1.05E-07	1.75E-07
Chlorobenzene	NC	1.55E-02	NC	1.07E-01	NC	NC	3.00E-02	NC	1.09E-01	NC	NC
Chloroform	2.38E-05	--	NC	--	NC	NC	--	NC	1.16E-02	1.38E-07	1.38E-07
Ethylbenzene	NC	--	NC	--	NC	NC	4.19E-02	NC	--	NC	NC
Naphthalene	NC	8.51E-03	NC	4.58E-02	NC	NC	5.02E-02	NC	4.26E-03	NC	NC
Tetrachloroethene	8.95E-07	--	NC	4.10E-03	1.83E-09	1.83E-09	--	NC	--	NC	NC
Toluene	NC	--	NC	2.24E-01	NC	NC	--	NC	--	NC	NC
Trichloroethene	2.68E-06	--	NC	2.62E-02	3.51E-08	3.51E-08	--	NC	6.48E-03	8.69E-09	8.69E-09
Vinyl chloride	6.89E-06	--	NC	1.30E-03	4.46E-09	4.46E-09	--	NC	--	NC	NC
	Total:		**5.13E-09**		**2.14E-07**	**2.19E-07**		**8.27E-08**		**2.52E-07**	**3.35E-07**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risk divided by number of wells in this area.

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TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - RME
TRENCH AIR

	Reference	Fill Area I									L	
	Risk	AA-I-S1		AA-I-S2		EE-12		EE-14			EEG-109	
Constituent	(per mg/m3)	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	Total	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	9.08E-05	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Methyl-2-pentanone	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Benzene	3.44E-06	1.68E-02	1.45E-08	3.25E-03	2.80E-09	1.84E-02	1.59E-08	2.03E-02	1.75E-08	5.06E-08	1.19E-03	4.10E-09
Chlorobenzene	NC	2.17E-01	NC	7.99E-02	NC	3.50E-02	NC	9.49E-02	NC	NC	--	NC
Chloroform	2.38E-05	--	NC	--	NC	--	NC	--	NC	NC	2.08E-03	4.95E-08
Ethylbenzene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	8.95E-07	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Trichloroethene	2.68E-06	--	NC	2.35E-02	1.58E-08	--	NC	--	NC	1.58E-08	--	NC
Vinyl chloride	6.89E-06	3.07E-02	5.28E-08	7.59E-03	1.31E-08	--	NC	--	NC	6.59E-08	--	NC
	Total:		**6.73E-08**		**3.17E-08**		**1.59E-08**		**1.75E-08**	**1.32E-07**		**5.36E-08**

Notes:
-- Not a constituent of potential concern in this area/m
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a
(a) - Risk divided by number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh RME Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	3.13E-02	3.13E-02	1.37E+00
Benzene	1.00E+00	1	1.70E-03	3.13E-02	3.13E-02	1.84E+01
Chlorobenzene	1.00E+00	1	5.71E-03	3.13E-02	3.13E-02	5.48E+00
Chloroform	1.00E+00	1	8.60E-05	3.13E-02	3.13E-02	3.64E+02
Ethylbenzene	1.00E+00	1	2.86E-01	3.13E-02	3.13E-02	1.09E-01
Naphthalene	1.00E+00	1	8.57E-04	3.13E-02	3.13E-02	3.65E+01
Tetrachloroethene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Toluene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	3.13E-02	3.13E-02	1.10E+00

TABLE
POTENTIAL HAZARD QUOTIENT
CONSTRUCTION WORKER - RME
TRENCH AIR

	Reference	Fill Area G					Fill Area H				
	HQ	EE-05		EEG-107			EE-01		EE-02		
Constituent	(per mg/m3)	EPC (mg/m3)	HQ (a)	EPC (mg/m3)	HQ (a)	Total	EPC (mg/m3)	HQ (a)	EPC (mg/m3)	HQ (a)	Total
1,1,2,2-Tetrachloroethane	NC	--	NC	--	NC	NC	2.80E-04	NC	--	NC	NC
4-Methyl-2-pentanone	1.37E+00	--	NC	1.25E-01	8.55E-02	8.55E-02	--	NC	--	NC	NC
Benzene	1.84E+01	2.98E-03	2.74E-02	1.00E-01	9.23E-01	9.50E-01	4.06E-02	3.74E-01	6.09E-02	5.61E-01	9.35E-01
Chlorobenzene	5.48E+00	1.55E-02	4.24E-02	1.07E-01	2.94E-01	3.37E-01	3.00E-02	8.21E-02	1.09E-01	2.98E-01	3.80E-01
Chloroform	3.64E+02	--	NC	--	NC	NC	--	NC	1.16E-02	2.12E+00	2.12E+00
Ethylbenzene	1.09E-01	--	NC	--	NC	NC	4.19E-02	2.29E-03	--	NC	2.29E-03
Naphthalene	3.65E+01	8.51E-03	1.56E-01	4.58E-02	8.37E-01	9.93E-01	5.02E-02	9.17E-01	4.26E-03	7.78E-02	9.95E-01
Tetrachloroethene	2.75E-01	--	NC	4.10E-03	5.63E-04	5.63E-04	--	NC	--	NC	NC
Toluene	2.75E-01	--	NC	2.24E-01	3.08E-02	3.08E-02	--	NC	--	NC	NC
Trichloroethene	NC	--	NC	2.62E-02	NC	NC	--	NC	6.48E-03	NC	NC
Vinyl chloride	1.10E+00	--	NC	1.30E-03	7.10E-04	7.10E-04	--	NC	--	NC	NC
	Total HI:		**2.25E-01**		**2.17E+00**	**2.40E+00**		**1.38E+00**		**3.06E+00**	**4.43E+00**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - HQ divided by number of wells in this area.

TABLE
POTENTIAL HAZARD QUOTIENT
CONSTRUCTION WORKER - RME
TRENCH AIR

Constituent	Reference HQ (per mg/m3)	Fill Area I									Fill Area L	
		AA-I-S1		AA-I-S2		EE-12		EE-14			EEG-109	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	Total	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Methyl-2-pentanone	1.37E+00	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Benzene	1.84E+01	1.68E-02	7.73E-02	3.25E-03	1.50E-02	1.84E-02	8.48E-02	2.03E-02	9.35E-02	2.71E-01	1.19E-03	2.19E-02
Chlorobenzene	5.48E+00	2.17E-01	2.98E-01	7.99E-02	1.10E-01	3.50E-02	4.79E-02	9.49E-02	1.30E-01	5.85E-01	--	NC
Chloroform	3.64E+02	--	NC	--	NC	--	NC	--	NC	NC	2.08E-03	7.58E-01
Ethylbenzene	1.09E-01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	3.65E+01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	2.75E-01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	2.75E-01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Trichloroethene	NC	--	NC	2.35E-02	NC	--	NC	--	NC	NC	--	NC
Vinyl chloride	1.10E+00	3.07E-02	8.40E-03	7.59E-03	2.08E-03	--	NC	--	NC	1.05E-02	--	NC
	Total HI:		**3.84E-01**		**1.27E-01**		**1.33E-01**		**2.24E-01**	**8.66E-01**		**7.80E-01**

Notes:
-- Not a constituent of potential concern in this area/m
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a
(a) - HQ divided by number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	MLE Construction Worker	64	(mg soil/day)	
Soil on Skin	MLE Construction Worker	0.19	(mg/cm^2)	
Skin Exposed	MLE Construction Worker	3339	(cm^2)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Frequency	MLE Construction Worker	20	(days)/365(days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(years)/70(years) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	2.15E-10	2.15E-10	7.09E-12	7.09E-12	3.22E-10	1.06E-11	3.33E-10
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-10	1.04E-10	2.55E-10
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-09	1.04E-09	2.55E-09
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-10	1.04E-10	2.55E-10
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-09	1.04E-09	2.55E-09
Dieldrin	1.00E+00	1	0.01	1.60E+01	7.16E-10	7.16E-10	7.09E-11	7.09E-11	1.15E-08	1.14E-09	1.26E-08
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-10	1.04E-10	2.55E-10
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	3.58E-10	3.58E-10	3.55E-10	3.55E-10	5.37E-05	5.32E-05	1.07E-04
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	5.94E-10	5.94E-10	2.84E-10	2.84E-10	1.19E-09	5.68E-10	1.76E-09

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	3.33E-10	--	NC	--	NC	--	NC	9.99E+00	3.32E-09	2.28E+01	7.59E-09	--	NC	3.33E+01	1.11E-08
Benzo(a)anthracene	2.55E-10	--	NC	1.28E+00	3.27E-10	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	2.55E-09	1.37E-01	3.49E-10	6.09E-01	1.55E-09	5.04E-01	1.29E-09	3.74E-01	9.54E-10	--	NC	6.29E-01	1.60E-09	2.30E+00	5.87E-09
Benzo(b)fluoranthene	2.55E-10	--	NC	1.07E+00	2.73E-10	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	6.66E+03	NC	--	NC
Dibenzo(a,h)anthracene	2.55E-09	--	NC	2.39E-01	6.10E-10	--	NC	--	NC	--	NC	--	NC	4.55E-01	1.16E-09
Dieldrin	1.26E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	2.55E-10	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	1.07E-04	--	NC	--	NC	--	NC	--	NC	5.33E-04	5.70E-08	3.34E-03	3.57E-07	--	NC
Total PCBs	1.76E-09	--	NC	--	NC	--	NC	--	NC	6.60E-01	1.16E-09	3.13E+01	5.49E-08	4.90E-01	8.60E-10
	Total:		**3.49E-10**		**2.76E-09**		**1.29E-09**		**4.28E-09**		**6.57E-08**		**4.14E-07**		**1.90E-08**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing LE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder LE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	1.50E-08	1.50E-08	4.97E-10	4.97E-10	5.01E-05	1.66E-06	5.18E-05
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	5.01E-08	5.01E-08	9.93E-10	9.93E-10	1.35E-06	2.68E-08	1.38E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	5.01E-08	5.01E-08	4.97E-09	4.97E-09	1.00E-03	9.93E-05	1.10E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	4.16E-08	4.16E-08	1.99E-08	1.99E-08	2.08E-03	9.93E-04	3.07E-03

TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HI (per mg/kg)	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	5.18E-05	--	NC	--	NC	--	NC	9.99E+00	5.17E-04	2.28E+01	1.18E-03	--	NC	3.33E+01	1.72E-03
Benzo(a)anthracene	NC	--	NC	1.28E+00	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	NC	1.37E-01	NC	6.09E-01	NC	5.04E-01	NC	3.74E-01	NC	--	NC	6.29E-01	NC	2.30E+00	NC
Benzo(b)fluoranthene	NC	--	NC	1.07E+00	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	1.38E-06	--	NC	--	NC	--	NC	--	NC	--	NC	6.66E+03	9.20E-03	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	2.39E-01	NC	--	NC	--	NC	--	NC	--	NC	4.55E-01	NC
Dieldrin	1.10E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	--	NC	--	NC	5.33E-04	NC	3.34E-03	NC	--	NC
Total PCBs	3.07E-03	--	NC	--	NC	--	NC	--	NC	6.60E-01	2.03E-03	3.13E+01	9.62E-02	4.90E-01	1.51E-03
	Total HI:		**NC**		**NC**		**NC**		**5.17E-04**		**3.21E-03**		**1.05E-01**		**3.23E-03**

Notes:
-- Not a constituent of concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Construction Worker

ASSUMPTIONS FOR INHALATION OF	CONSTRUCTION WORKER - MLE OUTDOOR AIR PARTICULATES	Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Construction Worker	1.5	(m^3 air/hour)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time	MLE Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Construction Worker	20	(days)/365 (days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

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SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh LE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	1.34E-04	1.34E-04	2.01E-03
Benzo(a)anthracene	1.00E+00	1	3.10E-01	1.34E-04	1.34E-04	4.16E-05
Benzo(a)pyrene	1.00E+00	1	3.10E+00	1.34E-04	1.34E-04	4.16E-04
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	1.34E-04	1.34E-04	4.16E-05
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	1.34E-04	1.34E-04	4.16E-04
Dieldrin	1.00E+00	1	1.61E+01	1.34E-04	1.34E-04	2.16E-03
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	1.34E-04	1.34E-04	4.16E-05
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	1.34E-04	1.34E-04	2.01E+01
Total PCBs	1.00E+00	1	2.00E+00	1.34E-04	1.34E-04	2.68E-04

TABLE
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Reference Risk (per mg/m3)	Transect 3		Transect 4 (a)		Transect 6 (a)		Transect 7		Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	2.01E-03	--	NC	--	NC	--	NC	5.99E-07	1.21E-09	1.37E-06	2.75E-09	--	NC	2.00E-06	4.02E-09
Benzo(a)anthracene	4.16E-05	--	NC	7.68E-08	3.19E-12	--	NC	--	NC	--	NC	--	NC	--	NC
Benzo(a)pyrene	4.16E-04	8.22E-09	3.42E-12	3.65E-08	1.52E-11	3.02E-08	1.26E-11	2.24E-08	9.33E-12	--	NC	3.77E-08	1.57E-11	1.38E-07	5.74E-11
Benzo(b)fluoranthene	4.16E-05	--	NC	6.42E-08	2.67E-12	--	NC	--	NC	--	NC	--	NC	--	NC
Copper	NC	--	NC	--	NC	--	NC	--	NC	--	NC	4.00E-04	NC	--	NC
Dibenzo(a,h)anthracene	4.16E-04	--	NC	1.43E-08	5.97E-12	--	NC	--	NC	--	NC	--	NC	2.73E-08	1.14E-11
Dieldrin	2.16E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	4.16E-05	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC
Total 2,3,7,8-TCDD TEQ	2.01E+01	--	NC	--	NC	--	NC	--	NC	3.20E-11	6.44E-10	2.00E-10	4.03E-09	--	NC
Total PCBs	2.68E-04	--	NC	--	NC	--	NC	--	NC	3.96E-08	1.06E-11	1.88E-06	5.04E-10	2.94E-08	7.89E-12
	Total:		3.42E-12		2.70E-11		1.26E-11		1.22E-09		3.41E-09		4.55E-09		4.10E-09

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
(a) - Higher of the surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh nstruction Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 3:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER-MLE INCIDENTAL INGESTION AND DERMAL CONTACT GROUNDWATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	MLE Construction Worker	0.005	(l/day)	
Skin Exposed	MLE Construction Worker	3339	(cm^2)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time (dermal route only)	MLE Construction Worker	1	(hr/day)	
Exposure Frequency	MLE Construction Worker	5	(days)/365 (days) =	1.37E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/ 70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/ 1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor (dermal route only)		0.001	(l/cm^3)	

22-Dec-00

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)**	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,1,2,2-Tetrachloroethane	1.00E+00	1	1	9.00E-03	2.00E-01	1.40E-08	1.40E-08	8.40E-08	8.40E-08	2.80E-09	1.68E-08	1.96E-08
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	2.40E-02	1.40E-08	1.40E-08	5.79E-07	5.79E-07	3.35E-10	1.39E-08	1.42E-08
2,4,5-TP (Silvex)	1.00E+00	NA	NA	2.33E-03	NA	NA	NA	NA	NA	NA	NA	NC
2,4,6-Trichlorophenol	1.00E+00	1	1	5.00E-02	1.10E-02	1.40E-08	1.40E-08	4.67E-07	4.67E-07	1.54E-10	5.13E-09	5.29E-09
2,4-Dichlorophenol	1.00E+00	NA	NA	2.30E-02	NA	NA	NA	NA	NA	NA	NA	NC
2-Chlorophenol	1.00E+00	NA	NA	1.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
2-Nitroaniline	1.00E+00	NA	NA	5.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
3-Methylphenol/4-Methylphenol	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
4,4-DDE	1.00E+00	1	1	2.40E-01	3.40E-01	1.40E-08	1.40E-08	2.24E-06	2.24E-06	4.75E-09	7.62E-07	7.66E-07
4-Chloroaniline	1.00E+00	NA	NA	6.33E-03	NA	NA	NA	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	NA	NA	2.77E-03	NA	NA	NA	NA	NA	NA	NA	NC
4-Nitroaniline	1.00E+00	NA	NA	2.66E-03	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	1	1	1.63E-02	6.30E+00	1.40E-08	1.40E-08	1.52E-07	1.52E-07	8.81E-08	9.59E-07	1.05E-06
Antimony	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1	1.60E-04	1.50E+00	1.40E-08	1.40E-08	1.49E-09	1.49E-09	2.10E-08	2.24E-09	2.32E-08
Benzene	1.00E+00	1	2.13	2.10E-02	1.50E-02	1.40E-08	1.40E-08	4.18E-07	4.18E-07	2.10E-10	6.26E-09	6.47E-09
Benzo(k)fluoranthene	1.00E+00	1	1	1.20E+00	7.30E-02	1.40E-08	1.40E-08	1.12E-05	1.12E-05	1.02E-09	8.18E-07	8.19E-07
beta-BHC	1.00E+00	1	1	1.60E-02	1.80E+00	1.40E-08	1.40E-08	1.49E-07	1.49E-07	2.52E-08	2.69E-07	2.94E-07
Cadmium	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Carbazole	1.00E+00	1	1	7.97E-02	2.00E-02	1.40E-08	1.40E-08	7.44E-07	7.44E-07	2.80E-10	1.49E-08	1.52E-08
Chlorobenzene	1.00E+00	NA	NA	4.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	1	8.90E-03	6.10E-03	1.40E-08	1.40E-08	8.31E-08	8.31E-08	8.53E-11	5.07E-10	5.92E-10
Cis/Trans-1,2-Dichloroethene	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
delta-BHC	1.00E+00	NA	NA	1.60E-02	NA	NA	NA	NA	NA	NA	NA	NC
Ethylbenzene	1.00E+00	NA	NA	7.40E-02	NA	NA	NA	NA	NA	NA	NA	NC
Heptachlor	1.00E+00	1	1	1.10E-02	4.50E+00	1.40E-08	1.40E-08	1.03E-07	1.03E-07	6.29E-08	4.62E-07	5.25E-07
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	9.10E+00	1.40E-08	1.40E-08	1.03E-07	1.03E-07	1.27E-07	9.34E-07	1.06E-06
Molybdenum	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	6.90E-02	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	5.45E-05	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	NA	NA	6.96E-03	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	1	6.50E-01	1.20E-01	1.40E-08	1.40E-08	6.07E-06	6.07E-06	1.68E-09	7.28E-07	7.30E-07
Phenol	1.00E+00	NA	NA	5.50E-03	NA	NA	NA	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	1	4.80E-02	5.20E-02	1.40E-08	1.40E-08	4.48E-07	4.48E-07	7.27E-10	2.33E-08	2.40E-08
Toluene	1.00E+00	NA	NA	4.50E-02	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.8	1.40E+00	1.50E+05	1.40E-08	1.40E-08	2.35E-05	2.35E-05	2.10E-03	3.53E+00	3.53E+00
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E+00	1.40E-08	1.40E-08	7.29E-06	7.29E-06	2.80E-08	1.46E-05	1.46E-05
Trichloroethene	1.00E+00	1	1	1.60E-02	1.10E-02	1.40E-08	1.40E-08	1.49E-07	1.49E-07	1.54E-10	1.64E-09	1.80E-09
Vanadium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1	7.30E-03	7.20E-01	1.40E-08	1.40E-08	6.81E-08	6.81E-08	1.01E-08	4.91E-08	5.91E-08
Zinc	1.00E+00	NA	NA	6.00E-04	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- MLE

	Reference	Fill Area G							Fill Area H						
	Risk	EE-05		EEG-106		EEG-107			EE-01		EE-02		EE-03		
Constituent	(per mg/L)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	Total	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	Total
1,1,2,2-Tetrachloroethane	1.96E-08	--	NC	--	NC	--	NC	NC	1.20E-02	7.84E-11	--	NC	--	NC	7.84E-11
1,4-Dichlorobenzene	1.42E-08	--	NC	--	NC	6.50E-01	4.03E-09	4.03E-09	2.20E+00	1.04E-08	6.35E-01	3.01E-09	--	NC	1.34E-08
2,4,5-TP (Silvex)	NC	3.90E-01	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
2,4,6-Trichlorophenol	5.29E-09	--	NC	--	NC	--	NC	NC	2.70E-01	4.76E-10	4.65E-01	8.20E-10	--	NC	1.30E-09
2,4-Dichlorophenol	NC	--	NC	--	NC	3.60E+00	NC	NC	--	NC	3.70E-01	NC	--	NC	NC
2-Chlorophenol	NC	--	NC	--	NC	6.30E-01	NC	NC	--	NC	--	NC	--	NC	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	NC	--	NC	1.35E-02	NC	--	NC	NC
3-Methylphenol/4-Methylphenol	NC	--	NC	--	NC	2.40E+00	NC	NC	--	NC	--	NC	--	NC	NC
4,4-DDE	7.66E-07	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
4-Chloroaniline	NC	1.60E+00	NC	--	NC	2.30E+01	NC	NC	1.80E+00	NC	7.75E-01	NC	--	NC	NC
4-Methyl-2-pentanone	NC	--	NC	--	NC	1.30E+00	NC	NC	--	NC	--	NC	--	NC	NC
4-Nitroaniline	NC	8.40E-03	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
alpha-BHC	1.05E-06	--	NC	8.30E-03	2.90E-09	6.00E-03	2.09E-09	4.99E-09	--	NC	4.95E-04	1.73E-10	--	NC	1.73E-10
Antimony	NC	--	NC	--	NC	--	NC	NC	--	NC	1.05E-01	NC	--	NC	NC
Arsenic	2.32E-08	--	NC	--	NC	--	NC	NC	--	NC	1.25E+00	9.67E-09	--	NC	9.67E-09
Benzene	6.47E-09	1.10E-01	2.37E-10	--	NC	3.70E+00	7.98E-09	8.22E-09	1.50E+00	3.24E-09	2.25E+00	4.85E-09	--	NC	8.09E-09
Benzo(k)fluoranthene	8.19E-07	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
beta-BHC	2.94E-07	--	NC	3.60E-04	3.53E-11	--	NC	3.53E-11	--	NC	--	NC	--	NC	NC
Cadmium	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Carbazole	1.52E-08	--	NC	--	NC	--	NC	NC	5.20E-03	2.63E-11	--	NC	--	NC	2.63E-11
Chlorobenzene	NC	6.20E-01	NC	--	NC	4.30E+00	NC	NC	1.20E+00	NC	4.35E+00	NC	--	NC	NC
Chloroform	5.92E-10	--	NC	--	NC	--	NC	NC	--	NC	4.25E-01	8.39E-11	--	NC	8.39E-11
Cis/Trans-1,2-Dichloroethene	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
delta-BHC	NC	3.60E-04	NC	--	NC	1.70E-02	NC	NC	--	NC	--	NC	--	NC	NC
Ethylbenzene	NC	--	NC	--	NC	--	NC	NC	1.80E+00	NC	--	NC	--	NC	NC
Heptachlor	5.25E-07	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Heptachlor epoxide	1.06E-06	--	NC	--	NC	--	NC	NC	--	NC	4.40E-03	1.56E-09	--	NC	1.56E-09
Molybdenum	NC	4.50E-01	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Naphthalene	NC	3.90E-01	NC	--	NC	2.10E+00	NC	NC	2.30E+00	NC	1.95E-01	NC	--	NC	NC
Nickel	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Nitrobenzene	NC	--	NC	--	NC	--	NC	NC	--	NC	5.65E-02	NC	--	NC	NC
Pentachlorophenol	7.30E-07	--	NC	--	NC	1.01E+00	2.46E-07	2.46E-07	3.35E+00	8.15E-07	6.50E-01	1.58E-07	--	NC	9.73E-07
Phenol	NC	3.80E-01	NC	--	NC	1.40E+01	NC	NC	--	NC	3.15E-01	NC	--	NC	NC
Tetrachloroethene	2.40E-08	--	NC	--	NC	1.70E-01	1.36E-09	1.36E-09	--	NC	--	NC	--	NC	NC
Toluene	NC	--	NC	--	NC	8.50E+00	NC	NC	--	NC	--	NC	--	NC	NC
Total 2,3,7,8-TCDD TEQ	3.53E+00	1.78E-07	2.09E-07	--	NC	3.60E-06	4.24E-06	4.45E-06	4.57E-08	5.38E-08	--	NC	5.02E-08	5.91E-08	1.13E-07
Total PCBs	1.46E-05	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Trichloroethene	1.80E-09	--	NC	--	NC	2.00E-01	1.20E-10	1.20E-10	--	NC	4.95E-02	2.96E-11	--	NC	2.96E-11
Vanadium	NC	--	NC	--	NC	3.30E-01	NC	NC	--	NC	--	NC	--	NC	NC
Vinyl chloride	5.91E-08	--	NC	--	NC	4.10E-02	8.08E-10	8.08E-10	--	NC	--	NC	--	NC	NC
Zinc	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
	Total:		2.10E-07		2.93E-09		4.50E-06	4.71E-06		8.83E-07		1.78E-07		5.91E-08	1.12E-06

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risks divided by the number of wells in this area.

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- MLE

Constituent	Reference Risk (per mg/L)	Fill Area I													Fill Area L	
		AA-I-S1		AA-I-S2		EE-12		EE-13		EE-14		EE-15			EE-109	
		EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	EPC (mg/L)	Risk (a)	Total	EPC (mg/L)	Risk (a)
1,1,2,2-Tetrachloroethane	1.98E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
1,4-Dichlorobenzene	1.42E-08	2.21E+00	5.24E-09	2.15E+00	5.10E-09	--	NC	--	NC	1.40E+01	3.32E-08	4.30E-01	1.02E-09	4.45E-08	--	NC
2,4,5-TP (Silvex)	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4,6-Trichlorophenol	5.29E-09	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	2.60E-02	NC
2-Chlorophenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
3-Methylphenol/4-Methylphenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4,4-DDE	7.66E-07	--	NC	--	NC	2.20E-03	2.81E-10	--	NC	--	NC	--	NC	2.81E-10	--	NC
4-Chloroaniline	NC	3.25E+00	NC	3.51E-01	NC	1.40E+00	NC	--	NC	1.80E+00	NC	--	NC	NC	5.50E-02	NC
4-Methyl-2-pentanone	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
alpha-BHC	1.05E-06	--	NC	--	NC	2.40E-03	4.19E-10	--	NC	1.10E-03	1.92E-10	--	NC	6.11E-10	--	NC
Antimony	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Arsenic	2.32E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	4.30E+00	9.98E-08
Benzene	6.47E-09	4.55E-01	4.91E-10	6.13E-02	6.61E-11	6.80E-01	7.34E-10	--	NC	7.50E-01	8.09E-10	--	NC	2.10E-09	4.40E-02	2.85E-10
Benzo(k)fluoranthene	8.19E-07	--	NC	1.20E-03	1.64E-10	--	NC	--	NC	--	NC	--	NC	1.64E-10	--	NC
beta-BHC	2.94E-07	--	NC	--	NC	--	NC	--	NC	1.00E-03	4.90E-11	--	NC	4.90E-11	--	NC
Cadmium	NC	--	NC	3.63E-02	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Carbazole	1.52E-08	--	NC	--	NC	3.50E-03	8.84E-12	--	NC	2.60E-02	6.57E-11	--	NC	7.45E-11	--	NC
Chlorobenzene	NC	5.15E+00	NC	1.66E+00	NC	1.40E+00	NC	--	NC	3.80E+00	NC	--	NC	NC	--	NC
Chloroform	5.92E-10	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	7.60E-02	4.50E-11
Cis/Trans-1,2-Dichloroethene	NC	7.25E-01	NC	4.05E-01	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
delta-BHC	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Ethylbenzene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Heptachlor	5.25E-07	--	NC	--	NC	2.50E-03	2.19E-10	--	NC	--	NC	--	NC	2.19E-10	--	NC
Heptachlor epoxide	1.06E-06	--	NC	--	NC	5.60E-03	9.91E-10	--	NC	--	NC	--	NC	9.91E-10	--	NC
Molybdenum	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Nickel	NC	--	NC	4.40E+00	NC	--	NC	--	NC	--	NC	--	NC	NC	1.80E+02	NC
Nitrobenzene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Pentachlorophenol	7.30E-07	--	NC	--	NC	--	NC	--	NC	3.30E-01	4.01E-08	--	NC	4.01E-08	--	NC
Phenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	2.40E-08	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Total 2,3,7,8-TCDD TEQ	3.53E+00	--	NC	--	NC	3.05E-06	1.79E-06	4.74E-08	2.79E-08	7.69E-07	4.53E-07	--	NC	2.28E-06	--	NC
Total PCBs	1.46E-05	--	NC	--	NC	--	NC	--	NC	5.88E-03	1.43E-08	--	NC	1.43E-08	--	NC
Trichloroethene	1.80E-09	--	NC	1.04E-01	3.11E-11	--	NC	--	NC	--	NC	--	NC	3.11E-11	--	NC
Vanadium	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Vinyl chloride	5.91E-08	7.35E-01	7.24E-09	2.00E-01	1.97E-09	--	NC	--	NC	--	NC	--	NC	9.21E-09	--	NC
Zinc	NC	--	NC	1.83E+01	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
	Total:		1.30E-08		7.33E-09		1.80E-06		2.79E-08		5.41E-07		1.02E-09	2.39E-06		1.00E-07

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risks divided by the number of wells in this area

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,1,2,2-Tetrachloroethane	1.00E+00	1	1	9.00E-03	6.00E-02	9.78E-07	9.78E-07	5.88E-06	5.88E-06	1.63E-05	9.80E-05	1.14E-04
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	3.00E-02	9.78E-07	9.78E-07	4.05E-05	4.05E-05	3.26E-05	1.35E-03	1.38E-03
2,4,5-TP (Silvex)	1.00E+00	1	1	2.33E-03	8.00E-03	9.78E-07	9.78E-07	1.52E-06	1.52E-06	1.22E-04	1.90E-04	3.13E-04
2,4,6-Trichlorophenol	1.00E+00	NA	NA	5.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	1	2.30E-02	3.00E-03	9.78E-07	9.78E-07	1.50E-05	1.50E-05	3.26E-04	5.01E-03	5.34E-03
2-Chlorophenol	1.00E+00	1	1	1.10E-02	5.00E-03	9.78E-07	9.78E-07	7.19E-06	7.19E-06	1.96E-04	1.44E-03	1.63E-03
2-Nitroaniline	1.00E+00	NA	NA	5.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
3-Methylphenol/4-Methylphenol	1.00E+00	1	1	1.00E-02	5.00E-02	9.78E-07	9.78E-07	6.53E-06	6.53E-06	1.96E-05	1.31E-04	1.50E-04
4,4-DDE	1.00E+00	NA	NA	2.40E-01	NA	NA	NA	NA	NA	NA	NA	NC
4-Chloroaniline	1.00E+00	1	1	6.33E-03	4.00E-03	9.78E-07	9.78E-07	4.14E-06	4.14E-06	2.45E-04	1.03E-03	1.28E-03
4-Methyl-2-pentanone	1.00E+00	1	1	2.77E-03	8.00E-02	9.78E-07	9.78E-07	1.81E-06	1.81E-06	1.22E-05	2.26E-05	3.49E-05
4-Nitroaniline	1.00E+00	NA	NA	2.66E-03	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	NA	NA	1.63E-02	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	1	6.7	1.60E-04	4.00E-04	9.78E-07	9.78E-07	7.00E-07	7.00E-07	2.45E-03	1.75E-03	4.20E-03
Arsenic	1.00E+00	1	1	1.60E-04	3.00E-04	9.78E-07	9.78E-07	1.05E-07	1.05E-07	3.26E-03	3.48E-04	3.61E-03
Benzene	1.00E+00	1	2.13	2.10E-02	3.00E-03	9.78E-07	9.78E-07	2.92E-05	2.92E-05	3.26E-04	9.74E-03	1.01E-02
Benzo(k)fluoranthene	1.00E+00	NA	NA	1.20E+00	NA	NA	NA	NA	NA	NA	NA	NC
beta-BHC	1.00E+00	NA	NA	1.60E-02	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	40	1.00E-03	5.00E-04	9.78E-07	9.78E-07	2.61E-05	2.61E-05	1.96E-03	5.23E-02	5.42E-02
Carbazole	1.00E+00	NA	NA	7.97E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	1	1	4.10E-02	2.00E-02	9.78E-07	9.78E-07	2.68E-05	2.68E-05	4.89E-05	1.34E-03	1.39E-03
Chloroform	1.00E+00	1	1	8.90E-03	1.00E-02	9.78E-07	9.78E-07	5.82E-06	5.82E-06	9.78E-05	5.82E-04	6.79E-04
Cis/Trans-1,2-Dichloroethene	1.00E+00	1	1	1.00E-02	1.00E-02	9.78E-07	9.78E-07	6.53E-06	6.53E-06	9.78E-05	6.53E-04	7.51E-04
delta-BHC	1.00E+00	1	1	1.60E-02	3.00E-04	9.78E-07	9.78E-07	1.05E-05	1.05E-05	3.26E-03	3.48E-02	3.81E-02
Ethylbenzene	1.00E+00	1	1	7.40E-02	1.00E-01	9.78E-07	9.78E-07	4.84E-05	4.84E-05	9.78E-06	4.84E-04	4.93E-04
Heptachlor	1.00E+00	1	1	1.10E-02	5.00E-04	9.78E-07	9.78E-07	7.19E-06	7.19E-06	1.96E-03	1.44E-02	1.63E-02
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	1.30E-05	9.78E-07	9.78E-07	7.19E-06	7.19E-06	7.53E-02	5.53E-01	6.28E-01
Molybdenum	1.00E+00	1	1	1.60E-04	5.00E-03	9.78E-07	9.78E-07	1.05E-07	1.05E-07	1.96E-04	2.09E-05	2.17E-04
Naphthalene	1.00E+00	1	1	6.90E-02	2.00E-02	9.78E-07	9.78E-07	4.51E-05	4.51E-05	4.89E-05	2.25E-03	2.30E-03
Nickel	1.00E+00	1	77	5.45E-05	2.00E-02	9.78E-07	9.78E-07	2.74E-06	2.74E-06	4.89E-05	1.37E-04	1.86E-04
Nitrobenzene	1.00E+00	1	1	6.96E-03	5.00E-04	9.78E-07	9.78E-07	4.55E-06	4.55E-06	1.96E-03	9.10E-03	1.11E-02
Pentachlorophenol	1.00E+00	1	1	6.50E-01	3.00E-02	9.78E-07	9.78E-07	4.25E-04	4.25E-04	3.26E-05	1.42E-02	1.42E-02
Phenol	1.00E+00	1	1	5.50E-03	6.00E-01	9.78E-07	9.78E-07	3.59E-06	3.59E-06	1.63E-06	5.99E-06	7.62E-06
Tetrachloroethene	1.00E+00	1	1	4.80E-02	1.00E-02	9.78E-07	9.78E-07	3.14E-05	3.14E-05	9.78E-05	3.14E-03	3.23E-03
Toluene	1.00E+00	1	1	4.50E-02	2.00E-01	9.78E-07	9.78E-07	2.94E-05	2.94E-05	4.89E-06	1.47E-04	1.52E-04
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	1.40E+00	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E-05	9.78E-07	9.78E-07	5.10E-04	5.10E-04	4.89E-02	2.55E+01	2.56E+01
Trichloroethene	1.00E+00	1	1	1.60E-02	6.00E-03	9.78E-07	9.78E-07	1.05E-05	1.05E-05	1.63E-04	1.74E-03	1.91E-03
Vanadium	1.00E+00	1	10	1.60E-04	7.00E-03	9.78E-07	9.78E-07	1.05E-06	1.05E-06	1.40E-04	1.49E-04	2.89E-04
Vinyl chloride	1.00E+00	1	1	7.30E-03	3.00E-03	9.78E-07	9.78E-07	4.77E-06	4.77E-06	3.26E-04	1.59E-03	1.92E-03
Zinc	1.00E+00	1.6	3.03	6.00E-04	3.00E-01	1.57E-06	1.57E-06	1.19E-06	1.19E-06	5.22E-06	3.96E-06	9.18E-06

TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- MLE

Constituent	Reference HQ (per mg/L)	Fill Area G							Fill Area H						
		EE-05		EEG-106		EEG-107			EE-01		EE-02		EE-03		
		EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total
1,1,2,2-Tetrachloroethane	1.14E-04	--	NC	--	NC	--	NC	NC	1.20E-02	4.57E-07	--	NC	--	NC	4.57E-07
1,4-Dichlorobenzene	1.38E-03	--	NC	--	NC	8.50E-01	3.92E-04	3.92E-04	2.20E+00	1.01E-03	6.35E-01	2.93E-04	--	NC	1.31E-03
2,4,5-TP (Silvex)	3.13E-04	3.90E-01	4.06E-05	--	NC	--	NC	4.06E-05	--	NC	--	NC	--	NC	NC
2,4,6-Trichlorophenol	NC	--	NC	--	NC	--	NC	NC	2.70E-01	NC	4.65E-01	NC	--	NC	NC
2,4-Dichlorophenol	5.34E-03	--	NC	--	NC	3.60E+00	6.40E-03	6.40E-03	--	NC	3.70E-01	6.58E-04	--	NC	6.58E-04
2-Chlorophenol	1.63E-03	--	NC	--	NC	6.30E-01	3.43E-04	3.43E-04	--	NC	--	NC	--	NC	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	NC	--	NC	1.35E-02	NC	--	NC	NC
3-Methylphenol/4-Methylphenol	1.50E-04	--	NC	--	NC	2.40E+00	1.20E-04	1.20E-04	--	NC	--	NC	--	NC	NC
4,4-DDE	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
4-Chloroaniline	1.28E-03	1.60E+00	6.82E-04	--	NC	2.30E+01	9.80E-03	1.05E-02	1.80E+00	7.67E-04	7.75E-01	3.30E-04	--	NC	1.10E-03
4-Methyl-2-pentanone	3.49E-05	--	NC	--	NC	1.30E+00	1.51E-05	1.51E-05	--	NC	--	NC	--	NC	NC
4-Nitroaniline	NC	8.40E-03	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
alpha-BHC	NC	--	NC	8.30E-03	NC	6.00E-03	NC	NC	--	NC	4.95E-04	NC	--	NC	NC
Antimony	4.20E-03	--	NC	--	NC	--	NC	NC	--	NC	1.05E-01	1.47E-04	--	NC	1.47E-04
Arsenic	3.61E-03	--	NC	--	NC	--	NC	NC	--	NC	1.25E+00	1.50E-03	--	NC	1.50E-03
Benzene	1.01E-02	1.10E-01	3.69E-04	--	NC	3.70E+00	1.24E-02	1.28E-02	1.50E+00	5.03E-03	2.25E+00	7.55E-03	--	NC	1.26E-02
Benzo(k)fluoranthene	NC	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
beta-BHC	NC	--	NC	3.60E-04	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Cadmium	5.42E-02	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Carbazole	NC	--	NC	--	NC	--	NC	NC	5.20E-03	NC	--	NC	--	NC	NC
Chlorobenzene	1.39E-03	6.20E-01	2.87E-04	--	NC	4.30E+00	1.99E-03	2.28E-03	1.20E+00	5.55E-04	4.35E+00	2.01E-03	--	NC	2.57E-03
Chloroform	6.79E-04	--	NC	--	NC	--	NC	NC	--	NC	4.25E-01	9.62E-05	--	NC	9.62E-05
Cis/Trans-1,2-Dichloroethene	7.51E-04	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
delta-BHC	3.81E-02	3.60E-04	4.57E-06	--	NC	1.70E-02	2.16E-04	2.21E-04	--	NC	--	NC	--	NC	NC
Ethylbenzene	4.93E-04	--	NC	--	NC	--	NC	NC	1.80E+00	2.96E-04	--	NC	--	NC	2.96E-04
Heptachlor	1.63E-02	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Heptachlor epoxide	6.28E-01	--	NC	--	NC	--	NC	NC	--	NC	4.40E-03	9.21E-04	--	NC	9.21E-04
Molybdenum	2.17E-04	4.50E-01	3.25E-05	--	NC	--	NC	3.25E-05	--	NC	--	NC	--	NC	NC
Naphthalene	2.30E-03	3.90E-01	2.99E-04	--	NC	2.10E+00	1.61E-03	1.91E-03	2.30E+00	1.77E-03	1.95E-01	1.50E-04	--	NC	1.92E-03
Nickel	1.86E-04	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Nitrobenzene	1.11E-02	--	NC	--	NC	--	NC	NC	--	NC	5.65E-02	2.08E-04	--	NC	2.08E-04
Pentachlorophenol	1.42E-02	--	NC	--	NC	1.01E+00	4.78E-03	4.78E-03	3.35E+00	1.58E-02	6.50E-01	3.07E-03	--	NC	1.89E-02
Phenol	7.62E-06	3.80E-01	9.65E-07	--	NC	1.40E+01	3.56E-05	3.65E-05	--	NC	3.15E-01	8.00E-07	--	NC	8.00E-07
Tetrachloroethene	3.23E-03	--	NC	--	NC	1.70E-01	1.83E-04	1.83E-04	--	NC	--	NC	--	NC	NC
Toluene	1.52E-04	--	NC	--	NC	8.50E+00	4.30E-04	4.30E-04	--	NC	--	NC	--	NC	NC
Total 2,3,7,8-TCDD TEQ	NC	*1.78E-07*	NC	--	NC	*3.60E-06*	NC	NC	*4.57E-08*	NC	--	NC	*5.02E-08*	NC	NC
Total PCBs	2.56E+01	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Trichloroethene	1.91E-03	--	NC	--	NC	2.00E-01	1.27E-04	1.27E-04	--	NC	4.95E-02	3.14E-05	--	NC	3.14E-05
Vanadium	2.89E-04	--	NC	--	NC	3.30E-01	3.18E-05	3.18E-05	--	NC	--	NC	--	NC	NC
Vinyl chloride	1.92E-03	--	NC	--	NC	4.10E-02	2.62E-05	2.62E-05	--	NC	--	NC	--	NC	NC
Zinc	9.18E-06	--	NC	--	NC	--	NC	NC	--	NC	--	NC	--	NC	NC
Total HI:			**1.72E-03**		**NC**		**3.89E-02**	**4.06E-02**		**2.53E-02**		**1.70E-02**		**NC**	**4.23E-02**

Notes:
-- *Not a constituent of potential concern in this area/medium.*
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium
(a) - HQ divided by the number of wells in this area

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TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- MLE

Constituent	Reference HQ (per mg/L)	Fill Area I													Fill Area L	
		AA-I-S1		AA-I-S2		EE-12		EE-13		EE-14		EE-15			EE-109	
		EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	EPC (mg/L)	HQ (a)	Total	EPC (mg/L)	HQ (a)
1,1,2,2-Tetrachloroethane	1.14E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
1,4-Dichlorobenzene	1.38E-03	2.21E+00	5.09E-04	2.15E+00	4.96E-04	--	NC	--	NC	1.40E+01	3.23E-03	4.30E-01	9.91E-05	4.33E-03	--	NC
2,4,5-TP (Silvex)	3.13E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4,6-Trichlorophenol	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2,4-Dichlorophenol	5.34E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	2.60E-02	1.39E-04
2-Chlorophenol	1.63E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
2-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
3-Methylphenol/4-Methylphenol	1.50E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4,4-DDE	NC	--	NC	--	NC	2.20E-03	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Chloroaniline	1.28E-03	3.25E+00	6.93E-04	3.51E-01	7.48E-05	1.40E+00	2.98E-04	--	NC	1.80E+00	3.84E-04	--	NC	1.45E-03	5.50E-02	7.03E-05
4-Methyl-2-pentanone	3.49E-05	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Nitroaniline	NC	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
alpha-BHC	NC	--	NC	--	NC	2.40E-03	NC	--	NC	1.10E-03	NC	--	NC	NC	--	NC
Antimony	4.20E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Arsenic	3.61E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	4.30E+00	1.55E-02
Benzene	1.01E-02	4.55E-01	7.64E-04	6.13E-02	1.03E-04	6.80E-01	1.14E-03	--	NC	7.50E-01	1.26E-03	--	NC	3.27E-03	4.40E-02	4.43E-04
Benzo(k)fluoranthene	NC	--	NC	1.20E-03	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
beta-BHC	NC	--	NC	--	NC	--	NC	--	NC	1.00E-03	NC	--	NC	NC	--	NC
Cadmium	5.42E-02	--	NC	3.63E-02	3.28E-04	--	NC	--	NC	--	NC	--	NC	3.28E-04	--	NC
Carbazole	NC	--	NC	--	NC	3.50E-03	NC	--	NC	2.60E-02	NC	--	NC	NC	--	NC
Chlorobenzene	1.39E-03	5.15E+00	1.19E-03	1.66E+00	3.84E-04	1.40E+00	3.24E-04	--	NC	3.80E+00	8.79E-04	--	NC	2.78E-03	--	NC
Chloroform	6.79E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	7.60E-02	5.16E-05
Cis/Trans-1,2-Dichloroethene	7.51E-04	7.25E-01	9.08E-05	4.05E-01	5.07E-05	--	NC	--	NC	--	NC	--	NC	1.41E-04	--	NC
delta-BHC	3.81E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Ethylbenzene	4.93E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Heptachlor	1.63E-02	--	NC	--	NC	2.50E-03	6.81E-06	--	NC	--	NC	--	NC	6.81E-06	--	NC
Heptachlor epoxide	6.28E-01	--	NC	--	NC	5.60E-03	5.86E-04	--	NC	--	NC	--	NC	5.86E-04	--	NC
Molybdenum	2.17E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	2.30E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Nickel	1.86E-04	--	NC	4.40E+00	1.36E-04	--	NC	--	NC	--	NC	--	NC	1.36E-04	1.80E+02	3.35E-02
Nitrobenzene	1.11E-02	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Pentachlorophenol	1.42E-02	--	NC	--	NC	--	NC	--	NC	3.30E-01	7.80E-04	--	NC	7.80E-04	--	NC
Phenol	7.62E-06	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	3.23E-03	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	1.52E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Total 2,3,7,8-TCDD TEQ	NC	--	NC	--	NC	3.05E-06	NC	4.74E-08	NC	7.69E-07	NC	--	NC	NC	--	NC
Total PCBs	2.56E+01	--	NC	--	NC	--	NC	--	NC	5.88E-03	2.51E-02	--	NC	2.51E-02	--	NC
Trichloroethene	1.91E-03	--	NC	1.04E-01	3.30E-05	--	NC	--	NC	--	NC	--	NC	3.30E-05	--	NC
Vanadium	2.89E-04	--	NC	--	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Vinyl chloride	1.92E-03	7.35E-01	2.35E-04	2.00E-01	6.39E-05	--	NC	--	NC	--	NC	--	NC	2.99E-04	--	NC
Zinc	9.18E-06	--	NC	1.83E+01	2.80E-05	--	NC	--	NC	--	NC	--	NC	2.80E-05	--	NC
	Total HI:		3.46E-03		1.70E-03		2.36E-03		NC		3.16E-02		9.91E-05	3.92E-02		4.97E-02

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - HQ divided by the number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - MLE INHALATION OF TRENCH AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Construction Worker	1.5	(m^3 air/hour)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time	MLE Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Construction Worker	20	(days)/365 (days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

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TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference Risk (per mg/m3)	Fill Area G					Fill Area H				
		EE-05		EEG-107			EE-01		EE-02		
		EPC (mg/m3)	Risk (a)	EPC (mg/m3)	Risk (a)	Total	EPC (mg/m3)	Risk (a)	EPC (mg/m3)	Risk (a)	Total
1,1,2,2-Tetrachloroethane	2.72E-05	--	NC	--	NC	NC	2.80E-04	3.81E-09	--	NC	3.81E-09
4-Methyl-2-pentanone	NC	--	NC	1.25E-01	NC	NC	--	NC	--	NC	NC
Benzene	1.03E-06	2.98E-03	1.54E-09	1.00E-01	5.18E-08	5.33E-08	4.08E-02	2.10E-08	6.09E-02	3.15E-08	5.25E-08
Chlorobenzene	NC	1.55E-02	NC	1.07E-01	NC	NC	3.00E-02	NC	1.09E-01	NC	NC
Chloroform	7.13E-06	--	NC	--	NC	NC	--	NC	1.16E-02	4.15E-08	4.15E-08
Ethylbenzene	NC	--	NC	--	NC	NC	4.19E-02	NC	--	NC	NC
Naphthalene	NC	8.51E-03	NC	4.58E-02	NC	NC	5.02E-02	NC	4.26E-03	NC	NC
Tetrachloroethene	2.68E-07	--	NC	4.10E-03	5.50E-10	5.50E-10	--	NC	--	NC	NC
Toluene	NC	--	NC	2.24E-01	NC	NC	--	NC	--	NC	NC
Trichloroethene	8.05E-07	--	NC	2.62E-02	1.05E-08	1.05E-08	--	NC	6.48E-03	2.61E-09	2.61E-09
Vinyl chloride	2.07E-06	--	NC	1.30E-03	1.34E-09	1.34E-09	--	NC	--	NC	NC
	Total:		**1.54E-09**		**6.42E-08**	**6.57E-08**		**2.48E-08**		**7.56E-08**	**1.00E-07**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risk divided by number of wells in this area.

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TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference Risk (per mg/m3)	Fill Area I									L	
		AA-I-S1		AA-I-S2		EE-12		EE-14			EEG-109	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	Total	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	2.72E-05	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Methyl-2-pentanone	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Benzene	1.03E-06	1.23E-02	3.16E-09	1.66E-03	4.29E-10	1.84E-02	4.76E-09	2.03E-02	5.25E-09	1.36E-08	1.19E-03	1.23E-09
Chlorobenzene	NC	1.29E-01	NC	4.14E-02	NC	3.50E-02	NC	9.49E-02	NC	NC	--	NC
Chloroform	7.13E-06	--	NC	--	NC	--	NC	--	NC	NC	2.08E-03	1.48E-08
Ethylbenzene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	2.68E-07	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Trichloroethene	8.05E-07	--	NC	1.36E-02	2.74E-09	--	NC	--	NC	2.74E-09	--	NC
Vinyl chloride	2.07E-06	2.32E-02	1.20E-08	6.32E-03	3.27E-09	--	NC	--	NC	1.53E-08	--	NC
	Total:		**1.52E-08**		**6.43E-09**		**4.76E-09**		**5.25E-09**	**3.16E-08**		**1.61E-08**

Notes:
-- Not a constituent of potential concern in this area/m
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a
(a) - Risk divided by number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh MLE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	9.39E-03	9.39E-03	4.11E-01
Benzene	1.00E+00	1	1.70E-03	9.39E-03	9.39E-03	5.53E+00
Chlorobenzene	1.00E+00	1	5.71E-03	9.39E-03	9.39E-03	1.65E+00
Chloroform	1.00E+00	1	8.60E-05	9.39E-03	9.39E-03	1.09E+02
Ethylbenzene	1.00E+00	1	2.86E-01	9.39E-03	9.39E-03	3.28E-02
Naphthalene	1.00E+00	1	8.57E-04	9.39E-03	9.39E-03	1.10E+01
Tetrachloroethene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Toluene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	9.39E-03	9.39E-03	3.29E-01

TABLE
POTENTIAL HAZARD QUOTIENT
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference HQ (per mg/m3)	Fill Area G					Fill Area H				
		EE-05		EEG-107			EE-01		EE-02		
		EPC (mg/m3)	HQ (a)	EPC (mg/m3)	HQ (a)	Total	EPC (mg/m3)	HQ (a)	EPC (mg/m3)	HQ (a)	Total
1,1,2,2-Tetrachloroethane	NC	--	NC	--	NC	NC	2.80E-04	NC	--	NC	NC
4-Methyl-2-pentanone	4.11E-01	--	NC	1.25E-01	2.56E-02	2.56E-02	--	NC	--	NC	NC
Benzene	5.53E+00	2.98E-03	8.23E-03	1.00E-01	2.77E-01	2.85E-01	4.06E-02	1.12E-01	6.09E-02	1.68E-01	2.81E-01
Chlorobenzene	1.65E+00	1.55E-02	1.27E-02	1.07E-01	8.83E-02	1.01E-01	3.00E-02	2.46E-02	1.09E-01	8.93E-02	1.14E-01
Chloroform	1.09E+02	--	NC	--	NC	NC	--	NC	1.16E-02	6.36E-01	6.36E-01
Ethylbenzene	3.28E-02	--	NC	--	NC	NC	4.19E-02	6.88E-04	--	NC	6.88E-04
Naphthalene	1.10E+01	8.51E-03	4.67E-02	4.58E-02	2.51E-01	2.98E-01	5.02E-02	2.75E-01	4.26E-03	2.33E-02	2.98E-01
Tetrachloroethene	8.24E-02	--	NC	4.10E-03	1.69E-04	1.69E-04	--	NC	--	NC	NC
Toluene	8.24E-02	--	NC	2.24E-01	9.23E-03	9.23E-03	--	NC	--	NC	NC
Trichloroethene	NC	--	NC	2.62E-02	NC	NC	--	NC	6.48E-03	NC	NC
Vinyl chloride	3.29E-01	--	NC	1.30E-03	2.13E-04	2.13E-04	--	NC	--	NC	NC
	Total HI:		**6.76E-02**		**6.52E-01**	**7.19E-01**		**4.13E-01**		**9.17E-01**	**1.33E+00**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - HQ divided by number of wells in this area.

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TABLE
POTENTIAL HAZARD QUOTIENT
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference HQ (per mg/m3)	Fill Area I									Fill Area L	
		AA-I-S1		AA-I-S2		EE-12		EE-14		Total	EEG-109	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ		EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	--	NC	--	NC	--	NC	NC	--	NC
4-Methyl-2-pentanone	4.11E-01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Benzene	5.53E+00	1.23E-02	1.70E-02	1.66E-03	2.29E-03	1.84E-02	2.54E-02	2.03E-02	2.81E-02	7.28E-02	1.19E-03	6.58E-03
Chlorobenzene	1.65E+00	1.29E-01	5.29E-02	4.14E-02	1.70E-02	3.50E-02	1.44E-02	9.49E-02	3.90E-02	1.23E-01	--	NC
Chloroform	1.09E+02	--	NC	--	NC	--	NC	--	NC	NC	2.08E-03	2.27E-01
Ethylbenzene	3.28E-02	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Naphthalene	1.10E+01	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Tetrachloroethene	8.24E-02	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Toluene	8.24E-02	--	NC	--	NC	--	NC	--	NC	NC	--	NC
Trichloroethene	NC	--	NC	1.36E-02	NC	--	NC	--	NC	NC	--	NC
Vinyl chloride	3.29E-01	2.32E-02	1.91E-03	6.32E-03	5.20E-04	--	NC	--	NC	2.43E-03	--	NC
	Total HI:		**7.18E-02**		**1.99E-02**		**3.98E-02**		**6.71E-02**	**1.99E-01**		**2.34E-01**

Notes:
-- Not a constituent of potential concern in this area/n
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not i
(a) - HQ divided by number of wells in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - RME INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	RME Trespassing Teen	100	(mg soil/day)	
Soil on Skin	RME Trespassing Teen	0.02	(mg/cm^2)	
Skin Exposed	RME Trespassing Teen	3677	(cm^2)	
Body Weight	RME Trespassing Teen	47	(kg)	
Exposure Frequency	RME Trespassing Teen	26	(days)/365(days) =	0.07123288
Exposure Duration (cancer)	RME Trespassing Teen	11	(years)/70(years) =	0.15714286
Exposure Duration (noncancer)	RME Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - RME

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	7.14E-09	7.14E-09	1.75E-11	1.75E-11	1.07E-08	2.63E-11	1.07E-08
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	6.91E-09	6.91E-09	3.50E-10	3.50E-10	5.04E-08	2.56E-09	5.30E-08
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	6.91E-09	6.91E-09	3.50E-10	3.50E-10	5.04E-08	2.56E-09	5.30E-08
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	1.19E-08	1.19E-08	8.76E-10	8.76E-10	1.79E-03	1.31E-04	1.92E-03
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	1.98E-08	1.98E-08	7.01E-10	7.01E-10	3.95E-08	1.40E-09	4.09E-08

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	1.07E-08	6.40E+01	6.88E-07	--	NC	3.70E+01	3.98E-07
Benzo(a)pyrene	5.30E-08	--	NC	2.20E+00	1.17E-07	7.00E+00	3.71E-07
Copper	NC	--	NC	1.30E+04	NC	--	NC
Dibenzo(a,h)anthracene	5.30E-08	--	NC	--	NC	1.30E+00	6.89E-08
Total 2,3,7,8-TCDD TEQ	1.92E-03	1.30E-03	2.49E-06	1.20E-02	2.30E-05	--	NC
Total PCBs	4.09E-08	1.52E+00	6.22E-08	1.21E+02	4.97E-06	1.07E+00	4.38E-08
Total:			**3.24E-06**		**2.81E-05**		**8.81E-07**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - RME

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	4.55E-08	4.55E-08	1.11E-10	1.11E-10	1.52E-04	3.72E-07	1.52E-04
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	1.52E-07	1.52E-07	2.23E-10	2.23E-10	4.10E-06	6.02E-09	4.10E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	1.26E-07	1.26E-07	4.46E-09	4.46E-09	6.29E-03	2.23E-04	6.51E-03

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TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (per mg/kg)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	1.52E-04	6.40E+01	9.72E-03	--	NC	3.70E+01	5.62E-03
Benzo(a)pyrene	NC	--	NC	2.20E+00	NC	7.00E+00	NC
Copper	4.10E-06	--	NC	1.30E+04	5.33E-02	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	--	NC	1.30E+00	NC
Total 2,3,7,8-TCDD TEQ	NC	1.30E-03	NC	1.20E-02	NC	--	NC
Total PCBs	6.51E-03	1.52E+00	9.90E-03	1.21E+02	7.90E-01	1.07E+00	6.97E-03
	Total HI:		**1.96E-02**		**8.43E-01**		**1.26E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - RME INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Trespassing Teen	1.2	(m^3 air/hour)	
Body Weight	RME Trespassing Teen	47	(kg)	
Exposure Time	RME Trespassing Teen	2	(hrs/day) =	2.00E+00
Exposure Frequency	RME Trespassing Teen	26	(days)/365 (days) =	7.12E-02
Exposure Duration (cancer)	RME Trespassing Teen	11	(yrs)/70(yrs) =	1.57E-01
Exposure Duration (noncancer)	RME Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	

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SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDinh RME Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	5.72E-04	5.72E-04	8.57E-03
Benzo(a)pyrene	1.00E+00	1	3.10E+00	5.72E-04	5.72E-04	1.77E-03
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	5.72E-04	5.72E-04	1.77E-03
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	5.72E-04	5.72E-04	8.57E+01
Total PCBs	1.00E+00	1	2.00E+00	5.72E-04	5.72E-04	1.14E-03

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - RME

Constituent	Reference Risk (per mg/m3)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	8.57E-03	8.11E-08	6.95E-10	--	NC	3.13E-08	2.68E-10
Benzo(a)pyrene	1.77E-03	--	NC	3.64E-09	6.46E-12	5.91E-09	1.05E-11
Copper	NC	--	NC	2.15E-05	NC	--	NC
Dibenzo(a,h)anthracene	1.77E-03	--	NC	--	NC	1.10E-09	1.95E-12
Total 2,3,7,8-TCDD TEQ	8.57E+01	1.65E-12	1.41E-10	1.99E-11	1.70E-09	--	NC
Total PCBs	1.14E-03	1.93E-09	2.20E-12	2.01E-07	2.30E-10	9.04E-10	1.03E-12
Total:			**8.36E-10**		**1.94E-09**		**2.82E-10**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - RME INHALATION OF OUTDOOR AIR -VOCs		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Trespassing Teen	1.2	(m^3 air/hour)	
Body Weight	RME Trespassing Teen	47	(kg)	
Exposure Time	RME Trespassing Teen	2	(hrs/day) =	2.00E+00
Exposure Frequency	RME Trespassing Teen	26	(days)/365 (days) =	7.12E-02
Exposure Duration (cancer)	RME Trespassing Teen	11	(yrs)/70(yrs) =	1.57E-01
Exposure Duration (noncancer)	RME Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	5.72E-04	5.72E-04	1.16E-04
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	5.72E-04	5.72E-04	4.40E-06
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	3.77E-04	3.77E-04	3.04E-05
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	5.72E-04	5.72E-04	1.14E-06
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	5.72E-04	5.72E-04	3.43E-06
Vinyl chloride	1.00E+00	1	1.54E-02	5.72E-04	5.72E-04	8.80E-06

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - RME

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	1.16E-04	--	NC	2.50E-07	2.90E-11	--	NC	--	NC
4-Methyl-2-pentanone	NC	9.50E-06	NC	--	NC	--	NC	--	NC
Benzene	4.40E-06	1.40E-04	6.16E-10	1.40E-04	6.16E-10	1.20E-04	5.28E-10	1.00E-06	4.40E-12
Chlorobenzene	NC	9.50E-05	NC	1.60E-04	NC	8.10E-04	NC	--	NC
Chloroform	3.04E-05	--	NC	2.50E-05	7.59E-10	--	NC	1.40E-06	4.25E-11
Ethylbenzene	NC	--	NC	1.20E-04	NC	--	NC	--	NC
Naphthalene	NC	6.90E-06	NC	1.30E-05	NC	--	NC	--	NC
Tetrachloroethene	1.14E-06	1.50E-05	1.71E-11	--	NC	--	NC	--	NC
Toluene	NC	3.40E-04	NC	--	NC	--	NC	--	NC
Trichloroethene	3.43E-06	1.70E-05	5.83E-11	7.00E-06	2.40E-11	6.40E-05	2.19E-10	--	NC
Vinyl chloride	8.80E-06	2.30E-05	2.02E-10	--	NC	2.30E-03	2.02E-08	--	NC
	Total:		**8.94E-10**		**1.43E-09**		**2.10E-08**		**4.69E-11**

Notes:
-- Not a constituent of potential concern in this area/medium.
NC - Not Calculated.
(a) - Maximum outdoor air concentration from this area.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	3.64E-03	3.64E-03	1.59E-01
Benzene	1.00E+00	1	1.70E-03	3.64E-03	3.64E-03	2.14E+00
Chlorobenzene	1.00E+00	1	5.71E-03	3.64E-03	3.64E-03	6.37E-01
Chloroform	1.00E+00	1	8.60E-05	3.64E-03	3.64E-03	4.23E+01
Ethylbenzene	1.00E+00	1	2.86E-01	3.64E-03	3.64E-03	1.27E-02
Naphthalene	1.00E+00	1	8.57E-04	3.64E-03	3.64E-03	4.24E+00
Tetrachloroethene	1.00E+00	1	1.14E-01	3.64E-03	3.64E-03	3.19E-02
Toluene	1.00E+00	1	1.14E-01	3.64E-03	3.64E-03	3.19E-02
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	3.64E-03	3.64E-03	1.27E-01

TABLE
POTENTIAL HAZARD INDEX
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - RME

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	2.50E-07	NC	--	NC	--	NC
4-Methyl-2-pentanone	1.59E-01	9.50E-06	1.51E-06	--	NC	--	NC	--	NC
Benzene	2.14E+00	1.40E-04	3.00E-04	1.40E-04	3.00E-04	1.20E-04	2.57E-04	1.00E-06	2.14E-06
Chlorobenzene	6.37E-01	9.50E-05	6.05E-05	1.60E-04	1.02E-04	8.10E-04	5.16E-04	--	NC
Chloroform	4.23E+01	--	NC	2.50E-05	1.06E-03	--	NC	1.40E-06	5.92E-05
Ethylbenzene	1.27E-02	--	NC	1.20E-04	1.53E-06	--	NC	--	NC
Naphthalene	4.24E+00	6.90E-06	2.93E-05	1.30E-05	5.52E-05	--	NC	--	NC
Tetrachloroethene	3.19E-02	1.50E-05	4.79E-07	--	NC	--	NC	--	NC
Toluene	3.19E-02	3.40E-04	1.08E-05	--	NC	--	NC	--	NC
Trichloroethene	NC	1.70E-05	NC	7.00E-06	NC	6.40E-05	NC	--	NC
Vinyl chloride	1.27E-01	2.30E-05	2.93E-06	--	NC	2.30E-03	2.93E-04	--	NC
	Total HI:		**4.05E-04**		**1.52E-03**		**1.07E-03**		**6.14E-05**

Notes:
-- Not a constituent of potential concern in this area/medium.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - Maximum outdoor air concentration from this area.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	MLE Trespassing Teen	50	(mg soil/day)	
Soil on Skin	MLE Trespassing Teen	0.02	(mg/cm^2)	
Skin Exposed	MLE Trespassing Teen	3677	(cm^2)	
Body Weight	MLE Trespassing Teen	47	(kg)	
Exposure Frequency	MLE Trespassing Teen	13	(days)/365(days) =	0.03561644
Exposure Duration (cancer)	MLE Trespassing Teen	11	(years)/70(years) =	0.15714286
Exposure Duration (noncancer)	MLE Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

22-Dec-00

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - MLE

Constituent	Unit Concentration In Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	MLE Trespassing Teen ADDing (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	1.79E-09	1.79E-09	8.76E-12	2.68E-09	1.31E-11	2.69E-09
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	1.73E-09	1.73E-09	1.75E-10	1.26E-08	1.28E-09	1.39E-08
Copper	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	1.73E-09	1.73E-09	1.75E-10	1.26E-08	1.28E-09	1.39E-08
Total 2,3,7,8-TCDD TEQ	1.00E+00	0.5	0.05	1.50E+05	2.98E-09	2.98E-09	4.38E-10	4.47E-04	6.57E-05	5.12E-04
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	4.94E-09	4.94E-09	3.50E-10	9.88E-09	7.01E-10	1.06E-08

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TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	2.69E-09	2.28E+01	6.14E-08	--	NC	3.33E+01	8.97E-08
Benzo(a)pyrene	1.39E-08	--	NC	6.29E-01	8.73E-09	2.30E+00	3.19E-08
Copper	NC	--	NC	6.66E+03	NC	--	NC
Dibenzo(a,h)anthracene	1.39E-08	--	NC	--	NC	4.55E-01	6.32E-09
Total 2,3,7,8-TCDD TEQ	5.12E-04	5.33E-04	2.73E-07	3.34E-03	1.71E-06	--	NC
Total PCBs	1.06E-08	6.60E-01	6.99E-09	3.13E+01	3.31E-07	4.90E-01	5.19E-09
Total:			**3.41E-07**		**2.05E-06**		**1.33E-07**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - MLE

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	MLE Trespassing Teen ADDder (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	1.14E-08	5.57E-11	5.57E-11	3.79E-05	1.86E-07	3.81E-05
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NC
Copper	1.00E+00	1	0.002	3.70E-02	3.79E-08	1.11E-10	1.11E-10	1.02E-06	3.01E-09	1.03E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	3.14E-08	2.23E-09	2.23E-09	1.57E-03	1.11E-04	1.68E-03

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TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
TRESPASSING TEEN - MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (per mg/kg)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	3.81E-05	2.28E+01	8.68E-04	--	NC	3.33E+01	1.27E-03
Benzo(a)pyrene	NC	--	NC	6.29E-01	NC	2.30E+00	NC
Copper	1.03E-06	--	NC	6.66E+03	6.84E-03	--	NC
Dibenzo(a,h)anthracene	NC	--	NC	--	NC	4.55E-01	NC
Total 2,3,7,8-TCDD TEQ	NC	5.33E-04	NC	3.34E-03	NC	--	NC
Total PCBs	1.68E-03	6.60E-01	1.11E-03	3.13E+01	5.27E-02	4.90E-01	8.25E-04
	Total HI:		**1.98E-03**		**5.95E-02**		**2.09E-03**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - MLE INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Trespassing Teen	1.0	(m^3 air/hour)	
Body Weight	MLE Trespassing Teen	47	(kg)	
Exposure Time	MLE Trespassing Teen	2	(hrs/day) =	2.00E+00
Exposure Frequency	MLE Trespassing Teen	13	(days)/365 (days) =	3.56E-02
Exposure Duration (cancer)	MLE Trespassing Teen	11	(yrs)/70(yrs) =	1.57E-01
Exposure Duration (noncancer)	MLE Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh MLE Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	2.38E-04	2.38E-04	3.57E-03
Benzo(a)pyrene	1.00E+00	1	3.10E+00	2.38E-04	2.38E-04	7.38E-04
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	2.38E-04	2.38E-04	7.38E-04
Total 2,3,7,8-TCDD TEQ	1.00E+00	1	1.50E+05	2.38E-04	2.38E-04	3.57E+01
Total PCBs	1.00E+00	1	2.00E+00	2.38E-04	2.38E-04	4.76E-04

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - MLE

Constituent	Reference Risk (per mg/m3)	Fill Area H		Fill Area I		Fill Area L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	3.57E-03	2.89E-08	1.03E-10	--	NC	2.81E-08	1.01E-10
Benzo(a)pyrene	7.38E-04	--	NC	1.04E-09	7.69E-13	1.94E-09	1.43E-12
Copper	NC	--	NC	1.10E-05	NC	--	NC
Dibenzo(a,h)anthracene	7.38E-04	--	NC	--	NC	3.84E-10	2.84E-13
Total 2,3,7,8-TCDD TEQ	3.57E+01	6.75E-13	2.41E-11	5.53E-12	1.98E-10	--	NC
Total PCBs	4.76E-04	8.36E-10	3.98E-13	5.18E-08	2.47E-11	4.14E-10	1.97E-13
	Total:		**1.28E-10**		**2.23E-10**		**1.02E-10**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
TRESPASSING TEEN - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Copper	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Total 2,3,7,8-TCDD TEQ	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Trespassing Teen

ASSUMPTIONS FOR TRESPASSING TEEN - MLE INHALATION OF OUTDOOR AIR -VOCs		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Trespassing Teen	1.0	(m^3 air/hour)	
Body Weight	MLE Trespassing Teen	47	(kg)	
Exposure Time	MLE Trespassing Teen	2	(hrs/day) =	2.00E+00
Exposure Frequency	MLE Trespassing Teen	13	(days)/365 (days) =	3.56E-02
Exposure Duration (cancer)	MLE Trespassing Teen	11	(yrs)/70(yrs) =	1.57E-01
Exposure Duration (noncancer)	MLE Trespassing Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh MLE Trespassing Teen (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	1	2.03E-01	2.38E-04	2.38E-04	4.83E-05
4-Methyl-2-pentanone	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	7.70E-03	2.38E-04	2.38E-04	1.83E-06
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	1.57E-04	1.57E-04	1.27E-05
Ethylbenzene	1.00E+00	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	2.38E-04	2.38E-04	4.76E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	2.38E-04	2.38E-04	1.43E-06
Vinyl chloride	1.00E+00	1	1.54E-02	2.38E-04	2.38E-04	3.67E-06

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - MLE

Constituent	Reference Risk (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,1,2,2-Tetrachloroethane	4.83E-05	--	NC	5.50E-08	2.66E-12	--	NC	--	NC
4-Methyl-2-pentanone	NC	9.40E-07	NC	--	NC	--	NC	--	NC
Benzene	1.83E-06	1.20E-05	2.20E-11	2.70E-05	4.95E-11	7.90E-06	1.45E-11	3.00E-07	5.50E-13
Chlorobenzene	NC	9.70E-06	NC	2.40E-05	NC	2.90E-05	NC	--	NC
Chloroform	1.27E-05	--	NC	2.60E-06	3.29E-11	--	NC	4.30E-07	5.44E-12
Ethylbenzene	NC	--	NC	1.70E-05	NC	--	NC	--	NC
Naphthalene	NC	7.00E-07	NC	1.50E-06	NC	--	NC	--	NC
Tetrachloroethene	4.76E-07	1.70E-06	8.10E-13	--	NC	--	NC	--	NC
Toluene	NC	3.20E-05	NC	1.20E-06	NC	--	NC	--	NC
Trichloroethene	1.43E-06	1.60E-06	2.29E-12	--	NC	1.90E-06	2.72E-12	--	NC
Vinyl chloride	3.67E-06	4.60E-06	1.69E-11	--	NC	7.10E-05	2.60E-10	--	NC
	Total:		**4.20E-11**		**8.51E-11**		**2.78E-10**		**5.99E-12**

Notes:
-- Not a constituent of potential concern in this area/medium.
NC - Not Calculated.
(a) - Outdoor air concentration calculated from average groundwater concentration in this area.

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SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh Trespassing Teen (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
1,1,2,2-Tetrachloroethane	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone	1.00E+00	1	2.29E-02	1.52E-03	1.52E-03	6.63E-02
Benzene	1.00E+00	1	1.70E-03	1.52E-03	1.52E-03	8.92E-01
Chlorobenzene	1.00E+00	1	5.71E-03	1.52E-03	1.52E-03	2.65E-01
Chloroform	1.00E+00	1	8.60E-05	1.52E-03	1.52E-03	1.76E+01
Ethylbenzene	1.00E+00	1	2.86E-01	1.52E-03	1.52E-03	5.30E-03
Naphthalene	1.00E+00	1	8.57E-04	1.52E-03	1.52E-03	1.77E+00
Tetrachloroethene	1.00E+00	1	1.14E-01	1.52E-03	1.52E-03	1.33E-02
Toluene	1.00E+00	1	1.14E-01	1.52E-03	1.52E-03	1.33E-02
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	1.52E-03	1.52E-03	5.30E-02

TABLE
POTENTIAL HAZARD INDEX
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR -VOCs
TRESPASSING TEEN - MLE

Constituent	Reference HQ (per mg/m3)	Fill Area G (a)		Fill Area H (a)		Fill Area I (a)		Fill Area L (a)	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,1,2,2-Tetrachloroethane	NC	--	NC	5.50E-08	NC	--	NC	--	NC
4-Methyl-2-pentanone	6.63E-02	9.40E-07	6.23E-08	--	NC	--	NC	--	NC
Benzene	8.92E-01	1.20E-05	1.07E-05	2.70E-05	2.41E-05	7.90E-06	7.04E-06	3.00E-07	2.67E-07
Chlorobenzene	2.65E-01	9.70E-06	2.57E-06	2.40E-05	6.37E-06	2.90E-05	7.70E-06	--	NC
Chloroform	1.76E+01	--	NC	2.60E-06	4.58E-05	--	NC	4.30E-07	7.58E-06
Ethylbenzene	5.30E-03	--	NC	1.70E-05	9.01E-08	--	NC	--	NC
Naphthalene	1.77E+00	7.00E-07	1.24E-06	1.50E-06	2.65E-06	--	NC	--	NC
Tetrachloroethene	1.33E-02	1.70E-06	2.26E-08	--	NC	--	NC	--	NC
Toluene	1.33E-02	3.20E-05	4.25E-07	1.20E-06	1.60E-08	--	NC	--	NC
Trichloroethene	NC	1.60E-06	NC	--	NC	1.90E-06	NC	--	NC
Vinyl chloride	5.30E-02	4.60E-06	2.44E-07	--	NC	7.10E-05	3.77E-06	--	NC
	Total HI:		**1.53E-05**		**7.90E-05**		**1.85E-05**		**7.85E-06**

Notes:
-- Not a constituent of potential concern in this area/medium.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - Outdoor air concentration calculated from average groundwater concentration in this area.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Recreational Teen

ASSUMPTIONS FOR RECREATIONAL TEEN - RME INCIDENTIAL INGESTION AND DERMAL CONTACT SEDIMENT		Assumed Value	Units	Calculated Value
Sediment Ingestion Rate	RME Recreational Teen	100	(mg soil/day)	
Sediment on Skin	RME Recreational Teen	1	(mg/cm^2)	
Skin Exposed	RME Recreational Teen	2029	(cm^2)	
Body Weight	RME Recreational Teen	47	(kg)	
Exposure Frequency	RME Recreational Teen	26	(days)/365(days) =	7.12E-02
Exposure Duration (cancer)	RME Recreational Teen	11	(years)/70(years) =	1.57E-01
Exposure Duration (noncancer)	RME Recreational Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL TEEN - RME

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Recreational Teen (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Recreational Teen (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.79E+01	0.3	0.001	1.50E+00	1.28E-07	1.28E-07	8.66E-09	8.66E-09	1.92E-07	1.30E-08	2.05E-07
Total PCBs	1.24E+00	0.83	0.04	2.00E+00	2.45E-08	2.45E-08	2.40E-08	2.40E-08	4.90E-08	4.79E-08	9.70E-08
								Total:	2.41E-07	6.09E-08	3.02E-07

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL TEEN - RME

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Recreational Teen (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Recreational Teen (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.79E+01	0.3	0.001	3.00E-04	8.15E-07	8.15E-07	5.51E-08	5.51E-08	2.72E-03	1.84E-04	2.90E-03
Total PCBs	1.24E+00	0.83	0.04	2.00E-05	1.56E-07	1.56E-07	1.53E-07	1.53E-07	7.80E-03	7.63E-03	1.54E-02
								Total:	1.05E-02	7.81E-03	1.83E-02

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Recreational Teen

ASSUMPTIONS FOR RECREATIONAL TEEN - MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SEDIMENT		Assumed Value	Units	Calculated Value
Sediment Ingestion Rate	MLE Recreational Teen	50	(mg soil/day)	
Sediment on Skin	MLE Recreational Teen	1	(mg/cm^2)	
Skin Exposed	MLE Recreational Teen	2029	(cm^2)	
Body Weight	MLE Recreational Teen	47	(kg)	
Exposure Frequency	MLE Recreational Teen	13	(days)/365(days) =	3.56E-02
Exposure Duration (cancer)	MLE Recreational Teen	11	(years)/70(years) =	1.57E-01
Exposure Duration (noncancer)	MLE Recreational Teen	11	(yrs)/11(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL TEEN - MLE

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing MLE Recreational Teen (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Recreational Teen (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.48E+01	0.3	0.001	1.50E+00	2.64E-08	2.64E-08	3.58E-09	3.58E-09	3.97E-08	5.36E-09	4.50E-08
Total PCBs	4.02E-01	0.83	0.04	2.00E+00	1.99E-09	1.99E-09	3.89E-09	3.89E-09	3.97E-09	7.77E-09	1.17E-08
								Total:	4.36E-08	1.31E-08	5.68E-08

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL TEEN - MLE

Constituent	Concentration In Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing MLE Recreational Teen (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Recreational Teen (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.48E+01	0.3	0.001	3.00E-04	1.68E-07	1.68E-07	2.28E-08	2.28E-08	5.61E-04	7.59E-05	6.37E-04
Total PCBs	4.02E-01	0.83	0.04	2.00E-05	1.26E-08	1.26E-08	2.47E-08	2.47E-08	6.32E-04	1.24E-03	1.87E-03
								Total:	1.19E-03	1.31E-03	2.50E-03

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Fisher

ASSUMPTIONS FOR RECREATIONAL FISHER - RME INCIDENTIAL INGESTION AND DERMAL CONTACT SEDIMENT		Assumed Value	Units	Calculated Value
Sediment Ingestion Rate	RME Fisher	100	(mg soil/day)	
Sediment on Skin	RME Fisher	1	(mg/cm^2)	
Skin Exposed	RME Fisher	4500	(cm^2)	
Body Weight	RME Fisher	70	(kg)	
Exposure Frequency	RME Fisher	22	(days)/365(days) =	6.03E-02
Exposure Duration (cancer)	RME Fisher	30	(years)/70(years) =	4.29E-01
Exposure Duration (noncancer)	RME Fisher	30	(yrs)/30(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL FISHER - RME

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Fisher (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Fisher (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.79E+01	0.3	0.001	1.50E+00	1.98E-07	1.98E-07	2.98E-08	2.98E-08	2.98E-07	4.47E-08	3.42E-07
Total PCBs	1.24E+00	0.83	0.04	2.00E+00	3.80E-08	3.80E-08	8.24E-08	8.24E-08	7.60E-08	1.65E-07	2.41E-07
								Total:	3.74E-07	2.09E-07	5.83E-07

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL FISHER - RME

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Fisher (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Fisher (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.79E+01	0.3	0.001	3.00E-04	4.63E-07	4.63E-07	6.95E-08	6.95E-08	1.54E-03	2.32E-04	1.78E-03
Total PCBs	1.24E+00	0.83	0.04	2.00E-05	8.86E-08	8.86E-08	1.92E-07	1.92E-07	4.43E-03	9.61E-03	1.40E-02
								Total:	5.97E-03	9.84E-03	1.58E-02

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 3:	RME Fisher

ASSUMPTIONS FOR RECREATIONAL FISHER - RME INGESTION OF FISH		Assumed Value	Units	Calculated Value
Fish Ingestion Rate	RME Fisher	0.008	(kg fish/day)	
Body Weight	RME Fisher	70	(kg)	
Exposure Frequency	RME Fisher	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (cancer)	RME Fisher	30	(yrs)/ 70 (yrs) =	4.29E-01
Exposure Duration (noncancer)	RME Fisher	30	(yrs)/ 30 (yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
RME

POTENTIAL CARCINOGENIC RISK
INGESTION OF FISH
RECREATIONAL FISHER - RME

Constituent	Fish Fillet Concentration (mg/kg)	Oral - Diet Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Fisher (mg/kg-day)	Lifetime Average Daily Dose (mg/kg-day)	Excess Lifetime Cancer Risk
Arsenic	4.50E-01	1	1.50E+00	2.20E-05	2.20E-05	3.31E-05

SAUGET AREA 1 - EE/CA AND RI/FS
RME

POTENTIAL HAZARD INDEX
INGESTION OF FISH
RECREATIONAL FISHER - RME

Constituent	Fish Fillet Concentration (mg/kg)	Oral - Diet Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Fisher (mg/kg-day)	Lifetime Average Daily Dose (mg/kg-day)	Excess Lifetime Hazard Index
Arsenic	4.50E-01	1	3.00E-04	5.14E-05	5.14E-05	1.71E-01

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Fisher

ASSUMPTIONS FOR RECREATIONAL FISHER - MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SEDIMENT		Assumed Value	Units	Calculated Value
Sediment Ingestion Rate	MLE Fisher	50	(mg soil/day)	
Sediment on Skin	MLE Fisher	1	(mg/cm^2)	
Skin Exposed	MLE Fisher	4500	(cm^2)	
Body Weight	MLE Fisher	70	(kg)	
Exposure Frequency	MLE Fisher	3	(days)/365(days) =	8.22E-03
Exposure Duration (cancer)	MLE Fisher	9	(years)/70(years) =	1.29E-01
Exposure Duration (noncancer)	MLE Fisher	9	(yrs)/9(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL FISHER - MLE

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDing MLE Fisher (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Fisher (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.48E+01	0.3	0.001	1.50E+00	3.35E-09	3.35E-09	1.01E-09	1.01E-09	5.03E-09	1.51E-09	6.54E-09
Total PCBs	4.02E-01	0.83	0.04	2.00E+00	2.52E-10	2.52E-10	1.09E-09	1.09E-09	5.04E-10	2.18E-09	2.69E-09
								Total:	5.53E-09	3.69E-09	9.22E-09

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SEDIMENT
RECREATIONAL FISHER - MLE

Constituent	Concentration in Sediment (mg/kg)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing MLE Fisher (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Fisher (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.48E+01	0.3	0.001	3.00E-04	2.61E-08	2.61E-08	7.82E-09	7.82E-09	8.69E-05	2.61E-05	1.13E-04
Total PCBs	4.02E-01	0.83	0.04	2.00E-05	1.96E-09	1.96E-09	8.50E-09	8.50E-09	9.79E-05	4.25E-04	5.23E-04
								Total:	1.85E-04	4.51E-04	6.36E-04

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 3:	MLE Fisher

ASSUMPTIONS FOR RECREATIONAL FISHER -MLE INGESTION OF FISH		Assumed Value	Units	Calculated Value
Fish Ingestion Rate	MLE Fisher	0.001	(kg fish/day)	
Body Weight	MLE Fisher	70	(kg)	
Exposure Frequency	MLE Fisher	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (cancer)	MLE Fisher	9	(yrs)/ 70 (yrs) =	1.29E-01
Exposure Duration (noncancer)	MLE Fisher	9	(yrs)/ 9 (yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

POTENTIAL CARCINOGENIC RISK
INGESTION OF FISH
RECREATIONAL FISHER -MLE

Constituent	Fish Fillet Concentration (mg/kg)	Oral - Diet Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing MLE Fisher (mg/kg-day)	Lifetime Average Daily Dose (mg/kg-day)	Excess Lifetime Cancer Risk
Arsenic	4.50E-01	1	1.50E+00	8.27E-07	8.27E-07	1.24E-06

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

POTENTIAL HAZARD INDEX
INGESTION OF FISH
RECREATIONAL FISHER -MLE

Constituent	Fish Fillet Concentration (mg/kg)	Oral - Diet Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing MLE Fisher (mg/kg-day)	Lifetime Average Daily Dose (mg/kg-day)	Excess Lifetime Hazard Index
Arsenic	4.50E-01	1	3.00E-04	6.43E-06	6.43E-06	2.14E-02

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 1:	RME Young Child
Receptor 3:	RME Adult

ASSUMPTIONS FOR RESIDENTIAL RECEPTORS - RME INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	RME Young Child	200	(mg soil/day)	
Soil Ingestion Rate	RME Adult	100	(mg soil/day)	
Soil on Skin	RME Young Child	0.06	(mg/cm^2)	
Soil on Skin	RME Adult	0.12	(mg/cm^2)	
Skin Exposed	RME Young Child	2058	(cm^2)	
Skin Exposed	RME Adult	5729	(cm^2)	
Body Weight	RME Young Child	15	(kg)	
Body Weight	RME Adult	70	(kg)	
Exposure Frequency	RME Young Child	266	(days)/365(days) =	7.29E-01
Exposure Frequency	RME Adult	266	(days)/365(days) =	7.29E-01
Exposure Duration (cancer)	RME Young Child	6	(years)/70(years) =	8.57E-02
Exposure Duration (cancer)	RME Adult	24	(years)/70(years) =	3.43E-01
Exposure Duration (noncancer)	RME Young Child	6	(yrs)/6(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTOR CHILD AND ADULT

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Young Child (mg/kg-day)	ADDing RME Adult (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Young Child (mg/kg-day)	ADDder RME Adult (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	2.50E-07	1.07E-07	3.57E-07	5.14E-10	2.45E-09	2.97E-09	5.35E-07	4.45E-09	5.40E-07
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	2.42E-07	1.04E-07	3.45E-07	1.03E-08	4.91E-08	5.94E-08	2.52E-07	4.33E-08	2.95E-07
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	2.42E-07	1.04E-07	3.45E-07	1.03E-08	4.91E-08	5.94E-08	2.52E-06	4.33E-07	2.95E-06
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	2.42E-07	1.04E-07	3.45E-07	1.03E-08	4.91E-08	5.94E-08	2.52E-07	4.33E-08	2.95E-07
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	2.42E-07	1.04E-07	3.45E-07	1.03E-08	4.91E-08	5.94E-08	2.52E-06	4.33E-07	2.95E-06
Dieldrin	1.00E+00	1	0.01	1.60E+01	8.33E-07	3.57E-07	1.19E-06	5.14E-09	2.45E-08	2.97E-08	1.90E-05	4.75E-07	1.95E-05
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	2.42E-07	1.04E-07	3.45E-07	1.03E-08	4.91E-08	5.94E-08	2.52E-07	4.33E-08	2.95E-07

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TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	5.40E-07	--	NC	--	NC	--	NC	--	NC	--	NC	1.50E+01	8.09E-06
Benzo(a)anthracene	2.95E-07	--	NC	--	NC	4.30E+00	1.27E-06	--	NC	4.20E+00	1.24E-06	1.90E+00	5.61E-07
Benzo(a)pyrene	2.95E-06	3.30E-01	9.74E-07	2.60E-01	7.68E-07	3.50E+00	1.03E-05	3.40E-01	1.00E-06	3.60E+00	1.06E-05	2.10E+00	6.20E-06
Benzo(b)fluoranthene	2.95E-07	--	NC	4.00E-01	1.18E-07	2.81E+00	8.30E-07	--	NC	4.40E+00	1.30E-06	2.20E+00	6.49E-07
Dibenzo(a,h)anthracene	2.95E-06	1.10E-01	3.25E-07	1.00E-01	2.95E-07	2.30E-01	6.79E-07	1.90E-01	5.61E-07	3.30E-01	9.74E-07	2.00E-01	5.90E-07
Dieldrin	1.95E-05	--	NC	--	NC	--	NC	1.00E-01	1.95E-06	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	2.95E-07	--	NC	--	NC	9.55E-01	2.82E-07	--	NC	5.90E-01	1.74E-07	6.30E-01	1.86E-07
	Total:		1.30E-06		1.18E-06		1.34E-05		3.52E-06		1.43E-05		1.63E-05

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - RME CHILD

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing Young Child (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Young Child (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	2.92E-06	2.92E-06	6.00E-09	6.00E-09	9.72E-03	2.00E-05	9.74E-03
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	9.72E-06	9.72E-06	6.00E-08	6.00E-08	1.94E-01	1.20E-03	1.96E-01
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
	HQ (per mg/kg)	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	9.74E-03	--	NC	--	NC	--	NC	--	NC	--	NC	1.50E+01	1.46E-01
Benzo(a)anthracene	NC	--	NC	--	NC	4.30E+00	NC	--	NC	4.20E+00	NC	1.90E+00	NC
Benzo(a)pyrene	NC	3.30E-01	NC	2.60E-01	NC	3.50E+00	NC	3.40E-01	NC	3.60E+00	NC	2.10E+00	NC
Benzo(b)fluoranthene	NC	--	NC	4.00E-01	NC	2.81E+00	NC	--	NC	4.40E+00	NC	2.20E+00	NC
Dibenzo(a,h)anthracene	NC	1.10E-01	NC	1.00E-01	NC	2.30E-01	NC	1.90E-01	NC	3.30E-01	NC	2.00E-01	NC
Dieldrin	1.96E-01	--	NC	--	NC	--	NC	1.00E-01	1.96E-02	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	9.55E-01	NC	--	NC	5.90E-01	NC	6.30E-01	NC
	Total HI:		NC		NC		NC		1.96E-02		NC		1.46E-01

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Young Child
Receptor 3:	RME Adult

ASSUMPTIONS FOR RESIDENTIAL RECEPTORS - RME INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Young Child	1.2	(m^3 air/hour)	
Inhalation Rate	RME Adult	1.6	(m^3 air/hour)	
Body Weight	RME Young Child	15	(kg)	
Body Weight	RME Adult	70	(kg)	
Exposure Time	RME Young Child	6	(hrs/day) =	6.00E+00
Exposure Time	RME Adult	2	(hrs/day) =	2.00E+00
Exposure Frequency	RME Young Child	266	(days)/365 (days) =	7.29E-01
Exposure Frequency	RME Adult	266	(days)/365 (days) =	7.29E-01
Exposure Duration (cancer)	RME Young Child	6	(yrs)/70(yrs) =	8.57E-02
Exposure Duration (cancer)	RME Adult	24	(yrs)/70(yrs) =	3.43E-01
Exposure Duration (noncancer)	RME Young Child	6	(yrs)/6(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Young Child (mg/kg-day)	ADDinh RME Adult (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	3.00E-02	1.14E-02	4.14E-02	6.21E-01
Benzo(a)anthracene	1.00E+00	1	3.10E-01	3.00E-02	1.14E-02	4.14E-02	1.28E-02
Benzo(a)pyrene	1.00E+00	1	3.10E+00	3.00E-02	1.14E-02	4.14E-02	1.28E-01
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	3.00E-02	1.14E-02	4.14E-02	1.28E-02
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	3.00E-02	1.14E-02	4.14E-02	1.28E-01
Dieldrin	1.00E+00	1	1.61E+01	3.00E-02	1.14E-02	4.14E-02	6.67E-01
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	3.00E-02	1.14E-02	4.14E-02	1.28E-02

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - RME

Constituent	Reference Risk (per mg/m3)	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	6.21E-01	--	NC	--	NC	--	NC	--	NC	--	NC	1.27E-08	7.86E-09
Benzo(a)anthracene	1.28E-02	--	NC	--	NC	3.63E-09	4.66E-11	--	NC	3.55E-09	4.56E-11	1.61E-09	2.06E-11
Benzo(a)pyrene	1.28E-01	4.18E-10	5.36E-11	2.20E-10	2.82E-11	2.96E-09	3.80E-10	2.87E-10	3.69E-11	3.04E-09	3.90E-10	1.77E-09	2.28E-10
Benzo(b)fluoranthene	1.28E-02	--	NC	3.38E-10	4.34E-12	2.37E-09	3.05E-11	--	NC	3.72E-09	4.77E-11	1.86E-09	2.39E-11
Dibenzo(a,h)anthracene	1.28E-01	1.39E-10	1.79E-11	8.45E-11	1.08E-11	1.94E-10	2.49E-11	1.61E-10	2.06E-11	2.79E-10	3.58E-11	1.69E-10	2.17E-11
Dieldrin	6.67E-01	--	NC	--	NC	--	NC	8.45E-11	5.63E-11	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	1.28E-02	--	NC	--	NC	8.07E-10	1.04E-11	--	NC	4.99E-10	6.40E-12	5.32E-10	6.83E-12
	Total:		7.15E-11		4.34E-11		4.92E-10		1.14E-10		5.26E-10		8.16E-09

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh RME Young Child (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptor Evaluated:	
1:	RME Young Child
2:	RME Adult

Assumptions for Carcinogenic Assessment Risk by Ingestion of Locally Grown Produce	Assumed Value	Units	Calculated Value
Crop Consumption Rate (Young Child)	15	g/day	
Body Weight (Young Child)	15	(kg)	
Exposure Frequency (Young Child)	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (Young Child) (cancer)	6	(yrs)/ 70(yrs) =	8.57E-02
Exposure Duration (Young Child) (noncancer)	6	(yrs)/ 6(yrs) =	1.00E+00
Crop Consumption Rate (Adult)	454	g/day	
Body Weight (Adult)	70	(kg)	
Exposure Frequency (Adult)	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (Adult) (cancer)	24	(yrs)/ 70(yrs) =	3.43E-01
Lifetime	70	(years)	
Unit Conversion Factor	0.001	(kg/g)	

SAUGET AREA 1 - EE/CA AND RI/FS
RME
Carcinogenic Assessment
Risk by Ingestion of Locally Grown Produce
Residential Adult and Child

Constituent	Unit Produce Concentration (mg/kg produce)	Oral Absorption Adjustment Factor	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADD Young Child (mg/kg-day)	ADD RME Adult (mg/kg-day)	Lifeteme Average Daily Dose - Ing. of all Crop Types (mg/kg-day)	Excess Lifetime Cancer Risk
Arsenic	1.00E+00	1	1.50E+00	8.57E-05	2.22E-03	2.31E-03	3.46E-03

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INGESTION OF PRODUCE
RESIDENTIAL ADULT AND CHILD
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk All Produce (per mg/kg)	Transect 7				
		Above Ground (a)		Below Ground (b)		
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	Total
Arsenic	3.46E-03	1.42E-02	3.40E-05	1.80E-02	1.93E-05	5.33E-05
	Total:		3.40E-05		1.93E-05	5.33E-05

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration (mg/kg produce).
NC - Not Calculated.
(a) - 69% of total vegetable ingestion is of above ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 69%.
(b) - 31% of total vegetable ingestion is of below ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 31%.

SAUGET AREA 1 - EE/CA AND RI/FS
RME
Noncarcinogenic Assessment
Risk by Ingestion of Locally Grown Produce
Residential Child

Constituent	Unit Produce Concentration (mg/kg produce)	Oral Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Chronic Average Daily Dose - Ing. of all Crop Types (mg/kg-day)	Hazard Index
Arsenic	1.00E+00	1	3.00E-04	1.00E-03	3.33E+00

TABLE
POTENTIAL HAZARD INDEX - RME
INGESTION OF PRODUCE
RESIDENTIAL CHILD
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (All produce) (per mg/kg)	Transect 7				
		Above Ground (a)		Below Ground (b)		
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	Total
Arsenic	3.33E+00	1.42E-02	3.27E-02	1.80E-02	1.86E-02	5.13E-02
	Total HI:		**3.27E-02**		**1.86E-02**	**5.13E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration (mg/kg produce).
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - 69% of total vegetable ingestion is of above ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 69%.
(b) - 31% of total vegetable ingestion is of below ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 31%.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 1:	MLE Young Child
Receptor 3:	MLE Adult

ASSUMPTIONS FOR RESIDENTIAL RECEPTORS - MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SURFACE SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	MLE Young Child	100	(mg soil/day)	
Soil Ingestion Rate	MLE Adult	50	(mg soil/day)	
Soil on Skin	MLE Young Child	0.06	(mg/cm^2)	
Soil on Skin	MLE Adult	0.12	(mg/cm^2)	
Skin Exposed	MLE Young Child	2058	(cm^2)	
Skin Exposed	MLE Adult	5729	(cm^2)	
Body Weight	MLE Young Child	15	(kg)	
Body Weight	MLE Adult	70	(kg)	
Exposure Frequency	MLE Young Child	178	(days)/365(days) =	4.88E-01
Exposure Frequency	MLE Adult	178	(days)/365(days) =	4.88E-01
Exposure Duration (cancer)	MLE Young Child	2	(years)/70(years) =	2.86E-02
Exposure Duration (cancer)	MLE Adult	7	(years)/70(years) =	1.00E-01
Exposure Duration (noncancer)	MLE Young Child	2	(yrs)/2(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTOR CHILD AND ADULT

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Young Child (mg/kg-day)	ADDing MLE Adult (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Young Child (mg/kg-day)	ADDder MLE Adult (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Arsenic	1.00E+00	0.3	0.001	1.50E+00	2.79E-08	1.05E-08	3.83E-08	1.15E-10	4.79E-10	5.94E-10	5.75E-08	8.90E-10	5.84E-08
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	2.69E-08	1.01E-08	3.70E-08	2.29E-09	9.58E-09	1.19E-08	2.70E-08	8.67E-09	3.57E-08
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	2.69E-08	1.01E-08	3.70E-08	2.29E-09	9.58E-09	1.19E-08	2.70E-07	8.67E-08	3.57E-07
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	2.69E-08	1.01E-08	3.70E-08	2.29E-09	9.58E-09	1.19E-08	2.70E-08	8.67E-09	3.57E-08
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	2.69E-08	1.01E-08	3.70E-08	2.29E-09	9.58E-09	1.19E-08	2.70E-07	8.67E-08	3.57E-07
Dieldrin	1.00E+00	1	0.01	1.60E+01	9.29E-08	3.48E-08	1.28E-07	1.15E-09	4.79E-09	5.94E-09	2.04E-06	9.50E-08	2.14E-06
Indeno(1,2,3-cd)pyrene	1.00E+00	0.29	0.02	7.30E-01	2.69E-08	1.01E-08	3.70E-08	2.29E-09	9.58E-09	1.19E-08	2.70E-08	8.67E-09	3.57E-08

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TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
Arsenic	5.84E-08	--	NC	--	NC	--	NC	--	NC	--	NC	9.99E+00	5.83E-07
Benzo(a)anthracene	3.57E-08	--	NC	--	NC	7.00E-01	2.50E-08	--	NC	6.06E-01	2.16E-08	3.42E-01	1.22E-08
Benzo(a)pyrene	3.57E-07	1.87E-01	6.68E-08	1.37E-01	4.89E-08	5.90E-01	2.11E-07	1.38E-01	4.93E-08	5.04E-01	1.80E-07	3.74E-01	1.34E-07
Benzo(b)fluoranthene	3.57E-08	--	NC	1.60E-01	5.71E-09	6.00E-01	2.14E-08	--	NC	6.34E-01	2.26E-08	4.06E-01	1.45E-08
Dibenzo(a,h)anthracene	3.57E-07	7.25E-02	2.59E-08	7.00E-02	2.50E-08	1.30E-01	4.64E-08	9.86E-02	3.52E-08	1.18E-01	4.21E-08	1.03E-01	3.68E-08
Dieldrin	2.14E-06	--	NC	--	NC	--	NC	1.58E-02	3.38E-08	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	3.57E-08	--	NC	--	NC	3.60E-01	1.29E-08	--	NC	2.20E-01	7.86E-09	2.40E-01	8.57E-09
	Total:		**9.27E-08**		**7.96E-08**		**3.16E-07**		**1.18E-07**		**2.74E-07**		**7.89E-07**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - MLE CHILD

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing Young Child (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Young Child (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Arsenic	1.00E+00	0.3	0.001	3.00E-04	9.75E-07	9.75E-07	4.01E-09	4.01E-09	3.25E-03	1.34E-05	3.26E-03
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	0.01	5.00E-05	3.25E-06	3.25E-06	4.01E-08	4.01E-08	6.50E-02	8.03E-04	6.58E-02
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SURFACE SOIL
RESIDENTIAL RECEPTORS - MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (per mg/kg)	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
Arsenic	3.26E-03	--	NC	--	NC	--	NC	--	NC	--	NC	9.99E+00	3.26E-02
Benzo(a)anthracene	NC	--	NC	--	NC	7.00E-01	NC	--	NC	6.06E-01	NC	3.42E-01	NC
Benzo(a)pyrene	NC	1.87E-01	NC	1.37E-01	NC	5.90E-01	NC	1.38E-01	NC	5.04E-01	NC	3.74E-01	NC
Benzo(b)fluoranthene	NC	--	NC	1.60E-01	NC	6.00E-01	NC	--	NC	6.34E-01	NC	4.06E-01	NC
Dibenzo(a,h)anthracene	NC	7.25E-02	NC	7.00E-02	NC	1.30E-01	NC	9.86E-02	NC	1.18E-01	NC	1.03E-01	NC
Dieldrin	6.58E-02	--	NC	--	NC	--	NC	1.58E-02	1.04E-03	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	NC	--	NC	--	NC	3.60E-01	NC	--	NC	2.20E-01	NC	2.40E-01	NC
	Total HI:		**NC**		**NC**		**NC**		**1.04E-03**		**NC**		**3.26E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Young Child
Receptor 3:	MLE Adult

ASSUMPTIONS FOR RESIDENTIAL RECEPTORS - MLE INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Young Child	0.32	(m^3 air/hour)	
Inhalation Rate	MLE Adult	0.55	(m^3 air/hour)	
Body Weight	MLE Young Child	15	(kg)	
Body Weight	MLE Adult	70	(kg)	
Exposure Time	MLE Young Child	6	(hrs/day) =	6.00E+00
Exposure Time	MLE Adult	2	(hrs/day) =	2.00E+00
Exposure Frequency	MLE Young Child	178	(days)/365 (days) =	4.88E-01
Exposure Frequency	MLE Adult	178	(days)/365 (days) =	4.88E-01
Exposure Duration (cancer)	MLE Young Child	2	(yrs)/70(yrs) =	2.86E-02
Exposure Duration (cancer)	MLE Adult	7	(yrs)/70(yrs) =	1.00E-01
Exposure Duration (noncancer)	MLE Young Child	2	(yrs)/2(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh MLE Young Child (mg/kg-day)	ADDinh MLE Adult (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Arsenic	1.00E+00	1	1.50E+01	1.79E-03	7.66E-04	2.55E-03	3.83E-02
Benzo(a)anthracene	1.00E+00	1	3.10E-01	1.79E-03	7.66E-04	2.55E-03	7.92E-04
Benzo(a)pyrene	1.00E+00	1	3.10E+00	1.79E-03	7.66E-04	2.55E-03	7.92E-03
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	1.79E-03	7.66E-04	2.55E-03	7.92E-04
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	1.79E-03	7.66E-04	2.55E-03	7.92E-03
Dieldrin	1.00E+00	1	1.61E+01	1.79E-03	7.66E-04	2.55E-03	4.11E-02
Indeno(1,2,3-cd)pyrene	1.00E+00	1	3.10E-01	1.79E-03	7.66E-04	2.55E-03	7.92E-04

TABLE
POTENTIAL CARCINOGENIC RISK
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - MLE

Constituent	Reference Risk (per mg/m3)	Fill Area N		Transect 3		Transect 4		Transect 5		Transect 6		Transect 7	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Arsenic	3.63E-02	--	NC	--	NC	--	NC	--	NC	--	NC	8.44E-09	3.23E-10
Benzo(a)anthracene	7.92E-04	--	NC	--	NC	5.91E-10	4.68E-13	--	NC	5.12E-10	4.05E-13	2.89E-10	2.29E-13
Benzo(a)pyrene	7.92E-03	2.37E-10	1.88E-12	1.16E-10	9.17E-13	4.99E-10	3.95E-12	1.17E-10	9.23E-13	4.26E-10	3.37E-12	3.16E-10	2.50E-12
Benzo(b)fluoranthene	7.92E-04	--	NC	1.35E-10	1.07E-13	5.07E-10	4.01E-13	--	NC	5.36E-10	4.24E-13	3.43E-10	2.72E-13
Dibenzo(a,h)anthracene	7.92E-03	9.18E-11	7.27E-13	5.91E-11	4.68E-13	1.10E-10	8.70E-13	8.33E-11	6.60E-13	9.97E-11	7.90E-13	8.70E-11	6.89E-13
Dieldrin	4.11E-02	--	NC	--	NC	--	NC	1.34E-11	5.49E-13	--	NC	--	NC
Indeno(1,2,3-cd)pyrene	7.92E-04	--	NC	--	NC	3.04E-10	2.41E-13	--	NC	1.86E-10	1.47E-13	2.03E-10	1.61E-13
	Total:		2.60E-12		1.49E-12		5.93E-12		2.13E-12		5.14E-12		3.27E-10

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.

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SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
RESIDENTIAL RECEPTORS - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh MLE Young Child (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	NA	NA	NA	NA	NC
Indeno(1,2,3-cd)pyrene	1.00E+00	NA	NA	NA	NA	NC

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptor Evaluated:	
1:	MLE Young Child
2:	MLE Adult

Assumptions for Carcinogenic Assessment Risk by Ingestion of Locally Grown Produce	Assumed Value	Units	Calculated Value
Crop Consumption Rate (Young Child)	4	g/day	
Body Weight (Young Child)	15	(kg)	
Exposure Frequency (Young Child)	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (Young Child) (cancer)	2	(yrs)/ 70(yrs) =	2.86E-02
Exposure Duration (Young Child) (noncancer)	2	(yrs)/ 2(yrs) =	1.00E+00
Crop Consumption Rate (Adult)	125	g/day	
Body Weight (Adult)	70	(kg)	
Exposure Frequency (Adult)	365	(days)/ 365 (days) =	1.00E+00
Exposure Duration (Adult) (cancer)	7	(yrs)/ 70(yrs) =	1.00E-01
Lifetime	70	(years)	
Unit Conversion Factor	0.001	(kg/g)	

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
Carcinogenic Assessment
Risk by Ingestion of Locally Grown Produce
Residential Adult and Child

Constituent	Unit Produce Concentration (mg/kg produce)	Oral Absorption Adjustment Factor	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADD Young Child (mg/kg-day)	ADD MLE Adult (mg/kg-day)	Lifeteme Average Daily Dose - Ing. of all Crop Types (mg/kg-day)	Excess Lifetime Cancer Risk
Arsenic	1.00E+00	1	1.50E+00	7.62E-06	1.79E-04	1.86E-04	2.79E-04

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INGESTION OF PRODUCE
RESIDENTIAL ADULT AND CHILD
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk All Produce (per mg/kg)	Transect 7				
		Above Ground (a)		Below Ground (b)		
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	Total
Arsenic	2.79E-04	9.49E-03	1.83E-06	1.20E-02	1.04E-06	2.87E-06
	Total:		**1.83E-06**		**1.04E-06**	**2.87E-06**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration (mg/kg produce).
NC - Not Calculated.
(a) - 69% of total vegetable ingestion is of above ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 69%.
(b) - 31% of total vegetable ingestion is of below ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 31%.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE
Noncarcinogenic Assessment
Risk by Ingestion of Locally Grown Produce
Residential Child

Constituent	Unit Produce Concentration (mg/kg produce)	Oral Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Chronic Average Daily Dose - Ing. of all Crop Types (mg/kg-day)	Hazard Index
Arsenic	1.00E+00	1	3.00E-04	2.67E-04	8.89E-01

TABLE
POTENTIAL HAZARD INDEX - MLE
INGESTION OF PRODUCE
RESIDENTIAL CHILD
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HQ (All produce) (per mg/kg)	Transect 7				
		Above Ground (a)		Below Ground (b)		
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	Total
Arsenic	6.89E-01	9.49E-03	5.82E-03	1.20E-02	3.30E-03	9.12E-03
	Total HI:		5.82E-03		3.30E-03	9.12E-03

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration (mg/kg produce).
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated.
(a) - 69% of total vegetable ingestion is of above ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 69%.
(b) - 31% of total vegetable ingestion is of below ground vegetables. Therefore, risk is the total produce concentration (mg/kg) x reference risk x 31%.

APPENDIX Q

ASSESSMENT OF POTENTIAL LEAD EXPOSURES

APPENDIX Q
ASSESSMENT OF POTENTIAL LEAD EXPOSURES

Lead was identified as constituent of potential concern (COPC) in a single non-potable use well (DW-MCDO) within the study area. Therefore, incidental ingestion of groundwater associated with residential use (such as car washing) or potential construction and/or utility repair was evaluated in the risk assessment.

For many compounds associated with known or potential noncarcinogenic health effects, it has been demonstrated that there is a threshold for these effects. It is conventionally assumed for all such compounds that there is a dose below which no adverse effect occurs or, conversely, above which an adverse effect may be seen. For compounds with known or suspected carcinogenic effects, the underlying assumption for all regulatory risk assessment is that there is no threshold for effects. Thus, every dose, no matter how small, is assumed to pose some finite level of risk.

Because of the uncertainties in the dose-response relationship between exposure to lead and biological effects, it is unclear whether the noncarcinogenic effects of lead exhibit a threshold response. Therefore, an RfD for lead is not available. Although USEPA has classified lead as a B2 (probable human) carcinogen, no cancer slope factor (CSF) has been developed. Therefore, potential exposures to lead cannot be evaluated using the traditional methods of risk assessment. However, the USEPA has developed an Integrated Exposure Uptake Biokinetic (IEUBK) model that correlates lead levels in the environment to blood lead levels in children (USEPA, 1994), and a model for assessing adult exposures to lead in multiple environmental media (air, soil, and water) in an industrial/commercial setting is available in the peer reviewed literature (Bowers et al., 1994).

USEPA IEUBK Model

It is generally believed that increasing blood lead concentrations in children correlate with adverse neurological effects. The IEUBK model is a computer program that links typical risk assessment exposure analysis with a biokinetic model of lead uptake and distribution in the body to enable estimates of blood lead levels that may occur due to overall exposures to lead in the environment. The IEUBK model predicts blood lead levels in children 0-7 years of age due to exposure to lead from multiple sources, including air, water, diet, soil, and maternal sources, and considers differing exposure patterns and physiological changes in the various age groups. Children 0-7 years of age are considered by US EPA to be sensitive receptors for lead exposure because, compared to older receptors, young children ingest more soil, absorb more lead from the gastrointestinal tract, and are more sensitive to the effects of lead in the bloodstream. The health effects of most concern from lead exposures are impaired mental and physical development in young children. Available evidence suggests that a threshold dose for these effects lies between 10 to 15 micrograms of lead per deciliter of blood (µg/dL) (USEPA, 1994).

Potential risk associated with incidental exposure of a young child (0-6 years of age) to lead as a result of non-potable groundwater use was evaluated using USEPA's IEUBK model (version 0.99d) (USEPA, 1994b).

Key assumptions in the IEUBK model are briefly discussed below:

Lead In Air: The model assumes a background concentration of lead in outdoor air of 0.1 ug/m^3 lead (based on the average lead concentration in outdoor air in urban areas in 1990) and in indoor air was assumed to be 30 percent of that for outdoor air or 0.03 ug/m^3. Age-specific air inhalation rates ranging from 2 to 7 m^3/day are used to estimate intake of lead via inhalation, and fractional uptake of inhaled lead was assumed to be 0.32.

Lead in the Diet: The model assumes an average ingestion of lead in diet that on an age-specific basis ranges from 0.006 to 0.007 mg lead/day. These values are based on FDA reported dietary lead intake for U.S. children (6 months to 6 years of age) from 1987 to 1994. Fractional uptake of lead ingested in the diet was assumed to be 0.50.

Lead in Drinking Water: The model assumes a background concentration of lead in drinking water of 4 ug/L. Age-specific drinking water ingestion rates ranging from 0.20 to 0.59 L/day for U.S. children ages 6 months to 6 years were used to estimate lead intake and fractional uptake of lead ingested in water was assumed to be 0.50. To evaluate site-specific exposure to lead in non-potable use groundwater, it was assumed that children may inadvertently ingest 0.005 liters of groundwater per day while using groundwater for outdoor activities, for all age groups evaluated (0-6 years of age). This ingestion rate is equivalent to one-tenth that assumed to occur during a swimming event (USEPA, 1989). A site-specific groundwater concentration of 129 ug/L was used in the model.

Lead in Outdoor Soil and Indoor Dust: Age-specific average outdoor soil plus indoor dust ingestion rates ranging from 85 to 135 mg/day are used by the model and it is assumed that 45 percent of total ingestion is from soil and 55 percent is from dust. USEPA recommends that central tendency (average) rates of soil plus dust ingestion be used in IEUBK model, rather than the upper-bound soil plus dust ingestion rate of 200 mg/day. The source of lead in indoor dust is assumed to be lead in outdoor soil, and the concentration of lead in indoor dust is assumed to be 0.7 of that in outdoor soil, based on measured soil-dust relationships at other sites where soil was a major contributor to indoor dust. The fractional uptake of lead from soil and dust was assumed to be 0.30. Lead was not identified as a COPC in soil; however, in order to evaluate potential impacts of cumulative exposure to lead in environmental media at the site, a concentration of 72 mg/kg has been assumed for lead in both soil and indoor dust for the young child resident. This represents the average soil concentration for Transect 1 and is the highest average lead concentration identified in soil from the three transects (Transects 1, 2, and 3) nearest the one non-potable groundwater well (DW-MCDO) where lead was identified as a COPC.

The IEUBK model calculates a distribution of blood lead concentration in children, both graphically and in table format. The results are presented in Figure Q-1 and Table Q-1. As can be seen in Figure Q-1, 99.95% of young children potentially exposed to lead under the condition summarized above are predicted to exhibit blood lead concentrations lower than the acceptable blood lead level of 10 µg/dL. The USEPA regulatory target is at least 95% of young children in a population potentially exposed to lead having blood lead levels below 10 µg/dL. Therefore, under the conditions described above no adverse health effects are expected for young children potentially exposed to lead groundwater.

Adult Lead Exposure Model of Bowers et al., 1994

Lead was identified as a COPC in only one non-potable use groundwater well at the site. The evaluation of potential adverse health effects resulting from exposure to lead must consider other factors and assumptions in addition to the carcinogenic or noncarcinogenic risks of lead. Due to the uncertainties in the dose-response relationship between exposure to lead and biological effects, it is unclear whether the noncarcinogenic effects of lead exhibit a threshold response. Therefore, an RfD for lead is not available and potential exposure to lead cannot be evaluated using the traditional methods of risk assessment. The USEPA (1996) has developed a model for evaluating adult worker exposure to lead in soil at site being evaluated for industrial/commercial use. Given the need to evaluate incidental construction worker exposure to lead in groundwater, the USEPA model is not strictly applicable at this site. However, a model for evaluating adult exposure to elevated levels of lead in multiple environmental media (air, soil, and water) is available from peer reviewed literature (Bowers et al., 1994). The model of Bowers et al., (1994) is based upon a biokinetic slope factor (BSF) approach conceptually similar to that upon which the USEPA (1996) model is based.

Lead was identified as a COPC in only one non-potable use groundwater well at the site; however, as a conservative measure potential construction worker exposure to lead in excavation air, soil, and groundwater was evaluated in this risk assessment. Potential exposure to lead in soil and groundwater via dermal contact was not evaluated in this risk assessment. Direct contact with groundwater may occur during soil excavation. However, this potential exposure pathway is not expected to contribute significantly to the future construction worker, because of the limited body surface area in contact with groundwater (i.e., hands and forearms), and the short duration of contact. In addition, the potential absorbed dermal dose from lead in groundwater is expected to be negligible due to the low skin permeability constant of lead compounds in water (K_p = $4x10^{-6}$ cm/hr). USEPA (1992) states that compounds with K_ps less than 0.1 cm/hr are probably not important to consider for the dermal exposure pathway.

The adult lead exposure model of Bowers et al. (1994) assumes that there is a baseline blood lead level in the adult population of the United States.. It is assumed that the baseline blood lead level reflects typical exposure arises primarily due to lead in the diet. The model also incorporates ingestion and absorption rates specific to each potential exposure pathway. It is assumed that there is a relationship between uptake of lead into the body and blood lead levels. A numerical value, called a

biokinetic slope factor, was assigned by Bowers et al. to represent the relationship between uptake of lead into the body and blood levels.

The following equation was used to predict the average expected blood lead level for a hypothetical construction worker:

$PbB\ (\mu g/dL) = PbB_{baseline}\ (\mu g/dL)$
$+ BSF\ (\mu g/dL \text{ per } \mu g/day)$
$x\ [(Uptake_{air}\ (\mu g/day)$
$+ Uptake_{soil}\ (\mu g/day)$
$+ Uptake_{water}\ (\mu g/day)]$

$PbB_{baseline}$

The baseline blood lead concentration ($PbB_{baseline}$) represents the best estimate of a reasonable central tendency value for women of child-bearing age without previous excessive occupational exposures. The USEPA Technical Review Workgroup (TRW) for Lead (USEPA, 1996) has developed three potential baseline blood lead levels which are dependent on race. For the purposes of this risk assessment the highest baseline blood level of 2.2 µg/dL for non-Hispanic black women was selected. Given that the ethnic and racial demographics of the population in the vicinity of the site are unknown, this is a conservative assumption.

BSF

The biokinetic slope factor (BSF) relates blood lead levels to lead uptake. The TRW recommended BSF of 0.4 µg Pb/dL blood per µg Pb absorbed/day (USEPA, 1996) was utilized in this screening level risk assessment.

$Uptake_{air}$

The fraction of lead taken into the body from air ($Uptake_{air}$) is calculated using the following equation:

$Uptake_{air}\ (\mu g/day) =$ Air lead absorption factor (unitless)
x Inhalation rate (m^3/day)
x Concentration of lead in air ($\mu g/m^3$)
x [Exposure Frequency (days)
/ Averaging Time (days)]

Air Lead Absorption Factor

The air lead absorption factor for lead 0.32 recommended by Bowers et al., (1994), was utilized in this risk assessment.

Inhalation Rate (m^3/day)

An inhalation rate of 20 m^3/day was used in this risk assessment. This is equivalent to the inhalation rate value for heavy activity for an outdoor worker listed in Table 5-23 of the Exposure Factors Handbook (USEPA, 1997).

Concentration of Lead in Air ($\mu g/m^3$)

Lead was not identified as a COPC in air; however, in order to evaluate potential impacts of cumulative exposure to lead in environmental media at the site, an exposure point concentration for lead in excavation air was derived. The excavation air concentration was estimated by multiplying the soil concentration of 72 mg/kg by a PM10 dust concentration of 0.06 mg/m^3 measured in the vicinity of construction sites (MADEP 1995) an then multiplying by a unit correction factor of $1x10^{-6}$ kg/mg. The predicted lead excavation dust concentration utilized in this risk assessment is $4.32x10^{-6}$ mg/m^3.

Exposure Frequency

In this risk assessment an exposure frequency of 40 days per year is assumed for the evaluation of potential construction worker exposure to lead in environmental media.

Averaging Time

In this risk assessment an averaging time of 365 days (i.e., one year) is assumed for the evaluation of potential construction worker exposure to lead in environmental media.

$\underline{Uptake_{soil}}$

The fraction of lead taken into the body from soil ($Uptake_{soil}$) is calculated using the following equation:

$Uptake_{soil}$ (μg/day) = Soil lead absorption factor (unitless)

x Soil ingestion rate (g/day)

x Concentration of lead in soil ($\mu g/g$)

x [Exposure Frequency (days)

/ Averaging Time (days)]

Soil Lead Absorption Factor

The TRW recommended default value of 0.12 (USEPA, 1996) was utilized for the soil lead absorption factor in this risk assessment.

Soil Ingestion Rate

A soil ingestion rate of 100 mg/day (0.1 g/day; USEPA, 1989) was assumed for the construction worker. This is consistent with recent TRW lead guidance on selecting construction worker soil ingestion rates for use in evaluating potential exposure to lead in soil (USEPA, 1999).

Concentration of Lead in Soil

Lead was not identified as a COPC in soil; however, in order to evaluate potential impacts of cumulative exposure to lead in environmental media at the site, a concentration of 72 mg/kg has been assumed for lead in soil. This represents the average soil concentration for Transect 1 and is the highest average lead concentration identified in soil from the three transects (Transects 1, 2, and 3) nearest the one non-potable groundwater well (DW-MCDO) where lead was identified as a COPC.

Exposure Frequency

In this risk assessment an exposure frequency of 40 days per year is assumed for the evaluation of potential construction worker exposure to lead in environmental media.

Averaging Time

Averaging time is specific to each potential exposure scenario. In this risk assessment an averaging time of 365 days (i.e., one year) is assumed for the evaluation of potential construction worker exposure to lead in environmental media.

$Uptake_{water}$

The fraction of lead taken into the body from water ($Uptake_{water}$) is calculated using the following equation:

$Uptake_{water}$ (µg/day) = Water lead absorption factor (unitless)

x Water ingestion rate (L/day)

x Concentration of lead in water (µg/L)

x [Exposure Frequency (days)

/ Averaging Time (days)]

Water Lead Absorption Factor

The TRW assumption that the absorption factor for soluble lead is 0.2 (USEPA, 1996), was utilized in this risk assessment.

Water Ingestion Rate (L/day)

In this risk assessment it is assumed that a construction worker may inadvertently ingest 0.005 liters of groundwater per day. This is equivalent to one-tenth that assumed to occur during a swimming event (USEPA, 1989).

Concentration of Lead in Water

Lead was detected in only one non-potable use groundwater well (DW-MCDO) at the site. A site-specific water concentration of 129 ug/L was utilized in this risk assessment for evaluation of the construction worker exposure scenario.

Predicted Blood Lead Levels

As can be seen in Table Q-2, an average expected blood lead level of 2.24 µg/dL is predicted for a hypothetical construction worker potentially exposed to lead in excavation, air, soil and groundwater. This is below acceptable Occupational Safety and Health Administration (OSHA) standards for adult workers (29 CFR, Part 1910.1025). The OSHA standards for blood lead levels are as follows: 1) Blood lead levels of workers (male and female) intending to have children should remain below 30 µg/dL.; and 2) OSHA allows 40 µg/dL as a "permissible" blood lead level in lead-exposed workers, below which no further medical monitoring or workplace intervention is required. It is also below the USEPA target blood lead level of 10 µg/dL for protection of a developing fetus (USEPA, 1996).

REFERENCES

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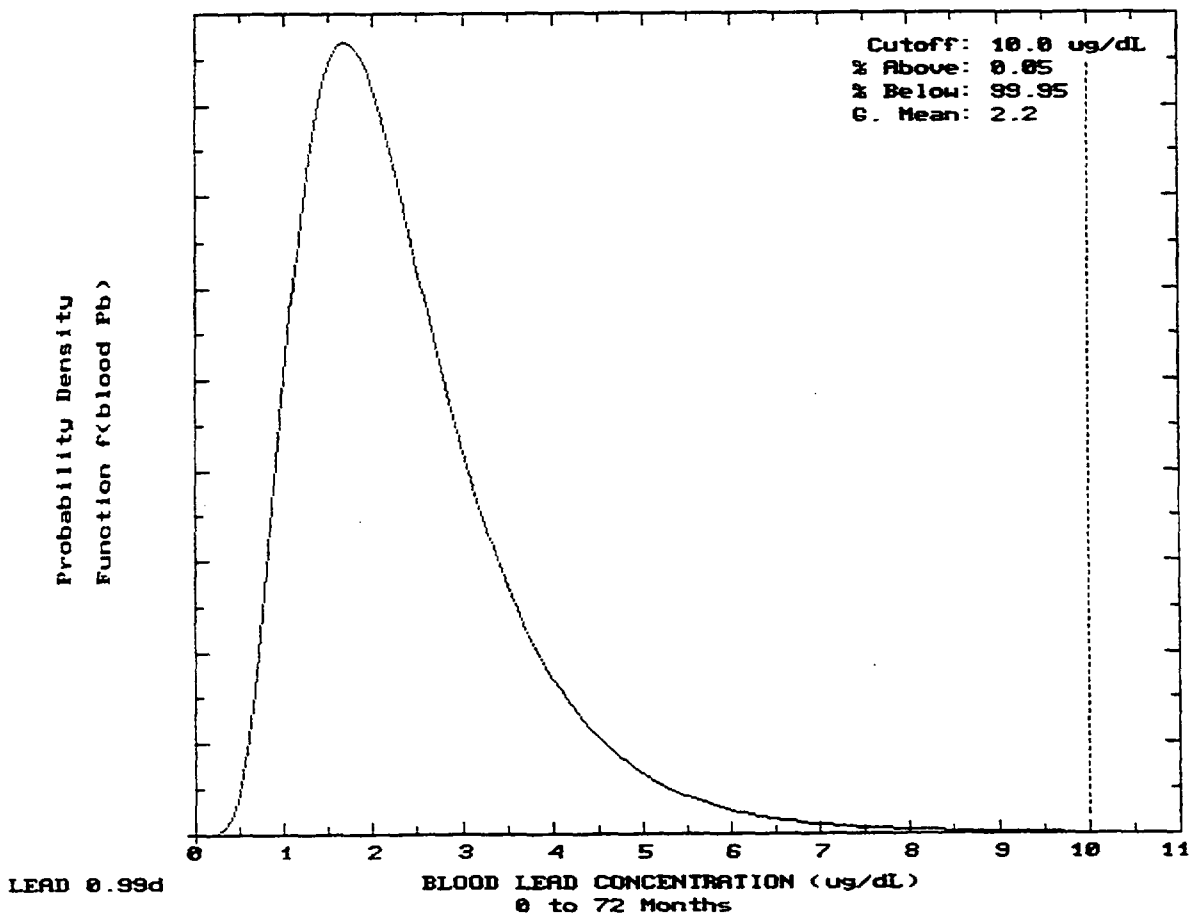

FIGURE Q-1.
IEUBK DISTRIBUTION OF BLOOD LEAD CONCENTRATIONS
SAUGET AREA 1 – EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

TABLE Q-1 (page 1 of 2)
IEUBK MODEL OUTPUT
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

AIR CONCENTRATION: 0.100 ug Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 129.00 ug Pb/L
Other WATER Parameters (non-default):

Age	Water Consumption (L/day)
0-1	0.005
1-2	0.005
2-3	0.005
3-4	0.005
4-5	0.005
5-6	0.005

SOIL & DUST:
Soil: constant conc.
Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	72.0	72.0
1-2	72.0	72.0
2-3	72.0	72.0
3-4	72.0	72.0
4-5	72.0	72.0
5-6	72.0	72.0

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 ug Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc: 2.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	2.4	4.40	1.75
1-2:	2.5	5.86	2.77
2-3:	2.3	6.25	2.79
3-4:	2.2	6.18	2.81
4-5:	1.9	5.40	2.10
5-6:	1.7	5.39	1.89

TABLE Q-1 (page 2 of 2)
IEUBK MODEL OUTPUT
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.63	0.00	0.00	0.02
1-2:	2.75	0.31	0.00	0.03
2-3:	3.10	0.31	0.00	0.06
3-4:	3.00	0.31	0.00	0.07
4-5:	2.92	0.31	0.00	0.07
5-6:	3.09	0.31	0.00	0.09

TABLE Q-2
EVALUATION OF CONSTRUCTION WORKER EXPOSURE
TO LEAD IN GROUNDWATER
SAUGET AREA 1 EE/CA AND RI/FS
SAUGET AND CAHOKIA, ILLINOIS
SOLUTIA, INC

	Construction Worker
PbB baseline (ug/dL)	2.2
BSF (ug/dL per ug/day)	0.4
Inhalation - Excavation Air	
Aa (unitless)	0.32
Va (m^3/day)	20
Ca (ug/m^3)	0.00432
Uptake air (ug/day)	0.0030
Ingestion - Water	
Aw (unitless)	0.2
Iw (L/day)	0.005
Cw (ug/L)	129
Uptake water (ug/day)	0.014
Ingestion Soil	
As (unitless)	0.12
Is (g/day)	0.1
Cs (ug/g)	72
Uptake soil (ug/day)	0.095
PbB (ug/dl)	2.24

Target Blood Lead Level as Defined by OSHA for Adult Workers:

a) Blood lead level of workers (male and female) intending to have children should remain below 30 ug/dL.
b) OSHA allows 40 ug/dL as a "permissible" blood lead level in lead-exposed workers, below which no further medical monitoring or workplace intervention is required.

The Centers for Disease Control has selected 10 ug/dl as the "level of concern" for young children. Bowers et al. (1994) suggest that while the CDC criteria for children were not developed for adults they may be useful as a screening ctechnique for adults.

APPENDIX R

TOXIC ENDPOINT ANALYSIS

APPENDIX R
TOXIC ENDPOINT ANALYSIS

This appendix presents the toxic endpoint analysis for the evaluation of noncarcinogenic total hazard indices for receptors whose total site hazard index exceeded the target value of 1.

In the report, a hazard quotient is calculated for each COPC for each receptor at each exposure point. When the HQ is less than one, the RfD has not been exceeded, and no adverse noncarcinogenic health effects are expected. Notice that this is not a calculation of risk, per se. That is, the hazard quotient does not predict the probability of health effect. It simply indicates whether an exposure estimate is above or below a dose assumed to be unlikely to produce an effect. However, because the RfD has the connotation of being "acceptable" (i.e., unlikely to result in effects) risk management decisions may be made based on whether the HQ is above or below one. A total receptor-specific HI is calculated for each exposure pathway by summing the HQ for each individual constituent for that receptor. This approach accounts for the possibility that the toxicity of all COPCs are additive and should be regarded only as a screening assessment because additive toxicity may not be correct. Again, if the total HI is below one, a remedial response would not normally be required. If the HI is greater than one, further evaluation to identify COPCs that may be additive (or otherwise interactive) in their toxicity should be conducted before making decisions. Such an evaluation is termed a toxic endpoint analysis. Toxicologically, only the HQs of chemicals having similar toxic endpoints can be added together to provide an HI for a given effect.

The toxic endpoints based on oral and inhalation exposures to COPCs are presented in Table R-1. The toxic endpoint information in this table was identified either by IRIS, HEAST or NCEA using the information on the dose-response tables presented in Section 4.0 of the text.. A single COPC can have more than one toxic endpoint. For example, the HQ for ethylbenzene is appropriately additive with other COPC that have "liver effects" identified as a toxic endpoint. However, because the toxic endpoint for ethylbenzene is identified as liver and kidney toxicity, the HQ for ethylbenzene is also added with the HQ for other COPC exhibiting kidney effects.

Five receptor scenarios were identified as having total HI greater than 1. These are:

- RME Outdoor Worker in Fill Area I
- RME Construction Worker in Fill Area G
- RME Construction Worker in Fill Area H
- MLE Construction Worker in Fill Area H
- RME Construction Worker in Fill Area I

The target HI exceedance for both receptors in Fill Area I is due to potential exposures to PCBs, therefore, a toxic endpoint analysis was not needed (moreover, none of the other COPCs share the same toxic endpoints with PCBs).
Therefore, a toxic endpoint analysis was conducted for the construction worker receptor for Fill Areas G and H. The analyses presented in the following tables:

- Table R-2: RME Construction Worker in Fill Area G
- Table R-3: RME Construction Worker in Fill Area H
- Table R-4: MLE Construction Worker in Fill Area H

The results are discussed in the text in Section 6.0.

TABLE R-1
TOXIC ENDPOINTS FOR POTENTIAL NONCARCINOGENIC EFFECTS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Dec. Body Weight		Develop. Effects		Blood Effects		Liver Effects		Kidney Effects		Neuro. Effects		GI Effects		Reproductive Effects		Vascular Effects		Dec. Longevity		Nasal Effects		Immune Effects		Spleen Effects		Skin Effects		Eye Effects		None Reported		No D/R Available	
	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh	ing	inh
1,1,2,2-Tetrachloroethane																													N			X
1,4-Dichlorobenzene								X																					N			
2,4,5-TP (Silvex)							X																									X
2,4,6-Trichlorophenol																															X	X
2,4-Dichlorophenol																							X									X
2-Chlorophenol															X																	X
2-Nitroaniline						X																									X	
3-Methylphenol/4-Methylphenol	X										X																					X
4,4-DDE																															X	X
4-Chloroaniline																									X							X
4-Methyl-2-pentanone							X	X	X	X																						
4-Nitroaniline						X																									X	
Acetone							X		X																							X
alpha-BHC																															X	X
Antimony					X														X													X
Arsenic																	X									X						X
Benzene					X	X																										
Benzo(a)anthracene																															X	X
Benzo(a)pyrene																															X	X
Benzo(b)fluoranthene																															X	X
Benzo(k)fluoranthene																															X	X
beta-BHC																															X	X
Cadmium									X																							X
Carbazole																															X	X
Chlorobenzene							X	X		X																						
Chloroform							X															X										
Cis/Trans-1,2-Dichloroethene					X																											X

R-4

TABLE R-1
TOXIC ENDPOINTS FOR POTENTIAL NONCARCINOGENIC EFFECTS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Dec. Body Weight		Develop. Effects		Blood Effects		Liver Effects		Kidney Effects		Neuro. Effects		GI Effects		Reproductive Effects		Vascular Effects		Dec. Longevity		Nasal Effects		Immune Effects		Spleen Effects		Skin Effects		Eye Effects		None Reported		No D/R Available	
	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh	Ing	Inh
Copper													X																			X
delta-BHC							X		X																							X
Dibenzo(a,h)anthracene																															X	X
Dieldrin							X																									X
Ethylbenzene				X			X		X																							
gamma-BHC							X		X																							X
Heptachlor							X																									X
Heptachlor epoxide							X																									X
Indeno(1,2,3-cd)pyrene																															X	X
Lead																															X	X
Molybdenum									X																							X
Naphthalene	X																				X											
Nickel	X																															X
Nitrobenzene					X	X	X	X	X	X																						
Pentachlorophenol							X		X																							X
Phenol			X																													X
Tetrachloroethene	X						X	X		X																						
Toluene							X		X			X																				
Total 2,3,7,8-TCDD TEQ																															X	X
Total PCBs																							X				X		X			X
Trichloroethene							X																									X
Vanadium																														X		X
Vinyl chloride							X	X																								
Zinc					X																											X

Notes:
Dec. - Decreased.
Develop. - Developmental.
D/R - Dose-Response.
GI - Gastrointestinal.
Ing - Ingestion.
Inh - Inhalation.
Neuro. - Neurological.
N - Value provided by NCEA as reported in USEPA Region 9 PRG Table (USEPA, 1999), toxic endpoint information not available.
X - This endpoint was identified for this exposure route for this constituent.

TABLE R-2
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA G
EXPOSURE TO COPCs IN EXCAVATION GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Decreased Body Weight			Developmental Effects			Blood Effects			Liver Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,4-Dichlorobenzene												
2,4,5-TP (Silvex)										0.0001		0.0001
2,4-Dichlorophenol												
2-Chlorophenol												
3-Methylphenol/4-Methylphenol	0.0002		0.0002									
4-Chloroaniline												
4-Methyl-2-pentanone										0.00003	0.09	0.09
Benzene							0.03	0.95	0.98			
Chlorobenzene										0.005	0.34	0.34
delta-BHC										0.0004		0.0004
Molybdenum												
Naphthalene	0.004		0.004									
Pentachlorophenol										0.02		0.02
Phenol				0.0001		0.0001						
Tetrachloroethene	0.0004		0.0004							0.0004	0.0006	0.0009
Toluene										0.0009		0.0009
Trichloroethene										0.0003		0.0003
Vanadium												
Vinyl chloride										0.0001	0.0007	0.0008
Total HI:	**0.004**		**0.004**	**0.0001**		**0.0001**	**0.03**	**0.95**	**0.98**	**0.03**	**0.42**	**0.45**

Notes:
COPC - Constituent of Potential Concern.
Ing - Ingestion.
HI - Hazard Index.
HQ - Hazard Quotient.
RME - Reasonable Maximum Exposure.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.

TABLE R-2
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA G
EXPOSURE TO COPCs IN EXCAVATION GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Kidney Effects			Neurological Effects			Reproductive Effects			Nasal Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,4-Dichlorobenzene												
2,4,5-TP (Silvex)												
2,4-Dichlorophenol												
2-Chlorophenol							0.0007		0.0007			
3-Methylphenol/4-Methylphenol				0.0002		0.0002						
4-Chloroaniline												
4-Methyl-2-pentanone	0.00003	0.09	0.09									
Benzene												
Chlorobenzene		0.34	0.34									
delta-BHC	0.0004		0.0004									
Molybdenum	0.0001		0.0001									
Naphthalene											0.99	0.99
Pentachlorophenol	0.02		0.02									
Phenol												
Tetrachloroethene		0.0006	0.0006									
Toluene	0.0009		0.0009		0.031	0.031						
Trichloroethene												
Vanadium												
Vinyl chloride												
Total HI:	**0.02**	**0.42**	**0.44**	**0.0002**	**0.03**	**0.03**	**0.0007**		**0.0007**		**0.99**	**0.99**

Notes:
COPC - Constituent of Potential Concern.
Ing - Ingestion.
HI - Hazard Index.
HQ - Hazard Quotient.
RME - Reasonable Maximum Exposure.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.

TABLE R-2
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA G
EXPOSURE TO COPCs IN EXCAVATION GROUNDWATER
SAUGET AREA 1 - EE/CA AND R/FS
HUMAN HEALTH RISK ASSESSMENT

	Immune Effects			Spleen Effects			None Reported			No Dose Response Value Available	
Constituent (a)	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing	Inh
1,4-Dichlorobenzene							0.0008		0.0008		
2,4,5-TP (Silvex)											X
2,4-Dichlorophenol	0.0128		0.0128								X
2-Chlorophenol											X
3-Methylphenol/4-Methylphenol											X
4-Chloroaniline				0.02		0.02					X
4-Methyl-2-pentanone											
Benzene											
Chlorobenzene											
delta-BHC											X
Molybdenum											X
Naphthalene											
Pentachlorophenol											X
Phenol											X
Tetrachloroethene											
Toluene											
Trichloroethene											X
Vanadium							0.0001		0.0001		X
Vinyl chloride											
Total HI:	**0.01**		**0.01**	**0.02**		**0.02**	**0.0008**		**0.001**		

Notes:
COPC - Constituent of Potential Concern.
Ing - Ingestion.
HI - Hazard Index.
HQ - Hazard Quotient.
RME - Reasonable Maximum Exposure.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.

TABLE R-3
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Decreased Body Weight			Developmental Effects			Blood Effects			Liver Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol												
4-Chloroaniline												
Antimony							0.0003		0.0003			
Arsenic												
Benzene							0.03	0.94	0.960			
Chlorobenzene										0.005	0.38	0.39
Chloroform										0.0002		0.0002
Ethylbenzene					0.002	0.002				0.0006		0.0006
Heptachlor epoxide										0.002		0.002
Naphthalene	0.004		0.004									
Nitrobenzene							0.0004		0.0004	0.0004		0.0004
Pentachlorophenol										0.05		0.05
Phenol				0.000002		0.000002						
Total PCBs												
Trichloroethene										0.0001		0.0001
Total HI:	**0.004**		**0.004**	**0.000002**	**0.002**	**0.002**	**0.03**	**0.94**	**0.96**	**0.06**	**0.38**	**0.44**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
RME - Reasonable Maximum Exposure.

TABLE R-3
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Kidney Effects			Vascular Effects			Decreased Longevity			Nasal Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol												
4-Chloroaniline												
Antimony							0.0003		0.0003			
Arsenic				0.01 soil, 0.003 gw		0.01						
Benzene												
Chlorobenzene		0.38	0.38									
Chloroform											2.12	2.12
Ethylbenzene	0.0006		0.0006									
Heptachlor epoxide												
Naphthalene											0.99	0.99
Nitrobenzene	0.0004		0.0004									
Pentachlorophenol	0.05		0.05									
Phenol												
Total PCBs												
Trichloroethene												
Total HI:	**0.05**	**0.38**	**0.43**	**0.01**		**0.01**	**0.0003**		**0.0003**		**3.12**	**3.12**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
RME - Reasonable Maximum Exposure.

TABLE R-3
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Immune Effects			Spleen Effects			Skin Effects			Eye Effecs		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol	0.001		0.001									
4-Chloroaniline				0.002		0.002						
Antimony												
Arsenic							0.01 soil, 0.003 gw		0.01			
Benzene												
Chlorobenzene												
Chloroform												
Ethylbenzene												
Heptachlor epoxide												
Naphthalene												
Nitrobenzene												
Pentachlorophenol												
Phenol												
Total PCBs	0.01 -soil		0.01				0.01-soil		0.01	0.01 -soil		0.01
Trichloroethene												
Total HI:	**0.01**		**0.01**	**0.002**		**0.002**	**0.02**		**0.02**	**0.01**		**0.01**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
RME - Reasonable Maximum Exposure.

TABLE R-3
HAZARD INDEX BY TARGET ENDPOINT
RME CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	None Reported			No Dose Response Value Available	
	Ing HQ	Inh HQ	Total HQ	Ing	Inh
1,1,2,2-Tetrachloroethane	0.000001		0.000001		X
1,4-Dichlorobenzene	0.003		0.003		
2,4-Dichlorophenol					X
4-Chloroaniline					X
Antimony					X
Arsenic					X
Benzene					
Chlorobenzene					
Chloroform					
Ethylbenzene					
Heptachlor epoxide					X
Naphthalene					
Nitrobenzene					
Pentachlorophenol					X
Phenol					X
Total PCBs					X
Trichloroethene					X
Total HI:	**0.003**		**0.003**		

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-6.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
RME - Reasonable Maximum Exposure.

TABLE R-4
HAZARD INDEX BY TARGET ENDPOINT
MLE CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Decreased Body Weight			Developmental Effects			Blood Effects			Liver Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol												
4-Chloroaniline												
Antimony							0.0001		0.0001			
Arsenic												
Benzene							0.01	0.28	0.293			
Chlorobenzene										0.003	0.11	0.12
Chloroform										0.0001		0.0001
Ethylbenzene					0.001	0.001				0.0003		0.0003
Heptachlor epoxide										0.001		0.001
Naphthalene	0.002		0.002									
Nitrobenzene							0.0002		0.0002	0.0002		0.0002
Pentachlorophenol										0.02		0.02
Phenol				0.000001		0.000001						
Total PCBs												
Trichloroethene										0.00003		0.00003
Total HI:	**0.002**		**0.002**	**0.000001**	**0.001**	**0.001**	**0.01**	**0.28**	**0.29**	**0.02**	**0.11**	**0.14**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-20.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
MLE - Most Likely Exposure.

TABLE R-4
HAZARD INDEX BY TARGET ENDPOINT
MLE CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Kidney Effects			Vascular Effects			Decreased Longevity			Nasal Effects		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol												
4-Chloroaniline												
Antimony							0.0001		0.0001			
Arsenic				0.001 (soil) 0.002 (gw)		0.003						
Benzene												
Chlorobenzene		0.11	0.11									
Chloroform											0.64	0.64
Ethylbenzene	0.0003		0.0003									
Heptachlor epoxide												
Naphthalene											0.30	0.30
Nitrobenzene	0.0002		0.0002									
Pentachlorophenol	0.02		0.02									
Phenol												
Total PCBs												
Trichloroethene												
Total HI:	**0.02**	**0.11**	**0.13**	**0.003**		**0.003**	**0.0001**		**0.0001**		**0.93**	**0.93**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-20.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
MLE - Most Likely Exposure.

TABLE R-4
HAZARD INDEX BY TARGET ENDPOINT
MLE CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	Immune Effects			Spleen Effects			Skin Effects			Eye Effecs		
	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ	Ing HQ	Inh HQ	Total HQ
1,1,2,2-Tetrachloroethane												
1,4-Dichlorobenzene												
2,4-Dichlorophenol	0.001		0.001									
4-Chloroaniline				0.001		0.001						
Antimony												
Arsenic							0.001 (soil) 0.002 (gw)		0.003			
Benzene												
Chlorobenzene												
Chloroform												
Ethylbenzene												
Heptachlor epoxide												
Naphthalene												
Nitrobenzene												
Pentachlorophenol												
Phenol												
Total PCBs	0.002 (soil)		0.002				0.002 (soil)		0.002	0.002 (soil)		0.002
Trichloroethene												
Total HI:	**0.003**		**0.003**	**0.001**		**0.001**	**0.005**		**0.005**	**0.002**		**0.002**

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-20.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
MLE - Most Likely Exposure.

TABLE R-4
HAZARD INDEX BY TARGET ENDPOINT
MLE CONSTRUCTION WORKER
FILL AREA H - EXPOSURE TO COPCs IN
EXCAVATION GROUNDWATER AND SURFACE SOIL
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent (a)	None Reported			No Dose Response Value Available	
	Ing HQ	Inh HQ	Total HQ	Ing	Inh
1,1,2,2-Tetrachloroethane	0.0000005		0.0000005		X
1,4-Dichlorobenzene	0.001		0.001		
2,4-Dichlorophenol					X
4-Chloroaniline					X
Antimony					X
Arsenic					X
Benzene					
Chlorobenzene					
Chloroform					
Ethylbenzene					
Heptachlor epoxide					X
Naphthalene					
Nitrobenzene					
Pentachlorophenol					X
Phenol					X
Total PCBs					X
Trichloroethene					X
Total HI:	**0.001**		**0.001**		

Notes:
All HQs are for groundwater, unless otherwise noted.
gw - Groundwater.
(a) - Only constituents for which HQs were calculated are included here. See Table 6-20.
COPC - Constituent of Potential Concern.
HI - Hazard Index.
HQ - Hazard Quotient.
Ing - Ingestion.
MLE - Most Likely Exposure.

APPENDIX S

GROUNDWATER ORDINANCES

ORDINANCE NO. 99-5

AN ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD

WHEREAS, certain properties in the Village of Sauget, Illinois, have been used over a period of time for commercial/industrial purposes; and

WHEREAS, because of said use, concentrations of certain chemical constituents in the groundwater beneath the Village may exceed Class I groundwater quality standards for potable resource groundwater, as set forth in 35 Illinois Administrative Code Part 620, or Tier 1 residential remediation objectives, as set forth in 35 Ill. Adm. Code Part 742; and

WHEREAS, the Village of Sauget desires to limit potential threats to human health from groundwater contamination while facilitating the redevelopment and productive use of properties that are the source of said chemical constituents;

NOW, THEREFORE, BE IT ORDAINED BY THE VILLAGE COUNCIL IN THE VILLAGE OF SAUGET, ILLINOIS:

Section One: Use of groundwater as a potable water supply prohibited.

The use or attempted use of groundwater from within the corporate limits of the Village as a potable water supply by the installation or drilling of wells or by any other method is hereby prohibited.

Section Two: Penalties

Any person violating the provisions of this ordinance shall be subject to a fine of up to $ 100.00 for each violation.

Section Three: Definitions.

"Person" is any individual, partnership, co-partnership, firm, company, limited liability company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their representatives, agents or assigns.

"Potable water" is any water used for human or domestic consumption, including, but not limited to, water used for drinking, bathing, swimming, washing dishes, or preparing foods.

Section Four: Repealer.

All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed insofar as they are in conflict with this ordinance.

Section Five: Severablity.

If any provision of this ordinance or its application to any person or under any circumstances is adjudged invalid, such adjudication shall not affect the validity of the ordinance as a whole or of any portion not adjudged invalid.

Section Six: Effective Date.

This ordinance shall be in full force and effect from and after its passage, approval and publication, as required by law.

INTRODUCED AND READ FOR THE FIRST TIME: October 12, 1999

READ FOR THE SECOND TIME:
(under suspension of rules): October 12, 1999

READ FOR THE THIRD TIME:
(under suspension of rules): October 12, 1999

ADOPTED AND ENACTED: October 12, 1999

ROLL CALL VOTE:
Ayes: Adels, McDaniel, Rich, Cates, Thornton, Sargent
Nays: NONE
Absent: NONE
Unfilled Vacancy:

APPROVED: October 12, 1999

APPROVED:

President (mayor) Pro Temore

ATTEST:

Village Clerk

ORDINACE No. 981

AN ORDINANCE PROHIBITING THE USE OF GROUNDWATER AS A POTABLE WATER SUPPLY BY THE INSTALLATION OR USE OF POTABLE WATER SUPPLY WELLS OR BY ANY OTHER METHOD

WHEREAS, certain properties in the Village of Cahokia, Illinois, have been used over a period of time for commercial/industrial uses; and

WHEREAS, because of said use, concentrations of certain chemical constituents in the groundwater beneath the Village may exceed Class I groundwater quality standards for potable resource groundwater, as set forth in 35 Administrative Code Part 620, or Tier 1 residential remediation objectives, as set forth in 35 Ill. Admin. Code Part 742; and

WHEREAS, the Village of Cahokia desires to limit potential threats to human health from groundwater contamination while facilitating the redevelopment and productive use of properties that are the source of said chemical constituents;

NOW, THEREFORE, BE IT ORDAINED BY THE VILLAGE BOARD IN THE VILLAGE OF CAHOKIA, ILLINOIS:

Section One: Use of groundwater as a potable water supply prohibited.

The use or attempted use of groundwater from within the corporate limits of the Village as a potable water supply by the installation or drilling of wells or by any other method is hereby prohibited.

Section Two: Penalties.

Any person violating the provisions of this ordinance shall be subject to a fine of up to $1,000.00 for each violation.

Section Three: Definitions.

"Person" is any individual, partnership, co-partnership, firm, company, limited liability company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their representatives, agents or assigns.

"Potable water" is any water used for human or domestic consumption, including, but not limited to, water used for drinking, bathing, swimming, washing dishes, garden or lawn watering, or preparing foods..

Section Four: Repealer.

All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed insofar as they are in conflict with this ordinance.

Section Five: Severability.

If any provision of this ordinance or its application to any person or under any circumstances is adjudged invalid, such adjudication shall not affect the validity of the ordinance as a whole or of any portion not adjudged invalid.

Section six: Effective Date.

This ordinance shall be in full force and effect from and after its passage, approval and publication, as required by law.

ADOPTED: 6-06-2000
(Date)

Xavier Brown
(Village Clerk)

ADOPTED: 6-06-2000
(Date)

Michael King
(Mayor)

Officially published this 21st day of June, 2000.

STATE OF ILLINOIS)
)
COUNTY OF ST. CLAIR) SS
)
VILLAGE OF CAHOKIA)

CERTIFICATE OF VILLAGE CLERK

I, Jessie Brown, Clerk of the Village of Cahokia, St. Clair County, Illinois, do hereby certify that as such Village Clerk of the Village of Cahokia, Illinois, I am legal custodian and keeper of the journal of the proceedings of the Village of Cahokia Board of Trustees of said Village, and I do certify that the attached documents are true and faithful copies of said documents. I do further certify that the original of said documents are now remaining on file and of record in my said office.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Village of Cahokia, Illinois, the 6 day of June, A.D. 2000.

Jessie Brown

Jessie Brown, Village Clerk
Village of Cahokia, Illinois

(SEAL)

APPENDIX T

SUPPLEMENTAL CONSTRUCTION WORKER EVALUATION

APPENDIX T - SUPPLEMENTAL CONSTRUCTION WORKER EVALUATION

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APPENDIX T

SUPPLEMENTAL CONSTRUCTION WORKER EVALUATION

1.0 INTRODUCTION

Pursuant to comments received from USEPA on the December 29, 2000 Human Health Risk Assessment for Sauget Area 1 (the HHRA), and comments received on the March 30, 2001 Response to Comment document, an additional evaluation has been conducted for the construction worker. This evaluation has been conducted to evaluate potential risks to the construction worker associated with subsurface soil and leachate in Sites G, H, I and L, and follows the same methods as presented in the December 29, 2000 HHRA report.

2.0 SITE CHARACTERIZATION

A description of the site, and the conceptual site model for the site, are presented in Section 2 of the HHRA.

3.0 DATA EVALUATION AND HAZARD IDENTIFICATION

The purpose of the data evaluation and hazard identification process is two-fold: 1) to evaluate the nature and extent of release of constituents present at the site; and 2) to select a subset of these constituents identified as Constituents of Potential Concern (COPCs) for quantitative evaluation in the risk assessment. This step of the risk assessment involves compiling and summarizing the data for the risk assessment, and selecting COPCs based on a series of screening steps.

3.1 Data Evaluation

Subsurface samples collected in the Sites as part of the SSP were analyzed for TCLP, not total constituent concentrations. Therefore, historical data collected for other investigations were employed to evaluate potential construction worker contact with COPCs in the subsurface. These data were obtained from the following: Sauget Area 1 Data Tables/Maps, Ecology and Environmental, Inc., February 1998, prepared for USEPA Region 5 Office of Superfund, Chicago, IL, ARCS Contract No. 68-W8-0086, Work Assignment No. 47-5N60. The historical data are unvalidated, and detection limits were not available for the majority of results reported as not detected. Therefore, only results reported as detected were used in this evaluation. Any sample for which all results were reported as not

detected were eliminated from further evaluation. Samples used in the subsurface soil evaluation are presented in Table T-1.

TCLP data from subsurface samples collected in the Sites as part of the SSP were used to represent leachate concentrations, i.e., concentrations in groundwater within the fill material. Additionally, one leachate sample collected from Site G on April 26, 2000 and one leachate sample collected from Site I on April 25, 2000 were used in this evaluation. This evaluation is separate from, and in addition to, the evaluation of the construction worker receptor's exposure to groundwater in the main text of the HHRA (in which the Site groundwater data were used). Samples used in the groundwater-TCLP evaluation are presented in Table T-2. Note that validation was not performed on the TCLP data, and limited data validation was performed on the leachate data to select between multiple runs and dilutions at the laboratory.

3.1.1 Summary Statistics

The available subsurface soil and groundwater TCLP data for each Site were summarized for use in the risk assessment.

The steps used to summarize the data for use in identifying COPCs in the screening process presented in this section are discussed in Section 3.1.3 of the HHRA. The additional steps used to summarize the data for identifying exposure point concentrations (EPCs) are presented in Section 5.0 of the HHRA.

Table T-3 presents the summary statistics for subsurface soil, and Table T-4 presents the summary statistics for groundwater-TCLP and groundwater-leachate. Note that statistics were calculated separately for TCLP and leachate samples.

3.2 Methodology for Selection of Constituents of Potential Concern

COPCs are a subset of the complete list of constituents detected in site media that are carried through the quantitative risk assessment process.

The steps used to identify COPCs are presented in Section 3.2 of the HHRA and are summarized below.

- **Frequency of Detection and Essential Nutrient Status**. No constituents were excluded from consideration as a COPC based on the frequency of detection screen. Essential nutrients (i.e., calcium, iron, magnesium, sodium and potassium) were not included as COPCs (HHRA Workplan, and USEPA, 1989a).

- **Comparison to Background.** Background samples were collected in the vicinity of the site to provide information on naturally occurring levels of constituents typical for the local area. The purpose of comparing site conditions to local background is to determine if site concentrations of constituents are representative of background concentrations, which, therefore, should not be included in risk calculations. Background comparisons were conducted for each medium using site-specific background data and background concentrations. No constituents in subsurface soil or groundwater were eliminated from further consideration based solely on background.

- **Toxicity Screen**. A toxicity screen was performed in accordance with USEPA Region 5 guidance (USEPA, 1998b) and IEPA regulations (IEPA, 1998). The sources of the screening criteria and the screening methodology are presented in Sections 3.2.3.1 and 3.2.3.2 of the HHRA. The screening values are presented in Appendix C. Tables T-5 through T-8 present the screening conducted for subsurface soils, and Table T-9 presents the screening conducted for TCLP –groundwater and leachate – groundwater.

4.0 DOSE-RESPONSE ASSESSMENT

The purpose of the dose-response assessment is to identify the types of adverse health effects a constituent may potentially cause, and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response) (USEPA, 1989a). Adverse effects are classified by USEPA as potentially carcinogenic or noncarcinogenic (i.e., potential effects other than cancer). Dose-response relationships are defined by USEPA for oral exposure and for exposure by inhalation. Oral toxicity values are also used to assess dermal exposures, with appropriate adjustments, because USEPA has not yet developed values for this route of exposure. Combining the results of the toxicity assessment with information on the magnitude of potential human exposure provides an estimate of potential risk. The methodology of the dose-response assessment and sources of the data are provided in Section 4.0 of the HHRA.

Table T-10 lists the COPCs identified in subsurface soil and groundwater for the construction worker scenario and summarizes the toxicity information for COPCs with potential noncarcinogenic effects for the oral route of exposure. For each COPC, the chemical abstracts service number (CAS number), the dose-response value (RfD), and the reference for the toxicity value are presented. In addition, the USEPA confidence level in the value, the uncertainty factor, the modifying factor, the study animal, study method, target organ and critical effect upon which the toxicity value is based are also presented for each COPC, where available. The confidence level is provided for constituents published on IRIS, and is based on the confidence in the study and the extent of toxicity information available for that constituent.

Table T-11 summarizes the toxicity information for COPCs with potential noncarcinogenic effects for the inhalation route of exposure. For each COPC, the CAS number and the toxicity value are

presented. Inhalation RfD (in units of mg/kg-day) values are calculated from Reference Concentrations (RfC) (in units of mg/m^3) assuming a 70 kg adult breathes 20 m^3 of air per day. Both values are presented where available. In addition, the reference for the toxicity value, the USEPA confidence level in the value, the uncertainty factor, the modifying factor, the study animal, study method, target organ and critical effect upon which the toxicity value is based are also presented for each constituent. USEPA does not support use of oral toxicity values to evaluate inhalation exposures (USEPA, 1996b).

Table T-12 summarizes the toxicity information for COPCs classified by the USEPA as potential carcinogens for the oral route of exposure. For each constituent, the CAS number, USEPA carcinogenicity class, the oral cancer-slope factor and the reference are provided. In addition, the study animal and route of exposure upon which the cancer slope factor (CSF) is based are presented.

Table T-13 summarizes the toxicity information for COPCs classified by the USEPA as potential carcinogens for the inhalation route of exposure. For each constituent, the CAS number, USEPA carcinogenicity class, the inhalation cancer slope factor and unit risk factor (provided in units of $(ug/m^3)^{-1}$) and the reference are provided. In addition, the study animal and route of exposure upon which the CSF is based are presented. The CSF is calculated from the unit risk assuming a 70 kg adult breathes 20 m^3 of air per day.

5.0 EXPOSURE ASSESSMENT

The purpose of the exposure assessment is to predict the magnitude and frequency of potential human exposure to each of the COPC retained for quantitative evaluation in the HHRA. To estimate the potential risk to human health that may be posed by the presence of COPCs in environmental media in the study area, it is first necessary to estimate the potential exposure dose of each COPC for each receptor. The exposure dose is estimated for each constituent via each exposure route/pathway by which the receptor is assumed to be exposed. Reasonable maximum exposure (RME) scenarios, and most likely exposure (MLE) scenarios based on appropriate USEPA guidance are both evaluated in the quantitative risk assessment. Exposure dose equations combine the estimates of constituent concentration in the environmental medium of interest with assumptions regarding the type and magnitude of each receptor's potential exposure to provide a numerical estimate of the exposure dose. The exposure dose is defined as the amount of COPC taken into the receptor and is expressed in units of milligrams of COPC per kilogram of body weight per day (mg/kg-day). The exposure doses are combined with the toxicity values to estimate potential risks and hazards for each receptor.

Section 5.1 of the HHRA presents the updated Conceptual Site Model (CSM) for the site.

Section 5.2 of the HHRA identifies the potential exposure scenarios and receptors evaluated in the HHRA. In this appendix, an on-site construction/utility worker is evaluated for potential exposure to COPCs in Site subsurface soil via incidental ingestion and dermal contact, and via inhalation of

particulates suspended during excavation activity. Construction/utility work is assumed to occur up to depths of 30 feet bgs as noted in the HHRA. Due to the shallow depth of groundwater, the construction/utility worker may contact groundwater during excavation. Therefore, the construction worker is assumed to be exposed to COPCs in groundwater via incidental ingestion and dermal contact, and via inhalation of COPCs volatilized from standing water in an excavation trench. In this evaluation, leachate from the Sites, as represented by the TCLP data, are used to evaluate exposure to groundwater. Because the Sites are areas of known waste disposal, appropriate safeguards would likely be used when excavating in waste areas (gas monitoring, appropriate personal protective equipment), although the use of such safeguards were not assumed when identifying the exposure factors used in the risk assessment.

Section 5.3 of the HHRA presents the methods for quantifying potential exposures.

Section 5.4 of the HHRA presents the receptor-specific exposure parameters. Exposure assumptions for the scenarios evaluated here are the same as those used in the HHRA. The exposure assumptions are presented in Table T-14.

Section 5.5 of the HHRA presents the constituent-specific exposure parameters. Constituent-specific parameters are presented for the COPCs for the additional construction worker scenarios in Tables T-15 (Absorption Adjustment Factors) and T-16 (Dermal Permeability Constants). Several dermal permeability constants were calculated, as shown in Table T-17. Additional AAF derivations not included in Appendix O are presented at the end of the text of this appendix.

Table T-18 presents the RME Exposure Point Concentrations (EPCs) for COPCs in subsurface soil, and Table T-19 presents the RME EPCs for COPCs in subsurface soil entrained on dusts (calculation of these are discussed in Section 5.5.1.2 of the HHRA). Table T-20 presents the RME EPCs for COPCs in groundwater. For Sites G and I, the higher of the maximum detected TCLP concentration and the leachate concentration was selected as the RME EPC. Table T-33 presents the comparison of the TCLP and leachate concentration and presents the selected value. Table T-21 presents the RME EPCs for volatile COPCs in an excavation trench. The attenuation factors for groundwater-to-air were calculated in Table T-34; the calculation of these factors is discussed in Appendix L. The MLE EPCs for these scenarios are presented in Tables T-22 through T-25. It should be noted that the EPCs for subsurface soils have been calculated based solely on data for detected constituents; therefore, the EPCs are likely biased high. This is due to the fact that the historical data report (see Section T3.1) did not provide the quantitative detection limits for constituents reported as "non-detect." Additionally, it should be noted that the MLE EPCs for groundwater are the higher of the average TCLP concentration and the leachate concentration (see Table T-33 for the comparison and selection). These values may also be biased high, as many are based on the results of one leachate sample, and are therefore the same as the RME EPCs (the "average" leachate concentration is the same as the "maximum" leachate concentration because there was only one sample).

The exposure dose and risk calculation spreadsheets are presented at the end of this appendix. The risk results are discussed in Section 6.0 of this appendix.

6.0 RISK CHARACTERIZATION

The potential risk to human health associated with potential exposure to COPC in environmental media at the site is evaluated in this step of the risk assessment process. Risk characterization is the process in which the dose-response information (Section 4.0) is integrated with quantitative estimates of human exposure derived in the Exposure Assessment (Section 5.0). The result is a quantitative estimate of the likelihood that humans will experience any adverse health effects given the exposure assumptions made. Two general types of health risk are characterized for each potential exposure pathway considered: potential carcinogenic risk and potential noncarcinogenic risk. Carcinogenic risk is evaluated by averaging exposure over a normal human lifetime, which, based on USEPA guidance (1989a), is assumed to be 70 years. Noncarcinogenic risk is evaluated by averaging exposure over the total exposure period.

Characterization of the potential impact of potential carcinogenic and noncarcinogenic constituents is approached in very different ways. The difference in approaches arises from the conservative assumption that substances with possible carcinogenic action proceed by a no-threshold mechanism, whereas other toxic actions may have a threshold, a dose below which few individuals would be expected to respond. Thus, under the no-threshold assumption, it is necessary to calculate a risk, but for constituents with a threshold, it is possible to simply characterize an exposure as above or below the threshold. In risk assessment, that threshold is termed a reference dose (RfD). Reference doses as well as cancer slope factors were discussed in Section 4.0. The approach to carcinogenic risk characterization is presented in Section 6.1 of the HHRA, and the approach to noncarcinogenic risk characterization is presented in Section 6.2 of the HHRA. The risk characterization results for the construction worker subsurface soil and groundwater pathways are presented in Section 6.1 of this appendix. Uncertainties associated with the risk characterization are presented in Section 6.5 of the HHRA; specific uncertainties involved with this additional evaluation are presented in Section 6.2 of this appendix. The risk calculation spreadsheets are presented at the end of this appendix.

6.1 Potential Carcinogenic Risk Results

Potential carcinogenic risks for the RME scenario are presented in Table T-26 and the potential HIs for the RME scenario are presented in Table T-27. Risks and HIs for the MLE scenario are presented in Tables T-28 and T-29, respectively. The construction worker is assumed to be exposed to COPCs in subsurface soil via incidental ingestion and dermal contact and inhalation of particulate matter in excavation dust, and to COPCs in groundwater exposed in an excavation via incidental ingestion and dermal contact and inhalation of constituents volatilized into excavation air.

As indicated in Table T-26, the potential risk for the construction worker (RME) for all Sites is below or within the USEPA risk range of 10^{-4} to 10^{-6}. Table T-28 indicates that the potential risks for the MLE scenario are also below or within the USEPA risk range of 10^{-4} to 10^{-6}.

The following scenarios resulted in risks below the target risk range (i.e., risks less than 10^{-6}):

Site L - MLE construction worker

The following scenarios [and risk-driving constituents-environmental medium] resulted in risks between 10^{-6} and 10^{-5}, which is within the target risk range:

Site L - RME construction worker [PCBs - subsurface soil]

Site G - MLE construction worker [PCBs – subsurface soil, Pentachlorophenol – leachate]

Site H - MLE construction worker [PCBs - subsurface soil]

Site I - MLE construction worker [PCBs, Total TCDD-TEQ, Pentachlorophenol - leachate]

The following scenarios [and risk-driving constituents-environmental medium] resulted in risks between 10^{-5} and 10^{-4}, which is within the target risk range:

Site G - RME construction worker [Pentachlorophenol - subsurface soil and leachate, PCBs – subsurface soil]

Site H - RME construction worker [PCBs, 1,4-Dichlorobenzene, Benzo(a)pyrene - subsurface soil]

Site I - RME construction worker [Pentachlorophenol, Chloroform, PCBs, 1,1-Dichloroethene, Total TCDD-TEQ - leachate; Hexachlorobenzene, PCBs, Toxaphene - subsurface soil]

6.2 Potential Noncarcinogenic Hazard Results

Table T-27 indicates that the potential HIs for the construction worker (RME) are above the target HI of 1 in each Site. The HI for the construction worker for the MLE scenario presented in Table T-29 is above 1 for all Sites with the exception of Site L.

The RME HI exceeds 1 in Site G primarily due to potential ingestion and dermal contact with PCBs and phosphorous in subsurface soil and secondarily due to potential inhalation exposure to benzene and naphthalene and due to volatilization from standing groundwater.

The RME HI exceeds 1 in Site H due potential ingestion and dermal contact with PCBs in subsurface soil, potential inhalation of manganese in particulates, potential ingestion and dermal contact with cadmium in groundwater, and potential inhalation of benzene from standing groundwater.

The RME HI exceeds 1 in Site I due potential ingestion and dermal contact with PCBs and antimony in subsurface soil, potential ingestion and dermal contact with PCBs in groundwater, and due to potential inhalation exposure to chloroform, chlorobenzene, and naphthalene due to volatilization from standing groundwater.

The RME HI exceeds 1 in Site L due to potential ingestion and dermal contact with PCBs in subsurface soil.

The MLE HI exceeds 1 in Site G due to potential ingestion and dermal contact with PCBs and phosphorous in subsurface soil. The MLE HI exceeds 1 in Site H due potential ingestion and dermal contact with PCBs in subsurface soil. The MLE HI exceeds 1 in Site I due potential ingestion and dermal contact with PCBs in groundwater, and due to potential inhalation exposure to chloroform due to volatilization from standing groundwater.

6.3 Lead Evaluation

Lead was identified as a COPC in both soil (Site I) and groundwater (Sites G, H, and I). Because of the uncertainties in the dose-response relationship between exposure to lead and biological effects, it is unclear whether the noncarcinogenic effects of lead exhibit a threshold response. Therefore, an RfD for lead is not available. Although USEPA has classified lead as a B2 (probable human) carcinogen, no cancer slope factor (CSF) has been developed. Therefore, potential exposures to lead cannot be evaluated using the traditional methods of risk assessment. However, the USEPA has developed a model for assessing adult exposures to lead in multiple environmental media (air, soil, and water) in an industrial/commercial setting is available in the peer reviewed literature (Bowers et al., 1994). The model is described in detail in Appendix Q. The results for the construction worker are summarized below.

As can be seen in Table T-30, an average expected blood lead level of 2.59 ug/dL is predicted for a hypothetical construction worker potentially exposed to lead in excavation, air, soil and groundwater in Site G, of 2.87 ug/dL in Site H, and of 3.43 ug/dL in Site I. These predictions are below acceptable Occupational Safety and Health Administration (OSHA) standards for adult workers (29 CFR, Part 1910.1025). The OSHA standards for blood lead levels are as follows: 1) Blood lead levels of workers (male and female) intending to have children should remain below 30 µg/dL; and 2) OSHA allows 40

ug/dL as a "permissible" blood lead level in lead-exposed workers, below which no further medical monitoring or workplace intervention is required. These values are also below the USEPA target blood lead level of 10 ug/dL for protection of a developing fetus (USEPA, 1996).

6.4 Uncertainty Analysis

Within any of the four steps of the human health risk assessment process, assumptions must be made due to a lack of absolute scientific knowledge. Some of the assumptions are supported by considerable scientific evidence, while others have less support. Every assumption introduces some degree of uncertainty into the risk assessment process. Regulatory risk assessment methodology requires that conservative assumptions be made throughout the risk assessment to ensure that public health is protected. Therefore, when all of the assumptions are combined, it is much more likely that risks are overestimated rather than underestimated.

The assumptions that introduce the greatest amount of uncertainty in this risk assessment are discussed in Section 6.5 of the HHRA. Additional uncertainties associated with the scenarios presented in this appendix are discussed below. They are discussed in qualitative terms, because for most of the assumptions there is not enough information to assign a numerical value to the uncertainty that can be factored into the calculation of risk.

Sample Statistics. Site subsurface soil data were not collected as part of the current investigation. Therefore, unvalidated historical data were used in this evaluation. Detection limits were not available for the majority of the results reported as not detected. Therefore, only detected concentrations were employed. This overestimates the EPCs for the subsurface soil data, because it is standard practice to use ½ the detection limit as a proxy concentration for results reported as not detected. Because the results were not validated, it is possible that there were unidentified sample collection or laboratory issues with the data. TCLP data were used as a proxy for groundwater data, introducing another source of uncertainty, which is likely to overestimate potential risks. Actual leachate data were available for Sites G and I; only one sample was collected from these Sites. Limited data validation was performed on this data to select between multiple runs and dilutions.

Environmental Degradation. The subsurface soil data used in this evaluation date back to the early 1980's. Organic constituents are naturally degraded in the environment by a variety of processes (i.e., photodegradation, microbial activity, hydrolysis, etc.). USEPA has recognized the validity and utility of natural attenuation and biodegradation as a remedial option and has recently published guidance for its site-specific implementation (USEPA, 1997d). Environmental half-lives vary for specific constituents based on environmental conditions (i.e., presence of bacteria, pH, exposures to sunlight and oxygen), and there are respected literature sources of such information. However, environmental degradation is not typically accounted for in the calculation of risks for the site. This has likely resulted in an over-estimation of site risks.

7.0 CONCLUSIONS

This construction worker evaluation (for subsurface soil and leachate) was conducted as a supplement to the original construction worker scenario presented in the main body of the report (surface soil and groundwater). Potential carcinogenic risks for this supplemental scenario are within the target risk range for all Sites. To evaluate potential additivity of risks for the two evaluations, risks calculated for the original and the supplemental risk assessments have been summed as shown in Tables T-31 and T-32 for the RME and MLE scenarios, respectively. The results indicate that the combined risks for each Site are still within the target risk range. With the exception of the MLE scenario for Site L, as the HIs for the supplemental risk assessment are all above 1, the combined HIs are also above 1. The combined HI for the MLE scenario for Site L is slightly above 1 (at 1.1).

These results support the original conclusion in the risk assessment that construction/excavation activities should not occur in Sites G, H, I, and now L based on present conditions without use of proper personal protective equipment and monitoring for air emissions from standing water.

8.0 REFERENCES

Sauget Area 1 Data Tables/Maps, Ecology and Environmental, Inc., February 1998, prepared for USEPA Region 5 Office of Superfund, Chicago, IL, ARCS Contract No. 68-W8-0086, Work Assignment No. 47-5N60.

Other references are presented in the main text of the report.

AAFs FOR CONSTITUENTS IN APPENDIX T NOT PRESENTED IN APPENDIX O

1,2-DICHLOROBENZENE

The oral RfD for 1,2-dichlorobenzene (9.0E-02 mg/kg-day) is based upon a corn oil gavage study in rats. Absorption is assumed to be virtually complete (100%) by this route. It is assumed that absorption is the same in animals and humans for gavage, drinking water, and soil ingestion exposures. Thus, the AAF (oral-water, oral-diet, oral-soil) are all 1.

ENSR has used a recommended default value for organics of 1% absorption for dermal exposures to soil and sediment (EPA, 2000). Thus, the AAF (dermal-soil, dermal-sediment) is 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 1,2-dichlorobenzene, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 1,2-Dichlorobenzene

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	NA

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

2,4-DINITROTOLUENE

The oral RfD for 2,4-dinitrotoluene of 2.0E-03 mg/kg-day is based on a study in dogs that received the dose via oral capsule. Limited information is available about the absorption of 2,4-dinitrotoluene. However, it is assumed that gastrointestinal absorption for this compound is complete. Furthermore, it is assumed that absorption is the same in animals and humans for oral capsule, drinking water, diet and soil ingestion exposures. Thus the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are all 1.

A recommended default value for organics of 1% absorption from dermal exposures to soil containing organics (USEPA, 2000) has been used. Thus, the AAF (dermal-soil/sediment) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 2,4-dinitrotoluene, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for 2,4-Dinitrotoluene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	NA

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

BARIUM

The USEPA oral RfD for barium (7E-02 mg/kg-day) is based on a drinking water study in humans in which healthy male volunteers consumed barium chloride. The gastrointestinal absorption in humans of other forms of barium from surface water or groundwater is assumed to be the same. Thus, the AAF (oral-water) is 1. The absorption of barium in humans from dietary constituents is reported to be greater than 91% (Lisk et al., 1988). It is assumed that the absorption from drinking water is 100%. Thus, the AAF (oral-diet) is 1. It is further assumed that the gastrointestinal absorption from soil is the same as from the diet (91-100%). Thus, the AAF (oral-soil) is assumed to be 1.

A recommended default value for inorganics of 0.1% was assumed for dermal absorption from soil in the absence of data on the dermal absorption of barium (USEPA, 2000). Thus, the AAF (dermal-soil) is 0.001.

The inhalation dose-response value for barium (1.43E-04 mg/kg-day) is based on the USEPA RfC, which is derived from an inhalation study in rats. It is assumed that absorption in humans from respirable particles retained in the lung is the same as absorption of $BaCO_3$ dust particles in rats. Thus, the AAF (inhalation) is 1.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For barium the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for Barium

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.001
Dermal-Water	1
Inhalation	1

REFERENCES

Lisk, D.J., C.A. Bache, L.A. Essick, C.M. Reid, M. Rutzke, and K. Crown. 1988. Absorption and excretion of selenium and barium in humans from consumption of brazil nuts. Nutrition Reports International 38:183-192.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

BERYLLIUM

The USEPA oral RfD of 2E-03 mg/kg-day is based on a dietary study in dogs. Beryllium is very poorly absorbed across the gastrointestinal tract with several investigators reporting less than 1% absorption of ingested beryllium (ATSDR, 1987). It is assumed that the absorption of beryllium in the diet, soil and sediment is the same as that in drinking water. Thus, the AAF (oral-diet), the AAF (oral-soil), the AAF (oral-sediment), and the AAF (oral-water) are all 1.

Dermal absorption of beryllium is also reported to be poor, although specific estimates were not located (ATSDR, 1987). A recommended default value for inorganics of 0.1% for the dermal absorption from soil has been used (USEPA, 2000). Assuming that the gastrointestinal absorption of beryllium from the drinking water study was 1%, results in an AAF (dermal-soil/sediment) of (0.1%)/(1%) = 0.1.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantifying risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make adjustment to the absorbed dermal dose, rather than adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For beryllium, the AAF (dermal-water) is (100%)/(1%) = 100.

Both the inhalation CSF of 8.4 $(mg/kg\text{-}day)^{-1}$ and the inhalation of RfD of 5.71E-06 mg/kg-day were derived from epidemiological data based on occupationally exposed workers. It is assumed that the absorption of inhaled beryllium in the environment is the same as in the dose-response study. Thus, the AAF (inhalation) is 1.

Summary of AAFs for Beryllium

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.1

Dermal-Water	100
Inhalation	1

REFERENCES

ATSDR (Agency for Toxic Substances and Disease Registry). 1987. Draft Toxicological Profile for Beryllium. ATSDR, Atlanta, GA.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

HEXACHLOROBENZENE

The oral and inhalation cancer slope factor of 1.6 $(mg/kg\text{-}day)^{-1}$ and the oral reference dose of 8E-04 mg/kg-day are based on dietary studies in rats. Therefore, the AAFs are the same for carcinogenic and noncarcinogenic risk assessment. Limited information was available concerning the absorption of hexachlorobenzene, so information on the structurally related constituent polychlorinated biphenyls was used to derive appropriate AAFs. The detailed derivations of the AAFs are presented under polychlorinated biphenyls. As for PCBs, absorption of hexachlorobenzene from oil gavage has been show to be about 80% (ATSDR, 1989). The AAFs (oral-water and oral-diet) are 1. The AAF (oral-soil) is 0.83. The absorption factor for dermal-soil is 0.04 and for dermal-water is 1.1. The inhalation AAF is 1.

REFERENCES

ATSDR (Agency for Toxic Substances and Disease Registry). 1989. Draft Toxicological Profile for hexachlorobenzene. ATSDR: Atlanta, GA.

MANGANESE

The oral RfD for dietary intake of manganese is 1.4E-01 mg/kg-day based on human consumption studies. Because these are dietary studies, the AAF (oral-diet) is by definition 1.

The oral RfD for exposure to manganese in non-food media such as drinking water, soil, etc., is 4.7E-02 mg/kg-day. This value is based on the dietary RfD after the application of a modifying factor of 3. The AAF (oral-water) and AAF (oral-soil) are assumed to be 1.

No studies have been found that address the dermal absorption of manganese from soils. A default value for the absorption of metals from soil is 0.1% (USEPA, 2000). Assuming a 10% absorption of manganese from the diet, the AAF (dermal-soil) is (0.1%/10%) = 0.01.

The USEPA inhalation RfC for manganese is 5.0E-05 mg/m^3. This corresponds to an inhalation RfD of 1.43E-05 mg/kg-day. The value is based on a human occupational epidemiological study. Absorption of airborne manganese is assumed not to differ from that in the dose-response study. Therefore, the AAF (inhalation) is 1.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantifying risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make adjustment to the absorbed dermal dose, rather than adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For manganese, the AAF (dermal-water) is 100%/10% = 10.

Summary of AAFs for Manganese

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	10
Inhalation	1

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

METHYLENE CHLORIDE

The oral CSF for methylene chloride (7.5E-03 $(mg/kg/day)^{-1}$) is based on drinking water and inhalation studies in mice. The oral RfD (6E-02 mg/kg/day) is based on a drinking water study in rats. Therefore, the derived AAFs for oral and dermal exposure routes will be the same for evaluating both carcinogenic and noncarcinogenic effects. The USEPA (1985) reports that absorption of methylene chloride by the gastrointestinal tract is high regardless of vehicle. Based on this information and other absorption information on other volatile organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, inhalation, and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil) are 1.

A recommended default value for VOCs of 1% was assumed for dermal absorption of methylene chloride from soil and sediment (USEPA, 2000). An estimate of the gastrointestinal absorption of methylene chloride in the dose-response studies was derived from the USEPA (1985) in which several absorption estimates were listed. The average of four estimates was 63%. Thus, the AAF (dermal-soil) is (1%/63%) = 0.016.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. Be definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined (100%)/(estimated absorption in the dose-response study). For methylene chloride, the AAF (dermal-water) is (100%)/(63%) = 1.6.

The inhalation RfC, 3.0 mg/m^3 (8.57E-01 mg/kg/day), is derived from an inhalation study in rats. It is assumed that absorption of methylene chloride in humans is the same as in the rats used in the dose-response study. Thus the AAF (inhalation) is 1 for noncarcinogenic effects. The inhalation cancer unit risk factor for methylene chloride is 4.7E-07 per $(\mu g/m^3)^{-1}$, equivalent to 1.65E-03 $(mg/kg/day)^{-1}$). It is derived from an inhalation study in mice. This value was derived by incorporating a physiologically based pharmacokinetic model to account for extrapolation of metabolism at high doses to low doses. It is assumed that no further adjustments are required, so the AAF (inhalation-vapor, inhalation) is 1 for cancer risk.

Summary of AAFs for Methylene Chloride

Oral-Water	1
Oral-Diet	1
Oral-Soil	1
Dermal-Soil	0.016
Dermal-Water	1.6
Inhalation	1 (for both carcinogenic and noncarcinogenic effects)

REFERENCES

U.S. EPA. 1985. Health Assessment Document for Dichloromethane (Methylene Chloride). Final Report. Office of Health and Environmental Assessment, Washington, D.C. EPA/600/8-82/004F.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

SELENIUM

The oral dose-response value for selenium (5E-03 mg/kg-day) is based on a human dietary study. According to ATSDR (1988) selenium is completely absorbed from drinking water as well as dietary constituents. This is supported by a study by Van Barweld (as cited in ATSDR) who showed that 90-95% of selenium given to mice in drinking water was absorbed. In addition, Lisk et al. (1988) showed that >87% of barium from food was absorbed by humans. It is assumed that gastrointestinal absorption from soil is also complete. Thus, the AAF (oral-water), AAF (oral-diet) and AAF (oral-soil) are all 1. The USEPA recommended default value of 0.1% for a dermal absorption of inorganics from soil has been used (USEPA, 2000). Thus, the AAF (dermal-soil) = (0.1%/100%) = 0.001.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For selenium, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for Selenium

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.001
Dermal-water	1

REFERENCES

ATSDR (Agency for Toxic Substances and Disease Registry). 1988. Toxicological Profile for Selenium (Agency for Toxic Substances and Disease Registry). Atlanta, GA.

Lisk, D. J., C. A. Bache, L. A. Essick, C.M. Reid, M. Rutzke, and K. Crown. 1988. Absorption and Excretion of Selenium and Barium in Humans From Consumption of Brazil Nuts. Nutrition Reports International 38:183-192.

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

PYRIDINE

The oral noncarcinogenic dose response value for pyridine (0.001 mg/kg-day) is based upon an oil gavage study in rats. Limited data are available describing oral absorption and these generally represent minimum estimates of the absorbed dose. Thus, it was assumed that 100% of the gavage dose administered in the dose-response study was absorbed. Furthermore, it was assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the oral-water AAF, the oral-diet AAF, and the oral-soil AAFs are all 1 for use with the oral dose response value.

We have used a recommended default value for VOCs of 1.0% absorption from dermal exposures to soil and sediment containing organics (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For pyridine, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for Pyridine

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

PHOSPHOROUS

The oral noncarcinogenic dose response value for phosphorous (2E-05 mg/kg-day) is based upon an oil gavage study in rats. It was assumed that 100% of the gavage dose administered in the dose-response study was absorbed. Furthermore, it was assumed that absorption is the same in animals and humans for gavage, drinking water, diet, and soil or sediment ingestion exposures. Thus, the oral-water AAF, the oral-diet AAF, and the oral-soil AAF are all 1 for use with the oral dose response value.

A recommended default value for inorganics of 0.1% absorption from dermal exposures to soil has been used (USEPA, 2000). Thus, the AAF (dermal-soil and dermal-sediment) is (1%/100%) = 0.001.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For phosphorous, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for Phosphorous

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.001
Dermal-water	1

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

2,4-D

The oral noncarcinogenic dose response value for 2,4-D (1E-02 mg/kg-day) is based upon a dietary study in rats. It is assumed that 100% of the dose in the dose-response study was absorbed. Furthermore, it was assumed that absorption is the same in animals and humans for drinking water, diet, and soil ingestion exposures. Thus, the oral-water AAF, the oral-diet AAF, and the oral-soil AAFs are all 1 for use with the oral dose response value.

A recommended default value for organics of 1.0% absorption from dermal exposures to soil has been used (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 2,4-D, the AAF (dermal-water) is 100%/100% = 1.

Summary of AAFs for 2,4-D

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

TOXAPHENE

The oral CSF for toxaphene of 1.1 $(mg/kg\text{-}day)^{-1}$ is based upon a dietary study in mice. It was assumed that 100% of the dose in the dose-response study was absorbed. Furthermore, it was assumed that absorption is the same in animals and humans for drinking water, diet, and soil ingestion exposures. Thus, the oral-water AAF, the oral-diet AAF, and the oral-soil AAF are all 1 for use with the oral dose response value.

A recommended default value for organics of 1.0% absorption from dermal exposures to soil has been used (USEPA, 2000). Thus, the AAF (dermal-soil) is (1%/100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For toxaphene, the AAF (dermal-water) is 100%/100% = 1.

The inhalation CSF of 1.12 $(mg/kg\text{-}day)^{-1}$ is based on the dietary study in mice. Due to the lack of chemical-specific information, it is assumed that absorption is the same for humans as in the dose-response study. Thus, the AAF (inhalation) is 1.

Summary of AAFs for Toxaphene

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

REFERENCES

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/healthbul.htm]

1,1-DICHLOROETHYLENE

The oral CSF for 1,1-dichloroethylene (6E-01 $(mg/kg\text{-}day)^{-1}$) is based on an oral drinking water study in rats (U.S. EPA, 2001). The oral RfD (9E-03 mg/kg-day) is based on an oral drinking water study in rats (U.S. EPA, 2001). According to the U.S. EPA (1990) 1,1-dichloroethylene is 100% absorbed in the gastrointestinal tract. It is assumed that 100% absorption occurs for oral exposure to drinking water and soil for animals and humans. Thus, the AAF (oral-water) and the AAF(oral-soil) are both (100%)/(100%) = 1.

A recommended default value of 1% for organics was assumed for dermal absorption of 1,1-dichloroethylene from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 1,1-dichloroethylene, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for 1,1-dichloroethylene (1.75E-01 $(mg/kg\text{-}day)^{-1}$) is based on an inhalation study in mice (U.S. EPA, 2001). According to the U.S. EPA (1990) 1,1-dichloroethylene is completely absorbed through inhalation. It is assumed that the absorption of 1,1-dichloroethylene in humans, via the inhalation route, is the same as in mice. Therefore, the AAF (inhalation) is (100%)/(100%) = 1.

Summary of AAFs for 1,1-Dichloroethylene

Oral-Water	1
Oral-soil	1
Dermal-soil	0.01
Dermal-Water	1
Inhalation	1

REFERENCES

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USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.

[URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

USEPA. 2001. Integrated Risk Information System (IRIS). Cincinnati, OH.

[URL: http://www.epa.gov/ngispgm3/iris/]

1,1-DICHLOROETHANE

The oral noncarcinogenic dose-response value (RfD) (1E-1 mg/kg-day) is based on an inhalation study in rats. Absorption in the dose-response study is assumed to be 100%. Based on absorption information on other volatile organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, inhalation, and soil ingestion exposures. Thus, the AAF (oral-water) and the AAF (oral-soil) are both 1.

A recommended default value for organics of 1% was assumed for dermal absorption of 1,1-DCA from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 1,1-DCA, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation noncarcinogenic dose-response value for 1,1-DCA (1E-01 mg/kg-day) is an inhalation RfD derived from an inhalation study in cats. It is assumed that the absorption in humans is the same as absorption of 1,1-DCA in cats. Thus, the AAF (inhalation) for noncarcinogenic effects is 1.

Summary of AAFs for 1,1-Dichloroethane

Oral-water	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

REFERENCE

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS.

USEPA Region 4. Atlanta, GA. Update 05/30/00.

[URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

2,4,5-T

The oral noncarcinogenic dose-response value (RfD) (1E-2 mg/kg-day) is based on a dietary study in rats. Absorption in the dose-response study is assumed to be 100%. Based on absorption information on other organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, inhalation, and soil ingestion exposures. Thus, the AAF (oral-water) and the AAF (oral-soil) are both 1.

A recommended default value for organics of 1% was assumed for dermal absorption of 1,1-DCA from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 1,1-DCA, the AAF (dermal-water) is (100%)/(100%) = 1.

Summary of AAFs for 2,4,5-T

Oral-water	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1

REFERENCE

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.
[URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

ALDRIN

The oral CSF for aldrin of 1.7E+01 $(mg/kg\text{-}day)^{-1}$ provided in IRIS (USEPA, 2001) is based on a dietary study in mice. The oral RfD for aldrin of 3E-05 mg/kg-day is based on a dietary study in rats. Due to the lack of chemical-specific information in both mice and rats and humans, it is assumed that absorption is complete (i.e., 100%) and is the same in humans and mice and rats for drinking water and soil ingestion exposures. Therefore, the AAF (oral-water) and the AAF (oral-soil) are both (100%)/(100%) = 1.

A recommended default value (U.S. EPA, 2000) for organics of 1% absorption from dermal exposures to soil and sediment has been used. Thus the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading, swimming, or bathing. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose-response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation CSF for aldrin is 1.7E+01 $(mg/kg\text{-}day)^{-1}$ and is based on extrapolation from the oral CSF. It is assumed that absorption from inhalation is the same as for the oral study. Therefore, the AAF (inhalation) = 1.

Summary of AAFs for Aldrin

Oral-Water	1
Oral-Soil	1
Dermal-Soil	0.01
Dermal-Water	1
Inhalation	1

REFERENCES

USEPA. 2001. Integrated Risk Information System (IRIS). [URL: http://www.epa.gov/ngispgm3/iris/]

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. URL: http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

INORGANIC MERCURY

The dose-response value for inorganic mercury (3.0E-4 mg/kg-day) is a chronic RfD based on three subchronic studies in which rats were dosed with mercuric chloride either by gavage or by subcutaneous injection. This RfD is intended to be used for risk assessment of water, soils, and sediments containing unspeciated mercury.

Derivation of the RfD for Inorganic Mercury

The EPA-derived RfD for mercuric chloride is a consensus value determined by a panel of mercury experts who met at EPA in October, 1987. The rat LOAEL for autoimmune effects was based on three LOAELs identified in three rat studies. In two studies mercuric chloride was given to the animals by gavage as an aqueous solution. LOAELS in these studies were 0.32 and 0.63 mg/kg-day in administered dose units. In a third study, mercuric chloride was injected subcutaneously. EPA converted the LOAEL of 0.016 mg/kg-day to units comparable to the gavage studies by assuming the following: (1) 7% of mercuric chloride is absorbed from the gastrointestinal tract and (2) 100% of mercuric chloride is absorbed when injected subcutaneously. The converted LOAEL was 0.23 mg/kg-day.

From these three LOAELS, the experts determined that 0.3 mg/kg-day was an appropriate average LOAEL from which to derive a chronic RfD. The resulting RfD is in administered dose units assuming an oral gavage dosing regimen with aqueous solutions. Thus, an estimation of absorption of inorganic mercury in rats from oral gavage is required for the development of the AAFs.

Estimation of Absorption in the Dose-Response Study

Three studies have been used to estimate the absorption of orally administered inorganic mercury in rodents. Two of these studies have defined absorption based on the residual body burden following a dose of radiolabelled ^{203}Hg. One has determined absorption based on urinary excretion data. Each of these will be discussed in turn below.

Residual Body Burden

Clarkson (1971) fed mice diets containing an unreported dose of $^{203}HgCl_2$. The body burden of mercury was measured by whole body radioactivity counting. After an initial sharp increase in radioactivity over the course of two days, whole body counts at steady state indicated that 1-2% of the daily dose was absorbed. The average of 1.5% is a minimum estimate of inorganic mercury absorption because it does not take into account the amount of the dose that was absorbed and then excreted either in urine or feces.

Walsh (1982) introduced $^{203}HgCl_2$ (46ug/kg) by gavage in aqueous solution to rats (3-6/group). At 4 hr and 43 hr post-dosing, radioactivity measurements were made on: 1) the contents of the GI tract (stomach and the regions of the intestine), and 2) the carcass after the GI contents had been removed. Radioactivity in the eliminated urine and feces were not determined. At 4 hr, 1.5% of the dose was associated with the carcass and the balance of the dose was recovered in the GI contents. At 43 hr, 2.4% of the dose was associated with the carcass and 3.3% of the dose was recovered in the GI contents. (This 3.3% may or may not be available for absorption, or may have already been absorbed and excreted.) Therefore, at 43 hr the remaining 94.3% of the dose had been eliminated from the body. The value of 2.4% then is an estimate of the body burden of inorganic mercury.

The above studies have estimated the following body burdens of inorganic mercury in rodents: 1.5% for inorganic mercury administered with food, and 2.4% for inorganic mercury administered in water. Because these values are similar, it can be assumed that the body burden of mercury administered with food is the same as the body burden resulting from exposure to mercury in drinking water. Thus, an average can be taken to estimate residual body burden of inorganic mercury after oral gavage, 2.0%.

Urinary Excretion Data

One study has reported the elimination of inorganic mercury as a fraction of the dose. This was a chronic feeding study conducted by Fitzhugh et al. (1950) in which mercuric acetate was administered in the diet to mice (20-24/sex/dose) at the following dietary concentrations: 0.5, 2.5, 10, 40, and 160 ppm. Six months into the study, urine and feces were collected for a 24 hour period and assayed for mercury content. Urinary excretion accounted for 0.5%-4.8% of the daily dose, and fecal elimination accounted for 40%-60% of the dose (values are the ranges of the averages for the dose groups).

To use the data of Fitzhugh et al. (1980) it is necessary to estimate fecal elimination from data on urinary elimination. The excretion of absorbed inorganic mercury into the urine and feces has been demonstrated by Gregus and Klassen (1986). Male Sprague-Dawley rats (4-6/group) were injected intravenously with $^{203}HgCl_2$. Urine and feces were collected, and after 4 days, fecal excretion accounted for 15.2% +/- 2.4% of the dose, and 16.3% +/- 1.4% of the dose was recovered in the urine. Thus it can be concluded from this study that fecal excretion of inorganic mercury does occur and that equal percentages of an absorbed dose are excreted into the feces and the urine.

Applying the results of the Gregus and Klassen (1986) study to the Fitzhugh et al. (1980) study, fecal excretion of absorbed inorganic mercury could also account for 0.5%-4.8% of the administered daily dose (i.e., assuming urinary and fecal excretion are equal). Therefore, it can be concluded

from this study that 1%-9.6%, or an average of 5.3%, of the ingested dose was absorbed and excreted within a 24 hr time period. Alternatively, it could be concluded that the portion of the dose not excreted, i.e., 100% minus 40%-60% or approximately 50% of the dose, was absorbed. The former estimate of 5.3% and the latter estimate of 50% are minimum and maximum estimates respectively. The results of this study are difficult to interpret because the elimination data are from animals who were on a diet containing mercury for six months, and the elimination data are only for a 24 hour period. Therefore, the 24 hour determination of elimination in this study is not a complete estimation, and only minimum and maximum amounts of absorption can be identified.

Absorption Estimate

The elimination data of Fitzhugh et al. (1950) provide an estimate of the average minimum absorption of 5.3% of inorganic mercury based on excretion data. The total absorption of inorganic mercury can be represented by the amount excreted plus the amount retained in the body, which was shown above to be 2%. Therefore, the absorption estimate is 2.0% plus 5.3% or 7.3%.

This value is very similar to the value of 7% absorption assumed by EPA in the calculation of the third LOAEL used to derive the RfD for inorganic mercury. The 7% value is also supported by two additional studies described below.

Revis et al. (1992) orally gavaged five male mice with an unreported dose of $^{203}HgCl_2$ in a slurry with powdered mouse chow. After 10 days, the feces eliminated over that period and the contents of the GI tract were assayed for radioactivity. The remainder of the dose not present in the fecal sample or GI tract was assumed to have been absorbed. The value of absorption of inorganic mercury determined from this experiment, 2.1%, is a minimum estimate of absorption because the amount of the dose that was absorbed and excreted into the feces was not accounted for.

The data of Clarkson (1971) were reviewed by Clarkson (1972) where it was estimated that the measured body burden of inorganic mercury of 1-2%, when corrected for excretion, would result in an absorption estimate of 10-15% for inorganic mercury when given orally. Quantitation of this estimate was not included in the paper, and, therefore, the results are considered here only for qualitative purposes.

The oral absorption value of 7% for inorganic mercury derived above is midway between the minimum absorption estimate of 2.1% (Revis et al., 1992) and a maximum estimate of 10-15% (Clarkson, 1972).

The value of 7.3% will be used in the AAF determinations for inorganic mercury.

AAF (Oral-Water) and AAF (Oral-Diet)

The AAF (oral-water) and AAF (oral-diet) are defined for inorganic mercury as: (absorption of inorganic mercury in humans from ingestion) / (absorption of inorganic mercury in rats from oral gavage). The estimate of absorption in rats from oral gavage, 7.3%, was derived above. Human oral absorption is discussed below.

Absorption in Humans

Miettinen (1973) estimated the oral absorption of inorganic mercury in humans using radioactive mercury and performing whole body counting, as well as analyzing the radiolabel in excreta and blood. Ten volunteers ingested a single, unreported dose of mercuric nitrate either in water or bound to calf liver protein (4-14 uCi). During the first four to five days, 0.17% of the dose was excreted in the urine and 85% of the dose was excreted in the feces. No difference was observed between the water and calf liver protein vehicles.

As described above, fecal excretion is a route of elimination of inorganic mercury. Thus, some of the mercury found in the feces was unabsorbed metal and some was absorbed and excreted metal. The minimum percentage of the administered dose absorbed was 15% (100%-85%) in the Miettinen study, if it is assumed that all mercury not excreted in the feces was absorbed. If it is also assumed that fecal and urinary elimination are roughly equal in humans, as they are in rats (Gregus and Klaassen, 1986), one can estimate the fecal mercury that was excreted as approximately 0.17% of the dose. This suggests that almost all of the metal present in the feces was unabsorbed. Thus, a minimum estimate of absorption is 14.8% (15%-0.17%).

The human gastrointestinal absorption value of 14.8% differs from a value of 7% that has been quoted in various articles, but which is based on the same experimental study. The Task Group on Metal Accumulation (1973) and WHO (1976) both report that 7% of soluble mercury is absorbed in humans and cite Rahola et al. (1973). This study is the original publication of work by Rahola and Miettinen. The Task Group (1973) and WHO (1976) erroneously gleaned a value of 7% from this work. The minimum absorption is, indeed, 14.8% from this experiment, as was reported in a later publication by Miettinen (1973).

Derivation of AAF (Oral-Water) and AAF (Oral-Diet)

The above experimental results indicate that the gastrointestinal absorption in humans of soluble inorganic mercury (mercuric nitrate) as an aqueous solution is the same as the absorption of the same compound when administered as a protein bound species (Miettinen, 1973). This value is 14.8%.

The estimate of absorption of mercury in rats from oral gavage was derived from the literature studies presented above to be 7.3%. Accordingly:

AAF (Oral-Water): (14.8%) / (7.3%) = 2.0

AAF (Oral-Diet): (14.8%) / (7.3%) = 2.0

AAF (Oral-Soil)

The AAF (oral-soil) is defined for inorganic mercury as: (absorption of inorganic mercury in humans from ingested soil) / (absorption of inorganic mercury in rats from oral gavage).

No relevant studies could be found in the literature regarding the gastrointestinal absorption of mercuric chloride, or other soluble mercury species, administered to any animal as a component of or mixed with soil. In the absence of absorption data from soil, it is assumed that mercuric chloride and other soluble inorganic mercury compounds are absorbed in humans from ingested soil to the same degree as when administered as an aqueous solution or as a protein bound species (Miettinen, 1973). This value is 14.8%. Therefore, the AAF (oral-soil) is:

AAF (Oral-Soil): (14.8%) / (7.3%) = 2.0

AAF (Dermal-Soil)

The AAF (dermal-soil) is defined for this chemical as: (absorption in humans from dermal contact with soil) / (absorption in rats from aqueous gavage).

The AAF (dermal-soil) was derived from the estimate of the fractional dermal absorption of mercury from soil documented elsewhere (0.05%) and the estimate rat absorption of 7.3% from Clarkson et al. (1972). Accordingly, the AAF (dermal-soil) is:

AAF (Dermal-Soil) = (0.05%) / (7.3%) = 0.007

AAF (Dermal-Water)

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming or potable water when bathing. The methodology for quantitating risks posed by these exposure pathways uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. The AAF is used

to make an adjustment of the exposure dose.

Thus, the AAF (dermal-water) is defined as: (100%) / (absorption of inorganic mercury in rats from aqueous gavage). This AAF is derived using the estimate of rat absorption of 7.3% from Clarkson et al. (1972). Accordingly, the AAF (dermal-water) is:

AAF (Dermal-Water) = (100%) / (7.3%) = 13.7

AAF (Inhalation)

The inhalation RfC for mercury is 3.0E-04 mg/m^3. This corresponds to an RfD of 8.57E-05 mg/kg-day. The value is based on inhalation exposure in humans. Therefore, the AAF (inhalation) is 1.0.

Summary of AAFs for Inorganic Mercury

Oral-Water	2
Oral-Diet	2
Oral-Soil	2
Dermal-Soil	0.007
Dermal-Water	13.7
Inhalation	1

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Cobalt

The oral noncarcinogenic dose-response value (RfD) (2E-2 mg/kg-day) is based on observations of humans undergoing dialysis. Absorption in the dose-response study is assumed to be 100%. It is assumed that absorption in this study is complete and is the same for drinking water, and soil ingestion exposures. Thus, the AAF (oral-water), and the AAF (oral-soil) are 1.

A recommended default value for organics of 1% was assumed for dermal absorption of cobalt from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation noncarcinogenic RfD value for cobalt (5E-06 mg/kg-day) is derived from a human occupational study. The inhalation CSF (9.8E+0 $(mg/kg\text{-}day)^{-1}$) is based on an inhalation study in mice. It is assumed that the absorption in humans is the same as absorption of cobalt in mice. Thus, the AAF (inhalation) for both carcinogenic and noncarcinogenic effects is 1.

Summary of AAFs for Cobalt

Oral-water	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

REFERENCE

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

Chloromethane

The oral CSF for chloromethane (1.3E-02 $(mg/kg\text{-}day)^{-1}$) is based on an inhalation study in mice. Absorption in the dose-response study is assumed to be 100%. Based on absorption information on other volatile organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, inhalation and soil ingestion exposures. Thus, the AAF (oral-water) and the AAF (oral-soil) are 1.

A recommended default value for organics of 1% was assumed for dermal absorption of chloromethane from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil) is (1%)/(100%) = 0.01.

The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). Thus, the AAF (dermal-water) is (100%)/(100%) = 1.

Both the inhalation CSF for chloromethane (3.5E-3$(mg/kg\text{-}day)^{-1}$) and the inhalation RfD (8.6E-2 mg/kg-day) are derived from an inhalation study in mice. It is assumed that the absorption in humans is the same as absorption of chloromethane in mice. Thus, the AAF (inhalation) for both carcinogenic and noncarcinogenic effects is 1.

Summary of AAFs for Chloromethane

Oral-water	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

REFERENCE

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00. [URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

1,1,1-TRICHLOROETHANE

The oral noncarcinogenic dose-response value (RfD) (2.8E-1 mg/kg-day) is based on an inhalation study in rats. Absorption in the dose-response study is assumed to be 100%. Based on absorption information on other volatile organic compounds, it is assumed that absorption is the same in animals and humans for gavage, drinking water, diet, inhalation and soil or sediment ingestion exposures. Thus, the AAF (oral-water), the AAF (oral-diet), and the AAF (oral-soil/sediment) are all 1.
A recommended default value for organics of 1% was assumed for dermal absorption of 1,1,1-TCA from soil (U.S. EPA, 2000). Thus, the AAF (dermal-soil/sediment) is (1%)/(100%) = 0.01.
The AAF (dermal-water) is used when estimating the human risks posed by dermally contacting surface water when wading or swimming. The methodology for quantitating risks posed by this exposure pathway uses a chemical-specific permeability constant that estimates the rate at which the chemical passes into and through the skin from an aqueous solution. By definition, the dose estimated by this procedure is an absorbed dose. Most dose-response criteria, however, are based on administered doses. An adjustment is necessary to account for the absorption in the dose-response study. In order to use consistent dose response criteria across all exposure pathways, the AAF is used to make an adjustment to the absorbed dermal dose, instead of adjusting the dose-response criteria. Here, the AAF is defined as (100%)/(estimated absorption in the dose-response study). For 1,1,1-TCA, the AAF (dermal-water) is (100%)/(100%) = 1.

The inhalation noncarcinogenic dose-response value for 1,1,1-TCA (6.3E-01 mg/kg-day) is an inhalation RfD derived from an inhalation study in gerbils. It is assumed that the absorption in humans is the same as absorption of 1,1,1-TCA in gerbils. Thus, the AAF (inhalation) for noncarcinogenic effects is 1.

Summary of AAFs for 1,1,1-Trichloroethane

Oral-water	1
Oral-diet	1
Oral-soil	1
Dermal-soil	0.01
Dermal-water	1
Inhalation	1

REFERENCE

USEPA. 2000. Region 4 Human Health Risk Assessment Bulletins - - Supplement to RAGS. USEPA Region 4. Atlanta, GA. Update 05/30/00.[URL:http://www.epa.gov/region4/waste/oftecser/otsguid.htm]

TABLE T-2
SAMPLES USED IN CALCULATION OF SITE CONCENTRATIONS
GROUNDWATER -TCLP (a) AND LEACHATE DATA

Site	Sample	Date Collected
G (TCLP)	WASTE-G-B3-10-12FTFD	10/11/99
G (TCLP)	WASTE-G-B3-COMPFD	10/11/99
G (TCLP)	WASTE-G-B1-2-4FT	10/8/99
G (TCLP)	WASTE-G-B1-COMP	10/8/99
G (TCLP)	WASTE-G-B2-12-14FT	10/8/99
G (TCLP)	WASTE-G-B2-COMP	10/8/99
G (TCLP)	WASTE-G-B3-10-12FT	10/11/99
G (TCLP)	WASTE-G-B3-COMP	10/11/99
G (TCLP)	WASTE-G-B4-12-14FT	10/12/99
G (TCLP)	WASTE-G-B4-COMP	10/12/99
G (Leachate)	LEACH-G-1	4/26/00 (b)
H (TCLP)	WASTE-H-B1-4-6FT	10/1/99
H (TCLP)	WASTE-H-B1-COMP	10/1/99
H (TCLP)	WASTE-H-B2-4-6FT	10/1/99
H (TCLP)	WASTE-H-B2A-4-6FT	10/5/99
H (TCLP)	WASTE-H-B2A-COMP	10/5/99
H (TCLP)	WASTE-H-B2-COMP	10/1/99
H (TCLP)	WASTE-H-B3-2-4FT	10/4/99
H (TCLP)	WASTE-H-B3-COMP	10/4/99
H (TCLP)	WASTE-H-B4-14-16FT	10/4/99
H (TCLP)	WASTE-H-B4-COMP	10/4/99
I (TCLP)	WASTE-I-B5-24-26FTFD	10/15/99
I (TCLP)	WASTE-I-B5-COMPFD	10/15/99
I (TCLP)	WASTE-I-B1-14-16FT	10/14/99
I (TCLP)	WASTE-I-B1-COMP	10/14/99
I (TCLP)	WASTE-I-B2-2-4FT	10/15/99
I (TCLP)	WASTE-I-B2-COMP	10/15/99
I (TCLP)	WASTE-I-B4-0-2FT	10/14/99
I (TCLP)	WASTE-I-B4-COMP	10/14/99
I (TCLP)	WASTE-I-B5-24-26FT	10/15/99
I (TCLP)	WASTE-I-B5-COMP	10/15/99
I (Leachate)	LEACH -I	4/25/00 (b)
L (TCLP)	WASTE-L-B1-COMP	9/29/99
L (TCLP)	WASTE-L-B2-COMP	9/29/99
L (TCLP)	WASTE-L-B3-0-2FT	9/30/99
L (TCLP)	WASTE-L-B3-COMP	9/30/99
L (TCLP)	WASTE-L-B4-0-2FT	9/30/99
L (TCLP)	WASTE-L-B4-COMP	9/30/99

TCLP - Toxicity Characteristic Leaching Procedure.
(a) - Leachate concentrations, as defined by the TCLP results for waste samples at each site, and leachate samples collected in sites G and I are evaluated as groundwater.
(b) - Leachate samples collected in support of the feasibility study.

Table T-3
Site Concentration Selection
Surface Soil Statistics

Site	Constituent	Number of Samples for Statistics (d)	Shapiro-Wilke's Test for Normality (a)		Summary Statistics (mg/kg)				95% UCL (mg/kg)			Site Concentration (mg/kg) (c)
			Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
G	1,1,2,2-Tetrachloroethane	1	NC	NC	NC	5.81E-01	5.81E-01	5.81E-01	NC	NC	NC	5.81E-01
G	1,2,4-Trichlorobenzene	4	0.8264	0.8563	Lognormal	7.87E+00	6.16E+01	1.20E+02	1.30E+02	2.19E+05	2.19E+05	1.20E+02
G	1,2-Dichloroethane	1	NC	NC	NC	4.35E-01	4.35E-01	4.35E-01	NC	NC	NC	4.35E-01
G	1,4-Dichlorobenzene	2	1.0000	1.0010	Lognormal	2.38E+00	2.97E+00	3.56E+00	6.69E+00	NC	NC	3.56E+00
G	2,4,6-Trichlorophenol	1	NC	NC	NC	4.95E+01	4.95E+01	4.95E+01	NC	NC	NC	4.95E+01
G	2,4-Dichlorophenol	3	0.8853	0.9937	Lognormal	1.41E+01	6.45E+01	1.41E+02	1.79E+02	5.17E+07	5.17E+07	1.41E+02
G	2,4-Dinitrophenol	1	NC	NC	NC	1.40E+01	1.40E+01	1.40E+01	NC	NC	NC	1.40E+01
G	2-Butanone (MEK)	11	0.9180	0.7225	Normal	2.20E-02	7.39E+00	1.78E+01	1.08E+01	5.01E+04	1.08E+01	1.08E+01
G	2-Chlorophenol	1	NC	NC	NC	8.76E+00	8.76E+00	8.76E+00	NC	NC	NC	8.76E+00
G	2-Methylnapthalene	4	0.7882	0.8906	Lognormal	8.71E+00	1.84E+01	3.71E+01	3.34E+01	1.04E+02	1.04E+02	3.71E+01
G	2-Methylphenol(o-cresol)	1	NC	NC	NC	3.56E+00	3.56E+00	3.56E+00	NC	NC	NC	3.56E+00
G	4,4'-DDE	4	0.8451	0.8556	Lognormal	3.07E+00	4.88E+01	1.35E+02	1.22E+02	1.85E+08	1.85E+08	1.35E+02
G	4-Chloroaniline	3	0.7568	0.8102	Lognormal	5.97E+00	8.16E+01	2.31E+02	2.99E+02	4.20E+22	4.20E+22	2.31E+02
G	4-Methyl-2-pentanone	4	0.9103	0.9239	Lognormal	6.35E-01	2.99E+00	6.00E+00	5.97E+00	5.54E+02	5.54E+02	6.00E+00
G	Acenapthene	1	NC	NC	NC	2.67E+00	2.67E+00	2.67E+00	NC	NC	NC	2.67E+00
G	Acetone	11	0.8917	0.8177	Normal	3.20E-02	5.66E+00	1.54E+01	8.44E+00	2.80E+02	8.44E+00	8.44E+00
G	Aluminum	13	0.9477	0.9341	Normal	9.66E+02	8.17E+03	1.87E+04	1.08E+04	1.74E+04	1.08E+04	1.08E+04
G	Anthracene	1	NC	NC	NC	8.49E+00	8.49E+00	8.49E+00	NC	NC	NC	8.49E+00
G	Arsenic	5	0.8232	0.9377	Lognormal	2.50E+00	5.52E+00	1.11E+01	8.65E+00	1.37E+01	1.37E+01	1.11E+01
G	Barium	13	0.4450	0.6892	Lognormal	1.17E+02	5.00E+03	4.59E+04	1.14E+04	4.18E+04	4.18E+04	4.18E+04
G	Benzene	6	0.8552	0.7001	Normal	3.00E-03	1.53E+01	4.53E+01	2.88E+01	3.88E+13	2.88E+01	4.53E+01
G	Benzyl alcohol	1	NC	NC	NC	6.10E+00	6.10E+00	6.10E+00	NC	NC	NC	6.10E+00
G	Butyl benzyl phthalate	1	NC	NC	NC	2.33E+01	2.33E+01	2.33E+01	NC	NC	NC	2.33E+01
G	Pentachlorophenol(PCP)	5	0.7250	0.9819	Lognormal	2.35E+01	1.32E+03	4.77E+03	3.19E+03	3.34E+07	3.34E+07	4.77E+03
G	Cadmium	3	0.9231	0.9968	Lognormal	2.00E+00	7.00E+00	1.40E+01	1.75E+01	6.65E+04	6.65E+04	1.40E+01
G	Calcium	2	1.0000	1.0045	Lognormal	1.61E+04	1.73E+04	1.85E+04	2.49E+04	NC	NC	1.85E+04
G	Chlorobenzene	8	0.6735	0.9484	Lognormal	1.07E-01	1.08E+02	5.38E+02	2.34E+02	1.18E+06	1.18E+06	5.38E+02
G	Chloroform	1	NC	NC	NC	1.16E+01	1.16E+01	1.16E+01	NC	NC	NC	1.16E+01
G	Chromium	13	0.3651	0.7033	Lognormal	5.00E+00	9.36E+01	9.85E+02	2.27E+02	2.28E+02	2.28E+02	2.28E+02
	Chrysene	1	NC	NC	NC	2.29E+01	2.29E+01	2.29E+01	NC	NC	NC	2.29E+01
	Cobalt	6	0.6928	0.8742	Lognormal	8.70E+00	2.05E+01	5.60E+01	3.51E+01	5.25E+01	5.25E+01	5.60E+01
G	Copper	20	0.3548	0.8810	Lognormal	8.00E+00	1.73E+02	2.22E+03	3.63E+02	3.24E+02	3.24E+02	3.24E+02
G	Di-N-butyl phthalate	4	0.7365	0.7373	Lognormal	2.79E-01	8.92E+00	1.76E+01	2.06E+01	2.10E+11	2.10E+11	1.76E+01
G	Dibenofuran	2	1.0000	0.9999	Normal	4.30E+00	1.91E+01	3.38E+01	1.12E+02	NC	1.12E+02	3.38E+01
G	Diethylphthalate	1	NC	NC	NC	2.29E+01	2.29E+01	2.29E+01	NC	NC	NC	2.29E+01
G	Ethylbenzene	6	0.8451	0.9113	Lognormal	1.64E-01	6.80E+00	1.69E+01	1.28E+01	7.35E+03	7.35E+03	1.69E+01
G	Fluoranthene	1	NC	NC	NC	6.59E+00	6.59E+00	6.59E+00	NC	NC	NC	6.59E+00
G	Fluorene	1	NC	NC	NC	1.13E+01	1.13E+01	1.13E+01	NC	NC	NC	1.13E+01
G	Hexachlorobenzene	2	1.0000	1.0004	Lognormal	2.79E+01	3.43E+01	4.06E+01	7.44E+01	NC	NC	4.06E+01
G	Iron	22	0.6593	0.9432	Lognormal	4.06E+03	1.35E+04	5.37E+04	1.72E+04	1.73E+04	1.73E+04	1.73E+04
G	Lead	18	0.3618	0.7723	Lognormal	3.00E+00	2.41E+02	3.12E+03	5.47E+02	7.30E+02	7.30E+02	7.30E+02
G	Magnesium	2	1.0000	1.0513	Lognormal	7.16E+03	7.31E+03	7.46E+03	8.26E+03	NC	NC	7.46E+03
G	Manganese	11	0.9544	0.9300	Normal	4.30E+01	2.09E+02	4.61E+02	2.75E+02	3.82E+02	2.75E+02	2.75E+02
G	Mercury	4	0.6356	0.8636	Lognormal	2.00E-02	8.66E+00	3.43E+01	2.88E+01	3.78E+21	3.78E+21	3.43E+01
G	Methylene chloride	11	0.6327	0.8626	Lognormal	3.00E-03	1.63E+00	7.11E+00	3.01E+00	4.29E+03	4.29E+03	7.11E+00
G	N-Nitrosodiphenylamine	1	NC	NC	NC	1.78E+02	1.78E+02	1.78E+02	NC	NC	NC	1.78E+02
G	Napthalene	7	0.5093	0.9141	Lognormal	4.83E+00	8.93E+02	5.43E+03	2.36E+03	9.78E+06	9.78E+06	5.43E+03
G	Nickel	19	0.4754	0.8981	Lognormal	8.00E+00	5.13E+01	3.99E+02	8.67E+01	7.98E+01	7.98E+01	7.98E+01
G	Phenanthrene	4	0.9133	0.9840	Lognormal	1.29E+01	2.84E+01	5.14E+01	4.77E+01	1.18E+02	1.18E+02	5.14E+01
G	Phenol	1	NC	NC	NC	1.78E+02	1.78E+02	1.78E+02	NC	NC	NC	1.78E+02
G	Phosphorus	9	0.8305	0.9759	Lognormal	1.83E+02	5.37E+02	1.34E+03	7.48E+02	8.98E+02	8.98E+02	8.98E+02
G	Potassium	2	1.0000	0.9970	Normal	1.47E+03	1.59E+03	1.70E+03	2.31E+03	NC	2.31E+03	1.70E+03
G	Pyrene	2	1.0000	1.0001	Lognormal	7.56E+00	1.33E+01	1.91E+01	4.96E+01	NC	NC	1.91E+01
G	Silver	1	NC	NC	NC	1.20E+01	1.20E+01	1.20E+01	NC	NC	NC	1.20E+01
G	Total PCBs	7	0.6284	0.8209	Lognormal	1.30E-01	9.08E+02	4.43E+03	2.07E+03	6.93E+16	6.93E+16	4.43E+03
G	Tetrachloroethene	8	0.8000	0.7400	Normal	9.00E-03	1.88E+01	5.86E+01	3.30E+01	3.09E+06	3.30E+01	3.30E+01
G	Tin	2	1.0000	1.0001	Lognormal	2.60E+01	5.30E+01	8.00E+01	2.23E+02	NC	NC	8.00E+01
G	Toluene	6	0.8949	0.8389	Normal	4.06E-01	4.85E+01	1.18E+02	8.71E+01	1.19E+06	8.71E+01	1.18E+02
G	Total Xylenes	6	0.8366	0.8860	Lognormal	9.20E-02	1.64E+01	4.15E+01	3.14E+01	1.36E+06	1.36E+06	4.15E+01
G	Trichloroethene	4	0.9047	0.9813	Lognormal	7.62E-01	1.94E+00	3.85E+00	3.55E+00	1.85E+01	1.85E+01	3.85E+00
G	Vanadium	11	0.3858	0.6385	Lognormal	1.40E+01	1.49E+02	1.32E+03	3.60E+02	4.44E+02	4.44E+02	4.44E+02
G	Zinc	19	0.4407	0.8137	Lognormal	2.70E+01	4.75E+02	4.26E+03	9.24E+02	1.02E+03	1.02E+03	1.02E+03
G	trans-1,2-Dichloroethene	1	NC	NC	NC	7.00E-01	7.00E-01	7.00E-01	NC	NC	NC	7.00E-01

Table T-3
Site Concentration Selection
Subsurface Soil Statistics

Site	Constituent	Number of Samples for Statistics (d)	Shapiro-Wilke's Test for Normality (a)		Summary Statistics (mg/kg)			95% UCL (mg/kg)			Site Concentration (mg/kg) (c)
			Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
H	1,2,4-Trichlorobenzene	6	0.5226	0.9308	Lognormal	6.10E-02	1.33E+03	7.58E+03	3.85E+03	4.42E+22	4.42E+22	7.58E+03
H	1,2-Dichlorobenzene	3	0.7535	0.9998	Lognormal	5.48E-01	6.48E+03	1.94E+04	2.53E+04	1.38E+134	1.38E+134	1.94E+04
H	1,2-Dichloroethane	1	NC	NC	NC	1.20E-02	1.20E-02	1.20E-02	NC	NC	NC	1.20E-02
H	1,3-Dichlorobenzene	3	0.7680	0.8664	Lognormal	7.65E+00	8.76E+01	2.42E+02	3.13E+02	1.28E+17	1.28E+17	2.42E+02
H	1,4-Dichlorobenzene	5	0.5723	0.9824	Lognormal	6.20E-02	6.32E+03	3.06E+04	1.93E+04	8.14E+38	8.14E+38	3.06E+04
H	2,4,6-Trichlorophenol	2	1.0000	1.0000	NC	1.79E-01	3.07E+02	6.13E+02	2.24E+03	NC	NC	6.13E+02
H	2,4-Dichlorophenol	5	0.5597	0.8190	Lognormal	1.67E-01	1.50E+02	7.42E+02	4.66E+02	2.30E+17	2.30E+17	7.42E+02
H	2,4-Dimethylphenol	1	NC	NC	NC	9.20E-02	9.20E-02	9.20E-02	NC	NC	NC	9.20E-02
H	2-Butanone (MEK)	5	0.8455	0.7487	Normal	3.30E-02	1.26E+01	2.72E+01	2.51E+01	1.47E+15	2.51E+01	2.72E+01
H	2-Methylnapthalene	3	0.7502	0.8055	Lognormal	1.56E-01	1.16E+02	3.47E+02	4.54E+02	1.00E+82	1.00E+82	3.47E+02
H	4,4'-DDE	2	1.0027	0.9996	Normal	5.04E-01	6.42E-01	7.80E-01	1.51E+00	NC	1.51E+00	7.80E-01
H	4,4'-DDT	2	1.0021	0.9989	Normal	7.80E-01	8.52E-01	9.23E-01	1.30E+00	NC	1.30E+00	9.23E-01
H	4-4'-DDD	1	NC	NC	NC	4.31E-01	4.31E-01	4.31E-01	NC	NC	NC	4.31E-01
H	4-Methyl-2-pentanone	4	0.7233	0.9342	Lognormal	9.00E-03	2.33E+00	7.85E+00	6.68E+00	1.90E+15	1.90E+15	7.85E+00
H	4-Methylphenol	1	NC	NC	NC	1.72E-01	1.72E-01	1.72E-01	NC	NC	NC	1.72E-01
H	4-Nitroaniline	1	NC	NC	NC	1.83E+03	1.83E+03	1.83E+03	NC	NC	NC	1.83E+03
H	Acenapthylene	3	0.7502	0.8114	Lognormal	1.30E-01	1.26E+02	3.78E+02	4.93E+02	4.03E+84	4.03E+84	3.78E+02
H	Acetone	11	0.6748	0.9456	Lognormal	1.50E-02	4.85E+00	2.11E+01	9.00E+00	1.58E+03	1.58E+03	2.11E+01
H	Aluminum	11	0.8342	0.9689	Lognormal	4.50E+02	3.85E+03	1.21E+04	5.79E+03	1.08E+04	1.08E+04	1.08E+04
H	Anthracene	4	0.6298	0.6819	Lognormal	1.29E-01	1.70E+02	6.80E+02	5.70E+02	1.80E+34	1.80E+34	6.80E+02
H	Arsenic	2	1.0000	1.0000	NC	3.00E+00	1.45E+01	2.60E+01	8.71E+01	NC	NC	2.60E+01
H	Barium	11	0.6278	0.8847	Lognormal	3.80E+01	6.05E+02	3.24E+03	1.17E+03	5.87E+03	5.87E+03	3.24E+03
H	Benzene	7	0.7383	0.8929	Lognormal	4.00E-03	1.52E+01	6.13E+01	3.20E+01	1.27E+12	1.27E+12	6.13E+01
H	Benzo(a)anthracene	3	0.7512	0.8335	Lognormal	5.54E-01	1.26E+02	3.78E+02	4.93E+02	9.26E+60	9.26E+60	3.78E+02
H	Benzo(a)pyrene	2	1.0000	1.0000	NC	7.80E-01	1.36E+02	2.72E+02	9.92E+02	NC	NC	2.72E+02
H	Benzo(b)fluoranthene	3	0.7520	0.8496	Lognormal	4.42E-01	7.10E+01	2.11E+02	2.76E+02	1.37E+50	1.37E+50	2.11E+02
H	Benzo(g,h,i)perylene	2	1.0000	1.0000	NC	4.94E-01	5.69E+01	1.13E+02	4.13E+02	NC	NC	1.13E+02
H	Benzoic acid	2	0.9998	0.9999	Lognormal	1.41E+00	2.02E+00	2.64E+00	5.91E+00	NC	NC	2.64E+00
H	Benzyl alcohol	1	NC	NC	NC	7.92E+00	7.92E+00	7.92E+00	NC	NC	NC	7.92E+00
H	Cadmium	4	0.8414	0.6883	Normal	5.00E+00	1.88E+02	2.94E+02	3.36E+02	1.67E+09	3.36E+02	2.94E+
H	Chlorobenzene	6	0.6554	0.9189	Lognormal	2.40E-02	9.76E+01	4.52E+02	2.45E+02	2.94E+17	2.94E+17	4.52E+
H	Chloroform	2	1.0066	1.0001	Normal	5.30E-02	1.23E-01	1.92E-01	5.61E-01	NC	5.61E-01	1.92E-01
H	Chromium	8	0.8422	0.8615	Lognormal	4.00E+00	4.21E+01	1.00E+02	6.91E+01	6.37E+02	6.37E+02	1.00E+02
H	Chrysene	3	0.7559	0.9214	Lognormal	7.50E-01	1.12E+02	3.32E+02	4.33E+02	5.95E+47	5.95E+47	3.32E+02
H	Cobalt	5	0.8462	0.9859	Lognormal	3.00E+00	3.64E+01	1.05E+02	7.64E+01	7.44E+03	7.44E+03	1.05E+02
H	Copper	8	0.7075	0.9363	Lognormal	3.00E+00	5.36E+02	2.44E+03	1.10E+03	1.74E+06	1.74E+06	2.44E+03
H	Cyanide	2	NC	NC	NC	2.00E+00	2.00E+00	2.00E+00	2.00E+00	NC	NC	2.00E+00
H	Di-N-butyl phthalate	8	0.4494	0.7021	Lognormal	3.43E-01	4.03E+00	2.57E+01	9.89E+00	2.84E+01	2.84E+01	2.57E+01
H	Dibenofuran	4	0.6424	0.8606	Lognormal	1.43E-01	1.55E+01	6.04E+01	5.07E+01	2.26E+15	2.26E+15	6.04E+01
H	Dibenzo(a,h)anthracene	1	NC	NC	NC	3.17E+01	3.17E+01	3.17E+01	NC	NC	NC	3.17E+01
H	Ethylbenzene	3	0.9635	0.9109	Normal	4.38E+00	9.06E+00	1.28E+01	1.63E+01	2.14E+02	1.63E+01	1.28E+01
H	Fluoranthene	4	0.6301	0.7950	Lognormal	1.45E-01	3.33E+02	1.33E+03	1.11E+03	8.60E+34	8.60E+34	1.33E+03
H	Fluorene	3	0.7506	0.8436	Lognormal	2.47E-01	1.61E+02	4.83E+02	6.31E+02	7.75E+78	7.75E+78	4.83E+02
H	Hexachlorobenzene	1	NC	NC	NC	7.14E-01	7.14E-01	7.14E-01	NC	NC	NC	7.14E-01
H	Ideno(1,2,3-cd)pyrene	1	NC	NC	NC	1.36E+02	1.36E+02	1.36E+02	NC	NC	NC	1.36E+02
H	Iron	11	0.8095	0.9196	Lognormal	5.10E+02	2.32E+04	8.45E+04	3.84E+04	4.98E+05	4.98E+05	8.45E+04
H	Lead	2	1.0000	1.0000	NC	4.00E+00	5.77E+02	1.15E+03	4.19E+03	NC	NC	1.15E+03
H	Manganese	11	0.4040	0.9448	Lognormal	7.00E+00	3.86E+03	3.65E+04	9.80E+03	2.74E+06	2.74E+06	3.65E+04
H	Mercury	3	0.8887	0.9720	Lognormal	8.00E-01	2.03E+00	3.90E+00	4.81E+00	1.78E+03	1.78E+03	3.90E+00
H	Methylene chloride	11	0.4501	0.7879	Lognormal	6.00E-03	6.34E+00	5.56E+01	1.55E+01	8.47E+03	8.47E+03	5.56E+01
H	N-Nitrosodiphenylamine	1	NC	NC	NC	1.00E-07	1.00E-07	1.00E-07	NC	NC	NC	1.00E-07
H	Napthalene	4	0.6301	0.8770	Lognormal	4.40E-02	5.67E+02	2.27E+03	1.90E+03	1.59E+44	1.59E+44	2.27E+03
H	Nickel	10	0.4409	0.8827	Lognormal	4.00E+00	1.77E+03	1.51E+04	4.51E+03	3.57E+06	3.57E+06	1.51E+04
H	Phenanthrene	6	0.4968	0.7918	Lognormal	4.70E-02	3.53E+02	2.11E+03	1.06E+03	3.01E+14	3.01E+14	2.11E+03
H	Phenol	1	NC	NC	NC	4.22E-01	4.22E-01	4.22E-01	NC	NC	NC	4.22E-01
H	Pyrene	3	0.7503	0.7793	Lognormal	9.35E-01	2.22E+02	6.64E+02	8.68E+02	5.05E+63	5.05E+63	6.64E+02
H	Selenium	1	NC	NC	NC	2.00E+00	2.00E+00	2.00E+00	NC	NC	NC	2.00E+00
H	Silver	2	1.0000	1.0001	Lognormal	9.00E+00	2.65E+01	4.40E+01	1.37E+02	NC	NC	4.40E+01
H	Total PCBs	7	0.4881	0.9280	Lognormal	2.51E-01	2.73E+03	1.80E+04	7.68E+03	5.45E+15	5.45E+15	1.80E+04
H	Tetrachloroethene	1	NC	NC	NC	5.65E+00	5.65E+00	5.65E+00	NC	NC	NC	5.65E+00
H	Thallium	1	NC	NC	NC	1.00E+00	1.00E+00	1.00E+00	NC	NC	NC	1.00E+00
H	Tin	3	0.9330	1.0000	Lognormal	1.40E+01	5.50E+01	1.11E+02	1.40E+02	1.05E+07	1.05E+07	1.11E+02
H	Toluene	5	0.8004	0.9165	Lognormal	1.45E-01	2.28E+01	7.65E+01	5.31E+01	2.05E+10	2.05E+10	7.65E+01
H	Total Xylenes	3	0.8885	0.8041	Normal	1.51E+00	1.48E+01	2.36E+01	3.46E+01	1.69E+12	3.46E+01	2.36E+01
H	Trichloroethene	1	NC	NC	NC	1.00E-02	1.00E-02	1.00E-02	NC	NC	NC	1.00E-02
H	Vanadium	6	0.7425	0.9068	Lognormal	7.00E+00	3.23E+01	9.50E+01	5.88E+01	1.97E+02	1.97E+02	9.50E+01
H	Zinc	11	0.4749	0.8703	Lognormal	8.00E+00	4.74E+03	3.95E+04	1.12E+04	1.61E+07	1.61E+07	3.95E+
H	bis(2-ethylhexyl)phthalate	4	0.8901	0.8934	Lognormal	2.51E-01	4.28E-01	6.14E-01	6.36E-01	1.10E+00	1.10E+00	6.14E

Table T-3
Site Concentration Selection
Surface Soil Statistics

Site	Constituent	Number of Samples for Statistics (d)	Shapiro-Wilke's Test for Normality (a)			Summary Statistics (mg/kg)			95% UCL (mg/kg)			Site Concentration (mg/kg) (c)
			Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
I	1,1,1-Trichloroethane	2	0.9999	1.0000	Lognormal	4.32E-01	1.06E+00	1.69E+00	5.04E+00	NC	NC	1.69E+00
I	1,2,4-Trichlorobenzene	8	0.5547	0.9662	Lognormal	6.71E+00	1.40E+03	8.26E+03	3.28E+03	1.17E+06	1.17E+06	8.26E+03
I	1,2-Dichlorobenzene	6	0.7151	0.9101	Lognormal	2.68E+00	8.29E+01	3.24E+02	1.89E+02	7.93E+04	7.93E+04	3.24E+02
I	1,3-Dichlorobenzene	2	1.0000	1.0000	NC	1.89E+01	4.45E+01	7.01E+01	2.06E+02	NC	NC	7.01E+01
I	1,4-Dichlorobenzene	8	0.4541	0.9451	Lognormal	1.60E+00	2.55E+02	1.84E+03	6.83E+02	1.26E+05	1.26E+05	1.84E+03
I	2,4-Dichlorophenol	1	NC	NC	NC	9.00E+00	9.00E+00	9.00E+00	NC	NC	NC	9.00E+00
I	2-Butanone (MEK)	15	0.8813	0.7557	Normal	1.20E-02	6.86E+00	1.69E+01	9.61E+00	1.14E+04	9.61E+00	9.61E+00
I	2-Methylnapthalene	7	0.6826	0.9542	Lognormal	1.70E+00	3.85E+01	1.69E+02	8.33E+01	2.64E+03	2.64E+03	1.69E+02
I	4,4'-DDT	1	NC	NC	NC	4.31E+00	4.31E+00	4.31E+00	NC	NC	NC	4.31E+00
I	4-4'-DDD	2	1.0000	1.0000	NC	6.64E+00	1.82E+01	2.97E+01	9.09E+01	NC	NC	2.97E+01
I	4-Chloroaniline	1	NC	NC	NC	4.32E+01	4.32E+01	4.32E+01	NC	NC	NC	4.32E+01
I	4-Methyl-2-pentanone	2	1.0000	1.0000	NC	1.00E-03	2.08E+00	4.16E+00	1.52E+01	NC	NC	4.16E+00
I	Acenapthene	1	NC	NC	NC	1.40E+01	1.40E+01	1.40E+01	NC	NC	NC	1.40E+01
I	Acetone	16	0.8710	0.8844	Lognormal	5.49E-01	6.66E+00	1.69E+01	9.18E+00	2.17E+01	2.17E+01	1.69E+01
I	Aluminum	16	0.7510	0.8587	Lognormal	1.01E+03	4.17E+03	1.35E+04	6.02E+03	7.92E+03	7.92E+03	7.92E+03
I	Anthracene	2	1.0000	1.0000	NC	2.31E+01	1.13E+02	2.03E+02	6.82E+02	NC	NC	2.03E+02
I	Antimony	3	0.7504	0.7805	Lognormal	1.40E+01	2.23E+03	6.66E+03	8.70E+03	5.78E+53	5.78E+53	6.66E+03
I	Arsenic	9	0.8557	0.9388	Lognormal	1.00E+00	6.56E+00	1.40E+01	9.73E+00	2.05E+01	2.05E+01	1.40E+01
I	Barium	10	0.6673	0.9340	Lognormal	8.00E+00	9.83E+02	3.60E+03	1.79E+03	4.82E+04	4.82E+04	3.60E+03
I	Benzene	10	0.5528	0.9824	Lognormal	2.30E-02	3.81E+00	2.41E+01	8.05E+00	2.34E+02	2.34E+02	2.41E+01
I	Benzo(a)anthracene	2	1.0000	1.0001	Lognormal	2.47E+00	4.59E+00	6.72E+00	1.80E+01	NC	NC	6.72E+00
I	Benzo(a)pyrene	1	NC	NC	NC	2.47E+00	2.47E+00	2.47E+00	NC	NC	NC	2.47E+00
I	Benzo(b)fluoranthene	2	1.0000	1.0000	NC	1.51E+00	1.70E+01	3.24E+01	1.15E+02	NC	NC	3.24E+01
I	Benzoic acid	1	NC	NC	NC	6.21E+01	6.21E+01	6.21E+01	NC	NC	NC	6.21E+01
I	Beryllium	1	NC	NC	NC	1.53E+03	1.53E+03	1.53E+03	NC	NC	NC	1.53E+03
I	Butyl benzyl phthalate	1	NC	NC	NC	1.39E+02	1.39E+02	1.39E+02	NC	NC	NC	1.39E+02
I	Pentachlorophenol(PCP)	1	NC	NC	NC	1.92E+02	1.92E+02	1.92E+02	NC	NC	NC	1.92E+02
I	Cadmium	7	0.7936	0.8249	Lognormal	2.00E+00	5.57E+00	1.30E+01	8.99E+00	1.84E+01	1.84E+01	1.30E+01
I	Chlorobenzene	12	0.7420	0.8842	Lognormal	1.00E-02	3.47E+01	1.27E+02	5.90E+01	7.16E+04	7.16E+04	1.27E+02
	Chromium	14	0.4232	0.8499	Lognormal	4.00E+00	7.61E+01	7.31E+02	1.67E+02	3.60E+02	3.60E+02	3.60E+02
	Chrysene	2	1.0000	0.9996	Normal	3.97E+00	4.78E+00	5.59E+00	9.88E+00	NC	9.88E+00	5.59E+00
I	Cobalt	7	0.6027	0.8307	Lognormal	1.30E+01	3.89E+01	1.40E+02	7.20E+01	1.05E+02	1.05E+02	1.40E+02
I	Copper	8	0.8815	0.9111	Lognormal	2.30E+01	2.98E+02	6.30E+02	4.57E+02	2.10E+03	2.10E+03	6.30E+02
I	Cyanide	3	0.7502	0.7911	Lognormal	2.00E+00	1.06E+03	3.18E+03	4.16E+03	1.14E+80	1.14E+80	3.18E+03
I	Di-N-butyl phthalate	8	0.5461	0.8356	Lognormal	1.34E-01	3.71E+01	2.03E+02	8.26E+01	3.15E+04	3.15E+04	2.03E+02
I	Dibenofuran	1	NC	NC	NC	5.59E+00	5.59E+00	5.59E+00	NC	NC	NC	5.59E+00
I	Diethylphthalate	1	NC	NC	NC	1.69E+01	1.69E+01	1.69E+01	NC	NC	NC	1.69E+01
I	Ethylbenzene	10	0.8681	0.9374	Lognormal	9.60E-02	4.65E+00	1.51E+01	7.53E+00	1.14E+02	1.14E+02	1.51E+01
I	Fluoranthene	3	0.7869	0.9134	Lognormal	8.91E+00	7.69E+01	2.03E+02	2.61E+02	3.81E+13	3.81E+13	2.03E+02
I	Fluorene	3	0.8211	0.9421	Lognormal	3.08E+00	1.49E+01	3.54E+01	4.50E+01	7.33E+08	7.33E+08	3.54E+01
I	Hexachlorobenzene	7	0.5543	0.8822	Lognormal	3.23E+01	2.58E+02	1.27E+03	5.88E+02	2.10E+03	2.10E+03	1.27E+03
I	Hexachloroethane	1	NC	NC	NC	3.01E+00	3.01E+00	3.01E+00	NC	NC	NC	3.01E+00
I	Iron	16	0.8292	0.9521	Lognormal	5.43E+02	1.17E+04	4.15E+04	1.66E+04	3.11E+04	3.11E+04	3.11E+04
I	Lead	15	0.3919	0.9224	Lognormal	3.00E+00	2.06E+03	2.33E+04	4.81E+03	3.08E+05	3.08E+05	2.33E+04
I	Manganese	1	NC	NC	NC	9.80E+01	9.80E+01	9.80E+01	NC	NC	NC	9.80E+01
I	Mercury	5	0.9776	0.9768	Normal	5.00E-01	1.70E+00	3.20E+00	2.69E+00	7.71E+00	2.69E+00	3.20E+00
I	Methylene chloride	16	0.7062	0.8791	Lognormal	7.00E-03	1.52E+00	6.77E+00	2.49E+00	1.64E+02	1.64E+02	6.77E+00
I	N-Nitrosodiphenylamine	2	1.0000	1.0000	NC	4.59E+01	7.31E+01	1.00E+02	2.45E+02	NC	NC	1.00E+02
I	Napthalene	7	0.5804	0.9039	Lognormal	1.10E+00	9.81E+01	5.15E+02	2.34E+02	5.75E+05	5.75E+05	5.15E+02
I	Nickel	12	0.5338	0.9727	Lognormal	9.00E-01	3.35E+02	2.41E+03	7.01E+02	2.50E+04	2.50E+04	2.41E+03
I	Phenanthrene	5	0.8349	0.9715	Lognormal	1.32E+00	3.43E+01	1.02E+02	7.41E+01	6.24E+04	6.24E+04	1.02E+02
I	Phenol	2	1.0000	1.0000	NC	1.52E+01	2.11E+01	2.70E+01	5.82E+01	NC	NC	2.70E+01
I	Pyrene	4	0.8690	0.8704	Lognormal	2.21E+00	1.96E+01	4.93E+01	4.57E+01	8.42E+05	8.42E+05	4.93E+01
I	Selenium	1	NC	NC	NC	1.32E+03	1.32E+03	1.32E+03	NC	NC	NC	1.32E+03
I	Total PCBs	5	0.9709	0.8928	Normal	2.04E+01	1.81E+02	3.43E+02	3.06E+02	7.24E+03	3.06E+02	3.43E+02
I	Tetrachloroethene	5	0.9500	0.9612	Lognormal	6.12E-01	2.57E+00	5.27E+00	4.27E+00	1.81E+01	1.81E+01	5.27E+00
I	Tin	9	0.7616	0.9293	Lognormal	2.00E+00	1.92E+01	5.50E+01	3.25E+01	1.15E+02	1.15E+02	5.50E+01
I	Toluene	11	0.5354	0.9704	Lognormal	4.80E-02	1.13E+01	7.79E+01	2.39E+01	4.10E+02	4.10E+02	7.79E+01
I	Total Xylenes	10	0.7955	0.9206	Lognormal	8.00E-02	4.96E+00	1.92E+01	8.52E+00	2.70E+02	2.70E+02	1.92E+01
I	Toxaphene	1	NC	NC	NC	4.93E+02	4.93E+02	4.93E+02	NC	NC	NC	4.93E+02
I	Trichloroethene	2	1.0000	0.9999	Normal	6.48E-01	2.23E+00	3.81E+00	1.22E+01	NC	1.22E+01	3.81E+00
I	Vanadium	7	0.5279	0.7761	Lognormal	1.80E+01	1.07E+02	5.53E+02	2.52E+02	8.22E+02	8.22E+02	5.53E+02
I	Zinc	16	0.4241	0.9283	Lognormal	1.30E+01	6.24E+02	6.33E+03	1.30E+03	5.00E+03	5.00E+03	5.00E+03
I	bis(2-ethylhexyl)phthalate	7	0.7482	0.9948	Lognormal	2.38E+00	3.49E+01	1.31E+02	6.82E+01	7.45E+02	7.45E+02	1.31E+02
I	trans-1,2-Dichloroethene	1	NC	NC	NC	3.00E-03	3.00E-03	3.00E-03	NC	NC	NC	3.00E-03

Table T-3
Site Concentration Selection
Subsurface Soil Statistics

Site	Constituent	Number of Samples for Statistics (d)	Shapiro-Wilke's Test for Normality (a)		Summary Statistics (mg/kg)			95% UCL (mg/kg)			Site Concentration (mg/kg) (c)
			Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	
L	1,2,4-Trichlorobenzene	3	0.8108	0.7722	Normal	5.50E+00	5.25E+01	7.90E+01	1.21E+02	4.45E+12	1.21E+02	7.90E+01
L	1,2-Dichlorobenzene	4	0.9546	0.7541	Normal	1.00E-02	3.50E+00	7.70E+00	7.23E+00	1.09E+12	7.23E+00	7.70E+00
L	1,3-Dichlorobenzene	1	NC	NC	NC	4.30E+00	4.30E+00	4.30E+00	NC	NC	NC	4.30E+00
L	1,4-Dichlorobenzene	9	0.6058	0.9226	Lognormal	1.80E-02	2.34E+01	1.00E+02	4.92E+01	1.29E+07	1.29E+07	1.00E+02
L	2,4,6-Trichlorophenol	1	NC	NC	NC	1.50E+00	1.50E+00	1.50E+00	NC	NC	NC	1.50E+00
L	2,4-Dichlorophenol	2	1.0000	1.0000	NC	2.40E+00	6.70E+00	1.10E+01	3.39E+01	NC	NC	1.10E+01
L	2-Butanone (MEK)	3	0.7500	0.7500	Lognormal	1.60E-02	3.34E+00	1.00E+01	1.31E+01	6.98E+61	6.98E+61	1.00E+01
L	2-Chlorophenol	3	0.8753	0.7767	Normal	1.30E-02	1.59E+00	2.60E+00	3.92E+00	5.15E+25	3.92E+00	2.60E+00
L	2-Methylnapthalene	6	0.9404	0.9188	Normal	2.10E-01	1.42E+00	3.10E+00	2.36E+00	1.92E+01	2.36E+00	3.10E+00
L	4-Chloroaniline	6	0.7367	0.8855	Lognormal	4.30E-02	9.87E+01	2.70E+02	2.06E+02	2.89E+14	2.89E+14	2.70E+02
L	4-Methyl-2-pentanone	4	0.9289	0.9414	Lognormal	8.00E-03	7.30E-02	1.67E-01	1.52E-01	1.49E+02	1.49E+02	1.67E-01
L	4-Methylphenol	5	0.9513	0.8565	Normal	8.80E-02	3.40E+00	7.10E+00	6.19E+00	3.58E+04	6.19E+00	7.10E+00
L	Acenapthene	3	0.7596	0.8590	Lognormal	4.40E-02	1.08E+00	3.10E+00	4.03E+00	3.47E+23	3.47E+23	3.10E+00
L	Acenapthylene	1	NC	NC	NC	2.80E-01	2.80E-01	2.80E-01	NC	NC	NC	2.80E-01
L	Acetone	6	0.6510	0.9621	Lognormal	1.50E-02	1.01E+00	4.56E+00	2.47E+00	2.30E+04	2.30E+04	4.56E+00
L	Aluminum	11	0.9457	0.9279	Normal	1.12E+03	5.80E+03	1.28E+04	7.82E+03	1.17E+04	7.82E+03	7.82E+03
L	Anthracene	3	0.7719	0.9650	Lognormal	2.80E-02	1.46E+00	4.20E+00	5.46E+00	3.58E+31	3.58E+31	4.20E+00
L	Antimony	1	NC	NC	NC	3.20E+01	3.20E+01	3.20E+01	NC	NC	NC	3.20E+01
L	Arsenic	10	0.8546	0.8917	Lognormal	4.90E+00	5.36E+01	1.72E+02	8.37E+01	4.08E+02	4.08E+02	1.72E+02
L	Barium	15	0.5869	0.7749	Lognormal	1.30E+00	3.00E+02	1.44E+03	5.07E+02	5.47E+04	5.47E+04	1.44E+03
L	Benzene	5	0.7695	0.8662	Lognormal	4.00E-03	2.01E+00	5.70E+00	4.61E+00	6.67E+13	6.67E+13	5.70E+00
L	Benzo(a)anthracene	4	0.7034	0.9800	Lognormal	7.50E-02	2.46E+00	8.60E+00	7.29E+00	9.54E+08	9.54E+08	8.60E+00
L	Benzo(a)pyrene	3	0.7568	0.8998	Lognormal	2.20E-02	1.80E+00	5.30E+00	6.91E+00	8.81E+35	8.81E+35	5.30E+00
L	Benzo(b)fluoranthene	3	0.7685	0.9296	Lognormal	5.80E-02	1.88E+00	5.40E+00	7.02E+00	2.48E+24	2.48E+24	5.40E+00
L	Benzo(g,h,i)perylene	1	NC	NC	NC	2.70E-02	2.70E-02	2.70E-02	NC	NC	NC	2.70E-02
L	Benzo(k)fluoranthene	1	NC	NC	NC	4.60E+00	4.60E+00	4.60E+00	NC	NC	NC	4.60E+00
L	Benzoic acid	2	1.0000	1.0000	NC	4.90E-02	1.62E+00	3.20E+00	1.16E+01	NC	NC	3.20E+00
L	Butyl benzyl phthalate	1	NC	NC	NC	5.40E+00	5.40E+00	5.40E+00	NC	NC	NC	5.40E+00
L	Corrosivity	2	0.9997	1.4450	Lognormal	8.20E+00	8.30E+00	8.40E+00	8.93E+00	NC	NC	8.40E+00
L	Pentachlorophenol(PCP)	4	0.9196	0.9476	Lognormal	1.15E+01	3.17E+01	5.82E+01	5.45E+01	2.13E+02	2.13E+02	5.82E+
L	Reactivity-Sulfide	2	1.0000	0.9999	Normal	2.40E+01	4.75E+01	7.10E+01	1.96E+02	NC	1.96E+02	7.10E+
L	Cadmium	6	0.5818	0.8100	Lognormal	1.90E-02	8.03E+00	4.20E+01	2.19E+01	1.32E+10	1.32E+10	4.20E+0
L	Calcium	6	0.6065	0.7216	Lognormal	1.55E+04	2.81E+04	7.55E+04	4.73E+04	6.01E+04	6.01E+04	7.55E+04
L	Chlorobenzene	8	0.6831	0.8528	Lognormal	1.20E-02	1.25E+00	5.30E+00	2.62E+00	2.41E+03	2.41E+03	5.30E+00
L	Chloroform	3	0.7517	0.8325	Lognormal	4.90E-02	6.80E+00	2.03E+01	2.64E+01	2.66E+48	2.66E+48	2.03E+01
L	Chromium	10	0.9272	0.9405	Lognormal	3.00E+00	1.16E+01	2.70E+01	1.59E+01	2.36E+01	2.36E+01	2.36E+01
L	Chrysene	4	0.6517	0.8701	Lognormal	7.60E-02	2.20E+00	8.20E+00	6.91E+00	7.34E+08	7.34E+08	8.20E+00
L	Cobalt	7	0.8532	0.8385	Normal	5.90E+00	7.70E+00	9.00E+00	8.67E+00	8.95E+00	8.67E+00	9.00E+00
L	Copper	10	0.8192	0.9142	Lognormal	9.70E+00	9.27E+01	3.08E+02	1.44E+02	4.33E+02	4.33E+02	3.08E+02
L	Cresol(m,p)	4	0.8616	0.8787	Lognormal	1.00E-01	1.43E-01	1.90E-01	1.95E-01	2.58E-01	2.58E-01	1.90E-01
L	Cyanide	1	NC	NC	NC	4.60E-01	4.60E-01	4.60E-01	NC	NC	NC	4.60E-01
L	Di-N-butyl phthalate	4	0.9031	0.9217	Lognormal	1.71E-01	1.28E+00	2.78E+00	2.74E+00	3.15E+03	3.15E+03	2.78E+00
L	Dibenofuran	2	1.0000	1.0000	NC	4.20E-02	1.52E+00	3.00E+00	1.09E+01	NC	NC	3.00E+00
L	Diethylphthalate	2	1.0002	1.0002	Lognormal	3.10E-01	6.55E-01	1.00E+00	2.83E+00	NC	NC	1.00E+00
L	Ethylbenzene	1	NC	NC	NC	4.00E-02	4.00E-02	4.00E-02	NC	NC	NC	4.00E-02
L	Fluoranthene	4	0.6500	0.8682	Lognormal	1.30E-01	4.27E+00	1.60E+01	1.35E+01	2.05E+09	2.05E+09	1.60E+01
L	Fluorene	2	1.0000	1.0000	NC	7.90E-02	2.54E+00	5.00E+00	1.81E+01	NC	NC	5.00E+00
L	Hexachlorobenzene	1	NC	NC	NC	4.80E+00	4.80E+00	4.80E+00	NC	NC	NC	4.80E+00
L	Hexachloroethane	1	NC	NC	NC	4.90E-02	4.90E-02	4.90E-02	NC	NC	NC	4.90E-02
L	Ideno(1,2,3-cd)pyrene	2	1.0000	1.0000	NC	1.10E-01	1.51E+00	2.90E+00	1.03E+01	NC	NC	2.90E+00
L	Iron	11	0.8801	0.8320	Normal	1.40E+03	9.96E+03	2.40E+04	1.45E+04	4.35E+04	1.45E+04	1.45E+04
L	Lead	13	0.4533	0.9293	Lognormal	2.20E-01	7.46E+01	6.64E+02	1.64E+02	5.83E+03	5.83E+03	6.64E+02
L	Magnesium	6	0.9047	0.8024	Normal	3.84E+02	4.91E+03	9.44E+03	7.92E+03	2.68E+05	7.92E+03	9.44E+03
L	Manganese	11	0.8256	0.8820	Lognormal	1.00E+01	2.19E+02	7.82E+02	3.54E+02	3.68E+03	3.68E+03	7.82E+02
L	Mercury	7	0.5326	0.8925	Lognormal	1.00E-02	3.09E-01	1.80E+00	7.94E-01	6.02E+01	6.02E+01	1.80E+00
L	Methylene chloride	5	0.5931	0.8758	Lognormal	5.00E-03	4.89E-01	2.28E+00	1.44E+00	5.92E+07	5.92E+07	2.28E+00
L	Napthalene	4	0.6744	0.8974	Lognormal	9.60E-02	2.02E+00	7.30E+00	6.17E+00	7.72E+06	7.72E+06	7.30E+00
L	Nickel	10	0.5304	0.9177	Lognormal	2.10E+01	3.78E+02	2.39E+03	7.98E+02	2.67E+03	2.67E+03	2.39E+03
L	Phenanthrene	5	0.6066	0.9575	Lognormal	9.10E-02	5.18E+00	2.30E+01	1.47E+01	1.33E+06	1.33E+06	2.30E+01
L	Phenol	5	0.8202	0.8099	Normal	3.46E-01	8.77E+00	1.60E+01	1.57E+01	2.05E+04	1.57E+01	1.60E+01
L	Potassium	6	0.7337	0.8032	Lognormal	9.75E+02	1.31E+03	2.28E+03	1.72E+03	1.86E+03	1.86E+03	2.28E+03
L	Pyrene	4	0.6397	0.8166	Lognormal	1.30E-01	5.96E+00	2.30E+01	1.93E+01	3.48E+10	3.48E+10	2.30E+01
L	Total PCBs	2	1.0000	1.0000	NC	1.60E+01	2.58E+02	5.00E+02	1.79E+03	NC	NC	5.00E+02
L	Toluene	7	0.5263	0.9490	Lognormal	5.00E-02	6.65E+01	4.00E+02	1.75E+02	3.21E+09	3.21E+09	4.00E+02
L	Total Xylenes	4	0.6669	0.8910	Lognormal	1.79E-01	3.10E+00	1.10E+01	9.30E+00	2.48E+06	2.48E+06	1.10E+01
L	Vanadium	9	0.6080	0.9192	Lognormal	7.70E+00	3.23E+01	1.31E+02	5.59E+01	7.51E+01	7.51E+01	7.51E+01
L	Zinc	11	0.4750	0.9629	Lognormal	6.40E+00	5.34E+02	4.24E+03	1.22E+03	1.61E+04	1.61E+04	4.24E+0
L	bis(2-ethylhexyl)phthalate	6	0.9272	0.8206	Normal	1.70E-02	9.21E-01	2.20E+00	1.61E+00	1.65E+04	1.61E+00	2.20E

Table T-3
Site Concentration Selection
Surface Soil Statistics

Site	Constituent	Number of Samples for Statistics (d)	Shapiro-Wilke's Test for Normality (a)			Summary Statistics (mg/kg)			95% UCL (mg/kg)			Site Concentration (mg/kg) (c)
			Normal	Lognormal	Dataset Distribution	Minimum	Mean	Maximum	t-Test	H-Test	UCL (b)	

Notes:
UCL - Upper Confidence Limit.
(a) - The results of the Shapiro-Wilke test for normality indicates whether the data set is more likely to be normally distributed or lognormally distributed. The data set is considered to be normally distributed if the test result is higher in the column labeled "NORMAL". The data set is considered to be lognormally distributed if the test result is higher in the column labeled "LOGNORMAL".
(b) - 95% UCL is selected based on whether the data set is normally or lognormally distributed. The UCL based on the t-statistic is chosen for a normal distribution, and the UCL based on the H-statistic is chosen if the data are lognormally distributed. Where there are greater than 50 samples, the distribution is assumed to be lognormal.
(c) - Site Concentration is the lower of the selected 95% UCL and the Maximum Detected Concentration. Where there are fewer than 8 samples, the maximum detected concentration is selected as the site concentration.
(d) - Only concentrations reported as detected by the laboratory were used in the calculation of statistics for subsurface soil.

Table T-4
Site Concentration Selection
Groundwater-TCLP and Leachate Statistics (a)

Site	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Summary Statistics			Site Concentration (b)
								Minimum	Mean	Maximum	
G	HERB	2,4-D	MG/L	4	3	75%	4	4.00E-02	1.32E+01	5.00E+01	5.00E+01
G	METAL	Barium	MG/L	4	4	100%	4	1.05E+00	2.94E+00	5.30E+00	5.30E+00
G	METAL	Cadmium	MG/L	4	1	25%	4	1.20E-01	6.75E-02	1.20E-01	1.20E-01
G	METAL	Lead	MG/L	4	2	50%	4	1.60E-01	6.09E+00	2.40E+01	2.40E+01
G	PEST	gamma-BHC (Lindane)	MG/L	4	1	25%	4	4.20E-03	2.00E-03	4.20E-03	4.20E-03
G	SVOA	1,4-Dichlorobenzene	MG/L	4	3	75%	4	4.00E-02	1.10E-01	2.15E-01	2.15E-01
G	SVOA	2,4,6-Trichlorophenol	MG/L	4	2	50%	4	9.10E-03	1.27E+00	4.95E+00	4.95E+00
G	SVOA	2-Methylphenol (o-cres	MG/L	4	2	50%	4	1.40E-02	3.15E-02	6.20E-02	6.20E-02
G	SVOA	Cresol m & p	MG/L	4	2	50%	4	8.40E-02	6.73E-02	1.35E-01	1.35E-01
G	SVOA	Cresol o,m,p	MG/L	4	2	50%	4	9.70E-02	8.30E-02	1.85E-01	1.85E-01
G	SVOA	Nitrobenzene	MG/L	4	3	75%	4	1.80E-02	3.96E-02	7.35E-02	7.35E-02
G	SVOA	Pentachlorophenol	MG/L	4	1	25%	4	1.10E+00	4.63E-01	1.10E+00	1.10E+00
G	VOA	2-Butanone (MEK)	MG/L	4	1	25%	4	1.20E-01	6.75E-02	1.20E-01	1.20E-01
G	VOA	Benzene	MG/L	4	3	75%	4	3.50E-02	2.04E-01	6.00E-01	6.00E-01
G	VOA	Chlorobenzene	MG/L	4	3	75%	4	1.50E-02	8.24E-01	2.70E+00	2.70E+00
G	VOA	Tetrachloroethene	MG/L	4	3	75%	4	7.40E-03	4.39E-02	1.30E-01	1.30E-01
G	VOA	Trichloroethene	MG/L	4	4	100%	4	2.40E-03	2.45E-02	7.90E-02	7.90E-02
G - LEACH	VOA	1,1-Dichloroethene	MG/L	1	1	100%	1	4.80E-03	4.80E-03	4.80E-03	4.80E-03
G - LEACH	SVOA	1,2,4-Trichlorobenzene	MG/L	1	1	100%	1	4.40E-02	4.40E-02	4.40E-02	4.40E-02
G - LEACH	SVOA	1,2-Dichlorobenzene	MG/L	1	1	100%	1	2.80E-01	2.80E-01	2.80E-01	2.80E-01
G - LEACH	SVOA	1,4-Dichlorobenzene	MG/L	1	1	100%	1	2.20E-01	2.20E-01	2.20E-01	2.20E-01
G - LEACH	HERB	2,4,5-T	MG/L	1	1	100%	1	3.80E-01	3.80E-01	3.80E-01	3.80E-01
G - LEACH	SVOA	2-Chlorophenol	MG/L	1	1	100%	1	1.10E+00	1.10E+00	1.10E+00	1.10E+00
G - LEACH	SVOA	2-Methylphenol (o-Cresol)	MG/L	1	1	100%	1	2.00E-01	2.00E-01	2.00E-01	2.00E-01
G - LEACH	SVOA	3-Methylphenol/4-Methylphenol (m&p-Cresol)	MG/L	1	1	100%	1	1.40E+00	1.40E+00	1.40E+00	1.40E+00
G - LEACH	VOA	4-Methyl-2-pentanone (MIBK)	MG/L	1	1	100%	1	9.30E-01	9.30E-01	9.30E-01	9.30E-01
G - LEACH	VOA	Acetone	MG/L	1	1	100%	1	7.30E-01	7.30E-01	7.30E-01	7.30E-01
G - LEACH	PEST	Aldrin	MG/L	1	1	100%	1	2.30E-04	2.30E-04	2.30E-04	2.30E-04
G - LEACH	PEST	alpha-BHC	MG/L	1	1	100%	1	5.40E-04	5.40E-04	5.40E-04	5.40E-04
G - LEACH	METAL	Aluminum	MG/L	1	1	100%	1	1.20E-01	1.20E-01	1.20E-01	1.20E-01
G - LEACH	METAL	Antimony	MG/L	1	1	100%	1	6.00E-03	6.00E-03	6.00E-03	6.00E-03
G - LEACH	METAL	Arsenic	MG/L	1	1	100%	1	1.90E-02	1.90E-02	1.90E-02	1.90F
G - LEACH	METAL	Barium	MG/L	1	1	100%	1	7.30E-01	7.30E-01	7.30E-01	7.30
G - LEACH	VOA	Benzene	MG/L	1	1	100%	1	8.80E-01	8.80E-01	8.80E-01	8.80E-01
G - LEACH	METAL	Cadmium	MG/L	1	1	100%	1	3.80E-03	3.80E-03	3.80E-03	3.80E-03
G - LEACH	METAL	Calcium	MG/L	1	1	100%	1	7.20E+02	7.20E+02	7.20E+02	7.20E+02
G - LEACH	VOA	Chlorobenzene	MG/L	1	1	100%	1	2.80E+00	2.80E+00	2.80E+00	2.80E+00
G - LEACH	VOA	Chloroform	MG/L	1	1	100%	1	3.20E-02	3.20E-02	3.20E-02	3.20E-02
G - LEACH	VOA	Chloromethane	MG/L	1	1	100%	1	2.60E-02	2.60E-02	2.60E-02	2.60E-02
G - LEACH	METAL	Chromium, total	MG/L	1	1	100%	1	6.10E-01	6.10E-01	6.10E-01	6.10E-01
G - LEACH	VOA	cis/trans-1,2-Dichloroethene	MG/L	1	1	100%	1	1.90E+00	1.90E+00	1.90E+00	1.90E+00
G - LEACH	METAL	Cobalt	MG/L	1	1	100%	1	1.40E+00	1.40E+00	1.40E+00	1.40E+00
G - LEACH	METAL	Copper	MG/L	1	1	100%	1	3.60E-03	3.60E-03	3.60E-03	3.60E-03
G - LEACH	VOA	Ethylbenzene	MG/L	1	1	100%	1	1.20E-01	1.20E-01	1.20E-01	1.20E-01
G - LEACH	METAL	Iron	MG/L	1	1	100%	1	2.80E+02	2.80E+02	2.80E+02	2.80E+02
G - LEACH	METAL	Lead	MG/L	1	1	100%	1	3.30E-03	3.30E-03	3.30E-03	3.30E-03
G - LEACH	METAL	Magnesium	MG/L	1	1	100%	1	7.70E+01	7.70E+01	7.70E+01	7.70E+01
G - LEACH	METAL	Manganese	MG/L	1	1	100%	1	4.90E+00	4.90E+00	4.90E+00	4.90E+00
G - LEACH	VOA	Methylene chloride	MG/L	1	1	100%	1	1.30E-02	1.30E-02	1.30E-02	1.30E-02
G - LEACH	METAL	Molybdenum	MG/L	1	1	100%	1	9.90E-02	9.90E-02	9.90E-02	9.90E-02
G - LEACH	VOA	Naphthalene	MG/L	1	1	100%	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00
G - LEACH	METAL	Nickel	MG/L	1	1	100%	1	1.90E-02	1.90E-02	1.90E-02	1.90E-02
G - LEACH	SVOA	Pentachlorophenol	MG/L	1	1	100%	1	7.60E+00	7.60E+00	7.60E+00	7.60E+00
G - LEACH	SVOA	Phenol	MG/L	1	1	100%	1	1.60E+01	1.60E+01	1.60E+01	1.60E+01
G - LEACH	METAL	Potassium	MG/L	1	1	100%	1	2.80E+01	2.80E+01	2.80E+01	2.80E+01
G - LEACH	METAL	Selenium	MG/L	1	1	100%	1	7.40E-03	7.40E-03	7.40E-03	7.40E-03
G - LEACH	METAL	Sodium	MG/L	1	1	100%	1	2.10E+02	2.10E+02	2.10E+02	2.10E+02
G - LEACH	VOA	Tetrachloroethene	MG/L	1	1	100%	1	9.90E-02	9.90E-02	9.90E-02	9.90E-02
G - LEACH	METAL	Tin	MG/L	1	1	100%	1	1.60E-02	1.60E-02	1.60E-02	1.60E-02
G - LEACH	VOA	Toluene	MG/L	1	1	100%	1	3.00E-01	3.00E-01	3.00E-01	3.00E-01
G - LEACH	DIOXIN	Total TCDD-TEQ	MG/L	1	1	100%	1	6.77E-08	6.77E-08	6.77E-08	6.77E-08
G - LEACH	PCB	Total Polychlorinated Biphenyls (PCBs)	MG/L	1	1	100%	1	5.40E-03	5.40E-03	5.40E-03	5.40E-03
G - LEACH	VOA	Trichloroethene	MG/L	1	1	100%	1	3.40E-01	3.40E-01	3.40E-01	3.40E-01
G - LEACH	METAL	Vanadium	MG/L	1	1	100%	1	6.20E-01	6.20E-01	6.20E-01	6.20E-01
G - LEACH	VOA	Vinyl chloride	MG/L	1	1	100%	1	1.60E-01	1.60E-01	1.60E-01	1.60E-01
G - LEACH	METAL	Xylenes (Total)	MG/L	1	1	100%	1	1.80E-01	1.80E-01	1.80E-01	1.80E-01
G - LEACH	METAL	Zinc	MG/L	1	1	100%	1	1.80E+00	1.80E+00	1.80E+00	1.80E+00
H	HERB	2,4-D	MG/L	5	2	40%	5	7.20E-03	9.29E-02	4.20E-01	4.20E-01
H	METAL	Arsenic	MG/L	5	1	20%	5	4.50E-01	1.70E-01	4.50E-01	4.50E-01
H	METAL	Cadmium	MG/L	5	3	60%	5	1.30E-01	4.52E+00	2.20E+01	2.20
H	METAL	Lead	MG/L	5	3	60%	5	3.00E-01	8.19E+00	4.00E+01	4.00E
H	SVOA	1,4-Dichlorobenzene	MG/L	5	2	40%	5	1.00E-01	3.55E-01	1.60E+00	1.60E+00
H	SVOA	2,4,5-Trichlorophenol	MG/L	5	1	20%	1	2.00E-02	2.00E-02	2.00E-02	2.00E-02

Table T-4
Site Concentration Selection
Groundwater-TCLP and Leachate Statistics (a)

Site	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Summary Statistics			Site Concentration (b)
								Minimum	Mean	Maximum	
H	SVOA	2,4,6-Trichlorophenol	MG/L	5	1	20%	5	5.10E-02	3.02E-02	5.10E-02	5.10E-02
H	SVOA	2-Methylphenol (o-cres	MG/L	5	2	40%	5	6.30E-03	2.73E-02	5.50E-02	5.50E-02
H	SVOA	Cresol m & p	MG/L	5	2	40%	5	6.10E-03	1.12E-01	4.80E-01	4.80E-01
H	SVOA	Cresol o,m,p	MG/L	5	2	40%	5	1.20E-02	1.25E-01	5.40E-01	5.40E-01
H	SVOA	Hexachlorobenzene	MG/L	5	1	20%	1	1.80E-02	1.80E-02	1.80E-02	1.80E-02
H	SVOA	Pentachlorophenol	MG/L	5	2	40%	5	4.60E-02	1.74E-01	4.50E-01	4.50E-01
H	VOA	Benzene	MG/L	5	2	40%	5	8.70E-02	5.23E-01	2.50E+00	2.50E+00
H	VOA	Chlorobenzene	MG/L	5	2	40%	5	1.50E+00	8.46E-01	2.70E+00	2.70E+00
H	VOA	Tetrachloroethene	MG/L	5	2	40%	4	1.30E-02	1.65E-02	3.30E-02	3.30E-02
H	VOA	Trichloroethene	MG/L	5	2	40%	2	2.70E-03	4.60E-03	6.40E-03	6.40E-03
I	HERB	2,4-D	MG/L	4	1	25%	4	1.40E-01	4.44E-02	1.40E-01	1.40E-01
I	METAL	Barium	MG/L	4	1	25%	4	5.85E+01	1.50E+01	5.85E+01	5.85E+01
I	METAL	Cadmium	MG/L	4	2	50%	4	1.70E-01	2.64E-01	7.85E-01	7.85E-01
I	METAL	Lead	MG/L	4	3	75%	4	5.80E-01	2.61E+00	8.80E+00	8.80E+00
I	SVOA	1,4-Dichlorobenzene	MG/L	4	3	75%	4	5.60E-03	5.99E-01	1.30E+00	1.30E+00
I	SVOA	2,4,5-Trichlorophenol	MG/L	4	1	25%	4	1.40E+00	3.69E-01	1.40E+00	1.40E+00
I	SVOA	2,4,6-Trichlorophenol	MG/L	4	1	25%	1	1.35E-02	1.35E-02	1.35E-02	1.35E-02
I	SVOA	2,4-Dinitrotoluene	MG/L	4	1	25%	4	3.80E-02	2.83E-02	3.80E-02	3.80E-02
I	SVOA	2-Methylphenol (o-cres	MG/L	4	1	25%	1	1.40E-02	1.40E-02	1.40E-02	1.40E-02
I	SVOA	Cresol m & p	MG/L	4	2	50%	4	1.13E-01	7.58E-02	1.40E-01	1.40E-01
I	SVOA	Cresol o,m,p	MG/L	4	2	50%	4	1.13E-01	8.08E-02	1.60E-01	1.60E-01
I	SVOA	Nitrobenzene	MG/L	4	1	25%	1	1.30E-02	1.30E-02	1.30E-02	1.30E-02
I	SVOA	Pentachlorophenol	MG/L	4	3	75%	4	4.30E-02	1.29E+00	3.80E+00	3.80E+00
I	SVOA	Pyridine	MG/L	4	1	25%	1	1.20E-02	1.20E-02	1.20E-02	1.20E-02
I	VOA	Benzene	MG/L	4	3	75%	4	6.80E-02	1.82E-01	5.10E-01	5.10E-01
I	VOA	Chlorobenzene	MG/L	4	3	75%	4	3.50E-01	2.62E+00	8.90E+00	8.90E+00
I	VOA	Chloroform	MG/L	4	1	25%	4	2.90E+00	7.33E-01	2.90E+00	2.90E+00
I	VOA	Tetrachloroethene	MG/L	4	1	25%	4	2.90E-01	8.00E-02	2.90E-01	2.90E-01
I	VOA	Trichloroethene	MG/L	4	3	75%	3	1.30E-03	3.00E-03	6.30E-03	6.30E-03
I - LEACH	VOA	1,1,1-Trichloroethane	MG/L	1	1	100%	1	1.30E+01	1.30E+01	1.30E+01	1.30E+01
I - LEACH	VOA	1,1,2-Trichloroethane	MG/L	1	1	100%	1	3.80E-02	3.80E-02	3.80E-02	3.80E-02
ACH	VOA	1,1-Dichloroethane	MG/L	1	1	100%	1	3.70E+00	3.70E+00	3.70E+00	3.70E+00
ACH	VOA	1,1-Dichloroethene	MG/L	1	1	100%	1	4.80E-01	4.80E-01	4.80E-01	4.80E-01
I - LEACH	SVOA	1,2,4-Trichlorobenzene	MG/L	1	1	100%	1	3.20E+00	3.20E+00	3.20E+00	3.20E+00
I - LEACH	SVOA	1,2-Dichlorobenzene	MG/L	1	1	100%	1	5.60E-01	5.60E-01	5.60E-01	5.60E-01
I - LEACH	SVOA	1,4-Dichlorobenzene	MG/L	1	1	100%	1	9.90E-01	9.90E-01	9.90E-01	9.90E-01
I - LEACH	SVOA	2,4,6-Trichlorophenol	MG/L	1	1	100%	1	1.30E+00	1.30E+00	1.30E+00	1.30E+00
I - LEACH	HERB	2,4-D	MG/L	1	1	100%	1	1.30E+00	1.30E+00	1.30E+00	1.30E+00
I - LEACH	SVOA	2,4-Dichlorophenol	MG/L	1	1	100%	1	2.60E+00	2.60E+00	2.60E+00	2.60E+00
I - LEACH	SVOA	2-Chlorophenol	MG/L	1	1	100%	1	4.60E-01	4.60E-01	4.60E-01	4.60E-01
I - LEACH	SVOA	2-Methylphenol (o-Cresol)	MG/L	1	1	100%	1	2.10E-01	2.10E-01	2.10E-01	2.10E-01
I - LEACH	SVOA	3-Methylphenol/4-Methylphenol (m&p-Cresol)	MG/L	1	1	100%	1	6.30E-01	6.30E-01	6.30E-01	6.30E-01
I - LEACH	VOA	4-Methyl-2-pentanone (MIBK)	MG/L	1	1	100%	1	1.60E+00	1.60E+00	1.60E+00	1.60E+00
I - LEACH	VOA	Acetone	MG/L	1	1	100%	1	1.20E+01	1.20E+01	1.20E+01	1.20E+01
I - LEACH	PEST	Aldrin	MG/L	1	1	100%	1	1.90E-04	1.90E-04	1.90E-04	1.90E-04
I - LEACH	PEST	alpha-BHC	MG/L	1	1	100%	1	2.50E-03	2.50E-03	2.50E-03	2.50E-03
I - LEACH	METAL	Aluminum	MG/L	1	1	100%	1	3.30E+00	3.30E+00	3.30E+00	3.30E+00
I - LEACH	METAL	Arsenic	MG/L	1	1	100%	1	3.10E-02	3.10E-02	3.10E-02	3.10E-02
I - LEACH	METAL	Barium	MG/L	1	1	100%	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00
I - LEACH	VOA	Benzene	MG/L	1	1	100%	1	6.90E-01	6.90E-01	6.90E-01	6.90E-01
I - LEACH	SVOA	Benzo(a)anthracene	MG/L	1	1	100%	1	2.20E-02	2.20E-02	2.20E-02	2.20E-02
I - LEACH	SVOA	bis(2-Ethylhexyl)phthalate	MG/L	1	1	100%	1	3.00E-02	3.00E-02	3.00E-02	3.00E-02
I - LEACH	METAL	Calcium	MG/L	1	1	100%	1	8.30E+01	8.30E+01	8.30E+01	8.30E+01
I - LEACH	VOA	Chlorobenzene	MG/L	1	1	100%	1	9.50E-01	9.50E-01	9.50E-01	9.50E-01
I - LEACH	VOA	Chloroform	MG/L	1	1	100%	1	2.60E-02	2.60E-02	2.60E-02	2.60E-02
I - LEACH	METAL	Chromium, total	MG/L	1	1	100%	1	5.50E-02	5.50E-02	5.50E-02	5.50E-02
I - LEACH	SVOA	Chrysene	MG/L	1	1	100%	1	2.30E-02	2.30E-02	2.30E-02	2.30E-02
I - LEACH	VOA	cis/trans-1,2-Dichloroethene	MG/L	1	1	100%	1	1.50E+01	1.50E+01	1.50E+01	1.50E+01
I - LEACH	METAL	Cobalt	MG/L	1	1	100%	1	2.00E-02	2.00E-02	2.00E-02	2.00E-02
I - LEACH	METAL	Copper	MG/L	1	1	100%	1	4.70E-02	4.70E-02	4.70E-02	4.70E-02
I - LEACH	METAL	Cyanide	MG/L	1	1	100%	1	1.30E-02	1.30E-02	1.30E-02	1.30E-02
I - LEACH	PEST	delta-BHC	MG/L	1	1	100%	1	1.90E-03	1.90E-03	1.90E-03	1.90E-03
I - LEACH	PEST	Dieldrin	MG/L	1	1	100%	1	1.50E-03	1.50E-03	1.50E-03	1.50E-03
I - LEACH	VOA	Ethylbenzene	MG/L	1	1	100%	1	8.80E-02	8.80E-02	8.80E-02	8.80E-02
I - LEACH	PEST	Heptachlor	MG/L	1	1	100%	1	2.50E-03	2.50E-03	2.50E-03	2.50E-03
I - LEACH	PEST	Heptachlor epoxide	MG/L	1	1	100%	1	1.30E-03	1.30E-03	1.30E-03	1.30E-03
I - LEACH	METAL	Iron	MG/L	1	1	100%	1	2.30E+01	2.30E+01	2.30E+01	2.30E+01
I - LEACH	METAL	Lead	MG/L	1	1	100%	1	5.80E-01	5.80E-01	5.80E-01	5.80E-01
I - LEACH	METAL	Magnesium	MG/L	1	1	100%	1	1.80E+01	1.80E+01	1.80E+01	1.80E+01
ACH	METAL	Manganese	MG/L	1	1	100%	1	7.10E-01	7.10E-01	7.10E-01	7.10E-01
ACH	HERB	MCPP	MG/L	1	1	100%	1	3.40E+01	3.40E+01	3.40E+01	3.40E+01
I - LEACH	METAL	Mercury	MG/L	1	1	100%	1	1.80E-02	1.80E-02	1.80E-02	1.80E-02
I - LEACH	VOA	Methylene chloride	MG/L	1	1	100%	1	1.40E-02	1.40E-02	1.40E-02	1.40E-02

Table T-4
Site Concentration Selection
Groundwater-TCLP and Leachate Statistics (a)

Site	Method	Constituent	Units	Number of Samples Analyzed	Number of Detects	Frequency of Detection	Number of Samples for Statistics	Summary Statistics			Site Concentration (b)
								Minimum	Mean	Maximum	
I - LEACH	METAL	Molybdenum	MG/L	1	1	100%	1	4.50E-03	4.50E-03	4.50E-03	4.50E-03
I - LEACH	VOA	Naphthalene	MG/L	1	1	100%	1	2.50E+00	2.50E+00	2.50E+00	2.50E+00
I - LEACH	METAL	Nickel	MG/L	1	1	100%	1	1.30E+00	1.30E+00	1.30E+00	1.30E+00
I - LEACH	SVOA	Pentachlorophenol	MG/L	1	1	100%	1	6.30E+00	6.30E+00	6.30E+00	6.30E+00
I - LEACH	SVOA	Phenol	MG/L	1	1	100%	1	6.70E+00	6.70E+00	6.70E+00	6.70E+00
I - LEACH	METAL	Potassium	MG/L	1	1	100%	1	8.40E+00	8.40E+00	8.40E+00	8.40E+00
I - LEACH	METAL	Sodium	MG/L	1	1	100%	1	6.30E+01	6.30E+01	6.30E+01	6.30E+01
I - LEACH	VOA	Tetrachloroethene	MG/L	1	1	100%	1	2.50E-02	2.50E-02	2.50E-02	2.50E-02
I - LEACH	METAL	Tin	MG/L	1	1	100%	1	1.20E-02	1.20E-02	1.20E-02	1.20E-02
I - LEACH	VOA	Toluene	MG/L	1	1	100%	1	4.30E-01	4.30E-01	4.30E-01	4.30E-01
I - LEACH	DIOXIN	Total TCDD-TEQ	MG/L	1	1	100%	1	3.07E-07	3.07E-07	3.07E-07	3.07E-07
I - LEACH	PCB	Total Polychlorinated Biphenyls (PCBs)	MG/L	1	1	100%	1	1.08E-01	1.08E-01	1.08E-01	1.08E-01
I - LEACH	VOA	Trichloroethene	MG/L	1	1	100%	1	6.20E-01	6.20E-01	6.20E-01	6.20E-01
I - LEACH	METAL	Vanadium	MG/L	1	1	100%	1	4.80E-02	4.80E-02	4.80E-02	4.80E-02
I - LEACH	VOA	Vinyl chloride	MG/L	1	1	100%	1	1.00E-01	1.00E-01	1.00E-01	1.00E-01
I - LEACH	METAL	Xylenes (Total)	MG/L	1	1	100%	1	1.30E-01	1.30E-01	1.30E-01	1.30E-01
I - LEACH	METAL	Zinc	MG/L	1	1	100%	1	3.50E-01	3.50E-01	3.50E-01	3.50E-01
L	METAL	Arsenic	MG/L	4	1	25%	4	7.90E-01	2.73E-01	7.90E-01	7.90E-01
L	METAL	Cadmium	MG/L	4	3	75%	4	1.40E-01	1.60E-01	2.70E-01	2.70E-01
L	SVOA	1,4-Dichlorobenzene	MG/L	4	2	50%	4	9.00E-02	2.53E-01	8.70E-01	8.70E-01
L	SVOA	Cresol m & p	MG/L	4	1	25%	4	1.90E-01	6.63E-02	1.90E-01	1.90E-01
L	SVOA	Cresol o,m,p	MG/L	4	1	25%	4	1.90E-01	6.63E-02	1.90E-01	1.90E-01
L	SVOA	Pentachlorophenol	MG/L	4	1	25%	4	1.50E-01	1.31E-01	1.50E-01	1.50E-01
L	SVOA	Pyridine	MG/L	4	2	50%	4	3.70E-02	1.69E-01	3.90E-01	3.90E-01
L	VOA	Chlorobenzene	MG/L	6	2	33%	6	7.40E-03	1.32E-02	3.20E-02	3.20E-02
L	VOA	Tetrachloroethene	MG/L	6	6	100%	6	1.90E-02	3.48E-02	7.20E-02	7.20E-02
L	VOA	Trichloroethene	MG/L	6	6	100%	6	3.50E-03	6.40E-03	1.20E-02	1.20E-02

Notes:
TCLP - Toxicity Characteristic Leaching Procedure.
(a) - Leachate concentrations, as defined by the TCLP results for waste samples at each site, are evaluated as groundwater.
(b) - Fewer than 8 samples are available from each site. Therefore, the maximum detected concentration is selected as the site concentration.

Table T-5
Suburface Soil - Industrial TACO Screen
Site G - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason	
1,1,2,2-Tetrachloroethane	mg/kg	1	5.81E-01	5.81E-01	No	ND	--	No	9.00E-01	No	No		<DCcw
1,2,4-Trichlorobenzene	mg/kg	4	6.16E+01	1.20E+02	No	ND	--	No	9.20E+02	No	No		<DCcw
1,2-Dichloroethane	mg/kg	1	4.35E-01	4.35E-01	No	ND	--	No	9.90E-01	No	No		<DCcw
1,4-Dichlorobenzene	mg/kg	2	2.97E+00	3.56E+00	No	ND	--	No	3.40E+02	No	No		<DCcw
2,4,6-Trichlorophenol	mg/kg	1	4.95E+01	4.95E+01	No	ND	--	No	5.40E+02	No	No		<DCcw
2,4-Dichlorophenol	mg/kg	3	6.45E+01	1.41E+02	No	ND	--	No	6.10E+02	No	No		<DCcw
2,4-Dinitrophenol	mg/kg	1	1.40E+01	1.40E+01	No	ND	--	No	4.10E+02	No	No		<DCcw
2-Butanone (MEK)	mg/kg	11	7.39E+00	1.78E+01	No	ND	--	No	2.80E+04	No	No		<DCcw
2-Chlorophenol	mg/kg	1	8.76E+00	8.76E+00	No	ND	--	No	1.00E+04	No	No		<DCcw
2-Methylnaphthalene	mg/kg	4	1.84E+01	3.71E+01	No	ND	--	No	8.20E+03	No	No		<DCcw
2-Methylphenol (o-cresol)	mg/kg	1	3.56E+00	3.56E+00	No	ND	--	No	1.00E+05	No	No		<DCcw
4,4'-DDE	mg/kg	4	4.88E+01	1.35E+02	No	ND	--	No	3.70E+02	No	No		<DCcw
4-Chloroaniline	mg/kg	3	8.16E+01	2.31E+02	No	ND	--	No	8.20E+02	No	No		<DCcw
4-Methyl-2-pentanone (MIBK)	mg/kg	4	2.99E+00	6.00E+00	No	ND	--	No	2.90E+03	No	No		<DCcw
Acenaphthene	mg/kg	1	2.67E+00	2.67E+00	No	ND	--	No	1.20E+05	No	No		<DCcw
Acetone	mg/kg	11	5.66E+00	1.54E+01	No	1.10E-02	Yes	No	1.00E+05	No	No		<DCcw
Aluminum	mg/kg	13	8.17E+03	1.87E+04	No	2.03E+04	No	Yes	1.00E+05	No	No		<DCcw
Anthracene	mg/kg	1	8.49E+00	8.49E+00	No	ND	--	No	6.10E+05	No	No		<DCcw
Arsenic	mg/kg	5	5.52E+00	1.11E+01	No	1.74E+01	No	Yes	6.10E+01	No	No		<DCcw
Barium	mg/kg	13	5.00E+03	4.59E+04	No	3.73E+02	Yes	No	1.40E+04	Yes	Yes	>DCcw	
Benzene	mg/kg	6	1.53E+01	4.53E+01	No	ND	--	No	2.10E+00	Yes	Yes	>DCcw	
Benzyl alcohol	mg/kg	1	6.10E+00	6.10E+00	No	ND	--	No	1.00E+05	No	No		<DCcw
Butylbenzylphthalate	mg/kg	1	2.33E+01	2.33E+01	No	ND	--	No	9.30E+02	No	No		<DCcw
Cadmium	mg/kg	3	7.00E+00	1.40E+01	No	6.87E+00	Yes	No	2.00E+02	No	No		<DCcw
Calcium	mg/kg	2	1.73E+04	1.85E+04	Yes	1.61E+04	Yes	Yes	NA	No	No		EN
Chlorobenzene	mg/kg	8	1.08E+02	5.38E+02	No	ND	--	No	1.30E+00	Yes	Yes	>DCcw	
Chloroform	mg/kg	1	1.16E+01	1.16E+01	No	ND	--	No	7.60E-01	Yes	Yes	>DCcw	
Chromium	mg/kg	13	9.36E+01	9.85E+02	No	3.27E+01	Yes	No	4.10E+03	No	No		<DCcw
Chrysene	mg/kg	1	2.29E+01	2.29E+01	No	8.40E-02	Yes	No	1.70E+04	No	No		<DCcw
Cobalt	mg/kg	6	2.05E+01	5.60E+01	No	1.39E+01	Yes	No	1.20E+04	No	No		<DCcw
Copper	mg/kg	20	1.73E+02	2.22E+03	No	1.55E+02	Yes	No	8.20E+03	No	No		<DCcw
Dibenzofuran	mg/kg	2	1.91E+01	3.38E+01	No	ND	--	No	5.10E+03	No	No		<DCcw
Diethylphthalate	mg/kg	1	2.29E+01	2.29E+01	No	1.85E-01	Yes	No	2.00E+03	No	No		<DCcw
Di-n-butylphthalate	mg/kg	4	8.92E+00	1.76E+01	No	ND	--	No	2.30E+03	No	No		<DCcw
Ethylbenzene	mg/kg	6	6.80E+00	1.69E+01	No	ND	--	No	5.80E+01	No	No		<DCcw
Fluoranthene	mg/kg	1	6.59E+00	6.59E+00	No	8.40E-02	Yes	No	8.20E+04	No	No		<DCcw
Fluorene	mg/kg	1	1.13E+01	1.13E+01	No	ND	--	No	8.20E+04	No	No		<DCcw
Hexachlorobenzene	mg/kg	2	3.43E+01	4.06E+01	No	ND	--	No	2.60E+00	Yes	Yes	>DCcw	
Iron	mg/kg	22	1.35E+04	5.37E+04	Yes	3.33E+04	Yes	Yes	NA	No	No		EN
Lead	mg/kg	18	2.41E+02	3.12E+03	No	1.42E+02	Yes	No	7.50E+02	Yes	No-Avg<Tier 1	>DCcw	FALSE

Table T-5
Suburface Soil - Industrial TACO Screen
Site G - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
Magnesium	mg/kg	2	7.31E+03	7.46E+03	Yes	9.33E+03	No	Yes	NA	No	No	EN
Manganese	mg/kg	11	2.09E+02	4.61E+02	No	8.00E+02	No	Yes	8.70E+03	No	No	<DCcw
Mercury	mg/kg	4	8.66E+00	3.43E+01	No	5.61E-02	Yes	No	6.10E+01	No	No	<DCcw
Methylene chloride	mg/kg	11	1.63E+00	7.11E+00	No	2.80E-03	Yes	No	3.40E+01	No	No	<DCcw
Naphthalene	mg/kg	7	8.93E+02	5.43E+03	No	ND	--	No	8.20E+03	No	No	<DCcw
Nickel	mg/kg	19	5.13E+01	3.99E+02	No	3.73E+01	Yes	No	4.10E+03	No	No	<DCcw
N-Nitrosodiphenylamine	mg/kg	1	1.78E+02	1.78E+02	No	ND	--	No	2.50E+04	No	No	<DCcw
Pentachlorophenol	mg/kg	5	1.32E+03	4.77E+03	No	ND	--	No	5.20E+02	Yes	Yes	>DCcw
Phenanthrene	mg/kg	4	2.84E+01	5.14E+01	No	ND	--	No	6.10E+05	No	No	<DCcw
Phenol	mg/kg	1	1.78E+02	1.78E+02	No	ND	--	No	1.20E+05	No	No	<DCcw
Phosphorus	mg/kg	9	5.37E+02	1.34E+03	No	ND	--	No	4.10E+01	Yes	Yes	>DCcw
Potassium	mg/kg	2	1.59E+03	1.70E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Pyrene	mg/kg	2	1.33E+01	1.91E+01	No	ND	--	No	6.10E+04	No	No	<DCcw
Silver	mg/kg	1	1.20E+01	1.20E+01	No	1.39E+00	Yes	No	1.00E+03	No	No	<DCcw
Tetrachloroethene	mg/kg	8	1.88E+01	5.86E+01	No	ND	--	No	2.80E+01	Yes	Yes	>DCcw
Tin	mg/kg	2	5.30E+01	8.00E+01	No	ND	--	No	1.00E+05	No	No	<DCcw
Toluene	mg/kg	6	4.85E+01	1.18E+02	No	ND	--	No	4.20E+01	Yes	Yes	>DCcw
Total PCBs	mg/kg	7	9.08E+02	4.43E+03	No	ND	--	No	1.00E+00	Yes	Yes	>DCcw
trans-1,2-Dichloroethene	mg/kg	1	7.00E-01	7.00E-01	No	ND	--	No	3.10E+03	No	No	<DCcw
Trichloroethene	mg/kg	4	1.94E+00	3.85E+00	No	ND	--	No	1.20E+01	No	No	<DCcw
Vanadium	mg/kg	11	1.49E+02	1.32E+03	No	5.80E+01	Yes	No	1.40E+03	No	No	<DCcw
Xylenes, Total	mg/kg	6	1.64E+01	4.15E+01	No	ND	--	No	4.10E+02	No	No	<DCcw
Zinc	mg/kg	19	4.75E+02	4.26E+03	No	6.41E+02	Yes	No	6.10E+04	No	No	<DCcw

Table T-6
Suburface Soil - Industrial TACO Screen
Site H - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
1,2,4-Trichlorobenzene	mg/kg	6	1.33E+03	7.58E+03	No	ND	--	No	9.20E+02	Yes	Yes	>DCcw
1,2-Dichlorobenzene	mg/kg	3	6.48E+03	1.94E+04	No	ND	--	No	3.10E+02	Yes	Yes	>DCcw
1,2-Dichloroethane	mg/kg	1	1.20E-02	1.20E-02	No	ND	--	No	9.90E-01	No	No	<DCcw
1,3-Dichlorobenzene	mg/kg	3	8.76E+01	2.42E+02	No	ND	--	No	3.10E+02	No	No	<DCcw
1,4-Dichlorobenzene	mg/kg	5	6.32E+03	3.06E+04	No	ND	--	No	3.40E+02	Yes	Yes	>DCcw
2,4,6-Trichlorophenol	mg/kg	2	3.07E+02	6.13E+02	No	ND	--	No	5.40E+02	Yes	Yes	>DCcw
2,4-Dichlorophenol	mg/kg	5	1.50E+02	7.42E+02	No	ND	--	No	6.10E+02	Yes	Yes	>DCcw
2,4-Dimethylphenol	mg/kg	1	9.20E-02	9.20E-02	No	ND	--	No	4.10E+04	No	No	<DCcw
2-Butanone (MEK)	mg/kg	5	1.26E+01	2.72E+01	No	ND	--	No	2.80E+04	No	No	<DCcw
2-Methylnaphthalene	mg/kg	3	1.16E+02	3.47E+02	No	ND	--	No	8.20E+03	No	No	<DCcw
4,4'-DDD	mg/kg	1	4.31E-01	4.31E-01	No	ND	--	No	5.20E+02	No	No	<DCcw
4,4'-DDE	mg/kg	2	6.42E-01	7.80E-01	No	ND	--	No	3.70E+02	No	No	<DCcw
4,4'-DDT	mg/kg	2	8.52E-01	9.23E-01	No	ND	--	No	1.00E+02	No	No	<DCcw
4-Methyl-2-pentanone (MIBK)	mg/kg	4	2.33E+00	7.85E+00	No	ND	--	No	2.90E+03	No	No	<DCcw
4-Methylphenol	mg/kg	1	1.72E-01	1.72E-01	No	ND	--	No	1.00E+05	No	No	<DCcw
4-Nitroaniline	mg/kg	1	1.83E+03	1.83E+03	No	ND	--	No	5.00E+01	Yes	Yes	>DCcw
Acenaphthylene	mg/kg	3	1.26E+02	3.78E+02	No	ND	--	No	1.20E+05	No	No	<DCcw
Acetone	mg/kg	11	4.85E+00	2.11E+01	No	1.10E-02	Yes	No	1.00E+05	No	No	<DCcw
Aluminum	mg/kg	11	3.85E+03	1.21E+04	No	2.03E+04	No	Yes	1.00E+05	No	No	<DCcw
Anthracene	mg/kg	4	1.70E+02	6.80E+02	No	ND	--	No	6.10E+05	No	No	<DCcw
Arsenic	mg/kg	2	1.45E+01	2.60E+01	No	1.74E+01	Yes	No	6.10E+01	No	No	<DCcw
Barium	mg/kg	11	6.05E+02	3.24E+03	No	3.73E+02	Yes	No	1.40E+04	No	No	<DCcw
Benzene	mg/kg	7	1.52E+01	6.13E+01	No	ND	--	No	2.10E+00	Yes	Yes	>DCcw
Benzo(a)anthracene	mg/kg	3	1.26E+02	3.78E+02	No	5.20E-02	Yes	No	1.70E+02	Yes	Yes	>DCcw
Benzo(a)pyrene	mg/kg	2	1.36E+02	2.72E+02	No	ND	--	No	1.70E+01	Yes	Yes	>DCcw
Benzo(b)fluoranthene	mg/kg	3	7.10E+01	2.11E+02	No	ND	--	No	1.70E+02	Yes	Yes	>DCcw
Benzo(g,h,i)perylene	mg/kg	2	5.69E+01	1.13E+02	No	6.80E-02	Yes	No	6.10E+04	No	No	<DCcw
Benzoic acid	mg/kg	2	2.02E+00	2.64E+00	No	ND	--	No	8.20E+05	No	No	<DCcw
Benzyl alcohol	mg/kg	1	7.92E+00	7.92E+00	No	ND	--	No	1.00E+05	No	No	<DCcw
bis(2-ethylhexyl)phthalate	mg/kg	4	4.28E-01	6.14E-01	No	ND	--	No	4.10E+03	No	No	<DCcw
Cadmium	mg/kg	4	1.88E+02	2.94E+02	No	6.87E+00	Yes	No	2.00E+02	Yes	Yes	>DCcw
Chlorobenzene	mg/kg	6	9.76E+01	4.52E+02	No	ND	--	No	1.30E+00	Yes	Yes	>DCcw
Chloroform	mg/kg	2	1.23E-01	1.92E-01	No	ND	--	No	7.60E-01	No	No	<DCcw
Chromium	mg/kg	8	4.21E+01	1.00E+02	No	3.27E+01	Yes	No	4.10E+03	No	No	<DCcw
Chrysene	mg/kg	3	1.12E+02	3.32E+02	No	8.40E-02	Yes	No	1.70E+04	No	No	<DCcw
Cobalt	mg/kg	5	3.64E+01	1.05E+02	No	1.39E+01	Yes	No	1.20E+04	No	No	<DCcw
Copper	mg/kg	8	5.36E+02	2.44E+03	No	1.55E+02	Yes	No	8.20E+03	No	No	<DCcw
Cyanide, Total	mg/kg	2	2.00E+00	2.00E+00	No	ND	--	No	4.10E+03	No	No	<DCcw
Dibenzo(a,h)anthracene	mg/kg	1	3.17E+01	3.17E+01	No	ND	--	No	1.70E+01	Yes	Yes	>DCcw
Dibenzofuran	mg/kg	4	1.55E+01	6.04E+01	No	ND	--	No	5.10E+03	No	No	<DCcw

Table T-6
Suburface Soil - Industrial TACO Screen
Site H - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason	
Di-n-butylphthalate	mg/kg	8	4.03E+00	2.57E+01	No	ND	--	No	2.30E+03	No	No	<DCcw	
Ethylbenzene	mg/kg	3	9.06E+00	1.28E+01	No	ND	--	No	5.80E+01	No	No	<DCcw	
Fluoranthene	mg/kg	4	3.33E+02	1.33E+03	No	8.40E-02	Yes	No	8.20E+04	No	No	<DCcw	
Fluorene	mg/kg	3	1.61E+02	4.83E+02	No	ND	--	No	8.20E+04	No	No	<DCcw	
Hexachlorobenzene	mg/kg	1	7.14E-01	7.14E-01	No	ND	--	No	2.60E+00	No	No	<DCcw	
Indeno(1,2,3-cd)pyrene	mg/kg	1	1.36E+02	1.36E+02	No	ND	--	No	1.70E+02	No	No	<DCcw	
Iron	mg/kg	11	2.32E+04	8.45E+04	Yes	3.33E+04	Yes	Yes	NA	No	No	EN	
Lead	mg/kg	2	5.77E+02	1.15E+03	No	1.42E+02	Yes	No	7.50E+02	Yes	No-Avg<Tier 1	>DCcw	FALSE
Manganese	mg/kg	11	3.86E+03	3.65E+04	No	8.00E+02	Yes	No	8.70E+03	Yes	Yes	>DCcw	
Mercury	mg/kg	3	2.03E+00	3.90E+00	No	5.61E-02	Yes	No	6.10E+01	No	No	<DCcw	
Methylene chloride	mg/kg	11	6.34E+00	5.56E+01	No	2.80E-03	Yes	No	3.40E+01	Yes	Yes	>DCcw	
Naphthalene	mg/kg	4	5.67E+02	2.27E+03	No	ND	--	No	8.20E+03	No	No	<DCcw	
Nickel	mg/kg	10	1.77E+03	1.51E+04	No	3.73E+01	Yes	No	4.10E+03	Yes	Yes	>DCcw	
N-Nitrosodiphenylamine	mg/kg	1	1.00E-07	1.00E-07	No	ND	--	No	2.50E+04	No	No	<DCcw	
Phenanthrene	mg/kg	6	3.53E+02	2.11E+03	No	ND	--	No	6.10E+05	No	No	<DCcw	
Phenol	mg/kg	1	4.22E-01	4.22E-01	No	ND	--	No	1.20E+05	No	No	<DCcw	
Pyrene	mg/kg	3	2.22E+02	6.64E+02	No	ND	--	No	6.10E+04	No	No	<DCcw	
Selenium	mg/kg	1	2.00E+00	2.00E+00	No	ND	--	No	1.00E+03	No	No	<DCcw	
Silver	mg/kg	2	2.65E+01	4.40E+01	No	1.39E+00	Yes	No	1.00E+03	No	No	<DCcw	
Tetrachloroethene	mg/kg	1	5.65E+00	5.65E+00	No	ND	--	No	2.80E+01	No	No	<DCcw	
Thallium	mg/kg	1	1.00E+00	1.00E+00	No	ND	--	No	1.60E+02	No	No	<DCcw	
Tin	mg/kg	3	5.50E+01	1.11E+02	No	ND	--	No	1.00E+05	No	No	<DCcw	
Toluene	mg/kg	5	2.28E+01	7.65E+01	No	ND	--	No	4.20E+01	Yes	Yes	>DCcw	
Total PCBs	mg/kg	7	2.73E+03	1.80E+04	No	ND	--	No	1.00E+00	Yes	Yes	>DCcw	
Trichloroethene	mg/kg	1	1.00E-02	1.00E-02	No	ND	--	No	1.20E+01	No	No	<DCcw	
Vanadium	mg/kg	6	3.23E+01	9.50E+01	No	5.80E+01	Yes	No	1.40E+03	No	No	<DCcw	
Xylenes, Total	mg/kg	3	1.48E+01	2.36E+01	No	ND	--	No	4.10E+02	No	No	<DCcw	
Zinc	mg/kg	11	4.74E+03	3.95E+04	No	6.41E+02	Yes	No	6.10E+04	No	No	<DCcw	

Table T-7
Suburface Soil - Industrial TACO Screen
Site I - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
1,1,1-Trichloroethane	mg/kg	2	1.06E+00	1.69E+00	No	ND	--	No	1.20E+03	No	No	<DCcw
1,2,4-Trichlorobenzene	mg/kg	8	1.40E+03	8.26E+03	No	ND	--	No	9.20E+02	Yes	Yes	>DCcw
1,2-Dichlorobenzene	mg/kg	6	8.29E+01	3.24E+02	No	ND	--	No	3.10E+02	Yes	Yes	>DCcw
1,3-Dichlorobenzene	mg/kg	2	4.45E+01	7.01E+01	No	ND	--	No	3.10E+02	No	No	<DCcw
1,4-Dichlorobenzene	mg/kg	8	2.55E+02	1.84E+03	No	ND	--	No	3.40E+02	Yes	Yes	>DCcw
2,4-Dichlorophenol	mg/kg	1	9.00E+00	9.00E+00	No	ND	--	No	6.10E+02	No	No	<DCcw
2-Butanone (MEK)	mg/kg	15	6.86E+00	1.69E+01	No	ND	--	No	2.80E+04	No	No	<DCcw
2-Methylnaphthalene	mg/kg	7	3.85E+01	1.69E+02	No	ND	--	No	8.20E+03	No	No	<DCcw
4,4'-DDD	mg/kg	2	1.82E+01	2.97E+01	No	ND	--	No	5.20E+02	No	No	<DCcw
4,4'-DDT	mg/kg	1	4.31E+00	4.31E+00	No	ND	--	No	1.00E+02	No	No	<DCcw
4-Chloroaniline	mg/kg	1	4.32E+01	4.32E+01	No	ND	--	No	8.20E+02	No	No	<DCcw
4-Methyl-2-pentanone (MIBK)	mg/kg	2	2.08E+00	4.16E+00	No	ND	--	No	2.90E+03	No	No	<DCcw
Acenaphthene	mg/kg	1	1.40E+01	1.40E+01	No	ND	--	No	1.20E+05	No	No	<DCcw
Acetone	mg/kg	16	6.66E+00	1.69E+01	No	1.10E-02	Yes	No	1.00E+05	No	No	<DCcw
Aluminum	mg/kg	16	4.17E+03	1.35E+04	No	2.03E+04	No	Yes	1.00E+05	No	No	<DCcw
Anthracene	mg/kg	2	1.13E+02	2.03E+02	No	ND	--	No	6.10E+05	No	No	<DCcw
Antimony	mg/kg	3	2.23E+03	6.66E+03	No	2.40E+00	Yes	No	8.20E+01	Yes	Yes	>DCcw
Arsenic	mg/kg	9	6.56E+00	1.40E+01	No	1.74E+01	No	Yes	6.10E+01	No	No	<DCcw
Barium	mg/kg	10	9.83E+02	3.60E+03	No	3.73E+02	Yes	No	1.40E+04	No	No	<DCcw
Benzene	mg/kg	10	3.81E+00	2.41E+01	No	ND	--	No	2.10E+00	Yes	Yes	>DCcw
Benzo(a)anthracene	mg/kg	2	4.59E+00	6.72E+00	No	5.20E-02	Yes	No	1.70E+02	No	No	<DCcw
Benzo(a)pyrene	mg/kg	1	2.47E+00	2.47E+00	No	ND	--	No	1.70E+01	No	No	<DCcw
Benzo(b)fluoranthene	mg/kg	2	1.70E+01	3.24E+01	No	ND	--	No	1.70E+02	No	No	<DCcw
Benzoic acid	mg/kg	1	6.21E+01	6.21E+01	No	ND	--	No	8.20E+05	No	No	<DCcw
Beryllium	mg/kg	1	1.53E+03	1.53E+03	No	1.27E+00	Yes	No	4.08E+02	Yes	Yes	>DCcw
bis(2-ethylhexyl)phthalate	mg/kg	7	3.49E+01	1.31E+02	No	ND	--	No	4.10E+03	No	No	<DCcw
Butylbenzylphthalate	mg/kg	1	1.39E+02	1.39E+02	No	ND	--	No	9.30E+02	No	No	<DCcw
Cadmium	mg/kg	7	5.57E+00	1.30E+01	No	6.87E+00	Yes	No	2.00E+02	No	No	<DCcw
Chlorobenzene	mg/kg	12	3.47E+01	1.27E+02	No	ND	--	No	1.30E+00	Yes	Yes	>DCcw
Chromium	mg/kg	14	7.61E+01	7.31E+02	No	3.27E+01	Yes	No	4.10E+03	No	No	<DCcw
Chrysene	mg/kg	2	4.78E+00	5.59E+00	No	8.40E-02	Yes	No	1.70E+04	No	No	<DCcw
Cobalt	mg/kg	7	3.89E+01	1.40E+02	No	1.39E+01	Yes	No	1.20E+04	No	No	<DCcw
Copper	mg/kg	8	2.98E+02	6.30E+02	No	1.55E+02	Yes	No	8.20E+03	No	No	<DCcw
Cyanide, Total	mg/kg	3	1.06E+03	3.18E+03	No	ND	--	No	4.10E+03	No	No	<DCcw
Dibenzofuran	mg/kg	1	5.59E+00	5.59E+00	No	ND	--	No	5.10E+03	No	No	<DCcw
Diethylphthalate	mg/kg	1	1.69E+01	1.69E+01	No	1.85E-01	Yes	No	2.00E+03	No	No	<DCcw
Di-n-butylphthalate	mg/kg	8	3.71E+01	2.03E+02	No	ND	--	No	2.30E+03	No	No	<DCcw
Ethylbenzene	mg/kg	10	4.65E+00	1.51E+01	No	ND	--	No	5.80E+01	No	No	<DCcw
Fluoranthene	mg/kg	3	7.69E+01	2.03E+02	No	8.40E-02	Yes	No	8.20E+04	No	No	<DCcw
Fluorene	mg/kg	3	1.49E+01	3.54E+01	No	ND	--	No	8.20E+04	No	No	<DCcw

Table T-7
Subsurface Soil - Industrial TACO Screen
Site I - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
Hexachlorobenzene	mg/kg	7	2.58E+02	1.27E+03	No	ND	--	No	2.60E+00	Yes	Yes	>DCcw
Hexachloroethane	mg/kg	1	3.01E+00	3.01E+00	No	ND	--	No	2.00E+03	No	No	<DCcw
Iron	mg/kg	16	1.17E+04	4.15E+04	Yes	3.33E+04	Yes	Yes	NA	No	No	EN
Lead	mg/kg	15	2.06E+03	2.33E+04	No	1.42E+02	Yes	No	7.50E+02	Yes	Yes	>DCcw
Manganese	*mg/kg*	1	9.80E+01	9.80E+01	No	8.00E+02	*No*	*Yes*	8.70E+03	*No*	*No*	<DCcw
Mercury	mg/kg	5	1.70E+00	3.20E+00	No	5.61E-02	Yes	No	6.10E+01	No	No	<DCcw
Methylene chloride	mg/kg	16	1.52E+00	6.77E+00	No	2.80E-03	Yes	No	3.40E+01	No	No	<DCcw
Naphthalene	mg/kg	7	9.81E+01	5.15E+02	No	ND	--	No	8.20E+03	No	No	<DCcw
Nickel	mg/kg	12	3.35E+02	2.41E+03	No	3.73E+01	Yes	No	4.10E+03	No	No	<DCcw
N-Nitrosodiphenylamine	mg/kg	2	7.31E+01	1.00E+02	No	ND	--	No	2.50E+04	No	No	<DCcw
Pentachlorophenol	mg/kg	1	1.92E+02	1.92E+02	No	ND	--	No	5.20E+02	No	No	<DCcw
Phenanthrene	mg/kg	5	3.43E+01	1.02E+02	No	ND	--	No	6.10E+05	No	No	<DCcw
Phenol	mg/kg	2	2.11E+01	2.70E+01	No	ND	--	No	1.20E+05	No	No	<DCcw
Pyrene	mg/kg	4	1.96E+01	4.93E+01	No	ND	--	No	6.10E+04	No	No	<DCcw
Selenium	mg/kg	1	1.32E+03	1.32E+03	No	ND	--	No	1.00E+03	Yes	Yes	>DCcw
Tetrachloroethene	mg/kg	5	2.57E+00	5.27E+00	No	ND	--	No	2.80E+01	No	No	<DCcw
Tin	mg/kg	9	1.92E+01	5.50E+01	No	ND	--	No	1.00E+05	No	No	<DCcw
Toluene	mg/kg	11	1.13E+01	7.79E+01	No	ND	--	No	4.20E+01	Yes	Yes	>DCcw
Total PCBs	mg/kg	5	1.81E+02	3.43E+02	No	ND	--	No	1.00E+00	Yes	Yes	>DCcw
Toxaphene	mg/kg	1	4.93E+02	4.93E+02	No	ND	--	No	1.10E+02	Yes	Yes	>DCcw
trans-1,2-Dichloroethene	mg/kg	1	3.00E-03	3.00E-03	No	ND	--	No	3.10E+03	No	No	<DCcw
Trichloroethene	mg/kg	2	2.23E+00	3.81E+00	No	ND	--	No	1.20E+01	No	No	<DCcw
Vanadium	mg/kg	7	1.07E+02	5.53E+02	No	5.80E+01	Yes	No	1.40E+03	No	No	<DCcw
Xylenes, Total	*mg/kg*	10	4.96E+00	1.92E+01	No	ND	--	*No*	4.10E+02	*No*	*No*	<DCcw
Zinc	mg/kg	16	6.24E+02	6.33E+03	No	6.41E+02	Yes	No	6.10E+04	No	No	<DCcw

Table T-8
Suburface Soil - Industrial TACO Screen
Site L - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
1,2,4-Trichlorobenzene	mg/kg	3	5.25E+01	7.90E+01	No	ND	--	No	9.20E+02	No	No	<DCcw
1,2-Dichlorobenzene	mg/kg	4	3.50E+00	7.70E+00	No	ND	--	No	3.10E+02	No	No	<DCcw
1,3-Dichlorobenzene	mg/kg	1	4.30E+00	4.30E+00	No	ND	--	No	3.10E+02	No	No	<DCcw
1,4-Dichlorobenzene	mg/kg	9	2.34E+01	1.00E+02	No	ND	--	No	3.40E+02	No	No	<DCcw
2,4,6-Trichlorophenol	mg/kg	1	1.50E+00	1.50E+00	No	ND	--	No	5.40E+02	No	No	<DCcw
2,4-Dichlorophenol	mg/kg	2	6.70E+00	1.10E+01	No	ND	--	No	6.10E+02	No	No	<DCcw
2-Butanone (MEK)	mg/kg	3	3.34E+00	1.00E+01	No	ND	--	No	2.80E+04	No	No	<DCcw
2-Chlorophenol	mg/kg	3	1.59E+00	2.60E+00	No	ND	--	No	1.00E+04	No	No	<DCcw
2-Methylnaphthalene	mg/kg	6	1.42E+00	3.10E+00	No	ND	--	No	8.20E+03	No	No	<DCcw
3&4-Methylphenol (m&p-cresol)	mg/kg	4	1.43E-01	1.90E-01	No	ND	--	No	1.00E+05	No	No	<DCcw
4-Chloroaniline	mg/kg	6	9.87E+01	2.70E+02	No	ND	--	No	8.20E+02	No	No	<DCcw
4-Methyl-2-pentanone (MIBK)	mg/kg	4	7.30E-02	1.67E-01	No	ND	--	No	2.90E+03	No	No	<DCcw
4-Methylphenol	mg/kg	5	3.40E+00	7.10E+00	No	ND	--	No	1.00E+05	No	No	<DCcw
Acenaphthene	mg/kg	3	1.08E+00	3.10E+00	No	ND	--	No	1.20E+05	No	No	<DCcw
Acenaphthylene	mg/kg	1	2.80E-01	2.80E-01	No	ND	--	No	1.20E+05	No	No	<DCcw
Acetone	mg/kg	6	1.01E+00	4.56E+00	No	1.10E-02	Yes	No	1.00E+05	No	No	<DCcw
Aluminum	mg/kg	11	5.80E+03	1.28E+04	No	2.03E+04	No	Yes	1.00E+05	No	No	<DCcw
Anthracene	mg/kg	3	1.46E+00	4.20E+00	No	ND	--	No	6.10E+05	No	No	<DCcw
Antimony	mg/kg	1	3.20E+01	3.20E+01	No	2.40E+00	Yes	No	8.20E+01	No	No	<DCcw
Arsenic	mg/kg	10	5.36E+01	1.72E+02	No	1.74E+01	Yes	No	6.10E+01	Yes	Yes	>DCcw
Barium	mg/kg	15	3.00E+02	1.44E+03	No	3.73E+02	Yes	No	1.40E+04	No	No	<DCcw
Benzene	mg/kg	5	2.01E+00	5.70E+00	No	ND	--	No	2.10E+00	Yes	Yes	>DCcw
Benzo(a)anthracene	mg/kg	4	2.46E+00	8.60E+00	No	5.20E-02	Yes	No	1.70E+02	No	No	<DCcw
Benzo(a)pyrene	mg/kg	3	1.80E+00	5.30E+00	No	ND	--	No	1.70E+01	No	No	<DCcw
Benzo(b)fluoranthene	mg/kg	3	1.88E+00	5.40E+00	No	ND	--	No	1.70E+02	No	No	<DCcw
Benzo(g,h,I)perylene	mg/kg	1	2.70E-02	2.70E-02	No	6.80E-02	No	Yes	6.10E+04	No	No	<DCcw
Benzo(k)fluoranthene	mg/kg	1	4.60E+00	4.60E+00	No	ND	--	No	1.70E+03	No	No	<DCcw
Benzoic acid	mg/kg	2	1.62E+00	3.20E+00	No	ND	--	No	8.20E+05	No	No	<DCcw
bis(2-ethylhexyl)phthalate	mg/kg	6	9.21E-01	2.20E+00	No	ND	--	No	4.10E+03	No	No	<DCcw
Butylbenzylphthalate	mg/kg	1	5.40E+00	5.40E+00	No	ND	--	No	9.30E+02	No	No	<DCcw
Cadmium	mg/kg	6	8.03E+00	4.20E+01	No	6.87E+00	Yes	No	2.00E+02	No	No	<DCcw
Calcium	mg/kg	6	2.81E+04	7.55E+04	Yes	1.61E+04	Yes	Yes	NA	No	No	EN
Chlorobenzene	mg/kg	8	1.25E+00	5.30E+00	No	ND	--	No	1.30E+00	Yes	Yes	>DCcw
Chloroform	mg/kg	3	6.80E+00	2.03E+01	No	ND	--	No	7.60E-01	Yes	Yes	>DCcw
Chromium	mg/kg	10	1.16E+01	2.70E+01	No	3.27E+01	No	Yes	4.10E+03	No	No	<DCcw
Chrysene	mg/kg	4	2.20E+00	8.20E+00	No	8.40E-02	Yes	No	1.70E+04	No	No	<DCcw
Cobalt	mg/kg	7	7.70E+00	9.00E+00	No	1.39E+01	No	Yes	1.20E+04	No	No	<DCcw
Copper	mg/kg	10	9.27E+01	3.08E+02	No	1.55E+02	Yes	No	8.20E+03	No	No	<DCcw
Cyanide, Total	mg/kg	1	4.60E-01	4.60E-01	No	ND	--	No	4.10E+03	No	No	<DCcw
Dibenzofuran	mg/kg	2	1.52E+00	3.00E+00	No	ND	--	No	5.10E+03	No	No	<DCcw

Table T-8
Suburface Soil - Industrial TACO Screen
Site L - Historical Subsurface Soil Data

Constituent	Units	Number of Detects	Mean	Maximum Detected Concentration (Max)	Essential Nutrient (EN)?	Subsurface Soil Background (BK) Concentration	Is Max>BK?	Pass EN/BK?	Taco Tier I Construction Worker Direct Contact (DC) Concentration	Is Max>CW DC?	COPC?	Reason
Diethylphthalate	mg/kg	2	6.55E-01	1.00E+00	No	1.85E-01	Yes	No	2.00E+03	No	No	<DCcw
Di-n-butylphthalate	mg/kg	4	1.28E+00	2.78E+00	No	ND	--	No	2.30E+03	No	No	<DCcw
Ethylbenzene	mg/kg	1	4.00E-02	4.00E-02	No	ND	--	No	5.80E+01	No	No	<DCcw
Fluoranthene	mg/kg	4	4.27E+00	1.60E+01	No	8.40E-02	Yes	No	8.20E+04	No	No	<DCcw
Fluorene	mg/kg	2	2.54E+00	5.00E+00	No	ND	--	No	8.20E+04	No	No	<DCcw
Hexachlorobenzene	mg/kg	1	4.80E+00	4.80E+00	No	ND	--	No	2.60E+00	Yes	Yes	>DCcw
Hexachloroethane	mg/kg	1	4.90E-02	4.90E-02	No	ND	--	No	2.00E+03	No	No	<DCcw
Indeno(1,2,3-cd)pyrene	mg/kg	2	1.51E+00	2.90E+00	No	ND	--	No	1.70E+02	No	No	<DCcw
Iron	mg/kg	11	9.96E+03	2.40E+04	Yes	3.33E+04	No	Yes	NA	No	No	EN
Lead	mg/kg	13	7.46E+01	6.64E+02	No	1.42E+02	Yes	No	7.50E+02	No	No	<DCcw
Magnesium	mg/kg	6	4.91E+03	9.44E+03	Yes	9.33E+03	Yes	Yes	NA	No	No	EN
Manganese	mg/kg	11	2.19E+02	7.82E+02	No	8.00E+02	No	Yes	8.70E+03	No	No	<DCcw
Mercury	mg/kg	7	3.09E-01	1.80E+00	No	5.61E-02	Yes	No	6.10E+01	No	No	<DCcw
Methylene chloride	mg/kg	5	4.89E-01	2.28E+00	No	2.80E-03	Yes	No	3.40E+01	No	No	<DCcw
Naphthalene	mg/kg	4	2.02E+00	7.30E+00	No	ND	--	No	8.20E+03	No	No	<DCcw
Nickel	mg/kg	10	3.78E+02	2.39E+03	No	3.73E+01	Yes	No	4.10E+03	No	No	<DCcw
Pentachlorophenol	mg/kg	4	3.17E+01	5.82E+01	No	ND	--	No	5.20E+02	No	No	<DCcw
Phenanthrene	mg/kg	5	5.18E+00	2.30E+01	No	ND	--	No	6.10E+05	No	No	<DCcw
Phenol	mg/kg	5	8.77E+00	1.60E+01	No	ND	--	No	1.20E+05	No	No	<DCcw
Potassium	mg/kg	6	1.31E+03	2.28E+03	Yes	4.20E+03	No	Yes	NA	No	No	EN
Pyrene	mg/kg	4	5.96E+00	2.30E+01	No	ND	--	No	6.10E+04	No	No	<DCcw
Toluene	mg/kg	7	6.65E+01	4.00E+02	No	ND	--	No	4.20E+01	Yes	Yes	>DCcw
Total PCBs	mg/kg	2	2.58E+02	5.00E+02	No	ND	--	No	1.00E+00	Yes	Yes	>DCcw
Vanadium	mg/kg	9	3.23E+01	1.31E+02	No	5.80E+01	Yes	No	1.40E+03	No	No	<DCcw
Xylenes, Total	mg/kg	4	3.10E+00	1.10E+01	No	ND	--	No	4.10E+02	No	No	<DCcw
Zinc	mg/kg	11	5.34E+02	4.24E+03	No	6.41E+02	Yes	No	6.10E+04	No	No	<DCcw

Table T-9
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Construction Worker

Constituent		Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
		Number of Samples	Number of Detects	Average (mg/L)	Maximum (MAX) Detection (mg/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (mg/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (mg/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (mg/L)	Is Average> 100*Class II?
Site G - TCLP															
2,4-D		4	3	1.32E+01	5.00E+01	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
Barium		4	4	2.94E+00	5.30E+00	No	6.17E-01	Yes	No	2.00E+00	Yes	Yes	>Tier 1	2.00E+02	No
Cadmium		4	1	6.75E-02	1.20E-01	No	ND	--	No	5.00E-02	Yes	Yes	>Tier 1	5.00E+00	No
Lead		4	2	6.09E+00	2.40E+01	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	No
gamma-BHC (Lindane)		4	1	2.00E-03	4.20E-03	No	1.01E-05	Yes	No	1.00E-03	Yes	Yes	>Tier 1	1.00E-01	No
1,4-Dichlorobenzene		4	3	1.10E-01	2.15E-01	No	ND	--	No	3.75E-01	No	No	<Tier 1	3.75E+01	No
2,4,6-Trichlorophenol		4	2	1.27E+00	4.95E+00	No	ND	--	No	3.20E-02	Yes	Yes	>Tier 1	3.20E+00	No
2-Methylphenol (o-cresol)		4	2	3.15E-02	6.20E-02	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
3&4-Methylphenol (m&p-cresol)		4	2	6.73E-02	1.35E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
2&3&4-Methylphenol (o&m&p-cresol)		4	2	8.30E-02	1.85E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
Nitrobenzene		4	3	3.98E-02	7.35E-02	No	ND	--	No	3.50E-03	Yes	Yes	>Tier 1	3.50E-01	No
Pentachlorophenol		4	1	4.63E-01	1.10E+00	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	No
2-Butanone (MEK)		4	1	6.75E-02	1.20E-01	No	ND	--	No	1.90E+00	No	No	<Tier 1	1.90E+02	No
Benzene		4	3	2.04E-01	6.00E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Chlorobenzene		4	3	8.24E-01	2.70E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1	5.00E+01	No
Tetrachloroethene		4	3	4.39E-02	1.30E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Trichloroethene		4	4	2.45E-02	7.90E-02	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Site G - Leachate															
1,1-Dichloroethene		1	1	4.80E-03	4.80E-03	No	ND	--	No	3.50E-02	No	No	<Tier 1	3.50E+00	No
1,2,4-Trichlorobenzene		1	1	4.40E-02	4.40E-02	No	ND	--	No	7.00E-01	No	No	<Tier 1	7.00E+01	No
1,2-Dichlorobenzene		1	1	2.80E-01	2.80E-01	No	ND	--	No	1.50E+00	No	No	<Tier 1	1.50E+02	No
1,4-Dichlorobenzene		1	1	2.20E-01	2.20E-01	No	ND	--	No	3.75E-01	No	No	<Tier 1	3.75E+01	No
2,4,5-T		1	1	3.80E-01	3.80E-01	No	4.20E-04	Yes	No	3.60E-01	Yes	Yes	>Tier 1	3.60E+01	No
2-Chlorophenol		1	1	1.10E+00	1.10E+00	No	ND	--	No	1.75E-01	Yes	Yes	>Tier 1	1.75E+01	No
2-Methylphenol (o-Cresol)		1	1	2.00E-01	2.00E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
3-Methylphenol/4-Methylphenol (m&p-Cresol)		1	1	1.40E+00	1.40E+00	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
4-Methyl-2-pentanone (MIBK)		1	1	9.30E-01	9.30E-01	No	ND	--	No	1.60E-01	Yes	Yes	>Tier 1	1.60E+01	No
Acetone		1	1	7.30E-01	7.30E-01	No	ND	--	No	7.00E-01	Yes	Yes	>Tier 1	7.00E+01	No
Aldrin		1	1	2.30E-04	2.30E-04	No	ND	--	No	2.00E-04	Yes	Yes	>Tier 1	2.00E-02	No
alpha-BHC		1	1	5.40E-04	5.40E-04	No	ND	--	No	1.50E-04	Yes	Yes	>Tier 1	1.50E-02	No
Aluminum		1	1	1.20E-01	1.20E-01	No	ND	--	No	3.60E+01	No	No	<Tier 1	3.60E+03	No
Antimony		1	1	6.00E-03	6.00E-03	No	ND	--	No	2.40E-02	No	No	<Tier 1	2.40E+00	No
Arsenic		1	1	1.90E-02	1.90E-02	No	1.17E-02	Yes	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
Barium		1	1	7.30E-01	7.30E-01	No	6.17E-01	Yes	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Benzene		1	1	8.80E-01	8.80E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Cadmium		1	1	3.80E-03	3.80E-03	No	ND	--	No	5.00E-02	No	No	<Tier 1	5.00E+00	No
Calcium		1	1	7.20E+02	7.20E+02	Yes	4.27E+02	Yes	Yes	NA	--	No	EN	NA	--
Chlorobenzene		1	1	2.80E+00	2.80E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1	5.00E+01	No
Chloroform		1	1	3.20E-02	3.20E-02	No	ND	--	No	1.00E-04	Yes	Yes	>Tier 1	1.00E-02	Yes
Chloromethane		1	1	2.60E-02	2.60E-02	No	ND	--	No	1.50E-03	Yes	Yes	>Tier 1	1.50E-01	No
Chromium, total		1	1	6.10E-01	6.10E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
cis/trans-1,2-Dichloroethene		1	1	1.90E+00	1.90E+00	No	ND	--	No	2.00E-01	Yes	Yes	>Tier 1	2.00E+01	No
Cobalt		1	1	1.40E+00	1.40E+00	No	1.14E-02	Yes	No	1.00E+00	Yes	Yes	>Tier 1	1.00E+02	No
Copper		1	1	3.60E-03	3.60E-03	No	ND	--	No	6.50E-01	No	No	<Tier 1	6.50E+01	No
Ethylbenzene		1	1	1.20E-01	1.20E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Iron		1	1	2.80E+02	2.80E+02	Yes	2.20E+01	Yes	Yes	5.00E+00	Yes	No	EN	5.00E+02	No
Lead		1	1	3.30E-03	3.30E-03	No	ND	--	No	1.00E-01	No	No	<Tier 1	1.00E+01	No
Magnesium		1	1	7.70E+01	7.70E+01	Yes	9.23E+01	No	Yes	NA	--	No	EN	NA	--
Manganese		1	1	4.90E+00	4.90E+00	No	1.75E+00	Yes	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Methylene chloride		1	1	1.30E-02	1.30E-02	No	ND	--	No	5.00E-02	No	No	<Tier 1	5.00E+00	No
Molybdenum		1	1	9.90E-02	9.90E-02	No	ND	--	No	1.80E-01	No	No	<Tier 1	1.80E+01	No

Table T-9
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Construction Worker

Constituent		Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
		Number of Samples	Number of Detects	Average (mg/L)	Maximum (MAX) Detection (mg/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (mg/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (mg/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (mg/L)	Is Average> 100*Class II?
Naphthalene		1	1	1.00E+00	1.00E+00	No	ND	--	No	3.90E-02	Yes	Yes	>Tier 1	3.90E+00	No
Nickel		1	1	1.90E-02	1.90E-02	No	1.30E-01	No	Yes	2.00E+00	No	No	<Tier 1	2.00E+02	No
Pentachlorophenol		1	1	7.60E+00	7.60E+00	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	Yes
Phenol		1	1	1.60E+01	1.60E+01	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	Yes
Potassium		1	1	2.80E+01	2.80E+01	Yes	1.23E+02	No	Yes	NA	--	No	EN	NA	--
Selenium		1	1	7.40E-03	7.40E-03	No	ND	--	No	5.00E-02	No	No	<Tier 1	5.00E+00	No
Sodium		1	1	2.10E+02	2.10E+02	Yes	1.30E+02	Yes	Yes	NA	--	No	EN	NA	--
Tetrachloroethene		1	1	9.90E-02	9.90E-02	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Tin		1	1	1.60E-02	1.60E-02	No	ND	--	No	2.20E+01	No	No	<Tier 1	2.20E+03	No
Toluene		1	1	3.00E-01	3.00E-01	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Total TCDD-TEQ		1	1	6.77E-08	6.77E-08	No	5.02E-10	Yes	No	3.00E-08	Yes	Yes	>Tier 1	3.00E-06	No
Total Polychlorinated Biphenyls (PCBs)	(a)	1	1	5.40E-03	5.40E-03	No	ND	--	No	2.50E-03	Yes	Yes	>Tier 1	2.50E-01	No
Trichloroethene		1	1	3.40E-01	3.40E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Vanadium		1	1	6.20E-01	6.20E-01	No	ND	--	No	4.90E-02	Yes	Yes	>Tier 1	4.90E+00	No
Vinyl chloride		1	1	1.60E-01	1.60E-01	No	ND	--	No	1.00E-02	Yes	Yes	>Tier 1	1.00E+00	No
Xylenes (Total)		1	1	1.80E-01	1.80E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Zinc		1	1	1.80E+00	1.80E+00	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Site H - TCLP															
2,4-D		5	2	9.29E-02	4.20E-01	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
Arsenic		5	1	1.70E-01	4.50E-01	No	1.17E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1	2.00E+01	No
Cadmium		5	3	4.52E+00	2.20E+01	No	ND	--	No	5.00E-02	Yes	Yes	>Tier 1	5.00E+00	No
Lead		5	3	8.19E+00	4.00E+01	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	No
1,4-Dichlorobenzene		5	2	3.55E-01	1.60E+00	No	ND	--	No	3.75E-01	Yes	Yes	>Tier 1	3.75E+01	No
2,4,5-Trichlorophenol		5	1	2.00E-02	2.00E-02	No	ND	--	No	3.50E+00	No	No	<Tier 1	3.50E+02	No
2,4,6-Trichlorophenol		5	1	3.02E-02	5.10E-02	No	ND	--	No	3.20E-02	Yes	Yes	>Tier 1	3.20E+00	No
2-Methylphenol (o-cresol)		5	2	2.73E-02	5.50E-02	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
3&4-Methylphenol (m&p-cresol)		5	2	1.12E-01	4.80E-01	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
2&3&4-Methylphenol (o&m&p-cresol)		5	2	1.25E-01	5.40E-01	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
Hexachlorobenzene		5	1	1.80E-02	1.80E-02	No	ND	--	No	3.00E-04	Yes	Yes	>Tier 1	3.00E-02	No
Pentachlorophenol		5	2	1.74E-01	4.50E-01	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	No
Benzene		5	2	5.23E-01	2.50E+00	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Chlorobenzene		5	2	8.46E-01	2.70E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1	5.00E+01	No
Tetrachloroethene		5	2	1.65E-02	3.30E-02	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Trichloroethene		5	2	4.60E-03	6.40E-03	No	ND	--	No	2.50E-02	No	No	<Tier 1	2.50E+00	No
Site I - TCLP															
2,4-D		4	1	4.44E-02	1.40E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
Barium		4	1	1.50E+01	5.85E+01	No	6.17E-01	Yes	No	2.00E+00	Yes	Yes	>Tier 1	2.00E+02	No
Cadmium		4	2	2.64E-01	7.85E-01	No	ND	--	No	5.00E-02	Yes	Yes	>Tier 1	5.00E+00	No
Lead		4	3	2.61E+00	8.80E+00	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	No
1,4-Dichlorobenzene		4	3	5.99E-01	1.30E+00	No	ND	--	No	3.75E-01	Yes	Yes	>Tier 1	3.75E+01	No
2,4,5-Trichlorophenol		4	1	3.69E-01	1.40E+00	No	ND	--	No	3.50E+00	No	No	<Tier 1	3.50E+02	No
2,4,6-Trichlorophenol		4	1	1.35E-02	1.35E-02	No	ND	--	No	3.20E-02	No	No	<Tier 1	3.20E+00	No
2,4-Dinitrotoluene		4	1	2.83E-02	3.80E-02	No	ND	--	No	2.00E-05	Yes	Yes	>Tier 1	2.00E-03	Yes
2-Methylphenol (o-cresol)		4	1	1.40E-02	1.40E-02	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
3&4-Methylphenol (m&p-cresol)		4	2	7.58E-02	1.40E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
2&3&4-Methylphenol (o&m&p-cresol)		4	2	8.08E-02	1.60E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
Nitrobenzene		4	1	1.30E-02	1.30E-02	No	ND	--	No	3.50E-03	Yes	Yes	>Tier 1	3.50E-01	No
Pentachlorophenol		4	3	1.29E+00	3.80E+00	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	Yes
Pyridine		4	1	1.20E-02	1.20E-02	No	ND	--	No	3.60E-02	No	No	<Tier 1	3.60E+00	No
Benzene		4	3	1.62E-01	5.10E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Chlorobenzene		4	3	2.62E+00	8.90E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1	5.00E+01	No

Table T-9
Comparison of Groundwater Data to TACO Tier I Screening Criteria
Construction Worker

Constituent		Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
		Number of Samples	Number of Detects	Average (mg/L)	Maximum (MAX) Detection (mg/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (mg/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (mg/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (mg/L)	Is Average> 100*Class II?
Chloroform		4	1	7.33E-01	2.90E+00	No	ND	--	No	1.00E-04	Yes	Yes	>Tier 1	1.00E-02	Yes
Tetrachloroethene		4	1	8.00E-02	2.90E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Trichloroethene		4	3	3.00E-03	6.30E-03	No	ND	--	No	2.50E-02	No	No	<Tier 1	2.50E+00	No
Site I - Leachate															
1,1,1-Trichloroethane		1	1	1.30E+01	1.30E+01	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1	1.00E+02	No
1,1,2-Trichloroethane		1	1	3.80E-02	3.80E-02	No	ND	--	No	5.00E-02	No	No	<Tier 1	5.00E+00	No
1,1-Dichloroethane		1	1	3.70E+00	3.70E+00	No	ND	--	No	3.50E+00	Yes	Yes	>Tier 1	3.50E+02	No
1,1-Dichloroethene		1	1	4.80E-01	4.80E-01	No	ND	--	No	3.50E-02	Yes	Yes	>Tier 1	3.50E+00	No
1,2,4-Trichlorobenzene		1	1	3.20E+00	3.20E+00	No	ND	--	No	7.00E-01	Yes	Yes	>Tier 1	7.00E+01	No
1,2-Dichlorobenzene		1	1	5.60E-01	5.60E-01	No	ND	--	No	1.50E+00	No	No	<Tier 1	1.50E+02	No
1,4-Dichlorobenzene		1	1	9.90E-01	9.90E-01	No	ND	--	No	3.75E-01	Yes	Yes	>Tier 1	3.75E+01	No
2,4,6-Trichlorophenol		1	1	1.30E+00	1.30E+00	No	ND	--	No	3.20E-02	Yes	Yes	>Tier 1	3.20E+00	No
2,4-D		1	1	1.30E+00	1.30E+00	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
2,4-Dichlorophenol		1	1	2.60E+00	2.60E+00	No	ND	--	No	2.10E-02	Yes	Yes	>Tier 1	2.10E+00	Yes
2-Chlorophenol		1	1	4.60E-01	4.60E-01	No	ND	--	No	1.75E-01	Yes	Yes	>Tier 1	1.75E+01	No
2-Methylphenol (o-Cresol)		1	1	2.10E-01	2.10E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
3-Methylphenol/4-Methylphenol (m&p-Cresol)		1	1	6.30E-01	6.30E-01	No	ND	--	No	3.50E-01	Yes	Yes	>Tier 1	3.50E+01	No
4-Methyl-2-pentanone (MIBK)		1	1	1.60E+00	1.60E+00	No	ND	--	No	1.60E-01	Yes	Yes	>Tier 1	1.60E+01	No
Acetone		1	1	1.20E+01	1.20E+01	No	ND	--	No	7.00E-01	Yes	Yes	>Tier 1	7.00E+01	No
Aldrin		1	1	1.90E-04	1.90E-04	No	ND	--	No	2.00E-04	No	No	<Tier 1	2.00E-02	No
alpha-BHC		1	1	2.50E-03	2.50E-03	No	ND	--	No	1.50E-04	Yes	Yes	>Tier 1	1.50E-02	No
Aluminum		1	1	3.30E+00	3.30E+00	No	ND	--	No	3.60E+01	No	No	<Tier 1	3.60E+03	No
Arsenic		1	1	3.10E-02	3.10E-02	No	1.17E-02	Yes	No	2.00E-01	No	No	<Tier 1	2.00E+01	No
Barium		1	1	1.00E+00	1.00E+00	No	6.17E-01	Yes	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Benzene		1	1	6.90E-01	6.90E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Benzo(a)anthracene		1	1	2.20E-02	2.20E-02	No	ND	--	No	6.50E-04	Yes	Yes	>Tier 1	6.50E-02	No
bis(2-Ethylhexyl)phthalate		1	1	3.00E-02	3.00E-02	No	ND	--	No	6.00E-02	No	No	<Tier 1	6.00E+00	No
Calcium		1	1	8.30E+01	8.30E+01	Yes	4.27E+02	No	Yes	NA	--	No	EN	NA	--
Chlorobenzene		1	1	9.50E-01	9.50E-01	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1	5.00E+01	No
Chloroform		1	1	2.60E-02	2.60E-02	No	ND	--	No	1.00E-04	Yes	Yes	>Tier 1	1.00E-02	Yes
Chromium, total		1	1	5.50E-02	5.50E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Chrysene		1	1	2.30E-02	2.30E-02	No	ND	--	No	7.50E-03	Yes	Yes	>Tier 1	7.50E-01	No
cis/trans-1,2-Dichloroethene		1	1	1.50E+01	1.50E+01	No	ND	--	No	2.00E-01	Yes	Yes	>Tier 1	2.00E+01	No
Cobalt		1	1	2.00E-02	2.00E-02	No	1.14E-02	Yes	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Copper		1	1	4.70E-02	4.70E-02	No	ND	--	No	6.50E-01	No	No	<Tier 1	6.50E+01	No
Cyanide		1	1	1.30E-02	1.30E-02	No	ND	--	No	6.00E-01	No	No	<Tier 1	6.00E+01	No
delta-BHC		1	1	1.90E-03	1.90E-03	No	1.25E-05	Yes	No	1.50E-04	Yes	Yes	>Tier 1	1.50E-02	No
Dieldrin		1	1	1.50E-03	1.50E-03	No	ND	--	No	1.00E-04	Yes	Yes	>Tier 1	1.00E-02	No
Ethylbenzene		1	1	8.80E-02	8.80E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1	1.00E+02	No
Heptachlor		1	1	2.50E-03	2.50E-03	No	2.60E-05	Yes	No	2.00E-03	Yes	Yes	>Tier 1	2.00E-01	No
Heptachlor epoxide		1	1	1.30E-03	1.30E-03	No	2.66E-05	Yes	No	1.00E-03	Yes	Yes	>Tier 1	1.00E-01	No
Iron		1	1	2.30E+01	2.30E+01	Yes	2.20E+01	Yes	Yes	5.00E+00	Yes	No	EN	5.00E+02	No
Lead		1	1	5.80E-01	5.80E-01	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	No
Magnesium		1	1	1.80E+01	1.80E+01	Yes	9.23E+01	No	Yes	NA	--	No	EN	NA	--
Manganese		1	1	7.10E-01	7.10E-01	No	1.75E+00	No	Yes	1.00E+01	No	No	<Tier 1	1.00E+03	No
MCPP		1	1	3.40E+01	3.40E+01	No	ND	--	No	3.60E-02	Yes	Yes	>Tier 1	3.60E+00	Yes
Mercury		1	1	1.80E-02	1.80E-02	No	ND	--	No	1.00E-02	Yes	Yes	>Tier 1	1.00E+00	No
Methylene chloride		1	1	1.40E-02	1.40E-02	No	ND	--	No	5.00E-02	No	No	<Tier 1	5.00E+00	No
Molybdenum		1	1	4.50E-03	4.50E-03	No	ND	--	No	1.80E-01	No	No	<Tier 1	1.80E+01	No
Naphthalene		1	1	2.50E+00	2.50E+00	No	ND	--	No	3.90E-02	Yes	Yes	>Tier 1	3.90E+00	No
Nickel		1	1	1.30E+00	1.30E+00	No	1.30E-01	Yes	No	2.00E+00	No	No	<Tier 1	2.00E+02	No
Pentachlorophenol		1	1	6.30E+00	6.30E+00	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	Yes

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Construction Worker

Constituent		Summary Statistics				COPC Selection - Chronic Exposure Screen								Short-Term Exposure Screen	
		Number of Samples	Number of Detects	Average (mg/L)	Maximum (MAX) Detection (mg/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (mg/L)	Is Max> BK?	Pass EN/BK?	TACO Class II Groundwater Criteria (mg/L)	Is Max> Class II?	COPC?	Reason	100 Times TACO Class II Groundwater Criteria (mg/L)	Is Average> 100*Class II?
Phenol		1	1	6.70E+00	6.70E+00	No	ND	--	No	1.00E-01	Yes	Yes	>Tier 1	1.00E+01	No
Potassium		1	1	8.40E+00	8.40E+00	Yes	1.23E+02	No	Yes	NA	--	No	EN	NA	--
Sodium		1	1	6.30E+01	6.30E+01	Yes	1.30E+02	No	Yes	NA	--	No	EN	NA	--
Tetrachloroethene		1	1	2.50E-02	2.50E-02	No	ND	--	No	2.50E-02	No	No	<Tier 1	2.50E+00	No
Tin		1	1	1.20E-02	1.20E-02	No	ND	--	No	2.20E+01	No	No	<Tier 1	2.20E+03	No
Toluene		1	1	4.30E-01	4.30E-01	No	ND	--	No	2.50E+00	No	No	<Tier 1	2.50E+02	No
Total TCDD-TEQ		1	1	3.07E-07	3.07E-07	No	5.02E-10	Yes	No	3.00E-08	Yes	Yes	>Tier 1	3.00E-06	No
Total Polychlorinated Biphenyls (PCBs)	(a)	1	1	1.08E-01	1.08E-01	No	ND	--	No	2.50E-03	Yes	Yes	>Tier 1	2.50E-01	No
Trichloroethene		1	1	6.20E-01	6.20E-01	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Vanadium		1	1	4.80E-02	4.80E-02	No	ND	--	No	4.90E-02	No	No	<Tier 1	4.90E+00	No
Vinyl chloride		1	1	1.00E-01	1.00E-01	No	ND	--	No	1.00E-02	Yes	Yes	>Tier 1	1.00E+00	No
Xylenes (Total)		1	1	1.30E-01	1.30E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Zinc		1	1	3.50E-01	3.50E-01	No	ND	--	No	1.00E+01	No	No	<Tier 1	1.00E+03	No
Site L - TCLP															
Arsenic		4	1	2.73E-01	7.90E-01	No	1.17E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1	2.00E+01	No
Cadmium		4	3	1.60E-01	2.70E-01	No	ND	--	No	5.00E-02	Yes	Yes	>Tier 1	5.00E+00	No
1,4-Dichlorobenzene		4	2	2.53E-01	8.70E-01	No	ND	--	No	3.75E-01	Yes	Yes	>Tier 1	3.75E+01	No
3&4-Methylphenol (m&p-cresol)		4	1	6.63E-02	1.90E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
2&3&4-Methylphenol (o&m&p-cresol)		4	1	6.63E-02	1.90E-01	No	ND	--	No	3.50E-01	No	No	<Tier 1	3.50E+01	No
Pentachlorophenol		4	1	1.31E-01	1.50E-01	No	ND	--	No	5.00E-03	Yes	Yes	>Tier 1	5.00E-01	No
Pyridine		4	2	1.69E-01	3.90E-01	No	ND	--	No	3.60E-02	Yes	Yes	>Tier 1	3.60E+00	No
Chlorobenzene		6	2	1.32E-02	3.20E-02	No	ND	--	No	5.00E-01	No	No	<Tier 1	5.00E+01	No
Tetrachloroethene		6	6	3.48E-02	7.20E-02	No	ND	--	No	2.50E-02	Yes	Yes	>Tier 1	2.50E+00	No
Trichloroethene		6	6	6.40E-03	1.20E-02	No	ND	--	No	2.50E-02	No	No	<Tier 1	2.50E+00	No

Notes:
A limited validation of data was performed.
TCLP - Toxicity Characteristic Leaching Procedure.
(a) Total PCBs = sum of all PCB monomers.

TABLE T-10
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Oral Dose-Response Value (mg/kg-day)		Reference (Last Verified) Type	EPA Confidence Level	Uncertainty Factor	Modifing Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	3.00E-02		NCEA (e)	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA		NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	3.00E-03		IRIS (11/2000)	LOW	100	1	Decreased delayed hypersensitivity response	RAT	ORAL:DRINKING WATER
3/4-Methylphenol	(a)	5.00E-02	(b)	IRIS (11/2000)	MEDIUM	1000	1	Decreased body weight, neurotoxicity	RAT	ORAL:GAVAGE
4-Nitroaniline	100-01-6	NA		NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	4.00E-04		IRIS (11/2000)	LOW	1000	1	Decreased longevity, dec. blood glucose and cholesterol changes	RAT	ORAL:DRINKING WATER
Arsenic	7440-38-2	3.00E-04		IRIS (11/2000)	MEDIUM	3	1	Hyperpigmentation and keratosis of the skin and poss. vascular complications	HUMAN	ORAL:DRINKING WATER
Benzene	71-43-2	3.00E-03		NCEA (7/29/96)	MEDIUM-LOW	3000	NA	Hematological and Immunological	RAT	ORAL:GAVAGE
Benzo(a)anthracene	56-55-3	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	5.00E-04		IRIS (11/2000)	HIGH	10	1	Proteinuria	HUMAN	ORAL
Chlorobenzene	108-90-7	2.00E-02		IRIS (11/2000)	MEDIUM	1000	1	Histopathologic changes in liver	DOG	ORAL:CAPSULE
Chloroform	67-66-3	1.00E-02		IRIS (11/2000)	MEDIUM	1000	1	Fatty cyst formation in liver	DOG	ORAL:CAPSULE
Dibenzo(a,h)anthracene	53-70-3	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
gamma-BHC	58-89-9	3.00E-04		IRIS (11/2000)	MEDIUM	1000	1	Liver and kidney toxicity	RAT	ORAL:DIET
Lead	7439-92-1	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	2.00E-02		IRIS (11/2000)	MEDIUM	300	1	Decreased body & organ wts	RAT	ORAL:DIET
Nitrobenzene	98-95-3	5.00E-04		IRIS (11/2000)	LOW	10000	1	Hematologic effects, and adrenal, renal & hepatic lesions	RAT/MOUSE	INHALATION
Pentachlorophenol	87-86-5	3.00E-02		IRIS (11/2000)	MEDIUM	100	1	Liver & kidney pathology	RAT	ORAL:DIET
Tetrachloroethene	127-18-4	1.00E-02		IRIS (11/2000)	MEDIUM	1000	1	Hepatotoxicity in mice, decreased weight gain in rats	MOUSE/RAT	ORAL:GAVAGE/DRINKING WATER
Toluene	108-88-3	2.00E-01		IRIS (11/2000)	MEDIUM	1000	1	Changes in liver and kidney weights	RAT	ORAL:GAVAGE
Total PCBs	1336-36-3	2.00E-05	(d)	IRIS (11/2000)	MEDIUM	300	1	Ocular, meibomiam gland, finger and toenail, and immune effects	MONKEY	ORAL:CAPSULE
Trichloroethene	79-01-6	6.00E-03		NCEA (e)	LOW	3000	1	Increased relative liver weight	MOUSE	ORAL:DRINKING WATER
1,2,4-Trichlorobenzene	120-82-1	1.00E-02		IRIS (3/2001)	MEDIUM	1000	1	Increased adrenal weights, vacuolization of zona fasciculata in cortex	RAT	ORAL:DRINKING WATER
1,2-Dichlorobenzene	95-50-1	9.00E-02		IRIS (3/2001)	LOW	1000	1	No adverse effects	RAT	ORAL:GAVAGE
2,4-D	94-75-7	1.00E-02		IRIS (3/2001)	MEDIUM	100	1	Hematologic, hepatic, and renal toxicity	RAT	ORAL:DIET
2,4-Dinitrotoluene	121-14-2	2.00E-03		IRIS (3/2001)	HIGH	100	1	Neurotoxicity, Heinz bodies, and biliary tract hyperplasia	DOG	ORAL:CAPSULE
Barium	7440-39-3	7.00E-02		IRIS (3/2001)	MEDIUM	3	1	Increased kidney weight	HUMAN	OCCUPATIONAL
Beryllium	7440-41-7	2.00E-03		IRIS (3/2001)	LOW-MEDIUM	300	1	Small instestine lesions	DOG	ORAL:DIET
Hexachlorobenzene	118-74-1	8.00E-04		IRIS (3/2001)	MEDIUM	100	1	Liver effects	RAT	ORAL:DIET
Manganese	7439-96-5	4.67E-02	(c)	IRIS (3/2001)	MEDIUM	1	3	CNS Effects	HUMAN	ORAL:CHRONIC
Methylene Chloride	75-09-2	6.00E-02		IRIS (3/2001)	MEDIUM	100	1	Liver effects	RAT	ORAL:DRINKING WATER
Phosphorous	7723-14-0	2.00E-05		IRIS (3/2001)	LOW	1000	1	Parturition mortality; forelimb hair loss	RAT	ORAL:GAVAGE
Pyridine	110-86-1	1.00E-03		IRIS (3/2001)	MEDIUM	1000	1	Increased liver weight	RAT	ORAL:GAVAGE
Selenium	7782-49-2	5.00E-03		IRIS (3/2001)	HIGH	3	1	Clinical selenosis	HUMAN	EPIDEMIOLOGICAL
Toxaphene	8001-35-2	NA		IRIS (3/2001)	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	5.00E-03		IRIS (11/2000)	LOW	1000	1	Reproductive effects	RAT	ORAL:DRINKING WATER
4-Chloroaniline	106-47-8	4.00E-03		IRIS (11/2000)	LOW	3000	1	Splenic lesions	RAT	ORAL:DIET
4-Methyl-2-pentanone (MIBK)	108-10-1	8.00E-02		HEAST	NA	3000	1	Increased liver and kidney weights, increased urinary protein	RAT	ORAL:GAVAGE
Acetone	67-64-1	1.00E-01		IRIS (11/2000)	LOW	1000	1	Increased liver and kidney weights and nephrotoxicity	RAT	ORAL:GAVAGE
alpha-BHC	319-84-6	NA		IRIS (11/2000)	NA	NA	NA	NA	NA	NA
cis/trans-1,2-Dichloroethene	540-59-0	1.00E-02	(f)	HEAST	NA	3000	1	Decreased hematocrit and hemoglobin	RAT	ORAL:GAVAGE
delta-BHC	319-86-8	3.00E-04	(g)	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	5.00E-05		IRIS (11/2000)	MEDIUM	100	1	Liver lesions	RAT	ORAL:DIET
Heptachlor	76-44-8	5.00E-04		IRIS (11/2000)	LOW	300	1	Increased liver weight	RAT	ORAL:DIET
Heptachlor epoxide	1024-57-3	1.30E-05		IRIS (11/2000)	LOW	1000	1	Increased liver to body-weight ratios	DOG	ORAL:DIET
Phenol	108-95-2	6.00E-01		IRIS (11/2000)	Low	100	1	Reduced fetal body weights	RAT	ORAL:GAVAGE
Vanadium	7440-62-2	7.00E-03		HEAST	NA	100	1	No effects reported	RAT	ORAL:DRINKING WATER
Vinyl chloride	75-01-4	3.00E-03		IRIS (11/2000)	MEDIUM	30	1	Liver cell polymorphism	RAT	ORAL:DIET
1,1,1-Trichloroethane	71-55-6	2.80E-01		NCEA (8/4/99)	MEDIUM-LOW	90	NA	Hepatotoxicity	RAT	INHALATION

TABLE T-10
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Oral Dose-Response Value (mg/kg-day)	Reference (Last Verified) Type	EPA Confidence Level	Uncertainty Factor	Modifing Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,1-Dichloroethane	75-34-3	1.00E-01	HEAST	NA	1000	NA	No adverse effects observed	RAT	INHALATION:INTERMITTENT
1,1-Dichloroethene	75-35-4	9.00E-03	IRIS (5/2001)	MEDIUM	1000	1	Hepatic Lesions	RAT	ORAL:DRINKING WATER
2,4,5-T	93-76-5	1.00E-02	IRIS (5/2001)	MEDIUM	300	1	Increased urinary coproporphyrins; Reduced neonatal survival	RAT	ORAL:DIET
Aldrin	309-00-2	3.00E-05	IRIS (5/2001)	MEDIUM	1000	1	Liver toxicity	RAT	ORAL:DIET
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	2.00E-02	NCEA (3/16/01)	NA	10	1	Hematological Effects	HUMAN:TREATMENT	DIALASIS
MCPP	93-65-2	1.00E-03	IRIS (5/2001)	MEDIUM	3000	1	Increased absolute and relative kidney weights	RAT	ORAL:DIET
Mercury	7439-97-6	3.00E-04 (h)	IRIS (5/2001)	HIGH	1000	1	Autoimmune effects	RAT	ORAL:DIET AND SUBCUTANEOUS
Naphthalene	91-20-3	2.00E-02	IRIS (5/2001)	LOW	3000	1	Decreased mean terminal body weights in males	RAT	ORAL:GAVAGE
Total TCDD-TEQ	1746-01-6	NA	HEAST	NA	NA	NA	NA	NA	NA

Notes:
CAS - Chemical Abstracts Service.
LOAEL - Lowest Observed Adverse Effects Level.
RfD - Reference Dose.
NA - Not Available
NCEA - National Center for Environmental Assessment.
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2000c).
HEAST - Health Effects Assessment Summary Tables, published annually by the USEPA (1997b).
(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.
(b) Value for 3-Methylphenol; IRIS value for 4-Methylphenol has been withdrawn.
(c) Value for non-food
(d) Value for Aroclor 1254 (IRIS).
(e) As reported in the USEPA Region 9 Preliminary Remediation Goal (PRG) Table (10/1999).
(f) Value for cis-1,2-dichloroethene.
(g) Value for gamma-BHC used due to structural similarities.
(h) Value for mercuric chloride.
(i) As reported in the USEPA Region 3 Risk-Based Concetnrations (RBC) Table (5/8/2001).

TABLE T-11
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL NONCARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Inhalation Dose-Response Value (mg/kg-day)	Inhalation Reference Concentration (mg/m^3)	Reference (Last Verified) Type	EPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	2.29E-01	8.05E-01	IRIS (11/2000)	MEDIUM	100	1	Increased liver weight	RAT	INHALATION
2,4,6-Trichlorophenol	88-06-2	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
3/4-Methylphenol	(a)	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	5.71E-05 (b)	NA	NA	NA	10000	1	Hematological effects	RAT	INHALATION:INTERMITTENT
Antimony	7440-36-0	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	1.70E-03	6.00E-03	NCEA (7/2/96)	MEDIUM	1000	NA	Hematopoietic Effects	MOUSE	INHALATION:VAPOR
Benzo(a)anthracene	56-55-3	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	5.71E-03	2.00E-02	HEAST	NA	10000	1	Liver and kidney effects	RAT	INHALATION: INTERMITTENT
Chloroform	67-66-3	8.60E-05	NA	NCEA 12/1/97	NA	NA	NA	Nasal Effects	NA	NA
Dibenzo(a,h)anthracene	53-70-3	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
gamma-BHC	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	5.70E-04	2.00E-03	HEAST	NA	10000	1	Hematological effects and adrenal, renal, and heptatic lesions	MOUSE/RAT	INHALATION
Pentachlorophenol	87-86-5	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	1.14E-01	4.00E-01	NCEA (c)	MEDIUM	300	1	Hepatotoxicity and renal toxicity	MOUSE	INHALATION
Toluene	108-88-3	1.14E-01	4.00E-01	IRIS (11/2000)	MEDIUM	300	1	Neurological effects	HUMAN	INHALATION:OCCUPATIONAL
Total PCBs	1336-36-3	NA	NA	IRIS (11/2000)	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	120-82-1	5.71E-02	2.00E-01	HEAST	NA	1000	NA	Liver:Nonadverse weight changes	RAT,RABBIT, DOG, MONKEY	INHALATION
1,2-Dichlorobenzene	95-50-1	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
2,4-D	94-75-7	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	1.43E-04	5.00E-04	HEAST (ALT)	NA	1000	NA	Fetotoxicity	RAT	INHALATION:INTERMITTENT
Beryllium	7440-41-7	5.71E-06	2.00E-05	IRIS (3/2001)	MEDIUM	10	1	Lung - Chronic Beryllium Disease	HUMAN	INHALATION:OCCUPATIONAL
Hexachlorobenzene	118-74-1	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	1.43E-05	5.00E-05	IRIS (3/2001)	MEDIUM	1000	1	Neurological effects	HUMAN	INHALATION:OCCUPATIONAL
Methylene Chloride	75-09-2	8.60E-01	NA	HEAST	NA	NA	NA	NA	NA	NA
Phosphorous	7723-14-0	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
Pyridine	110-86-1	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	IRIS (3/2001)	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	2.29E-02	8.00E-02	IRIS (5/2001)	MEDIUM	1000	1	Increased liver wt, kidney effects	RAT	INHALATION:INTERMITTENT
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis/trans-1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	2.86E-02	1.00E-01	IRIS (5/2001)	MEDIUM	30	1	Liver cell polymorphism	RAT	ORAL:DIET
1,1,1-Trichloroethane	71-55-6	6.30E-01	2.20E+00	NCEA (8/4/99)	LOW-MEDIUM	90	NA	Neurotoxicity	GERBIL	INHALATION

TABLE T-11
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL NONCARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Inhalation Dose-Response Value (mg/kg-day)	Inhalation Reference Concentration (mg/m^3)	Reference (Last Verified) Type	EPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,1-Dichloroethane	75-34-3	1.00E-01	5.00E-01	HEAST (ALT)	NA	1000	NA	Kidney damage	CAT	INHALATION:INTERMITTENT
1,1-Dichloroethene	75-35-4	NA	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
2,4,5-T	93-76-5	NA	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	8.60E-02	3.00E-01	NCEA (6/14/99))	MEDIUM	30	10	Liver, kidney, CNS effects	MOUSE	INHALATION
Chrysene	218-01-9	NA	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	5.00E-06	2.00E-05	NCEA (12/20/00)	LOW-MEDIUM	100	NA	Lung function	HUMAN:OCCUPATIONAL	INHALATION
MCPP	93-65-2	NA	NA	IRIS (5/2001)	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	8.57E-05 (d)	3.00E-04	IRIS (5/2001)	MEDIUM	30	1	Hand tremor; Increases in memory disturbances; Slight autonomic dysfunction	HUMAN:OCCUPATIONAL	INHALATION
Naphthalene	91-20-3	8.57E-04	3.00E-03	IRIS (5/2001)	MEDIUM	3000	1	Nasal effects: hyperplasia and metaplasia in respiratory and olfactor epithelium	MOUSE	INHALATION
Total TCDD-TEQ	1746-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
ALT - Reported in the HEAST Alternate Table.
CAS - Chemical Abstracts Service.
LOAEL - Lowest Observed Adverse Effects Level.
RIC - Reference Concentration.
NA - Not Available.
NCEA - National Center for Environmental Assessment.
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2000c).
HEAST - Health Effects Assessment Summary Tables, published annually by the USEPA (1997b).
(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.
(b) Due to structural similarities, value for 2-Nitroaniline used.
(c) As reported in the USEPA Region 9 Preliminary Remediation Goal (PRG) Table (10/1999).
(d) Value for elemental mercury.
(e) As reported in the USEPA Region 3 Risk-Based Concentrations (RBC) Table (5/8/2001).

TABLE T-12
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL CARCINOGENIC EFFECTS BY THE ORAL ROUTE OF EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	EPA Carcinogen Class	Oral CSF (mg/kg-day)$^{-1}$		Oral CSF Reference (Last Verified)	Oral CSF Study Animal	Oral CSF Study Method
1,4-Dichlorobenzene	106-46-7	C	2.40E-02		HEAST (1997)	MOUSE	ORAL:GAVAGE
2,4,6-Trichlorophenol	88-06-2	B2	1.10E-02		IRIS (11/2000)	RAT	ORAL:DIET
2,4-Dichlorophenol	120-83-2	NA	NA		IRIS (11/2000)	NA	NA
3/4-Methylphenol	(a)	C	NA		IRIS (11/2000)	NA	NA
4-Nitroaniline	100-01-6	NA	NA		NA	NA	NA
Antimony	7440-36-0	NA	NA		IRIS (11/2000)	NA	NA
Arsenic	7440-38-2	A	1.50E+00		IRIS (11/2000)	HUMAN	ORAL:DRINKING WATER
Benzene	71-43-2	A	1.50E-02	(b)	IRIS (11/2000)	HUMAN	INHALATION: OCCUPATIONAL
Benzo(a)anthracene	56-55-3	B2	7.30E-01	(c)	IRIS (11/2000)	NA	NA
Benzo(a)pyrene	50-32-8	B2	7.30E+00		IRIS (11/2000)	MOUSE	ORAL:DIET
Benzo(b)fluoranthene	205-99-2	B2	7.30E-01	(c)	IRIS (11/2000)	NA	NA
Cadmium	7440-43-9	B1	NA		IRIS (11/2000)	NA	NA
Chlorobenzene	108-90-7	D	NA		IRIS (11/2000)	NA	NA
Chloroform	67-66-3	B2	6.10E-03		IRIS (11/2000)	RAT	ORAL:DRINKING WATER
Dibenzo(a,h)anthracene	53-70-3	B2	7.30E+00	(f)	IRIS (11/2000)	NA	NA
gamma-BHC	58-89-9	B2-C	1.30E+00		HEAST	MOUSE	ORAL:DIET
Lead	7439-92-1	B2	NA		NA	NA	NA
Nickel	7440-02-0	NA	NA	(i)	IRIS (11/2000)	NA	NA
Nitrobenzene	98-95-3	D	NA		IRIS (11/2000)	NA	NA
Pentachlorophenol	87-86-5	B2	1.20E-01		IRIS (11/2000)	MOUSE	ORAL:DIET
Tetrachloroethene	127-18-4	NA	5.20E-02		NCEA (k)	NA	NA
Toluene	108-88-3	D	NA		IRIS (11/2000)	NA	NA
Total PCBs	1336-36-3	B2	2.00E+00	(g)	IRIS (11/2000)	RAT	ORAL:DIET
Trichloroethene	79-01-6	NA	1.10E-02		NCEA (k)	MOUSE	ORAL:GAVAGE
1,2,4-Trichlorobenzene	120-82-1	D	NA		IRIS (3/2001)	NA	NA
1,2-Dichlorobenzene	95-50-1	D	NA		IRIS (3/2001)	NA	NA
2,4-D	94-75-7	NA	NA		IRIS (3/2001)	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA		IRIS (3/2001)	NA	NA
Barium	7440-39-3	NA	NA		IRIS (3/2001)	NA	NA
Beryllium	7440-41-7	B1	NA		IRIS (3/2001)	NA	NA
Hexachlorobenzene	118-74-1	B2	1.60E+00		IRIS (3/2001)	RAT	ORAL:DIET
Manganese	7439-96-5	D	NA		IRIS (3/2001)	NA	NA
Methylene Chloride	75-09-2	B2	7.50E-03		IRIS (3/2001)	MOUSE	INHALATION AND DRINKING WATER
Phosphorous	7723-14-0	NA	NA		IRIS (3/2001)	NA	NA
Pyridine	110-86-1	NA	NA		IRIS (3/2001)	NA	NA
Selenium	7782-49-2	D	NA		IRIS (3/2001)	NA	NA
Toxaphene	8001-35-2	B2	1.10E+00		IRIS (3/2001)	MOUSE	ORAL:DIET
2-Chlorophenol	95-57-8	NA	NA		IRIS (11/2000)	NA	NA
4-Chloroaniline	106-47-8	NA	NA		IRIS (11/2000)	NA	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	NA	NA		IRIS (11/2000)	NA	NA
Acetone	67-64-1	D	NA		IRIS (11/2000)	NA	NA
alpha-BHC	319-84-6	B2	6.30E+00		IRIS (11/2000)	MOUSE	ORAL:DIET
cis/trans-1,2-Dichloroethene	540-59-0	D	NA	(l)	IRIS (11/2000)	NA	NA
delta-BHC	319-86-8	D	NA		IRIS (11/2000)	NA	NA
Dieldrin	60-57-1	B2	1.60E+01		IRIS (11/2000)	MOUSE	ORAL:DIET
Heptachlor	76-44-8	B2	4.50E+00		IRIS (11/2000)	MOUSE	ORAL:DIET
Heptachlor epoxide	1024-57-3	B2	9.10E+00		IRIS (11/2000)	MOUSE	ORAL:DIET
Phenol	108-95-2	D	NA		IRIS (11/2000)	NA	NA
Vanadium	7440-62-2	NA	NA		HEAST	NA	NA
Vinyl chloride	75-01-4	A	7.20E-01	(m)	IRIS (11/2000)	RAT	ORAL:DIET
1,1,1-Trichloroethane	71-55-6	D	NA		IRIS (5/2001)	NA	NA
1,1-Dichloroethane	75-34-3	C	NA		NA	NA	NA
1,1-Dichloroethene	75-35-4	C	6.00E-01		IRIS (5/2001)	RAT	ORAL:DRINKING WATER
2,4,5-T	93-76-5	NA	NA		IRIS (5/2001)	NA	NA
Aldrin	309-00-2	B2	1.70E+01		IRIS (5/2001)	MOUSE	ORAL:DIET
Chloromethane	74-87-3	C	1.30E-02		HEAST	MOUSE	INHALATION:INTERMITTENT
Chrysene	218-01-9	B2	7.30E-03		NCEA (k)	NA	NA
Cobalt	7440-48-4	B1	NA		NCEA (12/20/00)	NA	NA
MCPP	93-65-2	NA	NA		IRIS (5/2001)	NA	NA

TABLE T-12
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL CARCINOGENIC EFFECTS BY THE ORAL ROUTE OF EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	EPA Carcinogen Class	Oral CSF $(mg/kg\text{-}day)^{-1}$	Oral CSF Reference (Last Verified)	Oral CSF Study Animal	Oral CSF Study Method
Mercury	7439-97-6	D	NA	IRIS (5/2001)	NA	NA
Naphthalene	91-20-3	C	NA	IRIS (5/2001)	NA	NA
Total TCDD-TEQ	1746-01-6	B2	1.50E+05	HEAST	RAT	ORAL:DIET

Notes:
CAS - Chemical Abstracts Service.
CSF - Cancer Slope Factor.
NCEA - National Center for Environmental Assessment
IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2000c).
HEAST - Health Effects Assessment Summary Tables, published annually by the USEPA (1997b).
(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.
(b) IRIS provides a range of CSF for benzene of 1.5E-02 to 5.5E-02 kg*day/mg. IRIS states that each value within this range has equal scientific plausibility.
(c) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.1 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).
(d) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.01 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).
(e) Cis-1,2-Dichloroethene has a carcinogen class of D; trans-1,2-Dichloroethene has not been classified; per IRIS.
(f) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 1.0 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).
(g) *This is the upperbound CSF for high risk and persistence PCBs. USEPA provides a range of slope factor or IRIS; these will be discussed in the risk characterization.*
(h) Value provided by IRIS for continuous adult exposure. This value used in calculations as vinyl chloride was not identified as a constituent of potential concern in residential areas.
(i) - Information for nickel, soluble salts on IRIS.
(k) As reported in the USEPA Region 9 PRG Table (10/1999).
(l) Cis-1,2-Dichloroethene has a carcinogen class of D; trans-1,2-Dichloroethene has not been classified; per IRIS.
(m) Value provided by IRIS for continuous adult exposure. This value used in calculations as vinyl chloride was not identified as a constituent of potential concern in residential areas.

T-13
DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL CARCINOGENIC EFFECTS BY THE INHALATION ROUTE OF EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	EPA Carcinogen Class	Inhalation CSF $(mg/kg\text{-}day)^{-1}$ (i)		Unit Risk Factor (ug/m^3)		Inhalation CSF Reference (Last Verified)	Inhalation CSF Study Animal	Inhalation CSF Study Method
1,4-Dichlorobenzene	106-46-7	C	2.20E-02		NA		NCEA (k)	NA	NA
2,4,6-Trichlorophenol	88-06-2	B2	1.09E-02		3.10E-06		IRIS (11/2000)	RAT	ORAL:DIET
2,4-Dichlorophenol	120-83-2	NA	NA		NA		IRIS (11/2000)	NA	NA
3/4-Methylphenol	(a)	C	NA		NA		IRIS (11/2000)	NA	NA
4-Nitroaniline	100-01-6	NA	NA		NA		NA	NA	NA
Antimony	7440-36-0	NA	NA		NA		NA	NA	NA
Arsenic	7440-38-2	A	1.50E+01		4.30E-03		IRIS (11/2000)	HUMAN	INHALATION: OCCUPATIONAL
Benzene	71-43-2	A	7.70E-03	(b)	2.20E-06		IRIS (11/2000)	HUMAN	INHALATION: OCCUPATIONAL
Benzo(a)anthracene	56-55-3	B2	3.10E-01	(c)	NA		IRIS (11/2000)	NA	NA
Benzo(a)pyrene	50-32-8	B2	3.10E+00		NA		NCEA (k)	NA	NA
Benzo(b)fluoranthene	205-99-2	B2	3.10E-01	(c)	NA		IRIS (11/2000)	NA	NA
Cadmium	7440-43-9	B1	6.30E+00		1.80E-03		IRIS (11/2000)	HUMAN	INHALATION: OCCUPATIONAL
Chlorobenzene	108-90-7	D	NA		NA		IRIS (11/2000)	NA	NA
Chloroform	67-66-3	B2	8.05E-02		2.30E-05		IRIS (11/2000)	MOUSE	ORAL:GAVAGE
Dibenzo(a,h)anthracene	53-70-3	B2	3.10E+00	(f)	NA		IRIS (11/2000)	NA	NA
gamma-BHC	58-89-9	B2-C	NA		NA		IRIS (11/2000)	NA	NA
Lead	7439-92-1	B2	NA		NA		IRIS (11/2000)	NA	NA
Nickel	7440-02-0	NA	NA	(j)	NA		IRIS (11/2000)	NA	NA
Nitrobenzene	98-95-3	D	NA		NA		IRIS (11/2000)	NA	NA
Pentachlorophenol	87-86-5	B2	NA		NA		IRIS (11/2000)	NA	NA
Tetrachloroethene	127-18-4	NA	2.00E-03		5.80E-07		NCEA (k)	NA	NA
Toluene	108-88-3	D	NA		NA		IRIS (11/2000)	NA	NA
Total PCBs	1336-36-3	B2	2.00E+00	(g)	NA		IRIS (11/2000)	RAT	ORAL:DIET
Trichloroethene	79-01-6	NA	6.00E-03		NA		NCEA (k)	NA	NA
1,2,4-Trichlorobenzene	120-82-1	D	NA		NA		IRIS (3/2001)	NA	NA
1,2-Dichlorobenzene	95-50-1	D	NA		NA		IRIS (3/2001)	NA	NA
2,4-D	94-75-7	NA	NA		NA		IRIS (3/2001)	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA		NA		IRIS (3/2001)	NA	NA
Barium	7440-39-3	NA	NA		NA		IRIS (3/2001)	NA	NA
Beryllium	7440-41-7	B1	8.40E+00		2.40E-03		IRIS (3/2001)	HUMAN	INHALATION: OCCUPATIONAL
Hexachlorobenzene	118-74-1	B2	1.61E+00		4.60E-04		IRIS (3/2001)	RAT	ORAL:DIET
Manganese	7439-96-5	D	NA		NA		IRIS (3/2001)	NA	NA
Methylene Chloride	75-09-2	B2	1.65E-03		4.70E-07		IRIS (3/2001)	MOUSE	INHALATION
Phosphorous	7723-14-0	NA	NA		NA		IRIS (3/2001)	NA	NA
Pyridine	110-86-1	NA	NA		NA		IRIS (3/2001)	NA	NA
Selenium	7782-49-2	D	NA		NA		IRIS (3/2001)	NA	NA
Toxaphene	8001-35-2	B2	1.12E+00		3.20E-04		IRIS (3/2001)	MOUSE	ORAL:DIET
2-Chlorophenol	95-57-8	NA	NA		NA		IRIS (11/2000)	NA	NA
4-Chloroaniline	106-47-8	NA	NA		NA		IRIS (11/2000)	NA	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	NA	NA		NA		IRIS (11/2000)	NA	NA
Acetone	67-64-1	D	NA		NA		IRIS (11/2000)	NA	NA
alpha-BHC	319-84-6	B2	6.30E+00		1.80E-03		IRIS (11/2000)	MOUSE	ORAL:DIET
cis/trans-1,2-Dichloroethene	540-59-0	D	NA		NA		IRIS (11/2000)	NA	NA
delta-BHC	319-86-8	D	NA		NA		IRIS (11/2000)	NA	NA
Dieldrin	60-57-1	B2	1.61E+01		4.60E-03		IRIS (11/2000)	MOUSE	ORAL:DIET
Heptachlor	76-44-8	B2	4.50E+00		1.30E-03		IRIS (11/2000)	MOUSE	ORAL:DIET
Heptachlor epoxide	1024-57-3	B2	9.10E+00		2.60E-03		IRIS (11/2000)	MOUSE	ORAL:DIET
Phenol	108-95-2	D	NA		NA		NA	NA	NA
Vanadium	7440-62-2	NA	NA		NA		HEAST	NA	NA
Vinyl chloride	75-01-4	A	1.54E-02		4.40E-06	(m)	IRIS (11/2000)	RAT	INHALATION
1,1,1-Trichloroethane	71-55-6	D	NA		NA		IRIS (5/2001)	NA	NA
1,1-Dichloroethane	75-34-3	C	NA		NA		NA	NA	NA
1,1-Dichloroethene	75-35-4	C	1.75E-01		5.00E-05		IRIS (5/2001)	MOUSE	INHALATION
2,4,5-T	93-76-5	NA	NA		NA		IRIS (5/2001)	NA	NA
Aldrin	309-00-2	B2	1.70E+01		4.93E-03		IRIS (5/2001)	MOUSE	ORAL:DIET
Chloromethane	74-87-3	C	3.50E-03		1.00E-06		NCEA (6/14/99)	MOUSE	INHALATION:INTERMITTENT
Chrysene	218-01-9	B2	3.10E-03		NA		NCEA (k)	NA	NA
Cobalt	7440-48-4	B1	9.80E+00		2.80E-03		NCEA (12/20/00)	MOUSE	INHALATION:INTERMITTENT
MCPP	93-65-2	NA	NA		NA		IRIS (5/2001)	NA	NA

T-13

DOSE-RESPONSE INFORMATION FOR COMPOUNDS WITH POTENTIAL CARCINOGENIC EFFECTS BY THE INHALATION ROUTE OF EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	EPA Carcinogen Class	Inhalation CSF $(mg/kg\text{-}day)^{-1}$ (i)	Unit Risk Factor $(ug/m^3)^{-1}$	Inhalation CSF Reference (Last Verified)	Inhalation CSF Study Animal	Inhalation CSF Study Method
Mercury	7439-97-6	D	NA	NA	IRIS (5/2001)	NA	NA
Naphthalene	91-20-3	C	NA	NA	IRIS (5/2001)	NA	NA
Total TCDD-TEQ	1746-01-6	B2	1.50E+05	NA	HEAST	RAT	ORAL:DIET

Notes:

CAS - Chemical Abstracts Service.

CSF - Cancer Slope Factor.

NCEA - National Center for Environmental Assessment

IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2000c).

HEAST - Health Effects Assessment Summary Tables, published annually by the USEPA (1997b).

(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.

(b) IRIS provides a range of inhalation unit risk factors for benzene of 2.2E-06 to 7.8E-06 m^3/ug. These are equivalent to an CSF range of 7.7 E-03 to 2.7E-02 kg*day/mg. IRIS states that each value within this range has equal scientific plausibility.

(c) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.1 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).

(d) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.01 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).

(e) Cis-1,2-Dichloroethene has a carcinogen class of D; trans-1,2-Dichloroethene has not been classified; per IRIS.

(f) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 1.0 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993d).

(g) *This is the upperbound CSF for high risk and persistence PCBs. USEPA provides a range of slope factor or IRIS; these will be discussed in the risk characterization.*

(h) Value provided by IRIS for continuous adult exposure. This value used in calculations as vinyl chloride was not identified as a constituent of potential concern in residential areas.

(i) Inhalation CSF calculated from the unit risk factor, where available, assuming a 70 kg adult breathes 20 m^3 of air per day.

(j) - Information for nickel, soluble salts, on IRIS.

(k) As reported in the USEPA Region 9 PRG Table (10/1999).

(m) Value provided by IRIS for continuous adult exposure. This value used in calculations as vinyl chloride was not identified as a constituent of potential concern in residential areas.

TABLE T-14
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CONSTRUCTION WORKER
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Parameter	RME Future Construction/Utility Worker		MLE Future Construction/Utility Worker	
Parameters Used in the Subsurface Soil Inhalation Pathway				
Exposure Time (hr/day)	8	(a)	8	(a)
Exposure Frequency (days/year)	40	(b)	20	(c)
Exposure Duration (yr)	1	(d)	1	(d)
Inhalation Rate (m^3/hour)	2.5	(e)	1.5	(f)
Body Weight (kg)	70	(g)	70	(g)
Parameters Used in the Subsurface Soil Pathway				
Exposure Frequency (days/year)	40	(b)	20	(c)
Exposure Duration (yr)	1	(d)	1	(d)
Soil Ingestion Rate (mg/day)	100	(g)	64	(h)
Skin Contacting Medium (cm^2)	3339	(i)	3339	(i)
Soil on Skin (mg/cm^2)	0.19	(j)	0.19	(j)
Body Weight (kg)	70	(g)	70	(g)
Parameters Used in the Groundwater Pathway				
Exposure Time (hr/event)	1	(k)	1	(k)
Exposure Frequency (days/year)	10	(k)	5	(k)
Exposure Duration (yr)	1	(d)	1	(d)
Water Ingestion Rate (l/event)	0.005	(l)	0.005	(l)
Skin Contacting Medium (cm^2)	3339	(i)	3339	(i)
Body Weight (kg)	70	(g)	70	(g)
Parameters Used in the Groundwater Inhalation Pathway				
Exposure Time (hr/day)	8	(a)	8	(a)
Exposure Frequency (days/year)	40	(b)	20	(c)
Exposure Duration (yr)	1	(d)	1	(d)
Inhalation Rate (m^3/hour)	2.5	(e)	1.5	(f)
Body Weight (kg)	70	(g)	70	(g)

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) - USEPA, 1997a. Exposure Factors Handbook. 50th percentile time spent at work, males and females, all ages. Table 15-68.
(b) - Exposure frequency is equivalent to 5 days per week for 2 months.
(c) - Exposure frequency is equivalent to five days per week for one month.
(d) - Construction activities are assumed to occur over a 1 year period.
(e) - USEPA, 1997a. Exposure Factors Handbook. Inhalation rate is the value for heavy activity for an outdoor worker listed in Table 5-23.
(f) - USEPA, 1997a. Exposure Factors Handbook. Inhalation rate is the value for moderate activity for an outdoor worker listed in Table 5-23.
(g) - USEPA, 1991b. Standard Default Exposure Factors.
(h) - ENSR-derived value; described briefly in the text.
(i) - USEPA, 1997a. Exposure Factors Handbook. Represents 50th percentile values for males and females based on hands, forearms, and face.
(j) - USEPA, 1997a. Exposure Factors Handbook. See Table 5-10 for calculation.
(k) - Assumed that contact with water occurs only for a fraction of the total exposure duration and time.
(l) - USEPA, 1989a. Risk Assessment Guidance for Superfund, Volume I. Value is one-tenth of that assumed to occur during a swimming event.

5/29/01

TABLE T-15
ABSORPTION ADJUSTMENT FACTORS (AAFs) FOR CHRONIC EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Exposure Route (Medium)									
	Oral (Water)		Oral (Soil)		Dermal (Water)		Dermal (Soil)		Inhalation	
	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.
1,4-Dichlorobenzene	1	1	1	1	1	1	0.01	0.01	1	1
2,4,6-Trichlorophenol	1	NA	1	NA	1	NA	0.01	NA	1	NA
2,4-Dichlorophenol	NA	1	NA	1	NA	1	NA	0.01	1	1
3/4-Methylphenol	NA	1	NA	1	NA	1	NA	0.01	NA	NA
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
Antimony	NA	1	NA	1	NA	6.7	NA	0.007	NA	NA
Arsenic	1	1	0.3	0.3	1	1	0.001	0.001	1	NA
Benzene	1	1	1	1	2.13	2.13	0.02	0.02	1	1
Benzo(a)anthracene	1	NA	0.29	NA	1	NA	0.02	NA	1	NA
Benzo(a)pyrene	1	NA	0.29	NA	1	NA	0.02	NA	1	NA
Benzo(b)fluoranthene	1	NA	0.29	NA	1	NA	0.02	NA	1	NA
Cadmium	NA	1	NA	1	NA	40	NA	0.04	1	NA
Chlorobenzene	NA	1	NA	1	NA	1	NA	0.01	NA	1
Chloroform	1	1	1	1	1	1	0.01	0.01	0.66	1
Dibenzo(a,h)anthracene	1	NA	0.29	NA	1	NA	0.02	NA	1	NA
gamma-BHC	1	1	1	1	1	1	0.01	0.01	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	1	NA	1	NA	77	NA	0.08	NA	NA
Nitrobenzene	NA	1	NA	1	NA	1	NA	0.01	NA	1
Pentachlorophenol	1	1	1	1	1	1	0.01	0.01	NA	NA
Tetrachloroethene	1	1	1	1	1	1	0.01	0.01	1	1
Toluene	NA	1	NA	1	NA	1	NA	0.01	NA	1
Total PCBs	1	1	0.83	0.83	1.1	1.1	0.04	0.04	1	NA
Trichloroethene	1	1	1	1	1	1	0.01	0.01	1	NA
1,2,4-Trichlorobenzene	NA	1	NA	1	NA	1	NA	0.01	NA	1
1,2-Dichlorobenzene	NA	1	NA	1	NA	1	NA	0.01	NA	NA
2,4-D	NA	1	NA	1	NA	1	NA	0.01	NA	NA
2,4-Dinitrotoluene	NA	1	NA	1	NA	1	NA	0.01	NA	NA
Barium	NA	1	NA	1	NA	1	NA	0.001	NA	1
Beryllium	NA	1	NA	1	NA	100	NA	0.1	1	1
Hexachlorobenzene	1	1	0.83	0.83	1.1	1.1	0.04	0.04	1.1	NA
Manganese	NA	1	NA	1	NA	10	NA	0.01	NA	1
Methylene Chloride	1	1	1	1	1.6	1.6	0.016	0.016	1	1
Phosphorous	NA	1	NA	1	NA	1	NA	0.001	NA	NA
Pyridine	NA	1	NA	1	NA	1	NA	0.01	NA	NA
Selenium	NA	1	NA	1	NA	1	NA	0.001	NA	NA
Toxaphene	1	NA	1	NA	1	NA	0.01	NA	1	NA
2-Chlorophenol	NA	1	NA	1	NA	1	NA	0.01	NA	NA
4-Chloroaniline	NA	1	NA	1	NA	1	NA	0.01	NA	NA
4-Methyl-2-pentanone (MIBK)	NA	1	NA	1	NA	1	NA	0.01	NA	1
Acetone	NA	1	NA	1	NA	1	NA	0.01	NA	NA
alpha-BHC	1	NA	1	NA	1	NA	0.01	NA	1	NA
cis/trans-1,2-Dichloroethene	NA	1	NA	1	NA	1	NA	0.01	NA	NA
delta-BHC	NA	1	NA	1	NA	1	NA	0.01	NA	NA

TABLE T-15
ABSORPTION ADJUSTMENT FACTORS (AAFs) FOR CHRONIC EXPOSURE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Exposure Route (Medium)									
	Oral (Water)		Oral (Soil)		Dermal (Water)		Dermal (Soil)		Inhalation	
	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.	Carc.	Noncarc.
Dieldrin	1	1	1	1	1	1	0.01	0.01	1	NA
Heptachlor	1	1	1	1	1	1	0.01	0.01	1	NA
Heptachlor epoxide	1	1	1	1	1	1	0.01	0.01	1	NA
Phenol	NA	1	NA	1	NA	1	NA	0.01	NA	NA
Vanadium	NA	1	NA	1	NA	10	NA	0.01	NA	NA
Vinyl chloride	1	1	1	1	1	1	0.01	0.01	1	1
1,1,1-Trichloroethane	NA	1	NA	1	NA	1	NA	0.01	NA	1
1,1-Dichloroethane	NA	1	NA	1	NA	1	NA	0.01	NA	1
1,1-Dichloroethene	1	1	1	1	1	1	0.01	0.01	1	NA
2,4,5-T	NA	1	NA	1	NA	1	NA	0.01	NA	NA
Aldrin	1	1	1	1	1	1	0.01	0.01	1	NA
Chloromethane	1	NA	1	NA	1	NA	0.01	NA	1	1
Chrysene	1	NA	0.29	NA	1	NA	0.02	NA	1	NA
Cobalt	NA	1	NA	1	NA	1	NA	0.001	1	1
MCPP	NA	1	NA	1	NA	1	NA	0.01	NA	NA
Mercury	NA	2	NA	2	NA	13.7	NA	0.007	NA	1
Naphthalene	NA	1	NA	0.29	NA	1	NA	0.1	NA	1
Total TCDD-TEQ	1	NA	0.5	NA	1.8	NA	0.05	NA	1	NA

Notes:
All Absorption Adjustment Factors were derived by ENSR.
Carc. - The value derived is for assessing the compound's carcinogenic potential.
Noncarc. - The value derived is for assessing the compound's noncarcinogenic potential.
NA - Not Applicable. No Dose-response value available.

TABLE T-16
DERMAL PERMEABILITY CONSTANTS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Dermal Permeability Constant (cm/hr) (a)	
2,4,5-T	1.40E-04	(k)
Aldrin	1.60E-03	
Chloromethane	4.20E-03	
Chrysene	8.10E-01	
Cobalt	4.00E-04	(l)
MCPP	1.14E-02	(k)
Mercury	1.00E-03	(m)
Naphthalene	6.90E-02	
Total TCDD-TEQ	1.40E+00	

Notes:
(a) All values are from USEPA, 1992b, Dermal Exposure Assessment: Principles and Applications, Table 5-7, unless otherwise noted.
(b) Average value of 3-Methylphenol and 4-methylphenol
(d) Value for water (USEPA, 1992b, Table 5-7)
(e) Value for cadmium chloride (USEPA, 1992b, Table 5-3)
(f) Due to structural similarity, the value for heptachlor is used to evaluate this constituent.
(g) Value for lead acetate (USEPA, 1992b, Table 5-3)
(h) Average of values for nickel chloride and nickel sulfate (USEPA, 1992b, Table 5-3)
(i) Value for PCB hexachlorobiphenyl (USEPA, 1992b, Table 5-7)
(k) Calculated in Table 5-43 using logKow, molecular weight, and equation 5.8 from USEPA, 1992b.
(l) Value for cobalt chloride (USEPA, 1992b, Table 5-3)
(m) Value for mercuric chloride (USEPA, 1992b, Table 5-3)

TABLE T-17
DERMAL PERMEABILITY CONSTANTS - CALCULATED VALUES (c)
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	Molecular Weight (grams/mol) (a)	Log Kow (a)	Log Permiability constant (PC) (b)	Dermal Permeability Constant (cm/hr) (b)
4-Nitroaniline	138.13	1.39	-2.575693	2.66E-03
Nitrobenzene	123.11	1.85	-2.157471	6.96E-03
2,4-D	221.04	2.81	-2.073244	8.45E-03
Pyridine	79.1	0.65	-2.74101	1.82E-03
4-Chloroaniline	127.57	1.83	-2.198877	6.33E-03
4-Methyl-2-pentanone (MIBK)	100.16	1.09	-2.557076	2.77E-03
Acetone	58.08	-0.24	-3.244688	5.69E-04
alpha-BHC	290.83	3.81	-1.788963	1.63E-02
delta-BHC	290.83	4.14	-1.554663	2.79E-02
2,4,5-T	255.48	0.6	-3.852428	1.40E-04
MCPP	214.5	2.94 (d)	-1.94105	1.15E-02

Notes:
Kow - Octanol-Water Partition Coefficient.
PC - Permeability Constant.
(a) Handbook of RCRA Groundwater Monitoring Constituents. Physical and Chemical Properties. USEPA. September 1992d.
(b) USEPA, 1992b Dermal Exposure Equation 5.8: Log PC = -2.72 + 0.71 log Kow - 0.0061 MW
(c) Values not presented in USEPA 1992d.
(d) Handbook of Physical Properties of Organic Chemicals. Lewis, 1997.

TABLE T-18
EXPOSURE POINT CONCENTRATIONS (RME) - SITE SOILS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Construction Scenario EPCs Site (mg/kg)			
		G	H	I	L
1,4-Dichlorobenzene	106-46-7	--	3.06E+04	1.84E+03	--
2,4,6-Trichlorophenol	88-06-2	--	6.13E+02	--	--
2,4-Dichlorophenol	120-83-2	--	7.42E+02	--	--
4-Nitroaniline	100-01-6	--	1.83E+03	--	--
Antimony	7440-36-0	--	--	6.66E+03	--
Arsenic	7440-38-2	--	--	--	1.72E+02
Benzene	71-43-2	4.53E+01	6.13E+01	2.41E+01	5.70E+00
Benzo(a)anthracene	56-55-3	--	3.78E+02	--	--
Benzo(a)pyrene	50-32-8	--	2.72E+02	--	--
Benzo(b)fluoranthene	205-99-2	--	2.11E+02	--	--
Cadmium	7440-43-9	--	2.94E+02	--	--
Chlorobenzene	108-90-7	5.38E+02	4.52E+02	1.27E+02	5.30E+00
Chloroform	67-66-3	1.16E+01	--	--	2.03E+01
Dibenzo(a,h)anthracene	53-70-3	--	3.17E+01	--	--
Lead	7439-92-1	--	--	2.06E+03	--
Nickel	7440-02-0	--	1.51E+04	--	--
Pentachlorophenol	87-86-5	4.77E+03	--	--	--
Tetrachloroethene	127-18-4	3.30E+01	--	--	--
Toluene	108-88-3	1.18E+02	7.65E+01	7.79E+01	4.00E+02
Total PCBs	1336-36-3	4.43E+03	1.80E+04	3.43E+02	5.00E+02
1,2,4-Trichlorobenzene	120-82-1	--	7.58E+03	8.26E+03	--
1,2-Dichlorobenzene	95-50-1	--	1.94E+04	3.24E+02	--
Barium	7440-39-3	4.18E+04	--	--	--
Beryllium	7440-41-7	--	--	1.53E+03	--
Hexachlorobenzene	118-74-1	4.06E+01	--	1.27E+03	4.80E+00
Manganese	7439-96-5	--	3.65E+04	--	--
Methylene Chloride	75-09-2	--	5.56E+01	--	--
Phosphorous	7723-14-0	8.98E+02	--	--	--
Selenium	7782-49-2	--	--	1.32E+03	--
Toxaphene	8001-35-2	--	--	4.93E+02	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.

TABLE T-19
EXPOSURE POINT CONCENTRATIONS (RME) - SITE SOILS - OUTDOOR EXCAVATION AIR
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Construction Scenario EPCs for Air Site (mg/m3) (a)			
		G	H	I	L
1,4-Dichlorobenzene	106-46-7	--	1.84E-03	1.10E-04	--
2,4,6-Trichlorophenol	88-06-2	--	3.68E-05	--	--
2,4-Dichlorophenol	120-83-2	--	4.45E-05	--	--
4-Nitroaniline	100-01-6	--	1.10E-04	--	--
Antimony	7440-36-0	--	--	4.00E-04	--
Arsenic	7440-38-2	--	--	--	1.03E-05
Benzene	71-43-2	2.72E-06	3.68E-06	1.45E-06	3.42E-07
Benzo(a)anthracene	56-55-3	--	2.27E-05	--	--
Benzo(a)pyrene	50-32-8	--	1.63E-05	--	--
Benzo(b)fluoranthene	205-99-2	--	1.27E-05	--	--
Cadmium	7440-43-9	--	1.76E-05	--	--
Chlorobenzene	108-90-7	3.23E-05	2.71E-05	7.61E-06	3.18E-07
Chloroform	67-66-3	6.98E-07	--	--	1.22E-06
Dibenzo(a,h)anthracene	53-70-3	--	1.90E-06	--	--
Lead	7439-92-1	--	--	1.24E-04	--
Nickel	7440-02-0	--	9.06E-04	--	--
Pentachlorophenol	87-86-5	2.86E-04	--	--	--
Tetrachloroethene	127-18-4	1.98E-06	--	--	--
Toluene	108-88-3	7.06E-06	4.59E-06	4.67E-06	2.40E-05
Total PCBs	1336-36-3	2.66E-04	1.08E-03	2.06E-05	3.00E-05
1,2,4-Trichlorobenzene	120-82-1	--	4.55E-04	4.95E-04	--
1,2-Dichlorobenzene	95-50-1	--	1.16E-03	1.94E-05	--
Barium	7440-39-3	2.51E-03	--	--	--
Beryllium	7440-41-7	--	--	9.18E-05	--
Hexachlorobenzene	118-74-1	2.44E-06	--	7.62E-05	2.88E-07
Manganese	7439-96-5	--	2.19E-03	--	--
Methylene Chloride	75-09-2	--	3.34E-06	--	--
Phosphorous	7723-14-0	5.39E-05	--	--	--
Selenium	7782-49-2	--	--	7.92E-05	--
Toxaphene	8001-35-2	--	--	2.96E-05	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.
(a) - Excavation air concentrations are the soil concentration (mg/kg) multiplied by the PM10 (Particulate Matter of 10 microns in diameter) dust concentration (0.06 mg/m3) (MADEP, 1995) multiplied by a unit correction factor (1E-6 kg/mg).

TABLE T-20
EXPOSURE POINT CONCENTRATIONS (RME) - GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Groundwater EPCs (mg/L)			
		Site G (b)	Site H (c)	Site I (b)	Site L (c)
1,4-Dichlorobenzene	106-46-7	--	1.60E+00	1.30E+00	8.70E-01
2,4,6-Trichlorophenol	88-06-2	4.95E+00	5.10E-02	1.30E+00	--
2,4-Dichlorophenol	120-83-2	--	--	2.60E+00	--
3/4-Methylphenol	(a)	1.40E+00	4.80E-01	6.30E-01	--
Arsenic	7440-38-2	--	4.50E-01	--	7.90E-01
Benzene	71-43-2	8.80E-01	2.50E+00	6.90E-01	--
Benzo(a)anthracene	56-55-3	--	--	2.20E-02	--
Cadmium	7440-43-9	1.20E-01	2.20E+01	7.85E-01	2.70E-01
Chlorobenzene	108-90-7	2.80E+00	2.70E+00	8.90E+00	--
Chloroform	67-66-3	3.20E-02	--	2.90E+00	--
gamma-BHC	58-89-9	4.20E-03	--	--	--
Lead (d)	7439-92-1	6.09E+00	8.19E+00	2.61E+00	--
Nitrobenzene	98-95-3	7.35E-02	--	1.30E-02	--
Pentachlorophenol	87-86-5	7.60E+00	4.50E-01	6.30E+00	1.50E-01
Tetrachloroethene	127-18-4	1.30E-01	3.30E-02	2.90E-01	7.20E-02
Total PCBs	1336-36-3	5.40E-03	--	1.08E-01	--
Trichloroethene	79-01-6	3.40E-01	--	6.20E-01	--
1,2,4-Trichlorobenzene	120-82-1	--	--	3.20E+00	--
2,4-D	94-75-7	5.00E+01	4.20E-01	1.30E+00	--
2,4-Dinitrotoluene	121-14-2	--	--	3.80E-02	--
Barium	7440-39-3	5.30E+00	--	5.85E+01	--
Hexachlorobenzene	118-74-1	--	1.80E-02	--	--
Pyridine	110-86-1	--	--	--	3.90E-01
2-Chlorophenol	95-57-8	1.10E+00	--	4.60E-01	--
4-Methyl-2-pentanone (MIBK)	108-10-1	9.30E-01	--	1.60E+00	--
Acetone	67-64-1	7.30E-01	--	1.20E+01	--
alpha-BHC	319-84-6	5.40E-04	--	2.50E-03	--
cis/trans-1,2-Dichloroethene	540-59-0	1.90E+00	--	1.50E+01	--
delta-BHC	319-86-8	--	--	1.90E-03	--
Dieldrin	60-57-1	--	--	1.50E-03	--
Heptachlor	76-44-8	--	--	2.50E-03	--
Heptachlor epoxide	1024-57-3	--	--	1.30E-03	--
Phenol	108-95-2	1.60E+01	--	6.70E+00	--
Vanadium	7440-62-2	6.20E-01	--	--	--
Vinyl chloride	75-01-4	1.60E-01	--	1.00E-01	--
1,1,1-Trichloroethane	71-55-6	--	--	1.30E+01	--
1,1-Dichloroethane	75-34-3	--	--	3.70E+00	--
1,1-Dichloroethene	75-35-4	--	--	4.80E-01	--
2,4,5-T	93-76-5	3.80E-01	--	--	--
Aldrin	309-00-2	2.30E-04	--	--	--
Chloromethane	74-87-3	2.60E-02	--	--	--
Chrysene	218-01-9	--	--	2.30E-02	--
Cobalt	7440-48-4	1.40E+00	--	--	--
MCPP	93-65-2	--	--	3.40E+01	--
Mercury	7439-97-6	--	--	1.80E-02	--
Naphthalene	91-20-3	1.00E+00	--	2.50E+00	--
Total TCDD-TEQ	1746-01-6	6.77E-08	--	3.07E-07	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.
TCLP - Toxicity Characteristic Leaching Procedure.
(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.
(b) The higher of leachate data and TCLP data (Table T-33) are listed here and are evaluated as groundwater.
(c) Leachate concentrations, as defined by the TCLP results for waste samples at each site, are evaluated as groundwater.
(d) EPCs for Lead are arithmethic averages.

TABLE T-21
EXPOSURE POINT CONCENTRATIONS (RME) - EXCAVATION AIR, VOLATILIZATION FROM EXPOSED GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Site Excavation Air EPCs (mg/m3) (a)			
		Site G	Site H	Site I	Site L
Benzene	71-43-2	2.38E-02	6.77E-02	1.87E-02	--
Chlorobenzene	108-90-7	6.99E-02	6.74E-02	2.22E-01	--
Chloroform	67-66-3	--	--	7.95E-02	--
Tetrachloroethene	127-18-4	3.13E-03	7.95E-04	6.99E-03	1.74E-03
Trichloroethene	79-01-6	4.45E-02	--	8.11E-02	--
Methylene Chloride	75-09-2	--	--	--	--
4-Methyl-2-pentanone (MIBK)	108-10-1	8.93E-02	--	1.54E-01	--
Acetone	67-64-1	1.60E-02	--	2.62E-01	--
cis/trans-1,2-Dichloroethene (b)	540-59-0	5.85E-02	--	4.62E-01	--
Vinyl chloride	75-01-4	5.06E-03	--	3.16E-03	--
1,1,1-Trichloroethane	71-55-6	--	--	3.27E-01	--
1,1-Dichloroethane	75-34-3	--	--	1.05E-01	--
1,1-Dichloroethene	75-35-4	--	--	1.36E-02	--
Chloromethane	74-87-3	9.36E-04	--	--	--
Naphthalene	91-20-3	2.18E-02	--	5.46E-02	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
RME - Reasonable Maximum Exposure.
(a) Excavation air concentration (mg/m3) = groundwater concentration (mg/l) * groundwater-to-air attenuation factor (l/m^3) calculated in Table T-34.
(b) Values for trans-1,2-dichloroethene.

TABLE T-23
EXPOSURE POINT CONCENTRATIONS (MLE) - SITE SOILS - OUTDOOR EXCAVATION AIR
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Construction Scenario EPCs for Air Site (mg/m3) (a)			
		G	H	I	L
1,4-Dichlorobenzene	106-46-7	--	3.79E-04	1.53E-05	--
2,4,6-Trichlorophenol	88-06-2	--	1.84E-05	--	--
2,4-Dichlorophenol	120-83-2	--	9.01E-06	--	--
4-Nitroaniline	100-01-6	--	1.10E-04	--	--
Antimony	7440-36-0	--	--	1.34E-04	--
Arsenic	7440-38-2	--	--	--	3.22E-06
Benzene	71-43-2	9.21E-07	9.13E-07	2.28E-07	1.20E-07
Benzo(a)anthracene	56-55-3	--	7.58E-06	--	--
Benzo(a)pyrene	50-32-8	--	8.18E-06	--	--
Benzo(b)fluoranthene	205-99-2	--	4.26E-06	--	--
Cadmium	7440-43-9	--	1.13E-05	--	--
Chlorobenzene	108-90-7	6.51E-06	5.86E-06	2.08E-06	7.49E-08
Chloroform	67-66-3	6.98E-07	--	--	4.08E-07
Dibenzo(a,h)anthracene	53-70-3	--	1.90E-06	--	--
Lead	7439-92-1	--	--	1.24E-04	--
Nickel	7440-02-0	--	1.06E-04	--	--
Pentachlorophenol	87-86-5	7.91E-05	--	--	--
Tetrachloroethene	127-18-4	1.13E-06	--	--	--
Toluene	108-88-3	2.91E-06	1.37E-06	6.76E-07	3.99E-06
Total PCBs	1336-36-3	5.45E-05	1.64E-04	1.08E-05	1.55E-05
1,2,4-Trichlorobenzene	120-82-1	--	7.99E-05	8.39E-05	--
1,2-Dichlorobenzene	95-50-1	--	3.89E-04	4.97E-06	--
Barium	7440-39-3	3.00E-04	--	--	--
Beryllium	7440-41-7	--	--	9.18E-05	--
Hexachlorobenzene	118-74-1	2.06E-06	--	1.55E-05	2.88E-07
Manganese	7439-96-5	--	2.32E-04	--	--
Methylene Chloride	75-09-2	--	3.80E-07	--	--
Phosphorous	7723-14-0	3.22E-05	--	--	--
Selenium	7782-49-2	--	--	7.92E-05	--
Toxaphene	8001-35-2	--	--	2.96E-05	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.
(a) - Excavation air concentrations are the soil concentration (mg/kg) multiplied by the PM10 (Particulate Matter of 10 microns in diameter) dust concentration (0.06 mg/m3) (MADEP, 1995) multiplied by a unit correction factor (1E-6 kg/mg).

TABLE T-24
EXPOSURE POINT CONCENTRATIONS (MLE) - GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent	CAS Number	Groundwater EPCs (mg/L)			
		Site G (b)	Site H (c)	Site I (b)	Site L (c)
1,4-Dichlorobenzene	106-46-7	--	3.55E-01	9.90E-01	2.53E-01
2,4,6-Trichlorophenol	88-06-2	1.27E+00	3.02E-02	1.30E+00	--
2,4-Dichlorophenol	120-83-2	--	--	2.60E+00	--
3/4-Methylphenol	(a)	1.40E+00	1.12E-01	6.30E-01	--
Arsenic	7440-38-2	--	1.70E-01	--	2.73E-01
Benzene	71-43-2	8.80E-01	5.23E-01	6.90E-01	--
Benzo(a)anthracene	56-55-3	--	--	2.20E-02	--
Cadmium	7440-43-9	6.75E-02	4.52E+00	2.64E-01	1.60E-01
Chlorobenzene	108-90-7	2.80E+00	8.46E-01	2.62E+00	--
Chloroform	67-66-3	3.20E-02	--	7.33E-01	--
gamma-BHC	58-89-9	2.00E-03	--	--	--
Lead	7439-92-1	6.09E+00	8.19E+00	2.61E+00	--
Nitrobenzene	98-95-3	3.96E-02	--	1.30E-02	--
Pentachlorophenol	87-86-5	7.60E+00	1.74E-01	6.30E+00	1.31E-01
Tetrachloroethene	127-18-4	9.90E-02	1.65E-02	8.00E-02	3.48E-02
Total PCBs	1336-36-3	5.40E-03	--	1.08E-01	--
Trichloroethene	79-01-6	3.40E-01	--	6.20E-01	--
1,2,4-Trichlorobenzene	120-82-1	--	--	3.20E+00	--
2,4-D	94-75-7	1.32E+01	9.29E-02	1.30E+00	--
2,4-Dinitrotoluene	121-14-2	--	--	2.83E-02	--
Barium	7440-39-3	2.94E+00	--	1.50E+01	--
Hexachlorobenzene	118-74-1	--	1.80E-02	--	--
Pyridine	110-86-1	--	--	--	1.69E-01
2-Chlorophenol	95-57-8	1.10E+00	--	4.60E-01	--
4-Methyl-2-pentanone (MIBK)	108-10-1	9.30E-01	--	1.60E+00	--
Acetone	67-64-1	7.30E-01	--	1.20E+01	--
alpha-BHC	319-84-6	5.40E-04	--	2.50E-03	--
cis/trans-1,2-Dichloroethene	540-59-0	1.90E+00	--	1.50E+01	--
delta-BHC	319-86-8	--	--	1.90E-03	--
Dieldrin	60-57-1	--	--	1.50E-03	--
Heptachlor	76-44-8	--	--	2.50E-03	--
Heptachlor epoxide	1024-57-3	--	--	1.30E-03	--
Phenol	108-95-2	1.60E+01	--	6.70E+00	--
Vanadium	7440-62-2	6.20E-01	--	--	--
Vinyl chloride	75-01-4	1.60E-01	--	1.00E-01	--
1,1,1-Trichloroethane	71-55-6	--	--	1.30E+01	--
1,1-Dichloroethane	75-34-3	--	--	3.70E+00	--
1,1-Dichloroethene	75-35-4	--	--	4.80E-01	--
2,4,5-T	93-76-5	3.80E-01	--	--	--
Aldrin	309-00-2	2.30E-04	--	--	--
Chloromethane	74-87-3	2.60E-02	--	--	--
Chrysene	218-01-9	--	--	2.30E-02	--
Cobalt	7440-48-4	1.40E+00	--	--	--
MCPP	93-65-2	--	--	3.40E+01	--
Mercury	7439-97-6	--	--	1.80E-02	--
Naphthalene	91-20-3	1.00E+00	--	2.50E+00	--
Total TCDD-TEQ	1746-01-6	6.77E-08	--	3.07E-07	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.
TCLP - Toxicity Characteristic Leaching Procedure.
(a) The CAS numbers for 3-Methylphenol and 4-Methylphenol are 106-44-5 and 108-39-4, respectively.
(b) The higher of leachate data and TCLP data (Table T-33) are listed here and are evaluated as groundwater.
(c) Leachate concentrations, as defined by the TCLP results for waste samples at each site, are evaluated as groundwater.

TABLE T-25
EXPOSURE POINT CONCENTRATIONS (MLE) - EXCAVATION AIR, VOLATILIZATION FROM EXPOSED GROUNDWATER
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Constituent / Site Location	CAS Number	Site Excavation Air EPCs (mg/m3) (a)			
		Site G	Site H	Site I	Site L
Benzene	71-43-2	2.38E-02	1.42E-02	1.87E-02	--
Chlorobenzene	108-90-7	6.99E-02	2.11E-02	6.53E-02	--
Chloroform	67-66-3	--	--	2.01E-02	--
Tetrachloroethene	127-18-4	2.39E-03	3.98E-04	1.93E-03	8.39E-04
Trichloroethene	79-01-6	4.45E-02	--	--	--
4-Methyl-2-pentanone (MIBK)	108-10-1	8.93E-02	--	1.54E-01	--
Acetone	67-64-1	1.60E-02	--	2.62E-01	--
cis/trans-1,2-Dichloroethene	540-59-0	5.85E-02	--	4.62E-01	--
Vinyl chloride	75-01-4	5.06E-03	--	3.16E-03	--
1,1,1-Trichloroethane	71-55-6	--	--	3.27E-01	--
1,1-Dichloroethane	75-34-3	--	--	1.05E-01	--
1,1-Dichloroethene	75-35-4	--	--	1.36E-02	--
Chloromethane	74-87-3	9.36E-04	--	--	--
Naphthalene	91-20-3	2.18E-02	--	5.46E-02	--

Notes:
-- - Not a COPC in this area/medium.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
EPC - Exposure Point Concentration.
MLE - Most Likely Exposure.
(a) Excavation air concentration (mg/m3) = groundwater concentration (mg/l) * groundwater-to-air attenuation factor (l/m^3) calculated in Table T-34.

TABLE T-26
TOTAL POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - RME
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site G					Site H				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	1.75E-06	1.81E-08	4.55E-08	NC	1.81E-06
2,4,6-Trichlorophenol	NC	NC	5.23E-08	NC	5.23E-08	1.60E-08	1.78E-10	5.39E-10	NC	1.68E-08
2,4-Dichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	NC	NC	2.09E-08	NC	2.09E-08
Benzene	1.71E-09	9.37E-12	1.14E-08	8.21E-08	9.52E-08	2.32E-09	1.27E-11	3.24E-08	2.33E-07	2.68E-07
Benzo(a)anthracene	NC	NC	NC	NC	NC	2.57E-07	3.14E-09	NC	NC	2.60E-07
Benzo(a)pyrene	NC	NC	NC	NC	NC	1.85E-06	2.26E-08	NC	NC	1.87E-06
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	1.44E-07	1.76E-09	NC	NC	1.46E-07
Cadmium	NC	NC	NC	NC	NC	NC	4.97E-08	NC	NC	4.97E-08
Chlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloroform	1.69E-10	1.66E-11	3.79E-11	NC	2.23E-10	NC	NC	NC	NC	NC
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	2.16E-07	2.64E-09	NC	NC	2.18E-07
gamma-BHC	NC	NC	1.58E-09	NC	1.58E-09	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pentachlorophenol	1.36E-06	NC	1.11E-05	NC	1.25E-05	NC	NC	6.57E-07	NC	6.57E-07
Tetrachloroethene	4.08E-09	1.77E-12	6.25E-09	2.80E-09	1.31E-08	NC	NC	1.59E-09	7.12E-10	2.30E-09
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total PCBs	2.15E-05	2.38E-07	1.58E-07	NC	2.19E-05	8.73E-05	9.66E-07	NC	NC	8.82E-05
Trichloroethene	NC	NC	1.22E-09	1.19E-07	1.21E-07	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-D	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Beryllium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Hexachlorobenzene	1.58E-07	1.93E-09	NC	NC	1.60E-07	NC	NC	1.25E-07	NC	1.25E-07
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	1.03E-09	2.45E-12	NC	NC	1.03E-09
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Acetone	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	1.13E-09	NC	1.13E-09	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	1.89E-08	3.48E-08	5.38E-08	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	2.26E-10	NC	2.26E-10	NC	NC	NC	NC	NC
Chloromethane	NC	NC	3.60E-11	1.47E-09	1.50E-09	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	4.78E-07	NC	4.78E-07	NC	NC	NC	NC	NC
Total Risk	2.30E-05	2.40E-07	1.18E-05	2.41E-07	3.53E-05	9.15E-05	1.06E-06	8.83E-07	2.34E-07	9.37E-05

Notes:
ing/derm - Ingestion/Dermal.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-26
TOTAL POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - RME
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site I					Site L				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk
1,4-Dichlorobenzene	1.05E-07	1.08E-09	3.70E-08	NC	1.43E-07	NC	NC	2.48E-08	NC	2.48E-08
2,4,6-Trichlorophenol	NC	NC	1.37E-08	NC	1.37E-08	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	1.77E-07	6.92E-08	3.67E-08	NC	2.83E-07
Benzene	9.12E-10	4.99E-12	8.93E-09	6.44E-08	7.42E-08	2.15E-10	1.18E-12	NC	NC	2.17E-10
Benzo(a)anthracene	NC	NC	2.43E-07	NC	2.43E-07	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloroform	NC	NC	3.43E-09	1.89E-06	1.89E-06	2.94E-10	2.89E-11	NC	NC	3.23E-10
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pentachlorophenol	NC	NC	9.20E-06	NC	9.20E-06	NC	NC	2.19E-07	NC	2.19E-07
Tetrachloroethene	NC	NC	1.39E-08	6.25E-09	2.02E-08	NC	NC	3.46E-09	1.55E-09	5.01E-09
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total PCBs	1.66E-06	1.84E-08	3.14E-06	NC	4.82E-06	2.42E-06	2.68E-08	NC	NC	2.45E-06
Trichloroethene	NC	NC	2.23E-09	2.18E-07	2.20E-07	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-D	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Beryllium	NC	3.45E-07	NC	NC	3.45E-07	NC	NC	NC	NC	NC
Hexachlorobenzene	4.93E-06	6.04E-08	NC	NC	4.99E-06	1.86E-08	2.28E-10	NC	NC	1.88E-08
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	1.29E-06	1.48E-08	NC	NC	1.30E-06	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Acetone	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	5.23E-09	NC	5.23E-09	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	7.84E-09	NC	7.84E-09	NC	NC	NC	NC	NC
Heptachlor	NC	NC	2.62E-09	NC	2.62E-09	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	2.76E-09	NC	2.76E-09	NC	NC	NC	NC	NC
Phenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	1.18E-08	2.18E-08	3.36E-08	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	9.41E-08	1.06E-06	1.16E-06	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chrysene	NC	NC	2.54E-09	NC	2.54E-09	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	2.17E-06	NC	2.17E-06	NC	NC	NC	NC	NC
Total Risk	7.98E-06	4.40E-07	1.50E-05	3.26E-06	2.66E-05	2.62E-06	9.63E-08	2.84E-07	1.55E-09	3.00E-06

Notes:
ing/derm - Ingestion/Dermal.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-27
TOTAL POTENTIAL NONCARCINOGENIC RISK
CONSTRUCTION WORKER - RME
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site G					Site H				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	1.70E-01	2.51E-04	4.43E-03	NC	1.75E-01
2,4,6-Trichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	NC	NC	NC	4.12E-02	NC	NC	NC	4.12E-02
3/4-Methylphenol	NC	NC	4.21E-04	NC	4.21E-04	NC	NC	1.44E-04	NC	1.44E-04
4-Nitroaniline	NC	NC	NC	NC	NC	NC	6.03E-02	NC	NC	6.03E-02
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	NC	NC	3.25E-03	NC	3.25E-03
Benzene	2.67E-03	5.01E-05	1.77E-02	4.39E-01	4.59E-01	3.60E-03	6.77E-05	5.03E-02	1.25E+00	1.30E+00
Benzo(a)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	1.30E-02	NC	1.30E-02	1.15E-01	NC	2.39E+00	NC	2.50E+00
Chlorobenzene	4.48E-03	1.77E-04	7.78E-03	3.83E-01	3.96E-01	3.76E-03	1.49E-04	7.50E-03	3.70E-01	3.81E-01
Chloroform	1.94E-04	2.54E-04	4.35E-05	NC	4.91E-04	NC	NC	NC	NC	NC
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	2.84E-04	NC	2.84E-04	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	1.78E-01	NC	NC	NC	1.78E-01
Nitrobenzene	NC	NC	1.62E-03	NC	1.62E-03	NC	NC	NC	NC	NC
Pentachlorophenol	2.65E-02	NC	2.16E-01	NC	2.42E-01	NC	NC	1.28E-02	NC	1.28E-02
Tetrachloroethene	5.49E-04	5.43E-07	8.41E-04	8.61E-04	2.25E-03	NC	NC	2.13E-04	2.18E-04	4.32E-04
Toluene	9.79E-05	1.94E-06	NC	NC	9.99E-05	6.36E-05	1.26E-06	NC	NC	6.49E-05
Total PCBs	3.76E+01	NC	2.76E-01	NC	3.78E+01	1.53E+02	NC	NC	NC	1.53E+02
Trichloroethene	NC	NC	1.30E-03	NC	1.30E-03	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	1.26E-01	2.49E-04	NC	NC	1.26E-01
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	3.58E-02	NC	NC	NC	3.58E-02
2,4-D	NC	NC	6.50E-02	NC	6.50E-02	NC	NC	5.46E-04	NC	5.46E-04
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	9.40E-02	5.49E-01	1.64E-04	NC	6.43E-01	NC	NC	NC	NC	NC
Beryllium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Hexachlorobenzene	8.62E-03	NC	NC	NC	8.62E-03	NC	NC	6.84E-03	NC	6.84E-03
Manganese	NC	NC	NC	NC	NC	1.30E-01	4.81E+00	NC	NC	4.94E+00
Methylene Chloride	NC	NC	NC	NC	NC	1.60E-04	1.21E-07	NC	NC	1.60E-04
Phosphorous	7.07E+00	NC	NC	NC	7.07E+00	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	3.59E-03	NC	3.59E-03	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	6.48E-05	1.22E-01	1.22E-01	NC	NC	NC	NC	NC
Acetone	NC	NC	1.97E-05	NC	1.97E-05	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	2.85E-03	NC	2.85E-03	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phenol	NC	NC	2.44E-04	NC	2.44E-04	NC	NC	NC	NC	NC
Vanadium	NC	NC	3.59E-04	NC	3.59E-04	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	6.13E-04	5.54E-03	6.16E-03	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	8.13E-05	NC	8.13E-05	NC	NC	NC	NC	NC
Aldrin	NC	NC	3.10E-05	NC	3.10E-05	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	3.41E-04	3.41E-04	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	1.74E-04	NC	1.74E-04	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	4.61E-03	7.98E-01	8.02E-01	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total HI	4.48E+01	5.50E-01	6.13E-01	1.75E+00	4.77E+01	1.54E+02	4.87E+00	2.47E+00	1.62E+00	1.62E+02

Notes:
ing/derm - Ingestion/Dermal.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-27
TOTAL POTENTIAL NONCARCINOGENIC RIS
CONSTRUCTION WORKER - RME
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site I					Site L				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ
1,4-Dichlorobenzene	1.02E-02	1.51E-05	3.60E-03	NC	1.38E-02	NC	NC	2.41E-03	NC	2.41E-03
2,4,6-Trichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	2.77E-02	NC	2.77E-02	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	1.89E-04	NC	1.89E-04	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	2.72E+00	NC	NC	NC	2.72E+00	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	2.75E-02	NC	5.70E-03	NC	3.32E-02
Benzene	1.42E-03	2.67E-05	1.39E-02	3.44E-01	3.60E-01	3.35E-04	6.30E-06	NC	NC	3.41E-04
Benzo(a)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	8.51E-02	NC	8.51E-02	NC	NC	2.93E-02	NC	2.93E-02
Chlorobenzene	1.06E-03	4.18E-05	2.47E-02	1.22E+00	1.24E+00	4.41E-05	1.74E-06	NC	NC	4.59E-05
Chloroform	NC	NC	3.94E-03	2.89E+01	2.89E+01	3.37E-04	4.42E-04	NC	NC	7.80E-04
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	2.87E-04	NC	2.87E-04	NC	NC	NC	NC	NC
Pentachlorophenol	NC	NC	1.79E-01	NC	1.79E-01	NC	NC	4.26E-03	NC	4.26E-03
Tetrachloroethene	NC	NC	1.88E-03	1.92E-03	3.80E-03	NC	NC	4.66E-04	4.77E-04	9.42E-04
Toluene	6.49E-05	1.28E-06	NC	NC	6.61E-05	3.33E-04	6.59E-06	NC	NC	3.40E-04
Total PCBs	2.91E+00	NC	5.50E+00	NC	8.41E+00	4.24E+00	NC	NC	NC	4.24E+00
Trichloroethene	NC	NC	2.36E-03	NC	2.36E-03	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	1.37E-01	2.71E-04	4.24E-02	NC	1.80E-01	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	5.99E-04	NC	NC	NC	5.99E-04	NC	NC	NC	NC	NC
2,4-D	NC	NC	1.69E-03	NC	1.69E-03	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	1.32E-04	NC	1.32E-04	NC	NC	NC	NC	NC
Barium	NC	NC	1.81E-03	NC	1.81E-03	NC	NC	NC	NC	NC
Beryllium	1.96E-01	5.03E-01	NC	NC	6.99E-01	NC	NC	NC	NC	NC
Hexachlorobenzene	2.69E-01	NC	NC	NC	2.69E-01	1.02E-03	NC	NC	NC	1.02E-03
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	1.69E-03	NC	1.69E-03
Selenium	4.16E-02	NC	NC	NC	4.16E-02	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	1.50E-03	NC	1.50E-03	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	1.12E-04	2.10E-01	2.11E-01	NC	NC	NC	NC	NC
Acetone	NC	NC	3.24E-04	NC	3.24E-04	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	2.25E-02	NC	2.25E-02	NC	NC	NC	NC	NC
delta-BHC	NC	NC	2.43E-04	NC	2.43E-04	NC	NC	NC	NC	NC
Dieldrin	NC	NC	6.86E-04	NC	6.86E-04	NC	NC	NC	NC	NC
Heptachlor	NC	NC	8.17E-05	NC	8.17E-05	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	1.63E-03	NC	1.63E-03	NC	NC	NC	NC	NC
Phenol	NC	NC	1.02E-04	NC	1.02E-04	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	3.83E-04	3.46E-03	3.85E-03	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	1.12E-03	1.63E-02	1.74E-02	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	5.03E-04	3.28E-02	3.33E-02	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	1.22E-03	NC	1.22E-03	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	5.74E-01	NC	5.74E-01	NC	NC	NC	NC	NC
Mercury	NC	NC	1.31E-03	NC	1.31E-03	NC	NC	NC	NC	NC
Naphthalene	NC	NC	1.15E-02	1.99E+00	2.01E+00	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total HI	6.29E+00	5.03E-01	6.51E+00	3.28E+01	4.61E+01	4.27E+00	4.57E-04	4.38E-02	4.77E-04	4.32E+00

Notes:
ing/derm - Ingestion/Dermal.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-28
TOTAL POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site G					Site H				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	1.19E-07	1.12E-09	5.05E-09	NC	1.26E-07
2,4,6-Trichlorophenol	NC	NC	6.72E-09	NC	6.72E-09	2.65E-09	2.68E-11	1.60E-10	NC	2.84E-09
2,4-Dichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	NC	NC	3.95E-09	NC	3.95E-09
Benzene	1.97E-10	9.51E-13	5.70E-09	2.46E-08	3.05E-08	1.96E-10	9.43E-13	3.39E-09	1.46E-08	1.82E-08
Benzo(a)anthracene	NC	NC	NC	NC	NC	3.22E-08	3.15E-10	NC	NC	3.26E-08
Benzo(a)pyrene	NC	NC	NC	NC	NC	3.48E-07	3.40E-09	NC	NC	3.51E-07
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	1.81E-08	1.77E-10	NC	NC	1.83E-08
Cadmium	NC	NC	NC	NC	NC	NC	9.54E-09	NC	NC	9.54E-09
Chlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloroform	5.58E-11	4.97E-12	1.89E-11	NC	7.97E-11	NC	NC	NC	NC	NC
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	8.09E-08	7.91E-10	NC	NC	8.17E-08
gamma-BHC	NC	NC	3.76E-10	NC	3.76E-10	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pentachlorophenol	1.24E-07	NC	5.55E-06	NC	5.67E-06	NC	NC	1.27E-07	NC	1.27E-07
Tetrachloroethene	7.69E-10	3.03E-13	2.38E-09	6.40E-10	3.79E-09	NC	NC	3.96E-10	1.07E-10	5.03E-10
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total PCBs	1.59E-06	1.46E-08	7.89E-08	NC	1.69E-06	4.80E-06	4.40E-08	NC	NC	4.84E-06
Trichloroethene	NC	NC	6.11E-10	3.58E-08	3.64E-08	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-D	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Beryllium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Hexachlorobenzene	4.82E-08	4.89E-10	NC	NC	4.86E-08	NC	NC	6.25E-08	NC	6.25E-08
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	3.94E-11	8.39E-14	NC	NC	3.95E-11
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Acetone	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	5.65E-10	NC	5.65E-10	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	9.46E-09	1.05E-08	1.99E-08	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	1.13E-10	NC	1.13E-10	NC	NC	NC	NC	NC
Chloromethane	NC	NC	1.80E-11	4.40E-10	4.58E-10	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	2.39E-07	NC	2.39E-07	NC	NC	NC	NC	NC
Total Risk	1.77E-06	1.51E-08	5.89E-06	7.20E-08	7.74E-06	5.40E-06	5.94E-08	2.03E-07	1.48E-08	5.68E-06

Notes:
ing/derm - Ingestion/Dermal.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-28
TOTAL POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site I					Site L				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	Risk
1,4-Dichlorobenzene	4.81E-09	4.51E-11	1.41E-08	NC	1.89E-08	NC	NC	3.59E-09	NC	3.59E-09
2,4,6-Trichlorophenol	NC	NC	6.87E-09	NC	6.87E-09	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	1.78E-08	6.48E-09	6.32E-09	NC	3.06E-08
Benzene	4.90E-11	2.36E-13	4.47E-09	1.93E-08	2.38E-08	2.58E-11	1.24E-13	NC	NC	2.59E-11
Benzo(a)anthracene	NC	NC	1.22E-07	NC	1.22E-07	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloroform	NC	NC	4.34E-10	1.43E-07	1.44E-07	3.26E-11	2.91E-12	NC	NC	3.55E-11
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pentachlorophenol	NC	NC	4.60E-06	NC	4.60E-06	NC	NC	9.58E-08	NC	9.58E-08
Tetrachloroethene	NC	NC	1.92E-09	5.17E-10	2.44E-09	NC	NC	8.36E-10	2.25E-10	1.06E-09
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total PCBs	3.17E-07	2.91E-09	1.57E-06	NC	1.89E-06	4.53E-07	4.15E-09	NC	NC	4.57E-07
Trichloroethene	NC	NC	1.11E-09	NC	1.11E-09	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-D	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Beryllium	NC	1.03E-07	NC	NC	1.03E-07	NC	NC	NC	NC	NC
Hexachlorobenzene	3.63E-07	3.68E-09	NC	NC	3.66E-07	6.74E-09	6.84E-11	NC	NC	6.81E-09
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	4.26E-07	4.44E-09	NC	NC	4.31E-07	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Acetone	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	2.62E-09	NC	2.62E-09	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	3.92E-09	NC	3.92E-09	NC	NC	NC	NC	NC
Heptachlor	NC	NC	1.31E-09	NC	1.31E-09	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	1.38E-09	NC	1.38E-09	NC	NC	NC	NC	NC
Phenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	5.91E-09	6.53E-09	1.24E-08	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	4.70E-08	3.18E-07	3.65E-07	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chrysene	NC	NC	1.27E-09	NC	1.27E-09	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	1.08E-06	NC	1.08E-06	NC	NC	NC	NC	NC
Total Risk	1.11E-06	1.15E-07	7.47E-06	4.88E-07	9.18E-06	4.78E-07	1.07E-08	1.07E-07	2.25E-10	5.95E-07

Notes:
ing/derm - Ingestion/Dermal.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-29
TOTAL POTENTIAL NONCARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site G					Site H				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	1.16E-02	1.56E-05	4.91E-04	NC	1.21E-02
2,4,6-Trichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	NC	NC	NC	2.76E-03	NC	NC	NC	2.76E-03
3/4-Methylphenol	NC	NC	2.10E-04	NC	2.10E-04	NC	NC	1.68E-05	NC	1.68E-05
4-Nitroaniline	NC	NC	NC	NC	NC	NC	1.81E-02	NC	NC	1.81E-02
Antimony	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	NC	NC	6.14E-04	NC	6.14E-04
Benzene	3.07E-04	5.09E-06	8.86E-03	1.32E-01	1.41E-01	3.05E-04	5.05E-06	5.27E-03	7.83E-02	8.39E-02
Benzo(a)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	3.66E-03	NC	3.66E-03	2.63E-02	NC	2.45E-01	NC	2.72E-01
Chlorobenzene	2.99E-04	1.07E-05	3.89E-03	1.15E-01	1.19E-01	2.69E-04	9.63E-06	1.17E-03	3.47E-02	3.62E-02
Chloroform	6.40E-05	7.62E-05	2.17E-05	NC	1.62E-04	NC	NC	NC	NC	NC
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	6.75E-05	NC	6.75E-05	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	7.93E-03	NC	NC	NC	7.93E-03
Nitrobenzene	NC	NC	4.38E-04	NC	4.38E-04	NC	NC	NC	NC	NC
Pentachlorophenol	2.42E-03	NC	1.08E-01	NC	1.10E-01	NC	NC	2.47E-03	NC	2.47E-03
Tetrachloroethene	1.04E-04	9.30E-08	3.20E-04	1.97E-04	6.20E-04	NC	NC	5.34E-05	3.28E-05	8.61E-05
Toluene	1.33E-05	2.40E-07	NC	NC	1.36E-05	6.28E-06	1.13E-07	NC	NC	6.39E-06
Total PCBs	2.79E+00	NC	1.38E-01	NC	2.93E+00	8.40E+00	NC	NC	NC	8.40E+00
Trichloroethene	NC	NC	6.48E-04	NC	6.48E-04	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	NC	NC	NC	NC	NC	7.33E-03	1.31E-05	NC	NC	7.35E-03
1,2-Dichlorobenzene	NC	NC	NC	NC	NC	3.97E-03	NC	NC	NC	3.97E-03
2,4-D	NC	NC	8.56E-03	NC	8.56E-03	NC	NC	6.04E-05	NC	6.04E-05
2,4-Dinitrotoluene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Barium	3.62E-03	1.97E-02	4.54E-05	NC	2.34E-02	NC	NC	NC	NC	NC
Beryllium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Hexachlorobenzene	2.63E-03	NC	NC	NC	2.63E-03	NC	NC	3.42E-03	NC	3.42E-03
Manganese	NC	NC	NC	NC	NC	4.56E-03	1.52E-01	NC	NC	1.57E-01
Methylene Chloride	NC	NC	NC	NC	NC	6.13E-06	4.15E-09	NC	NC	6.13E-06
Phosphorous	1.36E+00	NC	NC	NC	1.36E+00	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Selenium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	1.80E-03	NC	1.80E-03	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	3.24E-05	3.67E-02	3.67E-02	NC	NC	NC	NC	NC
Acetone	NC	NC	9.86E-06	NC	9.86E-06	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	1.43E-03	NC	1.43E-03	NC	NC	NC	NC	NC
delta-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phenol	NC	NC	1.22E-04	NC	1.22E-04	NC	NC	NC	NC	NC
Vanadium	NC	NC	1.79E-04	NC	1.79E-04	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	3.07E-04	1.66E-03	1.97E-03	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	4.07E-05	NC	4.07E-05	NC	NC	NC	NC	NC
Aldrin	NC	NC	1.55E-05	NC	1.55E-05	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	1.02E-04	1.02E-04	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	8.68E-05	NC	8.68E-05	NC	NC	NC	NC	NC
MCPP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	2.30E-03	2.39E-01	2.42E-01	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total HI	4.16E+00	1.98E-02	2.79E-01	5.25E-01	4.98E+00	8.46E+00	1.70E-01	2.59E-01	1.13E-01	9.01E+00

Notes:
ing/derm - Ingestion/Dermal.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-29
TOTAL POTENTIAL NONCARCINOGENIC RI:
CONSTRUCTION WORKER - MLE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site I					Site L				
	Subsurface Soil		Groundwater		Total	Subsurface Soil		Groundwater		Total
Constituent	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ	Ing/Derm.	Inhalation	Ing/Derm.	Inhalation	HQ
1,4-Dichlorobenzene	4.67E-04	6.26E-07	1.37E-03	NC	1.84E-03	NC	NC	3.49E-04	NC	3.49E-04
2,4,6-Trichlorophenol	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2,4-Dichlorophenol	NC	NC	1.39E-02	NC	1.39E-02	NC	NC	NC	NC	NC
3/4-Methylphenol	NC	NC	9.47E-05	NC	9.47E-05	NC	NC	NC	NC	NC
4-Nitroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Antimony	2.99E-01	NC	NC	NC	2.99E-01	NC	NC	NC	NC	NC
Arsenic	NC	NC	NC	NC	NC	2.78E-03	NC	9.84E-04	NC	3.76E-03
Benzene	7.62E-05	1.26E-06	6.95E-03	1.03E-01	1.10E-01	4.01E-05	6.65E-07	NC	NC	4.08E-05
Benzo(a)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(a)pyrene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Benzo(b)fluoranthene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cadmium	NC	NC	1.43E-02	NC	1.43E-02	NC	NC	8.68E-03	NC	8.68E-03
Chlorobenzene	9.54E-05	3.42E-06	3.63E-03	1.07E-01	1.11E-01	3.44E-06	1.23E-07	NC	NC	3.56E-06
Chloroform	NC	NC	4.98E-04	2.19E+00	2.19E+00	3.74E-05	4.46E-05	NC	NC	8.20E-05
Dibenzo(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
gamma-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Lead	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nickel	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrobenzene	NC	NC	1.44E-04	NC	1.44E-04	NC	NC	NC	NC	NC
Pentachlorophenol	NC	NC	8.94E-02	NC	8.94E-02	NC	NC	1.86E-03	NC	1.86E-03
Tetrachloroethene	NC	NC	2.59E-04	1.59E-04	4.18E-04	NC	NC	1.13E-04	6.91E-05	1.82E-04
Toluene	3.10E-06	5.57E-08	NC	NC	3.16E-06	1.83E-05	3.29E-07	NC	NC	1.86E-05
Total PCBs	5.55E-01	NC	2.75E+00	NC	3.31E+00	7.93E-01	NC	NC	NC	7.93E-01
Trichloroethene	NC	NC	1.18E-03	NC	1.18E-03	NC	NC	NC	NC	NC
1,2,4-Trichlorobenzene	7.70E-03	1.38E-05	2.12E-02	NC	2.89E-02	NC	NC	NC	NC	NC
1,2-Dichlorobenzene	5.07E-05	NC	NC	NC	5.07E-05	NC	NC	NC	NC	NC
2,4-D	NC	NC	8.45E-04	NC	8.45E-04	NC	NC	NC	NC	NC
2,4-Dinitrotoluene	NC	NC	4.90E-05	NC	4.90E-05	NC	NC	NC	NC	NC
Barium	NC	NC	2.32E-04	NC	2.32E-04	NC	NC	NC	NC	NC
Beryllium	7.63E-02	1.51E-01	NC	NC	2.27E-01	NC	NC	NC	NC	NC
Hexachlorobenzene	1.98E-02	NC	NC	NC	1.98E-02	3.69E-04	NC	NC	NC	3.69E-04
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Phosphorous	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pyridine	NC	NC	NC	NC	NC	NC	NC	3.67E-04	NC	3.67E-04
Selenium	1.34E-02	NC	NC	NC	1.34E-02	NC	NC	NC	NC	NC
Toxaphene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
2-Chlorophenol	NC	NC	7.51E-04	NC	7.51E-04	NC	NC	NC	NC	NC
4-Chloroaniline	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4-Methyl-2-pentanone (MIBK)	NC	NC	5.58E-05	6.31E-02	6.32E-02	NC	NC	NC	NC	NC
Acetone	NC	NC	1.62E-04	NC	1.62E-04	NC	NC	NC	NC	NC
alpha-BHC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
cis/trans-1,2-Dichloroethene	NC	NC	1.13E-02	NC	1.13E-02	NC	NC	NC	NC	NC
delta-BHC	NC	NC	1.22E-04	NC	1.22E-04	NC	NC	NC	NC	NC
Dieldrin	NC	NC	3.43E-04	NC	3.43E-04	NC	NC	NC	NC	NC
Heptachlor	NC	NC	4.08E-05	NC	4.08E-05	NC	NC	NC	NC	NC
Heptachlor epoxide	NC	NC	8.17E-04	NC	8.17E-04	NC	NC	NC	NC	NC
Phenol	NC	NC	5.11E-05	NC	5.11E-05	NC	NC	NC	NC	NC
Vanadium	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Vinyl chloride	NC	NC	1.92E-04	1.04E-03	1.23E-03	NC	NC	NC	NC	NC
1,1,1-Trichloroethane	NC	NC	5.61E-04	4.88E-03	5.44E-03	NC	NC	NC	NC	NC
1,1-Dichloroethane	NC	NC	2.51E-04	9.85E-03	1.01E-02	NC	NC	NC	NC	NC
1,1-Dichloroethene	NC	NC	6.10E-04	NC	6.10E-04	NC	NC	NC	NC	NC
2,4,5-T	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Aldrin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chloromethane	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Chrysene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MCPP	NC	NC	2.87E-01	NC	2.87E-01	NC	NC	NC	NC	NC
Mercury	NC	NC	6.55E-04	NC	6.55E-04	NC	NC	NC	NC	NC
Naphthalene	NC	NC	5.76E-03	5.98E-01	6.04E-01	NC	NC	NC	NC	NC
Total TCDD-TEQ	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Total HI	9.71E-01	1.51E-01	3.21E+00	3.08E+00	7.42E+00	7.96E-01	4.57E-05	1.24E-02	6.91E-05	8.08E-01

Notes:
ing/derm - Ingestion/Dermal.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
RME - Reasonable Maximum Exposure.

TABLE T-30
EVALUATION OF CONSTRUCTION WORKER EXPOSURE
TO LEAD IN GROUNDWATER
SAUGET AREA 1 EE/CA AND RI/FS
SAUGET AND CAHOKIA, ILLINOIS
SOLUTIA, INC

Parameter	Construction Worker		
	Site G	Site H	Site I
PbB baseline (ug/dL)	2.2	2.2	2.2
BSF (ug/dL per ug/day)	0.4	0.4	0.4
Inhalation - Excavation Air			
Aa (unitless)	0.32	0.32	0.32
Va (m^3/day)	20	20	20
Ca (ug/m^3)	0.014469	0.03462	0.12363
Uptake air (ug/day)	0.0101	0.0243	0.0867
Ingestion - Water			
Aw (unitless)	0.2	0.2	0.2
Iw (L/day)	0.005	0.005	0.005
Cw (ug/L)	6009	8190	2610
Uptake water (ug/day)	0.659	0.898	0.286
Ingestion Soil			
As (unitless)	0.12	0.12	0.12
Is (g/day)	0.1	0.1	0.1
Cs (ug/g)	241.15	577	2060.5
Uptake soil (ug/day)	0.317	0.759	2.710
PbB (ug/dl)	2.59	2.87	3.43

Notes:
Target Blood Lead Level as Defined by OSHA for Adult Workers:

a) Blood lead level of workers (male and female) intending to have children should remain below 30 ug/dL.
b) OSHA allows 40 ug/dL as a "permissible" blood lead level in lead-exposed workers, below which no further medical monitoring or workplace intervention is required.

The Centers for Disease Control has selected 10 ug/dl as the "level of concern" for young children. Bowers et al. (1994) suggest that while the CDC criteria for children were not developed for adults they may be useful as a screening ctechnique for adults.

TABLE T-31
TOTAL POTENTIAL RISKS - ORIGINAL AND SUPPLEMENTAL
CONSTRUCTION WORKER - RME
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site			
	G	H	I	L
Total Potential Carcinogenic Risk - Original HHRA	1.01E-05	3.51E-06	8.92E-06	3.69E-07
Total Potential Carcinogenic Risk - Supplemental HHRA	3.53E-05	9.37E-05	2.66E-05	3.00E-06
Total Potential Carcinogenic Risk - Combined	**4.54E-05**	**9.72E-05**	**3.56E-05**	**3.37E-06**
Total Hazard Index - Original HHRA	2.49E+00	4.55E+00	2.04E+00	8.95E-01
Total Hazard Index - Supplemental HHRA	4.77E+01	1.62E+02	4.61E+01	4.32E+00
Total Hazard Index - Combined HHRA	**5.02E+01**	**1.67E+02**	**4.81E+01**	**5.21E+00**

Notes:
HHRA - Human Heath Risk Assessment.
HI - Hazard Index.
RME - Reasonable Maximum Exposure.

TABLE T-32
TOTAL POTENTIAL RISKS - ORIGINAL AND SUPPLEMENTAL
CONSTRUCTION WORKER - MLE
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	Site			
	G	H	I	L
Total Potential Carcinogenic Risk - Original HHRA	4.78E-06	1.29E-06	2.84E-06	1.39E-07
Total Potential Carcinogenic Risk - Supplemental HHRA	7.74E-06	5.68E-06	9.18E-06	5.95E-07
Total Potential Carcinogenic Risk - Combined	**1.25E-05**	**6.97E-06**	**1.20E-05**	**7.34E-07**
Total Hazard Index - Original HHRA	7.60E-01	1.38E+00	3.43E-01	2.87E-01
Total Hazard Index - Supplemental HHRA	4.98E+00	9.01E+00	7.42E+00	8.08E-01
Total Hazard Index - Combined HHRA	**5.74E+00**	**1.04E+01**	**7.76E+00**	**1.10E+00**

Notes:
HHRA - Human Heath Risk Assessment.
HI - Hazard Index.
MLE - Most Likely Exposure.

TABLE T-33
SELECTION OF EPCs (LEACHATE DATA VERSUS TCLP DATA)
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	RME						MLE					
	Site G			Site I			Site G			Site I		
Constituent	Leachate (a) (mg/L)	TCLP (b) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (b) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (d) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (d) (mg/L)	Selected (c) (mg/L)
1,1,1-Trichloroethane	--	--	--	1.30E+01	1.30E+01	1.30E+01	--	--	--	1.30E+01	--	1.30E+01
1,1-Dichloroethane	--	--	--	3.70E+00	3.70E+00	3.70E+00	--	--	--	3.70E+00	--	3.70E+00
1,1-Dichloroethene	--	--	--	4.80E-01	4.80E-01	4.80E-01	--	--	--	4.80E-01	--	4.80E-01
1,2,4-Trichlorobenzene	--	--	--	3.20E+00	3.20E+00	3.20E+00	--	--	--	3.20E+00	--	3.20E+00
1,4-Dichlorobenzene	--	--	--	9.90E-01	9.90E-01	9.90E-01	--	--	--	9.90E-01	5.99E-01	9.90E-01
2,4,5-T	3.80E-01	--	3.80E-01	--	3.80E-01	3.80E-01	3.80E-01	--	3.80E-01	--	--	--
2,4,6-Trichlorophenol	--	4.95E+00	4.95E+00	1.30E+00	4.95E+00	4.95E+00	--	1.27E+00	1.27E+00	1.30E+00	--	1.30E+00
2,4-D	--	5.00E+01	5.00E+01	--	5.00E+01	5.00E+01	--	1.32E+01	1.32E+01	--	--	--
2,4-D	--	--	--	1.30E+00	1.30E+00	1.30E+00	--	--	--	1.30E+00	--	1.30E+00
2,4-Dichlorophenol	--	--	--	2.60E+00	2.60E+00	2.60E+00	--	--	--	2.60E+00	--	2.60E+00
2,4-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--	2.83E-02	2.83E-02
2-Chlorophenol	1.10E+00	--	1.10E+00	4.60E-01	1.10E+00	1.10E+00	1.10E+00	--	1.10E+00	4.60E-01	--	4.60E-01
3-Methylphenol/4-Methylphenol	1.40E+00	--	1.40E+00	6.30E-01	1.40E+00	1.40E+00	1.40E+00	--	1.40E+00	6.30E-01	--	6.30E-01
4-Methyl-2-pentanone (MIBK)	9.30E-01	--	9.30E-01	1.60E+00	1.60E+00	1.60E+00	9.30E-01	--	9.30E-01	1.60E+00	--	1.60E+00
Acetone	7.30E-01	--	7.30E-01	1.20E+01	1.20E+01	1.20E+01	7.30E-01	--	7.30E-01	1.20E+01	--	1.20E+01
Aldrin	2.30E-04	--	2.30E-04	--	2.30E-04	2.30E-04	2.30E-04	--	2.30E-04	--	--	--
alpha-BHC	5.40E-04	--	5.40E-04	2.50E-03	2.50E-03	2.50E-03	5.40E-04	--	5.40E-04	2.50E-03	--	2.50E-03
Barium	--	5.30E+00	5.30E+00	--	5.30E+00	5.30E+00	--	2.94E+00	2.94E+00	--	1.50E+01	1.50E+01
Benzene	8.80E-01	6.00E-01	8.80E-01	6.90E-01	8.80E-01	8.80E-01	8.80E-01	2.04E-01	8.80E-01	6.90E-01	1.82E-01	6.90E-01
Benzo(a)anthracene	--	--	--	2.20E-02	2.20E-02	2.20E-02	--	--	--	2.20E-02	--	2.20E-02
Cadmium	--	1.20E-01	1.20E-01	--	1.20E-01	1.20E-01	--	6.75E-02	6.75E-02	--	2.64E-01	2.64E-01
Chlorobenzene	2.80E+00	2.70E+00	2.80E+00	9.50E-01	2.80E+00	2.80E+00	2.80E+00	8.24E-01	2.80E+00	9.50E-01	2.62E+00	2.62E+00
Chloroform	3.20E-02	--	3.20E-02	2.60E-02	3.20E-02	3.20E-02	3.20E-02	--	3.20E-02	2.60E-02	7.33E-01	7.33E-01
Chloromethane	2.60E-02	--	2.60E-02	--	2.60E-02	2.60E-02	2.60E-02	--	2.60E-02	--	--	--
Chrysene	--	--	--	2.30E-02	2.30E-02	2.30E-02	--	--	--	2.30E-02	--	2.30E-02
cis/trans-1,2-Dichloroethene	1.90E+00	--	1.90E+00	1.50E+01	1.50E+01	1.50E+01	1.90E+00	--	1.90E+00	1.50E+01	--	1.50E+01
Cobalt	1.40E+00	--	1.40E+00	--	1.40E+00	1.40E+00	1.40E+00	--	1.40E+00	--	--	--
delta-BHC	--	--	--	1.90E-03	1.90E-03	1.90E-03	--	--	--	1.90E-03	--	1.90E-03
Dieldrin	--	--	--	1.50E-03	1.50E-03	1.50E-03	--	--	--	1.50E-03	--	1.50E-03
gamma-BHC (Lindane)	--	4.20E-03	4.20E-03	--	4.20E-03	4.20E-03	--	2.00E-03	2.00E-03	--	--	--
Heptachlor	--	--	--	2.50E-03	2.50E-03	2.50E-03	--	--	--	2.50E-03	--	2.50E-03
Heptachlor epoxide	--	--	--	1.30E-03	1.30E-03	1.30E-03	--	--	--	1.30E-03	--	1.30E-03
Lead (e)	--	6.09E+00	6.09E+00	5.80E-01	6.09E+00	6.09E+00	--	6.09E+00	6.09E+00	5.80E-01	2.61E+00	2.61E+00
MCPP	--	--	--	3.40E+01	3.40E+01	3.40E+01	--	--	--	3.40E+01	--	3.40E+01
Mercury	--	--	--	1.80E-02	1.80E-02	1.80E-02	--	--	--	1.80E-02	--	1.80E-02
Naphthalene	1.00E+00	--	1.00E+00	2.50E+00	2.50E+00	2.50E+00	1.00E+00	--	1.00E+00	2.50E+00	--	2.50E+00
Nitrobenzene	--	7.35E-02	7.35E-02	--	7.35E-02	7.35E-02	--	3.96E-02	3.96E-02	--	1.30E-02	1.30E-02
Pentachlorophenol	7.60E+00	1.10E+00	7.60E+00	6.30E+00	7.60E+00	7.60E+00	7.60E+00	4.63E-01	7.60E+00	6.30E+00	1.29E+00	6.30E+00

TABLE T-33
SELECTION OF EPCs (LEACHATE DATA VERSUS TCLP DATA)
SAUGET AREA 1 EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

	RME						MLE					
	Site G			Site I			Site G			Site I		
Constituent	Leachate (a) (mg/L)	TCLP (b) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (b) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (d) (mg/L)	Selected (c) (mg/L)	Leachate (a) (mg/L)	TCLP (d) (mg/L)	Selected (c) (mg/L)
Phenol	1.60E+01	--	1.60E+01	6.70E+00	1.60E+01	1.60E+01	1.60E+01	--	1.60E+01	6.70E+00	--	6.70E+00
Tetrachloroethene	9.90E-02	1.30E-01	1.30E-01	--	1.30E-01	1.30E-01	9.90E-02	4.39E-02	9.90E-02	--	8.00E-02	8.00E-02
Total Polychlorinated Biphenyls	5.40E-03	--	5.40E-03	1.08E-01	1.08E-01	1.08E-01	5.40E-03	--	5.40E-03	1.08E-01	--	1.08E-01
Total TCDD-TEQ	6.77E-08	--	6.77E-08	3.07E-07	3.07E-07	3.07E-07	6.77E-08	--	6.77E-08	3.07E-07	--	3.07E-07
Trichloroethene	3.40E-01	7.90E-02	3.40E-01	6.20E-01	6.20E-01	6.20E-01	3.40E-01	2.45E-02	3.40E-01	6.20E-01	--	6.20E-01
Vanadium	6.20E-01	--	6.20E-01	--	6.20E-01	6.20E-01	6.20E-01	--	6.20E-01	--	--	--
Vinyl chloride	1.60E-01	--	1.60E-01	1.00E-01	1.60E-01	1.60E-01	1.60E-01	--	1.60E-01	1.00E-01	--	1.00E-01

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
TCLP - Toxicity Characteristic Leaching Procedure.
(a) - Results of leachate sample collected in April 2000.
(b) - Maximum detected concentration in TCLP samples collected in September-October 1999.
(c) - Higher of TCLP and Leachate data.
(d) - Average concentration in TCLP samples collected in September-October 1999.
(e) - The average is used to evaluate lead in both the RME and MLE scenarios.

TABLE T-34
CALCULATION OF GROUNDWATER-TO-AIR ATTENUATION FACTORS - RME AND MLE SCENARIOS
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

*** Input Parameters ***

Water temperature (degK)	298.15
Viscosity of water (cp)	0.8904
Wetted area (m**2)	2025
Wind speed (m/s)	2.25

*** Constants ***

Gas const. (atm m**3/(mol degK))	8.21E-05
Diff. of ether in H2O (cm**2/s)	8.50E-06
Viscosity of air (g/(cm s))	1.81E-04
Density of air (g/cm**3)	1.20E-03

*** Calculated Parameter ***

Effective diameter of source (m)	50.777

*** Chemical-Specific Parameters ***

		Molecular Weight		Henry's Law Coefficient (atm*m**3/g-mole)		Diffusivity In Air (cm**2/s)		Diffusivity In Water (cm**2/s)		Keq	Kl (m/s)	SCg	Kg (m/s)	K (m/s)	Q (m3/s)	Groundwater-to-Air Attenuation Factor (L/m3) (b)
4-METHYL-2-PENTANONE		100.2		4.16E-04		7.35E-02		8.68E-05		1.70E-02	1.31E-05	2.05E+00	3.64E-03	1.08E-05	2.19E-02	9.60E-02
BENZENE		78.11	1	5.55E-03	1	8.80E-02	2	9.80E-06	2	2.27E-01	3.06E-06	1.71E+00	4.11E-03	3.05E-06	6.17E-03	2.71E-02
CHLOROBENZENE		112.56	1	3.70E-03	1	7.30E-02	2	8.70E-06	2	1.51E-01	2.82E-06	2.07E+00	3.62E-03	2.81E-06	5.69E-03	2.50E-02
CHLOROFORM		119.4		3.39E-03		1.04E-01		1.00E-05		1.38E-01	3.10E-06	1.45E+00	4.59E-03	3.08E-06	6.24E-03	2.74E-02
NAPHTHALENE		128.17	1	4.83E-04	1	5.90E-02	2	7.50E-06	2	1.97E-02	2.56E-06	2.56E+00	3.14E-03	2.46E-06	4.97E-03	2.18E-02
TETRACHLORORETHENE		165.83		1.84E-02		7.20E-02		8.20E-06		7.52E-01	2.71E-06	2.09E+00	3.59E-03	2.71E-06	5.49E-03	2.41E-02
TRICHLOROETHENE		131.4		1.00E-02		8.18E-02		1.05E-04		4.09E-01	1.49E-05	1.84E+00	3.91E-03	1.47E-05	2.98E-02	1.31E-01
VINYLCHLORIDE		62.5		8.60E-02		1.06E-01		1.23E-05		3.51E+00	3.56E-06	1.42E+00	4.65E-03	3.56E-06	7.20E-03	3.16E-02
ACETONE		58.08	1	4.28E-05	1	1.24E-01	2	1.14E-05	2	1.75E-03	3.38E-06	1.22E+00	5.17E-03	2.46E-06	4.98E-03	2.19E-02
CIS/TRANS-1,2-DICHLOROETHENE	(a)	96.94	1	6.67E-03	1	7.07E-02	2	1.19E-05	2	2.73E-01	3.48E-06	2.13E+00	3.55E-03	3.47E-06	7.02E-03	3.08E-02
1,1,1-TRICHLOROETHANE		133.4	1	4.08E-03	1	7.80E-02	2	8.80E-06	2	1.67E-01	2.85E-06	1.93E+00	3.79E-03	2.83E-06	5.74E-03	2.52E-02
1,1-DICHLOROETHANE		98.96	1	5.87E-03	1	7.42E-02	2	1.05E-05	2	2.40E-01	3.20E-06	2.03E+00	3.66E-03	3.19E-06	6.46E-03	2.83E-02
1,1-DICHLOROETHENE		96.94	1	2.29E-02	1	9.00E-02	2	1.04E-05	2	9.34E-01	3.18E-06	1.88E+00	4.17E-03	3.18E-06	6.43E-03	2.82E-02
CHLOROMETHANE		50.49	1	8.82E-03	1	1.40E-01	3	1.50E-05	3	3.60E-01	4.06E-06	1.08E+00	5.60E-03	4.05E-06	8.20E-03	3.60E-02

References for physical constants:
MLE - Maximum Likely Exposure
RME - Reasonable Maximum Exposure
1 -- U.S. EPA. 1992. Handbook of RCRA Ground-water Monitoring Constituents. PB92-233287.
2 - U.S. EPA.1996. Soil Screening Guidance. PB96-963502.
3 - Calculated based on the methodology in the Handbook of Chemical Property Estimation Methods. Lyman, 1990.
(a) - Data for trans-1,2-Dichloroethene
(b) - The calculation of these values is discussed in Appendix L.

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated	
Receptor 3:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER RME INCIDENTIAL INGESTION AND DERMAL CONTACT SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	RME Construction Worker	100	(mg soil/day)	
Soil on Skin	RME Construction Worker	0.19	(mg/cm^2)	
Skin Exposed	RME Construction Worker	3339	(cm^2)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Frequency	RME Construction Worker	40	(days)/365(days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(years)/70(years) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

1-Jun-01

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME

Constituent	Unit Concentration in Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,4-Dichlorobenzene	1.00E+00	1	0.01	2.40E-02	2.24E-09	2.24E-09	1.42E-10	1.42E-10	5.37E-11	3.41E-12	5.71E-11
2,4,6-Trichlorophenol	1.00E+00	1	0.01	1.10E-02	2.24E-09	2.24E-09	1.42E-10	1.42E-10	2.46E-11	1.56E-12	2.62E-11
2,4-Dichlorophenol	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	0.3	0.001	1.50E+00	6.71E-10	6.71E-10	1.42E-11	1.42E-11	1.01E-09	2.13E-11	1.03E-09
Benzene	1.00E+00	1	0.02	1.50E-02	2.24E-09	2.24E-09	2.84E-10	2.84E-10	3.35E-11	4.26E-12	3.78E-11
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-10	2.07E-10	6.81E-10
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-09	2.07E-09	6.81E-09
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-10	2.07E-10	6.81E-10
Cadmium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	0.01	6.10E-03	2.24E-09	2.24E-09	1.42E-10	1.42E-10	1.36E-11	8.66E-13	1.45E-11
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	6.49E-10	6.49E-10	2.84E-10	2.84E-10	4.73E-09	2.07E-09	6.81E-09
Lead	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	0.01	1.20E-01	2.24E-09	2.24E-09	1.42E-10	1.42E-10	2.68E-10	1.70E-11	2.85E-10
Tetrachloroethene	1.00E+00	1	0.01	5.20E-02	2.24E-09	2.24E-09	1.42E-10	1.42E-10	1.16E-10	7.38E-12	1.24E-10
Toluene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	1.86E-09	1.86E-09	5.68E-10	5.68E-10	3.71E-09	1.14E-09	4.85E-09
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Beryllium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Hexachlorobenzene	1.00E+00	0.83	0.04	1.60E+00	1.86E-09	1.86E-09	5.68E-10	5.68E-10	2.97E-09	9.08E-10	3.88E-09
Manganese	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Methylene Chloride	1.00E+00	1	0.016	7.50E-03	2.24E-09	2.24E-09	2.27E-10	2.27E-10	1.68E-11	1.70E-12	1.85E-11
Phosphorous	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	1	0.01	1.10E+00	2.24E-09	2.24E-09	1.42E-10	1.42E-10	2.46E-09	1.56E-10	2.62E-09

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference	Site G		Site H		Site I		Site L	
	Risk (per mg/kg)	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
1,4-Dichlorobenzene	5.71E-11	--	NC	3.06E+04	1.75E-06	1.84E+03	1.05E-07	--	NC
2,4,6-Trichlorophenol	2.62E-11	--	NC	6.13E+02	1.60E-08	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	7.42E+02	NC	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.83E+03	NC	--	NC	--	NC
Antimony	NC	--	NC	--	NC	6.66E+03	NC	--	NC
Arsenic	1.03E-09	--	NC	--	NC	--	NC	1.72E+02	1.77E-07
Benzene	3.78E-11	4.53E+01	1.71E-09	6.13E+01	2.32E-09	2.41E+01	9.12E-10	5.70E+00	2.15E-10
Benzo(a)anthracene	6.81E-10	--	NC	3.78E+02	2.57E-07	--	NC	--	NC
Benzo(a)pyrene	6.81E-09	--	NC	2.72E+02	1.85E-06	--	NC	--	NC
Benzo(b)fluoranthene	6.81E-10	--	NC	2.11E+02	1.44E-07	--	NC	--	NC
Cadmium	NC	--	NC	2.94E+02	NC	--	NC	--	NC
Chlorobenzene	NC	5.38E+02	NC	4.52E+02	NC	1.27E+02	NC	5.30E+00	NC
Chloroform	1.45E-11	1.16E+01	1.69E-10	--	NC	--	NC	2.03E+01	2.94E-10
Dibenzo(a,h)anthracene	6.81E-09	--	NC	3.17E+01	2.16E-07	--	NC	--	NC
Lead	NC	--	NC	--	NC	2.06E+03	NC	--	NC
Nickel	NC	--	NC	1.51E+04	NC	--	NC	--	NC
Pentachlorophenol	2.85E-10	4.77E+03	1.36E-06	--	NC	--	NC	--	NC
Tetrachloroethene	1.24E-10	3.30E+01	4.08E-09	--	NC	--	NC	--	NC
Toluene	NC	1.18E+02	NC	7.65E+01	NC	7.79E+01	NC	4.00E+02	NC
Total PCBs	4.85E-09	4.43E+03	2.15E-05	1.80E+04	8.73E-05	3.43E+02	1.66E-06	5.00E+02	2.42E-06
1,2,4-Trichlorobenzene	NC	--	NC	7.58E+03	NC	8.26E+03	NC	--	NC
1,2-Dichlorobenzene	NC	--	NC	1.94E+04	NC	3.24E+02	NC	--	NC
Barium	NC	4.18E+04	NC	--	NC	--	NC	--	NC
Beryllium	NC	--	NC	--	NC	1.53E+03	NC	--	NC
Hexachlorobenzene	3.88E-09	4.06E+01	1.58E-07	--	NC	1.27E+03	4.93E-06	4.80E+00	1.86E-08
Manganese	NC	--	NC	3.65E+04	NC	--	NC	--	NC
Methylene Chloride	1.85E-11	--	NC	5.56E+01	1.03E-09	--	NC	--	NC
Phosphorous	NC	8.98E+02	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	1.32E+03	NC	--	NC
Toxaphene	2.62E-09	--	NC	--	NC	4.93E+02	1.29E-06	--	NC
Total:			**2.30E-05**		**9.15E-05**		**7.98E-06**		**2.62E-06**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing RME Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. /E (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,4-Dichlorobenzene	1.00E+00	1	0.01	3.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	5.22E-06	3.31E-07	5.55E-06
2,4,6-Trichlorophenol	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	0.01	3.00E-03	1.57E-07	1.57E-07	9.93E-09	9.93E-09	5.22E-05	3.31E-06	5.55E-05
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	1	0.007	4.00E-04	1.57E-07	1.57E-07	6.95E-09	6.95E-09	3.91E-04	1.74E-05	4.09E-04
Arsenic	1.00E+00	0.3	0.001	3.00E-04	4.70E-08	4.70E-08	9.93E-10	9.93E-10	1.57E-04	3.31E-06	1.60E-04
Benzene	1.00E+00	1	0.02	3.00E-03	1.57E-07	1.57E-07	1.99E-08	1.99E-08	5.22E-05	6.62E-06	5.88E-05
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	0.04	5.00E-04	1.57E-07	1.57E-07	3.97E-08	3.97E-08	3.13E-04	7.95E-05	3.93E-04
Chlorobenzene	1.00E+00	1	0.01	2.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	7.83E-06	4.97E-07	8.32E-06
Chloroform	1.00E+00	1	0.01	1.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	1.57E-05	9.93E-07	1.66E-05
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Lead	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	1	0.08	2.00E-02	1.57E-07	1.57E-07	7.95E-08	7.95E-08	7.83E-06	3.97E-06	1.18E-05
Pentachlorophenol	1.00E+00	1	0.01	3.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	5.22E-06	3.31E-07	5.55E-06
Tetrachloroethene	1.00E+00	1	0.01	1.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	1.57E-05	9.93E-07	1.66E-05
Toluene	1.00E+00	1	0.01	2.00E-01	1.57E-07	1.57E-07	9.93E-09	9.93E-09	7.83E-07	4.97E-08	8.32E-07
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	1.30E-07	1.30E-07	3.97E-08	3.97E-08	6.60E-03	1.99E-03	8.48E-03
1,2,4-Trichlorobenzene	1.00E+00	1	0.01	1.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	1.57E-05	9.93E-07	1.66E-05
1,2-Dichlorobenzene	1.00E+00	1	0.01	9.00E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	1.74E-06	1.10E-07	1.85E-06
Barium	1.00E+00	1	0.001	7.00E-02	1.57E-07	1.57E-07	9.93E-10	9.93E-10	2.24E-06	1.42E-08	2.25E-06
Beryllium	1.00E+00	1	0.1	2.00E-03	1.57E-07	1.57E-07	9.93E-08	9.93E-08	7.83E-05	4.97E-05	1.28E-04
Hexachlorobenzene	1.00E+00	0.83	0.04	8.00E-04	1.30E-07	1.30E-07	3.97E-08	3.97E-08	1.62E-04	4.97E-05	2.12E-04
Manganese	1.00E+00	1	0.01	4.67E-02	1.57E-07	1.57E-07	9.93E-09	9.93E-09	3.35E-06	2.13E-07	3.57E-06
Methylene Chloride	1.00E+00	1	0.016	6.00E-02	1.57E-07	1.57E-07	1.59E-08	1.59E-08	2.61E-06	2.65E-07	2.87E-06
Phosphorous	1.00E+00	1	0.001	2.00E-05	1.57E-07	1.57E-07	9.93E-10	9.93E-10	7.83E-03	4.97E-05	7.88E-03
Selenium	1.00E+00	1	0.001	5.00E-03	1.57E-07	1.57E-07	9.93E-10	9.93E-10	3.13E-05	1.99E-07	3.15E-05
Toxaphene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL HAZARD INDEX - RME
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER RME
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HI (per mg/kg)	Site G EPC (mg/kg)	Site G HQ	Site H EPC (mg/kg)	Site H HQ	Site I EPC (mg/kg)	Site I HQ	Site L EPC (mg/kg)	Site L HQ
1,4-Dichlorobenzene	5.55E-06	--	NC	3.06E+04	1.70E-01	1.84E+03	1.02E-02	--	NC
2,4,6-Trichlorophenol	NC	--	NC	6.13E+02	NC	--	NC	--	NC
2,4-Dichlorophenol	5.55E-05	--	NC	7.42E+02	4.12E-02	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.83E+03	NC	--	NC	--	NC
Antimony	4.09E-04	--	NC	--	NC	6.66E+03	2.72E+00	--	NC
Arsenic	1.60E-04	--	NC	--	NC	--	NC	1.72E+02	2.75E-02
Benzene	5.88E-05	4.53E+01	2.67E-03	6.13E+01	3.60E-03	2.41E+01	1.42E-03	5.70E+00	3.35E-04
Benzo(a)anthracene	NC	--	NC	3.78E+02	NC	--	NC	--	NC
Benzo(a)pyrene	NC	--	NC	2.72E+02	NC	--	NC	--	NC
Benzo(b)fluoranthene	NC	--	NC	2.11E+02	NC	--	NC	--	NC
Cadmium	3.93E-04	--	NC	2.94E+02	1.15E-01	--	NC	--	NC
Chlorobenzene	8.32E-06	5.38E+02	4.48E-03	4.52E+02	3.76E-03	1.27E+02	1.06E-03	5.30E+00	4.41E-05
Chloroform	1.66E-05	1.16E+01	1.94E-04	--	NC	--	NC	2.03E+01	3.37E-04
Dibenzo(a,h)anthracene	NC	--	NC	3.17E+01	NC	--	NC	--	NC
Lead	NC	--	NC	--	NC	2.06E+03	NC	--	NC
Nickel	1.18E-05	--	NC	1.51E+04	1.78E-01	--	NC	--	NC
Pentachlorophenol	5.55E-06	4.77E+03	2.65E-02	--	NC	--	NC	--	NC
Tetrachloroethene	1.66E-05	3.30E+01	5.49E-04	--	NC	--	NC	--	NC
Toluene	8.32E-07	1.18E+02	9.79E-05	7.65E+01	6.36E-05	7.79E+01	6.49E-05	4.00E+02	3.33E-04
Total PCBs	8.48E-03	4.43E+03	3.76E+01	1.80E+04	1.53E+02	3.43E+02	2.91E+00	5.00E+02	4.24E+00
1,2,4-Trichlorobenzene	1.66E-05	--	NC	7.58E+03	1.26E-01	8.26E+03	1.37E-01	--	NC
1,2-Dichlorobenzene	1.85E-06	--	NC	1.94E+04	3.58E-02	3.24E+02	5.99E-04	--	NC
Barium	2.25E-06	4.18E+04	9.40E-02	--	NC	--	NC	--	NC
Beryllium	1.28E-04	--	NC	--	NC	1.53E+03	1.96E-01	--	NC
Hexachlorobenzene	2.12E-04	4.06E+01	8.62E-03	--	NC	1.27E+03	2.69E-01	4.80E+00	1.02E-03
Manganese	3.57E-06	--	NC	3.65E+04	1.30E-01	--	NC	--	NC
Methylene Chloride	2.87E-06	--	NC	5.56E+01	1.60E-04	--	NC	--	NC
Phosphorous	7.88E-03	8.98E+02	7.07E+00	--	NC	--	NC	--	NC
Selenium	3.15E-05	--	NC	--	NC	1.32E+03	4.16E-02	--	NC
Toxaphene	NC	--	NC	--	NC	4.93E+02	NC	--	NC
	Total HI:		**4.48E+01**		**1.54E+02**		**6.29E+00**		**4.27E+00**

Notes:
-- Not a constituent of concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 1:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - RME INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Construction Worker	2.5	(m^3 air/hour)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time	RME Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Construction Worker	40	(days)/365 (days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

T-107

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,4-Dichlorobenzene	1.00E+00	1	2.20E-02	4.47E-04	4.47E-04	9.84E-06
2,4,6-Trichlorophenol	1.00E+00	1	1.09E-02	4.47E-04	4.47E-04	4.85E-06
2,4-Dichlorophenol	1.00E+00	1	NA	4.47E-04	4.47E-04	NC
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NC
Antimony	1.00E+00	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1.50E+01	4.47E-04	4.47E-04	6.71E-03
Benzene	1.00E+00	1	7.70E-03	4.47E-04	4.47E-04	3.44E-06
Benzo(a)anthracene	1.00E+00	1	3.10E-01	4.47E-04	4.47E-04	1.39E-04
Benzo(a)pyrene	1.00E+00	1	3.10E+00	4.47E-04	4.47E-04	1.39E-03
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	4.47E-04	4.47E-04	1.39E-04
Cadmium	1.00E+00	1	6.30E+00	4.47E-04	4.47E-04	2.82E-03
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	2.95E-04	2.95E-04	2.38E-05
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	4.47E-04	4.47E-04	1.39E-03
Lead	1.00E+00	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	4.47E-04	4.47E-04	8.95E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	1	2.00E+00	4.47E-04	4.47E-04	8.95E-04
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	NA	NA	NC
Beryllium	1.00E+00	1	8.40E+00	4.47E-04	4.47E-04	3.76E-03
Hexachlorobenzene	1.00E+00	1.1	1.61E+00	4.92E-04	4.92E-04	7.92E-04
Manganese	1.00E+00	NA	NA	NA	NA	NC
Methylene Chloride	1.00E+00	1	1.65E-03	4.47E-04	4.47E-04	7.36E-07
Phosphorous	1.00E+00	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	1	1.12E+00	4.47E-04	4.47E-04	5.01E-04

TABLE
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Reference Risk (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
1,4-Dichlorobenzene	9.84E-06	--	NC	1.84E-03	1.81E-08	1.10E-04	1.08E-09	--	NC
2,4,6-Trichlorophenol	4.85E-06	--	NC	3.68E-05	1.78E-10	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	4.45E-05	NC	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.10E-04	NC	--	NC	--	NC
Antimony	NC	--	NC	--	NC	4.00E-04	NC	--	NC
Arsenic	6.71E-03	--	NC	--	NC	--	NC	1.03E-05	6.92E-08
Benzene	3.44E-06	2.72E-06	9.37E-12	3.68E-06	1.27E-11	1.45E-06	4.99E-12	3.42E-07	1.18E-12
Benzo(a)anthracene	1.39E-04	--	NC	2.27E-05	3.14E-09	--	NC	--	NC
Benzo(a)pyrene	1.39E-03	--	NC	1.63E-05	2.26E-08	--	NC	--	NC
Benzo(b)fluoranthene	1.39E-04	--	NC	1.27E-05	1.76E-09	--	NC	--	NC
Cadmium	2.82E-03	--	NC	1.76E-05	4.97E-08	--	NC	--	NC
Chlorobenzene	NC	3.23E-05	NC	2.71E-05	NC	7.61E-06	NC	3.18E-07	NC
Chloroform	2.38E-05	6.98E-07	1.66E-11	--	NC	--	NC	1.22E-06	2.89E-11
Dibenzo(a,h)anthracene	1.39E-03	--	NC	1.90E-06	2.64E-09	--	NC	--	NC
Lead	NC	--	NC	--	NC	1.24E-04	NC	--	NC
Nickel	NC	--	NC	9.06E-04	NC	--	NC	--	NC
Pentachlorophenol	NC	2.86E-04	NC	--	NC	--	NC	--	NC
Tetrachloroethene	8.95E-07	1.98E-06	1.77E-12	--	NC	--	NC	--	NC
Toluene	NC	7.06E-06	NC	4.59E-06	NC	4.67E-06	NC	2.40E-05	NC
Total PCBs	8.95E-04	2.66E-04	2.38E-07	1.08E-03	9.66E-07	2.06E-05	1.84E-08	3.00E-05	2.68E-08
1,2,4-Trichlorobenzene	NC	--	NC	4.55E-04	NC	4.95E-04	NC	--	NC
1,2-Dichlorobenzene	NC	--	NC	1.16E-03	NC	1.94E-05	NC	--	NC
Barium	NC	2.51E-03	NC	--	NC	--	NC	--	NC
Beryllium	3.76E-03	--	NC	--	NC	9.18E-05	3.45E-07	--	NC
Hexachlorobenzene	7.92E-04	2.44E-06	1.93E-09	--	NC	7.62E-05	6.04E-08	2.88E-07	2.28E-10
Manganese	NC	--	NC	2.19E-03	NC	--	NC	--	NC
Methylene Chloride	7.36E-07	--	NC	3.34E-06	2.45E-12	--	NC	--	NC
Phosphorous	NC	5.39E-05	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	7.92E-05	NC	--	NC
Toxaphene	5.01E-04	--	NC	--	NC	2.96E-05	1.48E-08	--	NC
	Total:		2.40E-07		1.06E-06		4.40E-07		9.63E-08

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Higher of the surface soil and subsurface soil EPC used.

T-109

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh RME Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Inh (mg/kg-day)	Hazard Index - Inhalation
1,4-Dichlorobenzene	1.00E+00	1	2.29E-01	3.13E-02	3.13E-02	1.37E-01
2,4,6-Trichlorophenol	1.00E+00	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	NA	3.13E-02	3.13E-02	NC
4-Nitroaniline	1.00E+00	1	5.71E-05	3.13E-02	3.13E-02	5.48E+02
Antimony	1.00E+00	NA	NA	NA	NA	NC
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	1.70E-03	3.13E-02	3.13E-02	1.84E+01
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Cadmium	1.00E+00	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	1	5.71E-03	3.13E-02	3.13E-02	5.48E+00
Chloroform	1.00E+00	1	8.60E-05	3.13E-02	3.13E-02	3.64E+02
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Lead	1.00E+00	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Toluene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Total PCBs	1.00E+00	NA	NA	NA	NA	NC
1,2,4-Trichlorobenzene	1.00E+00	1	5.71E-02	3.13E-02	3.13E-02	5.48E-01
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Barium	1.00E+00	1	1.43E-04	3.13E-02	3.13E-02	2.19E+02
Beryllium	1.00E+00	1	5.71E-06	3.13E-02	3.13E-02	5.48E+03
Hexachlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Manganese	1.00E+00	1	1.43E-05	3.13E-02	3.13E-02	2.19E+03
Methylene Chloride	1.00E+00	1	8.60E-01	3.13E-02	3.13E-02	3.64E-02
Phosphorous	1.00E+00	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	NA	NA	NA	NA	NC

TABLE
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - RME

Constituent	Reference HQ (per mg/m3)	Site G EPC (mg/m3)	Site G HQ	Site H EPC (mg/m3)	Site H HQ	Site I EPC (mg/m3)	Site I HQ	Site L EPC (mg/m3)	Site L HQ
1,4-Dichlorobenzene	1.37E-01	--	NC	1.84E-03	2.51E-04	1.10E-04	1.51E-05	--	NC
2,4,6-Trichlorophenol	NC	--	NC	3.68E-05	NC	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	4.45E-05	NC	--	NC	--	NC
4-Nitroaniline	5.48E+02	--	NC	1.10E-04	6.03E-02	--	NC	--	NC
Antimony	NC	--	NC	--	NC	4.00E-04	NC	--	NC
Arsenic	NC	--	NC	--	NC	--	NC	1.03E-05	NC
Benzene	1.84E+01	2.72E-06	5.01E-05	3.68E-06	6.77E-05	1.45E-06	2.67E-05	3.42E-07	6.30E-06
Benzo(a)anthracene	NC	--	NC	2.27E-05	NC	--	NC	--	NC
Benzo(a)pyrene	NC	--	NC	1.63E-05	NC	--	NC	--	NC
Benzo(b)fluoranthene	NC	--	NC	1.27E-05	NC	--	NC	--	NC
Cadmium	NC	--	NC	1.76E-05	NC	--	NC	--	NC
Chlorobenzene	5.48E+00	3.23E-05	1.77E-04	2.71E-05	1.49E-04	7.61E-06	4.18E-05	3.18E-07	1.74E-06
Chloroform	3.64E+02	6.98E-07	2.54E-04	--	NC	--	NC	1.22E-06	4.42E-04
Dibenzo(a,h)anthracene	NC	--	NC	1.90E-06	NC	--	NC	--	NC
Lead	NC	--	NC	--	NC	1.24E-04	NC	--	NC
Nickel	NC	--	NC	9.06E-04	NC	--	NC	--	NC
Pentachlorophenol	NC	2.86E-04	NC	--	NC	--	NC	--	NC
Tetrachloroethene	2.75E-01	1.98E-06	5.43E-07	--	NC	--	NC	--	NC
Toluene	2.75E-01	7.06E-06	1.94E-06	4.59E-06	1.26E-06	4.67E-06	1.28E-06	2.40E-05	6.59E-06
Total PCBs	NC	2.66E-04	NC	1.08E-03	NC	2.06E-05	NC	3.00E-05	NC
1,2,4-Trichlorobenzene	5.48E-01	--	NC	4.55E-04	2.49E-04	4.95E-04	2.71E-04	--	NC
1,2-Dichlorobenzene	NC	--	NC	1.16E-03	NC	1.94E-05	NC	--	NC
Barium	2.19E+02	2.51E-03	5.49E-01	--	NC	--	NC	--	NC
Beryllium	5.48E+03	--	NC	--	NC	9.18E-05	5.03E-01	--	NC
Hexachlorobenzene	NC	2.44E-06	NC	--	NC	7.62E-05	NC	2.88E-07	NC
Manganese	2.19E+03	--	NC	2.19E-03	4.81E+00	--	NC	--	NC
Methylene Chloride	3.64E-02	--	NC	3.34E-06	1.21E-07	--	NC	--	NC
Phosphorous	NC	5.39E-05	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	7.92E-05	NC	--	NC
Toxaphene	NC	--	NC	--	NC	2.96E-05	NC	--	NC
	Total HI:		**5.50E-01**		**4.87E+00**		**5.03E-01**		**4.57E-04**

Notes:
-- Not a constituent of potential concern in this area/medium.
HQ - Hazard Quotient.
HI - Hazard Index.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Higher of the surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor 3:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER-RME INCIDENTAL INGESTION AND DERMAL CONTACT GROUNDWATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	RME Construction Worker	0.005	(l/day)	
Skin Exposed	RME Construction Worker	3339	(cm^2)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time (dermal route only)	RME Construction Worker	1	(hr/day)	
Exposure Frequency	RME Construction Worker	10	(days)/365 (days) =	2.74E-02
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/ 70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/ 1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor (dermal route only)		0.001	(l/cm^3)	

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	2.40E-02	2.80E-08	2.80E-08	1.16E-06	1.16E-06	6.71E-10	2.78E-08	2.85E-08
2,4,6-Trichlorophenol	1.00E+00	1	1	5.00E-02	1.10E-02	2.80E-08	2.80E-08	9.33E-07	9.33E-07	3.08E-10	1.03E-08	1.06E-08
2,4-Dichlorophenol	1.00E+00	NA	NA	2.30E-02	NA	NA	NA	NA	NA	NA	NA	NC
3/4-Methylphenol	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1	1.60E-04	1.50E+00	2.80E-08	2.80E-08	2.99E-09	2.99E-09	4.19E-08	4.48E-09	4.64E-08
Benzene	1.00E+00	1	2.13	2.10E-02	1.50E-02	2.80E-08	2.80E-08	8.35E-07	8.35E-07	4.19E-10	1.25E-08	1.29E-08
Benzo(a)anthracene	1.00E+00	1	1	8.10E-01	7.30E-01	2.80E-08	2.80E-08	1.51E-05	1.51E-05	2.04E-08	1.10E-05	1.11E-05
Cadmium	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	NA	NA	4.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	1	8.90E-03	6.10E-03	2.80E-08	2.80E-08	1.66E-07	1.66E-07	1.71E-10	1.01E-09	1.18E-09
gamma-BHC	1.00E+00	1	1	1.40E-02	1.30E+00	2.80E-08	2.80E-08	2.61E-07	2.61E-07	3.63E-08	3.40E-07	3.76E-07
Lead	1.00E+00	NA	NA	4.00E-06	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	NA	NA	6.96E-03	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	1	6.50E-01	1.20E-01	2.80E-08	2.80E-08	1.21E-05	1.21E-05	3.35E-09	1.46E-06	1.46E-06
Tetrachloroethene	1.00E+00	1	1	4.80E-02	5.20E-02	2.80E-08	2.80E-08	8.96E-07	8.96E-07	1.45E-09	4.66E-08	4.81E-08
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E+00	2.80E-08	2.80E-08	1.46E-05	1.46E-05	5.59E-08	2.92E-05	2.92E-05
Trichloroethene	1.00E+00	1	1	1.60E-02	1.10E-02	2.80E-08	2.80E-08	2.99E-07	2.99E-07	3.08E-10	3.29E-09	3.59E-09
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	1.00E-01	NA	NA	NA	NA	NA	NA	NA	NC
2,4-D	1.00E+00	NA	NA	8.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dinitrotoluene	1.00E+00	NA	NA	3.80E-03	NA	NA	NA	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Hexachlorobenzene	1.00E+00	1	1.1	2.10E-01	1.60E+00	2.80E-08	2.80E-08	4.31E-06	4.31E-06	4.47E-08	6.90E-06	6.94E-06
Pyridine	1.00E+00	NA	NA	1.82E-03	NA	NA	NA	NA	NA	NA	NA	NC
2-Chlorophenol	1.00E+00	NA	NA	1.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
4-Methyl-2-pentanone (MIBK)	1.00E+00	NA	NA	2.77E-03	NA	NA	NA	NA	NA	NA	NA	NC
Acetone	1.00E+00	NA	NA	5.69E-04	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	1	1	1.63E-02	6.30E+00	2.80E-08	2.80E-08	3.04E-07	3.04E-07	1.76E-07	1.92E-06	2.09E-06
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
delta-BHC	1.00E+00	NA	NA	2.79E-02	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	1	1.60E-02	1.60E+01	2.80E-08	2.80E-08	2.99E-07	2.99E-07	4.47E-07	4.78E-06	5.23E-06
Heptachlor	1.00E+00	1	1	1.10E-02	4.50E+00	2.80E-08	2.80E-08	2.05E-07	2.05E-07	1.26E-07	9.24E-07	1.05E-06
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	9.10E+00	2.80E-08	2.80E-08	2.05E-07	2.05E-07	2.54E-07	1.87E-06	2.12E-06
Phenol	1.00E+00	NA	NA	5.50E-03	NA	NA	NA	NA	NA	NA	NA	NC
Vanadium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1	7.30E-03	7.20E-01	2.80E-08	2.80E-08	1.36E-07	1.36E-07	2.01E-08	9.81E-08	1.18E-07
1,1,1-Trichloroethane	1.00E+00	NA	NA	1.70E-02	NA	NA	NA	NA	NA	NA	NA	NC
1,1-Dichloroethane	1.00E+00	NA	NA	8.90E-03	NA	NA	NA	NA	NA	NA	NA	NC
1,1-Dichloroethene	1.00E+00	1	1	1.60E-02	6.00E-01	2.80E-08	2.80E-08	2.99E-07	2.99E-07	1.68E-08	1.79E-07	1.96E-07
2,4,5-T	1.00E+00	NA	NA	1.40E-04	NA	NA	NA	NA	NA	NA	NA	NC
Aldrin	1.00E+00	1	1	1.60E-03	1.70E+01	2.80E-08	2.80E-08	2.99E-08	2.99E-08	4.75E-07	5.08E-07	9.83E-07

SAUGET AREA 1 - EE/CA AND RI/FS
RME
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Chloromethane	1.00E+00	1	1	4.20E-03	1.30E-02	2.80E-08	2.80E-08	7.84E-08	7.84E-08	3.63E-10	1.02E-09	1.38E-09
Chrysene	1.00E+00	1	1	8.10E-01	7.30E-03	2.80E-08	2.80E-08	1.51E-05	1.51E-05	2.04E-10	1.10E-07	1.11E-07
Cobalt	1.00E+00	NA	NA	4.00E-04	NA	NA	NA	NA	NA	NA	NA	NC
MCPP	1.00E+00	NA	NA	1.14E-02	NA	NA	NA	NA	NA	NA	NA	NC
Mercury	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	6.90E-02	NA	NA	NA	NA	NA	NA	NA	NC
Total TCDD-TEQ	1.00E+00	1	1.8	1.40E+00	1.50E+05	2.80E-08	2.80E-08	4.70E-05	4.70E-05	4.19E-03	7.06E+00	7.06E+00

TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- RME

Constituent	Reference Risk (per mg/L)	Site G		Site H		Site I		Site L	
		EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	Risk
1,4-Dichlorobenzene	2.85E-08	--	NC	1.60E+00	4.55E-08	1.30E+00	3.70E-08	8.70E-01	2.48E-08
2,4,6-Trichlorophenol	1.06E-08	4.95E+00	5.23E-08	5.10E-02	5.39E-10	1.30E+00	1.37E-08	--	NC
2,4-Dichlorophenol	NC	--	NC	--	NC	2.60E+00	NC	--	NC
3/4-Methylphenol	NC	1.40E+00	NC	4.80E-01	NC	6.30E-01	NC	--	NC
Arsenic	4.64E-08	--	NC	4.50E-01	2.09E-08	--	NC	7.90E-01	3.67E-08
Benzene	1.29E-08	8.80E-01	1.14E-08	2.50E+00	3.24E-08	6.90E-01	8.93E-09	--	NC
Benzo(a)anthracene	1.11E-05	--	NC	--	NC	2.20E-02	2.43E-07	--	NC
Cadmium	NC	1.20E-01	NC	2.20E+01	NC	7.85E-01	NC	2.70E-01	NC
Chlorobenzene	NC	2.80E+00	NC	2.70E+00	NC	8.90E+00	NC	--	NC
Chloroform	1.18E-09	3.20E-02	3.79E-11	--	NC	2.90E+00	3.43E-09	--	NC
gamma-BHC	3.76E-07	4.20E-03	1.58E-09	--	NC	--	NC	--	NC
Lead	NC	6.09E+00	NC	8.19E+00	NC	2.61E+00	NC	--	NC
Nitrobenzene	NC	7.35E-02	NC	--	NC	1.30E-02	NC	--	NC
Pentachlorophenol	1.46E-06	7.60E+00	1.11E-05	4.50E-01	6.57E-07	6.30E+00	9.20E-06	1.50E-01	2.19E-07
Tetrachloroethene	4.81E-08	1.30E-01	6.25E-09	3.30E-02	1.59E-09	2.90E-01	1.39E-08	7.20E-02	3.46E-09
Total PCBs	2.92E-05	5.40E-03	1.58E-07	--	NC	1.08E-01	3.14E-06	--	NC
Trichloroethene	3.59E-09	3.40E-01	1.22E-09	--	NC	6.20E-01	2.23E-09	--	NC
1,2,4-Trichlorobenzene	NC	--	NC	--	NC	3.20E+00	NC	--	NC
2,4-D	NC	5.00E+01	NC	4.20E-01	NC	1.30E+00	NC	--	NC
2,4-Dinitrotoluene	NC	--	NC	--	NC	3.80E-02	NC	--	NC
Barium	NC	5.30E+00	NC	--	NC	5.85E+01	NC	--	NC
Hexachlorobenzene	6.94E-06	--	NC	1.80E-02	1.25E-07	--	NC	--	NC
Pyridine	NC	--	NC	--	NC	--	NC	3.90E-01	NC
2-Chlorophenol	NC	1.10E+00	NC	--	NC	4.60E-01	NC	--	NC
4-Methyl-2-pentanone (MIBK)	NC	9.30E-01	NC	--	NC	1.60E+00	NC	--	NC
Acetone	NC	7.30E-01	NC	--	NC	1.20E+01	NC	--	NC
alpha-BHC	2.09E-06	5.40E-04	1.13E-09	--	NC	2.50E-03	5.23E-09	--	NC
cis/trans-1,2-Dichloroethene	NC	1.90E+00	NC	--	NC	1.50E+01	NC	--	NC
delta-BHC	NC	--	NC	--	NC	1.90E-03	NC	--	NC
Dieldrin	5.23E-06	--	NC	--	NC	1.50E-03	7.84E-09	--	NC
Heptachlor	1.05E-06	--	NC	--	NC	2.50E-03	2.62E-09	--	NC
Heptachlor epoxide	2.12E-06	--	NC	--	NC	1.30E-03	2.76E-09	--	NC
Phenol	NC	1.60E+01	NC	--	NC	6.70E+00	NC	--	NC
Vanadium	NC	6.20E-01	NC	--	NC	--	NC	--	NC
Vinyl chloride	1.18E-07	1.60E-01	1.89E-08	--	NC	1.00E-01	1.18E-08	--	NC
1,1,1-Trichloroethane	NC	--	NC	--	NC	1.30E+01	NC	--	NC
1,1-Dichloroethane	NC	--	NC	--	NC	3.70E+00	NC	--	NC
1,1-Dichloroethene	1.96E-07	--	NC	--	NC	4.80E-01	9.41E-08	--	NC
2,4,5-T	NC	3.80E-01	NC	--	NC	--	NC	--	NC
Aldrin	9.83E-07	2.30E-04	2.26E-10	--	NC	--	NC	--	NC
Chloromethane	1.38E-09	2.60E-02	3.60E-11	--	NC	--	NC	--	NC
Chrysene	1.11E-07	--	NC	--	NC	2.30E-02	2.54E-09	--	NC
Cobalt	NC	1.40E+00	NC	--	NC	--	NC	--	NC
MCPP	NC	--	NC	--	NC	3.40E+01	NC	--	NC
Mercury	NC	--	NC	--	NC	1.80E-02	NC	--	NC
Naphthalene	NC	1.00E+00	NC	--	NC	2.50E+00	NC	--	NC
Total TCDD-TEQ	7.06E+00	6.77E-08	4.78E-07	--	NC	3.07E-07	2.17E-06	--	NC
	Total:		**1.18E-05**		**8.83E-07**		**1.50E-05**		**2.84E-07**

Notes:

-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.

NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risks divided by the number of wells in

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	3.00E-02	1.96E-06	1.96E-06	8.10E-05	8.10E-05	6.52E-05	2.70E-03	2.77E-03
2,4,6-Trichlorophenol	1.00E+00	NA	NA	5.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	1	2.30E-02	3.00E-03	1.96E-06	1.96E-06	3.01E-05	3.01E-05	6.52E-04	1.00E-02	1.07E-02
3/4-Methylphenol	1.00E+00	1	1	1.00E-02	5.00E-02	1.96E-06	1.96E-06	1.31E-05	1.31E-05	3.91E-05	2.61E-04	3.01E-04
Arsenic	1.00E+00	1	1	1.60E-04	3.00E-04	1.96E-06	1.96E-06	2.09E-07	2.09E-07	6.52E-03	6.97E-04	7.22E-03
Benzene	1.00E+00	1	2.13	2.10E-02	3.00E-03	1.96E-06	1.96E-06	5.85E-05	5.85E-05	6.52E-04	1.95E-02	2.01E-02
Benzo(a)anthracene	1.00E+00	NA	NA	8.10E-01	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	40	1.00E-03	5.00E-04	1.96E-06	1.96E-06	5.23E-05	5.23E-05	3.91E-03	1.05E-01	1.08E-01
Chlorobenzene	1.00E+00	1	1	4.10E-02	2.00E-02	1.96E-06	1.96E-06	5.36E-05	5.36E-05	9.78E-05	2.68E-03	2.78E-03
Chloroform	1.00E+00	1	1	8.90E-03	1.00E-02	1.96E-06	1.96E-06	1.16E-05	1.16E-05	1.96E-04	1.16E-03	1.36E-03
gamma-BHC	1.00E+00	1	1	1.40E-02	3.00E-04	1.96E-06	1.96E-06	1.83E-05	1.83E-05	6.52E-03	6.10E-02	6.75E-02
Lead	1.00E+00	NA	NA	4.00E-06	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	1	1	6.96E-03	5.00E-04	1.96E-06	1.96E-06	9.10E-06	9.10E-06	3.91E-03	1.82E-02	2.21E-02
Pentachlorophenol	1.00E+00	1	1	6.50E-01	3.00E-02	1.96E-06	1.96E-06	8.49E-04	8.49E-04	6.52E-05	2.83E-02	2.84E-02
Tetrachloroethene	1.00E+00	1	1	4.80E-02	1.00E-02	1.96E-06	1.96E-06	6.27E-05	6.27E-05	1.96E-04	6.27E-03	6.47E-03
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E-05	1.96E-06	1.96E-06	1.02E-03	1.02E-03	9.78E-02	5.10E+01	5.11E+01
Trichloroethene	1.00E+00	1	1	1.60E-02	6.00E-03	1.96E-06	1.96E-06	2.09E-05	2.09E-05	3.26E-04	3.48E-03	3.81E-03
1,2,4-Trichlorobenzene	1.00E+00	1	1	1.00E-01	1.00E-02	1.96E-06	1.96E-06	1.31E-04	1.31E-04	1.96E-04	1.31E-02	1.33E-02
2,4-D	1.00E+00	1	1	8.45E-03	1.00E-02	1.96E-06	1.96E-06	1.10E-05	1.10E-05	1.96E-04	1.10E-03	1.30E-03
2,4-Dinitrotoluene	1.00E+00	1	1	3.80E-03	2.00E-03	1.96E-06	1.96E-06	4.97E-06	4.97E-06	9.78E-04	2.48E-03	3.46E-03
Barium	1.00E+00	1	1	1.60E-04	7.00E-02	1.96E-06	1.96E-06	2.09E-07	2.09E-07	2.80E-05	2.99E-06	3.09E-05
Hexachlorobenzene	1.00E+00	1	1.1	2.10E-01	8.00E-04	1.96E-06	1.96E-06	3.02E-04	3.02E-04	2.45E-03	3.77E-01	3.80E-01
Pyridine	1.00E+00	1	1	1.82E-03	1.00E-03	1.96E-06	1.96E-06	2.38E-06	2.38E-06	1.96E-03	2.38E-03	4.34E-03
2-Chlorophenol	1.00E+00	1	1	1.10E-02	5.00E-03	1.96E-06	1.96E-06	1.44E-05	1.44E-05	3.91E-04	2.88E-03	3.27E-03
4-Methyl-2-pentanone (MIBK)	1.00E+00	1	1	2.77E-03	8.00E-02	1.96E-06	1.96E-06	3.62E-06	3.62E-06	2.45E-05	4.52E-05	6.97E-05
Acetone	1.00E+00	1	1	5.69E-04	1.00E-01	1.96E-06	1.96E-06	7.44E-07	7.44E-07	1.96E-05	7.44E-06	2.70E-05
alpha-BHC	1.00E+00	NA	NA	1.63E-02	NA	NA	NA	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	1	1	1.00E-02	1.00E-02	1.96E-06	1.96E-06	1.31E-05	1.31E-05	1.96E-04	1.31E-03	1.50E-03
delta-BHC	1.00E+00	1	1	2.79E-02	3.00E-04	1.96E-06	1.96E-06	3.64E-05	3.64E-05	6.52E-03	1.21E-01	1.28E-01
Dieldrin	1.00E+00	1	1	1.60E-02	5.00E-05	1.96E-06	1.96E-06	2.09E-05	2.09E-05	3.91E-02	4.18E-01	4.57E-01
Heptachlor	1.00E+00	1	1	1.10E-02	5.00E-04	1.96E-06	1.96E-06	1.44E-05	1.44E-05	3.91E-03	2.88E-02	3.27E-02
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	1.30E-05	1.96E-06	1.96E-06	1.44E-05	1.44E-05	1.51E-01	1.11E+00	1.26E+00
Phenol	1.00E+00	1	1	5.50E-03	6.00E-01	1.96E-06	1.96E-06	7.19E-06	7.19E-06	3.26E-06	1.20E-05	1.52E-05
Vanadium	1.00E+00	1	10	1.60E-04	7.00E-03	1.96E-06	1.96E-06	2.09E-06	2.09E-06	2.80E-04	2.99E-04	5.78E-04
Vinyl chloride	1.00E+00	1	1	7.30E-03	3.00E-03	1.96E-06	1.96E-06	9.54E-06	9.54E-06	6.52E-04	3.18E-03	3.83E-03
1,1,1-Trichloroethane	1.00E+00	1	1	1.70E-02	2.80E-01	1.96E-06	1.96E-06	2.22E-05	2.22E-05	6.99E-06	7.93E-05	8.63E-05
1,1-Dichloroethane	1.00E+00	1	1	8.90E-03	1.00E-01	1.96E-06	1.96E-06	1.16E-05	1.16E-05	1.96E-05	1.16E-04	1.36E-04
1,1-Dichloroethene	1.00E+00	1	1	1.60E-02	9.00E-03	1.96E-06	1.96E-06	2.09E-05	2.09E-05	2.17E-04	2.32E-03	2.54E-03
2,4,5-T	1.00E+00	1	1	1.40E-04	1.00E-02	1.96E-06	1.96E-06	1.84E-07	1.84E-07	1.96E-04	1.84E-05	2.14E-04

SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal Permeability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Aldrin	1.00E+00	1	1	1.60E-03	3.00E-05	1.96E-06	1.96E-06	2.09E-06	2.09E-06	6.52E-02	6.97E-02	1.35E-01
Chloromethane	1.00E+00	NA	NA	4.20E-03	NA	NA	NA	NA	NA	NA	NA	NC
Chrysene	1.00E+00	NA	NA	8.10E-01	NA	NA	NA	NA	NA	NA	NA	NC
Cobalt	1.00E+00	1	1	4.00E-04	2.00E-02	1.96E-06	1.96E-06	5.23E-07	5.23E-07	9.78E-05	2.61E-05	1.24E-04
MCPP	1.00E+00	1	1	1.14E-02	1.00E-03	1.96E-06	1.96E-06	1.49E-05	1.49E-05	1.96E-03	1.49E-02	1.69E-02
Mercury	1.00E+00	2	13.7	1.00E-03	3.00E-04	3.91E-06	3.91E-06	1.79E-05	1.79E-05	1.30E-02	5.97E-02	7.27E-02
Naphthalene	1.00E+00	1	1	6.90E-02	2.00E-02	1.96E-06	1.96E-06	9.02E-05	9.02E-05	9.78E-05	4.51E-03	4.61E-03
Total TCDD-TEQ	1.00E+00	NA	NA	1.40E+00	NA	NA	NA	NA	NA	NA	NA	NC

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TABLE
POTENTIAL CARCINOGENIC RISK - RME
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- RME

Constituent	Reference HQ (per mg/L)	Site G		Site H		Site I		Site L	
		EPC (mg/L)	HQ	EPC (mg/L)	HQ	EPC (mg/L)	HQ	EPC (mg/L)	HQ
1,4-Dichlorobenzene	2.77E-03	--	NC	1.60E+00	4.43E-03	1.30E+00	3.60E-03	8.70E-01	2.41E-03
2,4,6-Trichlorophenol	NC	4.95E+00	NC	5.10E-02	NC	1.30E+00	NC	--	NC
2,4-Dichlorophenol	1.07E-02	--	NC	--	NC	2.60E+00	2.77E-02	--	NC
3/4-Methylphenol	3.01E-04	1.40E+00	4.21E-04	4.80E-01	1.44E-04	6.30E-01	1.89E-04	--	NC
Arsenic	7.22E-03	--	NC	4.50E-01	3.25E-03	--	NC	7.90E-01	5.70E-03
Benzene	2.01E-02	8.80E-01	1.77E-02	2.50E+00	5.03E-02	6.90E-01	1.39E-02	--	NC
Benzo(a)anthracene	NC	--	NC	--	NC	2.20E-02	NC	--	NC
Cadmium	1.08E-01	1.20E-01	1.30E-02	2.20E+01	2.39E+00	7.85E-01	8.51E-02	2.70E-01	2.93E-02
Chlorobenzene	2.78E-03	2.80E+00	7.78E-03	2.70E+00	7.50E-03	8.90E+00	2.47E-02	--	NC
Chloroform	1.36E-03	3.20E-02	4.35E-05	--	NC	2.90E+00	3.94E-03	--	NC
gamma-BHC	6.75E-02	4.20E-03	2.84E-04	--	NC	--	NC	--	NC
Lead	NC	6.09E+00	NC	8.19E+00	NC	2.61E+00	NC	--	NC
Nitrobenzene	2.21E-02	7.35E-02	1.62E-03	--	NC	1.30E-02	2.87E-04	--	NC
Pentachlorophenol	2.84E-02	7.60E+00	2.16E-01	4.50E-01	1.28E-02	6.30E+00	1.79E-01	1.50E-01	4.26E-03
Tetrachloroethene	6.47E-03	1.30E-01	8.41E-04	3.30E-02	2.13E-04	2.90E-01	1.88E-03	7.20E-02	4.66E-04
Total PCBs	5.11E+01	5.40E-03	2.76E-01	--	NC	1.08E-01	5.50E+00	--	NC
Trichloroethene	3.81E-03	3.40E-01	1.30E-03	--	NC	6.20E-01	2.36E-03	--	NC
1,2,4-Trichlorobenzene	1.33E-02	--	NC	--	NC	3.20E+00	4.24E-02	--	NC
2,4-D	1.30E-03	5.00E+01	6.50E-02	4.20E-01	5.46E-04	1.30E+00	1.69E-03	--	NC
2,4-Dinitrotoluene	3.46E-03	--	NC	--	NC	3.80E-02	1.32E-04	--	NC
Barium	3.09E-05	5.30E+00	1.64E-04	--	NC	5.85E+01	1.81E-03	--	NC
Hexachlorobenzene	3.80E-01	--	NC	1.80E-02	6.84E-03	--	NC	--	NC
Pyridine	4.34E-03	--	NC	--	NC	--	NC	3.90E-01	1.69E-03
2-Chlorophenol	3.27E-03	1.10E+00	3.59E-03	--	NC	4.60E-01	1.50E-03	--	NC
4-Methyl-2-pentanone (MIBK)	6.97E-05	9.30E-01	6.48E-05	--	NC	1.60E+00	1.12E-04	--	NC
Acetone	2.70E-05	7.30E-01	1.97E-05	--	NC	1.20E+01	3.24E-04	--	NC
alpha-BHC	NC	5.40E-04	NC	--	NC	2.50E-03	NC	--	NC
cis/trans-1,2-Dichloroethene	1.50E-03	1.90E+00	2.85E-03	--	NC	1.50E+01	2.25E-02	--	NC
delta-BHC	1.28E-01	--	NC	--	NC	1.90E-03	2.43E-04	--	NC
Dieldrin	4.57E-01	--	NC	--	NC	1.50E-03	6.86E-04	--	NC
Heptachlor	3.27E-02	--	NC	--	NC	2.50E-03	8.17E-05	--	NC
Heptachlor epoxide	1.26E+00	--	NC	--	NC	1.30E-03	1.63E-03	--	NC
Phenol	1.52E-05	1.60E+01	2.44E-04	--	NC	6.70E+00	1.02E-04	--	NC
Vanadium	5.78E-04	6.20E-01	3.59E-04	--	NC	--	NC	--	NC
Vinyl chloride	3.83E-03	1.60E-01	6.13E-04	--	NC	1.00E-01	3.83E-04	--	NC
1,1,1-Trichloroethane	8.63E-05	--	NC	--	NC	1.30E+01	1.12E-03	--	NC
1,1-Dichloroethane	1.36E-04	--	NC	--	NC	3.70E+00	5.03E-04	--	NC
1,1-Dichloroethene	2.54E-03	--	NC	--	NC	4.80E-01	1.22E-03	--	NC
2,4,5-T	2.14E-04	3.80E-01	8.13E-05	--	NC	--	NC	--	NC
Aldrin	1.35E-01	2.30E-04	3.10E-05	--	NC	--	NC	--	NC
Chloromethane	NC	2.60E-02	NC	--	NC	--	NC	--	NC
Chrysene	NC	--	NC	--	NC	2.30E-02	NC	--	NC
Cobalt	1.24E-04	1.40E+00	1.74E-04	--	NC	--	NC	--	NC
MCPP	1.69E-02	--	NC	--	NC	3.40E+01	5.74E-01	--	NC
Mercury	7.27E-02	--	NC	--	NC	1.80E-02	1.31E-03	--	NC
Naphthalene	4.61E-03	1.00E+00	4.61E-03	--	NC	2.50E+00	1.15E-02	--	NC
Total TCDD-TEQ	NC	6.77E-08	NC	--	NC	3.07E-07	NC	--	NC
	Total:		**6.13E-01**		**2.47E+00**		**6.51E+00**		**4.38E-02**

Notes:

-- *Not a constituent of potential concern in this area/medium.*
HI - Hazard Index.
HQ - Hazard Quotient.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value

SAUGET AREA 1 - EE/CA AND RI/FS
RME

Receptors Evaluated:	
Receptor:	RME Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - RME INHALATION OF TRENCH AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	RME Construction Worker	2.5	(m^3 air/hour)	
Body Weight	RME Construction Worker	70	(kg)	
Exposure Time	RME Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	RME Construction Worker	40	(days)/365 (days) =	1.10E-01
Exposure Duration (cancer)	RME Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	RME Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

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SAUGET AREA 1 - EE/CA AND RI/FS
RME

CARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh RME Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Benzene	1.00E+00	1	7.70E-03	4.47E-04	4.47E-04	3.44E-06
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	2.95E-04	2.95E-04	2.38E-05
Tetrachloroethene	1.00E+00	1	2.00E-03	4.47E-04	4.47E-04	8.95E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	4.47E-04	4.47E-04	2.68E-06
4-Methyl-2-pentanone (MIBK)	1.00E+00	NA	NA	NA	NA	NC
Acetone	1.00E+00	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1.54E-02	4.47E-04	4.47E-04	6.89E-06
1,1,1-Trichloroethane	1.00E+00	NA	NA	NA	NA	NC
1,1-Dichloroethane	1.00E+00	NA	NA	NA	NA	NC
1,1-Dichloroethene	1.00E+00	1	1.75E-01	4.47E-04	4.47E-04	7.83E-05
Chloromethane	1.00E+00	1	3.50E-03	4.47E-04	4.47E-04	1.57E-06
Naphthalene	1.00E+00	NA	NA	NA	NA	NC

TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - RME
TRENCH AIR

Constituent	Reference Risk (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Benzene	3.44E-06	2.38E-02	8.21E-08	6.77E-02	2.33E-07	1.87E-02	6.44E-08	--	NC
Chlorobenzene	NC	6.99E-02	NC	6.74E-02	NC	2.22E-01	NC	--	NC
Chloroform	2.38E-05	--	NC	--	NC	7.95E-02	1.89E-06	--	NC
Tetrachloroethene	8.95E-07	3.13E-03	2.80E-09	7.95E-04	7.12E-10	6.99E-03	6.25E-09	1.74E-03	1.55E-09
Toluene	NC	--	NC	--	NC	--	NC	--	NC
Trichloroethene	2.68E-06	4.45E-02	1.19E-07	--	NC	8.11E-02	2.18E-07	--	NC
4-Methyl-2-pentanone (MIBK)	NC	8.93E-02	NC	--	NC	1.54E-01	NC	--	NC
Acetone	NC	1.60E-02	NC	--	NC	2.62E-01	NC	--	NC
cis/trans-1,2-Dichloroethene	NC	5.85E-02	NC	--	NC	4.62E-01	NC	--	NC
Vinyl chloride	6.89E-06	5.06E-03	3.48E-08	--	NC	3.16E-03	2.18E-08	--	NC
1,1,1-Trichloroethane	NC	--	NC	--	NC	3.27E-01	NC	--	NC
1,1-Dichloroethane	NC	--	NC	--	NC	1.05E-01	NC	--	NC
1,1-Dichloroethene	7.83E-05	--	NC	--	NC	1.36E-02	1.06E-06	--	NC
Chloromethane	1.57E-06	9.36E-04	1.47E-09	--	NC	--	NC	--	NC
Naphthalene	NC	2.18E-02	NC	--	NC	5.46E-02	NC	--	NC
	Total:		**2.41E-07**		**2.34E-07**		**3.26E-06**		**1.55E-09**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

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SAUGET AREA 1 - EE/CA AND RI/FS
RME
NONCARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - RME

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh RME Construction Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Benzone	1.00E+00	1	1.70E-03	3.13E-02	3.13E-02	1.84E+01
Chlorobenzene	1.00E+00	1	5.71E-03	3.13E-02	3.13E-02	5.48E+00
Chloroform	1.00E+00	1	8.60E-05	3.13E-02	3.13E-02	3.64E+02
Tetrachloroethene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Toluene	1.00E+00	1	1.14E-01	3.13E-02	3.13E-02	2.75E-01
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone (MIBK)	1.00E+00	1	2.29E-02	3.13E-02	3.13E-02	1.37E+00
Acetone	1.00E+00	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	3.13E-02	3.13E-02	1.10E+00
1,1,1-Trichloroethane	1.00E+00	1	6.30E-01	3.13E-02	3.13E-02	4.97E-02
1,1-Dichloroethane	1.00E+00	1	1.00E-01	3.13E-02	3.13E-02	3.13E-01
1,1-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Chloromethane	1.00E+00	1	8.60E-02	3.13E-02	3.13E-02	3.64E-01
Naphthalene	1.00E+00	1	8.57E-04	3.13E-02	3.13E-02	3.65E+01

TABLE
POTENTIAL NONCARCINOGENIC RISK
CONSTRUCTION WORKER - RME
TRENCH AIR

Constituent	Reference HQ (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
Benzene	1.84E+01	2.38E-02	4.39E-01	6.77E-02	1.25E+00	1.87E-02	3.44E-01	--	NC
Chlorobenzene	5.48E+00	6.99E-02	3.83E-01	6.74E-02	3.70E-01	2.22E-01	1.22E+00	--	NC
Chloroform	3.64E+02	--	NC	--	NC	7.95E-02	2.89E+01	--	NC
Tetrachloroethene	2.75E-01	3.13E-03	8.61E-04	7.95E-04	2.18E-04	6.99E-03	1.92E-03	1.74E-03	4.77E-04
Toluene	2.75E-01	--	NC	--	NC	--	NC	--	NC
Trichloroethene	NC	4.45E-02	NC	--	NC	8.11E-02	NC	--	NC
4-Methyl-2-pentanone (MIBK)	1.37E+00	8.93E-02	1.22E-01	--	NC	1.54E-01	2.10E-01	--	NC
Acetone	NC	1.60E-02	NC	--	NC	2.62E-01	NC	--	NC
cis/trans-1,2-Dichloroethene	NC	5.85E-02	NC	--	NC	4.62E-01	NC	--	NC
Vinyl chloride	1.10E+00	5.06E-03	5.54E-03	--	NC	3.16E-03	3.46E-03	--	NC
1,1,1-Trichloroethane	4.97E-02	--	NC	--	NC	3.27E-01	1.63E-02	--	NC
1,1-Dichloroethane	3.13E-01	--	NC	--	NC	1.05E-01	3.28E-02	--	NC
1,1-Dichloroethene	NC	--	NC	--	NC	1.36E-02	NC	--	NC
Chloromethane	3.64E-01	9.36E-04	3.41E-04	--	NC	--	NC	--	NC
Naphthalene	3.65E+01	2.18E-02	7.98E-01	--	NC	5.46E-02	1.99E+00	--	NC
	Total:		1.75E+00		1.62E+00		3.28E+01		4.77E-04

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

T-123

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated	
Receptor 3:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER MLE INCIDENTIAL INGESTION AND DERMAL CONTACT SOIL		Assumed Value	Units	Calculated Value
Soil Ingestion Rate	MLE Construction Worker	64	(mg soil/day)	
Soil on Skin	MLE Construction Worker	0.19	(mg/cm^2)	
Skin Exposed	MLE Construction Worker	3339	(cm^2)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Frequency	MLE Construction Worker	20	(days)/365(days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(years)/70(years) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

1-Jun-01

T-124

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
POTENTIAL CARCINOGENIC RISK
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE

Constituent	Unit Concentration In Soil (mg/kg soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,4-Dichlorobenzene	1.00E+00	1	0.01	2.40E-02	7.16E-10	7.16E-10	7.09E-11	7.09E-11	1.72E-11	1.70E-12	1.89E-11
2,4,6-Trichlorophenol	1.00E+00	1	0.01	1.10E-02	7.16E-10	7.16E-10	7.09E-11	7.09E-11	7.87E-12	7.80E-13	8.65E-12
2,4-Dichlorophenol	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	0.3	0.001	1.50E+00	2.15E-10	2.15E-10	7.09E-12	7.09E-12	3.22E-10	1.06E-11	3.33E-10
Benzene	1.00E+00	1	0.02	1.50E-02	7.16E-10	7.16E-10	1.42E-10	1.42E-10	1.07E-11	2.13E-12	1.29E-11
Benzo(a)anthracene	1.00E+00	0.29	0.02	7.30E-01	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-10	1.04E-10	2.55E-10
Benzo(a)pyrene	1.00E+00	0.29	0.02	7.30E+00	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-09	1.04E-09	2.55E-09
Benzo(b)fluoranthene	1.00E+00	0.29	0.02	7.30E-01	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-10	1.04E-10	2.55E-10
Cadmium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	0.01	6.10E-03	7.16E-10	7.16E-10	7.09E-11	7.09E-11	4.37E-12	4.33E-13	4.80E-12
Dibenzo(a,h)anthracene	1.00E+00	0.29	0.02	7.30E+00	2.08E-10	2.08E-10	1.42E-10	1.42E-10	1.52E-09	1.04E-09	2.55E-09
Lead	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	0.01	1.20E-01	7.16E-10	7.16E-10	7.09E-11	7.09E-11	8.59E-11	8.51E-12	9.44E-11
Tetrachloroethene	1.00E+00	1	0.01	5.20E-02	7.16E-10	7.16E-10	7.09E-11	7.09E-11	3.72E-11	3.69E-12	4.09E-11
Toluene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	0.83	0.04	2.00E+00	5.94E-10	5.94E-10	2.84E-10	2.84E-10	1.19E-09	5.68E-10	1.76E-09
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Beryllium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Hexachlorobenzene	1.00E+00	0.83	0.04	1.60E+00	5.94E-10	5.94E-10	2.84E-10	2.84E-10	9.50E-10	4.54E-10	1.40E-09
Manganese	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Methylene Chloride	1.00E+00	1	0.016	7.50E-03	7.16E-10	7.16E-10	1.14E-10	1.14E-10	5.37E-12	8.51E-13	6.22E-12
Phosphorous	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	1	0.01	1.10E+00	7.16E-10	7.16E-10	7.09E-11	7.09E-11	7.87E-10	7.80E-11	8.65E-10

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference Risk (per mg/kg)	Site G		Site H		Site I		Site L	
		EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk	EPC (mg/kg)	Risk
1,4-Dichlorobenzene	1.89E-11	--	NC	6.32E+03	1.19E-07	2.55E+02	4.81E-09	--	NC
2,4,6-Trichlorophenol	8.65E-12	--	NC	3.07E+02	2.65E-09	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	1.50E+02	NC	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.83E+03	NC	--	NC	--	NC
Antimony	NC	--	NC	--	NC	2.23E+03	NC	--	NC
Arsenic	3.33E-10	--	NC	--	NC	--	NC	5.36E+01	1.78E-08
Benzene	1.29E-11	1.53E+01	1.97E-10	1.52E+01	1.96E-10	3.81E+00	4.90E-11	2.01E+00	2.58E-11
Benzo(a)anthracene	2.55E-10	--	NC	1.26E+02	3.22E-08	--	NC	--	NC
Benzo(a)pyrene	2.55E-09	--	NC	1.36E+02	3.48E-07	--	NC	--	NC
Benzo(b)fluoranthene	2.55E-10	--	NC	7.10E+01	1.81E-08	--	NC	--	NC
Cadmium	NC	--	NC	1.88E+02	NC	--	NC	--	NC
Chlorobenzene	NC	1.08E+02	NC	9.76E+01	NC	3.47E+01	NC	1.26E+00	NC
Chloroform	4.80E-12	1.16E+01	5.58E-11	--	NC	--	NC	6.80E+00	3.26E-11
Dibenzo(a,h)anthracene	2.55E-09	--	NC	3.17E+01	8.09E-08	--	NC	--	NC
Lead	NC	--	NC	--	NC	2.06E+03	NC	--	NC
Nickel	NC	--	NC	1.77E+03	NC	--	NC	--	NC
Pentachlorophenol	9.44E-11	1.32E+03	1.24E-07	--	NC	--	NC	--	NC
Tetrachloroethene	4.09E-11	1.88E+01	7.69E-10	--	NC	--	NC	--	NC
Toluene	NC	4.85E+01	NC	2.28E+01	NC	1.13E+01	NC	6.65E+01	NC
Total PCBs	1.76E-09	9.08E+02	1.59E-06	2.73E+03	4.80E-06	1.81E+02	3.17E-07	2.58E+02	4.53E-07
1,2,4-Trichlorobenzene	NC	--	NC	1.33E+03	NC	1.40E+03	NC	--	NC
1,2-Dichlorobenzene	NC	--	NC	6.48E+03	NC	8.29E+01	NC	--	NC
Barium	NC	5.00E+03	NC	--	NC	--	NC	--	NC
Beryllium	NC	--	NC	--	NC	1.53E+03	NC	--	NC
Hexachlorobenzene	1.40E-09	3.43E+01	4.82E-08	--	NC	2.58E+02	3.63E-07	4.80E+00	6.74E-09
Manganese	NC	--	NC	3.86E+03	NC	--	NC	--	NC
Methylene Chloride	6.22E-12	--	NC	6.34E+00	3.94E-11	--	NC	--	NC
Phosphorous	NC	5.37E+02	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	1.32E+03	NC	--	NC
Toxaphene	8.65E-10	--	NC	--	NC	4.93E+02	4.26E-07	--	NC
	Total:		1.77E-06		5.40E-06		1.11E-06		4.78E-07

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

T-126

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC HAZARD INDEX
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE

Constituent	Unit Concentration in Soil (mg/kg-soil)	Oral - Soil Absorption Adjustment Factor	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	ADDing MLE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. LE Construction Worker (mg/kg-day)	ADDder (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,4-Dichlorobenzene	1.00E+00	1	0.01	3.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	1.67E-06	1.66E-07	1.84E-06
2,4,6-Trichlorophenol	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	0.01	3.00E-03	5.01E-08	5.01E-08	4.97E-09	4.97E-09	1.67E-05	1.66E-06	1.84E-05
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Antimony	1.00E+00	1	0.007	4.00E-04	5.01E-08	5.01E-08	3.48E-09	3.48E-09	1.25E-04	8.69E-06	1.34E-04
Arsenic	1.00E+00	0.3	0.001	3.00E-04	1.50E-08	1.50E-08	4.97E-10	4.97E-10	5.01E-05	1.66E-06	5.18E-05
Benzene	1.00E+00	1	0.02	3.00E-03	5.01E-08	5.01E-08	9.93E-09	9.93E-09	1.67E-05	3.31E-06	2.00E-05
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	0.04	5.00E-04	5.01E-08	5.01E-08	1.99E-08	1.99E-08	1.00E-04	3.97E-05	1.40E-04
Chlorobenzene	1.00E+00	1	0.01	2.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	2.50E-06	2.48E-07	2.75E-06
Chloroform	1.00E+00	1	0.01	1.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	5.01E-06	4.97E-07	5.51E-06
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Lead	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Nickel	1.00E+00	1	0.08	2.00E-02	5.01E-08	5.01E-08	3.97E-08	3.97E-08	2.50E-06	1.99E-06	4.49E-06
Pentachlorophenol	1.00E+00	1	0.01	3.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	1.67E-06	1.66E-07	1.84E-06
Tetrachloroethene	1.00E+00	1	0.01	1.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	5.01E-06	4.97E-07	5.51E-06
Toluene	1.00E+00	1	0.01	2.00E-01	5.01E-08	5.01E-08	4.97E-09	4.97E-09	2.50E-07	2.48E-08	2.75E-07
Total PCBs	1.00E+00	0.83	0.04	2.00E-05	4.16E-08	4.16E-08	1.99E-08	1.99E-08	2.08E-03	9.93E-04	3.07E-03
1,2,4-Trichlorobenzene	1.00E+00	1	0.01	1.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	5.01E-06	4.97E-07	5.51E-06
1,2-Dichlorobenzene	1.00E+00	1	0.01	9.00E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	5.57E-07	5.52E-08	6.12E-07
Barium	1.00E+00	1	0.001	7.00E-02	5.01E-08	5.01E-08	4.97E-10	4.97E-10	7.16E-07	7.09E-09	7.23E-07
Beryllium	1.00E+00	1	0.1	2.00E-03	5.01E-08	5.01E-08	4.97E-08	4.97E-08	2.50E-05	2.48E-05	4.99E-05
Hexachlorobenzene	1.00E+00	0.83	0.04	8.00E-04	4.16E-08	4.16E-08	1.99E-08	1.99E-08	5.20E-05	2.48E-05	7.68E-05
Manganese	1.00E+00	1	0.01	4.67E-02	5.01E-08	5.01E-08	4.97E-09	4.97E-09	1.07E-06	1.06E-07	1.18E-06
Methylene Chloride	1.00E+00	1	0.016	6.00E-02	5.01E-08	5.01E-08	7.95E-09	7.95E-09	8.35E-07	1.32E-07	9.67E-07
Phosphorous	1.00E+00	1	0.001	2.00E-05	5.01E-08	5.01E-08	4.97E-10	4.97E-10	2.50E-03	2.48E-05	2.53E-03
Selenium	1.00E+00	1	0.001	5.00E-03	5.01E-08	5.01E-08	4.97E-10	4.97E-10	1.00E-05	9.93E-08	1.01E-05
Toxaphene	1.00E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC

TABLE
POTENTIAL HAZARD INDEX - MLE
INCIDENTIAL INGESTION AND DERMAL CONTACT
SOIL
CONSTRUCTION WORKER MLE
SAUGET AREA 1 - EE/CA AND RI/FS

Constituent	Reference HI (per mg/kg)	Site G		Site H		Site I		Site L	
		EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ	EPC (mg/kg)	HQ
1,4-Dichlorobenzene	1.84E-06	--	NC	6.32E+03	1.16E-02	2.55E+02	4.67E-04	--	NC
2,4,6-Trichlorophenol	NC	--	NC	3.07E+02	NC	--	NC	--	NC
2,4-Dichlorophenol	1.84E-05	--	NC	1.50E+02	2.76E-03	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.83E+03	NC	--	NC	--	NC
Antimony	1.34E-04	--	NC	--	NC	2.23E+03	2.99E-01	--	NC
Arsenic	5.18E-05	--	NC	--	NC	--	NC	5.36E+01	2.78E-03
Benzene	2.00E-05	1.53E+01	3.07E-04	1.52E+01	3.05E-04	3.81E+00	7.62E-05	2.01E+00	4.01E-05
Benzo(a)anthracene	NC	--	NC	1.26E+02	NC	--	NC	--	NC
Benzo(a)pyrene	NC	--	NC	1.36E+02	NC	--	NC	--	NC
Benzo(b)fluoranthene	NC	--	NC	7.10E+01	NC	--	NC	--	NC
Cadmium	1.40E-04	--	NC	1.88E+02	2.63E-02	--	NC	--	NC
Chlorobenzene	2.75E-06	1.08E+02	2.99E-04	9.76E+01	2.69E-04	3.47E+01	9.54E-05	1.25E+00	3.44E-06
Chloroform	5.51E-06	1.16E+01	6.40E-05	--	NC	--	NC	6.80E+00	3.74E-05
Dibenzo(a,h)anthracene	NC	--	NC	3.17E+01	NC	--	NC	--	NC
Lead	NC	--	NC	--	NC	2.06E+03	NC	--	NC
Nickel	4.49E-06	--	NC	1.77E+03	7.93E-03	--	NC	--	NC
Pentachlorophenol	1.84E-06	1.32E+03	2.42E-03	--	NC	--	NC	--	NC
Tetrachloroethene	5.51E-06	1.88E+01	1.04E-04	--	NC	--	NC	--	NC
Toluene	2.75E-07	4.85E+01	1.33E-05	2.28E+01	6.28E-06	1.13E+01	3.10E-06	6.65E+01	1.83E-05
Total PCBs	3.07E-03	9.08E+02	2.79E+00	2.73E+03	8.40E+00	1.81E+02	5.55E-01	2.58E+02	7.93E-01
1,2,4-Trichlorobenzene	5.51E-06	--	NC	1.33E+03	7.33E-03	1.40E+03	7.70E-03	--	NC
1,2-Dichlorobenzene	6.12E-07	--	NC	6.48E+03	3.97E-03	8.29E+01	5.07E-05	--	NC
Barium	7.23E-07	5.00E+03	3.62E-03	--	NC	--	NC	--	NC
Beryllium	4.99E-05	--	NC	--	NC	1.53E+03	7.63E-02	--	NC
Hexachlorobenzene	7.68E-05	3.43E+01	2.63E-03	--	NC	2.58E+02	1.98E-02	4.80E+00	3.69E-04
Manganese	1.18E-06	--	NC	3.86E+03	4.56E-03	--	NC	--	NC
Methylene Chloride	9.67E-07	--	NC	6.34E+00	6.13E-06	--	NC	--	NC
Phosphorous	2.53E-03	5.37E+02	1.36E+00	--	NC	--	NC	--	NC
Selenium	1.01E-05	--	NC	--	NC	1.32E+03	1.34E-02	--	NC
Toxaphene	NC	--	NC	--	NC	4.93E+02	NC	--	NC
	Total HI:		**4.16E+00**		**8.46E+00**		**9.71E-01**		**7.96E-01**

Notes:
-- Not a constituent of concern in this area/medium.
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Higher of surface soil and subsurface soil EPC used.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 1:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - MLE INHALATION OF OUTDOOR AIR PARTICULATES		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Construction Worker	1.5	(m^3 air/hour)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time	MLE Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Construction Worker	20	(days)/365 (days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

SAUGET AREA 1 - EE/CA AND RI/FS
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDinh MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
1,4-Dichlorobenzene	1.00E+00	1	2.20E-02	1.34E-04	1.34E-04	2.95E-06
2,4,6-Trichlorophenol	1.00E+00	1	1.09E-02	1.34E-04	1.34E-04	1.46E-06
2,4-Dichlorophenol	1.00E+00	1	NA	1.34E-04	1.34E-04	NC
4-Nitroaniline	1.00E+00	NA	NA	NA	NA	NC
Antimony	1.00E+00	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1.50E+01	1.34E-04	1.34E-04	2.01E-03
Benzene	1.00E+00	1	7.70E-03	1.34E-04	1.34E-04	1.03E-06
Benzo(a)anthracene	1.00E+00	1	3.10E-01	1.34E-04	1.34E-04	4.16E-05
Benzo(a)pyrene	1.00E+00	1	3.10E+00	1.34E-04	1.34E-04	4.16E-04
Benzo(b)fluoranthene	1.00E+00	1	3.10E-01	1.34E-04	1.34E-04	4.16E-05
Cadmium	1.00E+00	1	6.30E+00	1.34E-04	1.34E-04	8.45E-04
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	8.86E-05	8.86E-05	7.13E-06
Dibenzo(a,h)anthracene	1.00E+00	1	3.10E+00	1.34E-04	1.34E-04	4.16E-04
Lead	1.00E+00	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	2.00E-03	1.34E-04	1.34E-04	2.68E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Total PCBs	1.00E+00	1	2.00E+00	1.34E-04	1.34E-04	2.68E-04
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	NA	NA	NC
Beryllium	1.00E+00	1	8.40E+00	1.34E-04	1.34E-04	1.13E-03
Hexachlorobenzene	1.00E+00	1.1	1.61E+00	1.48E-04	1.48E-04	2.38E-04
Manganese	1.00E+00	NA	NA	NA	NA	NC
Methylene Chloride	1.00E+00	1	1.65E-03	1.34E-04	1.34E-04	2.21E-07
Phosphorous	1.00E+00	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	1	1.12E+00	1.34E-04	1.34E-04	1.50E-04

TABLE
CARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Reference Risk (per mg/m3)	Site G EPC (mg/m3)	Site G Risk	Site H EPC (mg/m3)	Site H Risk	Site I EPC (mg/m3)	Site I Risk	Site L EPC (mg/m3)	Site L Risk
1,4-Dichlorobenzene	2.95E-06	--	NC	3.79E-04	1.12E-09	1.53E-05	4.51E-11	--	NC
2,4,6-Trichlorophenol	1.46E-06	--	NC	1.84E-05	2.68E-11	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	9.01E-06	NC	--	NC	--	NC
4-Nitroaniline	NC	--	NC	1.10E-04	NC	--	NC	--	NC
Antimony	NC	--	NC	--	NC	1.34E-04	NC	--	NC
Arsenic	2.01E-03	--	NC	--	NC	--	NC	3.22E-06	6.48E-09
Benzene	1.03E-06	9.21E-07	9.51E-13	9.13E-07	9.43E-13	2.28E-07	2.36E-13	1.20E-07	1.24E-13
Benzo(a)anthracene	4.16E-05	--	NC	7.58E-06	3.15E-10	--	NC	--	NC
Benzo(a)pyrene	4.16E-04	--	NC	8.18E-06	3.40E-09	--	NC	--	NC
Benzo(b)fluoranthene	4.16E-05	--	NC	4.26E-06	1.77E-10	--	NC	--	NC
Cadmium	8.45E-04	--	NC	1.13E-05	9.54E-09	--	NC	--	NC
Chlorobenzene	NC	6.51E-06	NC	5.86E-06	NC	2.08E-06	NC	7.49E-08	NC
Chloroform	7.13E-06	6.98E-07	4.97E-12	--	NC	--	NC	4.08E-07	2.91E-12
Dibenzo(a,h)anthracene	4.16E-04	--	NC	1.90E-06	7.91E-10	--	NC	--	NC
Lead	NC	--	NC	--	NC	1.24E-04	NC	--	NC
Nickel	NC	--	NC	1.06E-04	NC	--	NC	--	NC
Pentachlorophenol	NC	7.91E-05	NC	--	NC	--	NC	--	NC
Tetrachloroethene	2.68E-07	1.13E-06	3.03E-13	--	NC	--	NC	--	NC
Toluene	NC	2.91E-06	NC	1.37E-06	NC	6.76E-07	NC	3.99E-06	NC
Total PCBs	2.68E-04	5.45E-05	1.46E-08	1.64E-04	4.40E-08	1.08E-05	2.91E-09	1.55E-05	4.15E-09
1,2,4-Trichlorobenzene	NC	--	NC	7.99E-05	NC	8.39E-05	NC	--	NC
1,2-Dichlorobenzene	NC	--	NC	3.89E-04	NC	4.97E-06	NC	--	NC
Barium	NC	3.00E-04	NC	--	NC	--	NC	--	NC
Beryllium	1.13E-03	--	NC	--	NC	9.18E-05	1.03E-07	--	NC
Hexachlorobenzene	2.38E-04	2.06E-06	4.89E-10	--	NC	1.55E-05	3.68E-09	2.88E-07	6.84E-11
Manganese	NC	--	NC	2.32E-04	NC	--	NC	--	NC
Methylene Chloride	2.21E-07	--	NC	3.80E-07	8.39E-14	--	NC	--	NC
Phosphorous	NC	3.22E-05	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	7.92E-05	NC	--	NC
Toxaphene	1.50E-04	--	NC	--	NC	2.96E-05	4.44E-09	--	NC
Total:			**1.51E-08**		**5.94E-08**		**1.15E-07**		**1.07E-08**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Higher of the surface soil and subsurface soil EPC used.

SAUGET AREA 1 - EE/CA AND RI/FS
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh MLE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
1,4-Dichlorobenzene	1.00E+00	1	2.29E-01	9.39E-03	9.39E-03	4.10E-02
2,4,6-Trichlorophenol	1.00E+00	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	NA	9.39E-03	9.39E-03	NC
4-Nitroaniline	1.00E+00	1	5.71E-05	9.39E-03	9.39E-03	1.64E+02
Antimony	1.00E+00	NA	NA	NA	NA	NC
Arsenic	1.00E+00	NA	NA	NA	NA	NC
Benzene	1.00E+00	1	1.70E-03	9.39E-03	9.39E-03	5.53E+00
Benzo(a)anthracene	1.00E+00	NA	NA	NA	NA	NC
Benzo(a)pyrene	1.00E+00	NA	NA	NA	NA	NC
Benzo(b)fluoranthene	1.00E+00	NA	NA	NA	NA	NC
Cadmium	1.00E+00	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	1	5.71E-03	9.39E-03	9.39E-03	1.65E+00
Chloroform	1.00E+00	1	8.60E-05	9.39E-03	9.39E-03	1.09E+02
Dibenzo(a,h)anthracene	1.00E+00	NA	NA	NA	NA	NC
Lead	1.00E+00	NA	NA	NA	NA	NC
Nickel	1.00E+00	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	NA	NA	NA	NA	NC
Tetrachloroethene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Toluene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Total PCBs	1.00E+00	NA	NA	NA	NA	NC
1,2,4-Trichlorobenzene	1.00E+00	1	5.71E-02	9.39E-03	9.39E-03	1.64E-01
1,2-Dichlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Barium	1.00E+00	1	1.43E-04	9.39E-03	9.39E-03	6.58E+01
Beryllium	1.00E+00	1	5.71E-06	9.39E-03	9.39E-03	1.64E+03
Hexachlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Manganese	1.00E+00	1	1.43E-05	9.39E-03	9.39E-03	6.58E+02
Methylene Chloride	1.00E+00	1	8.60E-01	9.39E-03	9.39E-03	1.09E-02
Phosphorous	1.00E+00	NA	NA	NA	NA	NC
Selenium	1.00E+00	NA	NA	NA	NA	NC
Toxaphene	1.00E+00	NA	NA	NA	NA	NC

TABLE
NONCARCINOGENIC ASSESSMENT
INHALATION OF
OUTDOOR AIR PARTICULATES
CONSTRUCTION WORKER - MLE

Constituent	Reference HQ (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
1,4-Dichlorobenzene	4.10E-02	--	NC	3.79E-04	1.56E-05	1.53E-05	6.26E-07	--	NC
2,4,6-Trichlorophenol	NC	--	NC	1.84E-05	NC	--	NC	--	NC
2,4-Dichlorophenol	NC	--	NC	9.01E-06	NC	--	NC	--	NC
4-Nitroaniline	1.64E+02	--	NC	1.10E-04	1.81E-02	--	NC	--	NC
Antimony	NC	--	NC	--	NC	1.34E-04	NC	--	NC
Arsenic	NC	--	NC	--	NC	--	NC	3.22E-06	NC
Benzene	5.53E+00	9.21E-07	5.09E-06	9.13E-07	5.05E-06	2.28E-07	1.26E-06	1.20E-07	6.65E-07
Benzo(a)anthracene	NC	--	NC	7.58E-06	NC	--	NC	--	NC
Benzo(a)pyrene	NC	--	NC	8.18E-06	NC	--	NC	--	NC
Benzo(b)fluoranthene	NC	--	NC	4.26E-06	NC	--	NC	--	NC
Cadmium	NC	--	NC	1.13E-05	NC	--	NC	--	NC
Chlorobenzene	1.65E+00	6.51E-06	1.07E-05	5.86E-06	9.63E-06	2.08E-06	3.42E-06	7.49E-08	1.23E-07
Chloroform	1.09E+02	6.98E-07	7.62E-05	--	NC	--	NC	4.08E-07	4.46E-05
Dibenzo(a,h)anthracene	NC	--	NC	1.90E-06	NC	--	NC	--	NC
Lead	NC	--	NC	--	NC	1.24E-04	NC	--	NC
Nickel	NC	--	NC	1.06E-04	NC	--	NC	--	NC
Pentachlorophenol	NC	7.91E-05	NC	--	NC	--	NC	--	NC
Tetrachloroethene	8.24E-02	1.13E-06	9.30E-08	--	NC	--	NC	--	NC
Toluene	8.24E-02	2.91E-06	2.40E-07	1.37E-06	1.13E-07	6.76E-07	5.57E-08	3.99E-06	3.29E-07
Total PCBs	NC	5.45E-05	NC	1.64E-04	NC	1.08E-05	NC	1.55E-05	NC
1,2,4-Trichlorobenzene	1.64E-01	--	NC	7.99E-05	1.31E-05	8.39E-05	1.38E-05	--	NC
1,2-Dichlorobenzene	NC	--	NC	3.89E-04	NC	4.97E-06	NC	--	NC
Barium	6.58E+01	3.00E-04	1.97E-02	--	NC	--	NC	--	NC
Beryllium	1.64E+03	--	NC	--	NC	9.18E-05	1.51E-01	--	NC
Hexachlorobenzene	NC	2.06E-06	NC	--	NC	1.55E-05	NC	2.88E-07	NC
Manganese	6.58E+02	--	NC	2.32E-04	1.52E-01	--	NC	--	NC
Methylene Chloride	1.09E-02	--	NC	3.80E-07	4.15E-09	--	NC	--	NC
Phosphorous	NC	3.22E-05	NC	--	NC	--	NC	--	NC
Selenium	NC	--	NC	--	NC	7.92E-05	NC	--	NC
Toxaphene	NC	--	NC	--	NC	2.96E-05	NC	--	NC
	Total HI:		1.98E-02		1.70E-01		1.51E-01		4.57E-05

Notes:
-- Not a constituent of potential concern in this area/medium.
HQ - Hazard Quotient.
HI - Hazard Index.
EPC - Exposure Point Concentration.
NC - Not Calculated.
(a) - Higher of the surface soil and subsurface soil EPC used.

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor 3:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER-MLE INCIDENTAL INGESTION AND DERMAL CONTACT GROUNDWATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	MLE Construction Worker	0.005	(l/day)	
Skin Exposed	MLE Construction Worker	3339	(cm^2)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time (dermal route only)	MLE Construction Worker	1	(hr/day)	
Exposure Frequency	MLE Construction Worker	5	(days)/365 (days) =	1.37E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/ 70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/ 1(yrs) =	1.00E+00
Lifetime		70	(years)	
Unit Conversion Factor (dermal route only)		0.001	(l/cm^3)	

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	2.40E-02	1.40E-08	1.40E-08	5.79E-07	5.79E-07	3.35E-10	1.39E-08	1.42E-08
2,4,6-Trichlorophenol	1.00E+00	1	1	5.00E-02	1.10E-02	1.40E-08	1.40E-08	4.67E-07	4.67E-07	1.54E-10	5.13E-09	5.29E-09
2,4-Dichlorophenol	1.00E+00	NA	NA	2.30E-02	NA	NA	NA	NA	NA	NA	NA	NC
3/4-Methylphenol	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic	1.00E+00	1	1	1.60E-04	1.50E+00	1.40E-08	1.40E-08	1.49E-09	1.49E-09	2.10E-08	2.24E-09	2.32E-08
Benzene	1.00E+00	1	2.13	2.10E-02	1.50E-02	1.40E-08	1.40E-08	4.18E-07	4.18E-07	2.10E-10	6.26E-09	6.47E-09
Benzo(a)anthracene	1.00E+00	1	1	8.10E-01	7.30E-01	1.40E-08	1.40E-08	7.56E-06	7.56E-06	1.02E-08	5.52E-06	5.53E-06
Cadmium	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Chlorobenzene	1.00E+00	NA	NA	4.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
Chloroform	1.00E+00	1	1	8.90E-03	6.10E-03	1.40E-08	1.40E-08	8.31E-08	8.31E-08	8.53E-11	5.07E-10	5.92E-10
gamma-BHC	1.00E+00	1	1	1.40E-02	1.30E+00	1.40E-08	1.40E-08	1.31E-07	1.31E-07	1.82E-08	1.70E-07	1.88E-07
Lead	1.00E+00	NA	NA	4.00E-06	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	NA	NA	6.96E-03	NA	NA	NA	NA	NA	NA	NA	NC
Pentachlorophenol	1.00E+00	1	1	6.50E-01	1.20E-01	1.40E-08	1.40E-08	6.07E-06	6.07E-06	1.68E-09	7.28E-07	7.30E-07
Tetrachloroethene	1.00E+00	1	1	4.80E-02	5.20E-02	1.40E-08	1.40E-08	4.48E-07	4.48E-07	7.27E-10	2.33E-08	2.40E-08
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E+00	1.40E-08	1.40E-08	7.29E-06	7.29E-06	2.80E-08	1.46E-05	1.46E-05
Trichloroethene	1.00E+00	1	1	1.60E-02	1.10E-02	1.40E-08	1.40E-08	1.49E-07	1.49E-07	1.54E-10	1.64E-09	1.80E-09
1,2,4-Trichlorobenzene	1.00E+00	NA	NA	1.00E-01	NA	NA	NA	NA	NA	NA	NA	NC
2,4-D	1.00E+00	NA	NA	8.45E-03	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dinitrotoluene	1.00E+00	NA	NA	3.80E-03	NA	NA	NA	NA	NA	NA	NA	NC
Barium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Hexachlorobenzene	1.00E+00	1	1.1	2.10E-01	1.60E+00	1.40E-08	1.40E-08	2.16E-06	2.16E-06	2.24E-08	3.45E-06	3.47E-06
Pyridine	1.00E+00	NA	NA	1.82E-03	NA	NA	NA	NA	NA	NA	NA	NC
2-Chlorophenol	1.00E+00	NA	NA	1.10E-02	NA	NA	NA	NA	NA	NA	NA	NC
4-Methyl-2-pentanone (MIBK)	1.00E+00	NA	NA	2.77E-03	NA	NA	NA	NA	NA	NA	NA	NC
Acetone	1.00E+00	NA	NA	5.69E-04	NA	NA	NA	NA	NA	NA	NA	NC
alpha-BHC	1.00E+00	1	1	1.63E-02	6.30E+00	1.40E-08	1.40E-08	1.52E-07	1.52E-07	8.81E-08	9.59E-07	1.05E-06
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	1.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
delta-BHC	1.00E+00	NA	NA	2.79E-02	NA	NA	NA	NA	NA	NA	NA	NC
Dieldrin	1.00E+00	1	1	1.60E-02	1.60E+01	1.40E-08	1.40E-08	1.49E-07	1.49E-07	2.24E-07	2.39E-06	2.61E-06
Heptachlor	1.00E+00	1	1	1.10E-02	4.50E+00	1.40E-08	1.40E-08	1.03E-07	1.03E-07	6.29E-08	4.62E-07	5.25E-07
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	9.10E+00	1.40E-08	1.40E-08	1.03E-07	1.03E-07	1.27E-07	9.34E-07	1.06E-06
Phenol	1.00E+00	NA	NA	5.50E-03	NA	NA	NA	NA	NA	NA	NA	NC
Vanadium	1.00E+00	NA	NA	1.60E-04	NA	NA	NA	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1	7.30E-03	7.20E-01	1.40E-08	1.40E-08	6.81E-08	6.81E-08	1.01E-08	4.91E-08	5.91E-08
1,1,1-Trichloroethane	1.00E+00	NA	NA	1.70E-02	NA	NA	NA	NA	NA	NA	NA	NC
1,1-Dichloroethane	1.00E+00	NA	NA	8.90E-03	NA	NA	NA	NA	NA	NA	NA	NC
1,1-Dichloroethene	1.00E+00	1	1	1.60E-02	6.00E-01	1.40E-08	1.40E-08	1.49E-07	1.49E-07	8.39E-09	8.96E-08	9.80E-08
2,4,5-T	1.00E+00	NA	NA	1.40E-04	NA	NA	NA	NA	NA	NA	NA	NC
Aldrin	1.00E+00	1	1	1.60E-03	1.70E+01	1.40E-08	1.40E-08	1.49E-08	1.49E-08	2.38E-07	2.54E-07	4.92E-07
Chloromethane	1.00E+00	1	1	4.20E-03	1.30E-02	1.40E-08	1.40E-08	3.92E-08	3.92E-08	1.82E-10	5.10E-10	6.91E-10

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
CARCINOGENIC ASSESSMENT
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	ADDing Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Lifetime Average Daily Dose-Der. (mg/kg-day)	Excess Lifetime Cancer Risk - Ingestion	Excess Lifetime Cancer Risk - Dermal Contact	Total Excess Lifetime Cancer Risk
Chrysene	1.00E+00	1	1	8.10E-01	7.30E-03	1.40E-08	1.40E-08	7.56E-06	7.56E-06	1.02E-10	5.52E-08	5.53E-08
Cobalt	1.00E+00	NA	NA	4.00E-04	NA	NA	NA	NA	NA	NA	NA	NC
MCPP	1.00E+00	NA	NA	1.14E-02	NA	NA	NA	NA	NA	NA	NA	NC
Mercury	1.00E+00	NA	NA	1.00E-03	NA	NA	NA	NA	NA	NA	NA	NC
Naphthalene	1.00E+00	NA	NA	6.90E-02	NA	NA	NA	NA	NA	NA	NA	NC
Total TCDD-TEQ	1.00E+00	1	1.8	1.40E+00	1.50E+05	1.40E-08	1.40E-08	2.35E-05	2.35E-05	2.10E-03	3.53E+00	3.53E+00

TABLE
POTENTIAL CARCINOGENIC RISK - MLE
INCIDENTAL INGESTION AND DERMAL CONTACT
GROUNDWATER
CONSTRUCTION WORKER- MLE

Constituent	Reference Risk (per mg/L)	Site G		Site H		Site I		Site L	
		EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	Risk
1,4-Dichlorobenzene	1.42E-08	--	NC	3.55E-01	5.05E-09	9.90E-01	1.41E-08	2.53E-01	3.59E-09
2,4,6-Trichlorophenol	5.29E-09	1.27E+00	6.72E-09	3.02E-02	1.60E-10	1.30E+00	6.87E-09	--	NC
2,4-Dichlorophenol	NC	--	NC	--	NC	2.60E+00	NC	--	NC
3/4-Methylphenol	NC	1.40E+00	NC	1.12E-01	NC	6.30E-01	NC	--	NC
Arsenic	2.32E-08	--	NC	1.70E-01	3.95E-09	--	NC	2.73E-01	6.32E-09
Benzene	6.47E-09	8.80E-01	5.70E-09	5.23E-01	3.39E-09	6.90E-01	4.47E-09	--	NC
Benzo(a)anthracene	5.53E-06	--	NC	--	NC	2.20E-02	1.22E-07	--	NC
Cadmium	NC	6.75E-02	NC	4.52E+00	NC	2.64E-01	NC	1.60E-01	NC
Chlorobenzene	NC	2.80E+00	NC	8.46E-01	NC	2.62E+00	NC	--	NC
Chloroform	5.92E-10	3.20E-02	1.89E-11	--	NC	7.33E-01	4.34E-10	--	NC
gamma-BHC	1.88E-07	2.00E-03	3.76E-10	--	NC	--	NC	--	NC
Lead	NC	6.09E+00	NC	8.19E+00	NC	2.61E+00	NC	--	NC
Nitrobenzene	NC	3.96E-02	NC	--	NC	1.30E-02	NC	--	NC
Pentachlorophenol	7.30E-07	7.60E+00	5.55E-06	1.74E-01	1.27E-07	6.30E+00	4.60E-06	1.31E-01	9.58E-08
Tetrachloroethene	2.40E-08	9.90E-02	2.38E-09	1.65E-02	3.96E-10	8.00E-02	1.92E-09	3.48E-02	8.36E-10
Total PCBs	1.46E-05	5.40E-03	7.89E-08	--	NC	1.08E-01	1.57E-06	--	NC
Trichloroethene	1.80E-09	3.40E-01	6.11E-10	--	NC	6.20E-01	1.11E-09	--	NC
1,2,4-Trichlorobenzene	NC	--	NC	--	NC	3.20E+00	NC	--	NC
2,4-D	NC	1.32E+01	NC	9.29E-02	NC	1.30E+00	NC	--	NC
2,4-Dinitrotoluene	NC	--	NC	--	NC	2.83E-02	NC	--	NC
Barium	NC	2.94E+00	NC	--	NC	1.50E+01	NC	--	NC
Hexachlorobenzene	3.47E-06	--	NC	1.80E-02	6.25E-08	--	NC	--	NC
Pyridine	NC	--	NC	--	NC	--	NC	1.69E-01	NC
2-Chlorophenol	NC	1.10E+00	NC	--	NC	4.60E-01	NC	--	NC
4-Methyl-2-pentanone (MIBK)	NC	9.30E-01	NC	--	NC	1.60E+00	NC	--	NC
Acetone	NC	7.30E-01	NC	--	NC	1.20E+01	NC	--	NC
alpha-BHC	1.05E-06	5.40E-04	5.65E-10	--	NC	2.50E-03	2.62E-09	--	NC
cis/trans-1,2-Dichloroethene	NC	1.90E+00	NC	--	NC	1.50E+01	NC	--	NC
delta-BHC	NC	--	NC	--	NC	1.90E-03	NC	--	NC
Dieldrin	2.61E-06	--	NC	--	NC	1.50E-03	3.92E-09	--	NC
Heptachlor	5.25E-07	--	NC	--	NC	2.50E-03	1.31E-09	--	NC
Heptachlor epoxide	1.06E-06	--	NC	--	NC	1.30E-03	1.38E-09	--	NC
Phenol	NC	1.60E+01	NC	--	NC	6.70E+00	NC	--	NC
Vanadium	NC	6.20E-01	NC	--	NC	--	NC	--	NC
Vinyl chloride	5.91E-08	1.60E-01	9.46E-09	--	NC	1.00E-01	5.91E-09	--	NC
1,1,1-Trichloroethane	NC	--	NC	--	NC	1.30E+01	NC	--	NC
1,1-Dichloroethane	NC	--	NC	--	NC	3.70E+00	NC	--	NC
1,1-Dichloroethene	9.80E-08	--	NC	--	NC	4.80E-01	4.70E-08	--	NC
2,4,5-T	NC	3.80E-01	NC	--	NC	--	NC	--	NC
Aldrin	4.92E-07	2.30E-04	1.13E-10	--	NC	--	NC	--	NC
Chloromethane	6.91E-10	2.60E-02	1.80E-11	--	NC	--	NC	--	NC
Chrysene	5.53E-08	--	NC	--	NC	2.30E-02	1.27E-09	--	NC
Cobalt	NC	1.40E+00	NC	--	NC	--	NC	--	NC
MCPP	NC	--	NC	--	NC	3.40E+01	NC	--	NC
Mercury	NC	--	NC	--	NC	1.80E-02	NC	--	NC
Naphthalene	NC	1.00E+00	NC	--	NC	2.50E+00	NC	--	NC
Total TCDD-TEQ	3.53E+00	6.77E-08	2.39E-07	--	NC	3.07E-07	1.08E-06	--	NC
	Total:		**5.89E-06**		**2.03E-07**		**7.47E-06**		**1.07E-07**

Notes:

-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.

NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.
(a) - Risks divided by the number of wells in

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
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Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
1,4-Dichlorobenzene	1.00E+00	1	1	6.20E-02	3.00E-02	9.78E-07	9.78E-07	4.05E-05	4.05E-05	3.26E-05	1.35E-03	1.38E-03
2,4,6-Trichlorophenol	1.00E+00	NA	NA	5.00E-02	NA	NA	NA	NA	NA	NA	NA	NC
2,4-Dichlorophenol	1.00E+00	1	1	2.30E-02	3.00E-03	9.78E-07	9.78E-07	1.50E-05	1.50E-05	3.26E-04	5.01E-03	5.34E-03
3/4-Methylphenol	1.00E+00	1	1	1.00E-02	5.00E-02	9.78E-07	9.78E-07	6.53E-06	6.53E-06	1.96E-05	1.31E-04	1.50E-04
Arsenic	1.00E+00	1	1	1.60E-04	3.00E-04	9.78E-07	9.78E-07	1.05E-07	1.05E-07	3.26E-03	3.48E-04	3.61E-03
Benzene	1.00E+00	1	2.13	2.10E-02	3.00E-03	9.78E-07	9.78E-07	2.92E-05	2.92E-05	3.26E-04	9.74E-03	1.01E-02
Benzo(a)anthracene	1.00E+00	NA	NA	8.10E-01	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium	1.00E+00	1	40	1.00E-03	5.00E-04	9.78E-07	9.78E-07	2.61E-05	2.61E-05	1.96E-03	5.23E-02	5.42E-02
Chlorobenzene	1.00E+00	1	1	4.10E-02	2.00E-02	9.78E-07	9.78E-07	2.68E-05	2.68E-05	4.89E-05	1.34E-03	1.39E-03
Chloroform	1.00E+00	1	1	8.90E-03	1.00E-02	9.78E-07	9.78E-07	5.82E-06	5.82E-06	9.78E-05	5.82E-04	6.79E-04
gamma-BHC	1.00E+00	1	1	1.40E-02	3.00E-04	9.78E-07	9.78E-07	9.15E-06	9.15E-06	3.26E-03	3.05E-02	3.38E-02
Lead	1.00E+00	NA	NA	4.00E-06	NA	NA	NA	NA	NA	NA	NA	NC
Nitrobenzene	1.00E+00	1	1	6.96E-03	5.00E-04	9.78E-07	9.78E-07	4.55E-06	4.55E-06	1.96E-03	9.10E-03	1.11E-02
Pentachlorophenol	1.00E+00	1	1	6.50E-01	3.00E-02	9.78E-07	9.78E-07	4.25E-04	4.25E-04	3.26E-05	1.42E-02	1.42E-02
Tetrachloroethene	1.00E+00	1	1	4.80E-02	1.00E-02	9.78E-07	9.78E-07	3.14E-05	3.14E-05	9.78E-05	3.14E-03	3.23E-03
Total PCBs	1.00E+00	1	1.1	7.10E-01	2.00E-05	9.78E-07	9.78E-07	5.10E-04	5.10E-04	4.89E-02	2.55E+01	2.56E+01
Trichloroethene	1.00E+00	1	1	1.60E-02	6.00E-03	9.78E-07	9.78E-07	1.05E-05	1.05E-05	1.63E-04	1.74E-03	1.91E-03
1,2,4-Trichlorobenzene	1.00E+00	1	1	1.00E-01	1.00E-02	9.78E-07	9.78E-07	6.53E-05	6.53E-05	9.78E-05	6.53E-03	6.63E-03
2,4-D	1.00E+00	1	1	8.45E-03	1.00E-02	9.78E-07	9.78E-07	5.52E-06	5.52E-06	9.78E-05	5.52E-04	6.50E-04
2,4-Dinitrotoluene	1.00E+00	1	1	3.80E-03	2.00E-03	9.78E-07	9.78E-07	2.48E-06	2.48E-06	4.89E-04	1.24E-03	1.73E-03
Barium	1.00E+00	1	1	1.60E-04	7.00E-02	9.78E-07	9.78E-07	1.05E-07	1.05E-07	1.40E-05	1.49E-06	1.55E-05
Hexachlorobenzene	1.00E+00	1	1.1	2.10E-01	8.00E-04	9.78E-07	9.78E-07	1.51E-04	1.51E-04	1.22E-03	1.89E-01	1.90E-01
Pyridine	1.00E+00	1	1	1.82E-03	1.00E-03	9.78E-07	9.78E-07	1.19E-06	1.19E-06	9.78E-04	1.19E-03	2.17E-03
2-Chlorophenol	1.00E+00	1	1	1.10E-02	5.00E-03	9.78E-07	9.78E-07	7.19E-06	7.19E-06	1.96E-04	1.44E-03	1.63E-03
4-Methyl-2-pentanone (MIBK)	1.00E+00	1	1	2.77E-03	8.00E-02	9.78E-07	9.78E-07	1.81E-06	1.81E-06	1.22E-05	2.26E-05	3.49E-05
Acetone	1.00E+00	1	1	5.69E-04	1.00E-01	9.78E-07	9.78E-07	3.72E-07	3.72E-07	9.78E-06	3.72E-06	1.35E-05
alpha-BHC	1.00E+00	NA	NA	1.63E-02	NA	NA	NA	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	1	1	1.00E-02	1.00E-02	9.78E-07	9.78E-07	6.53E-06	6.53E-06	9.78E-05	6.53E-04	7.51E-04
delta-BHC	1.00E+00	1	1	2.79E-02	3.00E-04	9.78E-07	9.78E-07	1.82E-05	1.82E-05	3.26E-03	6.07E-02	6.40E-02
Dieldrin	1.00E+00	1	1	1.60E-02	5.00E-05	9.78E-07	9.78E-07	1.05E-05	1.05E-05	1.96E-02	2.09E-01	2.29E-01
Heptachlor	1.00E+00	1	1	1.10E-02	5.00E-04	9.78E-07	9.78E-07	7.19E-06	7.19E-06	1.96E-03	1.44E-02	1.63E-02
Heptachlor epoxide	1.00E+00	1	1	1.10E-02	1.30E-05	9.78E-07	9.78E-07	7.19E-06	7.19E-06	7.53E-02	5.53E-01	6.28E-01
Phenol	1.00E+00	1	1	5.50E-03	6.00E-01	9.78E-07	9.78E-07	3.59E-06	3.59E-06	1.63E-06	5.99E-06	7.62E-06
Vanadium	1.00E+00	1	10	1.60E-04	7.00E-03	9.78E-07	9.78E-07	1.05E-06	1.05E-06	1.40E-04	1.49E-04	2.89E-04
Vinyl chloride	1.00E+00	1	1	7.30E-03	3.00E-03	9.78E-07	9.78E-07	4.77E-06	4.77E-06	3.26E-04	1.59E-03	1.92E-03
1,1,1-Trichloroethane	1.00E+00	1	1	1.70E-02	2.80E-01	9.78E-07	9.78E-07	1.11E-05	1.11E-05	3.49E-06	3.97E-05	4.32E-05
1,1-Dichloroethane	1.00E+00	1	1	8.90E-03	1.00E-01	9.78E-07	9.78E-07	5.82E-06	5.82E-06	9.78E-06	5.82E-05	6.79E-05
1,1-Dichloroethene	1.00E+00	1	1	1.60E-02	9.00E-03	9.78E-07	9.78E-07	1.05E-05	1.05E-05	1.09E-04	1.16E-03	1.27E-03
2,4,5-T	1.00E+00	1	1	1.40E-04	1.00E-02	9.78E-07	9.78E-07	9.18E-08	9.18E-08	9.78E-05	9.18E-06	1.07E-04

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Constituent	Unit Concentration In Groundwater (mg/l)	Oral - Water Absorption Adjustment Factor	Dermal - Water Absorption Adjustment Factor	Dermal PeMLEability Constant (cm/hr)	Oral Reference Dose (mg/kg-day)	ADDing Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	ADDder Construction Worker (mg/kg-day)	Chronic Average Daily Dose-Der. (mg/kg-day)	Hazard Index - Ingestion	Hazard Index - Dermal Contact	Total Hazard Index
Aldrin	1.00E+00	1	1	1.60E-03	3.00E-05	9.78E-07	9.78E-07	1.05E-06	1.05E-06	3.26E-02	3.48E-02	6.75E-02
Chloromethane	1.00E+00	NA	NA	4.20E-03	NA	NA	NA	NA	NA	NA	NA	NC
Chrysene	1.00E+00	NA	NA	8.10E-01	NA	NA	NA	NA	NA	NA	NA	NC
Cobalt	1.00E+00	1	1	4.00E-04	2.00E-02	9.78E-07	9.78E-07	2.61E-07	2.61E-07	4.89E-05	1.31E-05	6.20E-05
MCPP	1.00E+00	1	1	1.14E-02	1.00E-03	9.78E-07	9.78E-07	7.47E-06	7.47E-06	9.78E-04	7.47E-03	8.45E-03
Mercury	1.00E+00	2	13.7	1.00E-03	3.00E-04	1.96E-06	1.96E-06	8.95E-06	8.95E-06	6.52E-03	2.98E-02	3.64E-02
Naphthalene	1.00E+00	1	1	6.90E-02	2.00E-02	9.78E-07	9.78E-07	4.51E-05	4.51E-05	4.89E-05	2.25E-03	2.30E-03
Total TCDD-TEQ	1.00E+00	NA	NA	1.40E+00	NA	NA	NA	NA	NA	NA	NA	NC

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GROUNDWATER
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Constituent	Reference HQ (per mg/L)	Site G		Site H		Site I		Site L	
		EPC (mg/L)	HQ	EPC (mg/L)	HQ	EPC (mg/L)	HQ	EPC (mg/L)	HQ
1,4-Dichlorobenzene	1.38E-03	--	NC	3.55E-01	4.91E-04	9.90E-01	1.37E-03	2.53E-01	3.49E-04
2,4,6-Trichlorophenol	NC	1.27E+00	NC	3.02E-02	NC	1.30E+00	NC	--	NC
2,4-Dichlorophenol	5.34E-03	--	NC	--	NC	2.60E+00	1.39E-02	--	NC
3/4-Methylphenol	1.50E-04	1.40E+00	2.10E-04	1.12E-01	1.68E-05	6.30E-01	9.47E-05	--	NC
Arsenic	3.61E-03	--	NC	1.70E-01	6.14E-04	--	NC	2.73E-01	9.84E-04
Benzene	1.01E-02	8.80E-01	8.86E-03	5.23E-01	5.27E-03	6.90E-01	6.95E-03	--	NC
Benzo(a)anthracene	NC	--	NC	--	NC	2.20E-02	NC	--	NC
Cadmium	5.42E-02	6.75E-02	3.66E-03	4.52E+00	2.45E-01	2.64E-01	1.43E-02	1.60E-01	8.68E-03
Chlorobenzene	1.39E-03	2.80E+00	3.89E-03	8.46E-01	1.17E-03	2.62E+00	3.63E-03	--	NC
Chloroform	6.79E-04	3.20E-02	2.17E-05	--	NC	7.33E-01	4.98E-04	--	NC
gamma-BHC	3.38E-02	2.00E-03	6.75E-05	--	NC	--	NC	--	NC
Lead	NC	6.09E+00	NC	8.19E+00	NC	2.61E+00	NC	--	NC
Nitrobenzene	1.11E-02	3.96E-02	4.38E-04	--	NC	1.30E-02	1.44E-04	--	NC
Pentachlorophenol	1.42E-02	7.60E+00	1.08E-01	1.74E-01	2.47E-03	6.30E+00	8.94E-02	1.31E-01	1.86E-03
Tetrachloroethene	3.23E-03	9.90E-02	3.20E-04	1.65E-02	5.34E-05	8.00E-02	2.59E-04	3.48E-02	1.13E-04
Total PCBs	2.56E+01	5.40E-03	1.38E-01	--	NC	1.08E-01	2.75E+00	--	NC
Trichloroethene	1.91E-03	3.40E-01	6.48E-04	--	NC	6.20E-01	1.18E-03	--	NC
1,2,4-Trichlorobenzene	6.63E-03	--	NC	--	NC	3.20E+00	2.12E-02	--	NC
2,4-D	6.50E-04	1.32E+01	8.56E-03	9.29E-02	6.04E-05	1.30E+00	8.45E-04	--	NC
2,4-Dinitrotoluene	1.73E-03	--	NC	--	NC	2.83E-02	4.90E-05	--	NC
Barium	1.55E-05	2.94E+00	4.54E-05	--	NC	1.50E+01	2.32E-04	--	NC
Hexachlorobenzene	1.90E-01	--	NC	1.80E-02	3.42E-03	--	NC	--	NC
Pyridine	2.17E-03	--	NC	--	NC	--	NC	1.69E-01	3.67E-04
2-Chlorophenol	1.63E-03	1.10E+00	1.80E-03	--	NC	4.60E-01	7.51E-04	--	NC
4-Methyl-2-pentanone (MIBK)	3.49E-05	9.30E-01	3.24E-05	--	NC	1.60E+00	5.58E-05	--	NC
Acetone	1.35E-05	7.30E-01	9.86E-06	--	NC	1.20E+01	1.62E-04	--	NC
alpha-BHC	NC	5.40E-04	NC	--	NC	2.50E-03	NC	--	NC
cis/trans-1,2-Dichloroethene	7.51E-04	1.90E+00	1.43E-03	--	NC	1.50E+01	1.13E-02	--	NC
delta-BHC	6.40E-02	--	NC	--	NC	1.90E-03	1.22E-04	--	NC
Dieldrin	2.29E-01	--	NC	--	NC	1.50E-03	3.43E-04	--	NC
Heptachlor	1.63E-02	--	NC	--	NC	2.50E-03	4.08E-05	--	NC
Heptachlor epoxide	6.28E-01	--	NC	--	NC	1.30E-03	8.17E-04	--	NC
Phenol	7.62E-06	1.60E+01	1.22E-04	--	NC	6.70E+00	5.11E-05	--	NC
Vanadium	2.89E-04	6.20E-01	1.79E-04	--	NC	--	NC	--	NC
Vinyl chloride	1.92E-03	1.60E-01	3.07E-04	--	NC	1.00E-01	1.92E-04	--	NC
1,1,1-Trichloroethane	4.32E-05	--	NC	--	NC	1.30E+01	5.61E-04	--	NC
1,1-Dichloroethane	6.79E-05	--	NC	--	NC	3.70E+00	2.51E-04	--	NC
1,1-Dichloroethene	1.27E-03	--	NC	--	NC	4.80E-01	6.10E-04	--	NC
2,4,5-T	1.07E-04	3.80E-01	4.07E-05	--	NC	--	NC	--	NC
Aldrin	6.75E-02	2.30E-04	1.55E-05	--	NC	--	NC	--	NC
Chloromethane	NC	2.60E-02	NC	--	NC	--	NC	--	NC
Chrysene	NC	--	NC	--	NC	2.30E-02	NC	--	NC
Cobalt	6.20E-05	1.40E+00	8.68E-05	--	NC	--	NC	--	NC
MCPP	8.45E-03	--	NC	--	NC	3.40E+01	2.87E-01	--	NC
Mercury	3.64E-02	--	NC	--	NC	1.80E-02	6.55E-04	--	NC
Naphthalene	2.30E-03	1.00E+00	2.30E-03	--	NC	2.50E+00	5.76E-03	--	NC
Total TCDD-TEQ	NC	6.77E-08	NC	--	NC	3.07E-07	NC	--	NC
	Total:		**2.79E-01**		**2.59E-01**		**3.21E+00**		**1.24E-02**

Notes:
-- Not a constituent of potential concern in this area/medium.
HI - Hazard Index.
HQ - Hazard Quotient.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value

SAUGET AREA 1 - EE/CA AND RI/FS
MLE

Receptors Evaluated:	
Receptor:	MLE Construction Worker

ASSUMPTIONS FOR CONSTRUCTION WORKER - MLE INHALATION OF TRENCH AIR		Assumed Value	Units	Calculated Value
Inhalation Rate	MLE Construction Worker	1.5	(m^3 air/hour)	
Body Weight	MLE Construction Worker	70	(kg)	
Exposure Time	MLE Construction Worker	8	(hrs/day) =	8.00E+00
Exposure Frequency	MLE Construction Worker	20	(days)/365 (days) =	5.48E-02
Exposure Duration (cancer)	MLE Construction Worker	1	(yrs)/70(yrs) =	1.43E-02
Exposure Duration (noncancer)	MLE Construction Worker	1	(yrs)/1(yrs) =	1.00E+00
Lifetime		70	(years)	

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SAUGET AREA 1 - EE/CA AND RI/FS
MLE

CARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDInh MLE Construction Worker (mg/kg-day)	Lifetime Average Daily Dose - Inh. (mg/kg-day)	Excess Lifetime Cancer Risk - Inhalation
Benzene	1.00E+00	1	7.70E-03	1.34E-04	1.34E-04	1.03E-06
Chlorobenzene	1.00E+00	NA	NA	NA	NA	NC
Chloroform	1.00E+00	0.66	8.05E-02	8.86E-05	8.86E-05	7.13E-06
Tetrachloroethene	1.00E+00	1	2.00E-03	1.34E-04	1.34E-04	2.68E-07
Toluene	1.00E+00	NA	NA	NA	NA	NC
Trichloroethene	1.00E+00	1	6.00E-03	1.34E-04	1.34E-04	8.05E-07
4-Methyl-2-pentanone (MIBK)	1.00E+00	NA	NA	NA	NA	NC
Acetone	1.00E+00	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	1.54E-02	1.34E-04	1.34E-04	2.07E-06
1,1,1-Trichloroethane	1.00E+00	NA	NA	NA	NA	NC
1,1-Dichloroethane	1.00E+00	NA	NA	NA	NA	NC
1,1-Dichloroethene	1.00E+00	1	1.75E-01	1.34E-04	1.34E-04	2.35E-05
Chloromethane	1.00E+00	1	3.50E-03	1.34E-04	1.34E-04	4.70E-07
Naphthalene	1.00E+00	NA	NA	NA	NA	NC

TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference Risk (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk	EPC (mg/m3)	Risk
Benzene	1.03E-06	2.38E-02	2.46E-08	1.42E-02	1.46E-08	1.87E-02	1.93E-08	--	NC
Chlorobenzene	NC	6.99E-02	NC	2.11E-02	NC	6.53E-02	NC	--	NC
Chloroform	7.13E-06	--	NC	--	NC	2.01E-02	1.43E-07	--	NC
Tetrachloroethene	2.68E-07	2.39E-03	6.40E-10	3.98E-04	1.07E-10	1.93E-03	5.17E-10	8.39E-04	2.25E-10
Toluene	NC	--	NC	--	NC	--	NC	--	NC
Trichloroethene	8.05E-07	4.45E-02	3.58E-08	--	NC	--	NC	--	NC
4-Methyl-2-pentanone (MIBK)	NC	8.93E-02	NC	--	NC	1.54E-01	NC	--	NC
Acetone	NC	1.60E-02	NC	--	NC	2.62E-01	NC	--	NC
cis/trans-1,2-Dichloroethene	NC	5.85E-02	NC	--	NC	4.62E-01	NC	--	NC
Vinyl chloride	2.07E-06	5.06E-03	1.05E-08	--	NC	3.16E-03	6.53E-09	--	NC
1,1,1-Trichloroethane	NC	--	NC	--	NC	3.27E-01	NC	--	NC
1,1-Dichloroethane	NC	--	NC	--	NC	1.05E-01	NC	--	NC
1,1-Dichloroethene	2.35E-05	--	NC	--	NC	1.36E-02	3.18E-07	--	NC
Chloromethane	4.70E-07	9.36E-04	4.40E-10	--	NC	--	NC	--	NC
Naphthalene	NC	2.18E-02	NC	--	NC	5.46E-02	NC	--	NC
	Total:		**7.20E-08**		**1.48E-08**		**4.88E-07**		**2.25E-10**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

SAUGET AREA 1 - EE/CA AND RI/FS
MLE
NONCARCINOGENIC ASSESSMENT
INHALATION OF
TRENCH AIR
CONSTRUCTION WORKER - MLE

Constituent	Unit Concentration In Air (mg/m^3 air)	Inhalation Absorption Adjustment Factor	Inhalation Reference Dose (mg/kg-day)	ADDinh MLE Construction Worker (mg/kg-day)	Chronic Average Daily Dose-inh (mg/kg-day)	Hazard Index - Inhalation
Benzene	1.00E+00	1	1.70E-03	9.39E-03	9.39E-03	5.53E+00
Chlorobenzene	1.00E+00	1	5.71E-03	9.39E-03	9.39E-03	1.65E+00
Chloroform	1.00E+00	1	8.60E-05	9.39E-03	9.39E-03	1.09E+02
Tetrachloroethene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Toluene	1.00E+00	1	1.14E-01	9.39E-03	9.39E-03	8.24E-02
Trichloroethene	1.00E+00	NA	NA	NA	NA	NC
4-Methyl-2-pentanone (MIBK)	1.00E+00	1	2.29E-02	9.39E-03	9.39E-03	4.11E-01
Acetone	1.00E+00	NA	NA	NA	NA	NC
cis/trans-1,2-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Vinyl chloride	1.00E+00	1	2.86E-02	9.39E-03	9.39E-03	3.29E-01
1,1,1-Trichloroethane	1.00E+00	1	6.30E-01	9.39E-03	9.39E-03	1.49E-02
1,1-Dichloroethane	1.00E+00	1	1.00E-01	9.39E-03	9.39E-03	9.39E-02
1,1-Dichloroethene	1.00E+00	NA	NA	NA	NA	NC
Chloromethane	1.00E+00	1	8.60E-02	9.39E-03	9.39E-03	1.09E-01
Naphthalene	1.00E+00	1	8.57E-04	9.39E-03	9.39E-03	1.10E+01

TABLE
POTENTIAL CARCINOGENIC RISK
CONSTRUCTION WORKER - MLE
TRENCH AIR

Constituent	Reference HQ (per mg/m3)	Site G		Site H		Site I		Site L	
		EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ	EPC (mg/m3)	HQ
Benzene	5.53E+00	2.38E-02	1.32E-01	1.42E-02	7.83E-02	1.87E-02	1.03E-01	--	NC
Chlorobenzene	1.65E+00	6.99E-02	1.15E-01	2.11E-02	3.47E-02	6.53E-02	1.07E-01	--	NC
Chloroform	1.09E+02	--	NC	--	NC	2.01E-02	2.19E+00	--	NC
Tetrachloroethene	8.24E-02	2.39E-03	1.97E-04	3.98E-04	3.28E-05	1.93E-03	1.59E-04	8.39E-04	6.91E-05
Toluene	8.24E-02	--	NC	--	NC	--	NC	--	NC
Trichloroethene	NC	4.45E-02	NC	--	NC	--	NC	--	NC
4-Methyl-2-pentanone (MIBK)	4.11E-01	8.93E-02	3.67E-02	--	NC	1.54E-01	6.31E-02	--	NC
Acetone	NC	1.60E-02	NC	--	NC	2.62E-01	NC	--	NC
cis/trans-1,2-Dichloroethene	NC	5.85E-02	NC	--	NC	4.62E-01	NC	--	NC
Vinyl chloride	3.29E-01	5.06E-03	1.66E-03	--	NC	3.16E-03	1.04E-03	--	NC
1,1,1-Trichloroethane	1.49E-02	--	NC	--	NC	3.27E-01	4.88E-03	--	NC
1,1-Dichloroethane	9.39E-02	--	NC	--	NC	1.05E-01	9.85E-03	--	NC
1,1-Dichloroethene	NC	--	NC	--	NC	1.36E-02	NC	--	NC
Chloromethane	1.09E-01	9.36E-04	1.02E-04	--	NC	--	NC	--	NC
Naphthalene	1.10E+01	2.18E-02	2.39E-01	--	NC	5.46E-02	5.98E-01	--	NC
	Total:		**5.25E-01**		**1.13E-01**		**3.08E+00**		**6.91E-05**

Notes:
-- Not a constituent of potential concern in this area/medium.
EPC - Exposure Point Concentration.
NC - Not Calculated, no dose-response value or not a constituent of potential concern in this area/medium.

APPENDIX U

COMPARISON OF GROUNDWATER DATA TO TACO CLASS I CRITERIA

COMPARISON OF GROUNDWATER DATA TO TACO CLASS I CRITERIA

This appendix presents screening tables for groundwater using TACO Class I Criteria.

Groundwater in Sauget Area 1 is classified as Class I by IEPA. Groundwater in Sauget Area 1 is not used as a source of drinking water and there are ordinances in effect in the Villages of Sauget and Cahokia that prohibit the use of groundwater as drinking water. The risk assessment evaluated potential incidental exposure to constituents in groundwater via volatilization of constituents from groundwater to indoor and outdoor air, and via direct contact with groundwater during excavation activities. Therefore, the IEPA Class II groundwater criteria were used for the selection of COPCs in groundwater for these scenarios.

In response to a request by IEPA, this appendix presents a sampling location-by-location comparison of constituent concentrations in groundwater to the TACO Class I groundwater criteria presented in the first table of this appendix entitled "Groundwater and Surface Water Standards". The screening tables present:

- The frequency of detection and the arithmetic mean and maximum detected concentrations;
- An identification of essential nutrient status and comparison to background, as presented in Appendix D;
- Comparison to the TACO Tier 1 Class I groundwater screening values; and
- An identification of whether or not a constituent is selected as a COPC and the reason why or why not.

The screening tables are presented in the following order (location screening interval or sample identification, which includes a sample depth designator, is provided where more than one sample was included in the analysis):

Fill Area G

AA-GHL-S1	(AA-GHL-S1-12-16FT, AA-GHL-S1-22-26FT)
AA-GHL-S2	(AA-GHL-S2-12-16FT, AA-GHL-S2-22-26FT)
AA-GHL-S3	(AA-GHL-S3-20-24FT)
AA-SW-S1	(AA-SW-S1-14-16FT. AA-SW-S1-24-26FT)
EEG-101	(18-23FT)
EEG-102	(16.5-21.5FT)
EEG-104	(19-24FT)
EEG-106	(18-23 FT)

EEG-107 (23-28 FT)

EEG-112 (12-26FT)

EE-05 (18-23 FT)

Fill Area H

EEG-110 (18-23FT)

EE-01 (28-33 FT)

EE-02 (18-23 FT)

EE-03 (27-32 FT)

Fill Area I

AA-I-S1 (AA-I-S1-17-21FT, AA-I-S1-27-31FT)

AA-I-S2 (AA-I-S2-16-20FT, AA-I-S2-26-30FT)

AA-I-S3 (AA-I-S3-24-28FT)

EE-12 (28-33 FT)

EE-13 (23-29 FT)

EE-14 (32.5-37.5 FT)

EE-15 (24-29 FT)

Fill Area L

EEG-103 (16.5-21.5FT)

EEG-105 (no construction log)

EEG-109 (17-22 FT)

EEG-111 (no construction log)

AA-SW-S2 (AA-SW-S2-14-16FT, AA-SW-S2-22-26FT)

AA-SW-S3 (AA-SW-S3-14-16FT, AA-SW-S3-22-26FT)

Residential Area Locations

SGW-S1 (SGW-S1-15FT, SGW-S1-20FT)

SGW-S2 (SGW-S2-15FT, SGW-S2-20FT)

DW-MCDO	Unknown
DW-SCHM	Unknown
DW-SETT	Unknown
DW-WRIG	Unknown

Four private non-potable use wells were sampled in this investigation. These wells are not used as a source of drinking water, however, it was agreed that any COPCs identified these wells in the Class I groundwater screen would be quantitiatively evaluated in a drinking water scenario as an appendix to the risk assessment. This evalaution is presented in Appendix V.

Lead was the only COPC identified in a residential well (DW-MCDO and DW-WRIG). Therefore, a human heath risk assessment for drinking water will be performed for Lead in these two wells in Appendix V.

CAS Number	Constituent	Class I (ug/L) (a)
71-55-6	1,1,1-Trichloroethane	200
79-00-5	1,1,2-Trichloroethane	5
75-34-3	1,1-Dichloroethane	700
75-35-4	1,1-Dichloroethylene	7
120-82-1	1,2,4-Trichlorobenzene	70
96-12-8	1,2-Dibromo-3-chloropropane	0.2
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.05
95-50-1	1,2-Dichlorobenzene (o – Dichlorobenzene)	600
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	5
78-87-5	1,2-Dichloropropane	5
542-75-6	1,3-Dichloropropene	1
106-46-7	1,4-Dichlorobenzene (p - Dichlorobenzene)	75
93-72-1	2,4,5-TP (Silvex)	50
95-95-4	2,4,5-Trichlorophenol	700
88-06-2	2,4,6 Trichlorophenol	6.4
94-75-7	2,4-D	70
120-83-2	2,4-Dichlorophenol	21
105-67-9	2,4-Dimethylphenol	140
51-28-5	2,4-Dinitrophenol	14
121-14-2	2,4-Dinitrotoluene	0.02
606-20-2	2,6-Dinitrotoluene	0.1
95-57-8	2-Chlorophenol	35
95-48-7	2-Methylphenol (o - Cresol)	350
91-94-1	3,3'-Dichlorobenzidine	20
106-47-8	4-Chloroaniline (p-Chloroaniline)	28
83-32-9	Acenaphthene	420
67-64-1	Acetone	700
15972-60-8	Alachlor	2
116-06-3	Aldicarb	3
309-00-2	Aldrin	0.04
319-84-6	alpha-HCH (alpha-BHC)	0.03
120-12-7	Anthracene	2100
1912-24-9	Atrazine	3
71-43-2	Benzene	5
56-55-3	Benzo(a)anthracene	0.13
50-32-8	Benzo(a)pyrene	0.2
205-99-2	Benzo(b)fluoranthene	0.18
207-08-9	Benzo(k)fluroanthene	0.17
65-85-0	Benzoic Acid	28000
111-44-4	Bis(2-chloroethyl)ether	10
117-81-7	Bis(2-ethylhexyl)phthalate	6
75-27-4	Bromodichloromethane	0.02
75-25-2	Bromoform	0.2
71-36-3	Butanol	700
85-68-7	Butyl benzyl phthalate	1400
1563-66-2	Carbofuran	40
75-15-0	Carbon disulfide	700
56-23-5	Carbon tetrachloride	5
57-74-9	Chlordane	2
108-90-7	Chlorobenzene (Monochlorobenzene)	100
124-48-1	Chlorodibromomethane	140
67-66-3	Chloroform	0.02
218-01-9	Chrysene	1.5

CAS Number	Constituent	Class I (ug/L) (a)
156-59-2	cis-1,2-Dichloroethylene	70
75-99-0	Dalapon	200
72-54-8	DDD	0.11
72-55-9	DDE	0.04
50-29-3	DDT	0.12
53-70-3	Dibenzo(a,h)anthracene	0.3
60-57-1	Dieldrin	0.02
84-66-2	Diethyl phthalate	5600
84-74-2	Di-n-butyl phthalate	700
117-84-0	Di-n-octyl phthalate	140
88-85-7	Dinoseb	7
115-29-7	Endosulfan	42
145-73-3	Endothall	100
72-20-8	Endrin	2
100-41-4	Ethylbenzene	700
206-44-0	Fluoranthene	280
86-73-7	Fluorene	280
58-89-9	gamma-HCH (Lindane)	0.2
76-44-8	Heptachlor	0.4
1024-57-3	Heptachlor epoxide	0.2
118-74-1	Hexachlorobenzene	0.06
77-47-4	Hexachlorocyclopentadiene	50
67-72-1	Hexachloroethane	7
193-39-5	Indeno(1,2,3-c,d)pyrene	0.43
78-59-1	Isophorone	1400
72-43-5	Methoxychlor	40
74-83-9	Methyl bromide (Bromomethane)	9.8
75-09-2	Methylene chloride (Dichloromethane)	5
91-20-3	Naphthalene	25
98-95-3	Nitrobenzene	3.5
621-64-7	N-Nitrosodi-n-propylamine	10
122-39-4	N-Nitrosodiphenylamine	10
87-86-5	Pentachlorophenol	1
108-95-2	Phenol	100
1918-02-1	Picloram	500
1336-36-3	Polychlorinated biphenyls (PCBs)	0.5
129-00-0	Pyrene	210
122-34-9	Simazine	4
100-42-5	Styrene	100
127-18-4	Tetrachloroethylene (Perchloroethylene)	5
108-88-3	Toluene	1000
8001-35-2	Toxaphene	3
156-60-5	trans-1,2-Dichloroethylene	100
79-01-6	Trichloroethylene	5
108-05-4	Vinyl acetate	7000
75-01-4	Vinyl chloride	2
1330-20-7	Xylenes (total)	10000

CAS Number	Constituent	Class I (ug/L) (a)	
	Inorganics		
7440-36-0	Antimony	6	
7440-38-2	Arsenic	50	
7440-39-3	Barium	2000	
7440-41-7	Beryllium	4	
7440-42-8	Boron	2000	
7440-43-9	Cadmium	5	
16887-00-6	Chloride	200000	
18540-29-9	Chromium, ion, hexavalent	NA	
7440-47-3	Chromium, total	100	
7440-48-4	Cobalt	1000	
7440-50-8	Copper	650	
57-12-5	Cyanide	200	
7782-41-4	Fluoride	4000	
7439-89-6	Iron	5000	
7439-92-1	Lead	7.5	
7439-96-5	Manganese	150	
7439-97-6	Mercury	2	
7440-02-0	Nickel	100	
14797-55-8	Nitrate as N	10000	
7782-49-2	Selenium	50	
7440-22-4	Silver	50	
14808-79-8	Sulfate	400000	
7440-28-0	Thallium	2	
7440-62-2	Vanadium	49	
7440-66-6	Zinc	5000	
	Constituents Lacking TACO Standards		
79-34-5	1,1,2,2-Tetrachloroethane	0.055	(n)
541-73-1	1,3-Dichlorobenzene	1500	(b)
93-76-5	2,4,5-T	360	(n)
94-82-6	2,4-DB	290	(n)
91-58-7	2-Chloronaphthalene	490	(n)
91-57-6	2-Methylnaphthalene	39	(c)
88-74-4	2-Nitroaniline	2.1	(n)
106-44-5	3-Methylphenol/4-Methylphenol	350	(d)
108-10-1	4-Methyl-2-pentanone (MIBK)	160	(n)
100-01-6	4-Nitroaniline	2.1	(n)
5103-71-9	Alpha Chlordane	10	(e)
7429-90-5	Aluminum	36000	(n)
191-24-2	Benzo(g,h,i)perylene	1050	(f)
319-85-7	beta-BHC	0.15	(g)
86-74-8	Carbazole	3.4	(n)
540-59-0	Cis/Trans-1,2-Dichloroethene	200	(h)
319-86-8	delta-BHC	0.15	(g)
132-64-9	Dibenzofuran	24	(n)
1918-00-9	Dicamba	1100	(n)
120-36-5	Dichloroprop	NA	(l)
131-11-3	Dimethylphthalate	360000	(n)
1746-01-6	Dioxin	0.00003	(m)
959-98-8	Endosulfan I	210	(i)
33213-65-9	Endosulfan II	210	(i)
7421-93-4	Endrin aldehyde	10	(j)
53494-70-5	Endrin ketone	10	(j)

CAS Number	Constituent	Class I (ug/L) (a)	
5103-74-2	Gamma Chlordane	10	(e)
93-65-2	MCPP	36	(n)
7439-98-7	Molybdenum	180	(n)
85-01-8	Phenanthrene	10500	(k)

Notes:
CAS - Chemical Abstracts Service.
NA - Not Available.
ND - Not Determined.
TACO - Illinois Tiered Approach to Corrective Action.
(a) - Title 35, Subtitle G, Chapter I, Part 742 Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 values from Appendix B, Table E.
(b) - No TACO value available. Therefore, the TACO value for 1,2-dichlorobenzene has been used due to structural similarity.
(c) - No TACO value available. Therefore, the TACO value for naphthalene has been used due to structural similarity.
(d) - No TACO value available. Therefore, the TACO value for 2-methylphenol has been used due to structural similarity.
TACO - Illinois Tiered Approach to Corrective Action.
(f) - No TACO value available. Therefore, the TACO value for pyrene has been used due to structural similarity.
(g) - No TACO value available. Therefore, the TACO value for alpha-HCH has been used due to structural similarity.
(h) - TACO value for cis-1,2-dichloroethylene.
(i) - No TACO value available. Therefore, the TACO value for endosulfan has been used due to structural similarity.
(j) - No TACO value available. Therefore, the TACO value for endrin has been used due to structural similarity.
(k) - No TACO value available. Therefore, the TACO value for anthracene has been used due to structural similarity.
(l) - No TACO value, PRG value, appropriate surrogate, or dose response value available.
(m) - Drinking Water Standards and Health Adivories. Office of Water, EPA 822-B00-001, Summer 2000. Maximum Contaminant Level (MCL).
(n) - No TACO value, and no appropriate structural surrogate. Therefore, Region IX Preliminary Remediation Goal (PRG), October 1, 1999, used.

Table U-2
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: AA-GHL-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	1.30E+00	1.30E+00	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	1.20E+00	1.20E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
Aluminum	2	1	1.38E+02	1.95E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1
Barium	2	2	1.18E+02	1.35E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.33E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	9.40E-01	9.40E-01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Chromium	1	1	3.60E+00	3.60E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	1	1	7.10E-01	7.10E-01	No	ND	--	No	7.00E+01	No	No	<Tier 1
Cobalt	1	1	3.50E+00	3.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	2.30E+00	2.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	2	1	1.90E-02	3.20E-02	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
gamma-BHC (Lindane)	2	1	1.98E-02	3.00E-02	No	1.01E-02	Yes	No	2.00E-01	No	No	<Tier 1
Iron	2	2	7.60E+02	7.70E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	2	2	2.75E+04	3.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	3.86E+02	7.30E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	2	1	1.05E+01	1.60E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.03E+01	1.15E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	1	1	2.95E-01	2.95E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	2	2	4.73E+03	6.25E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	1.33E+04	1.55E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Tetrachloroethene	2	2	1.02E+01	1.30E+01	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Toluene	1	1	6.85E-01	6.85E-01	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total PCBs	2	1	1.09E+00	1.18E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	3.93E-06	3.93E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Trichloroethene	2	2	1.20E+00	1.90E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1

Table U-3
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: AA-GHL-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Aluminum	2	1	8.50E+02	1.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	3.80E+00	3.80E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	2	2	1.24E+02	1.60E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.25E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cis/Trans-1,2-Dichloroethene	2	2	1.23E+00	1.90E+00	No	ND	--	No	7.00E+01	No	No	<Tier 1
Cobalt	2	2	3.60E+00	4.20E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Iron	2	2	1.49E+03	2.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	2	2	2.70E+04	3.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	7.10E+02	1.20E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	2	2	4.50E+00	4.50E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	9.50E+00	9.80E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	2	2	4.00E+03	5.00E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	7.75E+03	8.20E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN
Trichloroethene	2	2	1.20E+00	1.60E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Vanadium	1	1	4.00E+00	4.00E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	9.10E+00	9.10E+00	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-4
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: AA-GHL-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent An Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
bis(2-Ethylhexyl)phthalate	1	1	8.00E-01	8.00E-01	No	ND	--	No	6.00E+00	No	No	<Tier 1
Calcium	1	1	1.70E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	5.80E+00	5.80E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Iron	1	1	2.00E+02	2.00E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	3.70E+04	3.70E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.50E+03	1.50E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	1.20E+01	1.20E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	1.20E+04	1.20E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.90E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total PCBs	1	1	1.23E+00	1.23E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1

Table U-5
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: AA-SW-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	†TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Acetone	2	1	2.65E+01	2.80E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1
Aluminum	2	1	2.45E+03	4.80E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	4.50E+00	4.50E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	2	2	2.40E+02	3.10E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.35E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	2	1	7.35E+00	9.70E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	2	2	2.65E+00	4.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Iron	2	2	4.91E+03	9.10E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	2	1	5.10E+00	7.70E+00	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	2	2	3.60E+04	3.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	7.00E+02	7.80E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	2	1	5.10E+00	5.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.75E+01	2.30E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Phenanthrene	1	1	4.20E-01	4.20E-01	No	ND	--	No	2.10E+03	No	No	<Tier 1
Potassium	2	2	5.75E+03	6.20E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	1.10E+04	1.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Vanadium	2	1	9.00E+00	1.30E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	2	1	2.30E+01	3.60E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-6
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-101

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
2,4,5-TP (Silvex)	1	1	1.40E-01	1.40E-01	No	3.20E-01	No	Yes	5.00E+01	No	No	<Tier 1
4,4'-DDE	1	1	4.00E-03	4.00E-03	No	ND	--	No	4.00E-02	No	No	<Tier 1
Aluminum	1	1	5.80E+02	5.80E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	2.10E+01	2.10E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.20E+05	1.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chromium	1	1	5.30E+00	5.30E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	4.40E+00	4.40E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	1.50E+00	1.50E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	8.20E-03	8.20E-03	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
Endosulfan I	1	1	1.60E-03	1.60E-03	No	ND	--	No	4.20E+01	No	No	<Tier 1
Endrin aldehyde	1	1	3.80E-03	3.80E-03	No	ND	--	No	2.00E+00	No	No	<Tier 1
Heptachlor	1	1	1.20E-03	1.20E-03	No	2.60E-02	No	Yes	4.00E-01	No	No	<Tier 1
Iron	1	1	6.40E+03	6.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	2.50E+04	2.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	2.40E+03	2.40E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Molybdenum	1	1	5.20E+00	5.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	2.00E+01	2.00E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	4.00E+03	4.00E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.60E+04	1.60E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	6.46E-06	6.46E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-7
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-102

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	1.00E+01	1.00E+01	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	5.80E+01	5.80E+01	No	ND	--	No	7.50E+01	No	No	<Tier 1
alpha-BHC	1	1	1.07E-05	1.07E-05	No	ND	--	No	3.00E-02	No	No	<Tier 1
Arsenic	1	1	2.80E+01	2.80E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	9.50E+01	9.50E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	8.40E+04	8.40E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	1.10E+01	1.10E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Cobalt	1	1	5.00E+00	5.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Iron	1	1	6.50E+03	6.50E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	1.80E+04	1.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	8.30E+02	8.30E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	9.50E+00	9.50E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	1.70E+01	1.70E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	6.70E+03	6.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.80E+04	1.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	1.07E-05	1.07E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Zinc	1	1	1.90E+01	1.90E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-8
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-104

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
4,4'-DDE	1	1	3.90E-03	3.90E-03	No	ND	--	No	4.00E-02	No	No	<Tier 1
alpha-BHC	1	1	8.00E-04	8.00E-04	No	ND	--	No	3.00E-02	No	No	<Tier 1
Aluminum	1	1	3.10E+01	3.10E+01	No	ND	--	No	3.60E+04	No	No	<Tier 1
Barium	1	1	1.60E+02	1.60E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	2.50E+00	2.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Dieldrin	1	1	2.60E-03	2.60E-03	No	ND	--	No	2.00E-02	No	No	<Tier 1
Endosulfan II	1	1	6.90E-03	6.90E-03	No	ND	--	No	4.20E+01	No	No	<Tier 1
Endrin aldehyde	1	1	1.10E-02	1.10E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
Endrin ketone	1	1	9.30E-03	9.30E-03	No	5.21E-02	No	Yes	2.00E+00	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	9.00E-04	9.00E-04	No	1.01E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	1	1	1.00E+02	1.00E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	3.80E+04	3.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	7.20E+02	7.20E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	1.50E+01	1.50E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	4.50E+03	4.50E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.20E+04	1.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.40E-05	2.40E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Zinc	1	1	1.10E+01	1.10E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-9
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-106

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	4.70E+01	4.70E+01	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	4.60E+00	4.60E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	3.30E+02	3.30E+02	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,6-Trichlorophenol	1	1	4.70E-01	4.70E-01	No	ND	--	No	6.40E+00	No	No	<Tier 1
2,4-Dichlorophenol	1	1	1.10E+01	1.10E+01	No	ND	--	No	2.10E+01	No	No	<Tier 1
2-Chlorophenol	1	1	2.30E+00	2.30E+00	No	ND	--	No	3.50E+01	No	No	<Tier 1
alpha-BHC	1	1	8.30E+00	8.30E+00	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Arsenic	1	1	4.20E+01	4.20E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	9.30E+00	9.30E+00	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
beta-BHC	1	1	3.60E-01	3.60E-01	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Calcium	1	1	2.80E+05	2.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	1.80E+02	1.80E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
delta-BHC	1	1	1.30E-01	1.30E-01	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
Dinoseb	1	1	3.20E-01	3.20E-01	No	ND	--	No	7.00E+00	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	6.80E-02	6.80E-02	No	1.01E-02	Yes	No	2.00E-01	No	No	<Tier 1
Iron	1	1	5.60E+04	5.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Lead	1	1	3.00E+00	3.00E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	1	1	6.00E+04	6.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	2.10E+03	2.10E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Pentachlorophenol	1	1	6.70E-02	6.70E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	1	1	1.40E+04	1.40E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.30E+05	2.30E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	1.03E-05	1.03E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-10
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-107

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	1.80E+02	1.80E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
1,2-Dichlorobenzene	1	1	3.00E+02	3.00E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	8.50E+02	8.50E+02	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-T	1	1	2.40E+01	2.40E+01	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1
2,4-D	1	1	1.20E+02	1.20E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
2,4-Dichlorophenol	1	1	3.60E+03	3.60E+03	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1
2-Chlorophenol	1	1	6.30E+02	6.30E+02	No	ND	--	No	3.50E+01	Yes	Yes	>Tier 1
2-Methylphenol (o-cresol)	1	1	2.30E+02	2.30E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	2.40E+03	2.40E+03	No	ND	--	No	3.50E+02	Yes	Yes	>Tier 1
4-Chloroaniline	1	1	2.30E+04	2.30E+04	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
4-Methyl-2-pentanone (MIBK)	1	1	1.30E+03	1.30E+03	No	ND	--	No	1.60E+02	Yes	Yes	>Tier 1
Acetone	1	1	5.90E+02	5.90E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1
alpha-BHC	1	1	6.00E+00	6.00E+00	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Aluminum	1	1	6.10E+02	6.10E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1
Antimony	1	1	8.60E+00	8.60E+00	No	ND	--	No	6.00E+00	Yes	Yes	>Tier 1
Arsenic	1	1	1.40E+01	1.40E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	4.20E+02	4.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	3.70E+03	3.70E+03	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Cadmium	1	1	2.60E+00	2.60E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	5.20E+05	5.20E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN
Chlorobenzene	1	1	4.30E+03	4.30E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	2.20E+01	2.20E+01	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	1	1	1.90E+02	1.90E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
Cobalt	1	1	1.40E+02	1.40E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
Copper	1	1	1.10E+01	1.10E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	1.70E+01	1.70E+01	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
Dichloroprop	1	1	4.70E+01	4.70E+01	No	ND	--	No	NA	--	No	No D/R
Ethylbenzene	1	1	3.20E+01	3.20E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1
Iron	1	1	2.70E+05	2.70E+05	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Lead	1	1	2.40E+01	2.40E+01	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	1	1	4.90E+04	4.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	6.10E+03	6.10E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Molybdenum	1	1	5.60E+01	5.60E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1
Naphthalene	1	1	2.10E+03	2.10E+03	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	1.20E+02	1.20E+02	No	1.30E+02	No	Yes	1.00E+02	Yes	No	BK
Pentachlorophenol	2	2	1.01E+03	2.00E+03	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1
Phenol	1	1	1.40E+04	1.40E+04	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Potassium	1	1	2.80E+04	2.80E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Selenium	1	1	5.00E+00	5.00E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1
Sodium	1	1	1.50E+05	1.50E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN
Tetrachloroethene	1	1	1.70E+02	1.70E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Toluene	1	1	8.50E+03	8.50E+03	No	ND	--	No	1.00E+03	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	3.65E-03	3.65E-03	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Trichloroethene	1	1	2.00E+02	2.00E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Vanadium	1	1	3.30E+02	3.30E+02	No	ND	--	No	4.90E+01	Yes	Yes	>Tier 1
Vinyl chloride	1	1	4.10E+01	4.10E+01	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1
Xylenes, Total	1	1	1.30E+02	1.30E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1
Zinc	1	1	1.30E+03	1.30E+03	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-11
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EEG-112

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
4-Chloroaniline	1	1	1.10E+00	1.10E+00	No	ND	--	No	2.80E+01	No	No	<Tier 1
Arsenic	1	1	5.50E+01	5.50E+01	No	1.17E+01	Yes	No	5.00E+01	Yes	Yes	>Tier 1
Barium	1	1	3.40E+02	3.40E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	1.90E+00	1.90E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	1.00E+05	1.00E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	2.80E+00	2.80E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1
Iron	1	1	2.70E+04	2.70E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	2.30E+04	2.30E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	3.10E+00	3.10E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Potassium	1	1	6.30E+03	6.30E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	5.80E+04	5.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	3.90E-06	3.90E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-12
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: G
Well: EE-05

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max > BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max > Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	1.60E+00	1.60E+00	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	5.70E+00	5.70E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	1	1	1.90E+00	1.90E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	1.60E+01	1.60E+01	No	ND	--	No	7.50E+01	No	No	<Tier 1
2,4,5-TP (Silvex)	1	1	3.90E+02	3.90E+02	No	3.20E-01	Yes	No	5.00E+01	Yes	Yes	>Tier 1
2,4-Dichlorophenol	1	1	3.10E+00	3.10E+00	No	ND	--	No	2.10E+01	No	No	<Tier 1
2-Chlorophenol	1	1	3.80E+01	3.80E+01	No	ND	--	No	3.50E+01	Yes	Yes	>Tier 1
2-Methylphenol (o-cresol)	1	1	2.60E+01	2.60E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	1.30E+02	1.30E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1
4,4'-DDD	1	1	2.40E-02	2.40E-02	No	ND	--	No	1.10E-01	No	No	<Tier 1
4,4'-DDE	1	1	1.40E-03	1.40E-03	No	ND	--	No	4.00E-02	No	No	<Tier 1
4-Chloroaniline	1	1	1.60E+03	1.60E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
4-Nitroaniline	1	1	8.40E+00	8.40E+00	No	ND	--	No	2.10E+00	Yes	Yes	>Tier 1
alpha-BHC	1	1	2.40E-02	2.40E-02	No	ND	--	No	3.00E-02	No	No	<Tier 1
Arsenic	1	1	4.50E+01	4.50E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	4.00E+02	4.00E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	1.10E+02	1.10E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Calcium	1	1	2.70E+05	2.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	6.20E+02	6.20E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Cis/Trans-1,2-Dichloroethene	1	1	4.20E+01	4.20E+01	No	ND	--	No	7.00E+01	No	No	<Tier 1
Cobalt	1	1	7.00E+00	7.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
delta-BHC	1	1	3.60E-01	3.60E-01	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
Dieldrin	1	1	2.00E-02	2.00E-02	No	ND	--	No	2.00E-02	No	No	<Tier 1
Diethylphthalate	1	1	7.10E+00	7.10E+00	No	7.00E-01	Yes	No	5.60E+03	No	No	<Tier 1
Endrin	1	1	2.40E-02	2.40E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
Endrin aldehyde	1	1	9.20E-02	9.20E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
Gamma Chlordane	1	1	8.00E-03	8.00E-03	No	ND	--	No	2.00E+00	No	No	<Tier 1
Heptachlor	1	1	2.60E-02	2.60E-02	No	2.60E-02	Yes	No	4.00E-01	No	No	<Tier 1
Heptachlor epoxide	1	1	2.40E-02	2.40E-02	No	2.66E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	1	1	4.60E+04	4.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	5.20E+04	5.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Methoxychlor	1	1	6.90E-02	6.90E-02	No	ND	--	No	4.00E+01	No	No	<Tier 1
Molybdenum	1	1	4.50E+02	4.50E+02	No	ND	--	No	1.80E+02	Yes	Yes	>Tier 1
Naphthalene	1	1	3.90E+02	3.90E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	5.90E+00	5.90E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Phenol	1	1	3.80E+02	3.80E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Potassium	1	1	3.50E+03	3.50E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	5.90E+04	5.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Toluene	1	1	9.70E+02	9.70E+02	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total TCDD-TEQ	1	1	1.78E-04	1.78E-04	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Trichloroethene	1	1	1.80E+01	1.80E+01	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Vanadium	1	1	3.70E+00	3.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1

Table U-13
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: H
Well: EE-01

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,1,2,2-Tetrachloroethane	1	1	1.20E+01	1.20E+01	No	ND	--	No	5.50E-02	Yes	Yes	>Tier 1
1,2,4-Trichlorobenzene	1	1	1.90E+01	1.90E+01	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	7.20E+02	7.20E+02	No	ND	--	No	6.00E+02	Yes	Yes	>Tier 1
1,4-Dichlorobenzene	1	1	2.20E+03	2.20E+03	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-Trichlorophenol	1	1	6.20E+01	6.20E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1
2,4,6-Trichlorophenol	1	1	2.70E+02	2.70E+02	No	ND	--	No	6.40E+00	Yes	Yes	>Tier 1
2-Chloronaphthalene	1	1	1.20E+01	1.20E+01	No	ND	--	No	4.90E+02	No	No	<Tier 1
2-Chlorophenol	1	1	7.30E+01	7.30E+01	No	ND	--	No	3.50E+01	Yes	Yes	>Tier 1
2-Methylnaphthalene	1	1	8.00E+00	8.00E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1
2-Methylphenol (o-cresol)	1	1	3.00E+01	3.00E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	6.20E+01	6.20E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1
4-Chloroaniline	1	1	1.80E+03	1.80E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
Acenaphthene	1	1	2.20E+00	2.20E+00	No	ND	--	No	4.20E+02	No	No	<Tier 1
Aluminum	1	1	3.00E+02	3.00E+02	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	3.70E+01	3.70E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	5.70E+02	5.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	1.50E+03	1.50E+03	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Cadmium	1	1	2.20E+00	2.20E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	3.30E+05	3.30E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Carbazole	1	1	5.20E+00	5.20E+00	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1
Chlorobenzene	1	1	1.20E+03	1.20E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	4.20E+00	4.20E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	1.30E+02	1.30E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
Copper	1	1	1.80E+01	1.80E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
Ethylbenzene	1	1	1.80E+03	1.80E+03	No	ND	--	No	7.00E+02	Yes	Yes	>Tier 1
Fluorene	1	1	3.00E+01	3.00E+01	No	4.80E-01	Yes	No	2.80E+02	No	No	<Tier 1
Iron	1	1	7.70E+04	7.70E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	6.00E+04	6.00E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.60E+03	1.60E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Naphthalene	1	1	2.30E+03	2.30E+03	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	6.70E+02	6.70E+02	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
N-Nitrosodiphenylamine	1	1	7.60E+00	7.60E+00	No	5.00E-01	Yes	No	1.00E+01	No	No	<Tier 1
Pentachlorophenol	2	2	3.35E+03	4.30E+03	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1
Phenanthrene	1	1	4.80E+00	4.80E+00	No	ND	--	No	2.10E+03	No	No	<Tier 1
Phenol	1	1	7.20E+01	7.20E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Potassium	1	1	2.70E+04	2.70E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	5.10E+04	5.10E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Toluene	1	1	9.40E+01	9.40E+01	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total TCDD-TEQ	1	1	4.57E-05	4.57E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Xylenes, Total	1	1	2.00E+02	2.00E+02	No	ND	--	No	1.00E+04	No	No	<Tier 1
Zinc	1	1	4.80E+02	4.80E+02	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-14
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: H
Well: EE-02

	Summary Statistics				COPC Selection - Chronic Exposure Scream							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX> BK?	Pass SW/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	3.15E+02	3.15E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
1,2-Dichlorobenzene	1	1	2.20E+02	2.20E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	1	1	5.45E+00	5.45E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	6.35E+02	6.35E+02	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-T	1	1	3.50E+01	3.50E+01	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1
2,4,5-Trichlorophenol	1	1	1.90E+02	1.90E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1
2,4,6-Trichlorophenol	1	1	4.65E+02	4.65E+02	No	ND	--	No	6.40E+00	Yes	Yes	>Tier 1
2,4-D	1	1	1.80E+02	1.80E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
2,4-Dichlorophenol	1	1	3.70E+02	3.70E+02	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1
2-Chlorophenol	1	1	2.25E+01	2.25E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1
2-Methylnaphthalene	1	1	1.80E+00	1.80E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1
2-Methylphenol (o-cresol)	1	1	2.80E+01	2.80E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1
2-Nitroaniline	1	1	1.35E+01	1.35E+01	No	ND	--	No	2.10E+00	Yes	Yes	>Tier 1
3-Methylphenol/4-Methylphenol	1	1	2.15E+02	2.15E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1
4-Chloroaniline	1	1	7.75E+02	7.75E+02	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
Acetone	1	1	4.90E+02	4.90E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1
Alpha Chlordane	1	1	2.40E+00	2.40E+00	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1
alpha-BHC	1	1	4.95E-01	4.95E-01	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Antimony	1	1	1.05E+02	1.05E+02	No	ND	--	No	6.00E+00	Yes	Yes	>Tier 1
Arsenic	1	1	1.25E+03	1.25E+03	No	1.17E+01	Yes	No	5.00E+01	Yes	Yes	>Tier 1
Barium	1	1	6.35E+01	6.35E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	2.25E+03	2.25E+03	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
bis(2-Ethylhexyl)phthalate	1	1	7.40E-01	7.40E-01	No	ND	--	No	6.00E+00	No	No	<Tier 1
Calcium	1	1	7.20E+05	7.20E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN
Carbazole	1	1	1.15E+00	1.15E+00	No	ND	--	No	3.40E+00	No	No	<Tier 1
Chlorobenzene	1	1	4.35E+03	4.35E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chloroform	1	1	4.25E+02	4.25E+02	No	ND	--	No	2.00E-02	Yes	Yes	>Tier 1
Chromium	1	1	3.00E+00	3.00E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	3.95E+01	3.95E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
Copper	1	1	6.30E+00	6.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Cyanide, Total	1	1	1.80E+01	1.80E+01	No	ND	--	No	2.00E+02	No	No	<Tier 1
Diethylphthalate	1	1	2.10E+01	2.10E+01	No	7.00E-01	Yes	No	5.60E+03	No	No	<Tier 1
Dimethylphthalate	1	1	3.65E+00	3.65E+00	No	ND	--	No	3.60E+05	No	No	<Tier 1
Endrin	1	1	3.60E-01	3.60E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1
Fluorene	1	1	1.00E+00	1.00E+00	No	4.80E-01	Yes	No	2.80E+02	No	No	<Tier 1
Heptachlor epoxide	1	1	4.40E+00	4.40E+00	No	2.66E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1
Iron	1	1	2.40E+04	2.40E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	3.95E+04	3.95E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	8.80E+03	8.80E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Mercury	1	1	9.00E-02	9.00E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
Methoxychlor	1	1	3.60E-01	3.60E-01	No	ND	--	No	4.00E+01	No	No	<Tier 1
Molybdenum	1	1	5.45E+00	5.45E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Naphthalene	1	1	1.95E+02	1.95E+02	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	4.30E+02	4.30E+02	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
Nitrobenzene	1	1	5.65E+01	5.65E+01	No	ND	--	No	3.50E+00	Yes	Yes	>Tier 1
Pentachlorophenol	2	2	6.50E+02	6.70E+02	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1
Phenol	1	1	3.15E+02	3.15E+02	No	ND		No	1.00E+02	Yes	Yes	>Tier 1
Potassium	1	1	2.60E+04	2.60E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Selenium	1	1	7.15E+00	7.15E+00	No	ND	--	No	5.00E+01	No	No	<Tier 1
Sodium	1	1	3.25E+04	3.25E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Thallium	1	1	5.05E+00	5.05E+00	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	2.31E-06	2.31E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Toluene	1	1	1.55E+03	1.55E+03	No	ND	--	No	1.00E+03	Yes	Yes	>Tier 1
Trichloroethene	1	1	4.95E+01	4.95E+01	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Vanadium	1	1	3.50E+00	3.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	6.05E+01	6.05E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-15
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: H
Well: EE-03

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2-Dichlorobenzene	1	1	2.20E+00	2.20E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	2.10E+01	2.10E+01	No	ND	--	No	7.50E+01	No	No	<Tier 1
2,4-Dichlorophenol	1	1	7.50E-01	7.50E-01	No	ND	--	No	2.10E+01	No	No	<Tier 1
Arsenic	1	1	2.80E+01	2.80E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	2.60E+05	2.60E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	1.40E+01	1.40E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Iron	1	1	3.60E+04	3.60E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	7.90E+04	7.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.40E+03	1.40E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	5.40E+00	5.40E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	2	1	1.75E+00	3.00E+00	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1
Potassium	1	1	1.20E+04	1.20E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	9.80E+04	9.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	5.02E-05	5.02E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1

Table U-16
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: H
Well: EEG-110

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX > BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX > Class I?	COPC?	Reason
Arsenic	1	1	4.50E+00	4.50E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	1	1	1.20E+02	1.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Cadmium	1	1	2.10E+00	2.10E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	1.20E+05	1.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	1.90E+00	1.90E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
delta-BHC	1	1	1.60E-03	1.60E-03	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
Heptachlor	1	1	9.90E-03	9.90E-03	No	2.60E-02	No	Yes	4.00E-01	No	No	<Tier 1
Iron	1	1	4.80E+02	4.80E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	2.10E+04	2.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.60E+03	1.60E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Methylene chloride	1	1	3.20E+00	3.20E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Molybdenum	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	1.50E+02	1.50E+02	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
Potassium	1	1	3.60E+03	3.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.50E+04	1.50E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Zinc	1	1	5.40E+02	5.40E+02	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-17
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: AA-I-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,1-Dichloroethane	2	1	6.05E+02	9.60E+02	No	ND	--	No	7.00E+02	Yes	Yes	>Tier 1
1,1-Dichloroethene	1	1	3.20E+01	3.20E+01	No	ND	--	No	7.00E+00	Yes	Yes	>Tier 1
1,2-Dichlorobenzene	2	2	7.15E+01	1.30E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	2	1	5.75E+01	1.10E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	2	2	2.21E+03	4.40E+03	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-TP (Silvex)	2	2	7.25E-01	1.10E+00	No	3.20E-01	Yes	No	5.00E+01	No	No	<Tier 1
2-Chlorophenol	2	1	5.25E+00	5.50E+00	No	ND	--	No	3.50E+01	No	No	<Tier 1
4,4'-DDD	1	1	3.60E-03	3.60E-03	No	ND	--	No	1.10E-01	No	No	<Tier 1
4,4'-DDT	1	1	2.20E-03	2.20E-03	No	ND	--	No	1.20E-01	No	No	<Tier 1
4-Chloroaniline	2	2	3.25E+03	4.10E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
Aldrin	2	2	4.10E-03	5.50E-03	No	ND	--	No	4.00E-02	No	No	<Tier 1
alpha-BHC	2	2	3.30E-02	5.40E-02	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Aluminum	2	2	7.65E+02	1.40E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	2	2	1.04E+02	1.40E+02	No	1.17E+01	Yes	No	5.00E+01	Yes	Yes	>Tier 1
Barium	2	2	5.35E+02	7.60E+02	No	6.17E+02	Yes	No	2.00E+03	No	No	<Tier 1
Benzene	2	2	4.55E+02	6.20E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
beta-BHC	2	1	4.90E-02	9.10E-02	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
bis(2-Chloroethyl)ether	1	1	1.10E+00	1.10E+00	No	ND	--	No	1.00E+01	No	No	<Tier 1
bis(2-Ethylhexyl)phthalate	1	1	6.90E-01	6.90E-01	No	ND	--	No	6.00E+00	No	No	<Tier 1
Calcium	2	2	2.55E+05	3.20E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Carbazole	1	1	1.40E+00	1.40E+00	No	ND	--	No	3.40E+00	No	No	<Tier 1
Chlorobenzene	2	2	5.15E+03	8.70E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	3.10E+00	3.10E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	2	1	7.25E+02	1.20E+03	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
Cobalt	2	1	7.50E+00	1.00E+01	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
delta-BHC	2	2	6.80E-02	1.00E-01	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
Dicamba	1	1	1.40E-01	1.40E-01	No	ND	--	No	1.10E+03	No	No	<Tier 1
Dieldrin	1	1	3.90E-03	3.90E-03	No	ND	--	No	2.00E-02	No	No	<Tier 1
Dinoseb	1	1	2.70E-01	2.70E-01	No	ND	--	No	7.00E+00	No	No	<Tier 1
Endosulfan II	1	1	1.00E-03	1.00E-03	No	ND	--	No	4.20E+01	No	No	<Tier 1
Endrin	1	1	2.70E-03	2.70E-03	No	ND	--	No	2.00E+00	No	No	<Tier 1
Endrin ketone	1	1	4.40E-03	4.40E-03	No	5.21E-02	No	Yes	2.00E+00	No	No	<Tier 1
Ethylbenzene	2	2	5.55E+02	8.70E+02	No	ND	--	No	7.00E+02	Yes	Yes	>Tier 1
gamma-BHC (Lindane)	2	1	3.93E-02	6.90E-02	No	1.01E-02	Yes	No	2.00E-01	No	No	<Tier 1
Heptachlor	2	2	2.60E-02	2.80E-02	No	2.60E-02	Yes	No	4.00E-01	No	No	<Tier 1
Heptachlor epoxide	2	2	1.09E-02	1.40E-02	No	2.66E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	2	2	4.90E+04	6.50E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Lead	2	1	2.65E+00	2.80E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	2	2	6.30E+04	7.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	2.55E+03	3.70E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Molybdenum	2	1	6.40E+00	7.80E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Naphthalene	1	1	4.20E+00	4.20E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1
Nickel	2	1	3.40E+01	4.80E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
N-Nitrosodiphenylamine	2	1	3.90E+00	5.30E+00	No	5.00E-01	Yes	No	1.00E+01	No	No	<Tier 1
Pentachlorophenol	1	1	1.30E-01	1.30E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	2	2	1.14E+04	1.30E+04	Yes	1.23E+05	No	Yes	NA	--	No	BK
Sodium	2	2	9.20E+04	1.30E+05	Yes	1.30E+05	No	Yes	NA	--	No	BK
Toluene	1	1	1.80E+01	1.80E+01	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total PCBs	2	1	1.07E+00	1.13E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1
Vanadium	1	1	4.50E+00	4.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Vinyl chloride	2	1	7.35E+02	9.70E+02	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1

Table U-18
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: AA-I-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
1,1-Dichloroethane	2	2	1.70E+02	1.80E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1
1,1-Dichloroethene	1	1	3.10E+01	3.10E+01	No	ND	--	No	7.00E+00	Yes	Yes	>Tier 1
1,2-Dichlorobenzene	2	1	7.25E+01	1.40E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	2	1	6.25E+01	1.20E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	2	2	2.15E+03	4.20E+03	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-TP (Silvex)	1	1	1.80E-01	1.80E-01	No	3.20E-01	No	Yes	5.00E+01	No	No	<Tier 1
2,4-D	2	1	2.60E-01	2.70E-01	No	ND	--	No	7.00E+01	No	No	<Tier 1
2,4-Dichlorophenol	2	1	5.80E+00	6.60E+00	No	ND	--	No	2.10E+01	No	No	<Tier 1
2-Chlorophenol	2	1	5.15E+00	5.30E+00	No	ND	--	No	3.50E+01	No	No	<Tier 1
4-Chloroaniline	2	2	3.51E+02	6.80E+02	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
alpha-BHC	1	1	8.40E-03	8.40E-03	No	ND	--	No	3.00E-02	No	No	<Tier 1
Arsenic	2	1	2.30E+01	4.10E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	2	2	6.30E+01	7.90E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	2	2	6.13E+01	1.20E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Benzo(a)anthracene	1	1	5.90E-01	5.90E-01	No	ND	--	No	1.30E-01	Yes	Yes	>Tier 1
Benzo(a)pyrene	1	1	9.80E-01	9.80E-01	No	ND	--	No	2.00E-01	Yes	Yes	>Tier 1
Benzo(k)fluoranthene	1	1	1.20E+00	1.20E+00	No	ND	--	No	1.70E-01	Yes	Yes	>Tier 1
Cadmium	2	1	3.63E+01	7.00E+01	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Calcium	2	2	3.05E+05	3.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	2	2	1.66E+03	3.20E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chrysene	1	1	7.30E-01	7.30E-01	No	ND	--	No	1.50E+00	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	2	2	4.05E+02	5.10E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
Cobalt	2	2	4.35E+01	4.70E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
delta-BHC	2	1	2.40E-02	4.20E-02	No	1.25E-02	Yes	No	3.00E-02	Yes	Yes	>Tier 1
Dibenzo(a,h)anthracene	2	2	9.75E-01	1.10E+00	No	ND	--	No	3.00E-01	Yes	Yes	>Tier 1
Ethylbenzene	2	1	1.11E+02	2.10E+02	No	ND	--	No	7.00E+02	No	No	<Tier 1
Heptachlor	2	2	7.60E-03	8.30E-03	No	2.60E-02	No	Yes	4.00E-01	No	No	<Tier 1
Iron	2	1	1.17E+04	2.30E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	2	2	5.80E+04	6.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	4.85E+03	7.40E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Molybdenum	2	2	3.00E+00	3.10E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	4.40E+03	7.80E+03	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
Potassium	2	2	1.20E+04	1.30E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	9.00E+04	1.20E+05	Yes	1.30E+05	No	Yes	NA	--	No	EN
Tetrachloroethene	1	1	7.40E+00	7.40E+00	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	1.88E-06	1.88E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Trichloroethene	2	1	1.04E+02	1.80E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Vanadium	1	1	2.70E+00	2.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Vinyl chloride	2	2	2.00E+02	2.40E+02	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1
Zinc	2	2	1.83E+04	3.30E+04	No	ND	--	No	5.00E+03	Yes	Yes	>Tier 1

Table U-19
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: AA-I-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Barium	1	1	3.30E+02	3.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzo(a)pyrene	1	1	4.50E-01	4.50E-01	No	ND	--	No	2.00E-01	Yes	Yes	>Tier 1
Benzo(b)fluoranthene	1	1	3.00E-01	3.00E-01	No	ND	--	No	1.80E-01	Yes	Yes	>Tier 1
Calcium	1	1	2.40E+05	2.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Heptachlor	1	1	9.20E-03	9.20E-03	No	2.60E-02	No	Yes	4.00E-01	No	No	<Tier 1
Magnesium	1	1	3.30E+04	3.30E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	4.30E+02	4.30E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	1.10E+01	1.10E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1
Potassium	1	1	1.70E+05	1.70E+05	Yes	1.23E+05	Yes	Yes	NA	--	No	EN
Sodium	1	1	1.80E+05	1.80E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.41E-06	2.41E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-20
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: EE-12

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	5.50E-01	5.50E-01	No	ND	--	No	7.00E+01	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	3.90E+00	3.90E+00	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	1	1	1.30E+01	1.30E+01	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	9.60E+01	9.60E+01	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-TP (Silvex)	1	1	4.50E-01	4.50E-01	No	3.20E-01	Yes	No	5.00E+01	No	No	<Tier 1
2-Chlorophenol	1	1	1.00E+01	1.00E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1
2-Methylphenol (o-cresol)	1	1	3.90E-01	3.90E-01	No	ND	--	No	3.50E+02	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	4.80E+00	4.80E+00	No	ND	--	No	3.50E+02	No	No	<Tier 1
4,4'-DDE	1	1	2.20E+00	2.20E+00	No	ND	--	No	4.00E-02	Yes	Yes	>Tier 1
4-Chloroaniline	1	1	1.40E+03	1.40E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
alpha-BHC	1	1	2.40E+00	2.40E+00	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Aluminum	1	1	4.90E+03	4.90E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	9.70E+00	9.70E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	1	1	9.20E+02	9.20E+02	No	6.17E+02	Yes	No	2.00E+03	No	No	<Tier 1
Benzene	1	1	6.80E+02	6.80E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
bis(2-Ethylhexyl)phthalate	1	1	7.90E-01	7.90E-01	No	ND	--	No	6.00E+00	No	No	<Tier 1
Cadmium	1	1	9.60E-01	9.60E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	4.80E+05	4.80E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN
Carbazole	1	1	3.50E+00	3.50E+00	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1
Chlorobenzene	1	1	1.40E+03	1.40E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	7.30E+00	7.30E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	2.80E+00	2.80E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	1.00E+01	1.00E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
Di-n-butylphthalate	1	1	1.40E+00	1.40E+00	No	ND	--	No	7.00E+02	No	No	<Tier 1
Endosulfan II	1	1	2.00E+00	2.00E+00	No	ND	--	No	4.20E+01	No	No	<Tier 1
Endrin ketone	1	1	1.80E+00	1.80E+00	No	5.21E-02	Yes	No	2.00E+00	No	No	<Tier 1
Ethylbenzene	1	1	4.60E+00	4.60E+00	No	ND	--	No	7.00E+02	No	No	<Tier 1
Fluoranthene	1	1	4.10E-01	4.10E-01	No	ND	--	No	2.80E+02	No	No	<Tier 1
Gamma Chlordane	1	1	3.50E+00	3.50E+00	No	ND	--	No	2.00E+00	Yes	Yes	>Tier 1
Heptachlor	1	1	2.50E+00	2.50E+00	No	2.60E-02	Yes	No	4.00E-01	Yes	Yes	>Tier 1
Heptachlor epoxide	1	1	5.60E+00	5.60E+00	No	2.66E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1
Iron	1	1	6.20E+04	6.20E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	1.10E+05	1.10E+05	Yes	9.23E+04	Yes	Yes	NA	--	No	EN
Manganese	1	1	6.80E+03	6.80E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Mercury	1	1	1.30E-01	1.30E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1
Methoxychlor	1	1	2.80E+00	2.80E+00	No	ND	--	No	4.00E+01	No	No	<Tier 1
Naphthalene	1	1	6.50E+00	6.50E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1
Nickel	1	1	9.50E+00	9.50E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	1	1	6.70E-02	6.70E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1
Phenol	1	1	1.90E+01	1.90E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Potassium	1	1	2.60E+04	2.60E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.40E+05	2.40E+05	Yes	1.30E+05	Yes	Yes	NA	--	No	EN
Toluene	1	1	5.00E+00	5.00E+00	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total TCDD-TEQ	1	1	3.05E-03	3.05E-03	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Vanadium	1	1	2.20E+01	2.20E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Xylenes, Total	1	1	1.40E+01	1.40E+01	No	ND	--	No	1.00E+04	No	No	<Tier 1
Zinc	1	1	1.20E+02	1.20E+02	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-21
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: EE-13

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Aluminum	1	1	1.50E+03	1.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Barium	1	1	1.70E+02	1.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chromium	1	1	2.50E+00	2.50E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	4.10E+00	4.10E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	3.80E+00	3.80E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	2.10E-02	2.10E-02	No	1.25E-02	Yes	No	3.00E-02	No	No	<Tier 1
Iron	1	1	2.10E+03	2.10E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	3.10E+04	3.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	3.20E+02	3.20E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	1.10E+01	1.10E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	1	1	6.60E-02	6.60E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	1	1	7.60E+03	7.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	3.70E+04	3.70E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	4.74E-05	4.74E-05	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Vanadium	1	1	5.00E+00	5.00E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	1.00E+01	1.00E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-22
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: EE-14

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,2,4-Trichlorobenzene	1	1	5.10E+02	5.10E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
1,2-Dichlorobenzene	1	1	5.00E+02	5.00E+02	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	1	1	4.50E+01	4.50E+01	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	1.40E+04	1.40E+04	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2,4,5-Trichlorophenol	1	1	1.60E+00	1.60E+00	No	ND	--	No	7.00E+02	No	No	<Tier 1
2,4,6-Trichlorophenol	1	1	1.50E+01	1.50E+01	No	ND	--	No	6.40E+00	Yes	Yes	>Tier 1
2-Chlorophenol	1	1	2.70E+01	2.70E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1
2-Methylnaphthalene	1	1	4.20E+00	4.20E+00	No	ND	--	No	2.50E+01	No	No	<Tier 1
2-Methylphenol (o-cresol)	1	1	2.10E+01	2.10E+01	No	ND	--	No	3.50E+02	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	1.10E+02	1.10E+02	No	ND	--	No	3.50E+02	No	No	<Tier 1
4,4'-DDE	1	1	1.80E-01	1.80E-01	No	ND	--	No	4.00E-02	Yes	Yes	>Tier 1
4-Chloroaniline	1	1	1.80E+03	1.80E+03	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
alpha-BHC	1	1	1.10E+00	1.10E+00	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
Arsenic	1	1	1.60E+01	1.60E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	5.80E+02	5.80E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	7.50E+02	7.50E+02	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
beta-BHC	1	1	1.00E+00	1.00E+00	No	ND	--	No	3.00E-02	Yes	Yes	>Tier 1
bis(2-Ethylhexyl)phthalate	1	1	1.10E+00	1.10E+00	No	ND	--	No	6.00E+00	No	No	<Tier 1
Butylbenzylphthalate	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.40E+03	No	No	<Tier 1
Calcium	1	1	1.90E+05	1.90E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Carbazole	1	1	2.60E+01	2.60E+01	No	ND	--	No	3.40E+00	Yes	Yes	>Tier 1
Chlorobenzene	1	1	3.80E+03	3.80E+03	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	7.80E+00	7.80E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	1	1	1.60E+02	1.60E+02	No	ND	--	No	7.00E+01	Yes	Yes	>Tier 1
Cobalt	1	1	4.00E+00	4.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	1.90E+01	1.90E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
Endrin ketone	1	1	1.10E-01	1.10E-01	No	5.21E-02	Yes	No	2.00E+00	No	No	<Tier 1
Ethylbenzene	1	1	8.30E+01	8.30E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1
Gamma Chlordane	1	1	2.50E-01	2.50E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	4.00E-01	4.00E-01	No	1.01E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1
Heptachlor epoxide	1	1	6.80E-01	6.80E-01	No	2.68E-02	Yes	No	2.00E-01	Yes	Yes	>Tier 1
Iron	1	1	6.40E+04	6.40E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Lead	1	1	2.20E+01	2.20E+01	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	1	1	4.90E+04	4.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.20E+03	1.20E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Mercury	1	1	1.80E-01	1.80E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1
Methoxychlor	1	1	2.20E-01	2.20E-01	No	ND	--	No	4.00E+01	No	No	<Tier 1
Naphthalene	1	1	3.60E+01	3.60E+01	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	1.50E+02	1.50E+02	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
N-Nitrosodiphenylamine	1	1	2.30E+01	2.30E+01	No	5.00E-01	Yes	No	1.00E+01	Yes	Yes	>Tier 1
Pentachlorophenol	2	2	3.30E+02	5.00E+02	No	ND	--	No	1.00E+00	Yes	Yes	>Tier 1
Phenol	1	1	1.70E+01	1.70E+01	No	ND	--	No	1.00E+02	No	No	<Tier 1
Potassium	1	1	1.10E+04	1.10E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	8.80E+04	8.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Toluene	1	1	4.20E+01	4.20E+01	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total PCBs	1	1	5.88E+00	5.88E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	7.69E-04	7.69E-04	No	5.02E-07	Yes	No	3.00E-05	Yes	Yes	>Tier 1
Vanadium	1	1	5.70E+00	5.70E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	9.30E+01	9.30E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-23
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: I
Well: EE-15

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
1,1-Dichloroethane	1	1	1.10E+01	1.10E+01	No	ND	--	No	7.00E+02	No	No	<Tier 1
1,2-Dichlorobenzene	1	1	2.40E+01	2.40E+01	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,3-Dichlorobenzene	1	1	1.10E+01	1.10E+01	No	ND	--	No	6.00E+02	No	No	<Tier 1
1,4-Dichlorobenzene	1	1	4.30E+02	4.30E+02	No	ND	--	No	7.50E+01	Yes	Yes	>Tier 1
2-Chlorophenol	1	1	3.15E+00	3.15E+00	No	ND	--	No	3.50E+01	No	No	<Tier 1
4-Chloroaniline	1	1	7.25E+00	7.25E+00	No	ND	--	No	2.60E+01	No	No	<Tier 1
Aluminum	1	1	4.25E+03	4.25E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	2.10E+01	2.10E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	2.55E+02	2.55E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	3.90E+00	3.90E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chlorobenzene	1	1	1.95E+02	1.95E+02	No	ND	--	No	1.00E+02	Yes	Yes	>Tier 1
Chromium	1	1	8.10E+00	8.10E+00	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cis/Trans-1,2-Dichloroethene	1	1	6.40E+01	6.40E+01	No	ND	--	No	7.00E+01	No	No	<Tier 1
Cobalt	1	1	6.25E+00	6.25E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	8.45E+00	8.45E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	5.30E-03	5.30E-03	No	1.01E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	1	1	3.50E+04	3.50E+04	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	4.05E+04	4.05E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.15E+03	1.15E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Mercury	1	1	1.10E-01	1.10E-01	No	ND	--	No	2.00E+00	No	No	<Tier 1
Nickel	1	1	1.90E+01	1.90E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	6.15E+03	6.15E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	3.05E+04	3.05E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.95E-06	2.95E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Trichloroethene	1	1	6.55E-01	6.55E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1
Vanadium	1	1	1.62E+01	1.62E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	2.71E+01	2.71E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-24
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: EEG-103

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
Aluminum	1	1	4.20E+01	4.20E+01	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	1.40E+01	1.40E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	1.70E+02	1.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	9.70E+04	9.70E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	1.90E+00	1.90E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	1.60E+00	1.60E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Iron	1	1	1.40E+03	1.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	2.10E+04	2.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	2.70E+02	2.70E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	7.90E+00	7.90E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	4.90E+00	4.90E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	4.10E+03	4.10E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.60E+04	1.60E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	3.58E-06	3.58E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-25
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: EEG-105

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
alpha-BHC	1	1	3.10E-03	3.10E-03	No	ND	--	No	3.00E-02	No	No	<Tier 1
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	8.60E+04	8.60E+04	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	1.60E+00	1.60E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
delta-BHC	1	1	1.20E-02	1.20E-02	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	7.40E-03	7.40E-03	No	1.01E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	1	1	2.80E+02	2.80E+02	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Magnesium	1	1	1.50E+04	1.50E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	4.50E+02	4.50E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	5.70E+00	5.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	6.70E+00	6.70E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	1	1	9.70E-02	9.70E-02	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	1	1	7.70E+03	7.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	1.90E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.90E-06	2.90E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1

Table U-26
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: EEG-109

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
2,4,5-T	1	1	3.20E+00	3.20E+00	No	4.20E-01	Yes	No	3.60E+02	No	No	<Tier 1
2,4-D	1	1	6.10E+00	6.10E+00	No	ND	--	No	7.00E+01	No	No	<Tier 1
2,4-Dichlorophenol	1	1	2.60E+01	2.60E+01	No	ND	--	No	2.10E+01	Yes	Yes	>Tier 1
2-Chlorophenol	1	1	2.10E+01	2.10E+01	No	ND	--	No	3.50E+01	No	No	<Tier 1
3-Methylphenol/4-Methylphenol	1	1	5.50E+00	5.50E+00	No	ND	--	No	3.50E+02	No	No	<Tier 1
4,4'-DDD	1	1	4.40E-02	4.40E-02	No	ND	--	No	1.10E-01	No	No	<Tier 1
4-Chloroaniline	1	1	5.50E+01	5.50E+01	No	ND	--	No	2.80E+01	Yes	Yes	>Tier 1
4-Methyl-2-pentanone (MIBK)	1	1	5.00E+01	5.00E+01	No	ND	--	No	1.60E+02	No	No	<Tier 1
Alpha Chlordane	1	1	3.80E-02	3.80E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
Aluminum	1	1	1.50E+03	1.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	4.30E+03	4.30E+03	No	1.17E+01	Yes	No	5.00E+01	Yes	Yes	>Tier 1
Barium	1	1	2.10E+01	2.10E+01	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Benzene	1	1	4.40E+01	4.40E+01	No	ND	--	No	5.00E+00	Yes	Yes	>Tier 1
Calcium	1	1	5.30E+05	5.30E+05	Yes	4.27E+05	Yes	Yes	NA	--	No	EN
Chlorobenzene	1	1	2.80E+00	2.80E+00	No	ND	--	No	1.00E+02	No	No	<Tier 1
Chloroform	1	1	7.60E+01	7.60E+01	No	ND	--	No	2.00E-02	Yes	Yes	>Tier 1
Cobalt	1	1	2.20E+02	2.20E+02	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
Copper	1	1	4.40E+01	4.40E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
Dieldrin	1	1	2.90E-03	2.90E-03	No	ND	--	No	2.00E-02	No	No	<Tier 1
Endrin ketone	1	1	9.40E-03	9.40E-03	No	5.21E-02	No	Yes	2.00E+00	No	No	<Tier 1
Gamma Chlordane	1	1	1.00E-02	1.00E-02	No	ND	--	No	2.00E+00	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	1.10E-02	1.10E-02	No	1.01E-02	Yes	No	2.00E-01	No	No	<Tier 1
Iron	1	1	2.90E+05	2.90E+05	Yes	2.20E+04	Yes	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	1.60E+05	1.60E+05	Yes	9.23E+04	Yes	Yes	NA	--	No	EN
Manganese	1	1	1.00E+04	1.00E+04	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Methylene chloride	1	1	3.60E+00	3.60E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Naphthalene	1	1	2.80E+01	2.80E+01	No	ND	--	No	2.50E+01	Yes	Yes	>Tier 1
Nickel	1	1	1.80E+05	1.80E+05	No	1.30E+02	Yes	No	1.00E+02	Yes	Yes	>Tier 1
Pentachlorophenol	1	1	3.70E-01	3.70E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	1	1	2.90E+04	2.90E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	4.70E+04	4.70E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	3.16E-06	3.16E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Trichloroethene	1	1	1.60E+00	1.60E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Xylenes, Total	1	1	3.80E+00	3.80E+00	No	ND	--	No	1.00E+04	No	No	<Tier 1
Zinc	1	1	1.20E+03	1.20E+03	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-27
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: EEG-111

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Aluminum	1	1	5.50E+03	5.50E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	4.20E+00	4.20E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	1	1	4.70E+02	4.70E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chromium	1	1	1.80E+01	1.80E+01	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	1	1	9.30E+00	9.30E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	9.40E+00	9.40E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	9.80E-03	9.80E-03	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
Iron	1	1	1.10E+04	1.10E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	2.90E+04	2.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	4.00E+02	4.00E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	1	1	1.00E+01	1.00E+01	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	1	1	2.40E+01	2.40E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Pentachlorophenol	1	1	1.30E-01	1.30E-01	No	ND	--	No	1.00E+00	No	No	<Tier 1
Potassium	1	1	5.80E+03	5.80E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.80E+04	2.80E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Vanadium	1	1	1.70E+01	1.70E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	3.70E+01	3.70E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-28
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: AA-SW-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Aluminum	2	1	1.37E+03	2.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Barium	2	2	2.05E+02	2.10E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.30E+05	1.40E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	2	1	6.15E+00	7.30E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	2.30E+00	2.30E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Iron	2	2	3.83E+03	6.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	2	1	2.55E+00	2.60E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	2	2	3.20E+04	3.60E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	7.15E+02	1.30E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	2	2	3.50E+00	3.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.39E+01	1.90E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	2	2	4.55E+03	5.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	5.65E+03	6.50E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total PCBs	2	2	1.17E+00	1.18E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	3.99E-06	3.99E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Vanadium	2	1	5.95E+00	6.90E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1

Table U-29
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: L
Well: AA-SW-S3

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
Aluminum	2	2	2.55E+03	4.40E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	2	1	6.95E+00	8.90E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	2	2	2.40E+02	2.90E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.65E+05	1.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	2	2	6.90E+00	8.50E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	4.50E+00	4.50E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Di-n-butylphthalate	1	1	3.20E-01	3.20E-01	No	ND	--	No	7.00E+02	No	No	<Tier 1
Iron	2	2	5.35E+03	6.70E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	2	1	2.60E+00	2.70E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	2	2	3.45E+04	4.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	1.18E+03	2.00E+03	No	1.75E+03	Yes	No	1.50E+02	Yes	Yes	>Tier 1
Molybdenum	2	1	5.65E+00	6.30E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.80E+01	1.90E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	2	2	6.85E+03	7.10E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	7.25E+03	7.70E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total PCBs	2	2	1.17E+00	1.18E+00	No	ND	--	No	5.00E-01	Yes	Yes	>Tier 1
Total TCDD-TEQ	1	1	6.05E-06	6.05E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Trichloroethene	1	1	3.40E-01	3.40E-01	No	ND	--	No	5.00E+00	No	No	<Tier 1
Vanadium	2	1	9.50E+00	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1

Table U-30
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: SGW-S1

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
4,4'-DDD	1	1	4.00E-03	4.00E-03	No	ND	--	No	1.10E-01	No	No	<Tier 1
alpha-BHC	1	1	2.10E-03	2.10E-03	No	ND	--	No	3.00E-02	No	No	<Tier 1
Aluminum	2	2	2.35E+03	4.00E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	2	2	2.85E+01	4.40E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	2	2	3.95E+02	5.40E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	2	2	1.05E+05	1.30E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chromium	2	2	1.12E+01	1.80E+01	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	2	2	8.10E+00	1.20E+01	No	1.14E+01	Yes	No	1.00E+03	No	No	<Tier 1
Copper	2	2	6.55E+00	1.10E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
Dieldrin	1	1	3.20E-03	3.20E-03	No	ND	--	No	2.00E-02	No	No	<Tier 1
gamma-BHC (Lindane)	2	2	3.80E-03	4.10E-03	No	1.01E-02	No	Yes	2.00E-01	No	No	<Tier 1
Heptachlor epoxide	1	1	1.40E-03	1.40E-03	No	2.66E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	2	2	9.80E+03	1.20E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	2	2	9.20E+00	1.50E+01	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	2	2	1.14E+04	1.40E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	1.28E+03	1.70E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Methoxychlor	1	1	5.40E-03	5.40E-03	No	ND	--	No	4.00E+01	No	No	<Tier 1
Molybdenum	2	2	6.05E+00	9.20E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.65E+01	2.70E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	2	2	1.12E+04	1.60E+04	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	1.40E+04	1.50E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Vanadium	2	2	8.90E+00	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	2	2	3.15E+01	5.10E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-31
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: SGW-S2

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Reason
2,4-DB	2	1	4.55E-01	6.60E-01	No	ND	--	No	2.90E+02	No	No	<Tier 1
4,4'-DDE	1	1	2.00E-03	2.00E-03	No	ND	--	No	4.00E-02	No	No	<Tier 1
Aluminum	2	2	3.90E+03	4.60E+03	No	ND	--	No	3.60E+04	No	No	<Tier 1
Arsenic	1	1	4.70E+00	4.70E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	2	2	4.05E+02	4.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
beta-BHC	1	1	2.00E-03	2.00E-03	No	ND	--	No	3.00E-02	No	No	<Tier 1
Calcium	2	2	1.55E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Chromium	2	2	1.01E+01	1.10E+01	No	1.05E+02	No	Yes	1.00E+02	No	No	<Tier 1
Cobalt	2	2	8.60E+00	1.00E+01	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	2	2	5.30E+00	5.90E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Gamma Chlordane	1	1	1.20E-03	1.20E-03	No	ND	--	No	2.00E+00	No	No	<Tier 1
gamma-BHC (Lindane)	1	1	1.70E-03	1.70E-03	No	1.01E-02	No	Yes	2.00E-01	No	No	<Tier 1
Iron	2	2	7.55E+03	8.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	2	2	4.60E+00	4.70E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	2	2	2.70E+04	2.70E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	2	2	7.75E+02	1.20E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Molybdenum	2	1	5.85E+00	6.70E+00	No	ND	--	No	1.80E+02	No	No	<Tier 1
Nickel	2	2	1.90E+01	2.20E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	2	2	5.20E+03	5.60E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	2	2	1.85E+04	1.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	2	2	1.36E-05	1.22E-05	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Vanadium	2	2	1.25E+01	1.40E+01	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	2	2	2.80E+01	3.00E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-32
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: DW-MCDO

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max> Class I?	COPC?	Rationale
Arsenic	1	1	2.90E+01	2.90E+01	No	1.17E+01	Yes	No	5.00E+01	No	No	<Tier 1
Barium	1	1	2.65E+02	2.65E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.00E+05	1.00E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Carbon disulfide	1	1	7.25E+00	7.25E+00	No	8.50E+00	No	Yes	7.00E+02	No	No	<Tier 1
Copper	1	1	1.85E+01	1.85E+01	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	2.90E-03	2.90E-03	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
Fluoranthene	1	1	3.85E-01	3.85E-01	No	ND	--	No	2.80E+02	No	No	<Tier 1
Iron	1	1	1.01E+04	1.01E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Lead	1	1	1.29E+02	1.29E+02	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	1	1	2.20E+04	2.20E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	5.75E+02	5.75E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Phenanthrene	1	1	3.80E-01	3.80E-01	No	ND	--	No	2.10E+03	No	No	<Tier 1
Potassium	1	1	4.05E+03	4.05E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	9.55E+03	9.55E+03	Yes	1.30E+05	No	Yes	NA	--	No	EN
Toluene	1	1	6.35E-01	6.35E-01	No	ND	--	No	1.00E+03	No	No	<Tier 1
Total TCDD-TEQ	1	1	3.45E-06	3.45E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Vanadium	1	1	2.50E+00	2.50E+00	No	ND	--	No	4.90E+01	No	No	<Tier 1
Zinc	1	1	4.05E+03	4.05E+03	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-33
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: DW-SCHM

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
Arsenic	1	1	6.40E+00	6.40E+00	No	1.17E+01	No	Yes	5.00E+01	No	No	<Tier 1
Barium	1	1	2.20E+02	2.20E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.70E+05	1.70E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Copper	1	1	2.80E+00	2.80E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Iron	1	1	1.70E+04	1.70E+04	Yes	2.20E+04	No	Yes	5.00E+03	Yes	No	EN
Magnesium	1	1	3.90E+04	3.90E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.20E+03	1.20E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Potassium	1	1	6.80E+03	6.80E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.20E+04	2.20E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.05E-06	2.05E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Zinc	1	1	1.20E+02	1.20E+02	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-34
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: DW-SETT

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is MAX> BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is MAX> Class I?	COPC?	Reason
Barium	1	1	1.80E+02	1.80E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Calcium	1	1	1.80E+05	1.80E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Carbon disulfide	1	1	1.50E+00	1.50E+00	No	8.50E+00	No	Yes	7.00E+02	No	No	<Tier 1
Cobalt	1	1	3.00E+00	3.00E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	2.60E+00	2.60E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
Iron	1	1	2.40E+03	2.40E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Lead	1	1	2.70E+00	2.70E+00	No	ND	--	No	7.50E+00	No	No	<Tier 1
Magnesium	1	1	4.10E+04	4.10E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	8.60E+02	8.60E+02	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	6.20E+00	6.20E+00	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	5.70E+03	5.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.40E+04	2.40E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Zinc	1	1	7.50E+01	7.50E+01	No	ND	--	No	5.00E+03	No	No	<Tier 1

Table U-35
Comparison of Groundwater Data to TACO Tier I Screening Criteria for Class I Groundwater
Area: RES
Well: DW-WRIG

	Summary Statistics				COPC Selection - Chronic Exposure Screen							
Constituent	Number of Samples	Number of Detects	Average (ug/L)	Maximum (MAX) Detection (ug/L)	Is Constituent an Essential Nutrient (EN)?	Background (BK) Concentration (ug/L)	Is Max > BK?	Pass EN/BK?	TACO Class I Groundwater Criteria (ug/L)	Is Max > Class I?	COPC?	Reason
Barium	1	1	1.30E+02	1.30E+02	No	6.17E+02	No	Yes	2.00E+03	No	No	<Tier 1
Cadmium	1	1	1.00E+00	1.00E+00	No	ND	--	No	5.00E+00	No	No	<Tier 1
Calcium	1	1	1.50E+05	1.50E+05	Yes	4.27E+05	No	Yes	NA	--	No	EN
Cobalt	1	1	4.10E+00	4.10E+00	No	1.14E+01	No	Yes	1.00E+03	No	No	<Tier 1
Copper	1	1	1.10E+00	1.10E+00	No	ND	--	No	6.50E+02	No	No	<Tier 1
delta-BHC	1	1	4.00E-03	4.00E-03	No	1.25E-02	No	Yes	3.00E-02	No	No	<Tier 1
Fluoranthene	1	1	3.60E-01	3.60E-01	No	ND	--	No	2.80E+02	No	No	<Tier 1
Iron	1	1	1.90E+03	1.90E+03	Yes	2.20E+04	No	Yes	5.00E+03	No	No	EN
Lead	1	1	1.50E+01	1.50E+01	No	ND	--	No	7.50E+00	Yes	Yes	>Tier 1
Magnesium	1	1	3.80E+04	3.80E+04	Yes	9.23E+04	No	Yes	NA	--	No	EN
Manganese	1	1	1.10E+03	1.10E+03	No	1.75E+03	No	Yes	1.50E+02	Yes	No	BK
Nickel	1	1	5.30E+01	5.30E+01	No	1.30E+02	No	Yes	1.00E+02	No	No	<Tier 1
Potassium	1	1	5.70E+03	5.70E+03	Yes	1.23E+05	No	Yes	NA	--	No	EN
Sodium	1	1	2.90E+04	2.90E+04	Yes	1.30E+05	No	Yes	NA	--	No	EN
Total TCDD-TEQ	1	1	2.58E-06	2.58E-06	No	5.02E-07	Yes	No	3.00E-05	No	No	<Tier 1
Zinc	1	1	9.50E+02	9.50E+02	No	ND	--	No	5.00E+03	No	No	<Tier 1

TABLE U-36
SUMMARY OF CONSTITUENTS OF POTENTIAL CONCERN
GROUNDWATER - CLASS I (DRINKING WATER) SCENARIO
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

Site	G								H				I							L			Res		
Constituent / Location	AA-GHL-S1	AA-GHL-S2	AA-SW-S1	EEG-101	EEG-106	EEG-107	EEG-112	EE-05	EEG-110	EE-01	EE-02	EE-03	AA-I-S1	AA-I-S2	AA-I-S3	EE-12	EE-13	EE-14	EE-15	EEG-109	AA-SW-S2	AA-SW-S3	SGW-S1	DW-SCDO	DW-WRHS
1,1,2,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	X	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	X	X	--	--	--	X	X	--	X	X	--	X	--	X	X	--	--	--	--	--	--
2,4,5-TP (Silvex)	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	X	--	--	--	--	--	--	--
2,4-D	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	X	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Methylphenol/4-Methylphenol	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4,4'-DDE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	X	--	X	--	X	X	--	X	X	--	X	--	X	--	X	--	--	--	--	--	--
4-Methyl-2-pentanone (MIBK)	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Alpha Chlordane	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
alpha-BHC	--	--	--	--	X	X	--	--	--	--	X	--	X	--	--	X	--	X	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	X	--	--	--	X	--	X	--	--	--	--	--	--	X	--	--	--	--	--
Benzene	--	--	--	--	X	X	--	X	--	X	X	--	X	X	--	X	--	X	--	X	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Beta-BHC	--	--	--	--	X	--	--	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Carbazole	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	X	X	--	X	--	X	X	--	X	X	--	X	--	X	X	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	X	--	--	--	--	--
Cis/Trans-1,2-Dichloroethene	--	--	--	--	--	X	--	--	--	--	--	--	X	X	--	--	--	X	--	--	--	--	--	--	--
delta-BHC	X	--	--	--	X	X	--	X	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	X	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--
Gamma Chlordane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--
gamma-BHC (Lindane)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Heptachlor	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--
Heptachlor epoxide	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	X	--	X	--	--	--	--	--	--	--
Lead	--	--	X	--	--	X	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	X	X	X
Manganese	--	--	--	X	X	X	--	--	--	--	X	--	X	X	--	X	--	--	--	X	--	X	--	--	--
Molybdenum	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	X	--	X	--	X	X	--	--	--	--	--	--	X	--	X	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	X	X	X	--	--	X	--	--	--	X	--	X	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	X	--	--	--	X	X	X	--	--	--	--	--	X	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	X	--	X	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	X	--	--	--	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs	X	X	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	X	--	--	X	X	--	--	--
Total TCDD-TEQ	--	--	--	--	--	X	--	X	--	X	--	X	--	--	--	X	X	X	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	X	--	X	--	--	X	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	X	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--
Total:	3	1	1	1	7	25	1	12	1	14	24	2	15	18	2	12	1	20	2	8	1	2	1	1	1

Notes:
-- This constituent was not identifed as a constituent of potential concern based on this scenario.
RES - Residential Non-Potable Use Well.

APPENDIX V

ASSESSMENT OF POTENTIAL LEAD EXPOSURES

RESIDENTIAL DRINKING WATER

APPENDIX V

ASSESSMENT OF POTENTIAL LEAD EXPOSURES - RESIDENTIAL DRINKING WATER

Lead was identified as constituent of potential concern (COPC) for the drinking water scenario using TACO Class I standards in Appendix U in two non-potable use residential wells (DW-MCDO, DW-WRIG) within the study area. Lead is the only COPC identified in each well. Therefore, ingestion of groundwater as drinking water was evaluated in the risk assessment. However, it should be noted that neither well is actually used for drinking water. Table V-1 provides a summary of field information collected for each well.

Risk Assessment Approach for Lead

For many compounds associated with known or potential noncarcinogenic health effects, it has been demonstrated that there is a threshold for these effects. It is conventionally assumed for all such compounds that there is a dose below which no adverse effect occurs or, conversely, above which an adverse effect may be seen. For compounds with known or suspected carcinogenic effects, the underlying assumption for all regulatory risk assessment is that there is no threshold for effects. Thus, every dose, no matter how small, is assumed to pose some finite level of risk.

Because of the uncertainties in the dose-response relationship between exposure to lead and biological effects, it is unclear whether the noncarcinogenic effects of lead exhibit a threshold response. Therefore, an RfD for lead is not available. Although USEPA has classified lead as a B2 (probable human) carcinogen, no cancer slope factor (CSF) has been developed. Therefore, potential exposures to lead cannot be evaluated using the traditional methods of risk assessment. However, the USEPA has developed an Integrated Exposure Uptake Biokinetic (IEUBK) model that correlates lead levels in the environment to blood lead levels in children (USEPA, 1994). In addition, a model for assessing adult exposures to lead in multiple environmental media (air, soil, and water) in an industrial/commercial setting is available in the peer reviewed literature (Bowers et al., 1994). The IEUBK model is used to evaluate residential drinking water scenarios.

USEPA IEUBK Model

It is generally believed that increasing blood lead concentrations in children correlate with adverse neurological effects. The IEUBK model is a computer program that links typical risk assessment exposure analysis with a biokinetic model of lead uptake and distribution in the body to enable estimates of blood lead levels that may occur due to overall exposures to lead in the environment. The IEUBK model predicts blood lead levels in children 0-7 years of age due to exposure to lead from multiple sources, including air, water, diet, soil, and maternal sources, and considers differing exposure patterns and physiological changes in the various age groups. Children 0-7 years of age are considered by USEPA to be sensitive receptors for lead exposure because, compared to older

receptors, young children ingest more soil, absorb more lead from the gastrointestinal tract, and are more sensitive to the effects of lead in the bloodstream. The health effects of most concern from lead exposures are impaired mental and physical development in young children. Available evidence suggests that a threshold dose for these effects lies between 10 to 15 micrograms of lead per deciliter of blood (μg/dL) (USEPA, 1994).

Potential risk associated with incidental exposure of a young child (0-7 years of age) to lead as a result of ingestion of groundwater as drinking water was evaluated using USEPA's IEUBK model (version 0.99d) (USEPA, 1994).

Key assumptions in the IEUBK model are briefly discussed below:

Lead In Air: The model assumes a background concentration of lead in outdoor air of 0.1 $\mu g/m^3$ lead (based on the average lead concentration in outdoor air in urban areas in 1990) and in indoor air was assumed to be 30 percent of that for outdoor air or 0.03 $\mu g/m^3$. Age-specific air inhalation rates ranging from 2 to 7 m 3 /day are used to estimate intake of lead via inhalation, and fractional uptake of inhaled lead was assumed to be 0.32.

Lead in the Diet: The model assumes an average ingestion of lead in diet that on an age-specific basis ranges from 0.006 to 0.007 mg lead/day. These values are based on FDA reported dietary lead intake for US children (6 months to 7 years of age) from 1987 to 1994. Fractional uptake of lead ingestion in the diet was assumed to be 0.50.

Lead in Drinking Water: The model assumes a background concentration of lead in drinking water of 4 μg/L. Age-specific drinking water ingestion rates ranging from 0.20 to 0.59 L/day for children ages 6 months to 6 years were used to estimate lead intake and fractional uptake of lead ingested in water was assumed to be 0.50. In order to evaluate site-specific exposure to lead in non-potable groundwater, a site-specific water concentration of 129 μg/L in well DW-MCDO and 15 μg/L in well DW-WRIG were substituted for all age groups evaluated (0-7 years of age).

Lead in Outdoor Soil and Indoor Dust: Age-specific average outdoor soil plus indoor dust ingestion rates ranging from 85 to 135 mg/day are used by the model and it is assumed that 45 percent of total ingestion is from soil and 55 percent is from dust. USEPA recommends that central tendency (average) rates of soil plus dust ingestion be used in IEUBK model, rather than the upper-bound soil plus dust ingestion rate of 200 mg/day. The source of lead in indoor dust is assumed to be lead in outdoor soil, and the concentration of lead in indoor dust is assumed to be 0.7 of that in outdoor soil, based on measured soil-dust relationships at other sites where soil was a major contributor to indoor dust. The fractional uptake of lead from soil and dust was assumed to be 0.30. Lead was not identified as a COPC in soil; however, in order to evaluate potential impacts of cumulative exposure to lead in environmental media at the site, a concentration of 72 mg/kg has been assumed for lead in both soil and indoor dust for the young child resident. This represents the average soil concentration

for Transect 1 and is the highest average lead concentration identified in soil from the three transects (Transects 1, 2, and 3) nearest the two non-potable groundwater wells (DW-MCDO, DW-WRIG) where lead was identified as a COPC.

The IEUBK model calculates a distribution of blood lead concentrations in children, both graphically and in table format. The results are presented in Figure 1 and Table 2 for well DW-MCDO, and in Figure 2 and Table 3 for DW-WRIG.

Well DW-MCDO

As can be seen in Figure 1, 41.7% of young children initially exposed to lead under the condition summarized above are predicted to exhibit blood lead concentrations lower than the acceptable blood lead level of 10 µg/dL, and 58.3% of young children potentially exposed to lead under the condition summarized above are predicted to exhibit blood lead concentrations greater than the acceptable blood lead level of 10 µg/dL. The USEPA regulatory target is at least 95% of young children in a population potentially exposed to lead having blood lead levels below 10 µg/dL. Therefore, under the conditions described above, young children that consume groundwater exclusively from well DW-MCDO as drinking water may experience adverse health effects. However, as noted above, this well is not in fact used for drinking water. As shown in Table 1, the well itself is located in the backyard of the residence. Appendix Q presents an analysis of lead in this well for non-potable uses such as car washing and household use, and indicates no adverse health effects for children.

Well DW-WRIG

As can be seen in Figure 2, 95.3% of young children potentially exposed to lead under the condition summarized above are predicted to exhibit blood lead concentrations lower than the acceptable blood lead level of 10 µg/dL. The USEPA regulatory target is at least 95% of young children in a population potentially exposed to lead having blood lead levels below 10 µg/dL. Therefore, under the conditions described above, no adverse health effects are expected for young children potentially exposed to lead in groundwater. Additionally, as noted above, this well is not in fact used for drinking water.

References

USEPA. 1994. Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children. USEPA, Office of Emergency and Remedial Response, Washington, DC.

TABLE V-1
INFORMATION ON DOMESTIC WELLS SAMPLED
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

McDonald residence, 109 Judith Lane:
location: backyard
sampling method: peristaltic pump
sampled from: top of well casing
depth of well: 18.71 ft.
depth to water: 9.74 ft.
length of water column: 8.97 ft.
other information: 0.62 stickup

Settle residence, 102 Judith Lane
location: backyard
sampling method: well pump
sampled from: pump tap
depth of well: could not access, reportedly 26-30 ft.
depth to water: could not access
length of water column: could not access
other information: none

Wright residence, 100 Judith Lane
location: house basement
sampling method: peristaltic pump
sampled from: top of well casing
depth of well: 25.02 ft.
depth to water: 9.40 ft.
length of water column: 15.62 ft.
other information: 0.36 stickup

Schmidt residence, 104 Judith Lane
location: backyard
sampling method: well pump
sampled from: pump tap
depth of well: could not access, reportedly 49 ft.
depth to water: could not access
length of water column: could not access
other information: none

TABLE V-2
IEUBK MODEL OUTPUT - DRINKING WATER SCENARIO - MCDONALD
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

LEAD MODEL Version 0.99d

AIR CONCENTRATION: 0.100 ug Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 129.00 ug Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil: constant conc.
Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	200.0	200.0
1-2	200.0	200.0
2-3	200.0	200.0
3-4	200.0	200.0
4-5	200.0	200.0
5-6	200.0	200.0
6-7	200.0	200.0

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 ug Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc: 2.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	9.0	17.04	4.18
1-2:	12.6	32.27	6.04
2-3:	12.5	34.48	6.21
3-4:	12.2	35.94	6.40
4-5:	11.8	36.31	4.89
5-6:	11.4	38.11	4.46
6-7:	10.8	39.11	4.27

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.27	10.57	0.00	0.02
1-2:	2.15	24.04	0.00	0.03
2-3:	2.49	25.72	0.00	0.06
3-4:	2.46	27.01	0.00	0.07
4-5:	2.45	28.91	0.00	0.07
5-6:	2.62	30.93	0.00	0.09
6-7:	2.93	31.82	0.00	0.09

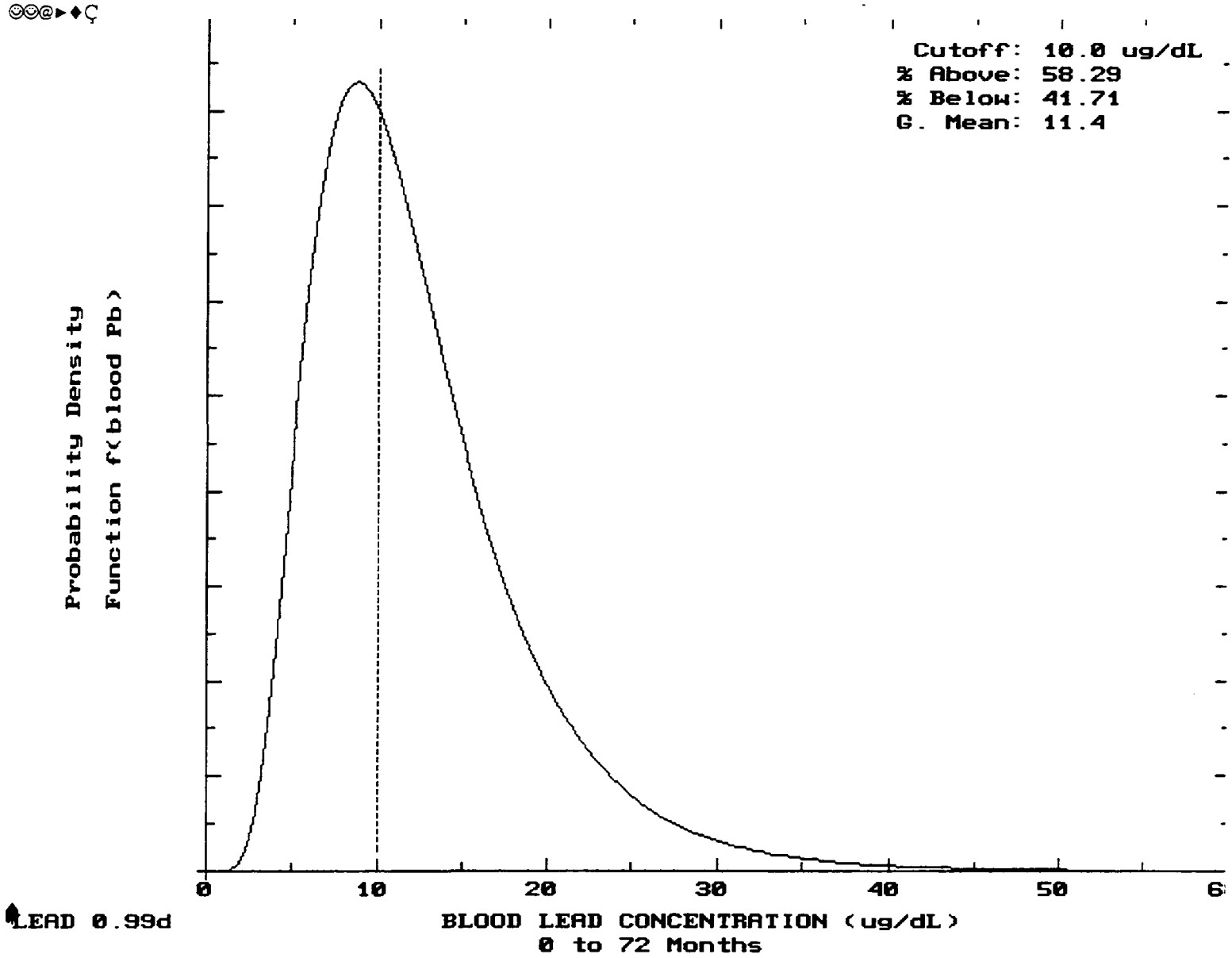

Cutoff: 10.0 ug/dL
% Above: 58.29
% Below: 41.71
G. Mean: 11.4
Probability Density
Function f(blood Pb)
0
10
20
30
40
50
LEAD 0.99d
BLOOD LEAD CONCENTRATION (ug/dL)
0 to 72 Months

TABLE V-3
IEUBK MODEL OUTPUT - DRINKING WATER SCENARIO - WRIGHT
SAUGET AREA 1 - EE/CA AND RI/FS
HUMAN HEALTH RISK ASSESSMENT

LEAD MODEL Version 0.99d

AIR CONCENTRATION: 0.100 ug Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 15.00 ug Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil: constant conc.
Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	200.0	200.0
1-2	200.0	200.0
2-3	200.0	200.0
3-4	200.0	200.0
4-5	200.0	200.0
5-6	200.0	200.0
6-7	200.0	200.0

Additional Dust Sources: None DEFAULT

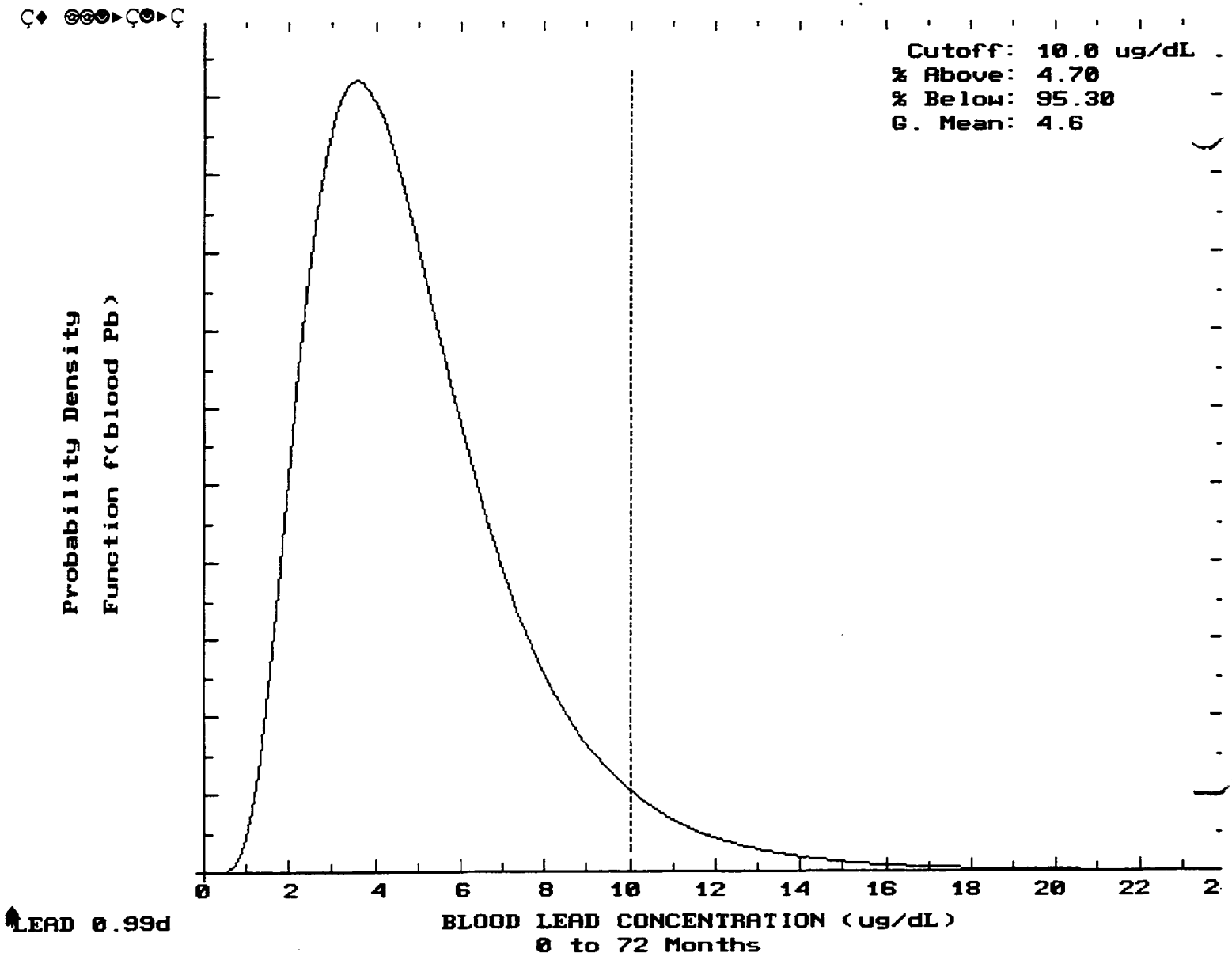
PAINT Intake: 0.00 ug Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc: 2.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	4.6	8.52	4.63
1-2:	5.4	13.16	7.21
2-3:	5.1	13.81	7.30
3-4:	4.9	13.97	7.41
4-5:	4.3	12.34	5.61
5-6:	3.8	12.27	5.09
6-7:	3.5	12.42	4.83

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.51	1.36	0.00	0.02
1-2:	2.57	3.34	0.00	0.03
2-3:	2.93	3.52	0.00	0.06
3-4:	2.85	3.64	0.00	0.07
4-5:	2.81	3.86	0.00	0.07
5-6:	2.99	4.10	0.00	0.09
6-7:	3.31	4.19	0.00	0.09


Cutoff: 10.0 ug/dL
% Above: 4.70
% Below: 95.30
G. Mean: 4.6
Probability Density
Function f(blood Pb)
0
2
4
6
8
10
12
14
16
18
20
22
LEAD 0.99d
BLOOD LEAD CONCENTRATION (ug/dL)
0 to 72 Months