US Army Corps of Engineers
Engineer Research and Development Center
Environmental Laboratory

VOLUME I: Project Report Overview

Sediment Sampling, Biological Analyses, and Chemical Analyses for Eighteenmile Creek AOC, Olcott, New York

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory Environmental Processes Chemistry Branch (EPC) and Environmental Processes Risk Assessment Branch (EPR) provided under MIPR No. W81EU632333137 the personnel, labor, materials, equipment, and laboratory facilities to perform chemical and biological testing on samples collected from Eighteenmile Creek Area of Concern (AOC).

As directed by the USACE technical POC, David Melfi, Buffalo District personnel supplied the fifteen sediment samples and five composites (biological unit sediments) directly to the Environmental Processes Chemistry Branch (EPC). EPR performed sediment bioaccumulation testing on four sediments (EBU-1, EBU-2, EBU-3, and EBU-4) using *Lumbriculus variegatus* according to the test conditions specified in the 1998 Great Lakes Dredged Material Testing and Evaluation Manual. EPC performed bulk chemical analyses following EPA SW846 methodology for the fifteen sediment samples and five composites. EPC contracted with Severn Trent Laboratory (STL), Knoxville, TN, to analyze the fifteen sediment samples for Dioxin. The USACE ERDC Geotechnical and Earthquake Engineering Branch Materials Testing Center performed particle sizing analyses according to ASTM Procedure D422 for the five composite samples.

2.0 LOCATION BACKGROUND

The Eighteenmile Creek AOC is located in the town of Olcott, Niagara county, in western New York state. The creek flows from the south and discharges into Lake Ontario, approximately 18 miles east of the mouth of the Niagara River, through Olcott Harbor. The AOC includes Olcott Harbor at the mouth of the creek and extends upstream to the farthest point at which backwater conditions exist during Lake Ontario's highest monthly average lake level. Restrictions for fish and wildlife consumption are due to PCB and dioxin contamination. The sources include upstream industrial discharges, inactive hazardous waste sites, contaminated sediments, air deposition, and Lake Ontario.

3.0 FIELD PROCEDURES

The Buffalo District Corps of Engineers was responsible for providing sample containers, shipping coolers, personnel, and boat facilities for obtaining surface sediment grab samples from Eighteenmile Creek AOC. The sampler was decontaminated with site water between samples. Grab samples were collected using a 6x6 inch, hand-held, Petite Ponar dredge and a 300 x 300 mm (12" x12") Peterson Grab with a clamshell closing scoop action.

Sediments were removed from samplers and handled using non-contaminating equipment. This included stainless steel bowls and paddles, protective gloves and

clothing, and sterilized laboratory containers. Samples were protected from external sources of contamination, such as fuel and lubricants. Reusable sampling equipment, such as stainless steel bowls, stanless steel paddles, and the grab sampler, were decontaminated after each sampling event by rinsing with site water as stated in the statement of work. The water was subsequently returned to the site along with any excess sediment.

All samples were visually examined and any samples with zebra mussels throughout the sample were discarded as non-representative. In such cases, new samples were taken at adjacent areas. If there was a zebra mussel layer on the sample surface, the zebra mussel layer was removed for the use of the sample. All large objects were removed from the sample. If it was necessary to deviate from any location to obtain a sufficient or representative sample, coordinates of the new location(s) were recorded.

Sample containers were identified unambiguously, and precise computer generated labels were utilized to avoid human error. The labels were secured to the sample containers using clear plastic tape to minimize deterioration during transport. Additionally, jars were marked with indelible markers as a safeguard. Glass jars were placed in bubble wrap bags and sealed. Sample containers were packaged for transport in a manner to maintain their temperature and protect them from breakage or spillage.

3.1 SAMPLE LOCATIONS

The Buffalo District personnel were responsible for all sediment sampling. The latitude and longitude of the sampling sites are provided in Table 1. Sampling sites of the areas are located in Figures 1-3 of Appendix D. A global positioning system (GPS) was used to locate the sampling locations. If it was necessary to deviate from any location to obtain a sufficient or representative sample, coordinates of the new location(s) were recorded. The actual GPS location coordinates were recorded in the field notes along with a description of the sample and water depth. Appendix E contains the sampling field logs.

3.2 SEDIMENT COLLECTION & FIELD NOTES

The Eighteenmile Creek sample locations are listed in Table 1. A global positioning system (GPS) was used to locate the sampling locations. The actual GPS location coordinates were recorded in the field notes along with a description of the sample and water depth. Appendix E contains the sampling field logs.

At each of the sediment sampling sites listed in Table 1, the total volume needed was five quarts plus (5+). One grab provided adequate sample amounts for sampling sites EM-3-12 and EMC-15. The following grabs were required to achieve adequate sample amounts from the following sites: two grabs for sites EMC-2 and EMC-14, three grabs for site EMC-1, and four grabs for site EMC-13.

Material from each site was stored in separate stainless steel pans. In each sampling area, the sediment was homogenized at each site and samples were placed into one 32-ounce jar for sediment chemistry. For site EMC-4, an eight ounce jar was filled for QA PCB testing. At the end of the sampling effort for an entire biological unit, the three separate samples were composited and homogenized following the quartering technique as described in USACE EM 200-1-3 into one sample. From each composite, a three-gallon sample was provided for biological, chemical, and particle size testing.

TABLE 1
Eighteenmile Creek Sample Location Coordinates

Sampling Area	Latitude	Longitude
EMC-1	43° 20.302’	78° 43.107’
EMC-2	43° 20.235’	78° 42.999’
EMC-3	43° 20.147’	78° 42.931’
EMC-4	43° 20.042’	78° 42.976’
EMC-5	43° 19.937’	78° 42.950’
EMC-6	43° 19.829’	78° 42.928’
EMC-7	43° 19.723’	78° 42.976’
EMC-8	43° 19.621’	78° 43.027’
EMC-9	43° 19.517’	78° 43.080’
EMC-10	43° 19.442’	78° 43.017’
EMC-11	43° 19.351’	78° 42.973’
EMC-12	43° 19.282’	78° 42.872’
EMC-13	43° 19.191’	78° 42.853’
EMC-14	43° 19.089’	78° 43.005’
EMC-15	43° 19.012’	78° 42.996’

3.3 CONTROL SEDIMENT COLLECTION

Sediment used as the control sediment was collected from Brown’s Lake located on the property of the ERDC site in Vicksburg, MS. Sediment was collected using a hand shovel, collecting approximately the top 10-cm of the sediment. The sediment was placed in 5 gallon plastic buckets and stored in a cold room at 5°C until use. Analytical chemistry was conducted on the sediment in the spring of 2000. Brown’s Lake sediment was mainly silty material with 1.8% sand, 98.2% fines (clay and silt), and 0.65% total organic carbon. Concentrations of PAHs, heavy metals, and pesticides were either below detection level or at concentrations not associated with adverse effects to aquatic invertebrates.

4.0 CHAIN OF CUSTODY

Fifteen sediment samples (EMC1-15) and five composites (EBU1-5) were properly labeled and packed into three coolers containing cubed ice. Coolers were taped for shipping and signed chain of custody seals were placed on the front and back of each cooler by Buffalo District personnel. The coolers were shipped via Fed-Ex on 28 August 2003 and arrived at the USACE ERDC Environmental Processes Chemistry Branch - Vicksburg on 29 August 2003.

Upon arrival at EPC, the coolers were inspected and were found to have intact chain of custody seals. The temperature of the samples upon arrival ranged from 6-15°C. (Appendix J of Volume II contains copies of the chain-of-custody and cooler receipt records.) Samples were stored at 4°C.

All fifteen sediments (EMC1-15) were sub-sampled for dioxin analysis, mercury, and total organic carbon. The five composites (EBU1-5) were sub-sampled for mercury (Hg) and total organic carbon (TOC). The sub-samples of the sediments and composites were sent on 2 September 2003 to ERDC EPC-Omaha via Fed-Ex overnight express. USACE ERDC EPC-Omaha forwarded the Dioxin samples to Severn Trent Laboratory (STL) of Knoxville, TN on 6 September 2003 via Fed-Ex overnight express. The five composite samples (EBU1-5) were sub-sampled and delivered to USACE ERDC Geotechnical and Earthquake Engineering Branch, Materials Testing Center for particle sizing on 2 September 2003.

The five biological unit composites (EBU1-5) were submitted to EPR on 22 October 2003 for the initiation of the bioaccumulation test. All samples were stored at 4°C.

5.0 QUALITY ASSURANCE & QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) are important for maintaining the integrity of sampling efforts, laboratory processes, and data. Proper QA/QC ensures the reliability of the data by requiring monitoring and measurement of prescribed standards of performance.

EPC followed the QA/QC guidelines established by EPA SW846 methodology except for particle sizing. A laboratory control sample (LCS) was generated for each analysis using a spiked representative matrix. In addition to the LCS, a matrix spike and matrix spike duplicate (MS/MSD) were analyzed. The analysis of a matrix spike provides information concerning sample interferences as well as precision and accuracy. According to the scope of work, sample EMC-4 was to be used for QA/QC purposes for the polychlorinated biphenyl (PCB) analysis. Relative percent differences (RPDs) are calculated using the data acquired from the MS/MSD and sample/sample duplicate. Appendix C of Volume II contains the QA/QC summaries for the sediment and tissue data.

6.0 CHEMICAL ANALYSES

Chemical analyses were performed using the Eighteenmile Creek sediments and tissues. Summaries of the sediment and tissue data are located in Appendices A and B.

The USACE ERDC Environmental Processes Chemistry Branch performed all chemical analyses except for particle sizing, which was performed by USACE ERDC Geotechnical and Earthquake Engineering Branch, Materials Testing Center and dioxin, which was contracted to Severn Trent Laboratory (STL) of Knoxville, TN. All analyses followed EPA SW846 methodology except for particle sizing, which followed ASTM Procedure D422. TOC analysis followed EPA SW846 method 9060 modified according to manufacturer suggestions. As found in the scope of work (Volume II, Appendix I), a summary of the analyses performed including the required reporting limits is listed in Table 2.

As outlined in the scope of work (Volume II, Appendix I), the required chemical and toxicological testing is listed in Table 3. Tables summarizing the chemical analytical results for each sediment and tissue sample are located in Appendices A and B. The laboratory reports, summaries of each analysis, and toxicological data are provided in Volume II.

Table 2. Required Parameters, Methodology, and Reporting Limits

Parameter	Method	Reporting Limits
	Sediments	**mg/kg (dry wt)**
Metals (TAL)	6010B	0.050
Mercury	7471	0.025
Total Organic Carbon (TOC)	9060 Modified	500
PCBs, Congeners	8082	0.010
Pesticides	8081A	0.010
Dioxin	9060	0.000002
	Tissue	**mg/kg (wet wt)**
Metals (TAL)	6020/6010B	0.025
Mercury	7470A	0.0040
PCBs, Summation of Ind. Congeners	8082	0.025
Pesticides	8081A	0.025
Lipid	Van Handel (1985)-IR	1 µg

TABLE 3

EIGHTEENMILE CREEK
2003 TESTING

	Sediment						Biological				
	Metals	**Dioxin**	**Pest**	**PCB**	**TOC**	**Particle**	**Lv**	**Metals**	**PCB**	**Pest**	**Lipid**
EMC-1	X	X	X	X	X						
EMC-2	X	X	X	X	X						
EMC-3	X	X	X	X	X						
EBU-1	X		X	X	X	X	X	X	X	X	X
EMC-4	X	X	X	X	X						
EMC-4 QA				X							
EMC-5	X	X	X	X	X						
EMC-6	X	X	X	X	X						
EBU-2	X		X	X	X	X	X	X	X	X	X
EMC-7	X	X	X	X	X						
EMC-8	X	X	X	X	X						
EMC-9	X	X	X	X	X						
EBU-3	X		X	X	X	X	X	X	X	X	X
EMC-10	X	X	X	X	X						
EMC-11	X	X	X	X	X						
EMC-12	X	X	X	X	X						
EBU-4	X		X	X	X	X	X	X	X	X	X
EMC-13	X	X	X	X	X						
EMC-14	X	X	X	X	X						
EMC-15	X	X	X	X	X						
EBU-5	X		X	X	X	X	X	X	X	X	X
TOTALS	**20**	**15**	**20**	**21**	**20**	**5**	**5**	**25**	**25**	**25**	**26**

6.1 POLYCHLORINATED BIPHENYLS (PCBs)

Polychlorinated biphenyls (PCBs) are synthetic organic chemicals that are composed of 209 congeners. PCBs are no longer manufactured and are banned in the United States. PCBs were used in a variety of applications including heating coils, lubricating oils, fluids in transformers, and varnishes. The PCBs were released into the environment through weathering, smokestacks, burning, leaching, and leakage. PCBs do not degrade in the environment, are extremely toxic, and bioaccumulate in the fatty tissues of animals.

6.2 DIOXIN

Dioxin is the common name used to refer to the chemical 2,3,7,8-tetrachlorodibenzo-p-dioxin or TCDD. In addition to dioxin itself there are other

compounds, such as the polychlorinated dibenzodioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and some polychlorinated biphenyls (PCBs), that have similar structures and activity as dioxin. These are often commonly referred to as dioxin-like compounds or "dioxins". Dioxins are chemical contaminants that have no commercial usefulness by themselves. They are formed during combustion processes, such as waste incineration, forest fires and backyard trash burning, and during manufacturing processes such as herbicide manufacture and paper manufacture. Dioxins are highly toxic, cause cancer, and alter reproductive, developmental, and immune function. Dioxins are very slowly removed from the body and accumulate in fat tissue.

6.3 PESTICIDES

Pesticides are any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. There are four types of chemical pesticides. Organophosphate and carbamate pesticides affect the nervous system by disrupting the enzyme that regulates acetylcholine. Most organophosphates are insecticides. Pyrethroid Pesticides were developed as a synthetic version of the naturally occurring pesticide pyrethrin, which is found in chrysanthemums.

The pyrethroids were modified to increase their stability in the environment and some are toxic to the nervous system. Organochlorine insecticides were commonly used in the past, but many have been removed from the market due to their health and environmental affects. Organochlorine insecticides such as DDT and chlordane are very persistent in nature. Pesticides can become concentrated, perhaps to toxic levels, via the food chain. This is especially problematic with pesticides that are fat-soluble and highly persistent, including DDT and other organochlorines.

6.4 METALS

Metals can be found in all natural waters and sediments. Metals may also enter the environment from wastewater discharges from plants, mining operations, and metal works. Certain metals, such as lead and mercury, can bioaccumulate in tissues.

6.5 TOTAL ORGANIC CARBON (TOC)

Total organic matter affects biogeochemical processes, nutrient cycling, biological availability, chemical transport, and interactions in aquatic systems. High TOC values are associated with an increase in oxygen consumption in aquatic systems. These high values will lead to an increase in microbial growth that may cause oxygen depletion. Organic matter may be from natural substances and/or from contaminated sources such as PAHs or PCBs. Organics may enter aquatic systems from accidental releases, industrial waste streams, and runoff from rainfall.

6.6 PARTICLE SIZING

Particle size distribution is a method of soil or sediment classification. Particle size distribution is related to the concentration of organic carbon in the sediment and therefore is also related to contaminant bioavailability (e.g., contaminants are more bioavailable in sandy sediments than in muddy sediments).

7.0 BIOACCUMULATION STUDIES

The U.S. Army Corps of Engineers Engineer Research and Development Center Environmental Processes Risk Assessment Branch (EPR) performed all biological testing using the contaminated sediments and control sediment collected from Brown's Lake located on the property of the ERDC site in Vicksburg, MS. Bioaccumulation tests for sediments were conducted according to guidelines provided in the USEPA/U.S. Army Corps of Engineers 1998 *Great Lakes Dredged Material Testing and Evaluation Manual.*

7.1 TEST ORGANISMS

The freshwater oligochaete *Lumbriculus variegatus* was used in the 28-day bioaccumulation experiment. Organisms were obtained from a commercial vendor (Aquatic Bio Systems Inc., Fort Collins, Colorado). Flow-through culture conditions were maintained according to standard procedures (USEPA 2000).

7.2 EXPOSURE

Lumbriculus variegatus 28-day bioaccumulation test for sediments was conducted according to guidelines provided in the USEPA/U.S. Army Corps of Engineers 1998 *Great Lakes Dredged Material Testing and Evaluation Manual.* Five replicates of each sediment collection site were used. Tests were conducted under flow-through conditions in box aquaria (31 ½ x 18 x 10 ½ cm). Test and control sediments were added to each aquarium to have a final sediment thickness of 2.5 cm. A water splitter chamber delivered test water provided by an automated water delivery system to the test chambers every 12 hours (1600 ml/cycle). At the initiation of the bioaccumulation test, organisms equaling 5 g of wet tissue were added to each chamber. Animals were not fed during the experiment. Light aeration was provided to maintain dissolved oxygen concentrations. Temperature was maintained at 23±1°C and the light:dark photo cycle was 16:8 using white light. Water quality parameters (conductivity, hardness, pH, alkalinity, ammonia, temperature and dissolved oxygen) were measured at test initiation and termination. Temperature and DO were monitored daily. At the end of the 28-day test period, test sediments were sieved to recover the worms and surviving animals placed in glass culture bowls for a 6-hour to depurate the contents of their guts. Animals were then blotted dry, weighed, and frozen at -20°C for chemical and total lipid analysis. Tables 1-6 in Appendix C contain summaries of the biomass, lipids, dry-to-wet weight ratio, and Bioaccumulation studies.

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APPENDIX A

EIGHTEENMILE CREEK AOC

SEDIMENT SUMMARY REPORTS

CHEMISTRY RESULTS

Eighteenmile Creek AOC - Pesticide Sediment Summary Report
Table 1
Results based on dry weights.

Sample ID	Units	Aldrin	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	Q	PPDDT	Heptachlor	Dieldrin	A-Endosulfan	B-Endosulfan
EMC 1	ug/kg	<1.11	<1.11	<1.11	<1.11	<1.11	3.22	<2.22		<2.22	<1.11	<2.22	<1.11	<2.22
EMC 2	ug/kg	<1.68	<1.68	<1.68	<1.68	<1.68	<3.36	17.4		<3.36	<1.68	<3.36	<1.68	<3.36
EMC 3	ug/kg	<2.44	<2.44	<2.44	<2.44	<2.44	<4.87	33.3		<4.87	<2.44	<4.87	<2.44	<4.87
EBU 1	ug/kg	<1.81	<1.81	<1.81	<1.81	<1.81	<3.61	16.2		<3.67	<1.81	<3.61	<1.81	<3.61
EMC 4	ug/kg	<2.20	<2.20	<2.20	<2.20	<2.20	<4.40	27.9		<4.40	<2.20	<4.40	<2.20	<4.40
EMC 5	ug/kg	<1.99	<1.99	<1.99	<1.99	<1.99	<3.97	25.8		<3.97	<1.99	<3.97	<1.99	<3.97
EMC 6	ug/kg	<1.59	<1.59	<1.59	<1.59	<1.59	<3.18	16.3		<3.18	<1.59	<3.18	<1.59	<3.18
EBU 2	ug/kg	<1.91	<1.91	<1.91	<1.91	<1.91	<3.83	22.5		<3.83	<1.91	<3.83	<1.91	<3.83
EMC 7	ug/kg	<1.85	<1.85	<1.85	<1.85	<1.85	<3.71	6.75		<3.71	<1.85	<3.71	<1.85	<3.71
EMC 8	ug/kg	<1.68	4.42	<1.68	<1.68	<1.68	<3.36	29.2		<3.36	<1.68	<3.36	<1.68	<3.36
EMC 9	ug/kg	<1.69	<1.69	<1.69	<1.69	<1.69	<3.39	20		<3.39	<1.69	<3.39	<1.69	<3.39
EBU 3	ug/kg	<1.82	<1.82	<1.82	<1.82	<1.82	<3.64	14.1	#	<3.64	<1.82	<3.64	<1.82	<3.64
EMC 10	ug/kg	<1.52	<1.52	<1.52	<1.52	<1.52	<3.03	11		<3.03	<1.52	<3.03	<1.52	<3.03
EMC 11	ug/kg	<1.38	<1.38	<1.38	<1.38	<1.38	<2.76	9.75		<2.76	<1.38	<2.76	<1.38	<2.76
EMC 12	ug/kg	<2.44	<2.44	<2.44	<2.44	<2.44	13.7	37.3		<4.88	<2.44	<4.88	<2.44	<4.88
EBU 4	ug/kg	<1.76	<1.76	<1.76	<1.76	<1.76	10.7	22.7		<3.52	<1.76	<3.52	<1.76	<3.52
EMC 13	ug/kg	<1.62	<1.62	<1.62	<1.62	<1.62	<3.24	3.24		<3.24	<1.62	<3.24	<1.62	<3.24
EMC 14	ug/kg	<1.21	<1.21	<1.21	<1.21	<1.21	<2.42	6.65		<2.42	<1.21	<2.42	<1.21	<2.42
EMC 15	ug/kg	<1.75	<1.75	<1.75	<1.75	<1.75	10.4	16.2		<3.50	<1.75	<3.50	<1.75	<3.50
EBU 5	ug/kg	<1.32	<1.32	<1.32	<1.32	<1.32	<2.63	4.07	#	<2.63	<1.32	<2.63	<1.32	<2.63

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
= Data qualified due to >40% difference between results on primary and secondary columns.

Rocky River Harbor - Pesticide Sediment Summary Report
Table 1
Results based on dry weights.

Sample ID	Units	Endosulfan sulfate	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene
EMC 1	ug/kg	<2.22	<2.22	<2.22	<1.11	<11.1	<11.1	<22.2
EMC 2	ug/kg	<3.36	<3.36	<3.36	<1.68	<16.8	<16.8	<33.6
EMC 3	ug/kg	<4.87	<4.87	<4.87	<2.44	<24.4	<24.4	<48.8
EBU 1	ug/kg	<3.61	<3.61	<3.61	<1.81	<18.1	<18.1	<36.2
EMC 4	ug/kg	<4.40	<4.40	<4.40	<2.20	<22.0	<22.0	<44.4
EMC 5	ug/kg	<3.97	<3.97	<3.97	<1.99	<19.9	<19.9	<39.8
EMC 6	ug/kg	<3.18	<3.18	<3.18	<1.59	<15.9	<15.9	<31.8
EBU 2	ug/kg	<3.83	<3.83	<3.83	<1.91	<19.1	<19.1	<38.2
EMC 7	ug/kg	<3.71	<3.71	<3.71	<1.85	<18.5	<18.5	<37.0
EMC 8	ug/kg	<3.36	<3.36	<3.36	<1.68	<16.8	<16.8	<33.6
EMC 9	ug/kg	4.12	<3.39	<3.39	<1.69	<16.9	<16.9	<33.8
EBU 3	ug/kg	<3.64	<3.64	<3.64	<1.82	<18.2	<18.2	<36.4
EMC 10	ug/kg	2.64	<3.03	<3.03	<1.52	<15.2	<15.2	<30.4
EMC 11	ug/kg	2.46	<2.76	<2.76	<1.38	<13.8	<13.8	<27.6
EMC 12	ug/kg	<4.88	<4.88	<4.88	<2.44	<24.4	<24.4	<48.8
EBU 4	ug/kg	3.65	<3.52	<3.52	<1.76	<17.6	<17.6	<35.2
EMC 13	ug/kg	<3.24	<3.24	<3.24	<1.62	<16.2	<16.2	<32.4
EMC 14	ug/kg	<2.42	<2.42	<2.42	<1.21	<12.1	<12.1	<24.2
EMC 15	ug/kg	2.86	<3.50	<3.50	<1.75	<17.5	<17.5	<35.0
EBU 5	ug/kg	<2.63	<2.63	<2.63	<1.32	<13.2	<13.2	<26.4

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
= Data qualified due to >40% difference between results on primary and secondary columns.

Eighteenmile Creek AOC - PCB Sediment Summary Report
Table 2
Results based on dry weights.

Sample ID	Units	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
EMC 4 QA	ug/kg	<20.4	<20.4	<20.4	<20.4	718	<20.4	<20.4

Notes:

= BRL

BRL = Below Reporting Limit

Eighteenmile Creek AOC - PCB Congener Sediment Summary Report
Table 3
Results based on dry weights.

Sample ID	Units	PCB 15	PCB 18	PCB 31	Q	PCB 40	Q	PCB 44	Q	PCB 49	PCB 52	PCB 54	PCB 60	Q	PCB 77	Q	PCB 86	PCB 87	PCB 97
EMC 1	ug/kg	NR	1.94	3.13	C	0.62	C	2.92	C	3.91	5.86	<0.90	0.34	C	0.35	C	NR	NR	NR
EMC 2	ug/kg	NR	3.01	4.77	C	1	C	4.89	C	6.66	9.26	<1.34	0.55	C	0.49	C	NR	NR	NR
EMC 3	ug/kg	NR	20.3	34.2	C	9.37	C	40.2	C	47.9	69.7	<1.96	5.21	C	2.61	C	NR	NR	NR
EBU 1	ug/kg	NR	14.1	22.8	C	5.67	C	25.5	C	32.4	45	<1.44	3.57	C	1.62	C	NR	NR	NR
EMC 4	ug/kg	NR	23.2	31.8	C	9.56	C	34.1	C	38.1	50.5	<1.76	1.57	C	2.12	C	NR	NR	NR
EMC 4 QA	ug/kg	NR	31.7	45.7	C	11.1	C	47.6	C	54.2	71.4	<1.68	3.77	C	2.22	C	NR	NR	NR
EMC 5	ug/kg	NR	17.2	25.5	C	5.99	C	26.4	C	32.6	44.2	<1.60	2.26	C	2.08	C	NR	NR	NR
EMC 6	ug/kg	NR	12.9	20.8	C	4.48	C	20	C	24.7	33	<1.28	2.1	C	1.46	C	NR	NR	NR
EBU 2	ug/kg	NR	15.3	21.9	C	5.47	C	24.2	C	29	39	<1.54	2.04	C	1.82	C	NR	NR	NR
EMC 7	ug/kg	NR	4.29	6.44	C	1.57	C	7.29	C	9.67	13.3	<1.48	1.01	C	0.63	C	NR	NR	NR
EMC 8	ug/kg	NR	41.5	58.8	C	11.3	C	51.4	C	51.4	68.5	<1.34	3.81	C	3.32	C	NR	NR	NR
EMC 9	ug/kg	NR	10.8	21.3	C	4.34	C	20.2	C	26.1	36.8	<1.36	2.65	C	1.59	C	NR	NR	NR
EBU 3	ug/kg	NR	24	34.2	C	6.92	C	30.6	C	33.4	45.6	<1.46	2.09	C	2.78	C	NR	NR	NR
EMC 10	ug/kg	NR	15.1	27.1	C	5.59	C	24.8	C	30.6	42.3	<1.22	3.16	C	2.24	C	NR	NR	NR
EMC 11	ug/kg	NR	7.68	14.2	C	3.13	C	13.9	C	18	24.8	<1.10	2.36	C	1.09	C	NR	NR	NR
EMC 12	ug/kg	NR	32.3	65	C	14.3	C	59.2	C	72.7	100	<1.94	8.13	C	4.2	C	NR	NR	NR
EBU 4	ug/kg	NR	16.5	34.2	C	7.1	C	32.5	C	38.9	55.5	<1.40	3.81	C	1.78	C	NR	NR	NR
EMC 13	ug/kg	NR	2.63	5.1	C	0.78	C	4.27	C	5.11	8.9	<1.30	0.45	C	0.51	C	NR	NR	NR
EMC 14	ug/kg	NR	2.75	6.69	C	1.27	C	5.96	C	7.34	12.7	<0.96	1.82	C	0.53	C	NR	NR	NR
EMC 15	ug/kg	NR	10.2	16.5	C	4.32	C	16.7	C	19	30.3	<1.40	1.38	C	1.03	C	NR	NR	NR
EBU 5	ug/kg	NR	2.46	5.84	C	0.95	C	4.82	C	5.85	10.2	<1.06	1.03	C	0.49	C	NR	NR	NR

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Eighteenmile Creek AOC - PCB Congener Sediment Summary Report
Table 3
Results based on dry weights.

Sample ID	Units	PCB 101	PCB 103	PCB 105	Q	PCB 114	PCB 118	Q	PCB 121	PCB 128	PCB 129	Q	PCB 138	Q	PCB 141	Q	PCB 143	PCB 151	Q	PCB 153
EMC 1	ug/kg	2.4	<0.90	0.77	C	0.45	2.28		<0.90	<0.90	<0.90		1.42	C	<0.90		<0.90	<0.90		NR
EMC 2	ug/kg	3.86	<1.34	1.28	C	0.82	3.88		<1.34	0.49	<1.34		2.35	C	<1.34		<1.34	<1.34		NR
EMC 3	ug/kg	24.6	<1.96	9.64	C	<1.96	21		<1.96	3.15	0.97	C	14.3	C	<1.96		<1.96	<1.96		NR
EBU 1	ug/kg	15.4	<1.44	5.74	C	<1.44	12.6		<1.44	1.71	<1.44		7.98	C	<1.44		<1.44	<1.44		NR
EMC 4	ug/kg	19.7	<1.76	5.12	C	<1.76	15		<1.76	2	0.9	C	9.55	C	<1.76		<1.76	<1.76		NR
EMC 4 QA	ug/kg	20.1	<1.68	4.72	C	<1.68	15.3		<1.68	2.3	<1.68		9.75	C	3.67	C	<1.68	<1.68		NR
EMC 5	ug/kg	20.9	<1.60	7.3	C	<1.60	15.1		<1.60	<1.60	0.6	C	14.6	C	<1.60		<1.60	<1.60		NR
EMC 6	ug/kg	13.5	<1.28	4.35	C	<1.28	10.8		<1.28	1.45	0.43	C	7.16	C	<1.28		<1.28	<1.28		NR
EBU 2	ug/kg	17	<1.54	4.97	C	<1.54	12.8		<1.54	1.82	<1.54		8.56	C	<1.54		<1.54	<1.54		NR
EMC 7	ug/kg	5.87	<1.48	1.91	C	<1.48	4.91	#	<1.48	0.81	<1.48		3.21	C	<1.48		<1.48	<1.48		NR
EMC 8	ug/kg	28.6	<1.34	6.82	C	<1.34	22.3		<1.34	3.49	0.65	C	14.7	C	5.08	C	<1.34	<1.34		NR
EMC 9	ug/kg	14.4	<1.36	5.49	C	<1.36	12		<1.36	1.88	<1.36		7.33	C	<1.36		<1.36	1.75		NR
EBU 3	ug/kg	19.4	<1.46	5.61	C	<1.46	16		<1.46	2.28	<1.46		9.89	C	<1.46		<1.46	2.58		NR
EMC 10	ug/kg	11.7	<1.22	3.42	C	<1.22	9.25		<1.22	1.47	0.86	C	6.03	C	<1.22		<1.22	<1.22		NR
EMC 11	ug/kg	10.4	<1.10	3.69	C	<1.10	8.14		<1.10	1.27	<1.10		5.22	C	<1.10		<1.10	1.27		NR
EMC 12	ug/kg	30.2	<1.94	10.6	C	<1.94	23.1		<1.94	3.96	0.9	C	15.5	C	<1.94		<1.94	<1.94		NR
EBU 4	ug/kg	16.5	<1.40	6.17	C	<1.40	13.4		<1.40	1.97	<1.40		9.11	C	<1.40		<1.40	<1.40		NR
EMC 13	ug/kg	2.9	<1.30	1.14	C	<1.30	2.05		<1.30	<1.30	<1.30		1.74	C	<1.30		<1.30	<1.30		NR
EMC 14	ug/kg	7.59	<0.96	3.1	C	0.35	6.54		<0.96	1.18	<0.96		5.07	C	<0.96		<0.96	0.89	C	NR
EMC 15	ug/kg	13.4	<1.40	3.16	C	<1.40	9.97		<1.40	2.04	<1.40		8.44	C	3.93	C	<1.40	<1.40		NR
EBU 5	ug/kg	4.38	<1.06	1.6	C	<1.06	3.27	#	<1.06	0.7	<1.06		3.19	C	<1.06		<1.06	<1.06		NR

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Eighteenmile Creek AOC - PCB Congener Sediment Summary Report
Table 3
Results based on dry weights.

Sample ID	Units	PCB 154	PCB 156	Q	PCB 159	PCB 170	PCB 171	PCB 173	Q	PCB 180	PCB 182	Q	PCB 183	Q	PCB 185	Q	PCB 187	Q	PCB 189
EMC 1	ug/kg	<0.90	NR	C	NR	<0.90	NR	<0.90		<0.90	<0.90		<0.90		<0.90		0.45	C	<0.90
EMC 2	ug/kg	<1.34	NR	C	NR	<1.34	NR	<1.34		<1.34	<1.34		<1.34		<1.34		0.83	C	<1.34
EMC 3	ug/kg	<1.96	2.05	C	NR	<1.96	NR	<1.96		<1.96	<1.96		1.37	C	0.86	C	4.43	C	<1.96
EBU 1	ug/kg	<1.44	1	C	NR	<1.44	NR	<1.44		<1.44	<1.44		0.89	C	0.71	C	2.37	C	<1.44
EMC 4	ug/kg	<1.76	1.22	C	NR	<1.76	NR	<1.76		<1.76	<1.76		1.1	C	2	C	3.35	C	<1.76
EMC 4 QA	ug/kg	<1.68	1.31	C	NR	<1.68	NR	<1.68		<1.68	<1.68		1.2	C	0.84	C	3.37	C	<1.68
EMC 5	ug/kg	<1.60	1.32	C	NR	<1.60	NR	<1.60		<1.60	<1.60		1.14	C	0.9	C	5.67	C	<1.60
EMC 6	ug/kg	<1.28	0.84	C	NR	<1.28	NR	<1.28		<1.28	<1.28		0.69	C	0.61	C	2.19	C	<1.28
EBU 2	ug/kg	<1.54	0.97	C	NR	<1.54	NR	<1.54		<1.54	<1.54		0.87	C	0.82	C	2.89	C	<1.54
EMC 7	ug/kg	<1.48	NR	C	NR	<1.48	NR	<1.48		<1.48	<1.48		<1.48		<1.48		1.07	C	<1.48
EMC 8	ug/kg	<1.34	2.29	C	NR	<1.34	NR	0.46	C	9.06	4.82	C	1.47		3.49	C	5.27	C	<1.34
EMC 9	ug/kg	<1.36	<1.36	C	NR	<1.36	NR	<1.36		<1.36	<1.36		0.72	C	<1.36		2.12	C	<1.36
EBU 3	ug/kg	<1.46	1.37	C	NR	<1.46	NR	<1.46		<1.46	<1.46		1.15	C	0.74	C	2.9	C	<1.46
EMC 10	ug/kg	<1.22	NR	C	NR	<1.22	NR	<1.22		<1.22	<1.22		0.62	C	0.69	C	<1.22		<1.22
EMC 11	ug/kg	<1.10	NR	C	NR	<1.10	NR	<1.10		<1.10	<1.10		0.57	C	0.47	C	1.42	C	<1.10
EMC 12	ug/kg	<1.94	1.96	C	NR	<1.94	NR	<1.94		<1.94	<1.94		1.51	C	0.92	C	3.36	C	<1.94
EBU 4	ug/kg	<1.40	NR	C	NR	<1.40	NR	<1.40		<1.40	<1.40		0.71	C	1.36	C	2.89	C	<1.40
EMC 13	ug/kg	<1.30	<1.30	C	NR	<1.30	NR	<1.30		<1.30	<1.30		<1.30		<1.30		<1.30		<1.30
EMC 14	ug/kg	<0.96	0.71	C	NR	<0.96	NR	<0.96		<0.96	<0.96		0.34	C	<0.96		0.79	C	<0.96
EMC 15	ug/kg	<1.40	<1.40	C	NR	<1.40	NR	<1.40		<1.40	3.78	C	0.89	C	1.15	C	4.44	C	<1.40
EBU 5	ug/kg	<1.06	<1.06	C	NR	<1.06	NR	<1.06		<1.06	2.26	C	<1.06		<1.06		1.07	C	<1.06

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Eighteenmile Creek AOC - PCB Congener Sediment Summary Report
Table 3
Results based on dry weights.

Sample ID	Units	PCB 191	PCB 194	PCB 195	Q	PCB 196	Q	PCB 199	PCB 201	Q	PCB 202	Q	PCB 203	Q	PCB 205	PCB 206	PCB 207	PCB 208	Q	PCB 155
EMC 1	ug/kg	<0.90	<0.90	<0.90		<0.90		<0.90	<0.90		<0.90		<0.90		<0.90	<0.90	<0.90	<0.90		<0.90
EMC 2	ug/kg	<1.34	<1.34	<1.34		<1.34		<1.34	<1.34		<1.34		<1.34		<1.34	<1.34	<1.34	0.46	C	<1.34
EMC 3	ug/kg	<1.96	0.91	1.11	C	<1.97		<1.97	2.12		<1.97		0.86	C	<1.97	<1.97	<1.97	1.57	C	<1.97
EBU 1	ug/kg	<1.44	<1.44	0.63	C	<1.44		<1.44	0.96		<1.44		<1.44		<1.44	<1.44	<1.44	0.86	C	<1.44
EMC 4	ug/kg	<1.76	<1.76	0.91	C	<1.76		<1.76	1.47		<1.76		0.74	C	<1.76	<1.76	<1.76	1.66	C	<1.76
EMC 4 QA	ug/kg	<1.68	1.47	1.1	C	<1.68		<1.68	1.9		<1.68		0.73	C	<1.68	2.64	<1.68	2.02	C	<1.68
EMC 5	ug/kg	<1.60	1.15	0.78	C	0.59	C	<1.60	1.26	C	<1.60		0.76	C	<1.60	<1.60	<1.60	1.14	C	<1.60
EMC 6	ug/kg	<1.28	<1.28	0.57	C	0.44	C	<1.28	1.06	C	<1.28		<1.28		<1.28	<1.28	<1.28	1.11	C	<1.28
EBU 2	ug/kg	<1.54	0.75	0.69	C	<1.54		<1.54	1.23	C	<1.54		<1.54		<1.54	<1.54	<1.54	1.34	C	<1.54
EMC 7	ug/kg	<1.48	<1.48	<1.48		<1.48		<1.48	<1.48		<1.48		<1.48		<1.48	<1.48	<1.48	<1.48		<1.48
EMC 8	ug/kg	<1.34	1.98	2.32	C	0.77	C	<1.34	2.78		0.89	C	1.33	C	<1.34	8.12	1.88	3.95	C	<1.34
EMC 9	ug/kg	<1.36	<1.36	0.59	C	<1.36		<1.36	<1.36		0.85	C	<1.36		<1.36	<1.36	<1.36	<1.36		<1.36
EBU 3	ug/kg	<1.46	<1.46	0.91	C	0.61	C	<1.46	1.81		<1.46		1.11	C	<1.46	<1.46	2.4	<1.46		<1.46
EMC 10	ug/kg	<1.22	<1.22	0.53	C	0.5	C	<1.22	1	C	<1.22		<1.22		<1.22	<1.31	<1.22	1.31	C	<1.22
EMC 11	ug/kg	<1.10	0.57	0.38	C	<1.10		<1.10	0.63	C	<1.10		<1.10		<1.10	0.83	<1.10	<1.10		<1.10
EMC 12	ug/kg	<1.94	1.49	0.87	C	0.65	C	<1.94	1.46	C	<1.94		0.83	C	<1.94	<1.94	<1.94	1.45	C	<1.94
EBU 4	ug/kg	<1.40	<1.40	0.89	C	0.59	C	0.74	<1.40		<1.40		0.68	C	<1.40	<1.40	<1.40	1.49	C	<1.40
EMC 13	ug/kg	<1.30	<1.30	<1.30		<1.30		<1.30	<1.30		<1.30		<1.30		<1.30	<1.30	<1.30	0.52	C	<1.30
EMC 14	ug/kg	<0.96	<0.96	<0.96		<0.96		<0.96	<0.96		<0.96		<0.96		<0.96	<0.96	1.44	0.48	C	<0.96
EMC 15	ug/kg	<1.40	<1.40	<1.40		<1.40		<1.40	3.36	C	<1.40		1.12	C	<1.40	<1.40	<1.40	3.72	C	<1.40
EBU 5	ug/kg	<1.06	<1.06	0.41	C	<1.06		<1.06	<1.06		<1.06		<1.06		<1.06	<1.06	<1.06	0.72	C	<1.06

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Eighteenmile Creek AOC - Metals Sediment Summary Report
Table 4
Results based on dry weights.

Sample ID	Units	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL	ZN
EMC 1	mg/kg	0.143	1.24	0.165	0.0897	8.34	14	82.1	9.58	0.081	0.076	0.056	71.8
EMC 2	mg/kg	0.29	3.39	0.541	0.846	46.3	66	91.6	34.9	0.432	0.626	0.205	302
EMC 3	mg/kg	0.514	4.02	0.755	1.18	70.4	130	162	50.9	0.602	0.828	0.286	485
EBU 1	mg/kg	0.345	3.4	0.523	0.751	41	64.7	102	31.2	0.498	0.47	0.198	328
EMC 4	mg/kg	0.543	4.91	0.755	1.78	101	150	189	72.9	0.582	0.973	0.361	674
EMC 4 MD	mg/kg	0.508	4.65	0.691	1.7	105	156	202	76.66	0.677	0.866	0.352	718
EMC 5	mg/kg	0.516	4.09	0.639	1.3	74.8	115	138	50.8	0.54	0.69	0.269	486
EMC 6	mg/kg	0.393	5.42	0.613	0.934	55.1	86.9	118	54.5	0.437	0.568	0.331	429
EBU 2	mg/kg	0.446	4.13	0.679	1.25	74.1	123	146	56.9	0.45	0.615	0.29	536
EMC 7	mg/kg	0.309	2.34	0.675	0.424	28.2	29.5	37.4	27.4	0.329	0.252	0.163	140
EMC 8	mg/kg	0.743	5.05	0.635	2.46	187	245	321	172	0.508	0.977	0.371	1350
EMC 9	mg/kg	0.457	3.31	0.622	0.9	49.3	75.3	133	47.9	0.281	0.395	0.257	497
EBU 3	mg/kg	0.56	3.75	0.598	1.52	109	157	203	20.5	3.53	0.618	0.288	800
EMC 10	mg/kg	0.463	3.39	0.632	1.1	53.9	91.8	157	59.1	2.88	3.8	2.78	525
EMC 11	mg/kg	0.332	2.99	0.646	0.779	39.1	47.2	84.9	46.9	0.152	0.258	0.215	388
EMC 12	mg/kg	0.462	4.29	0.861	1.07	62	85.8	157	40.6	0.596	0.501	0.253	411
EBU 4	mg/kg	2.97	3.38	0.629	0.898	52.5	73.5	153	47.9	0.319	0.34	0.237	444
EMC 13	mg/kg	0.312	2.02	0.636	0.268	19.1	14.7	26.9	20.5	0.169	0.133	0.114	87.8
EMC 14	mg/kg	0.409	3.03	0.621	0.466	30.5	32.4	89.5	73.4	0.144	0.142	0.135	236
EMC 15	mg/kg	0.739	5.6	0.678	1.62	867	179	322	71.3	0.304	0.621	0.189	776
EBU 5	mg/kg	0.334	2.78	0.604	0.363	102	31.7	69.9	39.9	0.102	0.181	0.126	238

Eighteenmile Creek AOC - Metals Sediment Summary Report
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Results based on dry weights.

Sample ID	Units	AL	BA	CA	CO	FE	MG	MN	K	NA	V
EMC 1	mg/kg	3700	32.4	30900	3.58	8720	4200	447	866	106	7.8
EMC 2	mg/kg	8780	92.3	18000	9.38	17900	6250	386	2820	234	22.4
EMC 3	mg/kg	15250	158	14000	13	30100	7450	629	4010	243	29.3
EBU 1	mg/kg	10800	113	20000	8.77	21200	6270	535	2700	187	20.8
EMC 4	mg/kg	12800	136	14000	13.9	26500	6990	376	3800	193	27.4
EMC 4 MD	mg/kg	14000	141	13600	13.2	28400	6840	392	3620	181	26.5
EMC 5	mg/kg	10900	124	13400	11.7	23600	6320	369	3350	178	23.6
EMC 6	mg/kg	11700	125	15100	11.3	24500	6680	405	3520	165	24.1
EBU 2	mg/kg	12800	137	14300	12.1	25900	6820	409	3570	180	25.3
EMC 7	mg/kg	11400	88.2	6500	11.6	23400	6730	379	3600	155	25.1
EMC 8	mg/kg	11200	145	10900	16.8	27000	6220	508	3380	164	24.6
EMC 9	mg/kg	12800	135	18100	12.8	26200	6470	486	3390	163	23.4
EBU 3	mg/kg	11600	122	10400	13.9	25400	6380	475	3440	158	24.5
EMC 10	mg/kg	11600	105	16800	13.3	24600	6450	400	3820	153	23.2
EMC 11	mg/kg	11400	99.2	16900	12.4	24400	6270	425	3490	175	23.2
EMC 12	mg/kg	13300	151	21000	12.6	28500	7480	624	4290	303	31.4
EBU 4	mg/kg	12800	122	19200	12.3	27600	6410	517	3710	186	23.5
EMC 13	mg/kg	10400	50.6	59200	9.4	21300	5950	313	3420	653	22.5
EMC 14	mg/kg	11000	85.7	31700	11.7	88400	6970	705	3550	397	23.2
EMC 15	mg/kg	10900	108	11000	11.4	24400	7200	320	2820	191	32.9
EBU 5	mg/kg	10700	65.8	12900	11.8	23400	6770	440	3500	463	20.5

Eighteenmile Creek AOC - Mercury and TOC Sediment Summary Report
Table 5
Results based on dry weights.

Sample ID	Units	HG	TOC
EMC 1	mg/kg	0.09	11000
EMC 2	mg/kg	0.15	32000
EMC 3	mg/kg	0.35	47000
EBU 1	mg/kg	0.17	33000
EMC 4	mg/kg	0.47	45000
EMC 5	mg/kg	0.36	44000
EMC 6	mg/kg	0.23	30000
EBU 2	mg/kg	0.33	39000
EMC 7	mg/kg	0.25	35000
EMC 8	mg/kg	0.56	36000
EMC 9	mg/kg	0.16	30000
EBU 3	mg/kg	0.37	36000
EMC 10	mg/kg	0.22	24000
EMC 11	mg/kg	0.12	32000
EMC 12	mg/kg	0.18	48000
EBU 4	mg/kg	0.17	31000
EMC 13	mg/kg	0.022	32000
EMC 14	mg/kg	0.027	18000
EMC 15	mg/kg	0.23	45000
EBU 5	mg/kg	0.044	29000
EBU 5 MD	mg/kg	0.04	26000

Eighteenmile Creek AOC - Dioxin Sediment Summary Report
Table 6
Results based on dry weights.

Sample ID	Units	2378-TCDD	Q	Total TCDD	Q	12378-PeCDD	Q	Total PeCDD	Q	123478-HxCDD	Q	123678-HxCDD	Q	123789-HxCDD	Q
EMC1	pg/g	ND		1.7		ND		1.4	Q	ND		0.63	Q	ND	
EMC2	pg/g	ND		2.9		ND		2.9	Q	ND		1.7	Q	ND	
EMC3	pg/g	ND		2.7	Q	ND		3.2	Q	ND		1.6		ND	
EMC4	pg/g	ND		8.4	Q	0.71	B	11	QB	0.7	Q	5.7		1.8	
EMC5	pg/g	ND		2.1		ND		4.2	Q	0.49	Q	1.9	Q	0.8	Q
EMC6	pg/g	ND		1.3		ND		2	Q	0.35	Q	1.5		0.6	Q
EMC7	pg/g	ND		ND		ND		1	Q	ND		0.9		ND	
EMC8	pg/g	0.6	Q	10	Q	0.94	QB	17	QB	1.9		14		4.6	Q
EMC9	pg/g	ND		5.6	Q	ND		6.3	Q	0.66	Q	3.8		1.7	
EMC10	pg/g	0.72	Q	11	Q	0.46	B	11	QB	1.3	Q	9.8		3.3	
EMC11	pg/g	ND		1.4		ND		2.3	Q	ND		1.9		ND	
EMC12	pg/g	ND		11	Q	ND		18	Q	1.2	Q	7.5		3	Q
EMC13	pg/g	ND		1.1	Q	ND		0.77	Q	ND		ND		ND	
EMC14	pg/g	ND		1.1	Q	ND		1.2	Q	ND		0.88		ND	
EMC15	pg/g	ND		12	Q	ND		21	Q	3.1		20		8.1	

Notes:

= J Value

J Value = Below reporting limit but above detection limit.
Q = Estimated maximum possible concentration (EMPC).
S = Ion Suppression
B = Method blank contamination.
ND = Not detected

Eighteenmile Creek AOC - Dioxin Sediment Summary Report
Table 6
Results based on dry weights.

Sample ID	Units	Total HxCDD	Q	1234678-HpCDD	Q	Total HpCDD	Q	OCDD	Q	2378-TCDF	Q	Total-TCDF	Q	12378-PeCDF	Q
EMC1	pg/g	4.6	QS	16	B	36	B	140	B	1.5	Q	23	Q	ND	
EMC2	pg/g	15	Q	46		100		500	B	2.7	Q	51	Q	0.65	Q
EMC3	pg/g	12		23		48		220	B	3.1	Q	35	Q	ND	
EMC4	pg/g	52	Q	110		220		1100	B	3.6	Q	62	Q	1.4	
EMC5	pg/g	18	Q	43		82		390	B	2.8	Q	33	Q	ND	
EMC6	pg/g	13	Q	25		50		220	B	1.6	Q	24	Q	0.38	Q
EMC7	pg/g	7.7	Q	11		23		110	B	1.5	Q	8	Q	ND	
EMC8	pg/g	100	Q	250		520		2500	B	5	Q	69	Q	1.9	Q
EMC9	pg/g	36	Q	76		160		760	B	3		66	Q	0.89	Q
EMC10	pg/g	69	Q	190		400		1800	B	5.2		79	Q	1.1	Q
EMC11	pg/g	14		42		86		440	B	1.8	Q	43	Q	0.33	Q
EMC12	pg/g	63	Q	140		280		1400	B	6.9	Q	120	Q	2.1	Q
EMC13	pg/g	3.7	Q	7.7		15		74	B	ND		2		ND	
EMC14	pg/g	7.5		17		37		180	B	1.3		18	Q	ND	
EMC15	pg/g	140	Q	320		640		2800	B	4.1	Q	110	Q	2.8	

Notes:

= J Value

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Q = Estimated maximum possible concentration (EMPC).
S = Ion Suppression
B = Method blank contamination.
ND = Not detected

Eighteenmile Creek AOC - Dioxin Sediment Summary Report
Table 6
Results based on dry weights.

Sample ID	Units	23478-PeCDF	Q	Total PeCDF	Q	123478-HxCDF	Q	123678-HxCDF	Q	234678-HxCDF	Q	123789-HxCDF
EMC1	pg/g	0.53	Q	4.9	Q	1		0.3	Q	ND		ND
EMC2	pg/g	1	QB	16	QB	4	QB	1.2	B	1.7	Q	ND
EMC3	pg/g	ND		7.4	Q	2.9	BQ	0.89	B	ND		ND
EMC4	pg/g	1.8	B	38	QB	12	BQ	4.4	QB	2	Q	ND
EMC5	pg/g	0.78	QB	12	BQ	3.7	QB	1.2	QB	ND		ND
EMC6	pg/g	0.44	QB	9.8	QB	2.9	QB	0.74	QB	0.63	Q	ND
EMC7	pg/g	ND		0.89	Q	1.1	QB	0.59	QB	ND		ND
EMC8	pg/g	2.5	B	68	QB	23	BQ	9.8	B	3.6	Q	ND
EMC9	pg/g	1.1	QB	24	QB	6.3	QB	2.5	B	1.2		ND
EMC10	pg/g	1.4	QB	47	QB	13	QB	4.6	B	1.8	Q	ND
EMC11	pg/g	0.65	QB	13	QB	3.7	BQ	1	B	0.64	Q	ND
EMC12	pg/g	2.2	B	45	QB	15	QB	3.7	QB	2.1	Q	ND
EMC13	pg/g	ND		2.1	Q	0.8	B	ND		ND		ND
EMC14	pg/g	ND		5.5	Q	2	QB	0.62	QB	ND		ND
EMC15	pg/g	4.1	B	150	QB	11	B	15	B	5.8	Q	ND

Notes:

= J Value

J Value = Below reporting limit but above detection limit.
Q = Estimated maximum possible concentration (EMPC).
S = Ion Suppression
B = Method blank contamination.
ND = Not detected

Eighteenmile Creek AOC - Dioxin Sediment Summary Report
Table 6
Results based on dry weights.

Sample ID	Units	Total HxCDF	Q	1234678-HpCDF	Q	1234789-HpCDF	Q	Total HpCDF	Q	OCDF	Q
EMC1	pg/g	8.3	SQ	8.8		0.48		20		14	B
EMC2	pg/g	30	QB	24	QB	ND		63	Q	13	B
EMC3	pg/g	16	QB	17	QB	ND		40	QB	11	B
EMC4	pg/g	85	QSB	82	B	3.1		200	QB	27	B
EMC5	pg/g	31	SQB	32	B	1.4	Q	80	BQ	18	B
EMC6	pg/g	19	QSB	19	B	1.1		44	QB	11	B
EMC7	pg/g	9.7	QB	8.5	QB	1.2		23	QB	8.2	B
EMC8	pg/g	200	QSB	230	B	9		550	QB	200	B
EMC9	pg/g	51	QSB	59	B	2.2		140	QB	43	B
EMC10	pg/g	130	QSB	130	B	6		340	QB	23	B
EMC11	pg/g	26	QB	24	B	1.2		62	QB	33	B
EMC12	pg/g	89	QSB	91	B	4.4		220	QB	23	B
EMC13	pg/g	4.1	QB	4.3	QB	ND		9.9	QB	4.7	B
EMC14	pg/g	12	QB	12	B	ND		29	QB	14	B
EMC15	pg/g	360	QB	370	B	12		810	QB	140	B

Notes:

= J Value

J Value = Below reporting limit but above detection limit.
Q = Estimated maximum possible concentration (EMPC).
S = Ion Suppression
B = Method blank contamination.
ND = Not detected

Eighteenmile Creek AOC - Particle Sizing Summary Report
Table 7

Sample ID	% Gravel	% Sand	% Fines
EBU-1	0.4	50.9	48.7
EBU-2	0.0	31.3	68.8
EBU-3	1.2	31.3	67.5
EBU-4	1.5	50.0	48.6
EBU-5	39.6	40.9	19.5

APPENDIX B

EIGHTEENMILE CREEK AOC

TISSUE SUMMARY REPORTS

CHEMISTRY RESULTS

Eighteenmile Creek AOC - Pesticide Tissue Summary Report
Table 1
Results based on wet weights.

Sample ID	Units	Aldrin	A-BHC	B-BHC	G-BHC	D-BHC	PPDDD	PPDDE	Q	PPDDT	Heptachlor	Dieldrin	A-Endosulfan	B-Endosulfan
CONTROL -1	ug/kg	<2.17	<2.17	<2.17	<2.17	<2.17	<4.34	<4.34		<4.34	<2.17	<4.34	<2.17	2.23
CONTROL-2	ug/kg	1.49	<2.09	<2.09	<2.09	<2.09	<4.18	<4.18		<4.18	<2.09	<4.18	<2.09	<4.18
CONTROL-3	ug/kg	<2.49	4.41	<2.49	<2.49	<2.49	<4.98	<4.98		<4.98	<2.49	<4.98	<2.49	<4.98
EBU1 1-1	ug/kg	<1.92	<1.92	<1.92	<1.92	<1.92	<3.84	6.87	#	3.21	1.29	<3.84	<1.92	<3.84
EBU1 1-2	ug/kg	<2.30	<2.30	<2.30	<2.30	<2.30	5.23	56.6		<4.60	<2.30	<4.60	<2.30	<4.60
EBU1 1-3	ug/kg	<1.81	<1.81	<1.81	<1.81	<1.81	<3.63	8.9	#	<3.63	<1.81	<3.63	<1.81	<3.63
EBU1 1-4	ug/kg	<1.47	<1.47	<1.47	<1.47	<1.47	<2.94	14.5		<2.94	<1.47	<2.94	<1.47	<2.94
EBU1 1-5	ug/kg	<2.04	<2.04	<2.04	<2.04	<2.04	<4.08	9.76	#	<4.08	<2.04	<4.08	<2.04	<4.08
EBU2 1-1	ug/kg	<2.40	<2.40	<2.40	<2.40	<2.40	<4.80	16.6	#	2.61	<2.40	<4.80	<2.40	<4.80
EBU2 2-1	ug/kg	<2.36	<2.36	4.12	<2.36	<2.36	<4.73	8.45	#	3.02	<2.36	<4.73	<2.36	<4.73
EBU2 3-1	ug/kg	<1.63	<1.63	<1.63	<1.63	<1.63	<3.26	9.35	#	<3.26	0.84	<3.26	<1.63	<3.26
EBU2 4-1	ug/kg	<2.34	<2.34	<2.34	<2.34	<2.34	<4.67	10.8	#	<4.67	0.99	<4.67	<2.34	<4.67
EBU2 5-1	ug/kg	<2.24	<2.24	<2.24	<2.24	<2.24	<4.48	7.03	#	2.61	<2.24	<4.48	<2.24	<4.48
EBU3 1-1	ug/kg	<2.46	<2.46	1.55	<2.46	<2.46	<4.91	12.3	#	<4.91	<2.46	<4.91	<2.46	<4.91
EBU3 2-1	ug/kg	<2.46	1.42	<2.46	<2.46	<2.46	<4.93	13.2	#	<4.93	<2.46	<4.93	<2.46	<4.93
EBU3 3-1	ug/kg	<2.15	5.34	<2.15	<2.15	<2.15	<4.30	13.8		<4.30	<2.15	<1.30	<2.15	<4.30
EBU3 4-1	ug/kg	<2.21	2.09	<2.21	<2.21	<2.21	<4.42	15.2	#	<4.42	<2.21	<4.42	<2.21	<4.42
EBU3 5-1	ug/kg	<1.87	2.17	<1.87	<1.87	<1.87	<3.73	12.3	#	<3.73	<1.87	<3.73	<1.87	<3.73
EBU4 1-1	ug/kg	<1.86	<1.86	<1.86	<1.86	<1.86	<3.72	10.2	#	<3.72	1.54	<3.72	<1.86	<3.72
EBU4 2-1	ug/kg	<1.76	<1.76	9.28	<1.76	<1.76	<3.52	9.34	#	<3.52	0.94	<3.52	<1.76	<3.52
EBU4 3-1	ug/kg	<1.82	<1.82	<1.82	<1.82	<1.82	<3.63	10.6	#	<3.63	<1.82	<3.63	<1.82	<3.63
EBU4 4-1	ug/kg	<2.13	<2.13	<2.13	<2.13	<2.13	<4.26	15.1	#	<4.26	1.36	<4.26	<2.13	<4.26
EBU4 5-1	ug/kg	<2.36	<2.36	<2.36	<2.36	<2.36	<4.71	16.6	#	<4.71	1.12	<4.71	<2.36	<4.71
EBU5 1-1	ug/kg	<2.50	<2.50	<2.50	<2.50	<2.50	<5.00	5.44	#	3.53	<2.50	<5.00	<2.50	<5.00
EBU5 2-1	ug/kg	<2.37	<2.37	<2.37	<2.37	<2.37	<4.73	7.82	#	3.83	<2.37	<4.73	<2.37	<4.73
EBU5 3-1	ug/kg	<2.23	<2.23	4.21	<2.23	<2.23	<4.46	9.54	#	<4.46	1.22	<4.46	<2.23	<4.46
EBU5 4-1	ug/kg	<2.42	<2.42	5.48	<2.42	<2.42	<4.83	4.42	#	<4.83	<2.42	<4.83	<2.42	<4.83
EBU5 5-1	ug/kg	<2.34	<2.34	5.12	<2.34	<2.34	<4.68	29.1		<4.68	<2.34	<4.68	<2.34	<4.68

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
= Data qualified due to >40% difference between results on primary and secondary columns.

Eighteenmile Creek AOC - Pesticide Tissue Summary Report
Table 1
Results based on wet weights.

Sample ID	Units	Endosulfan sulfate	Endrin	Endrin Aldehyde	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene	Alpha Chlordane	Gamma Chlordane
CONTROL -1	ug/kg	<4.34	<4.34	8.78	<2.17	<21.7	<21.7	<43.4	<2.17	<2.17
CONTROL-2	ug/kg	7.35	<4.18	<4.18	<2.09	<20.9	<20.9	<41.8	<2.09	<2.09
CONTROL-3	ug/kg	14.7	<4.98	<4.98	<2.49	<24.9	<24.9	<49.8	<2.49	<2.49
EBU1 1-1	ug/kg	<3.84	<3.84	<3.84	<1.92	<19.2	<19.2	<38.4	<1.92	<1.92
EBU1 1-2	ug/kg	<4.60	<4.60	<4.60	<2.30	<23.0	<23.0	<46.0	<2.30	7
EBU1 1-3	ug/kg	<3.63	<3.63	<3.63	<1.81	<18.1	<18.1	<36.3	<1.81	<1.81
EBU1 1-4	ug/kg	<2.94	<2.94	<2.94	<1.47	<14.7	<14.7	<29.4	<1.47	<1.47
EBU1 1-5	ug/kg	<4.08	<4.08	<4.08	<2.04	<20.4	<20.4	<40.8	<2.04	<2.04
EBU2 1-1	ug/kg	<4.80	<4.80	<4.80	<2.40	<24.0	<24.0	<48.0	<2.40	<2.40
EBU2 2-1	ug/kg	<4.73	<4.73	<4.73	<2.36	<23.6	<23.6	<47.3	<2.36	5.37
EBU2 3-1	ug/kg	<3.26	<3.26	<3.26	<1.63	<16.3	<16.3	<32.6	<1.63	<1.63
EBU2 4-1	ug/kg	<4.67	<4.67	<4.67	<2.34	<23.4	<23.4	<46.7	<2.34	<2.34
EBU2 5-1	ug/kg	<4.48	<4.48	<4.48	<2.24	<22.4	<22.4	<44.8	<2.24	<2.24
EBU3 1-1	ug/kg	<4.91	<4.91	<4.91	<2.46	<24.6	<24.6	<49.1	<2.46	8.55
EBU3 2-1	ug/kg	7.63	<4.93	<4.93	<2.46	<24.6	<24.6	<49.3	<2.46	8.96
EBU3 3-1	ug/kg	<4.30	<4.30	<4.30	<2.15	<21.5	<21.5	<43.0	<2.15	<2.15
EBU3 4-1	ug/kg	10.5	<4.42	<4.42	<2.21	<22.1	<22.1	<44.2	<2.21	<2.21
EBU3 5-1	ug/kg	12.7	1.95	<3.73	<1.87	<18.7	<18.7	<37.3	<1.87	<1.87
EBU4 1-1	ug/kg	<3.72	<3.72	<3.72	<1.86	<18.6	<18.6	<37.2	<1.86	6.35
EBU4 2-1	ug/kg	10.3	<3.52	<3.52	<1.76	<17.6	<17.6	<35.2	<1.76	5.61
EBU4 3-1	ug/kg	<3.63	<3.63	<3.63	<1.82	<18.2	<18.2	<36.3	<1.82	7.83
EBU4 4-1	ug/kg	3.27	<4.26	<4.26	<2.13	<21.3	<21.3	<42.6	<2.13	10.4
EBU4 5-1	ug/kg	<4.71	<4.71	<4.71	<2.36	<23.6	<23.6	<47.1	<2.36	9.96
EBU5 1-1	ug/kg	<5.00	<5.00	<5.00	<2.50	<25.0	<25.0	<50.0	<2.50	<2.50
EBU5 2-1	ug/kg	<4.73	<4.73	<4.73	<2.37	<23.7	<23.7	<47.3	<2.37	<2.37
EBU5 3-1	ug/kg	<4.46	<4.46	<4.46	<2.23	<22.3	<22.3	<44.6	<2.23	<2.23
EBU5 4-1	ug/kg	<4.83	<4.83	<4.83	<2.42	<24.2	<24.2	<48.3	<2.42	<2.42
EBU5 5-1	ug/kg	<4.68	<4.68	<4.68	<2.34	<23.4	<23.4	<46.8	<2.34	<2.34

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above detection limit.
= Data qualified due to >40% difference between results on primary and secondary columns.

Eighteenmile Creek AOC - PCB Congener Tissue Summary Report
Table 2
Results based on wet weights.

Sample ID	Units	PCB 15	PCB 18	Q	PCB 31	Q	PCB 40	Q	PCB 44	Q	PCB 49	PCB 52	PCB 54	PCB 60	Q	PCB 77	Q	PCB 86	PCB 87	Q
CONTROL-1	ug/kg	<0.95	<0.95		<0.95		<0.95		<0.95		<0.95	1.62	<1.90	<1.90		<0.95		N/A	<0.95	
CONTROL-2	ug/kg	<1.00	<1.00		<1.00		<1.00		<1.00		0.58	1.04	<2.00	<2.00		<1.00		N/A	<1.00	
CONTROL-3	ug/kg	<0.96	<0.96		<0.96		<0.96		<0.96		<0.96	<0.96	<1.92	<1.92		<0.96		N/A	<0.96	
EBU1 1-1	ug/kg	NR	4.82		8.67	C	2.16	C	9.72	C	13.6	17.3	<1.72	1.15	C	0.74	C	N/A	5.16	C
EBU1 1-2	ug/kg	NR	6.11	#	15.1	C	3.19	C	16.5	C	24.2	23.6	<1.98	2.28	C	1.39	C	N/A	10.8	C
EBU1 1-3	ug/kg	NR	5.4		10.3	C	2.07	C	10.1	C	13.7	17	<1.24	1.33	C	0.73	C	N/A	5.55	C
EBU1 1-4	ug/kg	NR	5.5		10.9	C	2.45	C	11.7	C	16.8	20.5	<1.18	1.62	C	0.79	C	N/A	7.15	C
EBU1 1-5	ug/kg	NR	5.06		8.6	C	1.95	C	10.2	C	13.6	17.4	<1.84	1.45	C	0.86	C	N/A	5.41	C
EBU2 1-1	ug/kg	NR	6.74		10.3	C	2.06	C	9.75	C	13.8	16.7	<1.98	1.16	C	0.91	C	N/A	4.27	C
EBU2 2-1	ug/kg	NR	7.41		12.3	C	2.44	C	12.1	C	18.4	21.1	<1.86	1.1	C	0.85	C	N/A	5.38	C
EBU2 3-1	ug/kg	NR	7.38		10.2	C	4.48	C	13.3	C	16	18.4	<1.88	1.04	C	2.95	C	N/A	3.95	C
EBU2 4-1	ug/kg	NR	8.63		10.9	C	2.96	C	14	C	20.7	24.2	<1.86	1.28	C	0.8	C	N/A	5.99	C
EBU2 5-1	ug/kg	NR	8.56		11.9	C	3.44	C	14.7	C	18.3	21.6	<1.98	1.03	C	0.88	C	N/A	4.67	C
EBU3 1-1	ug/kg	NR	14.9		16.1	C	4.65	C	20.7	C	23.8	26.5	<1.70	1.11	C	1.5	C	N/A	6.32	C
EBU3 2-1	ug/kg	NR	13.9		18.5	C	4.41	C	20.3	C	21.9	26.1	<1.46	1.08	C	1	C	N/A	5.58	C
EBU3 3-1	ug/kg	NR	14.6		18.6	C	4.75	C	22.1	C	22.9	27.1	<1.90	1.29	C	1.39	C	N/A	7.19	C
EBU3 4-1	ug/kg	NR	11.6		14.1	C	3.54	C	16.2	C	18.2	21.3	<1.46	1.15	C	1.54	C	N/A	5.97	C
EBU3 5-1	ug/kg	NR	10.2		15.9	C	3.48	C	15.8	C	18.9	21.2	<1.70	1.22	C	1.52	C	N/A	5.69	C
EBU4 1-1	ug/kg	NR	7.4		12.6	C	2.91	C	13.6	C	18.5	21.9	<1.12	1.72	C	0.73	C	N/A	6.96	C
EBU4 2-1	ug/kg	NR	8.85		14.8	C	3.48	C	16.5	C	21.9	26.3	<1.42	1.86	C	0.88	C	N/A	8.24	C
EBU4 3-1	ug/kg	NR	6.83		13.7	C	2.63	C	12.1	C	17.7	20.8	<1.98	1.65	C	0.85	C	N/A	6.93	C
EBU4 4-1	ug/kg	NR	7.7		13.1	C	2.55	C	13	C	19.9	25.3	<1.98	1.74	C	0.91	C	N/A	8.54	C
EBU4 5-1	ug/kg	NR	7.69		13.6	C	3.2	C	15.3	C	22.1	25.5	<2.00	1.72	C	0.87	C	N/A	8.6	C
EBU5 1-1	ug/kg	NR	2.63	#	4.9	C	1.11	C	6.31	C	9.15	12.5	<2.00	1.11	C	0.57	C	N/A	4.89	C
EBU5 2-1	ug/kg	NR	3.07	#	5.24	C	1.11	C	6.01	C	9.33	12.5	<2.00	1.08	C	0.79	C	N/A	4.53	C
EBU5 3-1	ug/kg	NR	3.76		7.03	C	1.53	C	7.74	C	10.5	14.7	<1.86	0.93	C	0.67	C	N/A	5.04	C
EBU5 4-1	ug/kg	NR	3.33		6.24	C	1.29	C	6.46	C	9.24	12.5	<1.94	0.89	C	0.75	C	N/A	4.97	C
EBU5 5-1	ug/kg	NR	4.02		6.35	C	1.46	C	7.74	C	11.3	15.2	<1.98	1.11	C	0.59	C	N/A	5.15	C

Notes:

= BRL
= J Value

BRL = Below Reporting Limit

J Value = Below reporting limit but above detection limit.

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= Data qualified due to >40% difference between results on primary and secondary columns.

Eighteenmile Creek AOC - PCB Congener Tissue Summary Report
Table 2
Results based on wet weights.

Sample ID	Units	PCB 97	Q	PCB 101	PCB 103	PCB 105	Q	PCB 114	PCB 118	Q	PCB 121	PCB 128	Q	PCB 129	Q	PCB 138	Q	PCB 141	Q	PCB 143	PCB 151	Q
CONTROL-1	ug/kg	<0.95		<0.95	<0.95	<0.95		<0.95	<0.95		<0.95	<0.95		<1.90		<0.95		<0.95		<0.95	<0.95	
CONTROL-2	ug/kg	<1.00		<1.00	<1.00	<1.00		<1.00	<1.00		<1.00	<1.00		<2.00		<1.00		<1.00		<1.00	<1.00	
CONTROL-3	ug/kg	<0.96		<0.96	<0.96	<0.96		<0.96	<0.96		<0.96	<0.96		<1.92		<0.96		<0.96		<0.96	<0.96	
EBU1 1-1	ug/kg	3.84	C	11.6	<0.86	3.07	C	<0.86	5.75		<0.86	0.89	#	<1.72		6.68	C	NR		<0.86	1.65	#
EBU1 1-2	ug/kg	7.57	C	19.1	<0.99	5.93	C	<0.99	10.5	#	<0.99	1.86		<1.98		14.1	C	NR		<0.99	3.51	
EBU1 1-3	ug/kg	4.11	C	10.7	<0.62	3.32	C	<0.62	6.14	#	<0.62	0.84	#	<1.24		6.59	C	NR		<0.62	1.39	
EBU1 1-4	ug/kg	5.34	C	14.8	<0.59	4.32	C	<0.59	7.32		<0.59	1.49		<1.18		8.85	C	NR		<0.59	2.2	#
EBU1 1-5	ug/kg	4.06	C	9.89	<0.92	3.22	C	<0.92	5.77		<0.92	0.88	#	<1.84		7.29	C	NR		<0.92	1.65	#
EBU2 1-1	ug/kg	3.68	C	7.77	<0.99	2.64	C	<0.99	4.06	#	<0.99	0.73	#	<1.98		7.3	C	NR		<0.99	1.57	#
EBU2 2-1	ug/kg	4.56	C	11.2	<0.93	2.93	C	<0.93	5.26	#	<0.93	1.08		<1.86		8.31	C	NR		<0.93	2.04	
EBU2 3-1	ug/kg	3.94	C	11.3	<0.94	2.6	C	<0.94	4.9		<0.94	0.68	#	<1.88		6.52	C	NR		<0.94	1.6	
EBU2 4-1	ug/kg	5.23	C	15.5	<0.93	3.99	C	<0.93	6.87	#	<0.93	1.13		<1.86		9.84	C	NR		<0.93	2.44	
EBU2 5-1	ug/kg	4.09	C	7.09	<0.99	2.74	C	<0.99	6.07		<0.99	1.05		<1.98		9.36	C	NR		<0.99	2.37	#
EBU3 1-1	ug/kg	5.98	C	16.8	<0.85	3.88	C	0.78	9.39		<0.85	1.29		<1.70		11	C	NR		<0.85	3.24	
EBU3 2-1	ug/kg	5.96	C	15	<0.73	3.49	C	<0.73	9.4		<0.73	1.22		<1.46		8.13	C	NR		<0.73	2.96	#
EBU3 3-1	ug/kg	6.88	C	17.6	<0.95	4.28	C	<0.95	11.7		<0.95	1.58		<1.90		10.2	C	NR		<0.95	3.41	#
EBU3 4-1	ug/kg	5.84	C	15.8	<0.73	3.93	C	<0.73	9.87		<0.73	1.65		<1.46		9.06	C	NR		<0.73	2.68	#
EBU3 5-1	ug/kg	5.63	C	16.2	<0.85	3.68	C	<0.85	9.12		<0.85	1.28		<1.70		9.3	C	NR		<0.85	3.66	#
EBU4 1-1	ug/kg	5.26	C	16.1	<0.56	4.59	C	<0.56	8.57		<0.56	1.3		0.55	C	8.2	C	NR		<0.56	2.47	#
EBU4 2-1	ug/kg	6.17	C	17	<0.71	4.79	C	<0.71	10.9		<0.71	1.28		<1.42		8.92	C	NR		<0.71	2.51	#
EBU4 3-1	ug/kg	5.07	C	14.1	<0.99	4.14	C	<0.99	8.06		<0.99	1.05		<1.98		8.45	C	NR		<0.99	1.94	#
EBU4 4-1	ug/kg	6.97	C	18.4	<0.99	4.97	C	<0.99	8.68	#	<0.99	1.79		<1.98		11.7	C	NR		<0.99	2.93	#
EBU4 5-1	ug/kg	6.75	C	20.2	<1.00	5.23	C	<1.00	8.93	#	<1.00	1.54		<2.00		12.2	C	NR		<1.00	2.88	#
EBU5 1-1	ug/kg	3.69	C	8.9	<1.00	3.14	C	<1.00	4.03	#	<1.00	1.04		<2.00		9.84	C	NR		<1.00	2.26	#
EBU5 2-1	ug/kg	3.51	C	9.15	<1.00	3.22	C	<1.00	3.1	#	<1.00	1		<2.00		9.23	C	NR		<1.00	2.23	#
EBU5 3-1	ug/kg	3.75	C	10.1	<0.93	3.21	C	<0.93	4.42	#	<0.93	1.02		<1.86		5.58	C	NR		<0.93	1.81	#
EBU5 4-1	ug/kg	3.75	C	9.93	<0.97	3.59	C	<0.97	4.13	#	<0.97	1.04		<1.94		9.25	C	NR		<0.97	1.82	#
EBU5 5-1	ug/kg	4.26	C	12.1	<0.99	3.42	C	<0.99	4.52	#	<0.99	1.14		<1.98		9.74	C	NR		<0.99	2.16	#

Notes:

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Eighteenmile Creek AOC - PCB Congener Tissue Summary Report
Table 2
Results based on wet weights.

Sample ID	Units	PCB 153	PCB 154	PCB 156	PCB 159	PCB 167	PCB 171	PCB 173	PCB 180	Q	PCB 182	Q	PCB 183	Q	PCB 185	Q	PCB 187	PCB 189	PCB 191
CONTROL-1	ug/kg	<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	<0.95		<0.95		<0.95		<0.95		0.59	<0.95	<0.95
CONTROL-2	ug/kg	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		<1.00		<1.00		<1.00		0.61	<1.00	<1.00
CONTROL-3	ug/kg	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<.96		<0.96		<0.96		<0.96		0.62	<0.96	<0.96
EBU1 1-1	ug/kg	NR	<0.86	NR	NR	<0.86	NR	<0.86	1.03	#	<0.86		0.36	C	<0.86		NR	<0.86	<0.86
EBU1 1-2	ug/kg	NR	<0.99	NR	NR	<0.99	NR	<0.99	1.77	#	<0.99		0.73	C	0.58	C	NR	<0.99	<0.99
EBU1 1-3	ug/kg	NR	<0.62	NR	NR	<0.62	NR	<0.62	1.14	#	<0.62		0.36	C	0.31	C	NR	<0.62	<0.62
EBU1 1-4	ug/kg	NR	<0.59	NR	NR	<0.59	NR	<0.59	1.47	C #	<0.59		0.64	C	0.39	C	NR	<0.59	<0.59
EBU1 1-5	ug/kg	NR	<0.92	NR	NR	<0.92	NR	<0.92	1.31	C #	<0.92		<0.92		0.39	C	NR	<0.92	<0.92
EBU2 1-1	ug/kg	NR	<0.99	NR	NR	<0.99	NR	<.99	0.79		<0.99		<0.99		0.43	C	NR	<0.99	<0.99
EBU2 2-1	ug/kg	NR	<0.93	NR	NR	<0.93	NR	<0.93	0.85	C	<0.93		0.39	C	0.31	C	NR	<0.93	<0.93
EBU2 3-1	ug/kg	NR	<0.94	NR	NR	<0.94	NR	<0.94	0.89	C	<0.94		<0.94		<0.94		NR	<0.94	<0.94
EBU2 4-1	ug/kg	NR	<0.93	NR	NR	<0.93	NR	<0.93	1.07	C #	0.38	C	0.44	C	0.38	C	NR	<0.93	<0.93
EBU2 5-1	ug/kg	NR	<0.99	NR	NR	<0.99	NR	<0.99	4.61	C	<0.99		1.62	C	0.44	C	NR	<0.99	<0.99
EBU3 1-1	ug/kg	NR	<0.85	NR	NR	<0.85	NR	<0.85	1.6	C	<0.85		1.05	C	0.89	C	NR	<0.85	<0.85
EBU3 2-1	ug/kg	NR	<0.73	NR	NR	<0.73	NR	<0.73	1.09	C	<0.73		0.51	C	<0.73		NR	<0.73	<0.73
EBU3 3-1	ug/kg	NR	<0.95	NR	NR	<0.95	NR	<0.95	1.57	C	<0.95		0.63	C	0.36	C	NR	<0.95	<0.95
EBU3 4-1	ug/kg	NR	<0.73	NR	NR	<0.73	NR	<0.73	1.21	C	<0.73		0.43	C	0.33	C	NR	<0.73	<0.73
EBU3 5-1	ug/kg	NR	<0.85	NR	NR	<0.85	NR	<0.85	0.9	C	<0.85		0.49	C	0.32	C	NR	<0.85	<0.85
EBU4 1-1	ug/kg	NR	<0.56	NR	NR	0.65	NR	<0.56	2.38	#	0.814	C	1.13	C	0.29	C	NR	<0.56	<0.56
EBU4 2-1	ug/kg	NR	<0.71	NR	NR	0.6	NR	<0.71	1.64	#	<0.71		1.3	C	0.55	C	NR	<0.71	<0.71
EBU4 3-1	ug/kg	NR	<0.99	NR	NR	0.67	NR	<0.99	1.53	#	<0.99		0.55	C	0.36	C	NR	<0.99	<0.99
EBU4 4-1	ug/kg	NR	<0.99	NR	NR	0.56	NR	<0.99	1.8	#	<0.99		0.97	C	0.48	C	NR	<0.99	<0.99
EBU4 5-1	ug/kg	NR	<1.00	NR	NR	0.59	NR	<1.00	1.62	#	<1.00		0.75	C	0.55	C	NR	<1.00	<1.00
EBU5 1-1	ug/kg	NR	<1.00	NR	NR	0.4	NR	<1.00	1.06	#	<1.00		0.59	C	<1.00		NR	<1.00	<1.00
EBU5 2-1	ug/kg	NR	<1.00	NR	NR	<1.00	NR	<1.00	1.69	#	<1.00		0.82	C	0.47	C	NR	<1.00	<1.00
EBU5 3-1	ug/kg	NR	<0.93	NR	NR	<0.93	NR	<0.93	1.02	#	<0.93		0.59	C	0.39	C	NR	<0.93	<0.93
EBU5 4-1	ug/kg	NR	<0.97	NR	NR	<0.97	NR	<0.97	1.12	#	<0.97		0.44	C	0.38	C	NR	<0.97	<0.97
EBU5 5-1	ug/kg	NR	<0.99	NR	NR	<0.99	NR	<0.99	0.95	#	<0.99		0.52	C	0.62	C	NR	<0.99	<0.99

Notes:

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Eighteenmile Creek AOC - PCB Congener Tissue Summary Report
Table 2
Results based on wet weights.

Sample ID	Units	PCB 194	PCB 195	Q	PCB 196	Q	PCB 199	PCB 201	Q	PCB 202	Q	PCB 203	Q	PCB 205	PCB 206	PCB 207	PCB 208	Q	PCB 155
CONTROL-1	ug/kg	<0.95	<0.95		<0.95		<0.95	<0.95		<0.95		<0.95		<0.95	<0.95	<0.95	<0.95		<0.95
CONTROL-2	ug/kg	<1.00	<1.00		<1.00		<1.00	<1.00		<1.00		<1.00		<1.00	<1.00	<1.00	<1.00		<1.00
CONTROL-3	ug/kg	<0.96	<0.96		<0.96		<0.96	<0.96		<0.96		<0.96		<0.96	<0.96	<0.96	<0.96		<0.96
EBU1 1-1	ug/kg	<0.86	<0.86		<0.86		<0.86	0.45	C	<0.86		0.27	C	<0.86	0.47	<0.86	0.33	C	<0.86
EBU1 1-2	ug/kg	<0.99	<0.99		<0.99		<0.99	1.06	C	<0.99		0.77	C	<0.99	0.91	<0.99	0.76	C	<0.99
EBU1 1-3	ug/kg	<0.62	<0.62		<0.62		<0.62	0.46	C	<0.62		0.27	C	<0.62	0.51	<0.62	0.33	C	<0.62
EBU1 1-4	ug/kg	0.23	<0.59		<0.59		<0.59	0.618	C	<0.59		0.34	C	<0.59	0.612	<0.59	0.49	C	<0.59
EBU1 1-5	ug/kg	<0.92	<0.92		<0.92		<0.92	0.46	C	<0.92		<0.92		<0.92	0.49	<0.92	0.4	C	<0.92
EBU2 1-1	ug/kg	<0.99	<0.99		<0.99		<0.99	0.44	C	<0.99		<0.99		<0.99	0.54	<0.99	0.44	C	<0.99
EBU2 2-1	ug/kg	<0.93	<0.93		<0.93		<0.93	0.59	C	<0.93		0.31	C	<0.93	0.65	<0.93	0.59	C	<0.93
EBU2 3-1	ug/kg	<0.94	1.17	C	<0.94		<0.94	0.44	C	<0.94		0.33	C	<0.94	<0.94	<0.94	0.63	C	<0.94
EBU2 4-1	ug/kg	<0.93	<0.93		<0.93		<0.93	0.76	C	<0.93		0.42	C	<0.93	1.05	<0.93	0.72	C	<0.93
EBU2 5-1	ug/kg	1.14	0.62	C	0.82	C	<0.99	1.31	C	<0.99		0.9	C	<0.99	0.9	<0.99	0.58	C	<0.99
EBU3 1-1	ug/kg	<0.85	0.28	C	<0.85		<0.85	<0.85		<0.85		0.5	C	<0.85	1.18	<0.85	0.97	C	<0.85
EBU3 2-1	ug/kg	<0.73	<0.73		<0.73		<0.73	1.53	C	0.29	C	0.57	C	<0.73	1.05	<0.73	0.87	C	<0.73
EBU3 3-1	ug/kg	0.36	<0.95		<0.95		<0.95	1.07		<0.95		0.55	C	0.95	1.46	<0.95	1.1	C	<0.95
EBU3 4-1	ug/kg	0.35	<0.73		<0.73		<0.73	0.91		<0.73		0.48	C	<0.73	1.21	<0.73	0.92	C	<0.73
EBU3 5-1	ug/kg	<0.85	<0.85		<0.85		<0.85	0.95		<0.85		0.51	C	<0.85	1.26	<0.85	1	C	<0.85
EBU4 1-1	ug/kg	0.19	<0.56		<0.56		0.25	0.55	C	<0.56		0.32	C	<0.56	0.52	<0.56	0.47	C	<0.56
EBU4 2-1	ug/kg	<0.71	0.26	C	<0.71		<0.71	1.12	C	<0.71		0.53	C	<0.71	1.19	<0.71	0.68	C	<0.71
EBU4 3-1	ug/kg	<0.99	<0.99		<0.99		<0.99	0.67	C	<0.99		0.37	C	<0.99	0.66	<0.99	0.55	C	<0.99
EBU4 4-1	ug/kg	<0.99	<0.99		<0.99		<0.99	0.83	C	<0.99		0.36	C	<0.99	0.78	<0.99	0.65	C	<0.99
EBU4 5-1	ug/kg	<1.00	<1.00		<1.00		<1.00	0.88	C	<1.00		0.45	C	<1.00	0.85	<1.00	0.64	C	<1.00
EBU5 1-1	ug/kg	<1.00	<1.00		<1.00		<1.00	0.95	C	<1.00		0.42	C	<1.00	1.45	<1.00	1.06	C	<1.00
EBU5 2-1	ug/kg	<1.00	<1.00		<1.00		<1.00	0.87	C	<1.00		0.38	C	<1.00	1.16	<1.00	0.98	C	<1.00
EBU5 3-1	ug/kg	<0.93	<0.93		<0.93		<0.93	0.71	C	<0.93		0.45	C	<0.93	0.93	0.35	0.71	C	<0.93
EBU5 4-1	ug/kg	<0.97	<0.97		<0.97		<0.97	0.83	C	<0.97		0.4	C	<0.97	1.24	<0.97	0.97	C	<0.97
EBU5 5-1	ug/kg	<0.99	<0.99		<0.99		<0.99	1.03	C	<0.99		0.45	C	<0.99	1.33	<0.99	1.1	C	<0.99

Notes:

= BRL
= J Value

BRL = Below Reporting Limit
J Value = Below reporting limit but above dete
C = Data confirmed based upon retention time but reported from one column only d
# = Data qualified due to >40% difference between results on primary and secondary columns.

Eighteenmile Creek AOC - Metals Tissue Summary Report
Table 3
Results based on wet weights.

Sample ID	Units	SB	AS	BE	CD	CR	CU	PB	NI	SE	AG	TL	ZN	AL	BA	CA	CO
CONTROL-1	mg/kg	0.0466	1.39	0.028	0.0576	1.34	5.43	3	1.89	0.678	<0.025	<0.025	37	412	122	1260	0.665
CONTROL-2	mg/kg	<0.025	0.843	<0.025	0.0465	0.283	4.73	2.21	1.03	0.607	<0.025	<0.025	38.2	158	118	365	0.449
CONTROL-3	mg/kg	<0.025	1.12	<0.025	0.0648	0.0711	4.61	1.33	1.18	0.647	<0.025	<0.025	36.1	236	31.1	738	0.562
EBU1 1-1	mg/kg	0.029	1.09	0.0357	0.192	5.23	10.1	7.65	5.25	0.43	<0.025	0.191	80	279	26.9	1360	1.04
EBU1 1-2	mg/kg	0.0574	1.16	0.0336	0.112	6.89	10.4	8.91	4.27	0.552	<0.025	<0.025	58.9	265	73.6	1300	0.77
EBU1 1-3	mg/kg	<0.025	0.41	0.0564	0.247	5.85	13.2	1.48	7.52	0.392	<0.025	0.0259	96.2	342	13.9	4100	1.61
EBU1 1-4	mg/kg	<0.025	0.769	<0.025	0.0547	1.9	4.31	3.94	2.14	0.435	<0.025	0.0457	39.4	145	56.4	723	0.39
EBU1 1-5	mg/kg	0.0281	1.04	0.0401	0.166	6.15	11	13.4	4.3	0.467	<0.025	<0.025	75.3	431	55.9	1420	0.931
EBU2 1-1	mg/kg	0.0349	1.24	0.048	0.297	11.2	19.4	15.2	10.2	0.493	<0.025	0.0362	127	433	30.6	1070	1.47
EBU2 2-1	mg/kg	0.0881	0.954	0.0277	0.155	4.13	9.1	10	3.87	0.452	0.0289	<0.025	73.7	284	64.9	584	0.709
EBU2 3-1	mg/kg	0.0909	1.31	0.0537	0.313	8.07	19.1	20.8	6.92	0.485	<0.025	0.0339	96.4	462	63.6	1110	1.08
EBU2 3-1 MD	mg/kg	<0.025	1.07	0.0572	0.336	12.3	19.6	8	10.5	4.22	<0.025	0.0471	134	507	16.5	1330	1.41
EBU2 4-1	mg/kg	<0.025	0.756	<0.025	0.52	2.17	5.93	5.39	2.01	0.514	0.0371	<0.025	44.6	254	81.9	323	0.434
EBU2 5-1	mg/kg	0.106	1.94	0.0802	0.461	13.3	24.3	30.4	19.6	0.476	0.0329	0.0557	170	676	48.4	2310	2.31
EBU3 1-1	mg/kg	0.0642	1.06	0.0423	0.32	15.9	26.6	29.5	15.1	0.0448	0.0283	0.0324	152	386	76	861	1.42
EBU3 2-1	mg/kg	0.142	1.34	0.0535	0.31	15	23.4	26.2	22	0.413	0.0516	0.0446	168	369	61.3	1340	1.75
EBU3 3-1	mg/kg	0.0425	1.22	0.0487	0.282	13.7	21.3	22.8	20	0.376	0.047	0.0406	159	212	55.7	1220	1.59
EBU3 4-1	mg/kg	0.0486	1.52	0.0483	0.387	21.3	33.8	42.8	27.5	0.446	0.0433	0.054	214	442	70.6	1200	2.4
EBU3 5-1	mg/kg	0.026	1.09	0.0602	0.297	12.5	22.1	28.1	16.8	0.402	0.0309	0.0354	171	638	80.1	1200	1.62
EBU4 1-1	mg/kg	0.105	1.05	0.0588	0.186	15.2	19.5	40.6	6.2	0.38	0.0315	0.0514	74	460	55.8	2510	2.48
EBU4 2-1	mg/kg	0.0543	0.843	0.041	0.141	5.32	18.2	20.1	4.58	0.402	<0.025	<0.025	71	353	67.1	1690	0.886
EBU4 3-1	mg/kg	0.0568	1.69	0.109	0.321	29.6	26.2	30.8	10.6	0.421	0.039	0.0408	117	886	49.7	3600	1.86
EBU4 4-1	mg/kg	<0.025	0.916	<0.025	0.0612	5.38	6.49	6.83	2.17	0.466	<0.025	<0.025	96.6	510	88.2	554	0.54
EBU4 4-1 MD		0.0613	0.93	0.0433	0.127	3.72	7.74	10.2	4.29	0.322	<0.025	0.027	284	1450	53.2	1110	0.734
EBU4 5-1	mg/kg	<0.025	0.833	0.0294	0.0675	2.47	8.02	8.7	2.77	0.444	0.059	<0.025	107	718	87.5	601	0.695
EBU5 1-1	mg/kg	0.153	0.793	<0.025	0.0833	6.36	4.64	4.49	1.15	0.31	0.326	<0.025	39	99.6	73.1	328	0.3
EBU5 2-1	mg/kg	0.0481	0.73	0.034	0.0997	2.92	6.08	7.97	3.37	0.253	<0.025	<0.025	51.3	246	41.7	874	0.576
EBU5 3-1	mg/kg	0.0338	1.02	0.0827	0.197	16.4	11.2	16.3	5.59	0.207	0.0768	0.0639	143	1460	31.2	2280	1
EBU5 4-1	mg/kg	0.0406	1.03	0.0314	0.23	15.9	8.63	22.7	2.51	0.357	<0.025	<0.025	136	609	69.4	2770	0.574
EBU5 5-1	mg/kg	<0.025	0.844	0.0274	0.0725	13.8	6.05	6.34	2.08	0.38	<0.025	<0.025	96	744	99.4	536	0.626

Notes:

= BRL

BRL = Below Reporting Limit

Eighteenmile Creek AOC - Metals Tissue Summary Report
Table 3
Results based on wet weights.

Sample ID	Units	FE	MG	MN	K	NA	V
CONTROL-1	mg/kg	1330	692	33.8	1200	772	1.45
CONTROL-2	mg/kg	764	314	15.5	1330	758	0.568
CONTROL-3	mg/kg	485	537	32.5	1340	691	1.09
EBU1 1-1	mg/kg	1270	330	35.3	791	495	1.61
EBU1 1-2	mg/kg	1190	331	27.4	1290	866	0.992
EBU1 1-3	mg/kg	397	464	97.6	628	424	2.11
EBU1 1-4	mg/kg	676	200	13.2	1110	728	0.518
EBU1 1-5	mg/kg	1580	362	34.1	986	629	1.73
EBU2 1-1	mg/kg	1770	362	24.4	917	582	1.82
EBU2 2-1	mg/kg	1100	258	14.9	1070	702	1.06
EBU2 3-1	mg/kg	1840	377	26.5	986	616	1.91
EBU2 3-1 MD	mg/kg	1610	473	32.9	786	494	2.38
EBU2 4-1	mg/kg	720	245	10.4	1330	976	0.552
EBU2 5-1	mg/kg	3210	537	45.8	719	431	3.25
EBU3 1-1	mg/kg	1690	343	33	1120	591	1.99
EBU3 2-1	mg/kg	1920	404	44.1	948	573	2.43
EBU3 3-1	mg/kg	1750	368	40.1	863	521	2.21
EBU3 4-1	mg/kg	2280	452	45.8	1050	615	2.85
EBU3 5-1	mg/kg	1930	447	37.2	1170	643	2.12
EBU4 1-1	mg/kg	2510	379	45.8	849	500	2.48
EBU4 2-1	mg/kg	1770	342	31.1	1030	679	1.74
EBU4 3-1	mg/kg	4220	629	89.8	767	435	4.66
EBU4 4-1	mg/kg	1070	283	17.6	1350	899	0.787
EBU4 4-1 MD		1940	319	40.5	859	532	2.13
EBU4 5-1	mg/kg	1230	304	28.6	1290	835	0.994
EBU5 1-1	mg/kg	651	212	15.6	1190	656	0.714
EBU5 2-1	mg/kg	1520	250	31.7	674	417	1.67
EBU5 3-1	mg/kg	2190	536	61.3	618	293	2.82
EBU5 4-1	mg/kg	1210	341	34.8	1100	596	1.36
EBU5 5-1	mg/kg	1240	371	30.1	1370	771	1.1

Notes:

= BRL

BRL = Below Reporting Limit

Eighteenmile Creek AOC - Mercury Tissue Summary Report
Table 4
Results based on wet weights.

Sample ID	Units	HG
CONTROL-1	mg/kg	0.0313
CONTROL-2	mg/kg	0.0378
CONTROL-3	mg/kg	0.187
EBU1 1-1	mg/kg	0.0853
EBU1 1-1 MD	mg/kg	0.0848
EBU1 1-2	mg/kg	11.5
EBU1 1-3	mg/kg	0.112
EBU1 1-4	mg/kg	0.0833
EBU1 1-5	mg/kg	0.0718
EBU2 1-1	mg/kg	0.116
EBU2 2-1	mg/kg	0.0929
EBU2 3-1	mg/kg	0.195
EBU2 4-1	mg/kg	0.0436
EBU2 5-1	mg/kg	0.113
EBU3 1-1	mg/kg	0.148
EBU3 2-1	mg/kg	0.116
EBU3 3-1	mg/kg	0.227
EBU3 4-1	mg/kg	0.198
EBU3 5-1	mg/kg	0.169
EBU4 1-1	mg/kg	0.105
EBU4 2-1	mg/kg	0.0607
EBU4 3-1	mg/kg	0.128
EBU4 4-1	mg/kg	0.0241
EBU4 5-1	mg/kg	0.0409
EBU5 1-1	mg/kg	0.0304
EBU5 2-1	mg/kg	0.0434
EBU5 3-1	mg/kg	0.0269
EBU5 4-1	mg/kg	0.029
EBU5 5-1	mg/kg	0.0148

APPENDIX C

EIGHTEENMILE CREEK AOC

BIOACCUMULATION SUMMARY

TOXICOLOGY RESULTS

Eighteenmile Creek AOC - Average Biomass of *L. variegatus* (g wet weight)

Table 1

Treatment Sample ID	Average ams wet wei	Standard Deviation
Control	3.34	0.260
EBU-1	5.79	2.076
EBU-2	5.86	1.055
EBU-3	5.61	2.274
EBU-4	4.86	2.246
EBU-5	3.16	0.050

The averages for test tissues were obtained from five replicates and the average for the control tissue was obtained from three replicates.

Eighteenmile Creek AOC - *L. variegatus* Lipid Summaries

Table 2

Sample ID	Average % Lipids	Standard Deviation
Initial	0.71	0.29
Control	0.78	0.19
EBU-1	1.27	0.62
EBU-2	1.69	0.65
EBU-3	1.15	0.87
EBU-4	0.96	0.22
EBU-5	0.96	0.32

Averages calculated using five replicates except for Initial and Control which were based upon 3 replicates.

Pre-Exposure Dry-to-Wet Weight Ratio in *L. variegatus*

Table 3

Average (g/g)	Standard Deviation
0.164	0.034

Averages calculated using five replicates.

Eighteenmile Creek AOC - Average Concentration (ug/Kg) of Pesticides Detected in *L. variegatus*

Table 4

Pesticides	Control	EBU-1	EBU-2	EBU-3	EBU-4	EBU-5
ALDRIN	1.01	0.64	0.73	0.74	0.66	0.79
A-BHC	1.94	0.64	0.73	2.37	0.66	0.79
B-BHC	0.75	0.64	0.73	0.89	0.66	0.79
G-BHC	0.75	0.64	0.73	0.74	0.66	0.79
D-BHC	0.75	0.64	0.73	0.74	0.66	0.79
PPDDD	1.50	2.01	1.46	1.49	1.32	1.58
PPDDE	1.50	19.33	10.45	13.36	12.37	11.26
PPDDT	1.50	1.70	2.18	1.49	1.32	2.40
Heptachlor	0.75	0.77	0.83	0.74	1.11	0.89
Dieldrin	1.50	1.31	1.46	1.49	1.32	1.58
A-Endosulfan	0.75	0.64	0.73	0.74	0.66	0.79
B-Endosulfan	1.76	1.31	1.46	1.49	1.32	1.58
Endosulfan sulfate	7.83	1.31	1.46	5.58	3.52	1.58
Endrin	1.50	1.31	1.46	1.63	1.32	1.58
Endrin Aldehyde	3.94	1.31	1.46	1.49	1.32	1.58
Heptachlor Epoxide	0.75	0.64	0.73	0.74	0.66	0.79
Methoxychlor	7.50	6.36	7.31	7.43	6.62	7.91
Chlordane	7.50	6.36	7.31	7.43	6.62	7.91
Toxaphene	15.00	12.73	14.63	14.86	13.23	15.80
Alpha Chlordane	0.75	0.64	0.73	0.74	0.66	0.79
Gamma Chlordane	0.75	1.88	1.65	3.92	8.03	0.79

Eighteenmile Creek AOC - Average Concentration (ug/Kg) of PCB Congeners Detected in *L. variegatus*

Table 5

PCB Congeners	Control	EBU-1	EBU-2	EBU-3	EBU-4	EBU-5
PCB 15	0.32					
PCB 18	0.32	5.38	7.74	13.04	7.69	3.36
PCB 31	0.32	10.71	11.12	16.64	13.56	5.95
PCB 40	0.32	2.36	3.08	4.17	2.95	1.30
PCB 44	0.32	11.64	12.77	19.02	14.10	6.85
PCB 49	0.41	16.38	17.44	21.14	20.02	9.90
PCB 52	0.99	19.16	20.40	24.44	23.96	13.48
PCB 54	0.65	0.53	0.64	0.55	0.57	0.65
PCB 60	0.65	1.57	1.12	1.17	1.74	1.02
PCB 77	0.32	0.90	1.28	1.39	0.85	0.67
PCB 86						
PCB 87	0.32	6.81	4.85	6.15	7.85	4.92
PCB 97	0.32	4.98	4.30	6.06	6.04	3.79
PCB 101	0.32	13.22	10.57	16.28	17.16	10.04
PCB 103	0.32	0.27	0.32	0.27	0.28	0.33
PCB 105	0.32	3.97	2.98	3.85	4.74	3.32
PCB 114	0.32	0.27	0.32	0.37	0.28	0.33
PCB 118	0.32	7.10	5.43	9.90	9.03	4.04
PCB 121	0.32	0.27	0.32	0.27	0.28	0.33
PCB 128	0.32	1.19	0.93	1.40	1.39	1.05
PCB 129	0.65	0.53	0.64	0.55	0.60	0.65
PCB 138	0.32	8.70	8.27	9.54	9.89	8.73
PCB 141	0.32	0.37				
PCB 143	0.32	0.27	0.32	0.27	0.28	0.33
PCB 151	0.32	2.08	2.00	3.19	2.55	2.06
PCB 153	0.32					
PCB 154	0.32	0.27	0.32	0.27	0.28	0.33
PCB 155	0.32	0.27	0.32	0.27	0.28	0.33
PCB 156	0.32					
PCB 159	0.32					
PCB 167	0.32	0.27	0.32	0.27	0.61	0.34
PCB 171	0.32					
PCB 173	0.32	0.27	0.32	0.27	0.28	0.33
PCB 180	0.32	1.34	1.64	1.27	1.79	1.17
PCB 182	0.32	0.27	0.33	0.27	0.41	0.33
PCB 183	0.32	0.48	0.62	0.62	0.94	0.59
PCB 185		0.41	0.37	0.43	0.45	0.44
PCB 187	0.61					
PCB 189	0.32	0.27	0.32	0.27	0.28	0.33
PCB 191	0.32	0.27	0.32	0.27	0.28	0.33
PCB 194	0.32	0.27	0.48	0.30	0.28	0.33
PCB 195	0.32	0.27	0.55	0.27	0.29	0.33
PCB 196	0.32	0.27	0.42	0.27	0.28	0.33
PCB 199	0.32	0.27	0.32	0.27	0.30	0.33
PCB 201	0.32	0.61	0.71	0.95	0.81	0.88
PCB 202	0.32	0.27	0.32	0.28	0.28	0.33
PCB 203	0.32	0.39	0.46	0.52	0.41	0.42
PCB 205	0.32	0.27	0.32	0.40	0.28	0.33
PCB 206	0.32	0.60	0.69	1.23	0.80	1.22
PCB 207	0.32	0.27	0.32	0.24	0.28	0.33
PCB 208	0.32	0.46	0.59	0.97	0.60	0.96
Sum PCB	17.52	126.67	126.89	169.63	156.07	93.35

Eighteenmile Creek AOC - Average Concentration (mg/Kg) of Metals Detected in *L. variegatus*

Table 6

Metals	Control	EBU-1	EBU-2	EBU-3	EBU-4	EBU-5
SB	0.021	0.026	0.066	0.065	0.047	0.057
AS	1.118	0.894	1.240	1.246	1.066	0.883
BE	0.015	0.035	0.044	0.051	0.049	0.037
CD	0.056	0.154	0.349	0.319	0.155	0.137
CR	0.6	5.2	7.8	15.7	11.6	11.1
CU	4.9	9.8	15.6	25.4	15.7	7.3
PB	2.2	7.1	16.4	29.9	21.4	11.6
NI	1.4	4.7	8.5	20.3	5.3	2.9
SE	0.64	0.46	0.48	0.34	0.42	0.30
AG	0.008	0.008	0.023	0.040	0.029	0.086
TL	0.008	0.056	0.028	0.041	0.023	0.019
ZN	37.1	70.0	102.3	172.8	93.1	93.1
AL	268.7	292	422	409	585	632
BA	90.4	45.3	57.9	68.7	69.7	63.0
CA	788	1781	1079	1164	1791	1358
CO	0.56	0.95	1.20	1.76	1.29	0.62
FE	860	1023	1728	1914	2160	1362
MG	514	337	356	403	387	342
MN	27.3	41.5	24.4	40.0	42.6	34.7
K	1290	961	1004	1030	1057	990
NA	740	628	661	589	670	547
V	1.04	1.39	1.72	2.32	2.13	1.53
HG	0.09	2.37	0.11	0.17	0.07	0.03